# COTOBA DESIGN AIML Documentation

Cotobadesign

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CHAPTER 1

# COTOBA AIMLãĄńãĄďãĄĎãĄę

COTOBA AIMLãĄĺãĄŕãĂĄCOTOBA DESIGN, Inc.ãĄőåŕ¿èľ´śãČůãČľãČČãČĹãČŢãĆľãČijãČăăĄğãĄĆãĆŃCOTOBA AgentãĄğãĂĄåŕ¿èľ´śãĆůãČŁãČłãĆŁłãĆŠèĺŸèijL'ãĄŹãĆŃçĆžãĄńåĹľçŤĺãĄŹãĆŃåŕ¿èľ´śèĺĂèłđãĄğãĄŹãĂĆ AIML(Artificial Intelligence Markup Language)ãĆŠãČŹãČijãĆźãĄńCOTOBA DESIGN, Inc.ãĄŇçŃňèĞłæŃąåijţãĆŠèąŇãĄłãĄčãĄęãĄŁãĆŁãĂĄJSONãĄőåŔŰãĆŁæĽśãĄĎãĆĎAPIãĄŃãĆĽãĄőãČąãĆ£ãČĞãČijãĆ£ãĄ APIãĄőåŚijãĄşåĞžãĄŮãĄŁãĆĹãĄşæĹżãĆŁåĂd'ãĄőåŔĆçĚğãĄńãĆĹãĆŃåŕ¿èľ´śåĹűå¿ąç■L'ãĂĄCOTOBA Agentäžěåd'ŰãĄőæČĚåăśãĆŠçŤĺãĄĎãĄ§åŕ¿èľ´śåĹűå¿ąãĄÑãĄğãĄ■ãĆŃãĆĹãĄĘãĄłæŃąåijţãĆŠèąŇãĄłãĄčãĄęãĄĎãĄ¿ãĄŹãĂĆ

## 1.1 COTOBA AIMLèíŸè£řæŰźæşŢ

åŕ¿èľ´śãĆůãČŁãČłãĆŁłãĄőèíŸè£řæŰźæşŢãĄńãĄd'ãĄĎãĄęèłňæŸŐãĄŮãĄ¿ãĄŹãĂĆ ãĄŞãĄŞãĄğãĄŕåĹľçŤĺèĂĚãĄőçŹžèľ´śåĘĚåőźãĄńåŕ¿ãĄŹãĆŃãĂĄåŕ¿èľ´śãČůãČľãČČãČĹãČŢãĆľãČijãČăăĄőå£IJç■ŤãĆŠèíŸèijL

åd'L'æŢřãĄőä£ÍæŇĄãĂĄJSONãĄőåĹľçŤĺæŰźæşŢãĂĄREST APIãĄőåŚijãĄşåĞžãĄŮæŰźæşŢç■L'ãĄŕCOTOBA AIMLãČłãČŢãĆąãČňãČşãĆźãĄőåĘĚåőźãĆŠçţĎãĄ£åŘĹãĆŘãĄŻãĆŃãĄŞãĄĺãĄğãĂĄæğŸãĂĚãĄłåŕ¿èľ´śãĆůãČŁãČłãĆłãČ

## 1.2 å§žælJňåŕ¿èľ´śãĆůãČŁãČłãĆł

åĹľçŤĺèĂĚãĄőçŹžèľ´śãĄőåĘĚåőźãĄńå£IJãĄŸãĂĄåŕ¿èľ´śãČůãČľãČČãČĹãČŢãĆľãČijãČăăĄŃãĆĽãĄőå£IJç■ŤãĆŠåőŽç¿l'ãĄŮã

categoryèęĄçt'ăăĄŕãĂĄAIMLãĄőåŕ¿èľ´śãČńãČijãČńãĄőå§žæIJňå■Ÿä¡■ãĄğãĄŹãĂĆ categoryèęĄçt'ăåĘĚãĄńãĂĄ pattern ãĄĺ template ãĄĺãĄĎãĄčãĄ§1ãĄd'ãĄőåŕ¿èľ´śãČńãČijãČńãĆŠèíŸèijL'ãĄŮãĄ¿ãĄŹãĂĆ

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">

    <category>
        <pattern>ãĄŁãĄŕãĆĹãĄĘãĄŤãĄŰãĄĎãĄ¿ãĄŹãĂĄäżŁæŮěãĆĆ1æŮěéäŚåijţãĆŁãĄ¿ãĄŮãĆĞãĄĘãĂĆ</template>
    </category>

</aiml>
```

Input: ãĄŁãĄŕãĆĹãĄĘ
Output: ãĄŁãĄŕãĆĹãĄĘãĄŤãĄŰãĄĎãĄ¿ãĄŹãĂĄäżŁæŮěãĆĆ1æŮěéäŚåijţãĆŁãĄ¿ãĄŮãĆĞãĄĘ

## 1.3 å£IJç■ŤãĄőåĹĘåšŘ

åŕ¿èľśãĆůãČŁãČłãĆłãĆŠä¡IJæĹŘãĄŹãĆŃåăť åŘĹãĂĄåĹľçŤĺèĂĚãĄő1ãĄd'åL'■ãĄőçŹžèl'śãĄńå£IJãĄŸãĄęå£IJç■ŤæŰĞãĆŠåd'

ä¿ŃãĄĹãĄřãĂĄåŕ¿èl'śãČŮãČl'ãĆČãČĹãČŢãĆl'ãČijãČããĄŃãĆL'ãĄőåŢŔãĄĎåŘĹãĆŔãĄŻãĄńåŕ¿ãĄŮãĂĄâĂİãĄŕãĄĎ/ãĄĎãĄĎ

ãĄŞãĄőåăť åŘĹãĄőå£IJç■ŤåĹĘåšŘãĄőä¿ŃãĄĺãĄŮãĄęãĄŕãĂĄthatãĆŠåĹľçŤĺãĄŮãĄ¿ãĄŹãĂĆ

äžëäÿŃä¿ŃãĄğãĄŕãĂĄâĂİãĄŕãĄĎâĂİãĂĄâĂİãĄĎãĄĎãĄĹâĂİãĄőçţŘæđIJãĄńãĆĹãĆĹå£IJç■ŤãĆŠåd'L'ãĄĹãĄęãĄĎãĄ¿ãĄŹã
ãĄŞãĄőå£IJç■ŤãĄŕBotãĄőå£IJç■ŤãĄÑãĂĄâĂİãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ§ãČńãĆŕãĆŠåĚěãĆÑãĄ¿ãĄŹãĄÑïij§âĂİãĄőæ

```
<category>
    <pattern>çğĄãĄŕãĆşãČijãČŠãČijãĄÑåě¡ãĄ■ãĄğãĄŹ</pattern>
    <template>ãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ§ãČńãĆŕãĆŠåĚěãĆÑãĄ¿ãĄŹãĄÑ</template>
</category>

<category>
    <pattern>ãĄŕãĄĎ</pattern>
    <that>ãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ§ãČńãĆŕãĆŠåĚěãĆÑãĄ¿ãĄŹãĄÑ</that>
    <template>ãĆŔãĄÑãĆŁãĄ¿ãĄŮãĄ§</template>
</category>

<category>
    <pattern>ãĄĎãĄĎãĄĹ</pattern>
    <that>ãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ§ãČńãĆŕãĆŠåĚěãĆÑãĄ¿ãĄŹãĄÑ</that>
    <template>ãČŰãČl'ãČČãĆŕãĄğãĄŹãĄ■</template>
</category>
```

Input: çğĄãĄŕãĆşãČijãČŠãČijãĄÑåě¡ãĄ■ãĄğãĄŹ
Output: ãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ§ãČńãĆŕãĆŠåĚěãĆÑãĄ¿ãĄŹãĄÑ
Input: ãĄŕãĄĎ
Output: ãĆŔãĄÑãĆŁãĄ¿ãĄŮãĄ§

## 1.4 åŕ¿èľśåĘĚåőźãĄőæŁ¡åĞžãĂĄåd'L'æŢřåĹľçŤĺ

åĹľçŤĺèĂĚãĄőçŹžèl'śãĄőåĘĚåőźãĆŠæŁ¡åĞžãĄŹãĆŃãĄńãĄŕâĂİ*âĂİãĄĺstarãĆŠåĹľçŤĺãĄŮãĄ¿ãĄŹãĂĆãĄ¿ãĄ§ãĂĄåĹľçŤĺèĂ
1ãĄd'çŻõãĄőçŹžèl'śãĄğãČŽãČČãČĹãĄőçĺŐéąđãĆŠä£ÍæŇĄãĄŮãĄ¿ãĄŹãĂĆãĄİãĄőéŽŻåĹľçŤĺèĂĚãĄőçŹžèl'śpatternãĄőãČŽãĆ
åd'L'æŢřãĄőåĹľçŤĺãĄŕset/getãĆŠä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆsetãĄőåšđæĂğãĄğæŇĞåőŽãĄŮãĄ§åŘ■çğřpetcategoryãĄńsetãĄőåĘĚå
æňąãĄőçŹžèl'śãĄğãĄŕãĂĄåĹľçŤĺèĂĚãĄőãČŽãČČãČĹãĄőåŘ■åL'■ãĆŠä£ÍæŇĄãĄŮãĄ¿ãĄŹãĂĆåŘŇæğŸãĄńsetãĆŠçŤĺãĄĎä£Ía
æňąãĄőçŹžèl'śãĄğãĄŕãĂĄä£ÍæŇĄãĄŮãĄ§åĘĚåőźãĆŠåĹľçŤĺãĄŮåŕ¿èl'śãĆŮãČl'ãČČãČĹãČŢãĆl'ãČijãČããĄŃãĆL'ãĄőå£IJç■Ťã
åd'L'æŢřãĄőåĘĚåőźãĄńãĆĹãĆŃåĹĘåšŘãĄŕãĂĄconditionãĆŠåĹľçŤĺãĄŮãĄ¿ãĄŹãĂĆconditionãĄŕåŕ¿èśąãĄĺãĄłãĆŃåd'L'æŢřãĄ
caseãĄőãĆĹãĄĘãĄłåĞęçŘĘãĆŠèÍŸèijL'ãĄŹãĆŃãĄŞãĄĺãĄŃãĄğãĄ■ãĄ¿ãĄŹãĂĆ

äžëäÿŃãĄőä¿ŃãĄğãĄŕãĂĄãČŽãČČãČĹãĄőçĺŐéąđpetcategoryãĄŃâĂİçĽńâĂİãĄŃâĂİçŃńâĂİãĄŃãĆŠswitch-
caseæŰĞãĄőcaseãĄńå¡ŞãĄ§ãĆŃliãĄğåĹĘåšŘãĄŮãĄ¿ãĄŹãĂĆãĄľãĄąãĆL'ãĄğãĆĆãĄłãĄŃãĄčãĄ§åăť åŘĹæIJłèl'Ţä¿ąçţŘæđIJã

ãĄ¿ãĄ§ãĂĄè£Ťç■ŤãĄőåĘĚåőźãĄńpetnameãĄğä£ÍæŇĄãĄŮãĄ§åĘĚåőźãĆŠè£ŤãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>çğĄãĄőãČŽãČČãČĹãĄŕ*ãĄğãĄŹ</pattern>
    <template>
        <think><set name="petcategory"><star /></set></think>
        <star/>ãĄŇåě¡ãĄ■ãĄłãĆŞãĄğãĄŹãĄ■
    </template>
</category>

<category>
    <pattern>ãČŽãČČãČĹãĄőåŘ■åL’■ãĄŕ*ãĄğãĄŹ</pattern>
    <template>
        <think><set name="petname"><star /></set></think>
        ãĄĎãĄĎåŘ■åL’■ãĄğãĄŹãĄ■ãĂĆ
    </template>
</category>

<category>
    <pattern>çğĄãĄőãČŽãČČãČĹèęŽãĄĹãĄęãĆŃïij§</pattern>
    <template>
        <condition name="petcategory">
            <li value="çŁń">ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄŕçŁñãĄő<get name="petname" />
↪ãĄğãĄŹãĆĹãĄ■</li>
            <li value="çŇń">ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄŕçŇńãĄő<get name="petname" />
↪ãĄğãĄŹãĆĹãĄ■</li>
            <li>ãČŽãČČãČĹãĄŕéčijãĄčãĄęãĄĎãĄłãĄŃãĄčãĄ§ãĆĹãĄ■</li>
        </condition>
    </template>
</category>
```

Input: çğĄãĄőãČŽãČČãČĹãĄŕçŁñãĄğãĄŹãĂĆ
Output: çŁñãĄŇåě¡ãĄ■ãĄłãĆŞãĄğãĄŹãĄ■ãĂĆ
Input: ãČŽãČČãČĹãĄőåŘ■åL’■ãĄŕãČđãČ■ãČşãĄğãĄŹãĂĆ
Output: ãĄĎãĄĎåŘ■åL’■ãĄğãĄŹãĄ■ãĂĆ
Input: çğĄãĄőãČŽãČČãČĹèęŽãĄĹãĄęãĆŃïij§
Output: ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄŕçŁñãĄőãČđãČ■ãČşãĄğãĄŹãĆĹãĄ■ãĂĆ

## 1.5 BOTéĂčæŘž

èd’ĞæŢřBOTãĆŠä¡IJæĹŘãĄŮåŘĎãĂĚãĄőçţŘæđIJãĆŠéĂčæŘžãĄŮåŃŢä¡IJãĄŢãĄŻãĆŃãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆREST
*æśŐçŤĺRESTãĆd’ãČşãĆ£ãČŢãĆğãČijãĆź* ãĆŠåĽ’çŤĺãĄŮãĄ¿ãĄŹãĂĆ äżěäÿŃãĄőãĆĹãĄĘãĄńãĂĄæŮćãĄń¡IJæĹŘãĄŮãĄ§ãČ

BOTãĄŇãĆL’ãĄőæĹżãĆŁåĂd’ãĄŕãĂĄvar:__SUBAGENT_BODY__ãĄńåŘńãĄ¿ãĆŇãĄęãĄŁãĆŁãĂĄjsonèęAçt’ãäĄğåŔŰãĆŁåČ

```
<?xml version="1.0" encoding="UTF-8"?>

<aiml version="2.0">
    <category>
        <pattern>ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹ*</pattern>
        <template>
            <think>
                <json var="body.utterance"><star /></json>
                <json var="body.userId"><get var="__USER_USERID__" /></json>
                <sraix>
                    <host>https://HOSTNAME/bots/BOT_ID/ask</host>
                    <method>POST</method>
                    <header>"Content-Type":"application/json;charset=UTF-8"</
↪header>
```

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```
                    <body><json var="body" /></body>
                </sraix>
            </think>
            <json var="__SUBAGENT_BODY__.response" />
        </template>
    </category>
</aiml>
```

sraixèęAçt'ãäĄőåśđæĂğ `botName`
ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄÍãĄąğãĂĄBOTãĄőãĆÍãĆd'ãČłãĆćãĆźåőŽç¿l'ãĆŠåĹl'çŤÍãĄŮãĄęåŕ¿BOTåřĆçŤÍãĄőéĂŽä£ąåĞęçŘĘã

èl'şçt'řãĄńãĄd'ãĄĎãĄęãĄŕãĂĄ*åŕ¿èl'śãČŮãČl'ãČČãČĹãČŢãĆl'ãČijãČäãĄğãĂĄåĚňéŰŃãĄŢãĆŃãĄęãĄĎãĆŃbotåŚijãĄşåĞžãĄ*
ãĆŠåŔĆçĔğãĄŮãĄęãĄŔãĄäãĄŢãĄĎãĂĆ

ãĆÍãĆd'ãČłãĆćãĆźåőŽç¿l'ãĆŠåĹl'çŤÍãĄŮãĄęåŘŇãĄŸåĞęçŘĘãĆŠèąŇãĄĘåät'åŘĹãĂĄãĄ¿ãĄŽãĂĄãĆÍãĆd'ãČłãĆćãĆźãĄőçŹžéł

```
bot:
  ALIAS_NAME:
    url: https://HOSTNAME/bots/BOT_ID/ask
```

ãĆůãČŁãČłãĆłãĄőèÍŸè£řãĄŕäžĕäÿŇãĄőæğŸãĄńçřąçŢĕåŇŰãĄŢãĆŇãĄ¿ãĄŹãĂĆ

```
<?xml version="1.0" encoding="UTF-8"?>

<aiml version="2.0">
    <category>
        <pattern>ãĆţãČŰãĆÍãČijãĆÿãĆğãČşãČĹ*</pattern>
        <template>
            <sraix botName="ALIAS_NAME">
                <star />
            </sraix>
        </template>
    </category>
</aiml>
```

## 1.6 æĎŔåŻşèğčéĞĹãĆÍãČşãĆÿãČşéĂčæŘž

æĎŔåŻşèğčéĞĹãĆÍãČşãĆÿãČşãĄğ¡IJæĹŘãĄŮãĄ§ãČćãČĞãČńãĆŠçŤÍãĄĎãĆŃåät'åŘĹãĂĄæŐÍèńŰãĆÍãČşãČL'ãČÍãĆd'ãČşãČĹ

NLUèęAçt'ãäĆŠåĹl'çŤÍãĄŮæĎŔåŻşèğčéĞĹãĆÍãČşãĆÿãČşãĄőãĆd'ãČşãČEąČşãČĹãĄńãĆĹãĆŃpatternåĹĘåšŘãĆůãČŁãČłãĆłãĆ

ãĄ¿ãĄ§ãĂĄåŕ¿èl'śãČŮãČl'ãČČãČĹãČŢãĆl'ãČijãČäãĄŕãĆůãČŁãČłãĆłãĄőèÍŸè£řãĄńå¿ŞãĄĎãČńãČijãČńãČŹãČijãĆźãĄőæĎŔåŻ
ãĆŠåŔĆçĔğãĄŮãĄęãĄŔãĄäãĄŢãĄĎãĂĆ

äžĕäÿŇãĄőä¿ŃãĄğãĄŕãĂĄæĎŔåŻşèğčéĞĹãĆÍãČşãĆÿãČşãĄőåĞęçŘĘçţŘædIJãĄŇâĂİãČńãĆźãČĹãČl'ãČşæd'IJçt'ćâĂİãĄäãĄčã

```
<aiml version="2.0">
    <category>
        <pattern>
            <nlu intent="ãČńãĆźãČĹãČl'ãČşæd'IJçt'ć" />
        </pattern>
        <template>
            <think>
                <set var="count">0</set>
                <set var="slotCount"><nluslot name="*" item="count" /></set>
            </think>
```

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```
            <condition>
                <li var="count"><value><get var="slotCount" /></value></li>
                <li>
                    slot:<nluslot name="*" item="slot"><index><get var="count" /></
↪index></nluslot>
                    entity:<nluslot name="*" item="entity"><index><get var="count"␣
↪/></index></nluslot>
                    <!-- score:<nluslot name="*" item="score"><index><get var=
↪"count" /></index></nluslot> -->
                    <think>
                        <set var="count"><map name="upcount"><get var="count" /></
↪map></set>
                    </think>
                    <loop />
                </li>
            </condition>
        </template>
    </category>
</aiml>
```

åřŽãĂąsraixèęĄçťăăĄőåśđæĂğ `nlu` ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄÍãĄğãĂĄçL'źåőŽãĄőN-
LUãĆţãČijãČŘãĄÍçŻť'æŐěéĂŽä£ąãĆŠèąŇãĄčãĄęãĂĄæĎŘåŻşèğčéĞĹãĆÍãČşãĆÿãČşãĄőåĞęçŘEçţŘæđIJãĆŠåŔŰå¿ŮãĄŹãĆŃã
èl'şçť'řãĄńãĄd'ãĄĎãĄęãĄfãĂĄSubAgentãĄő *NLUéĂŽä£ąãĆd'ãČşãĆ£ãČŢãĆğãČijãĆź*
ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăăĄŢãĄĎãĂĆ

# CHAPTER 2

# çŤÍèłđéŻĘ

æIJňçńäãĄğãĄŕãČL'ãĆ■ãČěãČąãČşãČĹäÿ■ãĄğçŤÍãĄĎãĆŃçŤÍèłđãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ

## 2.1 å ŕ¿èl'śåĞęçŘĘãĄńãĄ¿ãĄd'ãĆŔãĆŃçŤÍèłđ

æIJňãĆżãĆŕãĆůãČğãČşãĄğãĄŕãĂąãČL'ãĆ■ãČěãČąãČşãČĹäÿ■ãĄğçŤÍãĄĎãĆŃå ŕ¿èl'śåĞęçŘĘãĄńãĄ¿ãĄd'ãĆŔãĆŃçŤÍèłđãĆŠåő

| çŤÍèłđ | åőŽç¿l' |
|---|---|
| å ŕ¿èl'śãĆůãČŁãČłãĆł | å ŕ¿èl'śåĞęçŘĘãĄőåő§èąŇãĄńéŰćãĆŔãĆŃåĞęçŘĘãČŮãČ■ãĆřãČl'ãČăãĆĎãČĞãČijãĆ£ãĆŠèÍŸè£řãĄŮå ŕ¿èl'śãĆćãČ AIML (Artificial Inteligence Markup Language) ãĄğèÍŸè£řãĄŹãĆŃãĂĆ |
| éŰŃçŹżèĂĚ | å ŕ¿èl'śåĞęçŘĘãĄőãČŮãČ■ãĆřãČl'ãČăãĆĎãČĞãČijãĆ£ãĆŠèÍŸè£řãĄŮå ŕ¿èl'śãĆćãČ |
| å ŕ¿èl'śãĆÍãČşãĆÿãČş | å ŕ¿èl'śãĆůãČŁãČłãĆłãĆŠçŹżéŇšãĄŮãĄęå ŕ¿èl'śåĞęçŘĘãĆŠåő§èąŇãĄŹãĆŃåő§èąŇ |
| ãČIJãČČãČĹ | å ŕ¿èl'śãĆÍãČşãĆÿãČşãĄńå ŕ¿èl'śãĆůãČŁãČłãĆłãĄŇçŹżéŇšãĄŢãĆŇãĄęå ŕ¿èl'śåĞęçŘ |
| ãČęãČijãĆű | ãČIJãČČãČĹãĄńå ŕ¿ãĄŮãĄęå ŕ¿èl'śåĞęçŘĘãĆŠèĘąśĆãĄŹãĆŃèĂĚãĂĆ |
| ãĆůãĆźãČĘãČă | ãČIJãČČãČĹãĄőåĹěçğřãĂĆãČęãČijãĆűãĄĺå ŕ¿ærŤãĄŹãĆŃæŰĞèĎĹãĄğçŤÍãĄĎãĆ |
| ãČłãĆŕãĆÍãĆźãČĹ | ãČęãČijãĆűãĄŇãČIJãČČãČĹãĄńå ŕ¿ãĄŮãĄęèąŇãĄĘå ŕ¿èl'śåĞęçŘĘèĘąśĆãĂąãĂĄ |
| ãČňãĆźãČİãČşãĆź | ãČIJãČČãČĹãĄŇå ŕ¿èl'śåĞęçŘĘãĆŠèąŇãĄčãĄęãČęãČijãĆűãĄńè£ŤãĄŹå ŕ¿èl'śåĞęç |
| çŹżèl'śæŰĞ | ãČłãĆŕãĆÍãĆźãČĹãĄńåŘńãĄ¿ãĆŇãĂĄãČęãČijãĆűãĄŇãČIJãČČãČĹãĄńéĂąä£ąãĂ |
| å£IJç■ŤæŰĞ | ãČňãĆźãČİãČşãĆźãĄńåŘńãĄ¿ãĆŇãĂĄãČIJãČČãČĹãĄŇãČęãČijãĆűãĄńè£Ťä£ąãĂ |
| énŸåžęæĎŘåŽşèğčéĞĹ | æl'§æćŕå■ęç£ŠãČćãČĞãČńãĄńãĆĹãĆŁçŹżèl'śæŰĞãĄőæĎŘåŽş(ãĆd'ãČşãČEãČşãČ |
| å ŕ¿èl'śãĆ■ãĆř | å ŕ¿èl'śãĆÍãČşãĆÿãČş(ãČIJãČČãČĹ)ãĄŇåő§èąŇãĄŮãĄ§å ŕ¿èl'śåĞęçŘĘãĄőåŃŢä¡IJ |
| ãĆţãČŰãĆÍãČijãĆÿãĆğãČşãČĹ | ãĄĆãĆŇãČIJãČČãČĹãĄŇãĂĄçL'źåőŽãĄőå ŕ¿èl'śåĞęçŘĘãĆĎãĄĮãĄőäżŰãĄőæČĚ (SubAgent) ãĄĺãĆĆèÍŸãĄŹãĂĆ |
| ãČąãĆd'ãČşãĆÍãČijãĆÿãĆğãČşãČĹ | ãĆţãČŰãĆÍãČijãĆÿãĆğãČşãČĹãĆŠåŚijãĄşåĞžãĄŹåŢ'ãĄőãČIJãČČãČĹãĂĆMA (MainAgent) ãĄĺãĆĆèÍŸãĄŹãĂĆ |

## 2.2 cAIML

æIJňãĆżãĆŕãĆůãČğãČşãĄğãĄŕãĂąãČL'ãĆ■ãČěãČąãČşãČĹäÿ■ãĄğçŤÍãĄĎãĆŃ cAIML (COTOBA AIML) ãĄńãĄ¿ãĄd'ãĆŔãĆŃçŤÍèłđãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ

| çŤĺèłđ | åőŽç¿ľ |
|---|---|
| AIML | Artificial Inteligence Markup Language ãĄőçŢěçğřãĂĆåŕ¿èľśåĞęçŘĘãČŮãČ■ãĆřãČľãČăãĄőèÍŸè£řèÍĂèłć ãĄŕ XML å¡ćåijŔãĄğèÍŸè£řãĄŹãĆŃãĂĆ |
| cAIML | COTOBA AIML ãĄőçŢěçğřãĂĆCOTOBA DESIGN ãĄńãĆĹãĆŃçŃňèĞłäżŢæğŸæŃąåijţãĆŠåŘńãĆĂ AIMLãĂĆ |
| ãĆ£ãĆř | XML ãĄőå§žæIJňæğŃéĂăãĆŠèęŔåőŽãĄŹãĆŃãĆ£ãĆř(éŰŃåğŃãĆ£ãĆř âĂŸ<âĂę>âĂŹãĂĄçţĆäžĘãĆ£ãĆř âĂŸ</âĂę>âĂŹ)ãĄőãĄĘãĄą cAIML ãĄğåőŽç¿ľãĄŢãĆŃãĄ§ãĆĆãĄőãĂĆ |
| èęĄçť˘ă | ãĆ£ãĆřãĆŠæğŃæĹŘãĄŹãĆŃäÿżæğŃæĹŘèęĄçť˘ăãĂĆéŰŃåğŃãĆ£ãĆř âĂŸ<èęĄçť˘ă>âĂŹãĂĄçţĆäžĘãĆ£ãĆř âĂŸ</èęĄçť˘ă>âĂŹ ãĄőèÍŸæşŢãĄğèÍŸè£řãĄŢãĆŃãĆŃãĂĆ |
| åśđæĂğ | ãĆ£ãĆřãĆŠæğŃæĹŘãĄŹãĆŃãĆţãČŰæğŃæĹŘèęĄçť˘ăãĂĆéŰŃåğŃãĆ£ãĆř âĂŸ<èęĄçť˘ă åśđæĂğ=âĂİåĂd'âĂİ>âĂŹ ãĄőèÍŸæşŢãĄğèÍŸè£řãĄŢãĆŃãĆŃãĂĆåśđæĂğãĄŕèd'ĞæŢřãĄĆ |
| åĘĚåőź | éŰŃåğŃãĆ£ãĆřãĄĺçţĆäžĘãĆ£ãĆřãĄőéŰŞãĄńèÍŸè£řãĄŢãĆŃãĆŃæŰĞå■ůåĹŮãĂĆâĂŹ<èęĄçť˘ă åśđæĂğ=âĂİåĂd'âĂİ>åĘĚåőź</èęĄçť˘ă>âĂŹ ãĄőèÍŸæşŢãĄğèÍŸè£řãĄŢãĆŃãĆŃãĂĆåĘĚåőźãĄńãĄŕæŰĆ cAIML ãĄŕ XML åŘŇæğŸãĂĄåĚěãĆŃå■ŘæğŃéĂăãĄőèÍŸè£řå¡ćåijŔãĄĺãĄłãĆŃãĂĆ |
| èęĄçť˘ăåŘ■ | çĽźåőŽãĄőèęĄçť˘ăãĆŠæŇĞåőŽãĄŹãĆŃãĄ§ãĆĄãĄőåŘ■çğřãĂĆ |
| åśđæĂğåŘ■ | çĽźåőŽãĄőåśđæĂğãĆŠæŇĞåőŽãĄŹãĆŃãĄ§ãĆĄãĄőåŘ■çğřãĂĆ |
| åśđæĂğåĂd' | åśđæĂğãĄńèĺ■åőŽãĄŹãĆŃåĂd'ãĂĆcAIML ãĄğåśđæĂğåĂd'ãĄĺãĄŮãĄęèÍŸè£řãĄŹãĆŃåăt'åŘĹãČĂãČŰ |
| ãČŰãČ■ãČČãĆŕ | åĘĚåőźãĆŠåŘńãĆŞãĄäãĄĆãĆŃèęĄçť˘ăåĚĺä¡Ş(år¿å£IJãĄŹãĆŃéŰŃåğŃãĆ£ãĆřãĄŃãĆĽçţĆäžĘãĆ£ãĆřã |
| ãČŐãČijãČĽ | cAIML ãĄő XML å¡ćåijŔãĄőãČĞãČijãĆ£ægŃéĂăãĆŠæIJĺægŃéĂăãĄĺèęŃãĄ§æŹĆãĄőèęĄçť˘ăãĄńçŻÿå¡ |
| NLU | cAIML ãĄŃãĆĽåŠijãĄşåĞžãĄŹéńŸåžęæĎŔåŽşèğčéĞĹæľ§èČ¡ãĆŠæŇĞãĄŹãĂĆ |

CHAPTER 3

# COTOBA Agent dialog engine API

## 3.1 åŕ¿èľśAPI

åŕ¿èľśãĆÍãČşãĆÿãČşãĆŠREST APIãĆŕãČľãĆź(programy.clients.restful.yadlan.sanic.client)ãĆŠçŤÍãĄĎãĄęçńÑãĄąäÿŁãĄŠãĄ§åă
ãČęãČijãĆűãĄőçŹžèľśæŰĞãĆŠåŘńãĆĂãČłãĆŕãĆÍãĆźãČĹãĆŠãČIJãČČãČĹãĄńéĂĄä£ąãĄŮãĂĄãČIJãČČãČĹãĄÑãĆĽãĄőå£IJç

| éăĚçŽő | åĘĚåőź |
|---|---|
| ãČŮãČ■ãČĹãĆşãČń | HTTP |
| ãČąãĆ¡ãČČãČĽ | POST |

### 3.1.1 ãČłãĆŕãĆÍãĆźãČĹ

åŕ¿èľśAPIãČłãĆŕãĆÍãĆźãČĹãĄńèĺ■åőŽãĄŹãĆŃåĘĚåőźãĄğãĄŹãĂĆ

- ãČłãĆŕãĆÍãĆźãČĹãČŸãČČãČĂ

| ãČŢãĆčãČijãČńãČĽåŘ■ | | èłňæŸŐ |
|---|---|---|
| Content-Type | application/json;charset=UTF-8 | ãĆşãČşãČĘãČşãČĹãĆ£ãĆd'ãČŮãĄğJSONãĂĄæŰĞå■ŮãĆşãČijãČL'ãĄ |

- ãČłãĆŕãĆÍãĆźãČĹãČIJãČĞãĆč

| éäĚçŻőåŘ■ | | ãĆ■ãČij | åđŃ | å£ĚéäĹ | èłňæŸŐ |
|---|---|---|---|---|---|
| ãČ■ãĆśãČijãČń | | locale | string | No | èÍĂèłđãĆşãČijãČL'ãĄÍISO-639 èÍĂèłđãĆşãČijãČL'ãĄÍISO-3166 åŻ¡ãĆşãČijãČL'ãĆŠãČŔãĆď'ãČŢãČşçźÑãĄĎãĄăçţĎã JP, en-US, zh-CNãĂĆ æIJłæŇĞåőŽãĄőåăť'åŘĹãĂĄãČIJãČČãČĹåĄţ'ãĄğèę |
| æŹĆéŰŞæČĚåăś | | time | string | No | ãČłãĆŕãĆĺãĆźãČĹåĄţ'æŹĆåĹżãĂĆISO8601(RFC333 07-01T12:18:45+09:00ãĂĆ æIJłèĺ■åőŽãĄőåăť'åŘĹãĆţãČijãČŘæŹĆåĹżãĄğåŃŢä¡ |
| ãČęãČijãĆűID | | userId | string | Yes | ãČęãČijãĆűæŕŐãĄőãČęãČŃãČijãĆŕãĄIDãĆŠæŇĞåć |
| ãČĹãČŤãČČãĆŕID | | topic | string | No | åŕ¿èl'śãĆůãČŁãČłãĆŁãĄğèĺŸèijL'ãĄŮãĄ§ãĆůãČŁãČł |
| ãČęãČijãĆűçŹžèl'ś | | utterance | string | Yes | ãČęãČijãĆűãĄőçŹžèl'śæŰĞãĂĆ |
| ãĆ£ãĆźãĆŕåď'L'æŢřåL'ŁéŹď | | deleteVariable | boolean | No | trueãĆŠèĺ■åőŽãĄŽãĆŃãĄĺAIMLèĺŸè£řãĄőset/getãĄ data ãĄğèĺ■åőŽãĄŮãĄ§åď'L'æŢřãĆŠäÿĂæŃňãĄğåL'ŁéŹd |
| ãČąãĆ£ãČĞãČijãĆ£ | | metadata | string | No | JSONå¡ćåijŔãĄőãČąãĆ£ãČĞãČijãĆ£ãĂĄãĆĆãĄŮãĄ *åŕ¿èl'śAPIãČĞãČijãĆ£ãĄőåď'L'æŢřåĹl'çŤĺ* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăăĄŢãĄĎãĂĆ |
| ãĆşãČşãČŢãĆčãČř | | config | | No | åŕ¿èl'śãĆĺãČşãĆÿãČşåŃŢä¡IJçŁűæĚŃãĄńéŰćãĄŹãĆĺ |
| | ãČ■ãĆřãČňãČŹãČřogLevel | string | No | åŕ¿èl'śãĆĺãČşãĆÿãČşãĄőåŕ¿èl'śãĆ■ãĆřãĄőåĞžåŁŽãČ |

- ãČłãĆŕãĆĺãĆźãČĹä¿Ń

```
POST /v1.0/ask HTTP/1.1
Host: www.***.com
Accept: */*
Content-Type: application/json;charset=UTF-8

{
    "locale": "ja-JP",
    "time": "2018-07-01T12:18:45+09:00",
    "userId": "E8BDF659B007ADA2C4841EA364E8A70308E03A71",
    "topic": "greeting",
    "utterance": "ãĄŞãĆŞãĄńãĄąãĄŕ",
    "deleteVariable": false,
    "metadata": {"arg1":"value1","arg2":"value2"},
    "config": {"logLevel":"debug"}
}
```

### 3.1.2 ãČňãĆźãČĺãČşãĆź

åŕ¿èl'śAPIãČłãĆŕãĆĺãĆźãČĹãĄńåŕ¿ãĄŹãĆŃãČňãĆźãČĺãČşãĆźãČIJãČĞãĆčãĄŕJSONå¡ćåijŔãĄğãĄŹãĂĆ
åŕ¿èl'śAPIãČłãĆŕãĆĺãĆźãČĹãĄńåŕ¿ãĄŹãĆŃãČňãĆźãČĺãČşãĆźãĆşãČijãČL'ãĄőäÿĂèęğãĄŕäžëäÿŃãĄőãĄĺãĄŁãĆŁãĄğãĄŹãĂĆ
åŕ¿èl'śãĆĺãČşãĆÿãČşåĘĚãĄőåĞęçŘĘäžëåď'ŰãĄńèţůåŽãăĄŹãĆŃãČňãĆźãČĺãČşãĆźãĆşãČijãČL'(äžëäÿŃäÿĂèęğäžëåď'ŰãĄőHTT
ãĄĺãĄőåăť'åŘĹãĄőãČňãĆźãČĺãČşãĆźãČIJãČĞãĆčãĄőåĘĚåőźãĄŕäÿ■åőŽãĄğãĄŹãĂĆ

- ãČňãĆźãČĺãČşãĆźãČşãČijãČL'

| ãĆşãČijãČL' | èłňæŸŐ |
|---|---|
| 200 | ãČłãĆŕãĆĺãĆźãČĹæ■čåÿÿçţĆäžĘãĂĆ |
| 400 | ãČŠãČľãČąãČijãĆ£ãĆĺãČľãČijãĂĆãČłãĆŕãĆĺãĆźãČĹãĄőåĘĚåőźãĄőèęÑçŻţ'ãĄŮãĄŃå£ĚèęĄãĄğãĄŹãĂ |

- ãČňãĆźãČĺãČşãĆźãČŸãČČãČĂ

| ãČŢãĆčãČijãČńãČĽåŘ■ | èłňæŸŐ |
|---|---|
| Content-Type | application/json;charset=UTF-8 |

- ãČňãĆźãČİãČşãĆźãČIJãČĞãĆč

| éăĚçŻőåŘ■ | ãĆ■ãČij | åđŃ | å£ĚéãĹ | èłňæŸŐ |
|---|---|---|---|---|
| ãČęãČijãĆűçŹžèľś | utterance | string | Yes | åŕ¿èľśãĆĺãČşãĆÿãČşåĘĚéČĺãĄğåĞęçŘĘãĆŠèąÑãĄčãA§ãČę |
| ãČęãČijãĆűID | userId | string | Yes | ãČęãČijãĆűæŕŐãĄőãČęãČŃãČijãĆŕãĄłIDãĆŠæŇĞåőŽãĄŮã |
| å£IJç■ŤæŰĞ | response | string | Yes | åŕ¿èľśãĆĺãČşãĆÿãČşãĄŃãĆL'å£IJç■ŤæŰĞãĂĆUTF8ãĄőæŰ |
| ãČĹãČŤãČČãĆŕåŘ■ | topic | string | Yes | çŔ¿åIJĺãĄőãČĹãČŤãČČãĆŕåŘ■ãĂĆ |
| ãČňãĆd'ãČĘãČşãĆů | latency | number | Yes | ãĆĺãČşãĆÿãČşåĘĚåĞęçŘĘæŹĆéŰŞãĂĆãČłãĆŕãĆĺãĆźãČĹãC |
| ãČąãĆ£ãČĞãČijãĆ£ | metadata | string | No | JSONå¡ćåijŔãĄőãČąãĆ£ãČĞãČijãĆ£ãĂĄãĆĆãĄŮãĄŔãĄŕæ |

- ãČňãĆźãČİãČşãĆźä¿Ń

```
HTTP/1.1 200 Ok
Content-Type: application/json;charset=UTF-8

{
    "response": "ãĄŞãĆŞãĄńãĄąãĄŕãĂĄäżŁæŮěãĆĆãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■",
    "userId": "E8BDF659B007ADA2C4841EA364E8A70308E03A71",
    "topic": "greeting",
    "latency":0.0317230224609375,
    "utterance": "ãĄŞãĆŞãĄńãĄąãĄŕ"
}
```

é§şæě¡åĘ■çŤ§ãĄńåŕ¿å£IJãĄŮãĄ§åŕ¿èľśãĆůãČŁãČłãĆŁãĄğâĂİæňąãĄőæŻšãĆŠåĘ■çŤ§âĂİãĄĺçŹžèľśãĄŮãĂĄmetadataãĄńåĘ■çŤ

```
HTTP/1.1 200 Ok
Content-Type: application/json;charset=UTF-8

{
    "response": "æňąãĄőæŻšãĆŠåĘ■çŤ§ãĄŮãĄ¿ãĄŹãĄ■",
    "userId": "E8BDF659B007ADA2C4841EA364E8A70308E03A71",
    "topic": "music_play",
    "latency":0.0317230224609375,
    "utterance": "ãĄŞãĆŞãĄńãĄąãĄŕ",
    "metadata": {"play":"next"}
}
```

## 3.2 ãČĞãČŘãČČãĆřAPI

ãČĞãČŘãČČãĆřAPIãĄŕãĂĄãĆćãČČãČŮãČ■ãČijãČL'ãĄŢãĆŃãA§zipãĆćãČijãĆńãĆd'ãČŰãĄőåŕ¿èľśãĆůãČŁãČłãĆŁãČŢãĆąãĆd'
éĄŐåŐżãĄőåŕ¿èľśãĆŠåŘńãĆĄãA§åŕ¿èľśçŁűæĚŃãĆŠåŘŰå¿ŮãĄŹãĆŃãĄŞãĄĺãĄÑãĄğãĄ■ãA¿ãĄŹãĂĆãA¿ãA§ãĂĄåŕ¿èľśäÿ■ã

| éăĚçŻő | åĘĚåőź |
|---|---|
| ãČŮãČ■ãČĹãĆşãČń | HTTP |
| ãČąãĆ¡ãČČãČL' | POST |

### 3.2.1 ãČłãĆŕãĆĺãĆźãČĹ

ãČĞãČŘãČČãĆřAPIãČłãĆŕãĆĺãĆźãČĹãĄńèĺ■åőŽãĄŹãĆŃåĘĚåőźãĄğãĄŹãĂĆ
ãČĞãČŘãČČãĆřAPIãĆĺãČşãĆL'ãČİãĆd'ãČşãČĹãĄńãĄŕäžŃåL'■ãĄńçŹżéŃšãĄŮãĄ§ãČęãČijãĆűãĄőãĄ£ãĄŃãĆćãĆŕãĆżãĆźãĄğã

- ãČłãĆŕãĆĺãĆźãČĹãČŸãČČãČĂ

| ãČŢãĆčãČijãČńãČĽåŘ■ | | èłňæŸŐ |
|---|---|---|
| x-dev-key | yyyyyyyyyyyyyyyy | *user-information* ãĄőx-dev-keyãĄğåŔŰå¿ŮãĄŮãĄ§APIãĆ■ãČijãĆŠæŇĞåőŽ |
| Content-Type | application/json;charset=UTF-8 | ãĆşãČşãČĘãČşãČĹãĆ£ãĆd'ãČŮãĄğJSONãĂĄæŰ |

- ãČłãĆŕãĆĺãĆźãČĹãČIJãČĞãĆč

| éăĚçŽőåŘ■ | | ãĆ■ãČij | åđŃ | å£Ěéă | èłňæŸŐ |
|---|---|---|---|---|---|
| ãČęãČijãĆűID | | userId | string | No | ãČęãČijãĆűæŕŐãĄőãČęãČŃãČijãĆŕãĄIDãĆŠæŇĞåő |
| åd'L'æŢřãČłãĆźãČĹ | | variables | | No | åĂd'ãĆŠèĺ■åőŽãĄŹãĆŃåd'L'æŢřãĄőæČĚåăśãĆŠãČłã |
| | åd'L'æŢřãĆ£ãĆd'ãČŷpe | | string | No | åd'L'æŢřãĆ£ãĆd'ãČŮãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆæ<br>âĂŸnameâĂŹãĆĆãĄŮãĄŘãĄŕ<br>âĂŸdataâĂŹ<br>ãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ(keyïijÑvalueãĄĺãĄĺãĆĆãĄń |
| | åd'L'æŢřåŘ■ | key | string | No | åĂd'ãĆŠèĺ■åőŽãĄŹãĆŃåd'L'æŢřåŘ■ãĆŠæŇĞåőŽãĄ |
| | åĂd' | value | string | No | åd'L'æŻt'ãĄŹãĆŃåĂd'ãĆŠèĺŸèijL'ãĄŮãĄ¿ãĄŹãĂĆ(t |

- ãČłãĆŕãĆĺãĆźãČĹä¿Ń

```
POST / HTTP/1.1
Host: www.***.com
Accept: */*
x-dev-key: yyyyyyyyyyyyyyyy

Content-Type: application/json;charset=UTF-8

{
    "userId": "E8BDF659B007ADA2C4841EA364E8A70308000000",
    "variables": [
        {
            "type": "name",
            "key": "name_variable",
            "value": "0"
        },
        {
            "type": "data",
            "key": "data_variable",
            "value": "1"
        },
        ïijŽ
        }
    ]
}
```

### 3.2.2 ãČńãĆźãČİãČşãĆź

ãČĞãČŘãČČãĆřAPIãČłãĆŕãĆĺãĆźãČĹãĄńåŕ¿ãĄŹãĆŃãČIJãČĞãĆčãĄŕJSONå¡ćåijŔãĄğãĄŹãĂĆ
ãČĞãČŘãČČãĆřAPIãČłãĆŕãĆĺãĆźãČĹãĄńåŕ¿ãĄŹãĆŃãČńãĆźãČİãČşãĆźãČşãČijãČL'ãĄőäÿĂèęğãĄŕäžěäÿŃãĄőãĄĺãĄŁãĆŁãĄğ
åŕ¿èl'śãĆĺãČşãĆÿãČşåĘĚãĄőåĞęçŘĘäžěåd'ŰãĄńètůåŽããĄŹãĆŃãČńãĆźãČİãČşãĆźãČşãČijãČL'(äžěäÿŃäÿĂèęğäžěåd'ŰãĄőHTT
ãĄİãĄőåăt'åŘĹãĄőãČńãĆźãČİãČşãĆźãČIJãČĞãĆčãĄőåĘĚåőźãĄŕäÿ■åőŽãĄğãĄŹãĂĆ

ãĄłãĄŁãĂĄéĂĄä£ąæŹĆãĄńãĂĄåd'L'æŢřãČłãĆźãČĹïijŽvariablesãĆŠæŇĞåőŽãĄŮãĄ§åăt'åŘĹãĂĄåŘŮä£ąãČĞãČijãĆ£ãĄńãĄŕ

- ãČńãĆźãČİãČşãĆźãČşãČijãČL'

| ãĆşãČijãČL' | èłňæŸŐ |
|---|---|
| 200 | ãČłãĆŕãĆĺãĆźãČĹæ■čåÿÿçţĆäžĘãĂĆ |
| 400 | ãČŠãČl'ãČąãČijãĆ£ãĆĺãČl'ãČijãĂĆãČłãĆŕãĆĺãĆźãČĹãĄőåĘĚåőźãĄőèęŃçŻt'ãĄŮãĄŃå£ÈèęĄãĄğãĄŹãĂ |

- ãČňãĆźãČİãČşãĆźãČŸãČČãČĂ

| ãČŢãĆčãČijãČńãČĽåŘ■ | | èłňæŸŐ |
|---|---|---|
| Content-Type | application/json;charset=UTF-8 | ãĆşãČşãČĘãČşãČĹãĆ£ãĆđ'ãČŮãĄğJSONãĂĄæŰ |

- ãČňãĆźãČİãČşãĆźãČIJãČĞãĆč

| éăĚçŽőåŘ■ | ãĆ■ãČij | åđŃ | å£ĚéăĹ | èłňæŸŐ |
|---|---|---|---|---|
| åŕ¿èl'śåśĕæ■t'æČĚåăś | conversations | json | Yes | æŇĞåőŽãĄŮãĄ§ãČęãČijãĆűãĄőåŕ¿èl'śåśĕæ■t'ãĆŠåŔŰå¿Ůã |
| çŻt'è£Śåŕ¿èl'śæČĚåăś | current_conversations | json | Yes | çŻt'è£ŚãĄőåŕ¿èl'śåĞęçŘĘãĄğãĄőåđ'L'æŢřåĘĚåőźãĄőåđ'L'æ |
| ãĆůãČŁãČłãĆłãĆĺãČĺ'ãČijæČĚåăś | categories | json | Yes | åŕ¿èl'śãĆůãČŁãČłãĆłçŻźéÑšæŹĆãĄőãĆĺãČĺ'ãČijåĘĚåőźãĆŠ |
| ãĆůãČŁãČłãĆłéĞ■èđ'ãČijæČĚåăś | patterns | json | Yes | åŕ¿èl'śãĆůãČŁãČłãĆłçŻźéÑšæŹĆãĄőpatternãĄőéĞ■èđ'ĞãĆŠ |
| èl■åőŽãČŢãĆąãĆđ'ãČńãĆĺãČĺ'ãČijæČĚåăś | topics | json | Yes | åŘĎçĺőèĺ■åőŽãČŢãĆąãĆđ'ãČńãĄőçŻźéÑšæŹĆãĄőãĆĺãČĺ'ãČ |
| ãČ■ãĆřæČĚåăś | logs | json | Yes | çŻt'è£ŚãĄőåŕ¿èl'śåĞęçŘĘãĄőäÿ■ãĄğãĂĄtemplateãĆ£ãĆřåĘ |

- ãČňãĆźãČİãČşãĆźä¿Ń

```
HTTP/1.1 200 Ok
Content-Type: application/json;charset=UTF-8

{
    "conversations": {
        "categories": 1251,                         /*␣
↪çŹźéÑšãĄŢãĆÑãĄęãĄĎãĆŃCategoryæŢř */
        "user_categories": 0,                       /*␣
↪learnfãĄğçŹźéÑšãĄŢãĆÑãĄŞãČęãČijãĆűåŽžæIJL'ãĄőCategoryæŢř */
        "exception": null,                          /*␣
↪ä¿Ńåd'ŰçŹžçŢŞæŹĆãĄőãČąãČČãĆżãČijãĆÿ */
        "client_context": {                         /*␣
↪ãĆŕãČl'ãĆd'ãĆćãČşãČĹãČżãČęãČijãĆűæČĚåăś */
            "botid": "bot",
            "brainid": "brain",
            "clientid": "yadlan",
            "depth": 0,
            "userid": "E8BDF659B007ADA2C4841EA364E8A70308E03A71"
        },
        "properties": {                             /*␣
↪çŔ¿åIJĺãĄőãĆřãČ■ãČijãČŘãČńåd'L'æŢřïijĹnameïijL'åĂd'ãČłãĆźãČĹ */
            "topic": "daytime",
            "name_variable": "0"
        },
        "data_properties": {                        /*␣
↪çŔ¿åIJĺãĄőãĆřãČ■ãČijãČŘãČńåd'L'æŢřïijĹdataïijL'åĂd'ãČłãĆźãČĹ */
            "data_variable": "1"
        },
        "max_histories": 100,                       /*␣
↪æIJĂåd'ğåŕ¿èl'śåśĕæ■t'çőąçŘĘæŢřïijL' */
        "questions": [                              /*␣
↪åŕ¿èl'śåśĕæ■t'ïijĹåŔd'ãĄĎãĆĆãĄőãĄÑãĆL'éăĘãĄńãĂĄmax_historiesåĹĘãĆŠæăijçt'■ïijL' */
            {
                "exception": null,
                "name_properties": {                /*␣
↪åĞęçŘĘåőÑäžĘæŹĆãĄőãĆřãČ■ãČijãČŘãČńåd'L'æŢřïijĹnameïijL'åĂd'ãČłãĆźãČĹ */
                    "topic": "daytime"
                },
                "data_properties": {},              /*␣
↪åĞęçŘĘåőÑäžĘæŹĆãĄőãĆřãČ■ãČijãČŘãČńåd'L'æŢřïijĹdataïijL'åĂd'ãČłãĆźãČĹ */
                "var_properties": {                 /*␣
↪åĞęçŘĘåőÑäžĘæŹĆãĄőãČ■ãČijãĆńãČńåd'L'æŢřïijĹvarïijL'åĂd'ãČłãĆźãČĹ */
                    "__USER_LOCALE__": "None",
```

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```
                    "__USER_METADATA__": "None"
                    :
                },
               "sentences": [                          /*␣
↪çŹžèl'śæŰĞærŐãĄőåĞęçŘĘæČĚåăś */
                    {
                        "question": "test",             /* çŹžèl'śæŰĞ */
                        "matched_node": {               /*␣
↪ãČđãČČãČĄãĄŲãĄ§ãĆůãČŁãČłãĆłæČĚåăś */
                            "file_name": "../storage/categories/basic.aiml",
                            "start_line": "78",
                            "end_line": "92"
                        },
                        "response": "response OK"       /* å£IJç■ŤæŰĞ */
                    }
                :
            :
        ]
    },
    "current_conversation": [
        {
            "before_variables": {                   /*␣
↪åd'L'æŻt'ãĄÑãĄĆãĄčãĄ§åd'L'æŢřãĄőåĞęçŘĘéŰŃåğŃæŹĆãĄőåĂd'ãČłãĆźãČĹ */
                "name_properties": {
                    "topic": "*",
                    "name_variable": null
                },
                "data_properties": {
                    "data_variable": null
                }
            },
            "after_variables": {                    /*␣
↪åd'L'æŻt'ãĄÑãĄĆãĄčãĄ§åd'L'æŢřãĄőåĞęçŘĘåőÑäžĘæŹĆãĄőåĂd'ãČłãĆźãČĹ */
                "name_properties": {
                    "topic": "daytime",
                    "name_variable": "0"
                },
                "data_properties": {
                    "data_variable": "1"
                }
            },
            "question": "test",                     /* çŹžèl'śæŰĞ */
            "that": "*",                            /*␣
↪ãČđãČČãČĄåŕ¿èśąãĄĺãĄłãĆŃçŻt'è£ŚãĄőå£IJç■ŤæŰĞ(åĹİæIJ§åĂd'ïijž"*") */
            "topic": "*"                            /*␣
↪ãČđãČČãČĄåŕ¿èśąãĄĺãĄłãĆŃçŕ¿åIJĺãĄőTopicåĂd' */
            "matched_node": {                       /*␣
↪ãČđãČČãČĄãĄŲãĄ§ãĆůãČŁãČłãĆłæČĚåăś */
                "file_name": "../storage/categories/basic.aiml",
                "start_line": "78",
                "end_line": "92"
            },
            "processing_result": "response OK",  /*␣
↪brainãĄőéĂŽåÿÿåĞęçŘĘãĄğçŢ§æĹŘãĄŢãĆŃãĄ§å£IJç■ŤæŰĞïijĹdenied_
↪sraiåő§æŰ¡æŹĆãĄńãĄŕçl'žæŰĞå■ŮïijL' */
            "response": "response OK"               /* å£IJç■ŤæŰĞ */
            "srai_histories": [                     /* sraiåĞęçŘĘãĄőåő§æŰ¡åśěæ■t' */
                {
                    "before_variables": {               /*␣
↪åd'L'æŻt'ãĄÑãĄĆãĄčãĄ§åd'L'æŢřãĄősraiåĞęçŘĘéŰŃåğŃæŹĆãĄőåĂd'ãČłãĆźãČĹ */
                        "name_properties": {
```


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```
                            "topic": "*"
                        },
                        "var_properties": {
                            "var_variable": null
                        }
                    },
                    "after_variables": {            /*␣
↪åd'L'æŻt'ãĄÑãĄĆãĄčãĄŞåd'L'æŢřãĄősraiåĞęçŘĘåőÑäžĘæŹĆãĄőãČłãĆźãČĹ */
                        "name_properties": {
                            "topic": "daytime"
                        },
                        "var_properties": {
                            "var_variable": "srai_var"
                        }
                    },
                    "question": "test srai",         /* sraiåŕ¿èśąãĄőçŹžèl'śæŰĞ */
                    "that": "*",
                    "topic": "*",
                    "matched_node": {
                        "file_name": "../storage/categories/basic.aiml",
                        "start_line": "4",
                        "end_line": "11"
                    },
                    "processing_result": "srai OK",
                    "response": "srai OK"
                }
            ]
        }
    ],
    "errors": [
        {                                           /*␣
↪ãĆůãČŁãČłãĆłåĘĚãĄóäÿ■æ■čæČĚåäśãĆŠãČŢãĆąãĆd'ãČńãČżCategoryå■Ÿä¡■ãĄğåĞžåŁŻ */
            "category": {
                "end": "None",
                "start": "None"
            },
            "description": "Failed to load contents of AIML file : XML-Parser␣
↪Exception [mismatched tag: line 238, column 25]",
            "file": "../storage/categories/ng.aiml",
            "node": {
                "column": "0",
                "raw": "0"
            },
            "node_name": null
        }
    ],
    "duplicates": [
        {                                           /*␣
↪ãĆůãČŁãČłãĆłåĘĚãĄğãĄóéĞ■èd'ĞCategoryãĄóæČĚåäśãĆŠåĞžåŁŻ */
            "category": {
                "end": "35",
                "start": "21"
            },
            "description": "Dupicate grammar tree found [ãĄŁãĄŕãĆĹãĄĘ]",
            "file": "../storage/categories/basic.aiml",
            "node": {
                "column": "9",
                "raw": "22"
            }
        }
    ],
```


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```
    "errors_collection": {
        "denormals": [                          /* denormal.
↪txtãĄőäÿ■æ■čæČĚåăśãĆŠåĞžåŁŻ */
            {
                "description": "illegal format [\"word\"]",
                "file": "../storage/lookups/denormal.txt",
                "line": 1
            }
        ],
        "normals": [],                          /* normal.
↪txtãĄőäÿ■æ■čæČĚåăśãĆŠåĞžåŁŻ */
        "genders": [],                          /* gender.
↪txtãĄőäÿ■æ■čæČĚåăśãĆŠåĞžåŁŻ */
        :
    },
    "logs": [
        {
            "info": "(templete log-node) log message"
        }
    ]
}
```

errors/duplicates/errors_collectionãĄőåĘĚåőźãĆŠåŔĆçĚğãĄŹãĆŃãĄŞãĄĺãĄğãĂąãĆůãČŁãČłãĆłãĆĎåŘĎçĺõèĺ■åőŽãČŢãĆąãĆd'

conversations/current_conversation/logsãĄőåĘĚåőźãĄŃãĆL'ãĄŕåŕ¿èl'śåĞęçŘĘãĄőçŁűæşĄãĄŃçćžèł■ãĄğãĄ■ãĄ¿ãĄŹãĂĆïijĹä¿Ń

conversationsãĄğãĄŕãĂąä¡£çŤĺãĄŢãĆŃãĄęãĄĐãĆŃåĚĺåd'L'æŢřãĄőæČĚåăśãĄŃåĞžåŁŻãĄŢãĆŃãĄ¿ãĄŹãĄŃãĂącurrent_conv
ãČňãĆźãČİãČşãĆźä¿ŃãĄőcurrent_conversationãĄŃãĆL'ãĄŕãĂąçŹžèl'śæŰĞ âĂIJtestâĂİ
ãĄńåŕ¿ãĄŮãĄęãĂąâĂİtest sraiâĂİ
ãĄńåŕ¿ãĄŹãĆŃsraiåĞęçŘĘãĄŃåő§æŰ¡ãĄŢãĆŃãĂąsraiåĞęçŘĘãĄőäÿ■ãĄgtopicåd'L'æŢřãĄŃåd'L'æŻt'ãĄŢãĆŃãĄ§ãĄŞãĄĺãĄŃ

### 3.2.3 ãČęãČijãĆűåŻžæIJL'æČĚåăśãĄőãĆŕãČłãĆćæŇĞåőŽ

ãČĞãČŘãČČãĆŕAPIãĄőãČłãĆŕãĆĺãĆźãČĹãĄńãĄŕãĂąãČęãČijãĆűæŕŐãĄńä£ÌæŇąãĄŹãĆŃåŻžæIJL'æČĚåăśãĆŠãĆŕãČłãĆćãĄŹ

æIJňæŇĞåőŽãĆŠèąŇãĄčãĄ§ååt'åŘĹãĄńãĄŕãĂąäżŰãĄőæŇĞåőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŢãĆŃãĆŃçĆžãĂąãČňãĆźãČİãČşãĆźã
ãĆŕãČłãĆćåĞęçŘĘãĆŠèąŇãĄĘåŕ¿èśąãĄŕãĂąäżěäÿŃãĄőïijŠçĺőéąđãĄğãĄŹãĂĆ

- åŕ¿èl'śåśěæ■t'ïijĹconversation æŇĞåőŽïijL'ïijŽ ãČęãČijãĆűæŕŐãĄőåŕ¿èl'śåśěæ■t'æČĚåăśãĆŠãĆŕãČłãĆćãĄŮãĄ¿ãĄŹã
- learnçŹżéŇšæČĚåăśïijĹlearn æŇĞåőŽïijL'ïijŽ TemplateãĄő *learnf* ãČŐãČijãČL'ãĄğçŹżéŇšãĄŢãĆŃãĄ§ãĂąãČęãČijãĆűåŻžæIJL'ãĄőCategoryæČĚåăśãĆŠãĆŕãČłãĆćãĄŮãĄ¿ãĄŹãĂĆ
- ãČłãĆŕãĆĺãĆźãČĹãČIJãČĞãĆč

| éăĚçŻőåŘ■ | ãĆ■ãČij | åđŃ | å£ĚéăĹ | èłňæŸŐ |
|---|---|---|---|---|
| ãČęãČijãĆűID | userId | string | Yes | ãČęãČijãĆűæŕŐãĄőãČęãČŃãČijãĆŕãĄłIDãĆŠæŇĞåőŽãĄŮã |
| ãĆŕãČłãĆćåŕ¿èśą | reset | string | Yes | âĂŸconversationâĂŹãĂąâĂŹlearnâĂŹ<br>ãĄőãĄĐãĄŽãĆŃãĄŃãĂąãĄ¿ãĄ§ãĄŕãĂąäÿąæŰźãĆŠæĐŔå<br>âĂŸallâĂŹ<br>ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |

- ãČłãĆŕãĆĺãĆźãČĹä¿Ń

```
POST / HTTP/1.1
Host: www.***.com
Accept: */*
x-dev-key: yyyyyyyyyyyyyyyyy

Content-Type: application/json;charset=UTF-8

{
    "userId": "E8BDF659B007ADA2C4841EA364E8A70308000000",
    "reset": "all"
}
```

- ãČňãĆźãČİãČşãĆźãČIJãČĞãĆč

äžěäÿŃãĄõãĄľãĄąãĆĽãĄŃãĄőJSONå¡ćåijŔãĄŇèĺ■åőŽãĄŢãĆŇãĄ¿ãĄŹãĂĆ

- æĹŘåŁ§æŹĆïijŽ {âĂIJresetâĂİ: âĂIJSucceededâĂİ}
- åd'śæŢŮæŹĆïijŽ {âĂIJresetâĂİ: âĂIJFailedâĂİ}
- ãČňãĆźãČİãČşãĆźä¿Ń

```
HTTP/1.1 200 Ok
Content-Type: application/json;charset=UTF-8

{
    "reset": "Succeeded"
}
```

# CHAPTER 4

# COTOBA AIML: å§žæIJňèęĄçťă

ãĄŞãĄőçńăăĄğãĄŕãĂĄCOTOBA AIML (cAIML) ãĄğãĆţãČİãČijãČĹãĄŮãĄęãĄĐãĆŃAIM-
LãĄőå§žæIJňãĄĺãĄłãĆŃèęĄçť ăăĄńãĄd' ãĄĐãĄęèłňæŸŐãĄŮãĄ¿ãĄŹãĂĆ

ãĆżãĆŕãĆůãČğãČşåĘŠéă■ãĄő[âĂę]ãĄŕãĂĄãĄİãĄőèęĄçť ăăĄŇæIJĂåĹİãĄńåőŽç¿l' ãĄŢãĆŇãĄ§AIMLãĄőãČŘãČijãĆÿãČğãČşãĆ
[custom]ãĄŕãĂĄcAIML çŃňèĞłäżŢæğŸæŃąåijţãĄőèęĄçť ăăĄğãĄŹãĂĆ

cAIMLãĄőãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆŕåĎłåĚĹéăĘä¡■ãČńãČijãČńãĄőèl' şçť řãĄńãĄd' ãĄĐãĄęãĄŕãĂŇ*ãČŚãĆ£ãČijãČşãĆ*

- *aiml*
- *category*
- *pattern*
- *template*
- *topic*

## 4.1 aiml

[1.0]

aimlèęĄçť ăăĄŕãĂĄcAIMLãĄőãČńãČijãČĹèęĄçť ăăĄğãĄŹãĂĆäżŰãĄőåĚĺãĄęãĄőcAIMLãĄőèęĄçť ăăĄŕaimlèęĄçť ăăĄőåĘĚåőź

- åśđæĂğ

| ãČŚãĆ£ãČąãČijãĆ£ãĆ£ãĆďãČŮ | | å£Ëéăĺňæ ŸŐ | |
|---|---|---|---|
| version | string | Yes | èĺŸè£řãĄŢãĆŇãĄęãĄĐãĆŃAIMLãĄőãČŘãČijãĆÿãČğãČşãĆŠæŇĞåőŽãĄŮã |

- ä¡£çŤĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <!-- cAIML element should be described here -->
</aiml>
```

## 4.2 category

[1.0]

categoryèęAçţ’ăăAŕăĂAcAIMLãĄőåŕ¿èľśãČńãČijãČńãĄőå§žæIJňå■Ÿä¡■ãĄńçŻÿå¡ŞãĄŮãA¿ãĄŹãĂĆ

categoryèęAçţ’ăăĄőåĘĚåőźãĄĺãĄŮãĄęãĂĄãČęãČijãĆűãĄőçŹžèľśæŰĞãĄĺãĄőãČđãČČãČĄãČşãĆřãČŚãĆ£ãČijãČşãĆŠæŇĞåőŽ
*pattern* èęAçţ’ăăĄĺãĆůãĆźãČĘãČăăĄőå£IJç■ŤæŰĞãĆŠæŇĞåőŽãĄŹãĆŃ *template*
èęAçţ’ăãĆŠèÍŸè£řãĄŮãAę1ãAd’ãĄőåŕ¿èľśãČńãČijãČńãĆŠægŃæĹŘãĄŮãA¿ãĄŹãĂĆ

aimlèęAçţ’ăăĄőåĘĚåőźãĄńãĂĄèd’ĞæŢřãĄőcategoryèęAçţ’ăăĄőãČŰãČ■ãČČãĆŕãĆŚåŘńãĆŞãĄăå¡ćãĄğèÍŸè£řãĄŹãĆŃãĄŞãĄĺã
*aiml* èęAçţ’ăăĄĺ *topic* èęAçţ’ăăĆŠéŹd’ãĄŔãĂĄãĄŹãĄźãĄęãĄőcAIMLãĄőèęAçţ’ăăĄŕãĂĄcatego-
ryèęAçţ’ăăĄőãČŰãČ■ãČČãĆŕåĘĚãĄńåŘńãA¿ãĆŇãĄęãĄĎãĆŃå£ÈèęAąĄŇãĄĆãĆŁãA¿ãĄŹãĂĆ

åřŽãĂĄçŹżéŇšåŔŕèČ¡ãĄłcategoryæŢřãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşåőŽç¿l’ãĄő
*åĹűéŹŘåĂd’åőŽç¿l’* ãĄő `max_categories` ãA¿ãĄğãĄĺãĄłãĆŁãA¿ãĄŹãĂĆ

- åśđæĂğ

ãĄłãĄŮ

- ä¡£çŤĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ</pattern>
        <template>äżŁæŮěãĆĆãĄĎãĄĎåd’l’ærŮãĄğãĄŹãA■</template>
    </category>
        <category>
            <pattern>ãĄŢãĆĹãĄĘãĄłãĆL’</pattern>
            <template>æŸŐæŮěãA¿ãĄŞäijŽãĄĎãA¿ãĄŮãĆĞãĄĘ</template>
        </category>
</aiml>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: äżŁæŮěãĆĆãĄĎãĄĎåd’l’ærŮãĄğãĄŹãA■
Input: ãĄŢãĆĹãĄĘãĄłãĆL’
Output: æŸŐæŮěãA¿ãĄ§äijŽãĄĎãA¿ãĄŮãĆĞãĄĘ

éŰćéĂčéăĚçŻő: *aiml*, *topic* , *pattern*, *template*

## 4.3 pattern

[1.0]

patternèęÀçţ'ăăĄŕăĂĄcategoryèęÀçţ'ăăĄőåĘĚåőźăĄĺãĄŮăĄęèÍŸè£řăĄŮăĂĄpatternèęÀçţ'ăăĄőåĘĚåőźăĄĺãĄŮăĄęãČęãČijãĆűãĄ

patternèęÀçţ'ăåĘĚãĄńèÍŸè£řăĄŢãĆŇãĄ§æŰĞå■ŮåĹŮãĄĺãČęãČijãĆűçŹžèľśæŰĞãĄőæŰĞå■ŮåĹŮãĄŇäÿÄèĞt'ãĄŮãĄ§åät'åŘĺ

- åśđæĂğ

ãĄłãĄŮ

- ä¡£çŤĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ</pattern>
        <template>äżŁæŮěãĆĆãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■ãĂĆ</template>
    </category>
</aiml>
```

patternèęÀçţ'ăăĄőåĘĚåőźãĄńãĄŕæŰĞå■ŮåĹŮäžěåd'ŰãĄőcAIMLèęÀçţ'ăăĆŠåŘńãĆĂèÍŸè£řãĆŠèąŇãĄĘãĄŞãĄĺãĆĆãĄğãĄ■ãĄ

ãĄİãĆŇãĄńãĆĹãĆŁãĂĄèd'ĞéŻŠãĄłãČŠãĆ£ãČijãČşãČđãČČãČĄåĞęçŘĘãĆŠèąŇãĄĘãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆ

patternèęÀçţ'ăăĄőåĘĚåőźãĄĺãĄŮãĄęèÍŸè£řåŔŕèČ¡ãĄłcAIMLèęÀçţ'ăăĄőèľşçţ'řãĄńãĄd'ãĄĎãĄęãĄŕãĂĄ*patternèęÀçţ'ă*
ãĆŠå¿ąèęğãĄŘãĄăăĄŢãĄĎãĂĆ

## 4.4 template

[1.0]

templateèęÀçţ'ăăĄŕãĂĄcategoryèęÀçţ'ăăĄőåĘĚåőźãĄĺãĄŮãĄęèÍŸè£řãĄŮãĂĄtemplateèęÀçţ'ăăĄőåĘĚåőźãĄĺãĄŮãĄęãĆůãĆźãČ

åŕ¿èľśãČńãČijãČń(categoryèęÀçţ'ăăĄőãČŰãČ■ãĆČãĆŕ)ãĄŇåő§èąŇãĄŢãĆŇãĄ§åät'åŘĹãĂĄå¡ŞèľščategoryèęÀçţ'ăăĄőãČŰãČ■ã

- åśđæĂğ

ãĄłãĄŮ

- ä¡£çŤĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ</pattern>
        <template>äżŁæŮěãĆĆãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■ãĂĆ</template>
    </category>
</aiml>
```

templateèęÀçţ'ăăĄőåĘĚåőźãĄńãĄŕæŰĞå■ŮåĹŮäžěåd'ŰãĄőcAIMLãĆ£ãĆřãĆŠåŘńãĆĂèÍŸè£řãĆŠèąŇãĄĘãĄŞãĄĺãĄŇãĄğãĄ■ã

ãĄİãĆŇãĄńãĆĹãĆŁãĂĄèd'ĞéŻŠãĄłå£IJç■ŤæŰĞçŤ§æĹŘåĞęçŘĘãĆŠèąŇãĄĘãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆ

templateèęAçt’ăãĄőåĘĚåőźãĄńèÍŸè£řåŘŕèČ¡ãĄłcAIMLèęAçt’ăãĄőèl’şçt’řãĄńãĄd’ãĄĎãĄęãĄŕãĂĄ*templateèęAçt’ă*
ãĆŠå¿ąèęğãĄŘãĄăãĄŢãĄĎãĂĆ

## 4.5 topic

[1.0]

topicèęAçt’ăãĄőãČŰãČ■ãČČãĆŕåĘĚãĄńãĂĄèd’ĞæŢřãĄőåŕ¿èl’śãČńãČijãČń *category*
èęAçt’ăãĆŠèÍŸè£řãĄŹãĆŃãĄŞãĄÍãĄğåŕ¿èl’śãČńãČijãČńãĆŠãĆşãČęãĆ■ãĆźãČĹåŃŰãĄŹãĆŃãĄŞãĄÍãĄŃãĄğãĄ■ãĄ¿ãĄŹã

åŕ¿èl’śãČńãČijãČńãĄŃãĆşãČşãČĘãĆ■ãĆźãČĹåŃŰãĄŢãĆŃãĆŃãĄÍãĂĄåŕ¿èl’śãĆÍãČşãĆÿãČşãĄŃä£ÍæŃĄãĄŹãĆŃåd’L’æŢř
topic ãĄőåĂd’ãĄŃãĂĄtopicèęAçt’ăãĄő-
nameåśđæĂğãĄğæŃĞåőŽãĄŮãĄ§åśđæĂğåĂd’ãĄÍäÿĂèĞt’ãĄŹãĆŃæŹĆãĄąãĄŞãĂĄåŕ¿èl’śãČńãČijãČńãĄŃèl’Ţä¿ąãĄŢãĆŃãĄ¿ã

topicèęAçt’ăãĄőãČŰãČ■ãČČãĆŕåĘĚãĄńåŘńãĄ¿ãĆŃãĄłãĄĎåŕ¿èl’śãČńãČijãČń(ãĆşãČşãČĘãĆ■ãĆźãČĹåŃŰãĄŢãĆŃãĄłãĄĎåŕ¿è
*category* èęAçt’ăãĄŕãĂĄ-
nameåśđæĂğãĄőåśđæĂğåĂd’ãĄŃãČŕãĆd’ãČńãČL’ãĆńãČijãČL’âĂİ*âĂİãĄÍæŃĞåőŽãĄŢãĆŃãĄęãĄĎãĆŃãĄőãĄÍåŘŃãĄŸæL’śã
topic ãĄőåĂd’ãĄńéŰćä£ĆãĄłãĄŘãĄİãĄőåŕ¿èl’śãČńãČijãČńãĄŕèl’Ţä¿ąãĄŢãĆŃãĄ¿ãĄŹãĂĆ

ãĄ§ãĄăãĄŮãĂĄtopicèęAçt’ăãĄğãĆşãČşãČĘãĆ■ãĆźãČĹåŃŰãĄŢãĆŃãĄ§åŕ¿èl’śãČńãČijãČńãĄŃåĎłåĚĹãĄŮãĄęèl’Ţä¿ąãĄŢãĆŃ

âĂIJtopicâĂİãĄŕäžĹçt’Ďèłđ㥹ãĄÍãĄłãĆŃãĄ§ãĆĄãČęãČijãĆűãĄŐãŽç¿l’ãĄŹãĆŃåd’L’æŢřåŘ■ãĄÍãĄŮãĄęãĄŕåĹl’çŤÍãĄğãĄ■ãĄ¿ã

- åśđæĂğ

| ãČŚãČľãČąãČijãĆ£ãĆ£ãĆďãČŮ | | å£Ëéăĺñæ˙Ő | |
|---|---|---|---|
| name | string | Yes | topicåŘ■ãĆŠæŃĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |

topicèęAçt’ăãĆŠåĹl’çŤÍãĄŹãĆŃãĄÍãĂĄäžěäÿŃãĄőä¡£çŤÍä¿ŃãĄőãĆĹãĄĘãĄńåŘŃãĄŸ *pattern*
ãĄőãČđãČČãČĄãČşãĆŕåŃŢä¡IJãĆŠãĆşãČşãČĘãĆ■ãĆźãČĹ(topicãĄőåĂd’)ãĄńå£IJãĄŸãĄęä¡£ãĄĎåĹĘãĄŚãĆŃãĄŞãĄÍãĄŃãĄğ

ãĄŞãĄőä¡£çŤÍä¿ŃãĄğãĄŕãĂĄãČęãČijãĆűãĄőãĂŃçğĄãĄŕä¡ŢãĆĆåĚěãĆŃãĄ¿ãĄŽãĆŞãĂ■ãĄÍãĄĎãĄĘçŹžèl’śãĄńåŕ¿ãĄŮãĄęã

- ä¡£çŤÍä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>*ãĄńãĄd’ãĄĎãĄęèl’śãĄŮãĄ¿ãĄŮãĆĞãĄĘ</pattern>
        <template>
            çğĄãĆĆ<set name="topic"><star /></set>ãĄŃåě¡ãĄ■ãĄğãĄŹãĂĆ
        </template>
    </category>

    <topic name="ãĆşãČijãČŠãČij">
        <category>
            <pattern>çğĄãĄŕä¡ŢãĆĆåĚěãĆŃãĄ¿ãĄŽãĆŞ</pattern>
            <template>çğĄãĄŕãĆŕãČłãČijãČăãĄÍçăĆçşŮãĆŠåĚěãĆŃãĄ¿ãĄŹ</template>
        </category>
    </topic>

    <topic name="çt’ĚèŇű">
```

(continues on next page)

(continued from previous page)

```
        <category>
            <pattern>çğĄãĄŕä¡ŢãĆĆåĚěãĆŇãĄ¿ãĄŻãĆŞ</pattern>
            <template>çğĄãĄŕãČňãČćãČşãČĘãĆčãČijãĄŇåě¡ãĄ■ãĄğãĄŹ</template>
        </category>
    </topic>
</aiml>
```

Input: ãĆşãČijãČŠãČijãĄńãĄd'ãĄĎãĄęèl'śãĄŮãĄ¿ãĄŮãĆĞãĄĘ
Output: çğĄãĆĆãĆşãČijãČŠãČijãĄŇåě¡ãĄ■ãĄğãĄŹ
Input: çğĄãĄŕä¡ŢãĆĆåĚěãĆŇãĄ¿ãĄŻãĆŞ
Output: çğĄãĄŕãĆŕãČłãČijãČăãĄÍçăĆçşŰãĆŠåĚěãĆŇãĄ¿ãĄŹ
Input: çť ĚèŇűãĄńãĄd'ãĄĎãĄęèl'śãĄŮãĄ¿ãĄŮãĆĞãĄĘ
Output: çğĄãĆĆçť ĚèŇűãĄŇåě¡ãĄ■ãĄğãĄŹ
Input: çğĄãĄŕä¡ŢãĆĆåĚěãĆŇãĄ¿ãĄŻãĆŞ
Output: çğĄãĄŕãČňãČćãČşãČĘãĆčãČijãĄŇåě¡ãĄ■ãĄğãĄŹ

éŰćéĂčéăĚçŻő: *that*, *set*, *think*

# CHAPTER 5

## patternèęAçťăåĘĚãĄőå■ŘèęAçťă

æIJňçńăăAğãAŕpatternèęAçťăăĄőåĘĚåőźãAĺãĄŮãAęèÍŸè£řåŘŕèČ¡ãAłå■ŘèęAçťăăAńãAd'ãĄĎãAęèłňæŸŐãĄŮãA¿ãAŹãĂĆ

å■ŘèęAçťăăĄőä¡£çŤÍĺåŘŕåŘęãAńãAd'ãĄĎãAęãAŕãĂAąãĆńãĆźãĆ£ãČđãĆd'ãĆžãĄŇåŘŕèČ¡ãAğãAŹãĂĆèl'şçť'řãAŕ
*ãĆńãĆźãĆ£ãČăpatternèęAçť'ă* ãĆŠåŘĆçĚğãĄŮãAęãAŘãĄăăAŢãĄĎãĂĆ

cAIMLãAğãĆţãČİãČijãČĹãĄŮãAęãAĎãĆŃãČŠãĆ£ãČijãČşãČđãČČãČĄãČşãĆřèęAçť'ăăĄőäÿĂèęğãAŕäžëäÿŃãĄõãAĺãAŁãĆŁãA
åĚňåijŘãAő AIML
2.xäžŢæğŸãAńår¿ãĄŮãĂAçŃňèĞłãAőèęAçť'ăăĆżãČČãČĹãĆŠè£¡åŁăăĄŮãAęãAĎãA¿ãAŹãĂĆ

- *bot*: ãČđãČČãČĄãAŢãAŻãĆŃãČIJãČČãČĹãAőæČĚåăśãĆŠæŇĞåőŽ
- *iset*: ãČđãČČãČĄãAŢãAŻãĆŃå■ŸèłđãAőéŻĘåŘĹãĆŠæŇĞåőŽ
- *nlu*: ãČđãČČãČĄãAŢãAŻãĆŃéńŸåžęæĎŘåŻşèğčéĞĹçţŘæđIJãĆŠæŇĞåőŽ
- *oneormore*: 1åĂŃäżëäÿŁãAőäżżæĎŘãAőå■ŸèłđãAĺãČđãČČãČĄãAŹãĆŃãČŕãĆd'ãČńãČL'ãĆńãČijãČL'
- *priority*: ãČŕãĆd'ãČńãČL'ãĆńãČijãČL'ãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãAęãČđãČČãČĄãAŹãĆŃå■ŸèłđãĆŠæŇĞåőŽ
- *regex*: ãČđãČČãČĄãAŢãAŻãĆŃæ■čèęŘèąĺçŔ¿ãĆŠæŇĞåőŽ
- *set*: ãČđãČČãČĄãAŢãAŻãĆŃå■ŸèłđãAőéŻĘåŘĹãĆŠèÍŸè£řãAŮãA§ãČŢãĆąãĆd'ãČńãĆŠæŇĞåőŽ
- *topic*: ãČđãČČãČĄãAőæİąäżűãAńè£¡åŁăăAŹãĆŃtopicåd'L'æŢřãAőåĂd'ãĆŠæŇĞåőŽ
- *that*: 1ãAd'åL'■ãAőãĆůãĆźãČĘãČăăAőå£IJç■ŤæŰĞãĆŠæŇĞåőŽ
- *word*: ãČđãČČãČĄãAŢãAŻãĆŃå■ŸèłđæŰĞå■ŮåĹŮ)ãĆŠæŇĞåőŽ
- *zeroormore*: 0åĂŃäżëäÿŁãAőäżżæĎŘãAőå■ŸèłđãAĺãČđãČČãČĄãAŹãĆŃãČŕãĆd'ãČńãČL'ãĆńãČijãČL'

ãĄŞãĄŞãĄğèłňæŸŐãĄŹãĆŃèęAçť'ăăĄőåd'ğå■ŁãAŕãĂĄåśđæĂğãĄőæŇĞåőŽãĄĺãĂĄåĘĚåőźãĄĺãĄŮãAęãĄőå■ŘèęAçť'ăăĄőèÍŸ
patternèęAçť'ăăĄőèÍŸè£řãAńãĆĹãĆŃãČŠãĆ£ãČijãČşãČđãČČãČĄæŰźæşŢãĄőèl'şçť'řãAńãAd'ãĄĎãAęãAŕ
*ãČŠãĆ£ãČijãČşãČđãČČãČĄãČşãĆř* ãĆŠåŘĆçĚğãĄŮãAęãAŘãĄăăAŢãĄĎãĂĆ

åŘĎèęĄçť´ăăĄőåĚĹéă■ãĄő[âĂę]ãĄŕãĂĄåŕ¿èśąãĄőèęĄçť´ăăĄŇæIJĂåĹİãĄńåőŽç¿l'ãĄŢãĆŇãĄ§AIMLãĄőãČŘãČijãĆÿãČğãČşãĆ

åřŽãĂĄãČđãČČãČąãČşãĆřãĄŕãĂĄèŃśæŢřèÍŸåŔůãĄŕå■ŁèğŠæŰĞå■ŮãĂĄãĆńãĆ£ãĆńãČŁãĄŕåĚÍèğŠæŰĞå■ŮãĄőçţśäÿĂãĆşãĆ

## 5.1 bot

[1.0]

botèęĄçť´ăăĄŕãĂĄãĆńãĆźãĆ£ãČăăČIJãČČãČĹãČŮãČ■ãČŚãČĘãĆčãĆŠåŚijãĄşåĞžãĄŹãĄ§ãĆĄãĄńä¡£çŢĺãĄŢãĆŇãĄ¿ãĄŹãĂĆ
ãĄŞãĆŇãĆL'ãĄőåď'L'æŢřãĄńãĄŕãĂĄãČIJãČČãČĹãĄńãĆćãĆŕãĆżãĆźãĄŹãĆŇãĄŹãĄźãĄęãĄőãČęãČijãĆűãĄŇãĆćãĆŕãĆżãĆźãĄ
ãĆńãĆźãĆ£ãČăăČIJãČČãČĹãČŮãČ■ãČŚãČĘãĆčãĄŕãĂĄ*propertiesãČŢãĆąãĆď'ãČń*
ãĄğèÍ■åőŽãĄŮãĄ¿ãĄŹãĂĆpatternãĄőbotãĄğèÍ■åőŽãĄŹãĆŇåĂď'ãĄŕå■ŸèłđãĄğãĂĄéŰŞãĄńçľžçŹ¡ãĆŠæŇĞãĄŮãĄ§èď'ĞæŢřå

æŇĞåőŽãĄŹãĆŇãČŮãČ■ãČŚãČĘãĆčåŘ■ãĄŕãĂĄåď'ğæŰĞå■ŮãČżåřŔæŰĞå■ŮãĂĄåĚÍèğŠãČżå■ŁèğŠãĆŠåŇžåĹëãĄŮãĄ¿ãĄŹã

- åśđæĂğ

| ãČŚãČľãČąãČijãĆ£ãĆ£ãĆđ'ãČŮ | | å£ËéăĺñæŸÖ | |
|---|---|---|---|
| name | string | Yes | ãČIJãČČãČĹãČŮãČ■ãČŚãČĘãĆčåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |

propertiesãČŢãĆąãĆď'ãČńãĄğåőŽç¿l'ãĄŮãĄęãĄĐãĄłãĄĐãČŮãČ■ãČŚãČĘãĆčåŘ■ãĆŠnameãĄğæŇĞåőŽãĄŮãĄ§åät'åŘĹãĂĄãĆ

- ä¡£çŢĺä¿Ń

äžëäÿŃãĄőä¡£çŢĺä¿ŃãĄğãĄŕãČIJãČČãČĹãĄőåŘ■çğřãĆŠè£ŢãĄŮãĄ¿ãĄŹãĂĆ(propertiesãČŢãĆąãĆď'ãČń ãĄğ
âĂŸname:ãČIJãČČãČĹâĂŹ ãĄÍèÍ■åőŽãĄŮãĄęãĄĐãĆŃåL'■æŔŘ)

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãĄĆãĄłãĄ§ãĄŕ<bot name="name" />ãĄğãĄŹãĄŃïij§</pattern>
        <template>çğĄãĄőåŘ■åL'■ãĄŕ<bot name="name" />ãĄğãĄŹãĂĆ</template>
    </category>
</aiml>
```

Input: ãĄĆãĄłãĄ§ãĄŕãČIJãČČãČĹãĄğãĄŹãĄŃïij§
Output: çğĄãĄőåŘ■åL'■ãĄŕãČIJãČČãČĹãĄğãĄŹãĂĆ

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆď'ãČńçőąçŘĘïijŽproperties*

## 5.2 iset

[1.0]

isetèęĄçť´ăăĄŕãĂĄ*å■ŸèłđãČłãĆźãČĹãČŢãĆąãĆď'ãČń(sets)*
ãĆŠä¡£çŢĺãĄŻãĄŽãĂĄåŕŚæŢřãĄőãČđãČČãČĄåŕ¿èśąå■Ÿèłđã ĆŠèÍŸè£řãĄŹãĆŇåät'åŘĹãĄńä¡£çŢĺãĄŮãĄ¿ãĄŹãĂĆãČđãČČãČĄ

èęAçt’ăăAĺăAŮăAęăĂAèd’ĞæŢřèŃśå■Ÿèłđă AŅăĆL’ăAłăĆŃæŰĞå■ŮåĹŮăĆĆæŇĞåőŽăAŇåŔŕèČ¡ăAğăAŹăAŇăĂAăAİăAőåät’ă

åřŽăĂAèŃśå■Ÿèłđå ĹŮăAĺæŮĕæIJňèłđæŰĞå■ŮåĹŮăAŇæůůåIJĺăAŹăĆŃæŇĞåőŽăAőåät’åŘĹăAőåŃŢä¡IJăAŕä£ÌèĺijăAğăA■ăA¿

- åśđæĂğ

| ãČŚãČľãČąãČijãĆ£ãĆ£ãĆd’ãČŮ | | å£Ëéěĺňæ ŸŐ | |
|---|---|---|---|
| words | string | Yes | ãĆńãČşãČđåŇžåĹĞãĆŁãAğãČđãČČãČAåŕ¿èśąæŰĞå■ŮåĹŮïijĹå■Ÿèłđå ĹŮïi |

- ä¡£çŤĺä¿Ń

äžěäÿŇãAőä¡£çŤĺä¿ŃãAğãAŕãĂAąĂŇæİśäžňãĂ■ãĂŇçěđåěĹåůİãĂ■ãĂŇå■ČèŚL’ãĂ■ãĂŇç¿d’éęňãĂ■ãĂŇå§ijçŐL’ãĂ■ãĂŇæăČæ

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>çğAąãAŕ<iset words="æİśäžň, çěđåěĹåůİ, å■ČèŚL’, ç¿d’éęň, å§ijçŐL’,␣
↪æăČæIJÍ" />ãAńä¡ŔãĆŞãAğãAĎãA¿ãAŹãĂĆ</pattern>
        <template>
            çğAąãĆĆéŰćæİśãAńä¡ŔãĆŞãAğãAĎãA¿ãAŹãĂĆ
        </template>
    </category>
</aiml>
```

Input: çğAąãAŕæİśäžňãAńä¡ŔãĆŞãAğãAĎãA¿ãAŹãĂĆ
Output: çğAąãĆĆéŰćæİśãAńä¡ŔãĆŞãAğãAĎãA¿ãAŹãĂĆ

éŰćéĂčéăĚçŻő: *set*

## 5.3 nlu

[custom]

nluèęAçt’ăăAŕãĂAéńŸåžęæĎŔåŻşèğčéĞĹãĆĺãČşãĆÿãČşãAńãĆĹãĆŃãČęãČijãĆűçŹžèl’śæŰĞãAőæĎŔåŻşèğčéĞĹçţŘæđIJãĆŠçŤ

åśđæĂğãĂAå■ŘèęAçt’ăăAőèĺ■åőŽæŰźæşŢãĂAéńŸåžęæĎŔåŻşèğčéĞĹãĆĺãČşãĆÿãČşãAőåĹl’çŤĺæŰźæşŢãAłãAl’ăAőèl’şçt’řăAŕã
ãĆŠåŔĆçĚğãAŮãAęãAŔãAąăAŢãAĎãĂĆ

- åśđæĂğ

| ãČŚãČľãČąãČijãĆ£ãĆ£ãĆďãČů | | å£ËéëãĺñæŸŐ | |
|---|---|---|---|
| intent | string | Yes | ãČđãČČãČąãĄŢãĄŻãĆŃãĆďãČşãČęãČşãČĹåŘ■ãĆŚæŇĞåőŽãĄŮãĄ¿ãĄŹã |
| scoreGt | string | No | ãČđãČČãČąãĄŢãĄŻãĆŃä£ąéäijåžęãĆŚæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆår¿èśąãĆď |
| scoreGe | string | No | ãČđãČČãČąãĄŢãĄŻãĆŃä£ąéäijåžęãĆŚæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆår¿èśąãĆď |
| score | string | No | ãČđãČČãČąãĄŢãĄŻãĆŃä£ąéäijåžęãĆŚæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆår¿èśąãĆď |
| scoreLe | string | No | ãČđãČČãČąãĄŢãĄŻãĆŃä£ąéäijåžęãĆŚæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆår¿èśąãĆď |
| scoreLt | string | No | ãČđãČČãČąãĄŢãĄŻãĆŃä£ąéäijåžęãĆŚæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆår¿èśąãĆď |
| maxLikelihood | string | No | `true` ãĂĄ `false` ãĆŚæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆår¿èśąãĆď ãČşãČęãČşãČĹã<br>`true` ãĄőåăť åŘĹãĂĄår¿èśąãĆď ãČşãČęãČşãČĹãĄŇæIJĂårđ æŹĆãĄőãĄ£ãČ<br>`false` åăť åŘĹãĂĄår¿èśąãĆď ãČşãČęãČşãČĹãĄŇãĄőä£ąéäijåžęãĄŇæIJĂår<br>`true` ãĄĺãĄŮãĄęåĞęçŘęãĄŮãĄ¿ãĄŹãĂĆ |

æŇĞåőŽåŔŕèČ¡ãĄłãĆď ãČşãČęãČşãČĹåŘ■ãĄŕãĂĄéńŸåžęæĎŔåŻşèğčéĞĹãČĺãČşãĆÿãČşãĄŇä¡£çŤĺãĄŮãĄęãĄĎãĆŃæĎŔåŻşè

scoreXxãĄŕ1ãĄđ ãĄŮãĄŃæŇĞåőŽãĄgãĄ■ãĄ¿ãĄŻãĆŞãĂĆèđ ĞæŢřèĺŸèijL'ãĄŮãĄ§åăť åŘĹãĂĄscoreGtãĂĄscoreGeãĂĄscoreã

- ä¡£çŤĺä¿Ń

æĎŔåŻşèğčéĞĹãČćãČĞãČńãĄgåŚĺè¿žæđ IJçt'ćãĄőãĆď ãČşãČęãČşãČĹåŘ■ãĄŃ âĂŸaroundsearchâĂŹ ãĄĺèĺ■åőŽãĄŢãĆŃãĄęãĄĎãĆŃåăť åŘĹãĄőä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>
            <nlu intent="aroundsearch" />
        </pattern>
        <template>
            åŚĺè¿žæđ IJçt'ćãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ
        </template>
    </category>
</aiml>
```

Input: ãĄŞãĄőåŚĺè¿žãĆŠæŐćãĄŮãĄęãĂĆ
Output: åŚĺè¿žæđ IJçt'ćãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ

éŰćéĂčéäĚçŻő: *NLU*

## 5.4 oneormore

[1.0]

oneormoreèęAçt'ă âĂIJ_âĂİ, âĂIJ*âĂİãĄŕãĂĄãČŕãĆđ ãČńãČL'ãĆńãČijãČL'ãĄő1ãĄđ ãĄgãĂĄåŕŚãĄłãĄŔãĄĺãĆĆ1åĂŃãĄőäżæ
ãĄŞãĄőãČŕãĆđ ãČńãČL'ãĆńãČijãČL'ãĄŇ patternèęAçt'ăåĘĚãĄőèĺŸè£ŕãĄőæIJĂå¿ŇãĄńãĄĆãĆŃåăť åŘĹãĄŕãĂĄãČęãČijãĆűãĄ
ãĄ¿ãĄ§ãĂĄãĄŞãĄőãČŕãĆđ ãČńãČL'ãĆńãČijãČL'ãĄŇ patternèęAçt'ăåĘĚãĄőèĺŸè£ŕãĄőäżŮãĄőAIMLãČŚãĆ£ãČijãČşãČđãČČãČ

ãĄŞãĄőãČŕãĆđ ãČńãČL'ãĆńãČijãČL'ãĄńãĆĹãĆŃãČđãČČãČĄåĞęçŘęãĄĺäżŮãĄőAIMLãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřèęA
ãČŕãĆđ ãČńãČL'ãĆńãČijãČL' âĂIJ_âĂİãĄŕãĂĄ AIMLãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřèęAçt'ă
`set`ãĂĄ`iset`ãĂĄ`regex`ãĂĄ`bot`

ãĆĹãĆŁãĆĆåĚĹãĄńãČđãČČãČĄåĞęçŘĘãĄŇèąŇãĆŔãĆŇãĄ¿ãĄŹãĂĆãČŕãĆd'ãČńãČL'ãĆńãČijãČL'
âĂIJ*âĂİãĄŕãĂĄãĄŞãĆŇãĆL'ãĄőAIMLãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřèęAçt'ãäĆĹãĆŁãĆĆå¿ŇãĄńãČđãČČãČĄåĞęçŘĘãA
ãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřåĞęçŘĘãĄőèl'şçt'řãĄŕãĂĄ *ãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆř*
ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄäãĄŢãĄĎãĂĆ

æñąäĄő2ãĄd'ãĄőä¡£çŤĺä¿ŃãĄğãĄŕãĂĄãĂŇãĄŞãĆŞãĄńãĄąãĄŕãĂ■1å■Ÿèłđã Ą ĺã Ą İã Ą őå¿ŇãĄńçűŽãĄŔ1åĂŃäžëäÿŁãĄőå■Ÿèłc

- ä¡£çŤĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ _</pattern>
        <template>
            ãĄŞãĆŞãĄńãĄąãĄŕ
        </template>
   </category>
</aiml>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ ãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■
Output: ãĄŞãĆŞãĄńãĄąãĄŕ

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
   <category>
       <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ *</pattern>
       <template>
           ãĄŤæl'§åńŇãĄĎãĄŃãĄŇãĄğãĄŹãĄŃïij§
       </template>
   </category>
</aiml>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ ãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■
Output: ãĄŤæl'§åńŇãĄĎãĄŃãĄŇãĄğãĄŹãĄŃïij§

éŰćéĂčéăĚçŻő: *zeroormore* ãĂĄ *ãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆř*

## 5.5 priority

[1.0]

priorityèęAçt'ăäĄŕãĂĄpatternèęAçt'ăåĘĚãĄőãČđãČČãČĄår¿èśąå■Ÿèłđã Ą őåĚĹéă■ãĄń âĂIJ$âĂİ
ãĆŠèĺŸè£řãĄŮãĄ§ãĆĆãĄőãĄğãĂĄäżŰãĄőãČŚãĆ£ãČijãČşãĄőãČđãČČãČĄãĄğęçŘĘãĆĹãĆŁãĆĆãĂĄå¡Şèl'šå■Ÿèłđã Ą őãČđãČČ
äžëäÿŃãĄőä¡£çŤĺä¿ŃãĄğãĄŕãĂĄâĂİãĄŞãĆŞãĄńãĄąãĄŕ * âĂIJãĂĄâĂİãĄŞãĆŞãĄńãĄąãĄŕ *
ãĄĆãĆĹãĄŇãĄĺãĄĘâĂİç■L'ãĄőãČŕãĆd'ãČńãČL'ãĆńãČijãČL'ãĆŠåŘńãĆĂ
patternèęAçt'ăäĄŇèĺŸè£řãĄŢãĆŇãĄęãĄĎãĆŃår¿èl'śãČńãČijãČńãĄŇãĄĆãĄčãĄęãĆĆãĂĄâĂİ$âĂİ
ãĆŠèĺŸè£řãĄŮãĄ§å■Ÿèłđ âĂIJäżŁæŮěâĂİ ãĆŠåĎłåĚĹãĄŮãĄęãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ $äżŁæŮěãĆĆãĄĎãĄĎåd’l’ærŮãĄğãĄŹãĄ■</pattern>
        <template>
            ãĄİãĄĘãĄğãĄŹãĄ■
        </template>
    </category>

    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ *</pattern>
            <template>
                ãĄŞãĆŞãĄńãĄąãĄŕ
            </template>
        </category>

        <category>
            <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ * ãĄĆãĆŁãĄŇãĄĺãĄĘ</pattern>
            <template>
                ãĄl’ãĄĘãĄĎãĄŞãĄŮãĄ¿ãĄŮãĄę
            </template>
        </category>
</aiml>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ äżŁæŮěãĆĆãĄĎãĄĎåd’l’ærŮãĄğãĄŹãĄ■
Output: ãĄİãĄĘãĄğãĄŹãĄ■
Input: ãĄŞãĆŞãĄńãĄąãĄŕ äżŁæŮěãĄőåd’l’ærŮãĄŕãĄĎãĄ¿ãĄĎãĄąãĄğãĄŹãĄ■
Output: ãĄŞãĆŞãĄńãĄąãĄŕ
Input: ãĄŞãĆŞãĄńãĄąãĄŕ äżŁæŮěãĄŕ ãĄĆãĆŁãĄŇãĄĺãĄĘ
Output: ãĄl’ãĄĘãĄĎãĄ§ãĄŮãĄ¿ãĄŮãĄę

éŰćéĂčéăĚçŻő: *word*ãĂĄ *ãČŚãĆ£ãČijãČşãČđãČČãČąãČşãĆř*

## 5.6 regex

[custom]

regexèęĄçť’ăăĄőä¡£çŤĺãĄńãĆĺãĆŁãČęãČijãĆűçŹžèl’śæŰĞãĄńåŕ¿ãĄŹãĆŃæ■čèęŔèąĺçŔ¿ãĄńãĆĺãĆŃãČŚãĆ£ãČijãČşãČđãČČãĆ
å■Ÿèłđå■Ÿä¡■ãĄőæ■čèęŔèąĺçŔ¿ãĄÿãĄőåŕ¿å£IJãĂĄæŰĞå■ŮåĹŮãĄńéŰćãĄŹãĆŃæ■čèęŔèąĺçŔ¿ãĄńãĆĆåŕ¿å£IJãĄŮãĄ¿ãĄŹãĂ

- åśđæĂğ

| ãČŚãČľãĆąąĆąąĆąąĆąąĘĚéëĺňæŸŐ | | | |
|---|---|---|---|
| pattern | string | No | æ■čèęŔèąĺçŔ¿ãĄğå■Ÿèłđ ãĆŠèĺŸè£ř |
| template | string | No | regex.txtãČŢãĆąãĆď’ãČńãĄğåőŽç¿l’ãĄŮãĄ§å■Ÿèłđå■Ÿä¡■ãĄőæ■čèęŔèąĺçŔ¿ãĆŠåĹl’çŤĺ |
| form | string | No | èď’ĞæŢřãĄőå■Ÿèłđ ãĆŠåŘńãĆĄãĄ§æŰĞå■ŮåĹŮãĆŠåŕ¿èśąãĄĺãĄŮãĄ§æ■čèęŔèąĺçŔ¿ãĆŠèĺŸè£ř |

regexèęĄçť’ăãĆŠèĺŸè£řãĄŹãĆŃéŽŻãĄńãĄŕãĂĄpattern,template,formãĄőãĄĎãĄŽãĆŃãĄŃãĄőåśđæĂğãĆŠæŇĞåőŽãĄŹãĆŃãĄ

æ■čèęŔèąĺçŔ¿ãĄĺãĄŮãĄęäÿ■æ■čãĄłåĂď’ãĄŃæŇĞåőŽãĄŢãĆŃãĄ§åăť’åŘĹãĂĄãĆůãČŁãČłãĆłäÿ■æ■čãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

æ■čèęŔèąĺçŔ¿ãĄğçIJĄçŢěåŔŕèČ¡æŇĞåőŽïijĹä¿ŃïijŽâĂŹ(a)?âĂŹ)ãĄőãĄ£ãĆŠæŇĞåőŽãĄŮãĄ§åăť’åŘĹãĂĄèl’šå¡ŞãĄŹãĆŃåăť’ă

- ä¡£çŤĺä¿Ń

regexèęAçť ăăĄőåśđæĂğãĄŕãĂĄïijŞãĄd'ãĄőæŰźæşŢãĄğæ■čèęŔèąĺçŔ¿ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

1ãĄd'çŻőãĄŕãĂĄpatternãĄńçŻt'æŐěæ■čèęŔèąĺçŔ¿ãĆŠèĺŸè£řãĄŹãĆŃæŰźæşŢ(å■Ÿèłđå■Ÿä¡■)ãĄğãĄŹãĂĆ

ãĂŇãĄŞãĆŞãĄńãĄąãĄŕãĂ■ãĂŇãĄŞãĆŞãĄńãĄąãĆŔãĂ■ãĄŕãĄĎãĄŽãĆŇãĆĆåĹĘãĄŃãĄąæŻÿãĄ■åĞęçŘĘãĄńãĆĹãĄčãĄę1å■

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern><regex pattern="ãĄŞãĆŞãĄńãĄą[ãĄŕ|ãĆŔ]" /></pattern>
        <template>
            ãĄŞãĆŞãĄńãĄąãĄŕ
        </template>
    </category>
</aiml>
```

ïijŠãĄd'çŻőãĄŕãĂĄtemplateãĆŠåĹl'çŤĺãĄŹãĆŃæŰźæşŢãĄğãĄŹãĂĆtemplateåśđæĂğãĄń
*æ■čèęŔèąĺçŔ¿ãČłãĆźãČĹãČŢãĆąãĆd'ãČń*
ãĄńèĺŸèijL'ãĄŮãĄ§ãČĘãČşãČŮãČñãČijãČĹåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
templateãĄőèĺŸè£řåĘĚåőźãĄŕãĂĄpatternãĄĺåŘŇãĄŸãĄŔå■Ÿèłđå■Ÿä¡■ãĄğãĄŹãĂĆ

æ■čèęŔèąĺçŔ¿ãČłãĆźãČĹãČŢãĆąãĆd'ãČńãĄğåőŽç¿l'ãĄŮãĄęãĄĎãĄłãĄĎãČĘãČşãČŮãČñãČijãČĹåŘ■ãĆŠtemplateãĄğæŇĞåőŽ

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern><regex template="konnichiwa" /></pattern>
        <template>
            ãĄŞãĆŞãĄńãĄąãĄŕ
        </template>
    </category>
</aiml>
```

3ãĄd'çŻőãĄŕãĂĄformãĆŠåĹl'çŤĺãĄŹãĆŃæŰźæşŢãĄğãĄŹãĂĆæŰĞå■ŮåĹŮãĆŠår¿èśąãĄĺãĄŮãĄ§æ■čèęŔèąĺçŔ¿ãĆŠæŇĞåőŽã

ãČđãČČãČĄår¿èśąãĄőãČęãČijãĆűçŹžèl'śæŰĞãĆŠæŰĞå■ŮåĹŮãĄĺãĄŮãĄęæL'śãĄĘãĄ§ãĆĄãĂĄçŹžèl'śæŰĞãĄŇåĹĘãĄŃãĄąã

æŮěæIJñèłđæŰĞå■ŮåĹŮãĄŇåĹĘãĄŃãĄąæŻÿãĄ■åĞęçŘĘãĄńãĆĹãĆŁãĄl'ãĄőãĆĹãĄĘãĄłå■ŸèłđãĄńåĹĘåL'šãĄŢãĆŇãĆŃãĄŃ
formãĄńæŇĞåőŽãĄŹãĆŃæ■čèęŔèąĺçŔ¿ãĄŕãĂĄäžěäÿŃãĄőçţĎãĄ£åŘĹãĆŔãĄŻãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

| èąĺèĺŸ | æĎŔåŠş |
|---|---|
| âĂŸ[âĂę]âĂŹâĂŸ[âĂę]âĂŹåĘĚãĄőãĄĎãĄŽãĆŇãĄŃãĄőæŰĞå■ŮãĄńãČđãČČãČĄãĄŹãĆŃãĄřOKãĂĆ |
| âĂŸA\|BâĂŹ | âĂŸ\|âĂŹãĄőåůęåŔşãĄőæŰĞå■ŮåĹŮãĄőãĄĎãĄŽãĆŇãĄŃãĄńãČđãČČãČĄãĄŹãĆŃãĄřOKãĂĆ |
| âĂŸ(X)âĂŹ | æ■čèęŔèąĺçŔ¿XãĄőãĆţãČŰãČŚãĆ£ãČijãČşåŇŰãĂĆXãĄńãČđãČČãČĄãĄŹãĆŃãĄřOKãĂĆ |
| âĂŸ()?âĂŹ | âĂŸ?âĂŹãĄőçŻt'åL'■ãĄőãĆţãČŰãČŚãĆ£ãČijãČşãĄńãČđãČČãČĄãĄŮãĄęãĆĆãĄŮãĄłãĄŔãĄęãĆĆOKãĂĆ |
| âĂŸ(?!X)âĂŹæIJĂå¿Ňår¿ãĄŇXãĄńãČđãČČãČĄãĄŮãĄłãĄŚãĆŃãĄřOKãĂĆïijĹäžŰãĄőæŇĞåőŽãĄĺãĄőä¡ţçŤĺãĄŕäÿ■åŔřïijL' |

æňąãĄőä¡£çŤĺä¿ŃãĄğãĄŕãĂĄäžëäÿŃãĄőæŰĞãĄőãĄĎãĄŽãĆŃãĄńãĆĆãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>
            <regex form="äžŁ[ãĄŕãĆŔ]ä¡ŢæŹĆ(ãĄğãĄŹãĄŃ|ãĄğãĄŹ)?" />
        </pattern>
        <template>
            <date format="%HæŹĆ%MåĹę%SçğŠ" />
        </template>
    </category>
</aiml>
```

ãĂŇäžŁãĄŕä¡ŢæŹĆãĂ■ãĂŇäžŁãĄŕä¡ŢæŹĆãĄğãĄŹãĄŃãĂ■ãĂŇäžŁãĄŕä¡ŢæŹĆãĄğãĄŹãĂ■
ãĂŇäžŁãĆŔä¡ŢæŹĆãĂ■ãĂŇäžŁãĆŔä¡ŢæŹĆãĄğãĄŹãĄŃãĂ■ãĂŇäžŁãĆŔä¡ŢæŹĆãĄğãĄŹãĂ■

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽregex_templates*

## 5.7 set

[1.0]

setèęAçt'ããĄğãĄŕãĂĄåd'ŰéČĺãČŢãĆąãĆd'ãČńãĄğæŇĞåőŽãĄŮãĄ§èd'ĞæŢřãĄőå■Ÿèłđå£ŮãĄőãĄĎãĄŽãĆŃãĄŃãĄĺãĄőãČđãČđãČČãČĄåŕ¿èśąãĄőå■Ÿèłđã
ãČđãČČãČĄåŕ¿èśąãĄőå■Ÿèłđã
ãĄńãČłãĆźãČĹå¡ćåijŔãĄğåĹŮèĺŸãĄŮãĄ¿ãĄŹãĂĆ

èęAçt'ããĄĺãĄŮãĄęãĂĄèd'ĞæŢřèŃśå■Ÿèłđã
ãĄŃãĆL'ãĄłãĆŃæŰĞå■ŮåĹŮãĆĆæŇĞåőŽãĄŃåŔřèČ¡ãĄğãĄŹãĄŃãĂĄãĄĺãĄőåät'ã

åřŽãĂĄèŃśå■Ÿèłđå£ŮãĄĺæŮěæIJňèłđæŰĞå■ŮåĹŮãĄŃæůůåIJĺãĄŹãĆŃæŇĞåőŽãĄőåät'åŘĹãĄőåŃŢä¡IJãĄŕä£ÌèĺijãĄğãĄ■ãĄ¿

- åśđæĂğ

| ãČŚãČľãĆąãĆd'ãČńåŘ■ãĄŃãĆL'æŃąåijţå■ŘãĆŠéŹd'ãĄĐãĄ§æŰĞå■ŮåĹŮãĂĆ | | | |
|---|---|---|---|
| name | string | Yes | setsãČŢãĆąãĆd'ãČńåŘ■ãĄŃãĆL'æŃąåijţå■ŘãĆŠéŹd'ãĄĐãĄ§æŰĞå■ŮåĹŮãĂĆ |

çĎąåŁźãĄłãČŢãĆąãĆd'ãČńãĄőåŘ■çğřãĆŠnameãĄğæŇĞåőŽãĄŮãĄ§åät'åŘĹãĂĄãĆůãČŁãČłãĆłäÿ■æ■čãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ
ãĄ¿ãĄ§ãĂĄãĆşãČşãČŢãĆčãĆřãČńãČijãĆůãČğãĆşãĄő *dynamic*
ãĄğåőŽç¿l'ãĄŢãĆŃãĄęãĄĎãĆŃåŘ■çğřãĄńãĄd'ãĄĐãĄęãĄŕãĂĄdynamic
ãĄŃåĎłåĚĹãĄŢãĆŃãĆŃãĄ§ãĆĄçĎąåŁźãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

äžëäÿŃãĄőä¿ŃãĄğãĄŕãĂĄprefecture.txtãĄńæŮěæIJňãĄőéČ¡éĄŞåžIJçIJŃåŘ■ãĄŃèĺŸèijL'ãĄŢãĆŃãĄęãĄĎãĆŃãĄŞãĄĺãĆŠæČş

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>çğĄãĂŕ<set name="prefecture" />ãĄńä¡ŔãĆŞãĄğãĄĎãĄ¿ãĄŹãĂĆ</pattern>
        <template>
            çğĄãĂŕæİśäžňãĄńä¡ŔãĆŞãĄğãĄĎãĄ¿ãĄŹãĂĆ
        </template>
```

(continues on next page)

(continued from previous page)

```
    </category>
</aiml>
```

Input: çğĄãĄŕå■ČèŚĽãĄńä¡ŔãĆŞãĄğãĄĎãĄ¿ãĄŹãĂĆ
Output: çğĄãĄŕæİśäžñãĄńä¡ŔãĆŞãĄğãĄĎãĄ¿ãĄŹãĂĆ

éŰćéĂčéăĚçŻő: *iset* ãĂĄ *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽsets*

## 5.8 topic

[1.0]

topicèęAçt'ăăĆŠä¡£çŤĺãĄŹãĆŃãĄĺãĂĄãĆůãĆźãČĘãČăăĄőäžĹçt'Ďåd'L'æŢřtopicãĄőåĂd'ãĄÑnameãĄńæŇĞåőŽãĄŮãĄ§åĂd'ãĄ

topicãĄŕãĂĄæňąãĄõãĆĹãĄĘãĄńtemplateèęAçt'ăăĄősetãĆŠçŤĺãĄĎãĄęåĂd'ãĆŠèĺ■åőŽãĄŹãĆŃãĄŞãĄĺãĄÑãĄğãĄ■ãĄ¿ãĄŹãĂĆ

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern><!-- pattern description goes here --></pattern>
        <template>
            <think><set name="topic">FISHING</set></think>
            <!-- response sentence goes here-->
        </template>
    </category>
</aiml>
```

topicèęAçt'ăăĄőæİąäżűãĄŕãĂĄpatternãĄõãČđãČČãČĄåĞęçŘĘå¿ÑãĄńèl'Ţä¿ąãĄŢãĆŃãĄ¿ãĄŹïijĹAIMLåĞęçŘĘãĄőå§žæIJñãČ

åŘÑäÿĂãĄőpatternåőŽç¿l'ãĄğtopicæŇĞåőŽãĄÑãĄłãĄĎãĆĆãĄõãĄÑå£ĚèęĄãĄłåăt'åŘĹãĄŕãĂĄçŔ¿åIJĺèĺ■åőŽãĄŢãĆŃãĄęãĄĎ

äžěäÿÑãĄőä¡£çŤĺä¿ÑãĄğãĄŕãĂĄâİãĄłãĄIJãĄİãĆŃãĆŠç§ěãĄčãĄęãĄĎãĄ¿ãĄŹãĄÑïij§âĂİãĄĺãĄĎãĄĘãČęãČijãĆűçŹžèl'śãĄ

- ä¡£çŤĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãĄłãĄIJãĄİãĆŃãĆŠç§ěãĄčãĄęãĄĎãĄ¿ãĄŹãĄÑïij§</pattern>
        <topic>FISHING</topic>
        <template>
            å■Ră¿ŻãĄőéăČãĂĄçĺűãĄÑæŢŹãĄĹãĄęãĄŔãĆŃãĄ¿ãĄŮãĄ§ãĂĆ
        </template>
    </category>

    <category>
        <pattern>ãĄłãĄIJãĄİãĆŃãĆŠç§ěãĄčãĄęãĄĎãĄ¿ãĄŹãĄÑïij§</pattern>
```

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```
        <topic>COOKING</topic>
        <template>
            å■Řä¿ŻãĄőéăČãĂĄæŕ■ãĄŇæŢŹãĄĹãĄęãĄŕãĆŇãĄ¿ãĄŮãĄ$ãĂĆ
        </template>
    </category>
</aiml>
```

éŰćéĂčéăĚçŻő: *that*, *set(templateèęĄçţ'ă)*, *think*

## 5.9 that

[1.0]

thatèęĄçţ'ăãĆŠçŤĺãĄĎãĆŇãĄŞãĄĺãĄğãĂĄ1ãĄd'åL'■ãĄőåŕ¿èl'śãĄńãĄŁãĄŚãĆŇãĆůãĆźãČĘãČăãĄőå£IJç■ŤæŰĞãĄŇæŇĞåőŽã

thatèęĄçţ'ăãĄőãĄŞãĄőåČ■ãĄ■ãĄńãĆĹãĆŁãĂĄåŕ¿èl'śåĘĚåőźãĄőæţĄãĆŇãĆŠèĂČæĚőãĄŮãĄ$åŕ¿èl'śãČńãČijãČńèĺŸè£řãĄŇåŘ
ä¿ŃãĄĹãĄřãĂĄâĂİãĄŕãĄĎâĂİãĂĄâĂİãĄĎãĄĎãĄĹâĂİ
ãĄĺãĄĎãĄčãĄ$ãĂĄæśŐçŤĺçŽĎãĄłãČęãČijãĆűçŹžèl'śæŰĞãĄńåŕ¿ãĄŹãĆŇãĆůãĆźãČĘãČăå£IJç■ŤæŰĞãĆŠãĂĄçŻt'åL'■ãĄőåŕ¿

thatèęĄçţ'ăãĄőæİąäżűãĄŕãĂĄpatternãĄőãČđãČČãČĄåĞęçŘĘå¿ŇãĄńèl'Ţä¿ąãĄŢãĆŇãĄ¿ãĄŹïijĹAIMLåĞęçŘĘãĄőå§žæIJñãČńã

åŘŇäÿĂãĄőpatternåőŽç¿l'ãĄgthatæŇĞåőŽãĄŇãĄłãĄĎãĆĆãĄőãĄŇå£ĚèęĄãĄłåăt'åŘĹãĄŕãĂĄtemplateãĄőthatèęĄçţ'ăãĄgåŘŰ

- ä¡£çŤĺä¿Ń

äžěäÿŇãĄőä¡£çŤĺä¿ŃãĄğãĄŕãĂĄçŻt'åL'■ãĄőåŕ¿èl'śãĄőãĆůãĆźãČĘãČăå£IJç■ŤæŰĞãĄŇãĂŇãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>çğĄãĄŕãĆşãČijãČŠãČijãĄŇåě¡ãĄ■ãĄğãĄŹ</pattern>
        <template>ãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ$ãČńãĆŕãĆŠåĚěãĆŇãĄ¿ãĄŹãĄŃ</template>
    </category>

        <category>
        <pattern>çğĄãĄŕçt'ĚèŇűãĄŇåě¡ãĄ■ãĄğãĄŹ</pattern>
        <template>çt'ĚèŇűãĄńãČňãČćãČşãĆŠåĚěãĆŇãĄ¿ãĄŹãĄŃ</template>
    </category>

    <category>
        <pattern>ãĄŕãĄĎ</pattern>
        <that>ãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ$ãČńãĆŕãĆŠåĚěãĆŇãĄ¿ãĄŹãĄŃ</that>
        <template>ãĆŔãĄŇãĆŁãĄ¿ãĄŮãĄ$</template>
    </category>

    <category>
        <pattern>ãĄĎãĄĎãĄĹ</pattern>
        <that>ãĆşãČijãČŠãČijãĄńçăĆçşŰãĄĺãČ$ãČńãĆŕãĆŠåĚěãĆŇãĄ¿ãĄŹãĄŃ</that>
        <template>ãČŰãČl'ãČČãĆŕãĄğãĄŹãĄ■</template>
    </category>

    <category>
        <pattern>ãĄŕãĄĎ</pattern>
```

(continues on next page)

(continued from previous page)

```
        <that>çt'ĚèŇűãĄńãČňãČćãČşãĆŠåĚěãĆŇãĄ¿ãĄŹãĄŃ</that>
        <template>ãĆŕãĄŃãĆŁãĄ¿ãĄŮãĄ§</template>
    </category>

    <category>
        <pattern>ãĄĎãĄĎãĄĹ</pattern>
        <that>çt'ĚèŇűãĄńãČňãČćãČşãĆŠåĚěãĆŇãĄ¿ãĄŹãĄŃ</that>
        <template>ãĆźãČĹãČňãČijãČĹãČĘãĆčãČijãĄğãĄŹãĄ■</template>
    </category>
</aiml>
```

éŰćéĂčéăĚçŻő: *topic*

## 5.10 word

[1.0]

AIMLãĄőæIJĂãĆĆå§žæIJńçŽĎãĄłãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřèęAçt'ăãĄğãĄŹãĂĆ
wordèęAçt'ăãĄŕãĂĄå■Ÿèłđ(åĹĘãĄŃãĄąæŻÿãĄ■ãĄŢãĆŃãĄ§åŘĎæŰĞå■ŮåĹŮãĄőå■Ÿä¡■)ãĆŠèąĺãĄŮãĄęãĄŁãĆŁãĂĄår¿èľśã
èŃśå■Ÿèłđ ãĄńãĄŁãĄĎãĄęãĄŕåď'ğæŰĞå■ŮãĄĺářŔæŰĞå■ŮãĆŠåŇžåĹěãĄŻãĄŻãČđãČČãČĄåĞęçŘĘãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ
ãĄ¿ãĄ§ãĂĄåĚíèğŠæŰĞå■ŮãČżå■ŁèğŠæŰĞå■ŮãĄńãĄď'ãĄĎãĄęãĄŕãĂĄèŃśæŢřå■ŮãĄŕå■ŁèğŠãĂĄãĆńãČŁæŰĞå■ŮãĄŕåĚíèğ

äžěäÿŃãĄőä¡£çŤĺä¿ŃãĄğãĄŕHELLO, hello, Hello, HeLlOãĄőãĄl'ãĆŇãĄğãĆĆãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>HELLO</pattern>
        <template>
            ãĄŞãĆŞãĄńãĄąãĄŕ
        </template>
    </category>
</aiml>
```

éŰćéĂčéăĚçŻő: *priority*

## 5.11 zeroormore

[1.0]

zeroormoreèęAçt'ă âĂIJ^âĂİ, âĂIJ#âĂİ ãĄŕãĂĄãČŕãĆď'ãČńãČL'ãĆńãČijãČL'ãĄő1ãĄď'ãĄğãĂĄåřŚãĄłãĄŔãĄĺãĆĆ0åĂŃãĄőäżż
ãĄŞãĄőãČŕãĆď'ãČńãČL'ãĆńãČijãČL'ãĄŃ patternèęAçt'ăåĘĚãĄőèÍŸè£ŕãĄőæIJĂå¿ŇãĄńãĄĆãĆŃåăt'åŘĹãĄŕãĂĄãČęãČijãĆűãĄ
ãĄ¿ãĄ§ãĂĄãĄŞãĄőãČŕãĆď'ãČńãČL'ãĆńãČijãČL'ãĄŃ patternèęAçt'ăåĘĚãĄőèÍŸè£ŕãĄőäżŮãĄőAIMLãČŚãĆ£ãČijãČşãČđãČČãČ

ãĄŞãĄőãČŕãĆď'ãČńãČL'ãĆńãČijãČL'ãĄńãĆĹãĆŃãČđãČČãČĄåĞęçŘĘãĄĺäżŮãĄőAIMLãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřèęA
ãČŕãĆď'ãČńãČL'ãĆńãČijãČL' âĂIJ^âĂİãĄŕãĂĄ AIMLãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřèęAçt'ă
`set`ãĂĄ`iset`ãĂĄ`regex`ãĂĄ`bot`
ãĆĹãĆŁãĆĆåĚĹãĄńãČđãČČãČĄåĞęçŘĘãĄŃèąŇãĆŔãĆŃãĄ¿ãĄŹãĂĆãČŕãĆď'ãČńãČL'ãĆńãČijãČL'
âĂIJ#âĂİãĄŕãĂĄãĄŞãĆŃãĆL'ãĄőAIMLãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřèęAçt'ăãĆĹãĆŁãĆĆå¿ŇãĄńãČđãČČãČĄåĞęçŘĘãA

ãČŕãĆď'ãČńãČL'ãĆńãČijãČL'ãĆŠéĂčçűŽãĄŮãĄęèÍŸè£ŕãĄŮãĄ§patternèęAçt'ăãĆŞæŇĞåőŽãĄŹãĆŃåăt'åŘĹãĄńãĄŕãĂĄ*oneorm*
ãĄĺãĄőæůůåŘĹãĄŕéĄ£ãĄŚãĄęãĄŔãĄăãĄŢãĄĎãĂĆåĚěåŁŻæŰĞãĄőèl'šå¡ŞãĄŹãĆŃçfĎåŻšãĄőå■ŸèłđæŢřãĄńãĆĹãĆŁãĂĄstar

æňąãĄőä¡£çŤĺä¿ŃãĄğãĄŕãĂĄãĂŃãĄŞãĆŞãĄńãĄąãĄŕãĂ■ãĄőãĄ£ãĂĄãĄĆãĆŃãĄĎãĄŕãĂĄãĂŃãĄŞãĆŞãĄńãĄąãĄŕãĂ■ãĄğå

èľşçť řãĄŕãĂĄãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆř ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

- ä¡£çŤĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ ^</pattern>
        <template>
            ãĄŞãĆŞãĄńãĄąãĄŕ
        </template>
    </category>

    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ #</pattern>
        <template>
            ãĄŤæl’§åńÑãĄĎãĄŃãĄÑãĄğãĄŹãĄŃïij§
        </template>
    </category>
</aiml>
```

éŰćéĂčéăĚçŻő: *oneormore* ãĂĄ *ãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆř*

# CHAPTER 6

## templateèęĄçťăåĘĚãĄőå■ŘèęĄçťă

æIJňçńăăĄğãĄŕtemplateèęĄçťăåĘĚãĄğèÍŸè£řåŔŕèČ¡ãĄłå■ŘèęĄçťăăĄńãĄd'ãĄĎãĄęèłňæŸŐãĄŮãA¿ãĄŹãĂĆ

å■ŘèęĄçťăăĄőä¡£çŤÍĺåŔŕåŘęãĄńãĄd'ãĄĎãĄęãĄŕãĂĄãĆńãĆźãĆ£ãČđãĆd'ãĆžãĄŇåŔŕèČ¡ãĄğãĄŹãĂĆèl'şçţ'řãĄŕ
*ãĆńãĆźãĆ£ãČătemplateèęĄçţ'ă* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăăĄŢãĄĎãĂĆ

åŕ¿èl'śãČŮãČl'ãČČãČĹãČŢãĆl'ãČijãČăăĄğãĆţãČİãČijãČĹãĄŮãĄęãĄĎãĆŃtemplateãĄőèęĄçť'ăåĘĚãĄńèÍŸè£řåŔŕèČ¡ãĄłå■ŘèęĄ
åĚňåijŔãĄő AIML
2.xäżŢæğŸãĄńåŕ¿ãĄŮãĂĄçŃňèĞłãĄőèęĄçť'ăăĆżãČČãČĹãĆŠè£¡åŁăăĄŮãĄęãĄĎãA¿ãĄŹãĂĆ

- *addtriple*: RDFãČŁãČňãČČãĆÿãČŹãČijãĆźãĄÿãĄőãĆĺãČňãČąãČşãČĹè£¡åŁăèęĄçť'ă
- *authorise*: ãČęãČijãĆűãČ■ãČijãČńãĄńãĆĹãĆŁAIMLèęĄçť'ăăĄőåő§èąŇæÍl'ãĄőåĹĞãĆŁæŻ£ãĄĹèęĄçť'ă
- *bot*: botåŽžæIJL'ãĄőãČŮãČ■ãČŚãČĘãĆčãĄőåŔŰå¿ŮèęĄçť'ă
- *button*: ãČIJãĆ£ãČşæŁijäÿŃãĆŠä£ČãĄŹèęĄçť'ă
- *card*: çŤżåČŔãĂĄãČIJãĆ£ãČşãĂĄãĆ£ãĆd'ãČĹãČńãĂĄãĆţãČŰãĆ£ãĆd'ãČĹãČńãĆŠ1ãĄd'ãĄńãA¿ãĄÍãĆĄãĆŃèęĄçť'ă
- *carousel*: ãĆńãČijãČL'èęĄçť'ăăĆŠãA¿ãĄÍãĆĄãĆŃèęĄçť'ă
- *condition*: æİąäżűåĹĘåšŘãĄŮãĄęåĞęçŘĘãĆŠèąŇãĄĘèęĄçť'ă
  - *å■ŸäÿĂåĹd'åőŽ*
  - *æİąäżűåĹĘåšŘ*
  - *èd'ĞœŢřæİąäżűãĄğãĄőåĹĘåšŘ*
  - *ãČńãČijãČŮåĞęçŘĘ*
- *date*: æŮěäżŸãĂĄæŹĆåĹżåŔŰå¿ŮèęĄçť'ă
- *delay*: éĄĚåżűèęĄæśĆèĺ■åőŽèęĄçť'ă
- *deletetriple*: RDFãČŁãČňãČČãĆÿãČŹãČijãĆźãĄŃãĆL'ãĄőãĆĺãČňãČąãČşãČĹåL'ŁéŹd'èęĄçť'ă
- *denormalize*: å■ŸèłđãĄŇãĆL'æŰĞå■ŮåĹŮãĄÿãĄőåd'L'æŔŻèęĄçť'ă
- *eval*: åd'L'æŢřåĂd'ãĄőæŰĞå■ŮåĹŮåŇŰèęĄçť'ă(learn/learnfãĄğåĹl'çŤÍïijL'

- *explode*: æŰĞå■ŮåĹĘåL'šèęĄçť ă
- *first*: åĚĹéă■å■ŸèłđåŕŰå¿ŮèęĄçť ă
- *extension*ïijŽæŃąåijţæľ §èČ¡èęĄçť ă
- *formal*: åĚĹéă■æŰĞå■Ůåd'ğæŰĞå■ŮåŇŰèęĄçť ă
- *gender*: äÿL'äžžçğřäžčåŘ■èľ đãĄőæĂğåĹĕåd'L'æŔŻèęĄçť ă
- *get*: åd'L'æŢřåĘĚåőźåŔŰå¿ŮèęĄçť ă
- *id*: ãĆŕãČľãĆd'ãĆćãČşãČĹåŘ■åŔŰå¿ŮèęĄçť ă
- *image*: çŤżåČŔæČĚåăśæŇĞåőŽèęĄçť ă
- *implode*: æŰĞå■ŮåĹŮçţŘåŘĹèęĄçť ă
- *input*: patternæŰĞåŔŰå¿ŮèęĄçť ă
- *interval*: æŹĆåĹżåůőåĹĘèĺĹçőŮèęĄçť ă
- *json*: JSONèęĄçť ă
- *learn*: ãČęãČijãĆűåŻžæIJL'categoryçŹżéŇšèęĄçť ă
- *learnf*: ãČęãČijãĆűåŻžæIJL'categoryçŹżéŇšèęĄçť ă
- *li*: åĹĘåšŘæİąäżűèÍŸè£řèęĄçť ă
- *link*: URLæČĚåăśæŇĞåőŽèęĄçť ă
- *list*: ãČłãĆźãČĹå¡ćåijŔæČĚåăśæŇĞåőŽèęĄçť ă
- *log*: ãČ■ãĆŕåĞžåŁŻèęĄçť ă
- *lowercase*: èŃśæŰĞå■ŮåřŔæŰĞå■ŮåŇŰèęĄçť ă
- *map*: è¿đæŻÿåĹl'çŤĺãĄőåd'L'æŔŻèęĄçť ă
- *nluintent*: NLUãĆd'ãČşãČĘãČşãČĹåŔŰå¿ŮèęĄçť ă
- *nluslot*: NLUãĆźãČ■ãČČãČĹåŔŰå¿ŮèęĄçť ă
- *normalize*: æŰĞå■ŮåĹŮãĄŃãĆL'å■Ÿèłđã Ąÿã Ąőåd'L'æŔŻèęĄçť ă
- *oob*: Out of BandèęĄçť ă
- *olist*: ãĆłãČijãČĂãČijãČłãĆźãČĹå¡ćåijŔæŇĞåőŽèęĄçť ă
- *person*: äÿĂãČżäžŇäžžçğřäżčåŘ■èľđåd'L'æŔŻèęĄçť ă
- *person2*: äÿĂãČżäžŇäžžçğřäżčåŘ■èľđãĄĺäÿL'äžžçğřäżčåŘ■èľđãĄőåd'L'æŔŻèęĄçť ă
- *program*: ãČŮãČ■ãĆŕãČľãČăãČŘãČijãĆÿãČğãČşåŔŰå¿ŮèęĄçť ă
- *random*: ãČľãČşãČĂãČăåĹĘåšŘæŇĞåőŽèęĄçť ă
- *reply*: ãČęãČijãĆűãĄÿãĄőæŔŘçd'žåĘĚåőźæŇĞåőŽèęĄçť ă
- *request*: åĚěåŁŻåśěæ■ťåŔŰå¿ŮèęĄçť ă
- *resetlearn*: learnæČĚåăśãČłãĆżãČČãČĹèęĄçť ă
- *resetlearnf*: learnfæČĚåăśãČłãĆżãČČãČĹèęĄçť ă
- *response*: åĞžåŁŻåśěæ■ťåŔŰå¿ŮèęĄçť ă
- *rest*: åĚĹéă■å■Ÿèłđäžěåd'ŰãĄőåŔŰå¿ŮèęĄçť ă
- *set*: åd'L'æŢřèĺ■åőŽèęĄçť ă
- *select*: RDFãČŁãČňãČČãĆÿãČŹãČijãĆźãĄőæd'IJçť ćèęĄçť ă
- *sentence*: èŃśæŰĞæŢť å¡ćèęĄçť ă
- *size*: ãĆńãČĘãĆť ãČłæŢřåŔŰå¿ŮèęĄçť ă

- *space*: å■ŁèğŠãĆźãČŽãČijãĆźæŇ£åĚèęĄçť˘ă
- *split*: æŰĞçńăåĹĘåĽ˘šèęĄçť˘ă
- *sr*: sraiãĄÍstarãĄőçIJĄçŢěèęĄçť˘ă
- *srai*: ãČŚãĆ£ãČijãČşãČđãČČãČĄåĘ■åő§èąŇèęĄçť˘ă
- *sraix*: REST APIåŚijãĄşåĞžãĄŮèęĄçť˘ă
- *star*: ãČŕãĆd˘ãČńãČL˘ãĆńãČijãČL˘åŔŰå¿ŮèęĄçť˘ă
- *system*: ãĆůãĆźãČĘãČăăĆşãČijãČńåő§èąŇèęĄçť˘ă
- *that*: éĄŐåŐżå£IJç■ŤæŰĞåŔŰå¿ŮèęĄçť˘ă
- *thatstar*: éĄŐåŐżå£IJç■ŤæŰĞåĘĚãČŕãĆd˘ãČńãČL˘ãĆńãČijãČL˘åŔŰå¿ŮèęĄçť˘ă
- *think*: åĘĚéČÍåĞęçŘĘèÍŸè£řèęĄçť˘ă
- *topicstar*: topicåĘĚãČŕãĆd˘ãČńãČL˘ãĆńãČijãČL˘åŔŰå¿ŮèęĄçť˘ă
- *uniq*: RDFãČŁãČňãČČãĆÿãČŹãČijãĆźãĄőæd˘IJçť˘ćèęĄçť˘ă
- *uppercase*: èŃśæŰĞå■Ůåd˘ğæŰĞå■ŮåŇŰèęĄçť˘ă
- *video*: ãČŞãČĞãĆŁæČĚåăśæŇĞåőŽèęĄçť˘ă
- *vocabulary*: ãĆůãČŁãČłãĆŁå■ŸèłđæŢřåŔŰå¿ŮèęĄçť˘ă
- *word*: å■Ÿèłđã ČŐãČijãČL˘ãĆŠçd˘žãĄŹåőŽç¿l˘
- *xml*: æIJłåőŽç¿l˘XMLãČŐãČijãČL˘ãĄőåőŽç¿l˘

åřŽãĂĄtemplateãĄőå■ŘèęĄçť˘ăăĄŕãĂĄéĚ■äÿŃãĄńäÿŁèÍŸãĄőå■ŘèęĄçť˘ăăĆŠèÍŸè£řãĄŹãĆŃãĄŞãĄÍãĄğèd˘ĞåŘĹçŽĎãĄńåŘĎ

æIJňçńăăĄőåŘĎå■ŘèęĄçť˘ăăĄőèłñæŸŐãĄğèÍŸè£řãĄŹãĆŃæŇĞåőŽåŕřèČ¡ãĄłå■ŘèęĄçť˘ăăĄőéăĚçŻőãĄŕãĂĄèęłãĄÍãĄłãĆŃå■Ř

äžěäÿŃãĄőèęĄçť˘ăăĄŕåĞęçŘEçţŘædIJãĄŇçl˘žæŰĞå■ŮãĄőçČžãĂĄå■Ÿä¡ŞãĄğä¡£çŤÍãĄŮãĄ§åăt˘åŘĹãĄńãĄŕãĆćãČşãČđãČČãČ

- addtriple
- deletetriple
- jsonãĂĂïijĹåŔŰå¿ŮãĄőåăt˘åŘĹãĆŠéŹd˘ãĄŔïijL˘
- learn
- learnf
- resetlearn
- resetlearnf
- think

## 6.1 èľşçť˘ř

ãĄŞãĄőãĆżãĆŕãĆůãČğãČşãĄğãĄŕãĂĄAIMLãĄőtemplateèęĄçť˘ăåĘĚãĄńèÍŸè£řãĄŹãĆŃèęĄçť˘ăăĄőèłñæŸŐãĆŠèąŇãĄĐãĄ¿ãĄ

ãĄżãĄÍãĆŞãĄl˘ãĄőèęĄçť˘ăăĄŕXMLãĄőåśđæĂğãĄ¿ãĄ§ãĄŕå■ŘèęĄçť˘ăăĆŠè£¡åŁăăĄŮãĄęãĂĄãČĞãČijãĆ£ãĆŠåĹl˘çŤÍãĄŮãĄ¿ã

åŘĎèęĄçť˘ăăĄőĚĹéă■ãĄő[âĂę]ãĄŕãĂĄåŕ¿èśąãĄőèęĄçť˘ăăĄŇæIJĂåĹİãĄńåőŽç¿l˘ãĄŢãĆŃãĄ§AIMLãĄőãČŘãČijãĆÿãČğãČşãĆ

### 6.1.1 addtriple

[2.0]

addtripleèęAçť ããĄŕãĂĄRDFãČŁãČňãČČãĆÿãČŹãČijãĆźãĄńãĆÍãČňãČąãČşãČĹ(ç§ěè■Ÿ)ãĆŠè£¡åŁããĄŮãĄ¿ãĄŹãĂĆ
ãĆÍãČňãČąãČşãČĹãĄőægŇæĹŘèęAçť ããĄńãĄŕãĂĄsubject (äÿżèłđ)ãĂĄpredicate (è£řèłđ)ãĂĄobject
(çŻőçŽĎèłđ)ãĄő3ãĄd'ãĄőãĆćãĆd'ãČĘãČããĄÑãĄĆãĆŁãĄ¿ãĄŹãĂĆ

addtripleèęAçť ããĄőçţŘædIJæŰĞå■ŮåĹŮãĄŕãĂĄåÿÿãĄńçl'žæŰĞå■ŮãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ
addtripleèęAçť ããĄőèl'şçť řãĄńãĄd'ãĄĎãĄęãĄŕãĂĄ*RDFãĆţãČİãČijãČĹ*
ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄããĄŢãĄĎãĂĆ

- å■ŘèęAçť ă

| ãČŚãČľåČãąĆãĆŽãĆĆãĆŠãĚĹĚéěĺňæŸŐ | | | |
|---|---|---|---|
| subj | string | Yes | subject (äÿżèłđ)ãĄőåĂd' |
| pred | string | Yes | predicate (è£řèłđ)ãĄőåĂd' |
| obj | string | Yes | object (çŻőçŽĎèłđ)ãĄőåĂd' |

æŇĞåőŽãĄŢãĆŇãĄ§åĂd'ãĄŕæd'IJçť ćãĆŠåŁźçŐĞçŽĎãĄńèąŇãĄEçĆžãĂĄçţśäÿĂãĆşãČijãČL'ïijĹèŃśæŢřèĺŸåŔůïijŽå■ŁèğŠãĂ

åĂd'ãĄńçl'žæŰĞå■ŮïijĹçl'žçŹ¡ãĄőãĄ£ãĆŠåŘńãĆĂïijL'ãĆŠæŇĞåőŽãĄŮãĄ§åăť åŘĹãĂĄåő§èąŇæŹĆãĄńä¿Ńåd'ŰãĄŇçŹžçŢ§ã

äżěäÿŃãĄőä¡£çŢĺä¿ŃãĄğãĄŕãĂĄãČęãČijãĆűãĄőçŹžèl'śæŰĞãĂŇçğĄãĄŕãĆńãČňãČijãĄŇåě¡ãĄ■ãĄăãĂ■ãĄńår¿ãĄŮãĄęãĂĄsu
object=âĂŹãĆńãČňãČijâĂŹ ãĄőãĆćãĆd'ãČĘãČăãĄğægŇæĹŘãĄŢãĆŇãĆŃãĆĺãČňãČąãČşãČĹ(ç§ěè■Ÿ)ãĆŠRDFãČŁãČňãČČãĆÿ

- ä¡£çŢĺä¿Ń

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>* ãĄŕ * ãĄŇ åě¡ãĄ■ #</pattern>
        <template>
            <addtriple>
                <subj><star /></subj>
                <pred>åě¡ãĄ■</pred>
                <obj><star index="2"/></obj>
            </addtriple>
            åě¡ãĄ£ãĆŠçŹżéŇšãĄŮãĄ¿ãĄŮãĄ§
        </template>
    </category>
</aiml>
```

Input: çğĄ ãĄŕ ãĆńãČňãČij ãĄŇåě¡ãĄ■ãĄă
Output: åě¡ãĄ£ãĆŠçŹżéŇšãĄŮãĄ¿ãĄŮãĄ§

çŹżéŇšãĆŠèąŇãĄčãĄ§çţŘædIJãĄőçćžèł■æŰźæşŢãĄŕãĂĄ*uniq*, *select* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

éŰćéĂčéăĚçŻő: *deletetriple*, *select*, *uniq*, *RDFãĆţãČİãČijãČĹ*

### 6.1.2 authorise

[1.0]

authoriseèęAçť ăăĆŠä¡£ãĄĘãĄŞãĄÍãĄńãĆĹãĆŁãĂĄtemplateèęAçť ăåĘĚãĄńèÍŸè£řãĄŢãĆŇãĆŃAIMLèęAçť ăăĆŠåő§èąŇãĄŹãĆ

ãČęãČijãĆűãĄÍãĄŮãĄęauthoriseèęAçť ăăĄőroleåśđæĂğãĄğæŇĞåőŽãĄŢãĆŇãĄ§æÍľéŹŘãĄŇçĎąãĄĎåăť åŘĹãĂĄauthoriseèęAç
èľşçť řãĄŕ SecurityãĄő *æĽ£èћ*■ ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăăĄŢãĄĎãĂĆ

- åśđæĂğ

| ãČŚãČľãĆąãĆŽãĆŹãĆĆãĆŠãĆŤĚéăĽæŸŐ | | | |
|---|---|---|---|
| role | string | Yes | ãČ■ãČijãČńåŘ■ãĂĆ*ãČęãČijãĆűãĆřãČńãČijãČŮãČŢãĆąãĆd'ãČń* ãĄğèęŔåőŽ |
| denied_srai | string | No | èћ■èÍijåď śæŢŮæŹĆãĄősraiçŤÍçŹžèľ śæŰĞ |

*ãČęãČijãĆűãĆřãČńãČijãČŮãČŢãĆąãĆd'ãČń* ãĄğèęŔåőŽãĄŢãĆŇãĄęãĄĎãĄłãĄĎâĂİãČ■ãČijãČńåŘ■âĂİãĆŚæŇĞåőŽãĄŮãĄ§

- ä¡£çŤÍä¿Ń

ãĄŞãĄőä¡£çŤÍä¿ŃãĄğãĄŕãĂĄãČęãČijãĆűãĄőæÍľéŹŘãĄńâĂİrootâĂİãĄŇãĄĆãĆŃåăť åŘĹãĄőãĄ£ãĂĄvocabularyãĄőåĘĚåőźãĆ
ãČęãČijãĆűãĄńæÍľéŹŘãĄŇãĄłãĄĎåăť åŘĹãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄğåőŽç¿ľãĄŢãĆŇãĄ§ãĂĄdenied_sraiïij

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãČIJãĆ■ãČčãČŰãČl'ãČłãČłãĆźãČĹæŢř</pattern>
        <template>
            <authorise role="root">
                <vocabulary />
            </authorise>
        </template>
    </category>
</aiml>
```

ãĄ¿ãĄ§ãĂĄdenied_sraiåśđæĂğãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄÍãĄğãĂĄãČęãČijãĆűãĄńæÍľéŹŘãĄŇçĎąãĄĎåăť åŘĹãĄőãČĞãČŢã

ïijĹdenied_sraiãĄőåĂd'ãĆŠpatternèęAçť ăăĄńåőŽç¿l'ãĄŮãĄ§ãĆůãČŁãČłãĆłãĄŇå£ĚèęĄãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆïijL'

```
<?xml version="1.0" encoding="UTF-8"?>
<aiml version="2.0">
    <category>
        <pattern>ãČIJãĆ■ãČčãČŰãČl'ãČłãČłãĆźãČĹæŢř</pattern>
            <template>
                <authorise role="root" denied_srai="ACCESS_DENIED">
                    <vocabulary />
                </authorise>
            </template>
    </category>
</aiml>
```

éŰćéĂčéăĚçŻő: *æĽ£èћ*■

### 6.1.3 bot

[1.0]

botèęAçt’ããAŕãĂAbotåŻžæIJL’ãAőãČŮãČ■ãČŚãČĘãĆčãĆŚåŔŰå¿ŮãAŲãA¿ãAŹãĂĆãAŞãAőèęAçt’ããAŕèł■ãA£è¿ijãA£åřĆçŤĺãA
ãČŮãČ■ãČŚãČĘãĆčãAŕãĂA*propertiesãČŢãĆąãĆd’ãČń* ãAğèęŔåőŽãAŹãĆŃãAŞãAĺãAğãĂAäżżæĎŔãAőæČĚåäśãĆŚåŻžåőŽåAc

- åśđæĂğãĂĂïijĹå■ŘèęAçt’ããAğãAőæŇĞåőŽãĆĆåŔŕèČ¡ïijL’

| ãČŚãČľãĆąãĆčãĆąãĆčãĆŚãĆĘãĆĚéäĺňæŸŐ | | | |
|---|---|---|---|
| name | string | Yes | propertiesãČŢãĆąãĆd’ãČńãAğèęŔåőŽãAŲãA§ãĂAãČŮãČ■ãČŚãČĘãĆčåŘ■ãĆŚæŇĞåőŽ |

ãČŮãČ■ãČŚãČĘãĆčåŘ■ãAŕåd’L’æŢřåŘ■ãAĺåŘŇãAŸä¡■ç¡õãAęãAŞãAńãAŁãĆŃçĆžãĂAåd’ğæŰĞå■ŮãČżåřŔæŰĞå■ŮãĂAåĚíèğ

ãČŮãČ■ãČŚãČĘãĆčãAńãAŕãĂAäżżæĎŔãAőåŻžæIJL’åĂd’äžěåd’ŰãAńãĂAąĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l’ãĆŠç¡õ

- ä¡£çŤĺä¿Ń

ãČŮãČ■ãČŚãČĘãĆčãAĺãAŲãAęãĂAnameãĂAbirthdateãĂAapp_versionãĂAgrammar_versionãAŇçŹžéŇšãAŢãĆŇãAęãAĎãĆŃå

```
 <category>
    <pattern>ãAĆãAłãA§ãAŕèłřïijş</pattern>
    <template>
        çğAąãAőåŘ■åL’■ãAŕ<bot name="name" />ãAğãAŹãĂĆ
        <bot name="birthdate" />çŤ§ãA¿ãĆŇãAğãAŹãĂĆ
        ãĆćãČŮãČłãĆśãČijãĆůãČğãČşãČŘãČijãĆÿãČğãČşãAŕ<bot name="app_version" />
↪ãAğãAŹãĂĆ
        ãĆřãČl’ãČđãČijãČŘãČijãĆÿãČğãČşãAŕ<bot name="grammar_version" />ãAğãAŹãĂĆ
    </template>
</category>
```

nameåśđæĂğãAńãĂAçŹžéŇšãAŢãĆŇãAęãAłãAĎãČŮãČ■ãČŚãČĘãĆčåŘ■ãĆŚæŇĞåőŽãAŲãA§åät’åŘĹãĂAąĆůãČŁãČłãĆłåśŢéŮ

botãAőå■ŘèęAçt’ããAĺãAŲãAęnameãĆŠåĹl’çŤĺãAŹãĆŃãAŞãAĺãAğãĂAnameåśđæĂğãAĺåŘŇãAŸåĘĚåőźãĆŠèíŸèijL’ãAŹãĆŃãA

```
<category>
    <pattern>ãAĆãAłãA§ãAŕèłřãAğãAŹãAŃïijş</pattern>
    <template>
        çğAąãAőåŘ■åL’■ãAŕ<bot><name>name</name></bot>ãAğãAŹãĂĆ
        <bot><name>birthdate</name></bot>çŤ§ãA¿ãĆŇãAğãAŹãĂĆ
        ãĆćãČŮãČłãĆśãČijãĆůãČğãČşãČŘãČijãĆÿãČğãČşãAŕ<bot><name>app_version</name></
↪bot>ãAğãAŹãĂĆ
        ãĆřãČl’ãČđãČijãČŘãČijãĆÿãČğãČşãAŕ<bot><name>grammar_version</name></bot>
↪ãAğãAŹãĂĆ
    </template>
</category>
```

å■ŘèęAçt’ããAőnameãAńãĂAçŹžéŇšãAŢãĆŇãAęãAłãAĎãČŮãČ■ãČŚãČĘãĆčåŘ■ãĆŚæŇĞåőŽãAŲãA§åät’åŘĹãĂAåő§èąŇæŹĆ
*default-property* ãAőåőŽç¿l’åĂd’ãAŃè£ŤãĆŁãA¿ãAŹãĂĆ ïijĹdefault-propertyãAŅåőŽç¿l’ãAŢãĆŇãAęãAĎãAłãAĎåät’åŘĹãĂAd
getãAőåőŽç¿l’åĂd’ãAŃè£ŤãĆŁãA¿ãAŹãĂĆïijL’

åřŽãĂA*properties_jsonãĆĺãČşãČĘãĆčãČĘãĆč* ãĆŚåĹl’çŤĺãAŲãAęãĂAãČŮãČ■ãČŚãČĘãĆčãAőåĂd’ãAńJ-
SONå¡ćåijŔãĆŚæŇĞåőŽãAŲãA§åät’åŘĹãĂAåŘŰå¿ŮãAŢãĆŇãĆŃãČĞãČijãĆ£ãAŕãČŢãĆąãĆd’ãČńãAőåĘĚåőźãAĺãAőãĆĆãAőã
`properties_jsonãĆĺãČşãČĘãĆčãČĘãĆč` ãAńãĂAäżěäÿŇãAőJSONãČŢãĆąãĆd’ãČńãĆŠ
âĂŸtest_json.jsonâĂŹ ãAĺãAŲãAęéĚ■ç¡õãAŲãA§åät’åŘĹãĂA

```
{
  "key1": "value1",
  "key2":
    {
      "key2_1": "value2_1"
    }
}
```

<bot name="test_json" /> ãĄğåŔŰå¿ŮãĄŢãĆŇãĆŃåĂd'ãĄŕãĂĄäżëäÿŇãĄńæğŸãĄńçůĺéŻĘãĄŢãĆŇãĄ§æŰĞå■ŮåĹŮã

```
{"key1": "value1", "key2": {"key2_1": "value2_1"}}
```

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽproperties*

### 6.1.4 button

[2.1]

buttonèęAçt'ăãĄŕãĂĄäijŽèl'śäÿ■ãĄńãČęãČijãĆűãĄńãĆ£ãČČãČŮãĆŠä£ČãĄŹçŤĺéĂŤãĄğåĹl'çŤĺãĄŢãĆŇãĆŃãČłãČČãČĄãČąãČ
å■ŘèęAçt'ăãĄĺãĄŮãĄęãĂĄbuttonãĄőèąĺèĺŸãĄńä¡£çŤĺãĄŹãĆŃãČEąĆ■ãĆźãČĹãĂĄBotãĄńåŕ¿ãĄŹãĆŃpostbackãĂĄãČIJãĆ£ãČ

åŕ¿èl'śãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄãČłãČČãČĄãČąãČĞãĆčãĆćèęAçt'ăãĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘæđIJãĆŠè£ŤãĄŮãĄ
åő§éŽŻãĄőçŤżéĺćæŔŔçŤżç■L'ãĄŕãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l'ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄşåĞęçŘĘãĆŕãČl'ãĆźãĄőåĹűå¿ąãĄńä¿Ĺå■ŸãĄŮãĄ¿ãĄŹãĂĆ

- å■ŘèęAçt'ăãĂĂïijĹåśđæĂğãĄğãĄőæŇĞåőŽãĆĆåŔŕèČ¡ïijL'

| ãČŚãČl'ãČąąĆąąĆąąĆ

åŕ¿èľśãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄãČłãČČãČąãČąãČĞãĆčãĆćèęĄçť ăãĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘæđIJãĆŠè£ŤãĄŮãĄ
åő§éŽŽãĄőçŤżéÍćæŔŔçŤżç■Ľ ãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČńãČijãĆůãČğãČşåőŽç¿ľ ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄ§åĞęçŘĘãĆŕãČľ ãĆźãĄőåĹűå¿ąãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆ

- å■ŘèęĄçť ăãĂĂïijĹåśđæĂğãĄğãĄőæŇĞåőŽãĆĆåŔŕèČ¡ïijĽ

| ãČŚãČľãČąãĆčãĆąãĆčãĆŚãĆŤãĆĚéäĺňæŸŐ | | | |
|---|---|---|---|
| title | string | Yes | ãĆńãČijãČĽãĄőãĆ£ãĆd'ãČĹãČńãĆŠèĺŸèijĽãĄŮãĄ¿ãĄŹãĂĆïijĹçľžæŰĞå■ŮãĆŠèĺśåőźãĄŮãĄ¿ãĄ |
| subtitle | string | No | ãĆńãČijãČĽãĄńåŕ¿ãĄŹãĆŃè£¡åŁăæČĚåăśãĆŠèĺŸèijĽãĄŮãĄ¿ãĄŹãĂĆ |
| image | string | Yes | ãĆńãČijãČĽçŤĺãĄőçŤżåČŔURLç■Ľ ãĆŠèĺŸèijĽãĄŮãĄ¿ãĄŹãĂĆïijĹçľžæŰĞå■ŮãĆŠèĺśåőźãĄŮãĄ |
| button | string | Yes | ãĆńãČijãČĽçŤĺãĄőãČIJãĆ£ãČşæČĚåăśãĆŠèĺŸèijĽãĄŮãĄ¿ãĄŹãĂĆ |

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>æd'IJçt'ć</pattern>
    <template>
        <card>
            <title>ãĆńãČijãČL'ãČąãČŃãČěãČij</title>
            <subtitle>ãĆńãČijãČL'ãČąãČŃãČěãČijèl'şçt'ŕæČĚåăś</subtitle>
            <image>https://searchsite.com/image.png</image>
            <button>
                <text>æd'IJçt'ćãĄŮãĄ¿ãĄŹãĄŃïij§</text>
                <url>https://searchsite.com</url>
            </button>
        </card>
    </template>
</category>
```

éŰćéĂčéăĚçŻő: *button*, *image*

### 6.1.6 carousel

[2.1]

carouselèęĄçť ăãĄŕãČłãČČãČąãČąãČĞãĆčãĆćèęĄçť ăãĄğãĂĄãĆńãČijãČL'èęĄçť ăãĆŠèd'ĞæŢŕåĹľçŤĺãĄŮãĆ£ãČČãČŮãĆźãČńãĄŞãĆŇãĆĽãĄőãČłãČČãČąãČąãČĞãĆčãĆćèęĄçť ăãĄŹãĄźãĄęãĆŠåŘńãĆĂãČąãČŇãČěãČijãĄŇèąĺçd'žãĄŢãĆŇãĄ¿ãĄŹãĂĆ

åŕ¿èľśãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄãČłãČČãČąãČąãČĞãĆčãĆćèęĄçť ăãĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘæđIJãĆŠè£ŤãĄŮãĄ
åő§éŽŽãĄőçŤżéÍćæŔŔçŤżç■Ľ ãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČńãČijãĆůãČğãČşåőŽç¿ľ ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄ§åĞęçŘĘãĆŕãČľ ãĆźãĄőåĹűå¿ąãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆ

- å■ŘèęĄçť ă

| ãČŚãČľãČąãĆčãĆąãĆčãĆŚãĆŤãĆĚéäĺňæŸŐ | | | |
|---|---|---|---|
| card | string | Yes | èd'ĞæŢŕãĄőãĆńãČijãČĽãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆäÿÅåžęãĄńãĆńãČijãČĽãĆŠ1ãĄd'èąĺçd'žãĂ |

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>ãČńãĆźãČĹãČl'ãČşæd'IJçt'ć</pattern>
    <template>
        <carousel>
            <card>
                <title>ãĆd'ãĆ£ãČłãĆćãČş</title>
                <subtitle>ãĆd'ãĆ£ãČłãĆćæŰŹçŘĘåžŮãĄőæd'IJçt'ć</subtitle>
                <image>https://searchsite.com?q=italian</image>
                <button>ãĆd'ãĆ£ãČłãĆćãČşæd'IJçt'ć</button>
            </card>
            <card>
```

(continues on next page)

(continued from previous page)

```
                <title>ãČŢãČňãČşãČĄ</title>
                <subtitle>ãČŢãČl'ãČşãĆźæŰŹçŘĘåžŮãĄőæd'IJçt'ć</subtitle>
                <image>https://searchsite.com?q=french</image>
                <button>ãČŢãČňãČşãČĄæd'IJçt'ć</button>
            </card>
        </carousel>
    </template>
</category>
```

éŰćéĂčéäĚçŻő: *card*, *button*, *image*

### 6.1.7 condition

[1.0]

conditionèęĄçt'ăăĄŕãĂĄtemplateåĘĚãĄğãĄőæİąäżűåĹd'æŰ■ãĆŠèąŇãĄĘéŽŻãĄńä¡£çŢĺĺãĄŮãĂĄswitch-caseãĄõãĆĹãĄĘãĄłåĞęçŘĘãĆŠèĺŸèijL'ãĄğãĄ■ãĄ¿ãĄŹãĂĆ

conditionãĄőåśđæĂğãČżå■ŘèęĄçt'ăăĄğæŇĞåőŽãĄŮãĄ§åd'L'æŢřãĄĺåĹd'åőŽåĂd'ãĄőçţĎãĄ£åŘĹãĆŔãĄŻãĄğæİąäżűåĹd'åőŽãĆå■ŘèęĄçt'ăăĆŠä¡£çŢĺĺãĄŹãĆŃãĄŞãĄĺãĄğèd'ĞæŢřãĄőæİąäżűãĆŠåĹŮèĺŸãĄŹãĆŃãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆ

åŕ¿èśąåd'L'æŢřãĄńãĄŕãĂĄget/setãĄğåőŽç¿l'ãĄŮãĄ§ãĆřãČ■ãČijãČŘãČńåd'L'æŢřãĂĄãČ■ãČijãĆńãČńåd'L'æŢřãĄĺãĄĺãĆĆãĄńãĄ

- åśđæĂğ

| ãČŚãČľãČąãĆźãĆăĆĹãĆŠãĆĽĚéäĺňæŸŐ | | | |
|---|---|---|---|
| name | åd'L'æŢřåŘ■o | | åĹĘåšŘæİąäżűãĄĺãĄŹãĆŃãĆřãČ■ãČijãČŘãČńåd'L'æŢř(name)åŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |
| var | åd'L'æŢřåŘ■o | | åĹĘåšŘæİąäżűãĄĺãĄŹãĆŃãČ■ãČijãĆńãČńåd'L'æŢř(var)åŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |
| data | åd'L'æŢřåŘ■o | | åĹĘåšŘæİąäżűãĄĺãĄŹãĆŃãĆřãČ■ãČijãČŘãČńåd'L'æŢř(data)åŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |
| bot | ãČŮãČ■ãČŚãČĘãČĘãŘ■ | | æİąäżűãĄĺãĄŹãĆŃBotåŽžæIJL'æČĚåăśïijĹãČŮãČ■ãČŚãČĘãĆčïijL'åŘ■ãĆŠæŇĞåőŽãĄŮãĄ |
| value | åĹd'åőŽåĂŇo | | åĹĘåšŘæİąäżűãĄĺãĄłãĆŃåĂd'ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆïijĹåd'ğæŰĞå■ŮãČżåřŔæŰĞå■ŮãĂĄ |
| regex | åĹd'åőŽåĂŇo | | åĹĘåšŘæİąäżűãĄĺãĄłãĆŃåĂd'ãĆŠæ■čèęŔèąĺçŔ¿ãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆåĹd'åőŽãĄŕåőŇåĚĺã |

- å■ŘèęĄçt'ă

| ãČŚãČľãČąãĆźãĆăĆĹãĆŠãĆĽĚéäĺňæŸŐ | | | |
|---|---|---|---|
| li | string | No | æŇĞåőŽãĄŮãĄ§åd'L'æŢřãĄńåŕ¿ãĄŹãĆŃåĹĘåšŘæİąäżűãĆŠèĺŸèijL'ãĄŮãĄ¿ãĄŹãĂĆ |

ãĂĂåśđæĂğãĄőåŘĎãĆŚãČľãČąãČijãĆ£ãĆĆå■ŘèęĄçt'ăăĄĺãĄŮãĄęæŇĞåőŽãĄğãĄ■ãĄ¿ãĄŹãĂĆ

conditionèęĄçt'ăăĄńãĄŕãĂĄåd'L'æŢřãĄĺåĹd'åőŽåĂd'ãĄőèĺŸèijL'æŰźæşŢãĄńãĆĹãĆŁãĂĄæňąãĄőïijŞãĄd'ãĄőåĞęçŘĘæŰźåijŘ

- å■ŸäÿĂåĹd'åőŽïijŽ `li` å■ŘèęĄçt'ăăĆŠä¡£çŢĺĺãĄŽãĄŽãĄńãĂĄïijŚãĄd'ãĄőåd'L'æŢřãĄĺåĹd'åőŽåĂd'ãĄőçţĎãĄ£åŘĹãĆŔãĄ
- æİąäżűåĹĘåšŘïijŽ condition ãĄĺãĄŮãĄęåŕ¿èśąãĄĺãĄŹãĆŃïijŚãĄd'ãĄőåd'L'æŢřãĆŠèęŔåőŽãĄŮãĂĄ`li` å■ŘèęĄçt'ăæŕŐãĄńåĹd'åőŽåĂd'ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğãĂęd'ĞæŢřãĄőæİąäżűãĄńåŕ¿å£IJãĄŮãĄ¿ãĄŹãĂĆ
- èd'ĞæŢřæİąäżűãĄğãĄőåĹĘåšŘïijŽ `li` å■ŘèęĄçt'ăæŕŐãĄńåd'L'æŢřãĄĺåĹd'åőŽåĂd'ãĄőçţĎãĄ£åŘĹãĆŔãĄŻãĆŠæŇĞåőŽã

ãĄŞãĄőïijŞãĄd'ãĄőåĞęçŘĘæŰźåijŔãĄĺãĄŕçŢřãĄłãĆŃèĺŸèijL'æŰźæşŢãĄőåăt'åŘĹãĄńãĄŕãĂĄãĆůãČŁãČłãĆłåśŢéŰŃæŹĆãĄń

ïijĹäÿ■æ■čä¿ŃïijŽåd'L'æŢřãĄĺåĹd'åőŽåĂd'ãĄőçţĎãĄ£åŘĹãĆŔãĄŻãĄŅæĹŘçńŇãĄŮãĄłãĄĎåăt'åŘĹãĆĎãĂĄâŹconditionâŹ

äžĕäÿŃãĄńãĂĄåŘĎæŰźåijŔãĄgãĄőconditionãĄőèÍŸèijL'æŰźæşŢãĆŠèłñæŸŐãĄŮãĄ¿ãĄŹãĂĆ

### å■ŸäÿĂåĹď åőŽ

conditionèęAçt'ăãAĺãĄŮãĄęãĂąïijŚãAd'ãĄőåd'L'æŢřãAĺåĹd'åőŽåĂd'ãĄőçţĎãĄ£åŘĹãĆŔãĄŽãĆŠæŇĞåőŽãĄŹãĆŃæŰźåijŔãĄ

ãĄŞãĄőèÍŸèijL'æŰźæşŢãĄŕãĂĄåd'L'æŢřåĂd'ãĄőåĹd'åőŽçţŘæđIJãĄŇtrueãĄőåät'åŘĹãĄńèęAçt'ăãĄőæŰĞå■ŮåĹŮãĆŠè£ŤãĄŮ

äžĕäÿŃãĄőä¡£çŤĺä¿ŃãĄőæğŸãĄń4çĺőéąđãĄőèÍŸèijL'æŰźæşŢãĄŇãĄĆãĆŁãĂąãĄĎãĄŽãĆŇãĆĆåŘŇãĄŸåŃŢä¡IJãĆŠçd'žãĄŮã

- ä¡£çŤĺä¿Ń

```
<condition name="ãČŽãČČãČĹ" value="çŁň">çğĄãĆĆçŁňæt'¿ãĄğãĄŹ</condition>
<condition name="ãČŽãČČãČĹ"><value>çŁň</value>çğĄãĆĆçŁňæt'¿ãĄğãĄŹ</condition>
<condition value="çŁň"><name>ãČŽãČČãČĹ</name>çğĄãĆĆçŁňæt'¿ãĄğãĄŹ</condition>
<condition><name>ãČŽãČČãČĹ</name><value>çŁň</value>çğĄãĆĆçŁňæt'¿ãĄğãĄŹ</condition>
```

nameåd'L'æŢřijŽâĂİãČŽãČČãČĹâĂİãĄőåĂd'ãĄŇâĂİçŁňâĂİãĄgãĄĆãĄčãĄ§åät'åŘĹãĂĄâĂİçğĄãĆĆçŁňæt'¿ãĄğãĄŹâĂİãĆŠè

### æİąäžűåĹĘåšŘ

condition ãĄőåśđæĂğãĆżå■ŘèęAçt'ăãĄğïijŚãAd'ãĄőåd'L'æŢřãĆŠèÍ■åőŽãĄŮãĂĄ `li`
å■ŘèęAçt'ăãĄğår¿èśąãĄĺãĄłãĆŃåĂd'ãĄńår¿ãĄŹãĆŃåĹĘåšŘãĆŠèÍŸè£řãĄŮãĄ¿ãĄŹãĂĆåĹĘåšŘæŰźæşŢãĄŕswitch-caseãĄńäijjãĄęãĄĎãĄ¿ãĄŹãĂĆ
condition ãĄőåd'L'æŢřãĄőåĘĚåőźãĆŠ `li`
å■ŘèęAçt'ăãĄőåĹd'åőŽåĂd'ãĄÍærfŤèijČãĄŮãĂĄtrueãĄńãĄłãĄčãĄ§æİąäžűãĄőåĘĚåőźãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ
åĹĘåšŘæİąäžűãĄńåŘĹèĞt'ãĄŮãĄłãĄĎåät'åŘĹãĂĄåĹd'åőŽåĂd'ãĄŇæŇĞåőŽãĄŢãĆŇãĄęãĄĎãĄłãĄĎ `li`
å■ŘèęAçt'ăãĄőåĘĚåőźãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆåĹd'åőŽåĂd'ãĄŇæŇĞåőŽãĄŢãĆŇãĄęãĄĎãĄłãĄĎ `li`
å■ŘèęAçt'ăãĄŇãĄłãĄĎåät'åŘĹãĄŕãĂĄä¡ŢãĆĆè£ŤãĄŮãĄ¿ãĄŹãĆŞãĂĆ

äžĕäÿŃãĄőä¡£çŤĺä¿ŃãĄgãĄŕãĂĄnameåd'L'æŢřijŽâĂİãČŽãČČãČĹâĂİãĄőåĂd'ãĆŠèl'Ţä¿ąãĄŮãĄ¿ãĄŹãĂĆèl'Ţä¿ąãĄőåĎłåĚĹé

- ä¡£çŤĺä¿Ń

```
<condition name="ãČŽãČČãČĹ">
    <li value="çŁň">çğĄãĆĆçŁňæt'¿ãĄğãĄŹ</li>
    <li value="çŇń">çŇńãĄŇäÿĂçŢłåě¡ãĄ■ãĄğãĄŹ</li>
    <li>ãČŽãČČãČĹãĄŕéčijãĄčãĄęãĄłãĄĎãĄğãĄŹ</li>
</condition>

<condition>
    <name>ãČŽãČČãČĹ</name>
    <li value="çŁň">çğĄãĆĆçŁňæt'¿ãĄğãĄŹ</li>
    <li value="çŇń">çŇńãĄŇäÿĂçŢłåě¡ãĄ■ãĄğãĄŹ</li>
    <li>ãČŽãČČãČĹãĄŕéčijãĄčãĄęãĄłãĄĎãĄğãĄŹ</li>
</condition>
```

### èď ĞæŢřæİąäžűãĄgãĄőåĹĘåšŘ

`li`
å■ŘèęAçt'ăæfŐãĄńæİąäžűåĹĘåšŘãĆŠæŇĞåőŽãĄŹãĆŃåät'åŘĹãĄőèÍŸèijL'æŰźæşŢãĄgãĂĄåĹĘåšŘæŰźæşŢãĄŕifæŰĞãĄőéŽĘå
`li` å■ŘèęAçt'ăãĄgåőŽç¿l'ãĄŢãĆŃãĄ§åŘĎæİąäžűãĄŇéăĘæňąãČãĄĆgãČČãĆŕãĄŢãĆŃãĄ¿ãĄŹãĂĆåŘĎ''li''
å■ŘèęAçt'ăãĄgãĄŕçŢřãĄłãĆŃåd'L'æŢřãĂĄåĹd'åőŽåĂd'ãĆŠæŇĄãĄd'ãĄŞãĄĺãĄŇãĄgãĄ■ãĄ¿ãĄŹãĂĆ

æÌąäżűãĄŃtrueãĄńãĄłãĆŃãĄÍãĄÌãĄőæŹĆçĆźãĄğèľŢä¿ąãĄŃåőŃäžĘãĄŮãĂĄèľšå¡ŞãĄŹãĆŃ `li` å■ŘèęĄçťăăĄőåĘĚåőźãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ

äżěäÿŃãĄőä¡£çŤĺä¿ŃãĄğãĄŕãĂĄnameåď˙L˙æŢřïijŽâĂÌãČŽãČČãČĹâĂÌãĄÍãĂĄnameåď˙L˙æŢřïijŽâĂÌéčšãĄ£çL˙l˙âĂÌãĄőåÅď˙ãĆŠ

- ä¡£çŤĺä¿Ń

```
<condition>
    <li name="ãČŽãČČãČĹ" value="çłň">çğĄãĆĆçŁňæt’¿ãĄğãĄŹ</li>
    <li value="çŃń"><name>ãČŽãČČãČĹ</name>çŃńãĄŃäÿĂçŢłåě¡ãA■ãĄğãĄŹ</li>
    <li name="éčšãĄ£çL’l’"><value>ãĆşãČijãČŠãČij</value>
↪ãČđãČşãČĞãČłãČşãĄÑãĄĐãĄĐãĄğãĄŹ</li>
    <li><name>éčšãĄ£çL’l’</name><value>çt’ĚèŃű</value>
↪ãĆćãČijãČńãĆřãČńãĆd’ãĄŇåě¡ãA■ãĄğãĄŹ</li>
    <li>åě¡ãA■ãĄłãĆĆãĄőãĄŕãĄĆãĆŁãA¿ãĄŹãĄŃ</li>
</condition>
```

### ãČńãČijãČŮåĞęçŘĘ

æÌąäżűãĄńãĆĹãĆŁconditionåĞęçŘĘãĆŠçźřãĆŁè£ŤãĄŹåät’åŘĹãĂĄ<loop /> ãĆŠ `li` ãĄőå■ŘèęĄçť˙ăãĄÍãĄŮãĄęèÍŸèijL˙ãĄŮãĄ¿ãĄŹãĂĆ

éĂŽåÿÿ<li>ãĄğåĹĘåšŘãĄŮãĄ§åät’åŘĹãĂĄåĞęçŘĘåĘĚåőźãĆŠ<template>ãĄÍãĄŮãĄęè£ŤãĄŮãĄ¿ãĄŹãĄŃãĂĄâĂŹ<loop />âĂŹãĄŃãĄĆãĆŃåät’åŘĹãĂĄår¿èśąãĄÍãĄłãĆŃ<li>ãĄńåĹĘåšŘãĄŮãĂĄ<li>ãĄőåĞęçŘĘãĆŠçţĆãĄĹãĄ§å¿ŃãĂĄ<condition>ã

åřŽãĂĄïijŚãĄd’ãĄőconditionèęĄçť˙ååĘĚãĄğåő§æŰ¡ãĄğãĄ■ãĆŃãČńãČijãČŮåĞęçŘĘãĄőåŽđæŢřãĄŕãĂĄãĆşãČşãČŢãĆčãĆřãČr
*åĹűéŹŘåĂd’åőŽç¿l’* ãĄő `max_search_condition` ãA¿ãĄğãĄÍãĄłãĆŁãA¿ãĄŹãĂĆ

åĹűéŹŘæŢřãĆŠèűĚãĄĹãĄęãČńãČijãČŮåĞęçŘĘãĆŠèąŃãĄčãĄ§åät’åŘĹãĂĄåĞęçŘĘä¿Ńåd’ŰãĄŃçŹžçŢ§ãĄŮãĄ¿ãĄŹãĂĆ

äżěäÿŃãĄőä¡£çŤĺä¿ŃãĄğãĄŕãĂĄåd’L˙æŢřâĂÌèl’śéąŃâĂÌãĆŠèl’Ţä¿ąãĄŮãĄęè£ŤãĄŹåĘĚåőźãĆŠæśžåőŽãĄŮãĄ¿ãĄŹãĄŃãĂĄåĹ

- ä¡£çŤĺä¿Ń

```
<condition var="èl’śéąŃ">
    <li value="èŁś">èŁśãĄŕä¡ŢãĄŃåě¡ãA■ãĄğãĄŹãĄŃ</li>
    <li value="éčšãĄ£çL’l’">ãĆşãČijãČŠãČijãĄŕãĄl’ãĄĘãĄğãĄŹãĄŃ</li>
    <li value="éŻŚèńĞ">ä¡ŢãĄŃãĄĐãĄĐãĄŞãĄÍãĄĆãĆŁãA¿ãĄŮãĄ§ïij§</li>
    <li><think><set var="èl’śéąŃ">éŻŚèńĞ</set></think><loop /></li>
</condition>
```

éŰćéĂčéăĚçŻő: *li*, *get*, *set*, *bot*

## 6.1.8 date

[1.0]

dateèęĄçť˙ăãĄŕãĂĄæŮěäżŸãĄÍæŹĆåĹżãĄőæŰĞå■ŮåĹŮãĆŠåŔŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆå§žæžŰåÅď˙ãĄŕãĆůãĆźãČĘãČããĄőçŔ¿ã
ãĄğãĂĄlocale/timeãĄŃæŇĞåőŽãĄŢãĆŇãĄęãĄĐãĆŃåät’åŘĹãĂĄè£ŤãĄŹåĘĚåőźãĄŕæňąãĄőæğŸãĄńåď˙L˙åŇŰãĄŮãĄ¿ãĄŹãĂĆ

- localeãĆŠæŇĞåőŽïijŽãĂĂåŽ¡ãĆşãČijãČL˙ãĆŠåĚČãĄńãĂĄèl’šå¡ŞãĄŹãĆŃåIJŕå§§ãĄőæŮěæŹĆãĄÿãĄőæŔŽçőŮãĆŠèąÑã
- timeãĆŠæŇĞåőŽïijŽãĂĂæŇĞåőŽãĄŢãĆŇãĄ§æŮěæŹĆãĆŠå§žæžŰåÅď˙ãĄÍãĄŮãĄęåĞęçŘĘãĄŮãĄ¿ãĄŹãĂĆ

æŮěäżŸãČżæŹĆåĹżãĄőåĞžåŁŽå¡ćåijŔãĄőæŇĞåőŽãĄńãĄŕãĂĄPythonãĄőæŮěæŹĆæŰĞå■ŮåĹŮãĄőæŽÿåijŔãĆŠä¡£çŤĺãĄŮãĄ
èl’şçt’řãĄŕ PythonãĄőãČđãČŃãČěãĆćãČń(datetime)ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĐãĂĆ

- åśđæĂğãĂĂïijĹå■ŘèęĄçť˙ăãĄğãĄőæŇĞåőŽãĆĆåŔŕèČ¡ïijL˙

| ãČŚãČľãČăąąčăĵăČăąąčăĵăČăąąčăĵă

deletetripleèęAçť’ăăAŕăĂĄRDFăČŁăČńăČČăĆÿăČŹăČijăĆźăĄÑăĆĽ’ăĆÍăČńăČąăČşăČĹăĆŠåĽ’ŁéŹd’ăĄŮăĄ¿ăĄŹăĂĆ

æŇĞåőŽăĄğăĄ■ăĆŃăĆÍăČńăČąăČşăČĹăĄŕèţůåŃŢæŹĆăĄńRDFăČŢăĆąăĆd’ăČńăĄÑăĆĽ’èł■ăĄ£è¿ijăĄ¿ăĆŇăĄ§ăĆÍăČńăČąăČş
*addtriple* ăĄğè£¡åŁăăĄŢăĆŇăĄ§ăĆÍăČńăČąăČşăČĹăĄğăĄŹăĂĆ
deletetripleèęAçť’ăăĄőçţŘæđIJæŰĞå■ŮåĹŮãĄŕăĂĄåÿÿăĄńçľžæŰĞå■ŮãĄńãĄłăĆŁãĄ¿ăĄŹăĂĆ
èľşçť’řăĄŕăĂĄ*RDFăĆţăČİăČijăČĹ* ăĆŠåŔĆçĚğăĄŮăĄęăĄŔăĄăăĄŢăĄĎăĂĆ

- å■ŘèęAçť’ă

| ãČŚăČľăČăąăĆăĆăĆ

```
<category>
    <pattern>URLãĄŕ * ãĄğãĄŹãĂĆ</pattern>
    <template>
        <think>
            <set var="url"><normalize><star /></normalize></set>
        </think>
        <denormalize><get var="url" /></denormalize>ãĆŠå¿l'åĚČãĄůãĄ¿ãĄŹãĂĆ
    </template>
</category>
```

Input: URLãĄŕwww.***.comãĄğãĄŹãĂĆ
Output: www.***.comãĆŠå¿l'åĚČãĄůãĄ¿ãĄŹãĂĆ

<denormalize />ãĄŕ<denormalize><star /></denormalize>ãĄĺåŘŇç¿l'ãĄğãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>URLãĄŕ *ãĄğãĄŹãĂĆ</pattern>
    <template>
         <denormalize />ãĄńåd'L'æŔŻãĄůãĄ¿ãĄŹãĂĆ
    </template>
</category>
```

Input: URLãĄŕ___ãĄğãĄŹãĂĆ
Output: ***ãĄńåd'L'æŔŻãĄůãĄ¿ãĄŹãĂĆ

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽdenormal*, *normalize*

### 6.1.12 eval

[1.0]

evalèęAçt'ăãĄŕãĂĄ*learn*ãĂĄ*learnf* èęAçt'ăãĄőäÿĂéČĺãĄĺãĄůãĄęåĹl'çŤĺãĄŢãĆŇãĄ¿ãĄŹãĂĆ
evalèęAçt'ăãĄŕãĂĄåĘĚåőźãĆŠãČĘãĆ■ãĆźãČĹåŇŰãĄůãĄ§åĂd'ãĆŠè£ŤãĄůãĄ¿ãĄŹãĂĆ

evalèęAçt'ăãĄőåĘĚåőźãĄńgetèęAçt'ăç■L'ãĆŠèÍŸèijL'ãĄůãĄęãĄİãĄőåĂd'ãĄőåŘŰå¿ůãĄńåd'śæŢůãĄůãĄ§åät'åŘĹãĂĄ*default-get* ãĄőåĂd'ãĄŇèÍ■åőŽãĄŢãĆŇãĄ¿ãĄŹãĂĆ

æňąãĄőä¿ŃãĄğãĄŕãĂĄevalæŇĞåőŽãĄńãĆĹãĆŁãĂĄnameåđŇåd'L'æŢřâĂŹnameâĂŹãĄőåĂd'ïijŽâĂŹãČđãČ■ãČşâĂŹãĄĺãĂĄnameãĄİãĄőå¿ŃãĄŞãĄőlearnfãČŐãČijãČL'ãĄńåŘĹèĞt'ãĄŹãĆŃãĂĄâĂŹãČđãČ■ãČşãĄŕèłřãĄğãĄŹãĄŃâĂŹãĄĺãĄĐãĄĘåĚěåŁŻãĆŠ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĄőãČŽãČČãČĺãĄŕ * ãĄő * ãĄğãĄŹãĂĆ</pattern>
    <template>
        ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĺãĄŕãĂĄ<star />ãĄő<star index="2" />ãĄğãĄŹãĄ■ãĂĆ
        <think>
            <set name="animal"><star /></set>
            <set name="name"><star index="2" /></set>
        </think>
        <learnf>
            <category>
                <pattern>
                    <eval>
```

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(continued from previous page)

```
                    <get name="name"/>
                </eval>
                ãĄŕèłřãĄğãĄźãĄŃãĂĆ
            </pattern>
            <template>
                ãĄĆãĄłãĄŞãĄőãČŽãČČãČĹãĄő
                <eval>
                    <get name="animal"/>
                </eval>
                ãĄğãĄźãĂĆ
            </template>
        </category>
    </learnf>
</template>
</category>
```

Input: çğĄãĄőãČŽãČČãČĹãĄŕçŁňãĄőãČđãČ■ãČşãĄğãĄźãĂĆ
Output: ãĄĆãĄłãĄŞãĄőãČŽãČČãČĹãĄŕçŁňãĄőãČđãČ■ãČşãĄğãĄźãĄ■ãĂĆ
Input: ãČđãČ■ãČşãĄŕèłřãĄğãĄźãĄŃãĂĆ
Output: ãĄĆãĄłãĄŞãĄőãČŽãČČãČĹãĄőçŁňãĄğãĄźãĂĆ

éŰćéĂčéăĚçŻő: *learn*, *learnf*

### 6.1.13 explode

[1.0]

explodeèęĄçť'ããĄŕãĂĄåŕ¿èśąæŰĞå■ŮåĹŮãĆŠ1æŰĞå■Ůå■Ÿä¡■ãĄńåĹĘåL'šãĄŮãĂĄå■ŁèğŠãĆźãČŽãČijãĆźãĄğåŇžåĹĞãĆŁãĄâĂŹcoffeeâĂŹãĄĺåĚěåŁŻãĄŮãĄ§åăt'åŘĹãĂĄexplodeãĆŠæIJL'åŁźãĄńãĄŹãĆŃãĄĺãĂĄâĂŹc o f f e eâĂŹãĄńåd'L'æŔŻãĄŮãĄ¿ãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>EXPLODE *</pattern>
    <template>
        <explode><star /></explode>
    </template>
</category>
```

<explode />ãĄŕãĂĄ<explode><star /></explode>ãĄĺåŘŇç¿l'ãĄğãĄźãĂĆæŻÿãĄ■æŔŻãĄĹãĆŃãĄĺäżëäÿŃãĄőæğŸãĄńãĄłãĆŁãĄ

```
<category>
    <pattern>EXPLODE *</pattern>
    <template>
        <explode />
    </template>
</category>
```

Input: EXPLODE coffee
Output: c o f f e e

éŰćéĂčéăĚçŻő: *implode*

### 6.1.14 image

[2.1]

imageèèęAçt'ããĄŕãČłãČČãČĄãČąãČĞãĆčãĆćèęAçt'ããĄğãĂĄçŤżåČŔãĄőæČĚåăśãĆŠè£ŤãĄŹãĄŞãĄÍãĄÑãĄğãĄ■ãA¿ãĄŹãĂĆ
åĘĚåőźãĄńãĂĄçŤżåČŔURLãĆĎãČŢãĆąãĆd'ãČńåŘ■ãĆŠæŇĞåőŽãĄŮãA¿ãĄŹãĂĆ

åŕ¿èl'śãĆÍãČşãĆÿãČşãĄğãĄŕãĂĄąČłãČČãČĄãČąãČĞãĆčãĆćèęAçt'ããĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘæđIJãĆŠè£ŤãĄŮãĄ
åő§éŽŻãĄőçŤżéÍćæŔŔçŤżç■L'ãĄŕãĂĄąĆşãČşãČŢãĆčãĆŕãČñãČijãĆůãČğãČşåőŽç¿l'ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄşåĞęçŘĘãĆŕãČl'ãĆźãĄőåĹűå¿ąãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>çŤżåČŔèąÍçd'ž</pattern>
    <template>
        <image>https://url.for.image</image>
    </template>
</category>
```

### 6.1.15 first

[1.0]

firstèęAçt'ããĄŕãĂĄèd'ĞæŢřå■ŸèłđãĄŃãĆL'ãĄłãĆŃæŰĞå■ŮåĹŮãĄńåŕ¿ãĄŮãĄęãĂĄåĚĹéă■ãĄőå■ŸèłđãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ
(æŰĞå■ŮåĹŮãĄőå■ŸèłđåĹĘåL'šæŹĆãĄńãĄŕãĂĄ *punctuation_chars*
ãĄőæŇĞåőŽãĄńãĆĹãĆŃçL'źåőŽæŰĞå■ŮéŹd'åd'ŰãĄőåĞęçŘĘãĆŠèąÑãĄĎãA¿ãĄŹãĂĆ)
åŔŰå¿ŮãĄńåd'śæŢŮãĄŮãĄ§ăăť'åŘĹãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČñãČijãĆůãČğãČşåőŽç¿l'ãĄő *default-get*
ãĄőåĂd'ãĄŇè£ŤãĆŁãA¿ãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĄőåŘ■åL'■ãĄŕ * ãĄğãĄŹ </pattern>
    <template>
        ãĄĆãĄłãĄ§ãĄőåŘ■åL'■ãĄŕ <first><star /></first> ãĄŢãĆŞãĄğãĄŹãĄ■ãĂĆ
    </template>
</category>
```

Input: çğĄãĄőåŘ■åL'■ãĄŕ åśśçŤř åd'łéČŐ ãĄğãĄŹ
Output: ãĄĆãĄłãĄ§ãĄőåŘ■åL'■ãĄŕåśśçŤřãĄŢãĆŞãĄğãĄŹãĄ■

RDFãČŁãČñãČČãĆÿãČŹãČijãĆźãĄőæd'IJçt'ćçţŘæđIJãĄńéĄl'çŤĺãĄŮãĄ§ăăť'åŘĹãĂĄçţŘæđIJãČłãĆźãČĹåĘĚãĄőåĚĹéă■ãČĞãČ
èl'şçt'řãĄŕãĂĄ*RDFãĆţãČİãČijãČĹ* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ
JSONå¡ćåijŔãĄőãČĞãČijãĆ£ãĄńãĄŕåŕ¿å£IJãĄŮãĄęãĄĎãA¿ãĄŻãĆŞãĂĆ

éŰćéĂčéăĚçŻő: *rest*

### 6.1.16 extension

[custom]

extensionèęÀçţ'ããĄŕãĂĄåŕ¿èľ'śãĆĺãČşãĆÿãČşãĄőãĆńãĆźãĆ£ãČđãĆd'ãĆžãĆŠå£ĚèęĄãĄĺãĄŹãĆŃèęÀçţ'ããĄńãĄłãĆŁãĄ¿ãĄŹãĂ
extensionèęÀçţ'ããĄğãĄŕãĂĄPythonãĄőåĞęçŘĘãĆŕãČl'ãĆźãĆŠåŚijãĄşåĞžãĄŹæl'§èČ¡ãĆŠæŔŘä¿ŻãĄŮãĂĄ
`programy.extensions.base.Extension`
ãĆd'ãČşãĆ£ãČŢãĆğãČijãĆźãĆŠåő§èčĚãĄŹãĆŃPythonãČćãĆÿãČěãČijãČńãĆŕãČl'ãĆźãĄÿãĄőãČŢãČńãČŠãĆźãĆŠæŇĞåőŽãĄŮã

extensionèęÀçţ'ããĄőåĘĚåőźãĄŇåĞęçŘĘãĆŕãČl'ãĆźãĄńåŕ¿ãĄŹãĆŃåijŢæŢřïijĹæŰĞå■ŮåĹŮïijL'ãĄĺãĄŮãĄęãĂĄåijŢãĄ■æÿąãĄ

èľşçţ'řãĄŕãĂĄ *Extensions* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

- åśđæĂğ

| ãČŠãČľãĆąãĆźãĆźãĆãĆŠåĚĚéëĺĺnæŸŐ | | | |
|---|---|---|---|
| path | string | Yes | extensionåĞęçŘĘãĆŕãČl'ãĆźãĄőãČŠãĆźåŘ■ |

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>
        GEOCODE *
    </pattern>
    <template>
         <extension path="programy.extensions.goecode.geocode.GeoCodeExtension">
             <star />
         </extension>
    </template>
</category>
```

éŰćéĂčéăĚçŻő: *Extensions*

### 6.1.17 formal

[1.0]

formalèęÀçţ'ããĄŕãĂĄåŕ¿èśąæŰĞå■ŮåĹŮåĘĚãĄőå■ŸèłđãĄőåĚĹéă■æŰĞå■ŮãĆŠåd'ğæŰĞå■ŮãĄńåd'L'æŔŻãĄŮãĄ¿ãĄŹãĂĆ

JSONå¡ćåijŔãĆĎãČłãĆźãČĹå¡ćåijŔãĄőãČĞãČijãĆ£ãĄńéĄl'çŤĺãĄŮãĄ§åăt'åŘĹãĂĄåŘĎèęÀçţ'ãæŕŐãĄńåĞęçŘĘãĄŇèąÑãĆŔãĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĄőåŘ■åL'■ãĄŕ * * </pattern>
    <template>
     <formal><star /></formal> <formal><star index="2"/></formal>
↪ãĄŢãĆŞãĂĄãĄŞãĆŞãĄńãĄąãĄŕ
    </template>
</category>
```

<formal />ãĄŕ<formal><star /></formal> ãĄĺåŘÑç¿l'ãĄğãĄŹãĂĆæŻÿãĄ■æŔŻãĄĹãĆÑãĄĺäžëäÿÑãĄőæğŸãĄńãĄłãĆŁãĄ¿ãĄŹã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĄőåŘ■åL'■ãĄŕ * * </pattern>
    <template>
        <formal /><formal><star index="2"/></formal>ãĄŢãĆŞãĂĄãĄŞãĆŞãĄńãĄąãĄŕ
```

(continues on next page)

(continued from previous page)

```
    </template>
</category>
```

Input: çğĄãĄőåŘ■åL’■ãĄŕ george washington
Output: George Washington ãĄŢãĆŞãĂĄãĄŞãĆŞãĄńãĄąãĄŕ

### 6.1.18 gender

[1.0]

genderèęAçţ’ăãĄŕãĂĄçŹžèľśæŰĞãĄńåŘńãĄ¿ãĆŇãĆŃæĂğåĹěãĆŠèąĺãĄŹäžžçğřäżčåŘ■èľđç■L’ãĆŠåŕ¿èśąãĄńãĂĄéĂĘãĄőæĂğ
åď’L’æŔŻåĘĚåőźãĄŕãĂĄ*genderãČŢãĆąãĆd’ãČń* ãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

åď’L’æŔŻæŰźæşŢãĄőæŇĞåőŽãĄńãĄŕåď’L’æŔŻåL’■ãĄĺåď’L’æŔŻå¿ŇãĄőãĆżãČČãČĹãĄğèĺŸèijL’ãĄŮãĂĄgenderãĄőãĆżãČČãČ

åď’L’æŔŻåŕ¿èśąãĄőåĹď’åőŽãĄŕãĂĄèŃśæŢřèĺŸåŔůïijŽå■ŁèğŠãĂĄãĆńãĆ£ãĆńãČŁïijŽåĚĺèğŠãĄńåď’L’æŔŻãĄŮãĄ§äÿŁãĄğèąŇã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>* ãĄńäijŽãĄĎãĄ¿ãĄŮãĄ§ãĄŃïij§</pattern>
    <template>
        ãĄĎãĄĹãĂĄ <gender><star/></gender> ãĄńäijŽãĄĎãĄ¿ãĄŮãĄ§ãĂĆ
    </template>
</category>
```

Input: å¡ijãĄńäijŽãĄĎãĄ¿ãĄŮãĄ§ãĄŃïij§
Output: ãĄĎãĄĹãĂĄå¡ijåěşãĄńäijŽãĄĎãĄ¿ãĄŮãĄ§ãĂĆ

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd’ãČńçőąçŘĘïijŽgender*

### 6.1.19 get

[1.0]

getèęAçţ’ăãĄŕãĂĄåď’L’æŢřãĄőåĂď’åŔŰå¿ŮãĄńçŤĺãĄĎãĄ¿ãĄŹãĂĆåŔŰå¿ŮãĄńåď’śæŢŮãĄŮãĄ§åăţ’åŘĹãĂĄãĆşãČşãČŢãĆčãĆ
*default-get* ãĄőåĂď’ãĄŇè£ŤãĆŁãĄ¿ãĄŹãĂĆ
ïijĹ*propertiesãČŢãĆąãĆd’ãČń* ãĄğãĄő âĂIJdefault-getâĂİ åőŽç¿l’ãĄŇåĎłåĚĹãĄŢãĆŇãĄ¿ãĄŹãĂĆïijL’
getãĄğåŔŰå¿ŮãĄğãĄ■ãĆŃåĂď’ãĄŕãĂĄ*set*
ãĆŠä¡£ãĄčãĄęãĂĄåŕ¿èl’śåĞęçŘĘåő§æŰ¡æŹĆãĄńåĂď’ãĄőèĺ■åőŽãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ
èţůåŃŢæŹĆãĄńåĹìæIJ§åĂď’ãĆŠèĺ■åőŽãĄŹãĆŃåăţ’åŘĹãĂĄ*defaultsãČŢãĆąãĆd’ãČń*
ãĄńèĺŸèijL’ãĄŹãĆŃãĄŞãĄĺãĄğãĂĄãĆřãČ■ãČijãČŘãČńåď’L’æŢř(name)ãĄĺãĄŮãĄęåĹl’çŤĺãĄŹãĆŃãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹ

åď’L’æŢřçĺőåĹěãĄńãĄŕ3çĺőéąđãĄĆãĆŁãĂĄãČ■ãČijãĆńãČńåď’L’æŢřãĄĺä£ìæŇĄæIJ§éŰŞãĄŇçŢřãĄłãĆŃãĆřãČ■ãČijãČŘãČńåď’L

- ãČ■ãČijãĆńãČńåď'L'æŢř(var)

âĂIJvarâĂİåśđæĂğãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄÍãĄğãĂąãČ■ãČijãĆńãČńåď'L'æŢřæL'śãĄĐãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

ãČ■ãČijãĆńãČńåď'L'æŢřãĄŕãĂĄset/getãĄŇèÍŸèijL'ãĄŢãĆŇãĄęãĄĐãĆŃcategoryãĄőçŕĐåŻšãĄőãĄ£ä£İæŇĄãĄŢãĆŇãĄ¿ãĄŹãĂ

- çűŹçűŽä£İæŇĄãĆřãČ■ãČijãČŘãČńåď'L'æŢř(name)

âĂIJnameâĂİåśđæĂğãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄÍãĄğãĂąãĆřãČ■ãČijãČŘãČńåď'L'æŢřæL'śãĄĐãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆãĆřãČ

ãĄ¿ãĄ§ãĂąãĆřãČ■ãČijãČŘãČńåď'L'æŢřãĄőåĘĚåőźãĄŕçűŹçŽĐãĄńä£İæŇĄãĄŮãĄęãĄŁãĆŁãĂĂåŕ¿èľśåĞęçŘĘãĆŠçźřãĆŁè

- æŇĞåőŽçŕĐåŻšä£İæŇĄãĆřãČ■ãČijãČŘãČńåď'L'æŢř(data)

âĂIJdataâĂİåśđæĂğãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄÍãĄğãĂąãĆřãČ■ãČijãČŘãČńåď'L'æŢřæL'śãĄĐãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆnameãĄ

- åśđæĂğ

| ãČŚãČľãČąãĆŽãĆŁãĆŁãĆŁ

```
<!-- Access Global Variable -->
<category>
    <pattern>äżŁæŮĕãĄŕ * ãĄğãĄŹ</pattern>
    <template>
        <think><set name="weather"><star/></set></think>
         äżŁæŮĕãĄőåd'l'æřŮãĄŕãĂĄ<get name="weather" />ãĄğãĄŹãĂĆ
    </template>
</category>

<!-- Access Local Variable -->
<category>
    <pattern>æŸŐœŮĕãĄŕ * ãĄğãĄŹ</pattern>
    <template>
        <think><set var="weather"><star/></set></think>
         äżŁæŮĕãĄőåd'l'æřŮãĄŕ<get name="weather" />,æŸŐœŮĕãĄőåd'l'æřŮãĄŕ<get var=
↪"weather"/>ãĄğãĄŹãĂĆ
    </template>
</category>
<category>
    <pattern>åd'l'æřŮãĄŕïij§</pattern>
    <template>
         äżŁæŮĕãĄőåd'l'æřŮãĄŕ<get name="weather" />,æŸŐœŮĕãĄőåd'l'æřŮãĄŕ<get var=
↪"weather"/>ãĄğãĄŹãĂĆ
    </template>
</category>
```

Input: äżŁæŮĕãĄŕæŹťãĆŇãĄğãĄŹãĂĆ
Output: äżŁæŮĕãĄőåd'l'æřŮãĄŕæŹťãĆŇãĄğãĄŹãĂĆ
Input: æŸŐœŮĕãĄŕéŻĺãĄğãĄŹãĂĆ
Output: äżŁæŮĕãĄőåd'l'æřŮãĄŕæŹťãĆŇ,æŸŐœŮĕãĄőåd'l'æřŮãĄŕéŻĺãĄğãĄŹãĂĆ
Input: åd'l'æřŮãĄŕïij§
Output: äżŁæŮĕãĄőåd'l'æřŮãĄŕæŹťãĆŇ,æŸŐœŮĕãĄőåd'l'æřŮãĄŕunknownãĄğãĄŹãĂĆ

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄő *dynamic* ãĄğ `variables` ãĄŇåőŽç¿l'ãĄŢãĆŇãĄęãĄĎãĆŃåät'åŘĹãĂąãĆřãČ■ãČijã
`dynamic` ãĄőåőŽç¿l'ãĄŇåĎłåĚĹãĄŢãĆŇãĄ¿ãĄŹãĂĆ

éŰćéĂčéäĚçŻő: *set*, *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽproperties*

### 6.1.20 id

[1.0]

idèęAçt'ãäĄŕãĂĄãĆřãČl'ãĆd'ãĆćãČşãČĹåŘ■ãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆãĆřãČl'ãĆd'ãĆćãČşãČĹåŘ■ãĄŕãĆřãČl'ãĆd'ãĆćãČşãČĹéŰ
*ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆd'ãČń* ãĄőclientåőŽç¿l'ãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
idèęAçt'ãäĄńãĄŕãĂĄåśđæĂğãČżå■ŘèęAçt'ãäĄŕæŇĞåőŽãĄğãĄ■ãĄ¿ãĄŻãĆŞãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>ãĄĆãĄłãĄ$ãĄőåŘ■åL'■ãĄŕïij§</pattern>
    <template>
        <id />
    </template>
</category>
```

Input: ãĄĆãĄłãĄ§ãĄőåŘ■åL’■ãĄŕïij§
Output: console

### 6.1.21 implode

[custom]

implodeèèęĄçť’ăãĄŕãĂĄåŕ¿èśąæŰĞå■ŮåĹŮåĘĚãĄńãĄĆãĆŃå■Łèğ$ãĆźãČŽãČijãĆźãĆŠåL’ŁéŹď’ãĄŮãĂĄ1å■Ÿèłđ
âĂŸc o f f e
eâĂŹãĄĺåĚěåŁŻãĄŮãĄ§åät’åŘĹãĂĄimplodeãĆŠåő§æŰ¡ãĄŹãĆŃãĄĺãĂĄâĂŹcoffeeâĂŹãĄńåď’L’æŔŻãĄŮãĄ¿ãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>Implode *</pattern>
    <template>
        <implode><star /></implode>
    </template>
</category>
```

<implode />ãĄŕãĂĄ<implode><star /></implode>ãĄĺåŘŇç¿l’ãĄğãĄŹãĂĆæŻÿãĄ■æŔŻãĄĹãĆŃãĄĺäżěäÿŃãĄőæğŸãĄńãĄłãĆŁã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>Implode *</pattern>
    <template>
        <implode />
    </template>
</category>
```

Input: Implode c o f f e e
Output: coffee

éŰćéĂčéăĚçŻő: *explode*

### 6.1.22 input

[1.0]

inputèęĄçť’ăãĄŕãĂĄåĚěåŁŻãĄŢãĆŃãĄ§çŹžèľ’śæŰĞãĄńåŕ¿ãĄŮãĄęãĆđãĆČãĆČãĆĄåĞęçŘĘçŤĺãĄńçůĺéŻĘãĄŮãĄ§æŰĞå■ŮåĹŮïij

çůĺéŻĘåĞęçŘĘãĄğãĄŕãĂĄèŃśæŢřèĺŸåŔůãĄőå■Łèğ$åŇŰãĄĺãĆńãĆ£ãĆńãČŁãĄőåĚĺèğ$åŇŰãĂĄãČđãĆČãĆČãĆĄåĞęçŘĘåŕ¿èśąåď
inputèęĄçť’ăãĄŕãĂĄpatternåĘĚãĄőãČŕãĆď’ãČńãČL’ãĆńãČijãČL’ <star/>
ãĄĺãĄŕçŢřãĄłãĆŁãĂĄçŹžèľ’śæŰĞåĚĺä¡ŞãĄőçŕĎåŻšãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>èşłåŢŕãĄŕãĄłãĆŞãĄğãĄźãĄŃïij§</pattern>
    <template>
        ãĄĆãĄłãĄ§ãĄőèşłåŢŕãĄŕãĂĄ"<input />"ãĄğãĄźãĂĆ
    </template>
</category>
```

Input: èşłåŢŕãĄŕãĄłãĆŞãĄğãĄźãĄŃïij§
Output: ãĄĆãĄłãĄ§ãĄőèşłåŢŕãĄŕãĂĄâĂİèşłåŢŕãĄŕãĄłãĆŞãĄğãĄźãĄŃïij§âĂİãĄğãĄźãĂĆ

### 6.1.23 interval

[1.0]

intervalèęAçt'ããĄŕãĂĄ2ãĄd'ãĄőæŮěæŹĆãĄőåůőåĹĘãĆŠèÍĹçőŮãĄŮãĄ¿ãĄźãĂĆïijĹãČđãĆd'ãČŁãĆźãĄőåůőåĹĘãĄńãĆĆår¿å£

æŮěæŹĆãĄőå¡ćåijŔæŇĞåőŽãĄńãĄŕãĂĄPythonãĄőæŮěæŹĆæŰĞå■ŮåĹŮãĄőæŻÿåijŔãĆŠåĹl'çŤĺãĄŮãĄ¿ãĄźãĂĆ
èl'şçt'řãĄŕ PythonãĄőãČđãČŃãČěãĆćãČń ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

- åśđæĂğ

| ãČŚãČľäČãąĆãĆĆãĆĆãĆŠãĄĚĚéëĺľæŸŐ | | | |
|---|---|---|---|
| format | string | No | æŮěæŹĆãČĞãČijãĆ£ãĄőæŻÿåijŔãĂĆçIJĄçŢěåĂd'ãĄŕ âĂŸ%câĂŹ |

- å■ŘèęAçt'ă

| ãČŚãČľäČãąĆãĆĆãĆĆãĆŠãĄĚĚéëĺľæŸŐ | | | |
|---|---|---|---|
| format | string | No | æŮěæŹĆãČĞãČijãĆ£ãĄőæŻÿåijŔãĂĆçIJĄçŢěåĂd'ãĄŕ âĂŸ%câĂŹ |
| from | string | Yes | èÍĹçőŮãĆŚèąŇãĄĘåğŃçńŕæŮěæŹĆãĆŠformatãĄőæŻÿåijŔãĄğæŇĞåőŽ |
| to | string | Yes | èÍĹçőŮãĆŚèąŇãĄĘçţĆçńŕéŰŃåğŃæŮěæŹĆãĆŠformatãĄőæŻÿåijŔãĄğæŇĞåőŽ |
| style | string | No | åĞžåŁŽãĄźãĆŃå■Ÿä¡■ãĆŠæŇĞåőŽãĂĆçIJĄçŢěåĂd'ãĄŕ âĂŸdaysâĂŹ |

`style` ãĄğæŇĞåőŽãĄźãĆŃå¡ćåijŔãĄńãĄŕãĂĄäżëäÿŃãĄőçĺőęđãĄŇãĄĆãĆŁãĄ¿ãĄźãĂĆ

- æŮěæŹĆãĄőå■Ÿä¡■æŇĞåőŽïijŽ âĂŸyearsâĂŹ, âĂŸmonthsâĂŹ, âĂŸweeksâĂŹ, âĂŸdaysâĂŹ, âĂŸhoursâĂŹ, âĂŸminutesâĂŹ, âĂŸsecondsâĂŹ, âĂŸmicrosecondsâĂŹ
- èd'ĞåŘĹå■Ÿä¡■æŇĞåőŽïijŽ âĂŸymdâĂŹ, âĂŸhmsâĂŹ, âĂŸymdhmsâĂŹ

`from`, `to` ãĄğæŇĞåőŽãĄŢãĆŇãĄ§ãČĞãČijãĆ£ãĄŇ `format`
ãĄőæŻÿåijŔãĄĺçŢřãĄłãĆŃåät'åŘĹãĆĎãĂĄäÿ■æ■čãĄłå¡ćåijŔãĄőåät'åŘĹãĂĄåő§èąŇæŹĆãĄńä¿Ńåd'ŰãĄŇçŹžçŤ§ãĄŮãĄ¿ãĄźãĂĆ
åŘĹãĂĄ`style`
ãĄŇåd'L'æŢřç■L'ãĄğæŇĞåőŽãĄŢãĆŇãĂĄåő§èąŇæŹĆãĄńår¿èśąåd'ŰãĄőåÐd'ãĄŇä¡£çŤĺãĄŢãĆŇãĄ§åät'åŘĹãĂĄçţŘæđIJãĄĺã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>ãĄĆãĄłãĄ§ãĄŕä¡Ţæ■şãĄğãĄźãĄŃïij§</pattern>
    <template>
        <interval format="%B %d, %Y">
```

(continues on next page)

(continued from previous page)

```
            <style>years</style>
            <from><bot name="birthdate"/></from>
            <to><date format="%B %d, %Y" /></to>
        </interval>
        æ■şãĄğãĄźãĂĆ
    </template>
</category>
```

Input: ãĄĆãĄłãĄ§ãĄŕä¡Ţæ■şãĄğãĄźãĄŃïij§
Output: 5æ■şãĄğãĄźãĂĆ

éŰćéĂčéăĚçŻő: *date*

### 6.1.24 json

[custom]

jsonèęĄçť ăăĄŕãĂĄJSONãĆŠãĆůãČŁãČłãĆłãĄğåĽ'çŤĺãĄźãĆŃãĄ§ãĆĄãĄőæľ§èČ¡ãĄğãĂĄãČĞãČijãĆ£ãĄőåŔŰå¿ůãĄĺèĺ■åőŽ
*SubAgent*ãĂĄ*metadata*ãĂĄ*NLU*
(éńŸåžęæĎŔåŻşèğčéĞĹ)ãĄłãĄĮ'ãĄğä¡£çŤĺãĄźãĆŃJSONãČĞãČijãĆ£ãĆŠåĽ'çŤĺãĄźãĆŃãĄ§ãĆĄãĄńä¡£çŤĺãĄůãĄ¿ãĄźãĂĆ
èľşçť řãĄŕãĂĄ *JSON* ãĆŠåŔĆçĚğãĄůãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

åśđæĂğïijŔå■ŘèęĄçť ăãĄőname/var/dataãĄğæŇĞåőŽãĄźãĆŃåď'L'æŢřåŘ■ãĄńãĄŕãĂĄget/setãĄğåőŽç¿l'ãĄůãĄ§åď'L'æŢřåŘ■ãĆ

ä¡ĘãĄůãĂĄèĺ■åőŽãĆŠèąÑãĄĘåăť'åŘĹãĄńãĄŕãĂĄåď'L'æŢřåŘ■ãĄĺãĄĺãĆĆãĄńãĂĄJSONãĄĺãĄůãĄęãĄőãĆ■ãČijãĆŠäžŸåŁăăĄ
ãĂĂæŇĞåőŽä¿ŃïijŽ
âĂIJåď'L'æŢřåŘ■.ãĆ■ãČijâĂİãĂĂïijĹåśđæĂğãĆżå■ŘèęĄçť ăăĄğâĂİkeyâĂİãĆŠæŇĞåőŽãĄůãĄ§åăť'åŘĹãĄńãĄŕãĂĄåď'L'æŢřåŘ
åď'L'æŢřådŃ varãĄŕãČ■ãČijãĆńãČńåď'L'æŢřãĂĄnameãĄŕãĆřãČ■ãČijãČŘãČńåď'L'æŢřãĂĄ-
dataãĄŕãĆřãČ■ãČijãČŘãČńåď'L'æŢřãĄğãĄźãĂĆ

ãĄ¿ãĄ§ãĂĄãČąãĆ£ãČĞãČijãĆ£åď'L'æŢřãĆĎãĂĄãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄőæĹżãĆŁåĂď'ç■L'ãĄőãĆůãĆźãČĘãČăåŻžåć

- åśđæĂğ

| ãČŠãČľãČąãĆźãĆąãĆĆãĆŕãĆŠãĆĘãĆĺãĆŇãĆŽãĆĎãĆéãĆĽãĆĭæŸÓ | | | | |
|---|---|---|---|---|
| name | JSONåď'L'æŢřåŘ■ | | No | ãĆřãČ■ãČijãČŘãČńåď'L'æŢř(name)åŘ■ãĆŠæŇĞåőŽãĄůãĄ¿ãĄźãĂĆãĆ■ãČijåŘ■ãĆŠäž |
| var | JSONåď'L'æŢřåŘ■ | | No | ãČ■ãČijãĆńãČńåď'L'æŢř(var)åŘ■ãĆŠæŇĞåőŽãĄůãĄ¿ãĄźãĂĆãĆ■ãČijåŘ■ãĆŠäžŸåŁãă |
| data | JSONåď'L'æŢřåŘ■ | | No | ãĆřãČ■ãČijãČŘãČńåď'L'æŢř(data)åŘ■ãĆŠæŇĞåőŽãĄůãĄ¿ãĄźãĂĆãĆ■ãČijåŘ■ãĆŠäžŸ |
| function | | len | No | åŕ¿èśąãĄőJSONãČůãČ■ãĆŠãČĘãĆčãĄŇéĚ■åĹůãĄőåăť'åŘĹãĂĄéĚ■åĹůéŢůãĆŠåŔŰå¿ |
| | | delete | No | åŕ¿èśąãČůãČ■ãĆŠãČĘãĆčãĆŠåL'ŁéŽď'ãĄůãĄ¿ãĄźãĂĆéĚ■åĹůãĄőåăť'åŘĹãĄğindexãĆ |
| | | insert | No | JSONéĚ■åĹůãĄńåŕ¿ãĄźãĆŃåĂď'ãĄőè£¡åŁăăĆŠæŇĞåőŽãĄůãĄ¿ãĄźãĂĆéĚ■åĹůÇŢłå |
| index | ãĆď'ãČşãČĞãČČãĆŕãĆŇ | | No | JSONãČĞãČijãĆ£ãĆŠåŔŰå¿ůãĄźãĆŃåăť'åŘĹãĄőãĆď'ãČşãČĞãČČãĆŕãĆźãĆŠæŇĞåőŽ |
| item | | key | No | JSONãČĞãČijãĆ£ãĄŇãĆĽ'ãĆ■ãČijãĆŠåŔŰå¿ůãĄźãĆŃåăť'åŘĹãĄńä¡£çŤĺãĄůãĄ¿ãĄźã |
| key | ãĆ■ãČijæŇĞåőŽ | | No | JSONãČĞãČijãĆ£ãĆŠæŞ■ä¡IJãĄźãĆŃãĆ■ãČijãĆŠæŇĞåőŽãĄůãĄ¿ãĄźãĂĆ |
| type | | string | No | æŢřåĂď'ãĆżèńŰçŘĘåĂď'ãĆżnullåĂď'ãĆŠæŰĞå■ŮåĹůãĄĺãĄůãĄęåĞęçŘĘãĄźãĆŃãĄŞ |

jsonèęĄçť ăăĄĺãĄůãĄęãĂĄ`var`, `name`, `data` ãĄőãĄĐãĄźãĆŃãĄŃãĄŇèĺ■åőŽãĄŢãĆŃãĄęãĄĐãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄ

- å■ŘèęAçt'ă

ãĆůãČŁãČłãĆłãĄőåd'L'æŢřãĆŠåĂd'ãĄĺãĄŮãĄęæŇĞåőŽãĄŹãĆŃåăt'åŘĹãĄńåśđæĂğãĄğĄŕæŇĞåőŽãĄğãĄ■ãĄłãĄĎãĄ§ãĆĄã

åŃŢä¡IJãĄŕåśđæĂğãĄĺåŘŇãĄŸåŃŢä¡IJãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆåŘŇãĄŸåśđæĂğåŘ■ãĂĄå■ŘèęAçt'ääŘ■ãĆŠæŇĞåőŽãĄŮãĄ§åă

| ãČŚãČľãĆğąĆĆąĆĆąĆĆ£ĆĚéĚľnæŸŐ | | | |
|---|---|---|---|
| function | éŰćæŢřåŘ■No | | JSONãĄńåŕ¿ãĄŹãĆŃåĞęçŘĘãĆłãČŮãĆůãČğãČşãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆåĘĚåőźãĄńãĄd'ãĄĹ |
| index | ãĆd'ãČşãĆĞãĆĞãĆĞãĆĞãĆijãĆ£ãĆŠåŘŰå¿ŮãĄŹãĆŃåăt'åŘĹãĂĄJSONãĆłãČŰãĆÿãĆğãĆŕãČĹãĂĄéĚ■åĹŮãĄńå |
| item | ãĆ■ãČijåŘ■ãĆŘŰåJSONãČğãČijãĆ£ãĄŃãĆL'ãĆ■ãČijãĆŠåŘŰå¿ŮãĄŹãĆŃåăt'åŘĹãĄńä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆãĄŞãĄ |
| key | ãĆ■ãČijæŇĞåőŽJSONãČğãČijãĆ£ãĆŠæŞ■ä¡IJãĄŹãĆŃãĆ■ãČijãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ | | |

- ä¡£çŤĺä¿Ń

âĂIJtransitâĂİãĄĺãĄĎãĄĘSubAgentãĄŃãĆL'ãĄőãČńãĆźãČİãČşãĆźãĄŃè£ŤãĄčãĄęãĄ■ãĄ§åăt'åŘĹãĄőJSONãĄőãČĞãČijãĆ£ã

äžěäÿŃãĄőjsonãČĞãČijãĆ£ãĄŃSubAgentãĄŃãĆL'è£Ťå■t'ãĄŢãĆŃãĄ§åăt'åŘĹãĂĄâĂİ__SUBAGENT__.transitâĂİãĄŃSubAge

JSONãČĞãČijãĆ£ãĆŠåŘŰå¿ŮãĄŹãĆŃåăt'åŘĹãĂĄåśđæĂğãĄńåŕ¿èśąãĄĺãĄłãĆŃjsonåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĄŃãĂĄãĄŞ

JSONãČĞãČijãĆ£ãĄőå■ŘèęAçt'ãäĄőåŘŰå¿ŮãĆŠèąŃãĄĘåăt'åŘĹãĂĄjsonåŘ■ãĄńãĂĄèęAçt'ãæŕÕãĄőãĆ■ãČijåŘ■ãĆŠâĂİ.âĂİã
ãĄğæŇĞåőŽãĄŹãĆŃæŰźæşŢãĄŃãĄĆãĆŁãĄ¿ãĄŹãĂĆ

```
{
    "transportation":{
        "station":{
            "departure":"æİśäžň",
            "arrival":"äžňéČ¡"
        },
        "time":{
            "departure":"2018/11/1 11:00",
            "arrival":"2018/11/1 13:30"
        }
    }
}
```

äÿŁèÍŸä¿ŃãĄőæğŸãĄńãĂĄtransportation.station.departureãĆŠè£Ťå■t'ãĄŹãĆŃåăt'åŘĹãĂĄ

```
<category>
    <pattern>æİśäžňãĄŃãĆL'äžňéČ¡ãĄńèąŃãĄ■ãĄ§ãĄĎãĂĆ</pattern>
    <template>
        <json var="__SUBAGENT__.transit.transportation.station.departure"/>
↪åĞžçŹžãĄğãĄŹãĄ■ãĂĆ
    </template>
</category>
```

Input: æİśäžňãĄŃãĆL'äžňéČ¡ãĄńèąŃãĄ■ãĄ§ãĄĎãĂĆ
Output: æİśäžňåĞžçŹžãĄğãĄŹãĄ■ãĂĆ

éŰćéĂčéăĚçŻő: *JSON*, *SubAgent*

### 6.1.25 learn

[2.0]

learnèęAçť ăăAŕãĂAåŕ¿èľ śăAőæİąäżűãAńăĆĹãĆŁãČęãČijãĆűåŻžæIJL'ãAőæŰřãA§ãAŁcategoryãĆŠçŹżéŇšãAŲãA¿ãAŹãĂĆãAŹ

æŰřãA§ãAŁcategoryãAŕãČąãČćãČłäÿŁãAńä£İæŇąãAŢãĆŇãAęãAŁãĆŁãĂĄcontextãAŇæIJL'åŁźãAŁæIJ§éŰŞãĂĄåŘŇäÿĂãĆŕãČ
çŹżéŇšãAŢãĆŇãA§categoryãAŕãĂĄäżŰãAőãĆůãČŁãČłãĆłãAğ *restlearn* èęAçť ăăČż *resetlearnf*
èęAçť ăăAŇåő§èąŇãAŢãĆŇãĆŇãA¿ãAğä£İæŇąãAŢãĆŇãA¿ãAŹãĂĆ
åĹİæIJ§ãČ■ãČijãČL'ãAŢãĆŇãĆŃcategoryïijĹ*categoriesãĆĺãČşãČĘãĆčãČĘãĆč*
ãAğåśŢéŰŃ)ãAĺåŘŇãAŸPatternèęAçť ăăĆŠæŰřãA§ãAńçŹżéŇšãAŲãA§åăť åŘĹãĂĄlearnèęAçť ăăAğæŇĞåŐŽãAŲãA§categoryãA

çŹżéŇšåŔŕèČ¡ãAŁcategoryæŢřãAŕãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l'ãAő *åĹűéŹŘåĂd'åőŽç¿l'*
ãAő `max_categories`
ãAğåĹűéŹŘãAŢãĆŇãAęãAŁãĆŁãĂĄlearnèęAçť ăăAğãAőçŹżéŇšãĆĆåĹűéŹŘãAŢãĆŇãA¿ãAŹãĂĆ

åĹűéŹŘæŢřãAńéĄŤãAŮãA§çŁűæĚŃãAğæŰřèęŔçŹżéŇšãĆŠèąŇãAčãA§åăť åŘĹãAńãAŕãĂĄåĞęçŘEä¿Ńåd'ŰãĄŇçŽžçŢ§ãAŮãA

learnfãAŕãČŢãĆąãĆd'ãČńä£İæŇąãAŁãAőãAğãĂĄbotåE■ètůåŃŢãAğãĆĆçŁűæĚŃãĆŠä£İæŇąãAŲãA¿ãAŹãAŇãĂĄlearnãAŕbotå

å■ŘèęAçť ăăAńãAŕãĂĄcategoryèęAçť ăăĆŠèÍŸè£řãAŲãĂĄçŹżéŇšæŹĆãAőåd'L'æŢřãAőåĂd'ãĆŠåĞęçŘEæİąäżűãAńåŘńãĆąãĆŇ
*eval* ãĆŠåĹl'çŤÍãAŮãA¿ãAŹãĂĆ

äÿĂåžęãAńèd'ĞæŢřãAőcategoryãĆŠçŹżéŇšãAŹãĆŇãAŞãAÍãĆĆåŔŕèČ¡ãAğãAŹãAŇãĂĄtopicèęAçť ăăAğãĆřãČńãČijãČŮåŇŰãA
åřŽãĂĄlearnèęAçť ăăAőçţŘædIJãAŕãĂĄåÿÿãAńçl'žæŰĞå■ŮãAńãAŁãĆŁãA¿ãAŹãĂĆ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>çğĄãĄőãČŽãČČãČĹãĄŕ * ãĄő * ãĄğãĄźãĂĆ</pattern>
    <template>
        ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄŕãĂĄ<star />ãĄő<star index="2" />ãĄğãĄźãĄ■ãĂĆ
        <think>
            <set name="animal"><star /></set>
            <set name="name"><star index="2" /></set>
        </think>
        <learn>
            <category>
                <pattern>
                    <eval>
                        <get name="name"/>
                    </eval>
                    ãĄŕèłřãĄğãĄźãĄŃãĂĆ
                </pattern>
                <template>
                    ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄő
                    <eval>
                        <get name="animal"/>
                    </eval>
                    ãĄğãĄźãĂĆ
                </template>
            </category>
```

(continues on next page)

(continued from previous page)

```
        </learn>
    </template>
</category>
```

Input: çğĄãĄőãČŽãČČãČĹãĄŕçŁňãĄőãČđãČ■ãČşãĄğãĄŹãĂĆ
Output: ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄŕçŁňãĄőãČđãČ■ãČşãĄğãĄŹãĄ■ãĂĆ
Input: ãČđãČ■ãČşãĄŕèłřãĄğãĄŹãĄŃãĂĆ
Output: ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄőçŁňãĄğãĄŹ

éŰćéĂčéăĚçŻő; *eval*, *learnf* , *restlearn*, *resetlearnf*

### 6.1.26 learnf

[2.0]

learnfèęĄçť'ăãĄŕãĂĄåŕ¿èl'śãĄőæİąäżűãĄńãĆĹãĆŁãČęãČijãĆűåŻžæIJL'ãĄőæŰřãĄ§ãĄłcategoryãĆŠçŹźéŇšãĄŮãĄ¿ãĄŹãĂĆãĄŹ

æŰřãĄ§ãĄłcategoryãĄŕãČąãČćãČłäÿŁãĄĺãĄĺãĆĆãĄńãĂĄãČŢãĆąãĆd'ãČńäÿŁãĄńãĆĆä£ÍæŇĄãĄŢãĆŇãĄęãĄŁãĆŁãĂĄäżŰãĄ
*restlearn* èęĄçť'ăãČż *resetlearnf* èęĄçť'ăãĄŇåő§èąŇãĄŢãĆŇãĆŃãĄ¿ãĄğä£ÍæŇĄãĄŮçűŽãĄŚãĄ¿ãĄŹãĂĆ

çŹźéŇšãĄŢãĆŇãĄ§categoryãĄŕãĂĄåŘŇäÿĂãĆŕãČl'ãĆd'ãĆćãČşãČĹãĆŠåĹl'çŤĺãĄŹãĆŃåŘŇäÿĂãČęãČijãĆűãĄŃãĆL'ãĄőãĆćãĆ
åĹİæIJ§ãČ■ãČijãČL'ãĄŢãĆŇãĆŃcategoryïijĹ*categoriesãĆĺãČşãČĘãĆčãČĘãĆč*
ãĄğåśŢéŰŃ)ãĄĺåŘŇãĄŸPatternèęĄçť'ăãĆŠæŰřãĄ§ãĄńçŹźéŇšãĄŮãĄ§åät'åŘĹãĂĄlearnfèęĄçť'ăãĄğæŇĞåőŽãĄŮãĄ§categoryã

çŹźéŇšåŔŕèČ¡ãĄłcategoryæŢřãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕřãČňãČijãĆůãČğãČşåőŽç¿l'ãĄő *åĹűéŹŘåĂd'åőŽç¿l'*
ãĄő `max_categories`
ãĄğåĹűéŹŘãĄŢãĆŇãĄęãĄŁãĆŁãĂĄlearnèęĄçť'ăãĄğãĄőçŹźéŇšãĆĆåĹűéŹŘãĄŢãĆŇãĄ¿ãĄŹãĂĆ

åĹűéŹŘæŢřãĄńéĄŤãĄŮãĄ§çŁűæĚŇãĄğæŰřèęŔçŹźéŇšãĆŠèąŇãĄčãĄ§åät'åŘĹãĄńãĄŕãĂĄåĞęçŘEä¿Ńåd'ŰãĄŇçŹžçŤ§ãĄŮãĄ

learnfãĄŕãČŢãĆąãĆd'ãČńä£ÍæŇĄãĄłãĄőãĄğãĂĄbotãĄőåE■èţůåŃŢæŹĆãĄńåĘ■ãČ■ãČijãČL'ãĄŢãĆŇãĄ¿ãĄŹãĂĆ

å■ŘèęĄçť'ăãĄńãĄŕãĂĄcategoryèęĄçť'ăãĆŠèÍŸè£řãĄŮãĂĄçŹźéŇšæŹĆãĄőåd'L'æŢřãĄőåĂd'ãĆŠåĞęçŘEæİąäżűãĄńåŘńãĆĄãĆŃ
*eval* ãĆŠåĹl'çŤĺãĄŮãĄ¿ãĄŹãĂĆ

äÿĂåžęãĄńèd'ĞæŢřãĄőcategoryãĆŠçŹźéŇšãĄŹãĆŃãĄŞãĄĺãĆĆåŔŕèČ¡ãĄğãĄŹãĄŃãĂĄtopicèęĄçť'ăãĄğãĆřãČńãČijãČŮåŇŰãĄ
åřŽãĂĄlearnfèęĄçť'ăãĄőçţŘædIJãĄŕãĂĄåÿÿãĄńçl'žæŰĞå■ŮãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĄőãČŽãČČãČĹãĄŕ * ãĄő * ãĄğãĄŹ</pattern>
    <template>
        ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄŕãĂĄ<star />ãĄő<star index="2" />ãĄğãĄŹãĄ■ãĂĆ
        <think>
            <set name="animal"><star /></set>
```

(continues on next page)

(continued from previous page)

```
            <set name="name"><star index="2" /></set>
        </think>
        <learnf>
            <category>
                <pattern>
                    <eval>
                        <get name="name"/>
                    </eval>
                    ãĄŕèłřãĄğãĄźãĄŃãĂĆ
                </pattern>
                <template>
                        ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄő
                    <eval>
                        <get name="animal"/>
                    </eval>
                    ãĄğãĄźãĂĆ
                </template>
            </category>
        </learnf>
    </template>
</category>
```

Input: çğĄãĄőãČŽãČČãČĹãĄŕçŁňãĄőãČđãČ■ãČşãĄğãĄźãĂĆ
Output: ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄŕçŁňãĄőãČđãČ■ãČşãĄğãĄźãĄ■ãĂĆ
Input: ãČđãČ■ãČşãĄŕèłřãĄğãĄźãĄŃãĂĆ
Output: ãĄĆãĄłãĄ§ãĄőãČŽãČČãČĹãĄőçŁňãĄğãĄźãĂĆ

éŰćéĂčéăĚçŻő: *eval*, *learn*, *restlearn*, *resetlearnf*

### 6.1.27 li

[1.0]

lièęAçt'ăãĄŕãĂĄconditionèęAçt'ăãĄğãĄőåĹĘåšŘæÍąäżűãĄőæŇĞåőŽãĄÍãĂĄrandomèęAçt'ăãĄğãĄőéĄÿæŁđèęAçt'ăãĆŠæŇĞåő

conditionèęAçt'ăãĄőå■ŘèęAçt'ăãĄÍãĄŮãĄęä¡£çŤÍãĄŹãĆŃãĂt'åŘĹãĄńãĄŕãĂĄäžëäÿŃãĄőå■ŘèęAçt'ăïijĹåšđæĂğïijL'ãĄŇæŇĞå
èl'şçt'řãĄłåĹl'çŤÍæŰźæşŢãĄŕãĂĄ*condition* ãĆŠåŘĆçĚğãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

- å■ŘèęAçt'ăïijĹâĂŹloopâĂŹäžëåd'ŰãĄŕåšđæĂğãĄğãĆĆæŇĞåőŽåŘŕèČ¡ãĂĆïijL'

| ãČŠãČľãČąąą

### 6.1.28 link

[2.1]

linkèęAçt'ããĄŕãĂĄäijŽèl'śäÿ■ãĄńãČęãČijãĆűãĄńèąĺçd'žãĄŹãĆŃURLãĄłãĄl'ãĄőçŤĺéĂŤãĄğåĹl'çŤĺãĄŢãĆŇãĆŃãČłãČČãČąãČ
å■ŘèęAçt'ããĄĺãĄŮãĄęãĂĄèąĺçd'žãĆĎèł■ãĄ£äÿŁãĄŠãĄńä¡£çŤĺãĄŹãĆŃãČęãĆ■ãĆźãČĹãĂĄéĄůçğżåĚĹãĄőurlãĆŠèlŸèijL'ãĄğ

åŕ¿èl'śãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄãČłãČČãČąãČąãČĞãĆčãĆćèęAçt'ããĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘædIJãĆŠè£ŤãĄŮãĄ
åő§éŽŻãĄőçŤżéĺćæŔŔçŤżç■L'ãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşåőŽç¿l'ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄşåĞęçŘęãĆŕãČl'ãĆźãĄőåĹűå¿ąãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆ

- å■ŘèęAçt'ããĂĂïijĹåśđæĂğãĄğãĄőæŇĞåőŽãĆĆåŔŕèČ¡ïijL'

| ãČŚãČl'ãČąãĆźãĆŕãĆĺãĆŚãĆŽãĆŤãĆŹãĆŻãĆŰãĆŮãĆŲãĆŴãĆŶãĆŸãŁŃãŁŇãŁŊãŁŐãŁŒãŁŔãŁŖãŁŘãŁŚãŁŜãŁŞãŁŠãŁŢãŁŤãŁŦãŁŨãŁŪãŁŬãŁŭãŁŮãŁŰãŁŲãŁŴãŁŶãŁŸãŁŹãŁŻãŁŽãŁſãĆĆãĆĎãĆĐãĆÑãĆÒãĆÓãĆÔãĆÕãĆÖãĆØãĆÙãĆÚãĆÛãĆÜãĆÝãĆÞãĆßãĆàãĆáãĆâãĆããĆäãĆåãĆæãĆçãĆèãĆéãĆêãĆëãĆìãĆíãĆîãĆïãĆðãĆñãĆòãĆóãĆôãĆõãĆöãĆøãĆùãĆúãĆûãĆüãĆýãĆþãĆÿãĂĀãĂāãĂĂãĂăãĂĄãĂąãĂĆãĂćãĂĈãĂĉãĂĊãĂċãĂČãĂčãĂĎãĂďãĂĐãĂđãĂĒãĂēãĂĔãĂĕãĂĖãĂėãĂĘãĂęãĂĚãĂěãĂĜãĂĝãĂĞãĂğãĂĠãĂġãĂĢãĂģãĂĤãĂĥãĂĦãĂħãĂĨãĂĩãĂĪãĂīãĂĬãĂĭãĂĮãĂįãĂİãĂıãĂĲãĂĳãĂĴãĂĵãĂĶãĂķãĂĸãĂĹãĂĺãĂĻãĂļãĂĽãĂľãĂĿãĂŀãĂŁãĂłãĂŃãĂńãĂŅãĂņãĂŇãĂňãĂʼnãĂŊãĂŋãĂŌãĂōãĂŎãĂŏãĂŐãĂőãĂŒãĂœãĂŔãĂŕãĂŖãĂŗãĂŘãĂřãĂŚãĂśãĂŜãĂŝãĂŞãĂşãĂŠãĂšãĂŢãĂţãĂŤãĂťãĂŬãĂŭãĂŮãĂůãĂŰãĂűãĂŲãĂųãĂŴãĂŵãĂŶãĂŷãĂŸãĂźãĂŻãĂżãĂŽãĂžãĂſãĆĆãĆĎãĆĐãĆÑãĆÒãĆÓãĆÔãĆÕãĆÖãĆØãĆÙãĆÚãĆÛãĆÜãĆÝãĆÞãĆßãĆàãĆáãĆâãĆããĆäãĆåãĆæãĆçãĆèãĆéãĆêãĆëãĆìãĆíãĆîãĆïãĆðãĆñãĆòãĆóãĆôãĆõãĆöãĆøãĆùãĆúãĆûãĆüãĆýãĆþãĆÿãĂĀãĂāãĂĂãĂăãĂĄãĂąãĂĆãĂćãĂĈãĂĉãĂĊãĂċãĂČãĂčãĂĎãĂďãĂĐãĂđãĂĒãĂēãĂĔãĂĕãĂĖãĂėãĂĘãĂęãĂĚãĂěãĂĜãĂĝãĂĞãĂğãĂĠãĂġãĂĢãĂģãĂĤãĂĥãĂĦãĂħãĂĨãĂĩãĂĪãĂīãĂĬãĂĭãĂĮãĂįãĂİãĂıãĂĲãĂĳãĂĴãĂĵãĂĶãĂķãĂĸãĂĹãĂĺãĂĻãĂļãĂĽãĂľãĂĿãĂŀãĂŁãĂłãĂŃãĂńãĂŅãĂņãĂŇãĂňãĂʼnãĂŊãĂŋãĂŌãĂōãĂŎãĂŏãĂŐãĂőãĂŒãĂœãĂŔãĂŕãĂŖãĂŗãĂŘãĂřãĂŚãĂśãĂŜãĂŝãĂŞãĂşãĂŠãĂšãĂŢãĂţãĂŤãĂťãĂŬãĂŭãĂŮãĂůãĂŰãĂűãĂŲãĂųãĂŴãĂŵãĂŶãĂŷãĂŸãĂźãĂŻãĂżãĂŽãĂžãĂſãĆĆãĆĎãĆĐãĆÑãĆÒãĆÓãĆÔãĆÕãĆÖãĆØãĆÙãĆÚãĆÛãĆÜãĆÝãĆÞãĆßãĆàãĆáãĆâãĆããĆäãĆåãĆæãĆçãĆèãĆéãĆêãĆëãĆìãĆíãĆîãĆïãĆðãĆñãĆòãĆóãĆôãĆõãĆöãĆøãĆùãĆúãĆûãĆüãĆýãĆþãĆÿãĂĀãĂāãĂĂãĂăãĂĄãĂąãĂĆãĂćãĂĈãĂĉãĂĊãĂċãĂČãĂčãĂĎãĂďãĂĐãĂđãĂĒãĂēãĂĔãĂĕãĂĖãĂėãĂĘãĂęãĂĚãĂěãĂĜãĂĝãĂĞãĂğãĂĠãĂġãĂĢãĂģãĂĤãĂĥãĂĦãĂħãĂĨãĂĩãĂĪãĂīãĂĬãĂĭãĂĮãĂįãĂİãĂıãĂĲãĂĳãĂĴãĂĵãĂĶãĂķãĂĸãĂĹãĂĺãĂĻãĂļãĂĽãĂľãĂĿãĂŀãĂŁãĂłãĂŃãĂńãĂŅãĂņãĂŇãĂňãĂʼnãĂŊãĂŋãĂŌãĂōãĂŎãĂŏãĂŐãĂőãĂŒãĂœãĂŔãĂŕãĂŖãĂŗãĂŘãĂřãĂŚãĂśãĂŜãĂŝãĂŞãĂşãĂŠãĂšãĂŢãĂţãĂŤãĂťãĂŬãĂŭãĂŮãĂůãĂŰãĂűãĂŲãĂųãĂŴãĂŵãĂŶãĂŷãĂŸãĂźãĂŻãĂżãĂŽãĂžãĂſ |
|---|---|---|---|
| text | string | Yes | ãČIJãĆ£ãČşãĄÿãĄőèąĺçd'žãČĘãĆ■ãĆźãČĹãĆŠèlŸèijL'ãĄŮãĄ¿ãĄŹãĂĆïijĹçl'žæŰĞå■ŮãĆŠèlśåőźãĆŕãĆĺãĆŚãĆŽãĆŤãĆŹãĆŻãĆŰãĆŮãĆŲãĆŴãĆŶãĆŸãĆŹãĆŻãĆŽãĆſãĆĆãĆĎãĆĐãĆÑãĆÒãĆÓãĆÔãĆÕãĆÖãĆØãĆÙãĆÚãĆÛãĆÜãĆÝãĆÞãĆßãĆàãĆáãĆâãĆããĆäãĆåãĆæãĆçãĆèãĆéãĆêãĆëãĆìãĆíãĆîãĆïãĆðãĆñãĆòãĆóãĆôãĆõãĆöãĆøãĆùãĆúãĆûãĆüãĆýãĆþãĆÿãĂĀãĂāãĂĂãĂăãĂĄãĂąãĂĆãĂćãĂĈãĂĉãĂĊãĂċãĂČãĂčãĂĎãĂďãĂĐãĂđãĂĒãĂēãĂĔãĂĕãĂĖãĂėãĂĘãĂęãĂĚãĂěãĂĜãĂĝãĂĞãĂğãĂĠãĂġãĂĢãĂģãĂĤãĂĥãĂĦãĂħãĂĨãĂĩãĂĪãĂīãĂĬãĂĭãĂĮãĂįãĂİãĂıãĂĲãĂĳãĂĴãĂĵãĂĶãĂķãĂĸãĂĹãĂĺãĂĻãĂļãĂĽãĂľãĂĿãĂŀãĂŁãĂłãĂŃãĂńãĂŅãĂņãĂŇãĂňãĂʼnãĂŊãĂŋãĂŌãĂōãĂŎãĂŏãĂŐãĂőãĂŒãĂœãĂŔãĂŕãĂŖãĂŗãĂŘãĂřãĂŚãĂśãĂŜãĂŝãĂŞãĂşãĂŠãĂšãĂŢãĂţãĂŤãĂťãĂŬãĂŭãĂŮãĂůãĂŰãĂűãĂŲãĂųãĂŴãĂŵãĂŶãĂŷãĂŸãĂźãĂŻãĂżãĂŽãĂžãĂſ |
| url | string | No | ãČIJãĆ£ãČşæŁijäÿŇæŹĆãĄőURLãĆŠèlŸèijL'ãĄŮãĄ¿ãĄŹãĂĆ |

```
<category>
    <pattern>æd'IJçt'ć</pattern>
    <template>
        <link>
            <text>æd'IJçt'ćãĆţãĆd'ãČĹ</text>
            <url>searchsite.com</url>
        </link>
    </template>
</category>
```

### 6.1.29 list

[2.1]

listèęAçt'ããĄŕãĂĄitemãĄńèlŸèijL'ãĄŮãĄ§èęAçt'ããĆŠãČłãĆźãČĹå¡ćåijŔãĄğè£ŤãĄŹãČłãČČãČąãČąãČĞãĆčãĆćèęAçt'ããĄğãĄ
å■ŘèęAçt'ããĄőitemãĄńãČłãĆźãČĹãĄőåĘĚåőźãĆŠèlŸèijL'ãĄŹãĆŃãĄŞãĄĺãĄŃãĄğãĄ■ãĄ¿ãĄŹãĂĆãĄ¿ãĄ§ãĂĄitemãĄńlistãĆŠ

åŕ¿èl'śãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄãČłãČČãČąãČąãČĞãĆčãĆćèęAçt'ããĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘædIJãĆŠè£ŤãĄŮãĄ
åő§éŽŻãĄőçŤżéĺćæŔŔçŤżç■L'ãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşåőŽç¿l'ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄ§åĞęçŘęãĆŕãČl'ãĆźãĄőåĹűå¿ąãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆ

- å■ŘèęAçt'ă

| ãČŚãČl'ãČąãĆźãĆŕãĆĺãĆŚãĆŽãĆŤãĆŹãĆŻãĆŰãĆŮãĆŲãĆŴãĆŶãĆŸãŁŃãŁŇãŁŊãŁŐãŁŒãŁŔãŁŖãŁŘãŁŚãŁŜãŁŞãŁŠãŁŢãŁŤãŁŦãŁŨãŁŪãŁŬãŁŭãŁŮãŁŰãŁŲãŁŴãŁŶãŁŸãŁŹãŁŻãŁŽãŁſãĆĆãĆĎãĆĐãĆÑãĆÒãĆÓãĆÔãĆÕãĆÖãĆØãĆÙãĆÚãĆÛãĆÜãĆÝãĆÞãĆßãĆàãĆáãĆâãĆããĆäãĆåãĆæãĆçãĆèãĆéãĆêãĆëãĆìãĆíãĆîãĆïãĆðãĆñãĆòãĆóãĆôãĆõãĆöãĆøãĆùãĆúãĆûãĆüãĆýãĆþãĆÿãĂĀãĂāãĂĂãĂăãĂĄãĂąãĂĆãĂćãĂĈãĂĉãĂĊãĂċãĂČãĂčãĂĎãĂďãĂĐãĂđãĂĒãĂēãĂĔãĂĕãĂĖãĂėãĂĘãĂęãĂĚãĂěãĂĜãĂĝãĂĞãĂğãĂĠãĂġãĂĢãĂģãĂĤãĂĥãĂĦãĂħãĂĨãĂĩãĂĪãĂīãĂĬãĂĭãĂĮãĂįãĂİãĂıãĂĲãĂĳãĂĴãĂĵãĂĶãĂķãĂĸãĂĹãĂĺãĂĻãĂļãĂĽãĂľãĂĿãĂŀãĂŁãĂłãĂŃãĂńãĂŅãĂņãĂŇãĂňãĂʼnãĂŊãĂŋãĂŌãĂōãĂŎãĂŏãĂŐãĂőãĂŒãĂœãĂŔãĂŕãĂŖãĂŗãĂŘãĂřãĂŚãĂśãĂŜãĂŝãĂŞãĂşãĂŠãĂšãĂŢãĂţãĂŤãĂťãĂŬãĂŭãĂŮãĂůãĂŰãĂűãĂŲãĂųãĂŴãĂŵãĂŶãĂŷãĂŸãĂźãĂŻãĂżãĂŽãĂžãĂſ |
|---|---|---|---|
| item | string | Yes | ãČłãĆźãČĹãĄőåĘĚåőźãĆŠèlŸèijL'ãĄŮãĄ¿ãĄŹãĂĆ |

`item` ãĄńãĄŕãĂĄãČęãĆ■ãĆźãČĹäžěåd'ŰãĄńãĂĄ*button* ãĆĎãĂĄ*image* ç■L'ãĄőãČłãČČãČąãČąãČĞãĆčãĆćèęAçt'ããĆŠéĚ■ç¡ő

```
<category>
    <pattern>ãČłãĆźãČĹ</pattern>
    <template>
        <list>
            <item>
                <list>
                    <item>ãČłãĆźãČĹãĆćãĆd'ãČęãČă 1.1</item>
                    <item>ãČłãĆźãČĹãĆćãĆd'ãČęãČă 1.2</item>
                </list>
            </item>
            <item>ãČłãĆźãČĹãĆćãĆd'ãČęãČă 2.1</item>
            <item>ãČłãĆźãČĹãĆćãĆd'ãČęãČă 3.1</item>
        </list>
    </template>
</category>
```

éŰćéĂčéăĚçŻő: *card*, *button*, *image*

### 6.1.30 log

[custom]

logèęĄçţ’ăãĄŕéŰŃçŹžèĂĚçŤĺãĄőèęĄçţ’ăãĄğãĂąãĄŞãĄőèęĄçţ’ăãĆŠèĺŸèijĽ’ãĄŹãĆŃãĄĺãĂąbotãĄőãČ■ãĆřãČŢãĆąãĆd’ãČńãĄ
ãČ■ãĆőãČşãĆřãČńãČŹãČńãĄŕãĂąlevelåšđæĂğãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

- åšđæĂğ

| ãČŚãČľãĆąĆąĆą

### 6.1.31 lowercase

[1.0]

lowercaseèęĄçť ăăĄŕăĂĄåŕ¿èśąăĄĺăĄłăĆŃæŰĞå■ŮåĹŮåĘĚăĄőå■ŁèğŠèŃśå■ŮăĆŠåřŔæŰĞå■ŮăĄńăĄŮăĄ¿ăĄŹăĂĆ
èŃśå■Ůäżěåď ŰăĄńăĂĄåď ğæŰĞå■ŮăČżåřŔæŰĞå■ŮăĄŇå■ŸåIJĺăĄŹăĆŃăĆőăČłăĆůăČčæŰĞå■Ůç■L'ăĄńăĆĆåŕ¿å£IJăĄŮăĄ¿ă

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>ăĄŞăĆŞăĄńăĄąăĄŕ * ăĄğăĄŹ</pattern>
    <template>
        ăĄŞăĆŞăĄńăĄąăĄŕ <lowercase><star /></lowercase>ăĄŢăĆŞ
    </template>
</category>
```

<lowercase />ăĄŕăĂĄ<lowercase><star /></lowercase>ăĄĺåŘŇç¿l'ăĄğăĄŹăĂĆæŻÿăĄ■æŔŻăĄĹăĆŃăĄĺäżěäÿŃăĄőæğŸăĄńăĄł

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>ăĄŞăĆŞăĄńăĄąăĄŕ * ăĄğăĄŹ</pattern>
    <template>
        ăĄŞăĆŞăĄńăĄąăĄŕ <lowercase />ăĄŢăĆŞ
    </template>
</category>
```

Input: ăĄŞăĆŞăĄńăĄąăĄŕ GEORGE WASHINGTON ăĄğăĄŹ
Output: ăĄŞăĆŞăĄńăĄąăĄŕ george washingtonăĄŢăĆŞ

éŰćéĂčéăĚçŻő: *uppercase*

### 6.1.32 map

[1.0]

mapèęĄçť ăăĄğăĄŕăĂĄåď ŰéČĺăČŢăĆąăĆď ăČńăĄğæŇĞåőŽăĄŮăĄ§åď L'æŔŻè¿đæŻÿăĄńăĆĹăĆŁăĂĄåŕ¿èśąæŰĞå■ŮåĹŮăĄőå
åŕ¿èśąæŰĞå■ŮåĹŮăĄőåőŽç¿l'ăĄŕăĂĄ*mapsăČŢăĆąăĆď ăČńă*
ăĄğăČŢăĆąăĆď ăČńæŕŐăĄńăĂĄâŽåď L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮ: åď L'æŔŻå¿ŇæŰĞå■ŮåĹŮâĂŹ
ăĄőå¡ćåijŔăĄğåĹŮèĺŸăĄŮăĄ¿ăĄŹăĂĆ

åď L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮăĄőäÿĂèĞť åĹď åőŽăĄŕăĂĄèŃśå■ŮïijŽå■ŁèğŠåď ğæŰĞå■ŮăĂĄæŢřå■ŮăČżèĺŸåŕůïijŽå■ŁèğŠăĂ
åď L'æŔŻçţŘæđIJăĄńăĄŕæŇĞåőŽăĄŢăĆŇăĄ§åď L'æŔŻå¿ŇæŰĞå■ŮåĹŮăĄŇèĺ■åőŽăĄŢăĆŇăĄ¿ăĄŹăĂĆ

åď L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮăĂĄåď L'æŔŻå¿ŇæŰĞå■ŮåĹŮăĄńăĂĄèď ĞæŢřå■ŸèłđăĄŃăĆL'ăĄłăĆŃæŰĞå■ŮåĹŮăĆŠæŇĞåőŽ

åď L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮăĄőăČłăĆźăČĹăĄńäÿĂèĞť'ăĄŹăĆŃăĆĆăĄőăĄŇçĎąăĄĎåăť'åŘĹăĂĄăĆşăČşăČŢăĆčăĆřăČňăČijăĆ
*default-map* ăĄőåőŽç¿l'åĂď ăĄŃè£ŤăĆŁăĄ¿ăĄŹăĂĆ ïijĹdefault-mapăĄŇåőŽç¿l'ăĄŢăĆŃăĄęăĄĎăĄłăĄĎåăť'åŘĹăĂĄçl'žæŰĞå

- åśđæĂğăĂĂïijĹå■ŘèęĄçť ăăĄğăĄőæŇĞåőŽăĆĆåŔŕèČ¡ïijL'

| ăČŚăČľăĆąăĆĆăĆĆăĆĆĚéăĺĺæŸÖ | | | |
|---|---|---|---|
| name | mapåŘ■ | Yes | mapsăČŢăĆąăĆď ăČńåŘ■ăĄŃăĆL'æŃąåijţå■ŘăĆŠéŹď ăĄĎăĄ§æŰĞå■ŮåĹŮăĆŠæŇĞåőŽăĄŮăĄ¿ă |

åśđæĂğãĄgnameãĆŠæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĂĄçŹżéŇšãĄŢãĆŇãĄęãĄłãĄĎãČŢãĆąãĆd'ãČńåŘ■ãĆŠæŇĞåőŽãĄŹãĆŇãĄĺãĂ

å■ŘèęĄçť'ăãĄgnameãĆŠæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĂĄçŹżéŇšãĄŢãĆŇãĄęãĄłãĄĎãČŢãĆąãĆd'ãČńåŘ■ãĆŠæŇĞåőŽãĄŹãĆŇãĄĺ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>* ãĄőçIJŇåžĄæL'ĂåIJĺåIJřãĄŕïij§</pattern>
    <template>
       <map name="prefectural_office"><star/></map>ãĄğãĄźãĂĆ
    </template>
</category>
```

Input: çěđåëĹåůİçIJŇãĄőçIJŇåžĄæL'ĂåIJĺåIJřãĄŕïij§
Output: æĺłæţIJåÿĆãĄğãĄźãĂĆ

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄő *dynamic* ãĄğ `maps` ãĄŇåőŽç¿l'ãĄŢãĆŇãĄęãĄĎãĆŇåăť'åŘĹãĂĄmapsãČŢãĆąãĆd'ãČ
`dynamic` ãĄőåőŽç¿l'ãĄŇåĎłåĚĹãĄŢãĆŇãĄ¿ãĄźãĂĆ

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽmaps*

### 6.1.33 nluintent

[custom]

nluintentèęAçt'ăãĄŕãĂĄNLUçţŘæđIJãĄőintentæČĚåăśãĆŠåŘŰå¿ŮãĄźãĆŇãĄ§ãĆĄãĄőæl'§èČ¡ãĄğãĄźãĂĆ

NLUçţŘæđIJãĄŇãĄĆãĆŇåăť'åŘĹãĄőãĄ£åĂd'ãĄŇè£ŤãĆŁãĄ¿ãĄźãĂĆå¿ŞãĄčãĄęãĂĄå§žæIJńçŽĎãĄńäžëäÿŇãĄőåd'L'æŢřãĄŕ

- patternãĄń *nluãĆ£ãĆř* ãĆŠæŇĞåőŽãĄŮãĄ§categoryãĄńãČđãČČãČĄãĄŮãĄ§åăť'åŘĹãĄńãĂĄãČ■ãČijãĆńãČńåd'L'æŢř(va
  `__SYSTEM_NLUDATA__` ãĆŠår¿èśąãĄńåĞęçŘĘãĄŮãĄ¿ãĄźãĂĆ
- templateãĄő *sraixãĆ£ãĆř* ãĄğNLUéĂŽä£ąãĆŠèąŇãĄčãĄ§åăť'åŘĹãĄńãĂĄãČ■ãČijãĆńãČńåd'L'æŢř(var):
  `__SUBAGENT_NLU__.ãĆĺãĆd'ãČłãĆćãĆźåŘ■` ãĆŠår¿èśąãĄńåĞęçŘĘãĄŮãĄ¿ãĄźãĂĆ
- NLUçţŘæđIJãĆŠäžčåĚëãĄŮãĄ§åd'L'æŢřãĆŠår¿èśąãĄńåĞęçŘĘãĄŮãĄ¿ãĄźãĂĆ

èl'şçt'řãĄŕãĂĄ *NLU* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

- åśđæĂğ

| ãČŚãČĺãČąãĆČãĆĆãĆĆãĆČŮ | | å£ĚéëĺñæŸŐ | |
|---|---|---|---|
| name | ãĆd'ãČşãČĘãČşãČĹåŘ■ | Yes | åŘŰå¿ŮãĄŹãĆŃãĆd'ãČşãČĘãČşãČĹåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ<br>* ãĄğãČŕãĆd'ãČńãČL'ãĆńãČijãČL'æL'śãĄĎãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆãČŕãĆd'ã |
| item | åŘŰå¿ŮãĆćãĆd'ãČĘãČăåŘ■ | Yes | æŇĞåőŽãĄŮãĄ§ãĆd'ãČşãČĘãČşãČĹãĄőæČĚåăśãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂ<br>ãĂĄ score ãĄŁãĆĹãĄş count<br>ãĆŠæŇĞåőŽãĄğãĄ■ãĄ¿ãĄŹãĂĆ inten-<br>tæŇĞåőŽæŹĆãĄŕãĆd'ãČşãČĘãČşãČĹåŘ■ãĆŠåŘŰå¿ŮãĄŹãĆŃãĄŞãĄĺãĄŇã |
| index | ãĆd'ãČşãČĞãČČãĆŕãĆź | No | åŘŰå¿ŮãĄŹãĆŃãĆd'ãČşãČĘãČşãČĹãĄőãĆd'ãČşãČĞãČČãĆŕãĆźçŢłåŕůãĆŠ |
| target | åŕ¿èśąåd'L'æŢřåŘ■ | No | äżżæĎŘãĄőåd'L'æŢřãĆŠåŕ¿èśąãĄĺãĄŹãĆŃåăť'åŘĹãĄńãĂĄãĄİãĄőåd'L'æŢřã<br>__SYSTEM_NLUDATA__ ïijL'ãĂĆsraixãĄğãĄőN-<br>LUéĂŽä£ąçţŘædIJãĆŠåŕ¿èśąãĄĺãĄŹãĆŃåăť'åŘĹãĄńãĄŕãĂĄ__SUBAGENT_<br>ãĆĺãĆd'ãČłãĆćãĆźåŘ■<br>ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |
| type | åd'L'æŢřçĺőåĹě | No | target ãĄőæŇĞåőŽæŹĆãĄńæIJL'åŁźãĄğãĂĄåd'L'æŢřãĄőçĺőåĹëïijŽâĂŹ-<br>nameâĂŹ, âĂŸdataâĂŹ, âĂŸvarâĂŹ<br>ãĄőãĄĎãĄŽãĆŃãĄŃãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijĹçIJĄçŢěåĂd'ãĄŕãĂĄâĂŹ |

AIMLãĄőåd'L'æŢřãĆŠåĂd'ãĄĺãĄŮãĄęæŇĞåőŽãĄŹãĆŃåăť'åŘĹãĄńåšđæĂğãĄğãĄŕæŇĞåőŽãĄğãĄ■ãĄłãĄĎãĄ§ãĆĄãĂĄå■Řè

åŃŢä¡IJãĄŕåšđæĂğãĄĺåŘŇãĄŸåŃŢä¡IJãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆåŘŇãĄŸåšđæĂğåŘ■ãĂĄå■ŘèęAçt'ääŘ■ãĆŠæŇĞåőŽãĄŮãĄ§åă

- å■ŘèęAçt'ă

| ãČŚãČĺãČąãĆČãĆĆãĆĆãĆČŮ | | å£ĚéëĺñæŸŐ | |
|---|---|---|---|
| name | ãĆd'ãČşãČĘãČşãČĹåŘ■ | Yes | åŘŰå¿ŮãĄŹãĆŃãĆd'ãČşãČĘãČşãČĹåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ<br>åĘĚåőźãĄńãĄd'ãĄĎãĄęãĄŕåšđæĂğãĄő-<br>nameãĆŠåŔĆçĚğãĂĆ |
| item | åŘŰå¿ŮãĆćãĆd'ãČĘãČăåŘ■ | Yes | æŇĞåőŽãĄŮãĄ§ãĆd'ãČşãČĘãČşãČĹãĄőæČĚåăśãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂ |
| index | ãĆd'ãČşãČĞãČČãĆŕãĆź | No | åŘŰå¿ŮãĄŹãĆŃãĆd'ãČşãČĘãČşãČĹãĄőãĆd'ãČşãČĞãČČãĆŕãĆźçŢłåŕůãĆŠ |

- ä¡£çŤĺä¿Ń

NLUãĄőåĞęçŘĘçţŘædIJãĄőãĆd'ãČşãČĘãČşãČĹæČĚåăśãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ
äžëäÿŃä¿ŃãĄőNLUåĞęçŘĘçţŘædIJãĄŃãĆĽãĆd'ãČşãČĘãČşãČĹãĆŠåŘŰå¿ŮãĄŹãĆŃåăť'åŘĹãĆŠèłñæŸŐãĄŮãĄ¿ãĄŹãĂĆ

```
{
    "intents": [
        {"intent": "restaurantsearch", "score": 0.9 },
        {"intent": "aroundsearch", "score": 0.4 }
    ],
    "slots": [
        {"slot": "genre", "entity": "ãĆd'ãĆ£ãČłãĆćãČş", "score": 0.95, "startOffset
↪": 0, "endOffset": 5 },
        {"slot": "genre", "entity": "ãČŢãČñãČşãČĄ", "score": 0.86, "startOffset":␣
↪7, "endOffset": 10 },
        {"slot": "genre", "entity": "äÿ■èŕŕ", "score": 0.75, "startOffset": 12,
↪"endOffset": 14 }
    ]
}
```

NLUãĄğåĞęçŘĘãĄŮãĄ§ãĆd'ãČşãČĘãČşãČĹãĆŠåŘŰå¿ŮãĄŹãĆŃåăť'åŘĹãĂĄäžëäÿŃãĄőãĆĹãĄĘãĄńèĺŸè£řãĄŮãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>
        <nlu intent="restaurantsearch"/>
```

(continues on next page)

(continued from previous page)

```
    </pattern>
    <template>
        <nluintent name="restaurantsearch" item="score" />
    </template>
</category>
```

Input: ãĆd'ãĆ£ãČłãĆćãČşãĄÑãČŢãČňãČşãČĄãĄÑäÿ■èŘřãĆŠæŐćãĄŮãĄę
Output: 0.9ãĂĆ

*sraixãĆ£ãĆř* ãĄğN-
LUéĂŽä£ąãĆŠèąÑãĄčãĄ§çţŘæđIJãĄÑãĆL'ãĆd'ãČşãČĘãČşãČĹãĆŠåŘŰå¿ŮãĄŹãĆŃåät'åŘĹãĂĄäžëäÿÑãĄőãĆĹãĄĘãĄńèÍŸè£ì
åřŽãĂĄãĄŞãĄőåät'åŘĹãĄő *nlu_servers*
ãČŢãĆąãĆd'ãČńãĄğãĄřãĂĄserversãĄőãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄĺãĄŮãĄęãĂĄâĂŹsomeNluâĂŹ
ãĄÑçŹžéÑšãĄŢãĆÑãĄęãĄĎãĆÑãĆĆãĄőãĄĺãĄŮãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>
        NLUéĂŽä£ą *
    </pattern>
    <template>
        <think>
            <sraix nlu="sameNlu"><star /></sraix>
        <thimk>
        <nluintent name="restaurantsearch" item="score" target="__SUBAGENT_NLU__.
↪someNlu" />
    </template>
</category>
```

Input: NLUéĂŽä£ą ãĆd'ãĆ£ãČłãĆćãČşãĄÑãČŢãČňãČşãČĄãĄÑäÿ■èŘřãĆŠæŐćãĄŮãĄę
Output: 0.9ãĂĆ

éŰćéĂčéăĚçŻő: *NLU* ãĂĄ *NLUãĆd'ãČşãČĘãČşãČĹãĄőåŘŰå¿Ů*

### 6.1.34 nluslot

[custom]

nluslotèęAçt'ăăĄřãĂĄNLUçţŘæđIJãĄőslotæČĚåăśãĆŠåŘŰå¿ŮãĄŹãĆÑãĄ§ãĆĄãĄőæl'§èČ¡ãĄğãĄŹãĂĆ

NLUçţŘæđIJãĄÑãĄĆãĆÑåät'åŘĹãĄőãĄ£åĂd'ãĄÑè£ŤãĆŁãĄ¿ãĄŹãĂĆå¿ŞãĄčãĄęãĂĄå§žæIJñçŽĎãĄńäžëäÿÑãĄőåd'L'æŢřãĄń

- patternãĄń *nluãĆ£ãĆř* ãĆŠæŇĞåőŽãĄŮãĄ§categoryãĄńãČđãČČãČĄãĄŮãĄ§åät'åŘĹãĄńãĂĄãČ■ãČijãĆńãČńåd'L'æŢř(va
  __SYSTEM_NLUDATA__ ãĆŠår¿èśąãĄńåĞęçŘĘãĄŮãĄ¿ãĄŹãĂĆ
- templateãĄő *sraixãĆ£ãĆř* ãĄğNLUéĂŽä£ąãĆŠèąÑãĄčãĄ§åät'åŘĹãĄńãĂĄãČ■ãČijãĆńãČńåd'L'æŢř(var):
  __SUBAGENT_NLU__.ãĆĺãĆd'ãČłãĆćãĆźåŘ■ ãĆŠår¿èśąãĄńåĞęçŘĘãĄŮãĄ¿ãĄŹãĂĆ
- NLUçţŘæđIJãĆŠäžčåĚëãĄŮãĄ§åd'L'æŢřãĆŠår¿èśąãĄńåĞęçŘĘãĄŮãĄ¿ãĄŹãĂĆ

èl'şçt'řãĄřãĂĄ *NLU* ãĆŠåŘĆçĚğãĄŮãĄęãĄŘãĄăăĄŢãĄĎãĂĆ

- åśđæĂğ

| ãČŚãČľäČąąąąąąČŮ | | å£ËéëĺĺæŸŐ | |
|---|---|---|---|
| name | ãĆźãČ■ãČČãČĹåŘ■ | Yes | åŘŰå¿ŮãĄŹãĆŃãĆźãČ■ãČČãČĹåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ<br>* ãĄğãČřãĆđ'ãČńãČĽ'ãĆńãČijãČĽæĽśãĄĐãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆãČřãĆđ'ã |
| item | åŘŰå¿ŮãĆćãĆđ'ãČĘãČăåŘ■ | Yes | æŇĞåőŽãĄŮãĄ§ãĆźãČ■ãČČãČĹãĄőæČĚåăśãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆs<br>ãĂĄ entity ãĂĄ score ãĂĄstartOffset<br>ãĂĄendOffset ãĄŁãĆĹãĄş count<br>ãĆŠæŇĞåőŽãĄğãĄ■ãĄ¿ãĄŹãĂĆ<br>slotæŇĞåőŽæŹĆãĄŕãĆźãČ■ãČČãČĹåŘ■ãĆŠåŘŰå¿ŮãĄŹãĆŃãĄŞãĄĺãĄŃãĄ<br>countãĄŕåŘŇäÿĂãĆźãČ■ãČČãČĹåŘ■ãĄőæŢřãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ |
| index | ãĆđ'ãČşãČĞãČČãĆřãĆź | No | åŘŰå¿ŮãĄŹãĆŃãĆźãČ■ãČČãČĹãĄőãĆđ'ãČşãČĞãČČãĆřãĆźŢłåŘůãĆŠæŇ |
| target | åŕ¿èśąåđ'L'æŢřåŘ■ | No | äżżæĎŘãĄőåđ'L'æŢřãĆŠåŕ¿èśąãĄĺãĄŹãĆŃåăť'åŘĹãĄńãĂĄãĄİãĄőåđ'L'æŢřå<br>__SYSTEM_NLUDATA__ ïijL'ãĂĆsraixãĄğãĄőN-<br>LUéĂŽä£ąçţŘæđIJãĆŠåŕ¿èśąãĄĺãĄŹãĆŃåăť'åŘĹãĄńãĄŕãĂĄ__SUBAGENT_<br>ãĆĺãĆđ'ãČłãĆćãĆźåŘ■<br>ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |
| type | åđ'L'æŢřçĺőåĹě | No | target ãĄőæŇĞåőŽæŹĆãĄńæIJL'åŁźãĄğãĂĄåđ'L'æŢřãĄőçĺőåĹěïijŽâĂŹ-<br>nameâĂŹ, âĂŸdataâĂŹ, âĂŸvarâĂŹ<br>ãĄőãĄĐãĄŽãĆŃãĄŃãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹïijĹçIJĄçŢěåĐđ'ãĄŕãĂĄâĂŹ |

AIMLãĄőåđ'L'æŢřãĆŠåĂđ'ãĄĺãĄŮãĄęæŇĞåőŽãĄŹãĆŃåăť'åŘĹãĄńåśđæĂğãĄğãĄŕæŇĞåőŽãĄğãĄ■ãĄłãĄĐãĄ§ãĆĄãĂĄå■Řè
åŃŢä¡IJãĄŕåśđæĂğãĄĺåŘŇãĄŸåŃŢä¡IJãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆåŘŇãĄŸåśđæĂğåŘ■ãĂĄå■ŘèęĄçť'ääŘ■ãĆŠæŇĞåőŽãĄŮãĄ§åă

- å■ŘèęĄçť'ă

| ãČŚãČľäČąąąąąąČŮ | | å£ËéëĺĺæŸŐ | |
|---|---|---|---|
| name | ãĆźãČ■ãČČãČĹåŘ■ | Yes | åŘŰå¿ŮãĄŹãĆŃãĆźãČ■ãČČãČĹåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ<br>åĘĚåőźãĄńãĄđ'ãĄĐãĄęãĄŕåśđæĂğãĄő-<br>nameãĆŠåŘĆçĚğãĂĆ |
| item | åŘŰå¿ŮãĆćãĆđ'ãČĘãČăåŘ■ | Yes | æŇĞåőŽãĄŮãĄ§ãĆźãČ■ãČČãČĹãĄőæČĚåăśãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆåĚ |
| index | ãĆđ'ãČşãČĞãČČãĆřãĆź | No | åŘŰå¿ŮãĄŹãĆŃãĆźãČ■ãČČãČĹãĄőãĆđ'ãČşãČĞãČČãĆřãĆźŢłåŘůãĆŠæŇ |

- ä¡£çŤĺä¿Ń

NLUãĄőåĞęçŘĘçţŘæđIJãĄőãĆźãČ■ãČČãČĹæČĚåăśãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ
äžëäÿŃä¿ŃãĄőNLUåĞęçŘĘçţŘæđIJãĄŃãĆĽ'ãĆźãČ■ãČČãČĹãĆŠåŘŰå¿ŮãĄŹãĆŃåăť'åŘĹãĆŠèłñæŸŐãĄŮãĄ¿ãĄŹãĂĆ

```
{
    "intents": [
        {"intent": "restaurantsearch", "score": 0.9 },
        {"intent": "aroundsearch", "score": 0.4 }
    ],
    "slots": [
        {"slot": "genre", "entity": "ãĆđ'ãĆ£ãČłãĆćãČş", "score": 0.95, "startOffset
↪": 0, "endOffset": 5 },
        {"slot": "genre", "entity": "ãČŢãČńãČşãČĄ", "score": 0.86, "startOffset":␣
↪7, "endOffset": 10 },
        {"slot": "genre", "entity": "äÿ■èŘŕ", "score": 0.75, "startOffset": 12,
↪"endOffset": 14 }
    ]
}
```

NLUãĄğåĞęçŘĘãĄŮãĄ§ãĆźãČ■ãČČãČĹãĆŠåŘŰå¿ŮãĄŹãĆŃåăť'åŘĹãĂĄäžëäÿŃãĄőãĆĹãĄĘãĄńèĺŸè£řãĄŮãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>
        <nlu intent="restaurantsearch"/>
    </pattern>
```

(continues on next page)

(continued from previous page)

```
    <template>
        <nluslot name="genre" item="count" />
        <nluslot name="genre" item="entity" index="0" />
        <nluslot name="genre" item="entity" index="1" />
        <nluslot name="genre" item="entity" index="2" />
    </template>
</category>
```

Input: ãĆď'ãĆ£ãČłãĆćãČşãĄÑãČŢãČňãČşãČĄãĄÑäÿ■èŘŕãĆŠæŐćãĄŮãĄę
Output: 3 ãĆď'ãĆ£ãČłãĆćãČş ãČŢãČňãČşãČĄ äÿ■èŘŕãĂĆ

*sraixãĆ£ãĆŕ* ãĄğN-
LUéĂŽä£ąãĆŠèąÑãĄčãĄ§çţŘædIJãĄÑãĆL'ãĆźãČ■ãČČãČĹãĆŠåŔŰå¿ŮãĄŹãĆŃåät'åŘĹãĂĄäżěäÿÑãĄőãĆĹãĄĘãĄńèÍŸè£řãĄŮ
åřŽãĂĄãĄŞãĄőåät'åŘĹãĄő *nlu_servers*
ãČŢãĆąãĆd'ãČńãĄğãĄŕãĂĄserversãĄőãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄĺãĄŮãĄęãĂĄâĂŹsomeNluâĂŹ
ãĄŇçŹżéŇšãĄŢãĆŇãĄęãĄĎãĆŃãĆĆãĄőãĄĺãĄŮãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>
        NLUéĂŽä£ą *
    </pattern>
    <template>
        <think>
            <sraix nlu="sameNlu"><star /></sraix>
        <think>
        <nluslot name="genre" item="count" target="__SUBAGENT_NLU__.someNlu" />
        <nluslot name="genre" item="entity" index="0" target="__SUBAGENT_NLU__.
↪someNlu" />
        <nluslot name="genre" item="entity" index="1" target="__SUBAGENT_NLU__.
↪someNlu" />
        <nluslot name="genre" item="entity" index="2" target="__SUBAGENT_NLU__.
↪someNlu" />
    </template>
</category>
```

Input: NLUéĂŽä£ą ãĆď'ãĆ£ãČłãĆćãČşãĄÑãČŢãČňãČşãČĄãĄÑäÿ■èŘŕãĆŠæŐćãĄŮãĄę
Output: 3 ãĆď'ãĆ£ãČłãĆćãČş ãČŢãČňãČşãČĄ äÿ■èŘŕãĂĆ

éŰćéĂčéăĚçŽő: *NLU* ãĂĄ *NLUãĆźãČ■ãČČãČĹãĄőåŔŰå¿Ů*

### 6.1.35 normalize

[1.0]

normalizeèęAçt'ăãĄŕãĂĄåŕ¿èśąãĄĺãĄłãĆŃæŰĞå■ŮåĹŮãĄńåŘńãĄ¿ãĆŇãĆŃèĺŸåŔůãĆĎãĂĄç§■çÿőå¡ćãĄőæŰĞå■ŮåĹŮãĆŠãĂ
åd'L'æŔŻåĘĚåőźãĄŕãĂĄ*normalãČŢãĆąãĆd'ãČń*
ãĄğæŇĞåőŽãĄŮãĂĄåd'ğæŰĞå■ŮãČżåřŔæŰĞå■ŮãĂĄåĚíèğŠãČżå■ŁèğŠãĆŠåŇžåĹěãĄŮãĄęåd'L'æŔŻãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ

èŃšå■Ÿèłđ ãĄńåŕ¿ãĄŹãĆŃåd'L'æŔŻãĄőåät'åŘĹãĂĄæŰĞå■ŮãĆŠå■Ÿä¡■ãĄĺãĄŹãĆŃåd'L'æŔŻïijĹæŰĞå■Ůåd'L'æŔŻïijL'ãĄĺãĂ

ïijĹæŮěæIJňèłđãĄőåăť'åŘĹãĂĄå■Ÿèłđåđ'L'æŔŻãĄőãĄ£ãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆïijL'

ä¿ŃãĄĹãĄřãĂĄâĂŹ.âĂŹãĆŠâĂŹdotâĂŹãĂĄâĂŹ*âĂŹãĆŠâĂŹ_âĂŹãĄńåđ'L'æŔŻãĄŹãĆŃåăť'åŘĹãĂĄâĂŹwww.***.comâĂŹã
dot _ _ _ dot comâĂŹãĄńåđ'L'æŔŻãĄŢãĆŇãĄ¿ãĄŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>URLãĄŕ *</pattern>
    <template>
        <normalize><star /></normalize>ãĆŠèąĺçd'žãĄŮãĄ¿ãĄŹãĂĆ
    </template>
</category>
```

<normalize />ãĄŕãĂĄ<normalize><star /></normalize>ãĄĺåŘŇç¿l'ãĄğãĄŹãĂĆæŻÿãĄ■æŔŻãĄĹãĆŃãĄĺäžěäÿŃãĄőæğŸãĄńãĄł

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>URLãĄŕ *</pattern>
    <template>
         <normalize />ãĆŠèąĺçd'žãĄŮãĄ¿ãĄŹãĂĆ
    </template>
</category>
```

Input: URLãĄŕwww.***.com
Output: www dot _ _ _ dot com ãĆŠèąĺçd'žãĄŮãĄ¿ãĄŹãĂĆ

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽnormal* , *denormalize*

### 6.1.36 olist

[2.1]

olistïijĹordered listïijL'èęĄçt'ăãĄŕãĂĄå■ŘèęĄçt'ăãĄő *item* ãĄńèĺŸèijL'ãĄŮãĄ§èęĄçt'ăãĆŠãČłãĆźãČĹå¡ćåijŔãĄğè£ŤãĄŹãČłãČĆ
å■ŘèęĄçt'ăãĄőitemãĄńãĄŕãČłãĆźãČĹãĄőåĘĚåőźãĆŠèĺŸèijL'ãĄŹãĆŃãĄŞãĄĺãĄŃãĄğãĄ■ãĄ¿ãĄŹãĂĆãĄ¿ãĄ§ãĂĄitemãĄńlist

åŕ¿èl'śãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄãČłãČČãČąãČąãČĞãĆčãĆćèęĄçt'ăãĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţRædIJãĆŠè£ŤãĄŮãĄ
åő§éŻŽãĄőçŤżéÍćæŔŔçŤżç■L'ãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşåőŽç¿l'ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄ§åĞęçŘĘãĆŕãČl'ãĆźãĄőåĹűå¿ąãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆ

- å■ŘèęĄçt'ă

| ãČŚãČl'ãČąãĆźãČąãĆźãČąãĆź

(continued from previous page)

```
                    <button>
                        <text>Yes</text>
                        <url>https://searchsite.com:?q=yes</url>
                    </button>
                </card>
            </item>
            <item>
                <card>
                    <image>https://searchsite.com/image1.png</image>
                    <title>Image No.2</title>
                    <subtitle>Tag olist No.2</subtitle>
                    <button>
                        <text>No</text>
                        <url>https://searchsite.com:?q=no</url>
                    </button>
                </card>
            </item>
        </olist>
    </template>
</category>
```

éŰćéĂčéăĚçŻő: *item* , *card*

### 6.1.37 oob

[1.0]

OOBãĄŕ âĂIJOut of BandâĂİ
ãĄőçŢěãĄğãĂĄoobèęAçt'ăăĄŇèl'Ţä¿ąãĄŢãĆŇãĆŃãĄĺăŕ¿å£IJãĄŹãĆŃåĘĚéČĺãČćãĆÿãČěãČijãČńãĄŇåĞęçŘĘãĆŠèąŇãĄĎãĂĄ

åĘĚéČĺãČćãĆÿãČěãČijãČńãĄğãĄőåĞęçŘĘãĄŕOSäÿŁãĄğãĄőæl'§åŹĺæŞ■ä¡IJãĆŠæČşåőŽãĄŮãĄęãĄŁãĆŁãĂĄçţĎãĄ£è¿ijãĄ£æl

OOBãĆŠåĞęçŘĘãĄŹãĆŃåĘĚéČĺãČćãĆÿãČěãČijãČńãĄŕãĂĄãĆůãĆźãČĘãČáéŰŃçŹžèĂĚãĄŇèĺ■èĺĹãĂĄåő§èčĚãĆŠèąŇãĄĎãĄ¿
*OOB* ãĆŠåŘĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

oobèęAçt'ăăĄőå■ŘèęAçt'ăăĄőåŘ■çğřãĄńãĂĄåĹl'çŤĺãĄŹãĆŃOOBæl'§èČ¡ãĄőè■ŸåĹěåŘ■ãĆŠæŇĞåőŽãĄŮãĂĄãĄİãĄőåĘĚåőźã

åijŢæŢřãĆŠèd'ĞæŢřæŇĞåőŽãĄŹãĆŃåăt'åŘĹãĂĄèęAçt'ăåŘ■ãĄńãĄŕAIMLãĄğä¡£çŤĺãĄŹãĆŃèęAçt'ăåŘ■ãĄĺéĞ■ãĄłãĆL'ãĄłãĄ

ãĆşãČşãČŢãĆčãĆřãČńãČijãĆůãČğãČşãĄğçŹžéŇšãĄŮãĄęãĄĎãĄłãĄĎOOBãĄőè■ŸåĹěåŘ■ãĆŠæŇĞåőŽãĄŮãĄ§ăăt'åŘĹãĄńãĄ

(éĞ■èęĄïijL'

ãĂĂOOBãĄőåĞęçŘĘãĄŕãĂĄäżŰãĄőèęAçt'ăăĄĺãĄŕçŢřãĄłãĆŁãĂĄtemplateåĘĚãĄńèĺŸè£řãĄŢãĆŇãĄ§äżŰãĄőèęAçt'ăăĄőåĞęç

ãĂĂåŘĹãĂĄåő§æŰ¡ãĄğãĄ■ãĆŃOOBæl'§èČ¡ãĄŕcategoryåĘĚãĄğïijŚãĄd'ãĄőãĄ£ãĄğãĂĄèd'ĞæŢřãĄőOOBãĄőæŇĞåőŽãĆŠèą

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>DIAL *</pattern>
    <template>
```

(continues on next page)

(continued from previous page)

```
        <oob><dial><star /></dial></oob>
    </template>
</category>
```

Input: DIAL 0123-456-7890
Output: (DIAL) (è£Ťå■ť åĘĚåőźãĄŕåĘĚéČĺãČćãĆÿãČěãČijãČńãĄőåő§èčĚæňąçňň)

éŰćéĂčéăĚçŻő: *xml* ãĂĄ *OOB*

### 6.1.38 person

[1.0]

personèęĄçť ăãĄŕãĂĄçŹžèľ śæŰĞãĄńåŘńãĄ¿ãĆŇãĆŃäÿĂäžžçğřãĄőäżčåŘ■èľ đãĄÍäžŇäžžçğřãĄőäżčåŘ■èľ đãĄőéŰŞãĄőåd'L'æł
åd'L'æŔŻåĘĚåőźãĄŕãĂĄ*personãČŢãĆąãĆd'ãČń* ãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

åd'L'æŔŻæŰźæşŢãĄőæŇĞåőŽãĄńãĄŕåd'L'æŔŻåL'■ãĄĺåd'L'æŔŻå¿ŇãĄőãĆżãČČãČĹãĄğèíŸèijL'ãĄŮãĂĄpersonãĄőãĆżãČČãČ

åd'L'æŔŻåŕ¿èśąãĄőåĹd'åőŽãĄŕãĂĄèŃśæŢřèĺŸåŔůïijŽå■ŁèğŠãĂĄãĆńãĆ£ãĆńãČŁïijŽåĚĺèğŠãĄńåd'L'æŔŻãĄŮãĄ§äÿŁãĄğèąÑã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĄŕ * ãĆŠå¿ĚãĄčãĄęãĄĎãĄ¿ãĄŹãĂĆ</pattern>
    <template>
        ãĄĆãĄłãĄ§ãĄŕ <person><star /></person> ãĆŠå¿ĚãĄčãĄęãĄĎãĆŃãĆŞãĄğãĄŹãĄ■ãĂĆ
    </template>
</category>
```

<person />ãĄŕãĂĄ<person><star /></person>ãĄĺåŘŇç¿l'ãĄğãĄŹãĂĆæŻÿãĄ■æŔŻãĄĹãĆŃãĄĺäžëäÿŃãĄőæğŸãĄńãĄłãČŁãĄ¿ã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĄŕ * ãĆŠå¿ĚãĄčãĄęãĄĎãĄ¿ãĄŹãĂĆ</pattern>
    <template>
        ãĄĆãĄłãĄ§ãĄŕ <person /> ãĆŠå¿ĚãĄčãĄęãĄĎãĆŃãĆŞãĄğãĄŹãĄ■ãĂĆ
    </template>
</category>
```

Input: çğĄãĄŕãĄĆãĄłãĄ§ãĆŠå¿ĚãĄčãĄęãĄĎãĄ¿ãĄŹãĂĆ
Output: ãĄĆãĄłãĄ§ãĄŕçğĄãĆŠå¿ĚãĄčãĄęãĄĎãĆŃãĆŞãĄğãĄŹãĄ■ãĂĆ

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽperson* , *person2*

### 6.1.39 person2

[1.0]

person2èęAçt'ããAŕãĂAçŹžèl'śæŰĞãAńåŘńãA¿ãĆŇãĆŃäÿĂäžžçğřãAőäżčåŘ■èl'đãAĺäÿL'äžžçğřãAőäżčåŘ■èl'đãAőéŰŞãAőåd'L'a
åd'L'æŔŻåĘĚåőźãAŕãĂAperson2ãČŢãĆąãĆd'ãČń ãAğæŇĞåőŽãAŲãA¿ãAŹãĂĆ

åd'L'æŔŻæŰźæşŢãAőæŇĞåőŽãAńãAŕåd'L'æŔŻåL'■ãAĺåd'L'æŔŻå¿ŇãAőãĆżãČČãČĹãAğèĺŸèijL'ãAŲãĂAperson2ãAőãĆżãČČãĆ

åd'L'æŔŻåŕ¿èśąãAőåĹd'åőŽãAŕãĂAèŃśæŢřèĺŸåŔůïijŽå■ŁèğŠãĂAąĆńãĆ£ãĆńãČŁïijŽåĚĺèğŠãAńåd'L'æŔŻãAŲãA§äÿŁãAğèąŇã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>* ãAń * ãĆŠæŢŹãAĹãAęãAŔãAăãAŢãAĎãĂĆ</pattern>
    <template>
        <person2><star/></person2> ãAő <star index="2" /> ãAŕãAŞãĆŇãAğãAŹãĂĆ
    </template>
</category>
```

<person2 />ãAŕãĂA<person2><star /></person2>ãAĺåŘŇç¿l'ãAğãAŹãĂĆæŻÿãA■æŔŻãAĹãĆŇãAĺäžěäÿŇãAőæğŸãAńãAłãĆŁãA

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>* ãAń * ãĆŠæŢŹãAĹãAęãAŔãAăãAŢãAĎãĂĆ</pattern>
    <template>
        <person2 /> ãAő <star index="2" /> ãAŕãAŞãĆŇãAğãAŹãĂĆ
    </template>
</category>
```

Input: çğAąãAńèąŇãA■æŰźãĆŠæŢŹãAĹãAęãAŔãAăãAŢãAĎãĂĆ
Output: ãAĆãAłãA§æŰźãAőèąŇãA■æŰźãAŕãAŞãĆŇãAğãAŹãĂĆ

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽperson2* , *person*

### 6.1.40 program

[1.0]

programèęAçt'ããAŕãĂAąBotãAőãČŘãČijãĆÿãČğãČşæČĚåăśãĆŠ âĂŸãČIJãČČãČĹåŘ■ version
ãČŘãČijãĆÿãČğãČşåŘ■âĂŹ
ãAőå¡ćåijŔãAğè£ŤãAŲãA¿ãAŹãĂĆ(åŕ¿èl'śãĆĺãČşãĆÿãČşãAőãČŘãČijãĆÿãČğãČşãĆŠçd'žãAŹãĆĆãAőãAğãAŕãAĆãĆŁãA¿ãAŻã
ãČIJãČČãČĹåŘ■ãAŕãĂAądefault:âĂŹAIML botâĂŹ ãAğãĂAą *propertiesãČŢãĆąãĆd'ãČń* ãAğ
âĂŸfullnameâĂŹ ãĆŠæŇĞåőŽãAŹãĆŃãAŞãAĺãAğåd'L'æŻt'ãAğãA■ãA¿ãAŹãĂĆ
ãČŘãČijãĆÿãČğãČşåŘ■ãAŕãĂAąãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşãAő *version* ãĆŠdefaultãAĺãAŲãĂAą
*propertiesãČŢãĆąãĆd'ãČń* ãAő âĂŸversionâĂŹ æŇĞåőŽãAğåd'L'æŻt'ãAğãA■ãA¿ãAŹãĂĆ

propertiesãČŢãĆąãĆd'ãČńãAőversionãAń âĂŸv1,0âĂŹ ãĆŠæŇĞåőŽãAŲãA§åät'åŘĹãAńãAŕãĂAäžěäÿŇãAőæğŸãAńãAłãĆŁãA¿

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>version</pattern>
    <template>
        <program />
```

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(continued from previous page)

```
    </template>
</category>
```

Input: version
Output: AIML bot version v1.ïijŘ

éŰćéĂčéăĚçŻő: *ãČŢãĆąãĆd'ãČńçőąçŘĘïijŽproperties*

### 6.1.41 random

[1.0]

randomèęAçt'ããAŕãĂAąĹŮèÍŸãAŢãĆŇãA§ *li* å■ŘèęAçt'ããAőäÿ■ãAŃãĆĽãČľãČşãČĂãČăãAńïijŚåĂŃãĆŠéAÿãAşãĂAąãAİãAőçţ

- å■ŘèęAçt'ă

| ãČŚãČľãĆãąźãĆãjãĆãĂĚĚéěĺňæŸŐ | | | |
|---|---|---|---|
| li | string | Yes | ãČľãČşãČĂãČăãAğåĞžåŁŻãAŹãĆŃçţŘæđIJãĆŠæŇĞåőŽãAŮãA¿ãAŹãĂĆ |

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>ãAŞãĆŞãAńãAąãAŕ</pattern>
    <template>
        <random>
             <li>ãAŞãĆŞãAńãAąãAŕ</li>
             <li>äżŁæŮěãAőèŁ£å■ŘãAŕãAl'ãAĘãAğãAŹãAŃïij§</li>
             <li>äżŁæŮěãAőäžĹåőŽãĆŠèŁ£ãAźãA¿ãAŮãĆĞãAĘãAŃïij§</li>
        </random>
    </template>
</category>
```

Input: ãAŞãĆŞãAńãAąãAŕ
Output: äżŁæŮěãAőäžĹåőŽãĆŠèŁ£ãAźãA¿ãAŮãĆĞãAĘãAŃïij§
Input: ãAŞãĆŞãAńãAąãAŕ
Output: äżŁæŮěãAőèŁ£å■ŘãAŕãAl'ãAĘãAğãAŹãAŃïij§

éŰćéĂčéăĚçŻő: *li*

### 6.1.42 reply

[2.1]

replyèęAçt'ããAŕãĂAąãČłãĈČãČAąãČĞãĆčãĆćèęAçt'ããAğbuttonèęAçt'ããAńäijijãAęãAĎãA¿ãAŹãĂĆå■ŘèęAçt'ããAĺãAŮãAęã

replyãAĺbuttonãAőéAŢãAĎãAŕãĂAGUIãĆŠåĹl'çŤĺãAŻãAŽé§şåčřår¿èl'śãAŁãAl'ãAğåĹl'çŤĺãAŹãĆŃãAŞãAĺãĆŠæČşåőŽãAŮãAę

åŕ¿èľ śãĆĺãČşãĆÿãČşãĄğãĄŕãĂąãČłãČČãČąãČğãĆčãĆćèęĄçť ăãĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘæđIJãĆŠè£ŤãĄŮãĄ
åő§éŽŽãĄőçŤżéÍćæŔŔçŤżç■Ľ ãĄŕãĂąãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşåőŽç¿ľ ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄşåĞęçŘĘãĆŕãČľ ãĆźãĄőåĹűå¿ąãĄńä¿Íå■ŸãĄŮãĄ¿ãĄŹãĂĆ

- å■ŘèęĄçť ăãĂĂïijĹåśđæĂğãĄğãĄőæŇĞåőŽãĆĆåŔŕèČ¡ïijĽ

| ãČŚãČľãĆğãĄźãĆąãĆĺãĆčãĆŠãĆĘãĆĚéěĺňæŸŐ | | | |
|---|---|---|---|
| text | string | Yes | èł■ãĄ£äÿŁãĄŠãČĘãĆ■ãĆźãČĹãĆŠèĺŸèijĽ ãĄŮãĄ¿ãĄŹãĂĆïijĹçľ žæŰĞå■ŮãĆŠèĺśåőźãĄŮãĄ¿ãĄŹ |
| postback | string | No | åŃŢä¡IJãĆŠèĺŸèijĽ ãĄŮãĄ¿ãĄŹãĂĆãČęãČijãĆűãĄńãĄŕãĄŞãĄőãČąãČČãĆżãČijãĆÿãĄŕèęŃãĄŻãĄ |

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>äźŮãĆŁæŔŻãĄĹ</pattern>
    <template>
         <reply>
             <text>äźŮãĆŁæŔŻãĄĹæd'IJçt'ćãĄŮãĄ¿ãĄŹãĄŃïij$</text>
             <postback>äźŮãĆŁæŔŻãĄĹæąĹåĘĚ</postback>
         </reply>
    </template>
 </category>
```

éŰćéĂčéăĚçŻő: *button*

### 6.1.43 request

[1.0]

requestèęĄçť ăãĄŕãĂĄåśěæ■t' çŢłåŔůãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğåŕ¿èľ śåśěæ■t' ãĄőäÿ■ãĄŃãĆĽèľ šå¡ŞãĄŹãĆŃåĚěåŁŻïijĹç

åĚěåŁŻæŰĞãĄŕãĂĄèŃśæŢřèĺŸåŔůãĄőå■ŁèğŠåŇŰãĄĺãĆńãĆ£ãĆńãČŁãĄőåĚĺèğŠåŇŰãĂĄãČđãČČãČąåĞęçŘĘåŕ¿èśąåď ŰæŰČ

åśěæ■t' çŢłåŔůãĄŕãĂĄâĂŹ0âĂŹãĄŇçŔ¿åIJĺãĄğãĂĄæŢřåĂď ãĄŇåď ğãĄ■ãĄŔãĄłãĆŃãĄżãĄľéĄŐåŐżãĄőåśěæ■t' ãĄńãĄłãĆŁã
1âĂŹãĆŠæŇĞåőŽãĄŹãĆŃãĄĺæIJĂåŔď ãĄőåĚěåŁŻæŰĞãĄŇåŔŰå¿ŮãĄğãĄ■ãĄ¿ãĄŹãĂĆ

èľ šå¡ŞãĄŹãĆŃåśěæ■t' ãĄŇãĄłãĄĎåśěæ■t' çŢłåŔůãĆŠæŇĞåőŽãĄŮãĄ§åăť åŔĹãĂĄåŔŰå¿Ůåď śæŢŮãĄĺãĄŮãĄęçľ žæŰĞå■ŮãĆ

- åśđæĂğ

| ãČŚãČľãĆğãĄźãĆąãĆĺãĆčãĆŠãĆĘãĆĚéěĺňæŸŐ | | | |
|---|---|---|---|
| index | string | No | åśěæ■t' çŢłåŔůãĆŠæŢt' æŢřåĂď ãĄğæŇĞåőŽãĂĆæIJłæŇĞåőŽæŹĆãĄŕ<br>âĂŸ1âĂŹãĂĆ |

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>ãĄłãĆŞãĄęèÍÃãĄčãĄ§ãĄčãĄŚïij$</pattern>
    <template>
          <request index="2" />ãĂĄ
          <request index="1" />ãĂĄ
          <request index="0" />ãĂĄ
          ãĄÍèÍÃãĄĎãĄ¿ãĄŮãĄ§ãĂĆ
    </template>
</category>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: ãĄŞãĆŞãĄńãĄąãĄŕ
Input: ãĆĆãĄĘåďIJãĄăãĄ■
Output: ãĄŞãĆŞãĄřãĆŞãĄŕ
Input: ãĄłãĆŞãĄęèÍĂãĄčãĄ§ãĄčãĄŚïij§
Output:
ãĄŞãĆŞãĄńãĄąãĄŕãĂĄãĆĆãĄĘåďIJãĄăãĄ■ãĂĄãĄłãĆŞãĄęèÍĂãĄčãĄ§ãĄčãĄŚïij§ãĂĄãĄÍèÍĂãĄĎãĄ¿ãĄŮãĄ§ãĂĆ

<request />ãĄŕãĂĄ<request index=âĂİ1âĂİ />ãĄÍåŘŇç¿l'ãĄğãĄŹãĂĆæŻÿãĄ■æŔŻãĄĹãĆŃãĄÍäżëäÿŃãĄőæğŸãĄńãĄłãĆŁãĄ¿ã

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>ãĄłãĆŞãĄęèÍĂãĄčãĄ§ãĄčãĄŚïij§</pattern>
    <template>
          <request />ãĂĄãĄÍèÍĂãĄĎãĄ¿ãĄŮãĄ§ãĂĆ
    </template>
</category>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: ãĄŞãĆŞãĄńãĄąãĄŕ
Input: ãĄłãĆŞãĄęèÍĂãĄčãĄ§ãĄčãĄŚïij§
Output: ãĄŞãĆŞãĄńãĄąãĄŕãĂĄãĄÍèÍĂãĄĎãĄ¿ãĄŮãĄ§ãĂĆ

éŰćéĂčéăĚçŻő: *response*

### 6.1.44 resetlearn

[2.x]

resetlearnèęĄçť'ăãĄŕãĂĄãČąãČćãČłäÿŁãĄő *learn* èęĄçť'ă. *learnf*
èęĄçť'ăãĄğçŹžéŇšãĄŢãĆŇãĄ§ãČęãČijãĆűåŽžæIJL'ãĄőcategoryãĆŠåĚÍãĄęåL'ŁéŹd'ãĄŮãĄ¿ãĄŹãĂĆ

resetlearnãĄğãĄŕãĂĄlearnfèęĄçť'ăãĄğä¡IJæĹŘãĄŮãĄ§ãČŢãĆąãĆd'ãČńãĆŠåL'ŁéŹd'ãĄŮãĄłãĄĎçĆžãĂĄåĘ■èţůåŃŢæŹĆãĄńle

resetlearnãĆŠåő§èąŇãĄŹãĆŃãĄŞãĄÍãĄğãĂĄä¡£çŤÍäÿ■ãĄőcategoryæŢřãĄŕåĹİæIJ§ãČ■ãČijãČL'ãĄŮãĄ§categoryæŢřãĄńæĹżãĆ
åřŽãĂĄresetlearnèęĄçť'ăãĄőçţŘæđIJãĄŕãĂĄåÿÿãĄńçl'žæŰĞå■ŮãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>çğĄãĄőèÍĂãĄčãĄ§ãĄ§ãĄÍãĆŠå£ŸãĆŃãĄęãĂĆ</pattern>
    <template>
         <think><resetlearn /></think>
         ãĆŔãĄŃãĆŁãĄ¿ãĄŮãĄ§ãĂĆæőŃå£ţãĄğãĄŹãĄŃå£ŸãĆŃãĄ¿ãĄŹãĂĆ
    </template>
</category>
```

éŰćéĂčéăĚçŻő: *learn*, *learnf*, *resetlearnf*

### 6.1.45 resetlearnf

[2.x]

resetlearnfèęAçť'ăăAŗfăĂĄ*learn* èęAçť'ă. *learnf*
èęAçť'ăăAğçŹżéŇšăAŢăĆŇăA§ăČęăČijăĆűåŽžæIJL'ãAőcategoryãĆŠåĚĺãAęåL'ŁéŹd'ãAŮãA¿ãAŹãĂĆ

resetlearnãAĺãAőåůőãAŗfăĂĄlearnfèęAçť'ăăAğä¡IJæĹŘãAŮãA§ãČŢãĆąãĆd'ãČńãĆŠåŘńãĆAãAęåL'ŁéŹd'ãAŹãĆŇçĆźãAğãAŹãĂ

resetlearnfãĆŠåő§èąŇãAŹãĆŇãA§ãAĺãAğãĂĄä¡£çŤĺäÿ■ãAőcategoryæŢřãAŗåĹIæIJ§ãČ■ãČijãČL'ãAŮãA§categoryæŢřãAńæĹżãĆ
åřŽãĂĄresetlearnfèęAçť'ăăAőçţŘæđIJãAŗfăĂĄåÿÿãAńçl'žæŰĞå■ŮãAńãAłãĆŁãA¿ãAŹãĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĂőèÍÃãĄčãA§ãA§ãAĺãĆŠå£ŸãĆŇãAęãĂĆ</pattern>
    <template>
         <think><resetlearnf /></think>
         ãĆŘãAŃãĆŁãA¿ãAŮãA§ãĂĆæőNå£tãAğãAŹãAŃå£ŸãĆŇãA¿ãAŹãĂĆ
    </template>
</category>
```

éŰćéĂčéăĚçŻő: *learn*, *learnf*, *resetlearn*

### 6.1.46 response

[1.0]

responseèęAçť'ăăAŗfăĂĄåśěæ■t'çŢłåŔůãĆŠæŇĞåőŽãAŹãĆŃãA§ãAĺãAğåŕ¿èl'śåśěæ■t'ãAőäÿ■ãAŃãĆL'èl'šå¡§ãAŹãĆŃåĞžåŁŻïijĺ

åśěæ■t'çŢłåŔůãAŗfăĂĄâĂŹ0âĂŹãAŇçŔ¿åIJĺïijĹæIJłçćžåőŽãAőçĆžãĂĄæŇĞåőŽäÿ■åŔŕïijL'ãAğãĂĄæŢřåĂd'ãAŃåd'ğãA■ãAŔãA
1âĂŹãĆŠæŇĞåőŽãAŹãĆŃãAĺæIJĂåŔd'ãAőåĞžåŁŻæŰĞãAŃåŔŰå¿ŮãAğãA■ãA¿ãAŹãĂĆ

èl'šå¡§ãAŹãĆŃåśěæ■t'ãAŃãAłãAĐåśěæ■t'çŢłåŔůãĆŠæŇĞåőŽãAŮãA§åăt'åŘĹãĂĄåŔŰå¿Ůåd'śæŢŮãAĺãAŮãAęçl'žæŰĞå■ŮãĆ

- åśđæĂğ

| ãČŚãČľãĆąãĆąãĆą

Output: ãĄŞãĆŞãĄńãĄąãĄŕ
Input: ãĆĆãĄĘåd'IJãĄăãĄ■
Output: ãĄŞãĆŞãĄřãĆŞãĄŕ
Input: åŘŻãĄŕãĄłãĆŞãĄęèÍÃãĄčãĄ§ãĄčãĄŚïij§
Output: ãĄŞãĆŞãĄńãĄąãĄŕãĂĄãĄŞãĆŞãĄřãĆŞãĄŕãĂĄãĄÍèÍÃãĄĎãĄ¿ãĄŮãĄ§ãĂĆ

<response />ãĄŕãĂĄ<response index=âĂİ1âĂİ />ãĄÍåŘŇç¿l'ãĄğãĄŹãĂĆæŻÿãĄ■æŔŻãĄĹãĆŃãĄÍäżëäÿŃãĄőæğŸãĄńãĄłãĆŁãĄ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>åŘŻãĄŕãĄłãĆŞãĄęèÍÃãĄčãĄ§ãĄčãĄŚïij§</pattern>
    <template>
          <response /> ãĂĄãĄÍèÍÃãĄĎãĄ¿ãĄŮãĄ§ãĂĆ
    </template>
</category>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: ãĄŞãĆŞãĄńãĄąãĄŕ
Input: åŘŻãĄŕãĄłãĆŞãĄęèÍÃãĄčãĄ§ãĄčãĄŚïij§
Output: ãĄŞãĆŞãĄńãĄąãĄŕãĂĄãĄÍèÍÃãĄĎãĄ¿ãĄŮãĄ§ãĂĆ

éŰćéĂčéăĚçŻő: *request*

### 6.1.47 rest

[2.0]

restèęAçť'ããĄŕãĂĄèd'ĞæŢřå■ŸèłđãĄŃãĆL'ãĄłãĆŃæŰĞå■ŮåĹŮãĄńår¿ãĄŮãĄęãĂĄæIJĂåĹİäżěåd'ŰãĄőå■ŸèłđåĹŮãĆŠè£ŤãA
(æŰĞå■ŮåĹŮãĄőå■ŸèłđåĹĘåL'šæŹĆãĄńãĄŕãĂĄ *punctuation_chars*
ãĄőæŇĞåőŽãĄńãĆĹãĆŃçL'źåőŽæŰĞå■ŮéŹd'åd'ŰãĄőåĞęçŘĘãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ)
åŔŰå¿ŮãĄńåd'śæŢŮãĄŮãĄ§åăť'åŘĹãĄŕãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l'ãĄő *default-get*
ãĄőåĂd'ãĄŇè£ŤãĆŁãĄ¿ãĄŹãĂĆ
ä¿ŃãĄĹãĄŕãĂĄâĂİåśśçŤř åd'łéČŐâĂİãĄőåăť'åŘĹãĂĄâĂİåd'łéČŐâĂİãĄŇè£ŤãĆŁãĄ¿ãĄŹãĂĆ

åřŽãĂĄçţŘæđIJãĄőå■ŸèłđåĹŮãĄŕãĂĄæŮěæIJňèłđãĄőåăť'åŘĹãĄğãĆĆçl'žçŹ¡åŇžåĹĞãĆŁãĄğè£ŤãĆŁãĄ¿ãĄŹãĂĆ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>çğĄãĄőåŘ■åL'■ãĄŕ * ãĄğãĄŹ</pattern>
    <template>
        ãĄĆãĄłãĄ§ãĄőåŘ■åL'■ãĄŕ<rest><star /></rest>ãĄŢãĆŞãĄğãĄŹãĄ■
    </template>
</category>
```

Input: çğĄãĄőåŘ■åL'■ãĄŕ åśśçŤř åd'łéČŐ ãĄğãĄŹ
Output: ãĄĆãĄłãĄ§ãĄőåŘ■åL'■ãĄŕåd'łéČŐãĄŢãĆŞãĄğãĄŹãĄ■

RDFãČŁãČňãČČãĆÿãČŹãČijãĆźãĄőæď˙IJçţ˙ćçţŘæđIJãĄńéĄľçŤĺãĄŮãĄ§åăţ˙åŘĹãĂĄçţŘæđIJãČłãĆźãČĹĺĘĕãĄőåĚĹéă■äžěåď˙Ú
èľşçţ˙řãĄŕãĂĄ*RDFãĆţãČİäČijãČĹ* ãĆŠåŔĆçĚğãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ
JSONå¡ćåijŔãĄőãČĞãČijãĆ£ãĄńãĄŕår¿å£IJãĄŮãĄęãĄĎãĄ¿ãĄŻãĆŞãĂĆ

firstèęĄçţ˙ăãĄĺrestèęĄçţ˙ăãĆŠãĂĄconditionèęĄçţ˙ăåĘĚãĄğä¡£çŤĺãĄŹãĆŃãĄŞãĄĺãĄğãĂĄå■ŸèłđæŕőãĄőåĞęçŘĘãĆŠçźřãĆŁè£Ť
âĂIJunknownâĂİ ãĄőåŔŮå¿ŮãĄğçţĆäžĘãĄŮãĄ¿ãĄŹïijL˙ãĂĆ

ïijĹä¡ĘãĄŮãĂĄæIJńåĞęçŘĘãĄŕå■Ÿèłđå Ĺ Ęèğčçţ Ř æđIJãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆåŔĹãĂĄconditionãĄğãĄőloopåĞęçŘĘãĄńãĄ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>å■Ÿèłđåś Ţé ŰŃ *</pattern>
    <template>
        <think>
            <set var="WORDS"><star /></set>
        </think>
        <condition var="WORDS">
            <li value="unknown" />
            <li>
                "<first><get var="WORDS" /></first>"
                <think>
                    <set var="WORDS"><rest><get var="WORDS" /></rest></set>
                </think>
                <loop />
            </li>
        </condition>
    </template>
</category>
```

Input: å■Ÿèłđåś Ţé ŰŃ apple orange grape
Output: âĂIJappleâĂİ âĂIJorangeâĂİ âĂIJgrapeâĂİãĂĆ

éŰćéĂčéăĚçŻő: *first*

### 6.1.48 set

[1.0]

templateåĘĚãĄősetèęĄçţ˙ăãĄğãĄŕãĂĄãĆřãČ■ãČijãČŘãČńåď˙L˙æŢřãĄĺãČ■ãČijãĆńãČńåď˙L˙æŢřãĄőèĺ■åőŽãĆŠèąÑãĄĘãĄŞãĄĺãĄ
*get* ãĆŠåŔĆçĚğãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

JSONå¡ćåijŔãĆĎãČłãĆźãČĹå¡ćåijŔãĄőãČĞãČijãĆ£ãĆĆæŰĞå■ŮåĹŮãĄĺãĄŮãĄęæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğãĂĄsetèęĄçţ˙ăãĄ

setèęĄçţ˙ăãĄőçţŘæđIJãĄńãĄŕãĂĄęĺ■åőŽãĄŮãĄŞåĂď˙ãĄŇè£ŤãĆŁãĄ¿ãĄŹãĂĆå£IJç■ŤæŰĞãĄńåŔ■æŸăãĄŢãĆŃãĄłãĄĎæğŸãĄ
ãĆŠåĹľçŤĺãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

ãĆřãČ■ãČijãČŘãČńåď˙L˙æŢř(name/data)ãĄńãĄď˙ãĄĎãĄęãĄŕãĂĄåĹľçŤĺåŔŕèČ¡ãĄłåď˙L˙æŢřãĄőçůŔæŢřãĄŇãĆşãČşãČŢãĆčãĆřã

*åĹűéŹŘåĂd'åőŽç¿l'* ãĄő `max_properties` ãĄgåĹűéŹŘãĄţãĆŇãA¿ãĄŹãĂĆ

åĹűéŹŘæŢřãĄńéĄŤãĄŮãĄ§çŁűæĚŃãĄgæŰřèęŔçŹżéŇšãĆŠèąŇãĄčãA§åăt'åŘĹãĄńãĄŕãĂĄåĞęçŘEä¿Ńåd'ŰãĄŇçŹžçŢ§ãĄŮãA
*defaultsãČŢãĆąãĆd'ãČń*
ãĄgåĹìæIJ§èĺ■åőŽãĄŹãĆŃãĆřãČ■ãČijãČŘãČńåd'L'æŢř(name)ãĄńãĄd'ãĄĎãĄęãĄŕåĚĺãĄęçŹżéŇšãĄŢãĆŇãA¿ãĄŹãĄŇãĂĄåĹì

åd'L'æŢřãĆŠåL'ŁéŹd'ãĄŹãĆŃãĄńãĄŕãĂĄsetèęAçt'ăãĄőèĺ■åőŽåĂd'ãĄńçl'žæŰĞå■ŮãĆŠæŇĞåőŽãĄŮãA¿ãĄŹãĂĆïijĹãĆřãČ■ãČ
ãĄő `deleteVariable` æŇĞåőŽãĄgåL'ŁéŹd'ãĄŹãĆŃãĄŞãĄĺãĆĆãĄgãĄ■ãA¿ãĄŹãĂĆïijL'
ä¡ĘãĄŮãĂĄãĆřãČ■ãČijãČŘãČńåd'L'æŢř(name)ãĄő âĂŸtopicâĂŹ
ãĄŕåL'ŁéŹd'ãĄgãĄ■ãĄłãĄĎåd'L'æŢřãĄĺãĄŮãĄęãĂçl'žæŰĞå■ŮãĆŠæŇĞåőŽãĄŮãĄęãĆĆ âĂŸ*âĂŹ
ãĄŇèĺ■åőŽãĄŢãĆŇãA¿ãĄŹãĂĆ

- åśđæĂğãĂĂïijĹå■ŘèęAçt'ăãĄgãĄőæŇĞåőŽãĆĆåŕŕèČ¡ïijL'

| ãČŚãČľãČąæĆŚijãĆœãČåŁĚéäĺňæŸŐ | | |
|---|---|---|
| name | åd'L'æŢřåŘ■No | ãĆřãČ■ãČijãČŘãČńåd'L'æŢř(name)åŘ■ãĆŠæŇĞåőŽ |
| var | åd'L'æŢřåŘ■No | ãČ■ãČijãĆńãČńåd'L'æŢř(var)åŘ■ãĆŠæŇĞåőŽ |
| data | åd'L'æŢřåŘ■No | ãĆřãČ■ãČijãČŘãČńåd'L'æŢř(data)åŘ■ãĆŠæŇĞåőŽ |

setèęAçt'ăãĄĺãĄŮãĄęãĂĄåśđæĂğãČżå■ŘèęAçt'ăãĄgãĂĄvar, name, data
ãĄőãĄĎãĄŽãĆŇãĄŃãĄŇèĺ■åőŽãĄŢãĆŇãĄęãĄĎãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãA¿ãĄŹãĂĆ

èd'ĞæŢřãĄőåśđæĂğãĂĂå■ŘèęAçt'ăãĆŠæŇĞåőŽãĄŮãA§åăt'åŘĹãĄńãĄŕãĂĄäÿ■æ■čæŇĞåőŽãĄĺãĄŮãĄęãĆůãČŁãČłãĆłãĄŕçĎ

åřŽãĂĄåd'L'æŢřåŘ■ãČżèĺ■åőŽåĂd'ãĄĺãĆĆãĂĄåd'ğæŰĞå■ŮãČżåřŘæŰĞå■ŮãĂĄåĚĺèğŠãČżå■ŁèğŠãĆŠåŇžåĹēãĄŮãĄęçőąçŘE

- ä¡£çŤĺä¿Ń

```
<!-- ãĆřãČ■ãČijãČŘãČńåd'L'æŢř -->
<category>
    <pattern>MY NAME IS *</pattern>
    <template>
        <set name="myname"><star /></set>
    </template>
</category>

<!-- ãČ■ãČijãĆńãČńåd'L'æŢř -->
<category>
    <pattern>MY NAME IS *</pattern>
    <template>
        <set var="myname"><star /></set>
    </template>
</category>
```

éŰćéĂčéăĚçŻő: *get*

### 6.1.49 select

[2.0]

selectèęAçt'ăãĄŕRDFãĄőæd'IJçt'ćãĄńä¡£çŤĺãĄŹãĆŃèęAçt'ăãĄgãĂĄèţůåŃŢæŹĆãĄńåśŢéŰŃãĄŹãĆŃRDFãČŢãĆąãĆd'ãČńãĄőã
ãĄgè£¡åŁăãĄŢãĆŇãĄ§RDFãĆŁãČňãČČãĆÿãČŹãČijãĆźãĆŠåŕ¿èśąãĄńæd'IJçt'ćãĆŠèąŇãĄĐãĂĄèl'šå¡ŞãĄŹãĆŃæČĚåăśãĆŠåŘŰ

selectèęAçť ăăĄğăĄőæd' IJçť ćăĄŕăĂĄèĆŕåőŽæd' IJçť ćăĆŠèąŇăĄĘăĆŕăĆĺăČłăĄĺåŘęåőŽæd' IJçť ćăĆŠèąŇăĄĘăĆŕăĆĺăČłăĄŇæŇČ

åŔĹăĂĄæd' IJçť ćçŤĺåd' L' æŢřăĆŠåĹl' çŤĺăĄŹăĆŃăĄŞăĄĺăĄğăĂĄăĆŕăĆĺăČłéŰŞăĄğåĚśéĂŽăĄŹăĆŃåĂd' ăĆŠæd' IJçť ćåŕ¿èśąăĄĺ
âĂŸ?âĂŹ ăĆŠäżŸäÿŐăĄŮăĄ¿ăĄŹăĂĆ

(ăĆŕăĆĺăČłăĆŠåĹŮèÍŸăĄŮăĄ§åăť'åŘĹăĄğăĂĄåĚĹèąŇăĄŹăĆŃăĆŕăĆĺăČłăĄőçţŘæđIJăĄŇå¿ŇçűŽăĄőăĆŕăĆĺăČłăĄőçţŘæđIJăĆ
èl' şçť řăĄŕ *RDFăĆţăČĺăČijăČĹ* ăĆŠåŔĆçĚğăĄŮăĄęăĄŔăĄăăĄŢăĄĎăĂĆ

- å■ŘèęAçť ă

| ăČŠăČľăČąăČijăĆăĆ£ăĆd'ăĆĽĚèăĺæŸŐ | | | | |
|---|---|---|---|---|
| vars | | åd' L' æŢřåŘ■ăĆăĺĆźăĆĺĄŹăĆŃæd' IJçť ćçŤĺåd' L' æŢřåŘ■ăĆŠçľžçŹ¡åŇžåĹĞăĆŁăĄğåĹŮèÍŸ | | |
| q | | | No | èĆŕåőŽæd' IJçť ćăĆŠăĄŹăĆŃăĆŕăĆĺăČłăĄőæŇĞåőŽ |
| | subj | string | No | æd' IJçť ćåŕ¿èśąăĄősubject (äÿżèłđ)ăĄőåĂd' ăĂĄåŔĹăĄŕăĂĄæd' IJçť ćçŤĺåd' L' æŢřåŘ■ăĆŠæŇ |
| | pred | string | No | æd' IJçť ćåŕ¿èśąăĄőpredicate (è£řèłđ)ăĄőåĂd' ăĂĄåŔĹăĄŕăĂĄæd' IJçť ćçŤĺåd' L' æŢřåŘ■ăĆŠæ |
| | obj | string | No | æd' IJçť ćåŕ¿èśąăĄőobject (çŻőçŽĎèłđ)ăĄőåĂd' ăĂĄåŔĹăĄŕăĂĄæd' IJçť ćçŤĺåd' L' æŢřåŘ■ăĆŠ |
| notq | | | No | åŘęåőŽæd' IJçť ćăĆŠăĄŹăĆŃăĆŕăĆĺăČłăĄőæŇĞåőŽăĂĆå■ŘèęAçť ăæŇĞåőŽăĄńåŕ¿ăĄŮăĄ ANDæÍąäżűăĄğåĞęçŘĘăĄŮăĄ¿ăĄŹăĂĆ |
| | subj | string | No | æd' IJçť ćåŕ¿èśąåd' ŰăĄősubject (äÿżèłđ)ăĄőåĂd' ăĂĄåŔĹăĄŕăĂĄæd' IJçť ćçŤĺåd' L' æŢřåŘ■ăĆ |
| | pred | string | No | æd' IJçť ćåŕ¿èśąåd' ŰăĄőpredicate (è£řèłđ)ăĄőåĂd' ăĂĄåŔĹăĄŕăĂĄæd' IJçť ćçŤĺåd' L' æŢřåŘ■ă |
| | obj | string | No | æd' IJçť ćåŕ¿èśąåd' ŰăĄőobject (çŻőçŽĎèłđ)ăĄőåĂd' ăĂĄåŔĹăĄŕăĂĄæd' IJçť ćçŤĺåd' L' æŢřåŘ |

selectèęAçť ăăĄńăĄŕăĂĄå■ŘèęAçť ăăĄĺăĄŮăĄęăĂĄqăĂĄåŔĹăĄŕăĂĄ`notq`
ăĄŇïijŚăĄd' ăĄŕå£ĚèęĄăĄğăĄŹăĆăĆåŔĹăĂĄăĆŕăĆĺăČłéŰŞăĄğåd' L' æŢřăĆŠåĚśæIJL' ăĄŹăĆŃåăť'åŔĹăĂĄ`vars`
å■ŘèęAçť ăăĆĆå£ĚéáĹăĄńăĄłăĆŁăĄ¿ăĄŹăĂĆ
âĂŸqâĂŹăĂĄâĂŹnotqâĂŹ ăĄőå■ŘèęAçť ăăĄńăĄd' ăĄĎăĄęăĆĆăĂĄ`subj`ăĂĄ`pred`ăĂĄ`obj`
ăĄőăĄĎăĄŽăĆŃăĄŇïijŚăĄd' ăĄŇæIJĂä¡ŐéŹŘå£ĚèęĄăĄğăĄŹăĂĆåŘŇäÿĂå■ŘèęAçť ăăĄŃèd' ĞæŢřæŇĞåőŽăĄŢăĆŃăĄ§åăť'åŘ

ăĆŕăĆĺăČłåĘĚăĄğăĂĄâĂŹsubjâĂŹăĂĄâĂŹpredâĂŹăĂĄâĂŹobjâĂŹăĄőæŇĞåőŽăĆŠçIJĄçŢěăĄŮăĄ§åăť'åŔĹăĂĄçIJĄçŢěăĄŢ

äžëäÿŇăĄőä¿ŇăĄğăĄŕăĂĄRDFăĆŁăČňăĆČăĆÿăČŹăČijăĆźăĄńåŕ¿ăĄŮăĄęăĂĄpredicate=âĂİlegsâĂİ,
object=âĂİ4âĂİ ăĆŠæŇĞåőŽăĄŮăĄ§æd' IJçť ćăĆŠèąŇăĄčăĄęăĂĄsubject(åd' L' æŢřåŘ■:âĂŹ?nameâĂŹ)
ăĄőäÿĂèęğăĆŠåŔŰå¿ŮăĄŮăĄęăĄĎăĄ¿ăĄŹăĂĆ

æd' IJçť ćçţŘæđIJăĄŕåd' L' æŢřåŘ■ăĄĺåĂd' ăĄőăČłăĆźăČĹå¡ćåijŔăĄğèĺ■åőŽăĄŢăĆŇăĂĄå§žæIJńçŽĎăĄńRDFăČĞăČijăĆ£æŕŐăĄ
æd' IJçť ćçţŘæđIJăĄŇăĄłăĄŇăĄčăĄş§åăť'åŔĹăĄńăĄŕăĂĄăĆşăČşăČŢăĆčăĆŕăČňăČijăĆůăČğăČşåőŽç¿l' ăĄő
*default-get* ăĄőåĂd' ăĄŇè£ŤăĆŁăĄ¿ăĄŹăĂĆ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>* æIJňèűşăĄőåŃŢçL'l'ăĄŕïij§</pattern>
    <template>
        <select>
             <vars>?name</vars>
             <q><subj>?name</subj><pred>legs</pred><obj><star/></obj></q>
        </select>
    </template>
</category>
```

Input: 4 æIJňèűşăĄőåŃŢçL'l'ăĄŕïij§

Output: [[[âĂIJ?nameâĂİ, âĂIJZEBRAâĂİ]], [[âĂIJ?nameâĂİ, âĂIJLIONâĂİ]], [[âĂIJ?nameâĂİ, âĂIJELEPHANTâĂİ]]]

æňąãĄőä¿ÑãĄğãĄŕãĂĄRDFãČŁãČňãČČãĆÿãČŹãČijãĆźãĄńåŕ¿ãĄŮãĄęãĂĄpredicate=âĂİlegsâĂİ ãĆŠæŇĞåőŽãĄŮãĄ§æďIJçť´ćãĆŠèąŇãĄčãĄęãĂĄsubject(åďĽæŢřåŘ■:âĂŹ?nameâĂŹ) ãĄĺ object(åďĽæŢřåŘ■:âĂŹ?numberâĂŹ) ãĄőäÿÄèęğãĆŠåŔŰå¿ŮãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ åĞžåŁŻçţŘæđIJãĄŕãĂĄRDFãČĞãČijãĆ£æŕŐãĄń âĂŸsubjectâĂŹ ãĄĺ âĂŸobjectâĂŹ ãĄÑãĄ¿ãĄĺãĆĄãĆĽ´ãĆŇãĄ§å¡ćãĄğãČłãĆźãČĹãĄńæäijçť■ãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>åŃŢçL’l’ãĄőèűşãĄŕïij§</pattern>
    <template>
     <select>
         <vars>?name ?number</vars>
         <q><subj>?name</subj><pred>legs</pred><obj>?number</obj></q>
     </select>
    </template>
</category>
```

Input: åŃŢçL’l’ãĄőèűşãĄŕïij§

Output: [[[âĂIJ?nameâĂİ, âĂIJANTâĂİ], [âĂIJ?numberâĂİ, âĂIJ6âĂİ]], [[âĂIJ?nameâĂİ, âĂIJBATâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJLIONâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJPIGâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJELEPHANTâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJPERSONâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJBEEâĂİ], [âĂIJ?numberâĂİ, âĂIJâĂİ]], [[âĂIJ?nameâĂİ, âĂIJBUFFALOâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJANIMALâĂİ], [âĂIJ?numberâĂİ, âĂIJLegsâĂİ]], [[âĂIJ?nameâĂİ, âĂIJFROGâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJPENGUINâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJDUCKâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJBIRDâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJMONKEYâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJGOOSEâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJFOXâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJKANGAROOâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJDOGâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJCOWâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJSHEEPâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJFISHâĂİ], [âĂIJ?numberâĂİ, âĂIJ0âĂİ]], [[âĂIJ?nameâĂİ, âĂIJOXâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJDOLPHINâĂİ], [âĂIJ?numberâĂİ, âĂIJ0âĂİ]], [[âĂIJ?nameâĂİ, âĂIJBEARâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJWOLFâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJZEBRAâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJCATâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJWHALEâĂİ], [âĂIJ?numberâĂİ, âĂIJ0âĂİ]], [[âĂIJ?nameâĂİ, âĂIJCHICKENâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJTIGERâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJHORSEâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJOWLâĂİ], [âĂIJ?numberâĂİ, âĂIJ2âĂİ]], [[âĂIJ?nameâĂİ, âĂIJGOATâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]], [[âĂIJ?nameâĂİ, âĂIJRABBITâĂİ], [âĂIJ?numberâĂİ, âĂIJ4âĂİ]]]

äżżæĎŔãĄőåď´ĽæŢřåŘ■ãĆŠåĹľçŤĺãĄŻãĄŽãĄńæď´IJçť´ćåŕ¿èśąéăĚçŻőãĄń âĂŸ?âĂŹ ãĄőãĄ£ãĆŠæŇĞåőŽãĄŮãĄ§åăť´åŘĹãĂĄåď´ĽæŢřåŘ■ãĄĺãĄŮãĄęãĂĄâĂİ?subjâĂİ, âĂIJ?predâĂİ, âĂIJ?objâĂİ ãĄŇåĞžåŁŻãĄŢãĆŇãĄ¿ãĄŹãĂĆ

éŰćéĂčéăĚçŻő: *addtriple*, *deletetriple*, *uniq*, *RDFãĆţãČĺãČijãČĹ*

### 6.1.50 sentence

[1.0]

sentenceèęAçt’ăãAŕãĂAęÑśæŰĞãAńår¿ãAŹãĆÑæŢt’å¡ćãĆŠçŻõçŽĎãAĺãAŲãAęãĂAæŰĞçńããAőæIJĂåĹİãAőå■Ÿèłđ
èÑśå■Ůäżěåd’ŰãAńãĂAåd’ğæŰĞå■ŮãČżåřŔæŰĞå■ŮãAÑå■ŸåIJĺãAŹãĆÑãĆõãČłãĆůãČčæŰĞå■Ůç■L’ãAńãĆĆår¿å£IJãAŲãA¿ã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>Create a sentence with the word *</pattern>
    <template>
        <sentence>HAVE you Heard ABouT <star/></sentence>
    </template>
</category>
```

Input: Create a sentence with the word AnImAl
Output: Have you heard about animal

<sentence />ãAŕ<sentence><star /></sentence>ãAĺåŘÑç¿l’ãAğãAŹãĂĆæŻÿãA■æŔŻãAĹãĆÑãAĺäžěäÿÑãAőægŸãAńãAłãĆŁãA¿ã

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>CORRECT THIS *</pattern>
    <template>
        <sentence />
    </template>
</category>
```

Input: CORRECT THIS PleAse tEll Us The WeAthEr ToDay.
Output: Please tell us the weather today.

### 6.1.51 size

[1.0]

sizeèęAçt’ăãAŕãĂAåĹl’çŤĺåŘŕèČ¡ãAłãĆńãČĘãĆt’ãČłæŢřãĆŠè£ŤãAŲãA¿ãAŹãĂĆ
ãĆńãČĘãĆt’ãČłæŢřãAńãAŕãĂAåĹİæIJ§çŹżéÑšãAŢãĆÑãA§categoryãAńåŁăãAĹãĂAlearn/learnfãAğçŹżéÑšãAŢãĆÑãA§category

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çŘĘèğčãAğãA■ãĆÑãĆńãČĘãĆt’ãČłæŢřãAŕïij§</pattern>
    <template>
        <size />ãAğãAŹãĂĆ
    </template>
</category>
```

Input: çŘĘèğčãAğãA■ãĆÑãĆńãČĘãĆt’ãČłæŢřãAŕïij§
Output: 5000ãAğãAŹãĂĆ

### 6.1.52 space

[custom]

spaceèęAçt’ăăĄŕãĂĄèęAçt’ăæŕÕãĄőçţŘæđIJæŰĞå■ŮåĹŮãĄőéŰŞãĄńå■ŁèğŠãĆźãČŽãČijãĆźãĆŠæŇ£åĚěãĄŮãĄ¿ãĄŹãĂĆ

èŃśæŰĞãĄőăät’åŘĹãĄńãĄŕå■Ÿèłđé ŰŞãĄńçl’žçŹ¡ãĄŇåĚěãĆŁãĄ¿ãĄŹãĄŇãĂĄæŮěæIJňèłđãĄőăät’åŘĹãĄńãĄŕå§žæIJňçŽĎãĄń
èęAçt’ăăĄğãĄőSubAgen-
téĂčæŘžãĄğåijŢæŢřãĆŠçl’žçŹ¡åŇžåĹĞãĆŁãĄğæŇĞåőŽãĄŹãĆŃåät’åŘĹãĄłãĄl’ãĄńãĆĆä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆ

ářŽãĂĄæŰĞå■ŮåĹŮçţŘåŘĹãĄőåĞęçŘĘãĄğéĞ■èd’Ğçl’žçŹ¡ãĄŕijŚãĄd’ãĄőçl’žçŹ¡ãĄńç¡őæŔŻãĄŢãĆŇãĆŃçĆžãĂĄèŃśæŰĞãA

```
<category>
    <pattern>ãĄŁãĄŕãĆĹãĄĘãĄŤãĄŰãĄĎãĄ¿ãĄŹãĂĆ</pattern>
    <template>
         <think>
             <set var="french">ãČŢãČňãČşãČĄ</set>
             <set var="italian">ãĆd’ãĆ£ãČłãĆćãČş</set>
             <set var="chinese">äÿ■èŔŕ</set>
         </think>
         <get var="french"/><get var="italian"/><get var="chinese"/>ãĆŠæd’IJçt’ćãĂĆ
         <get var="french"/><space/><get var="italian"/><space/><get var="chinese"/
↪>ãĆŠæd’IJçt’ćãĂĆ
    </template>
</category>
```

Input: ãĄŁãĄŕãĆĹãĄĘãĄŤãĄŰãĄĎãĄ¿ãĄŹãĂĆ
Output: ãČŢãČňãČşãČĄãĆd’ãĆ£ãČłãĆćãČşäÿ■èŔŕãĆŠæd’IJçt’ćãĂĆãČŢãČňãČşãČĄ ãĆd’ãĆ£ãČłãĆćãČş
äÿ■èŔŕãĆŠæd’IJçt’ćãĂĆ

éŰćéĂčéăĚçŻő: *sraix*

### 6.1.53 split

[2.1]

splitèęAçt’ăăĄŕãČłãĆČãČĄãČąãČĞãĆčãĆćèęAçt’ăăĄğãĂĄXMLåĘĚãĄőæŰĞçńăãĆŠåĹĘåL’šãĄŹãĆŃãĄ§ãĆĄãĄńä¡£çŤĺãĄŮãĄ
år¿èl’śãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄãČłãĆČãČĄãČąãČĞãĆčãĆćèęAçt’ăăĄńår¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘæđIJãĆŠè£ŤãĄŮãĄ
åő§éŽŽãĄőçŤżéÍćæŔŔçŤżç■L’ãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşåőŽç¿l’ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄ§åĞęçŘĘãĆŕãČl’ãĆźãĄőåĹűå¿ąãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>ãĄŁãĄŕãĆĹãĄĘãĄŤãĄŰãĄĎãĄ¿ãĄŹãĂĆ</pattern>
    <template>
         äżŁæŮěãĄŕãĄĎãĄĎåd’l’ærŮãĄğãĄŹãĄ■ãĂĆ
         <split/>
         æŸŐæŮěãĆĆæŹt’ãĆŇãĆŃãĄĺãĄĎãĄĎãĄğãĄŹãĄ■ãĂĆ
    </template>
</category>
```

Input: ãĄŁãĄŕãĆĹãĄĘãĄŤãĄŰãĄĎãĄ¿ãĄŹãĂĆ
Output:
äżŁæŮěãĄŕãĄĎãĄĎåd’l’ærŮãĄğãĄŹãĄ■ãĂĆ<split/>æŸŐæŮěãĆĆæŹt’ãĆŇãĆŃãĄĺãĄĎãĄĎãĄğãĄŹãĄ■ãĂĆ

### 6.1.54 sr

[1.0]

srèęAçť ăãAŕãĂAåĚěåŁŻæŰĞãAńår¿ãAŹãĆŃsraièęAçť ăåĞęçŘĘãĆŠçřąæŸŞãAńèąÑãĄĘãĆĆãAőãĄğãĂA<srai><star/></srai> ãAőçIJAçŢěå¡cãAğãAŹãĂĆ
å¿ŞãAčãAęãĂA*srai* èęAçť ăãAÍåŘŇægŸãAńãĂAąãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l'ãAő
*åĹűéŹŘåĂd'åőŽç¿l'* ãAő `max_search_srai` ãAőåĹűéŹŘår¿èśąãAğãAŹãĂĆ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>çğĄãĄőèşłåŢŕãĄŕ * ãĄğãĄŹ</pattern>
    <template>
        <sr />
    </template>
</category>
```

<sr />ãAŕãĂA<srai><star/></srai>ãAÍåŘŇç¿l'ãAğãAŹãĂĆ

```
<category>
    <pattern>çğĄãĄőèşłåŢŕãĄŕ * ãĄğãĄŹ</pattern>
    <template>
        <srai><star/></srai>
    </template>
</category>
```

éŰćéĂčéăĚçŻő: *star*, *srai*

### 6.1.55 srai

[1.0]

sraièęAçť ăãAŕãĂAåĘĚåőźãAğæŃñãĆL'ãĆŇãA§æŰĞçńăãAğãČŚãĆ£ãČijãČşãČđãČČãČĄãĆŠåő§èąŇãAŮãĂAèl'šå¡ŞãAŹãĆŃcat
âĂIJsraiâĂİèĞłä¡ŞãAńãAŕæ■čåijŔãAłæĎŔåŚşãĆŠæŇĄãĄąãA¿ãAŻãĆŞãAŃãĂAsymbolic
reductionãĂĄãĆĆãAŮãAŔãAŕãĂAsymbolic recursionãAĺãAĎãAĘæĎŔåŚşãAńãAłãĆŁãA¿ãAŹãĂĆ

åĚśéĂŽçŽĎãAłåĞęçŘĘãĆŠèąŇãAĘcategoryãĆŠçŹžéŇšãAŮãAęãAŁãA■ãĂAsraièęAçť ăãAńår¿å£IJãAŹãĆŃçŹžèl'śæŰĞãĆŠæŇ

sraiåĞęçŘĘãAŕãČŚãĆ£ãČijãČşãČđãČČãČĄãĆŠèď ĞæŢřåŻđèąŇãAĘãA§ãĆAèšäè■ůãAŇéńŸãAŔãĂAåő§æŰ¡åŻđæŢřãĆŠãĆşãČş
*åĹűéŹŘåĂd'åőŽç¿l'* ãAő `max_search_srai` ãAğåĹűéŹŘãAŮãAęãAĎãA¿ãAŹãĂĆ

åĹűéŹŘåŻđæŢřãĆŠèűĚãAĹãAęsraiåĞęçŘĘãĆŠèąŇãAčãA§åät'åŘĹãĂAåĞęçŘĘä¿Ńåď ŰãAŇçŹžçŤ§ãAŮãA¿ãAŹãĂĆ

äžëäÿŇãAőä¿ŃãAŕãĂAâĂİHIâĂİãAńår¿å£IJãAŮãA§categoryãAğåĚśéĂŽãAŹãĆŃåĞęçŘĘãĆŠåőŽç¿l'ãAŮãĂAãAİãAőäżŰãAőåİ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>ãAŞãĆŞãAńãAąãAŕ</pattern>
    <template><srai>HI</srai></template>
</category>
```

(continues on next page)

(continued from previous page)

```
<category>
    <pattern>Hello</pattern>
    <template><srai>HI</srai></template>
</category>

<category>
    <pattern>Hola</pattern>
    <template><srai>HI</srai></template>
</category>

<category>
    <pattern>HI</pattern>
    <template>ãĄŞãĆŞãĄńãĄąãĄŕ</template>
</category>
```

Input: Hola
Output: ãĄŞãĆŞãĄńãĄąãĄŕ

éŰćéĂčéăĚçŻő: *star*, *sr*

### 6.1.56 sraix

[2.0]

sraixèęAçt’ăãAŗãĂAsraiãAőæŃąåijţæl’§èČ¡ãAğãAŗãAłãAŔãĂAãĆţãČŰãĆÍãČijãĆÿãĆğãČşãČĹéĂčæŘžãĆŠèąÑãAEåĹěãAőæl’§è

åd’ŰéČÍãAÍãAőéĂŽä£ąãĆŠèąÑãAEãA§ãĆAãĂAçŻÿæL’ŃãĆţãČijãČŞãĆźãAÍãAőéĂŽä£ąåĘĚåőźãAőçćžèł■ãĆŠèąÑãAčãA§äÿŁãA

åŔĹãĂAéĂŽä£ąçŢřåÿÿãAÑçŹžçŤ§ãAŮãA§åät’åŘĹãAőèĂČæĚőãĆĆå£ĚèęAãAğãĂAçŢřåÿÿæŹĆãAőæŰĞå■ŮåĹŮãAőæŇĞåőŽã

éĂŽä£ąæŹĆéŰŞãAńãAd’ãAĐãAęãĆĆãĂAãĆ£ãĆd’ãČăãĆćãĆęãČĹæŹĆéŰŞãAőæŇĞåőŽãAÍãAÍãĆĆãAńãĂAéĂAåŔŮä£ąãAőæŹ

ãĆţãČŰãĆÍãČijãĆÿãĆğãČşãČĹãAŇæŔŘä¿ŻãAŹãĆŃãĆţãČijãČŞãĆźãAÍéĂčæŘžãAŹãĆŃæŰźæşŢãAńãAŗãĂAäżěäÿŃãAőïijŤçÍőé

- *æśŐçŤÍŕRESTãĆd’ãČşãĆ£ãČŢãĆğãČijãĆź*
- *åŕ¿èl’śãČŮãČl’ãĆČãČĹãČŢãĆl’ãČijãČăăAğãĂAåĚňéŰŃãAŢãĆŃãAęãADãĆŃbotåŚijãAşåĞžãAŲ*
- *NLUéĂŽä£ąãĆd’ãČşãĆ£ãČŢãĆğãČijãĆź*
- *ãĆńãĆźãĆ£ãČăåd’ŰéČÍãĆţãČijãČŞãĆźåőş§èčĚ*

sraixèęAçt’ăãAğæŇĞåőŽãAŹãĆŃåśđæĂğãČżå■ŘèęAçt’ăãAŗäżěäÿŃãAńãAłãĆŁãA¿ãAŹãĂCèl’şçt’řãAŕ *Sub-Agent* ãĆŠåŔĆçĚğãAŮãAęãAŘãAăãAŢãADãĂĆ

- åśđæĂğ

| ãČŚãČľãČąãĆźãĆąãĆąãĆą

æŰĞå■ŮåĹŮåŔŰå¿ŮãĄńãĄŕè■ŸåĹěçŢłåŔůãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĄÑãĂĄè■ŸåĹěçŢłåŔůãĄńår¿å£IJãĄŮãĄ§æŰĞå■ŮåĹŮã

starèęAçt'ăãĄgåŔŰå¿ŮãĄŹãĆŃçţŘæđIJãĄŕãĆŠãĆ£ãČijãČşãČđãČČãČĄãČşãĆřæŹĆãĄőåĂd'ãĄÑår¿èśąãĄÍãĄłãĆŃãĄ§ãĆĄãĂĄ

- ãČŕãĆd'ãČńãČL'ãĆńãČijãČL'ãĄőçţŘæđIJïijŽ èŃśæŢřèÍŸåŘůïijŽå■ŁèğŠãĂĄãĆńãĆ£ãĆńãČŁïijŽåĚÍèğŠãĄńåd'L'æŔŻãĄŢãĆ
- setèęAçt'ăãĄőçţŘæđIJïijŽ ãČđãČČãČĄãĄŮãĄ§ *å■Ÿèłđ̄ãČłãĆźãČĹïijĹsetsïijL'ãČŢãĆąãĆd'ãČń* ãĄőåőŽç¿l'æŰĞå■ŮåĹŮãĂĆ
- isetèęAçt'ăãĄőçţŘæđIJïijŽ ãČđãČČãČĄãĄŮãĄ§ *isetãĄő* ãĄőwordsåőŽç¿l'æŰĞå■ŮåĹŮãĂĆ
- regexèęAçt'ăãĄőçţŘæđIJïijŽ æ■čèęŔèąÍçŔ¿ãĄÍãĄŮãĄęãČđãČČãČĄãĄŮãĄ§ãĂĄèŃśæŢřèÍŸåŘůïijŽå■ŁèğŠãĂĄãĆńãĆ£ãĆ
- botèęAçt'ăãĄőçţŘæđIJïijŽ ãČđãČČãČĄãĄŮãĄ§ *propertiesãČŢãĆąãĆd'ãČń* ãĄőåőŽç¿l'æŰĞå■ŮåĹŮãĂĆ
- åśđæĂğ

| ãČŚãČľãĆãĄĆãĄĆãĄ

(continued from previous page)

```
        <system>ls -l *.aiml</system>
    </template>
</category>
```

### 6.1.59 that

[1.0]

thatèęAçť'ăăAfăĂAcategory
ăAő å■ŘèęAçť'ăăAÍăAŮăAęăĆĆåőŽç¿l'ăAŇăAĆăĆŁăĂAçŻť'åL'■ăAő å£IJç■ŤæŰĞăAÍăAőäÿĂèĞť'åĹd'åőŽăAńåĹl'çŤÍăAŢăĆŇăA
that ăAfăĂAéAŐåŐżăAő å£IJç■ŤæŰĞăĆŠåŘŰå¿ŮăAŹăĆŃèęAçť'ăăAÍăAŮăAęä¡£çŤÍăAŮăA¿ăAŹăĂĆ

åśěæ■t'ăAőæŇĞåőŽăAńăAfåśěæ■t'çŢłåŘůăĆŠä¡£çŤÍăAŮăĂAâĂŹ0âĂŹăAŇçŘ¿åIJÍïijĹæIJłçćžåőŽăAőçĆžăĂAæŇĞåőŽäÿ■åŘríi
1âĂŹăĆŠæŇĞåőŽăAŹăĆŃăAÍæIJĂåŘd'ăAő å£IJç■ŤæŰĞăAŇåŘŰå¿ŮăAğăA■ăA¿ăAŹăĂĆ

èl'šå¡ŞăAŹăĆŃåśěæ■t'ăAŇăAłăAĎåśěæ■t'çŢłåŘůăĆŠæŇĞåőŽăAŮăA§åăt'åŘĹăĂAåŘŰå¿Ůåd'śæŢŮăAÍăAŮăAęçl'žæŰĞå■ŮăĆ

- åśđæĂğ

| ãČŚãČľáČãąĆĆąáĆĆąáĆĆąåĆĚéěĺňæŸŐ | | | |
|---|---|---|---|
| index | string | No | åśěæ■t'çŢłåŘůăĆŠ âĂŸ0âĂŹ äžěåd'ŰãAőæŢt'æŢřåĂd'ăAğæŇĞåőŽăĂĆæIJłæŇĞåőŽæŹĆãAf âĂŸ1âĂŹăĂĆ |

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>ãAŞãĆŞãAńãAąãĆŔ</pattern>
    <template>
         ãAŞãĆŞãAńãAąãAŕ
    </template>
</category>

<category>
    <pattern>ãAŹãA£ãA¿ãAŻãĆŞ</pattern>
    <template>
         <that />ãAğãAŹãA■
    </template>
</category>
```

Input: ãAŞãĆŞãAńãAąãĆŔ
Output: ãAŞãĆŞãAńãAąãAŕ
Input: ãAŹãA£ãA¿ãAŻãĆŞ
Output: ãAŞãĆŞãAńãAąãAfăAğãAŹãA■

éŰćéĂčéăĚçŻő: *that(pattern)*, *thatstar*

### 6.1.60 thatstar

[1.0]

thatstarèęAçt’ăãAąŕãĂĄthat
ãAğæŇĞåőŽãAŲãA§ãČŕãĆd’ãČńãČL’ãĆńãČijãČL’ãAńår¿å£IJãAŹãĆŃæŰĞå■ŮåĹŮãĆŠåŔŰå¿ŮãAŲãA¿ãAŹãĂĆ
patternãAńår¿ãAŹãĆŃ *star*
ãAĺåŘŇãAŸæŰźæşŢãAğãĆćãĆŕãĆżãĆźãAŢãĆŇãA¿ãAŹãAŲãĂĄpatternãAőãČŕãĆd’ãČńãČL’ãĆńãČijãČL’ãAğãAŕãAłãAŔãĂĄth

æŰĞå■ŮåĹŮåŔŰå¿ŮãAńãAŕè■ŸåĹěçŢłåŔůãĆŠæŇĞåőŽãAŲãA¿ãAŹãAŲãĂĄè■ŸåĹěçŢłåŔůãAńår¿å£IJãAŲãA§æŰĞå■ŮåĹŮã

- åśđæĂğ

| ãČŚãČľãĆąąĆąĆąĆ

### 6.1.62 topicstar

[1.0]

topicstarèęAçť'ăãAŕãĂĄtopic
ãĄğæŇĞåőŽãĄŮãĄ§ãČŕãĆď'ãČńãČL'ãĆńãČijãČL'ãĄńåŕ¿å£IJãĄŹãĆŃæŰĞå■ŮåĹŮãĆŠåŔŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ
patternãĄńåŕ¿ãĄŹãĆŃ *star*
ãĄĺåŘŇãĄŸæŰźæşŢãĄğãĆćãĆŕãĆżãĆźãĄŢãĆŇãĄ¿ãĄŹãĄŇãĂĄpatternãĄőãČŕãĆď'ãČńãČL'ãĆńãČijãČL'ãĄğãĄŕãĄłãĄŔãĂĄto

æŰĞå■ŮåĹŮåŔŰå¿ŮãĄńãĄŕè■ŸåĹěçŢłåŔůãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĄŇãĂĄè■ŸåĹěçŢłåŔůãĄńåŕ¿å£IJãĄŮãĄ§æŰĞå■ŮåĹŮã

- åśđæĂğ

| ãČŚãČľãČãĄćĆãĄĆãĄĺãĆãĄãĆĚéěĺľæŸŐ | | | |
|---|---|---|---|
| index | string | No | starè■ŸåĹěçŢłåŔůãĆŠ âĂŸ1âĂŹ äžëäÿŁãĄőæŢť'æŢřãĄğæŇĞåőŽãĂĆæIJłæŇĞåőŽæŹĆãĄŕ âĂŸ1âĂŹãĂĆ |

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>çğĄãĄŕãĆşãČijãČŠãČijãĄŇåě¡ãĄ■ãĄğãĄŹãĂĆ</pattern>
    <template>
        <think><set name="topic">beverages ãĆşãČijãČŠãČij</set></think>
        ãĆŔãĄŃãĆŁãĄ¿ãĄŮãĄ§ãĂĆ
    </template>
</category>

<topic name="beverages *">
    <category>
        <pattern>çğĄãĄőåě¡ãĄ■ãĄłéčšãĄ£çL'l'ãĄŕïij§</pattern>
        <template><topicstar/>ãĄğãĄŹãĂĆ</template>
    </category>
</topic>
```

Input: çğĄãĄŕãĆşãČijãČŠãČijãĄŇåě¡ãĄ■ãĄğãĄŹãĂĆ
Output: ãĆŔãĄŃãĆŁãĄ¿ãĄŮãĄ§ãĂĆ
Input: çğĄãĄőåě¡ãĄ■ãĄłéčšãĄ£çL'l'ãĄŕïij§
Output: ãĆşãČijãČŠãČijãĄğãĄŹãĂĆ

éŰćéĂčéăĚçŻő: *topic(pattern)*, *star*, *thatstar*

### 6.1.63 uniq

[2.0]

uniqèęAçť'ăãAŕ *select*
ãĄĺåŘŇæğŸãĄńãĂĄèţůåŃŢæŹĆãĄńåśŢéŰŃãĄŹãĆŃRDFãČŢãĆąãĆď'ãČńãĄőåĘĚåőźãĄĺãĂĄ*addtriple*
ãĄğè£¡åŁããĄŢãĆŇãĄ§RDFãČŁãČňãČĆãĆÿãČŹãČijãĆźãĆŠåŕ¿èśąãĄńæď'IJçť'ćãĆŠèąŇãĄĎãĂĄèl'šå¡ŞãĄŹãĆŃæČĚåăśãĆŠåŔŰ

selectãĄĺãĄőéĄŢãĄĎãĄŕãĂĄselectãĄŕæď'IJçť'ćçţŘæđIJãĄőèď'ĞæŢřåŹèčIJãĆŠãČłãĆźãČĹå¡ćåijŔãĄğåĚĺãĄęãĆŠè£ŤãĄŹãĄőã
èl'şçť'řãĄŕ *RDFãĆţãČİãČijãČĹ* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

uniqèęAçt’ăăĄgăĄőæd’IJçt’ćăĄgăĄŕăĂĄåŔŰå¿ŮăĄŮăĄ§ăĄĎéăĚçŻőăĄńår¿ăĄŮăĄę âĂŸ?âĂŹ
ăĆŠæŇĞåőŽăĄŮăĄ¿ăĄŹăĂĆ
æd’IJçt’ćçţŘædIJăĄÑăĄłăĄŃăĄčăĄ§åăt’åŘĹăĄńăĄŕăĂĄăĆşăČşăČŢăĆčăĆřăČńăCijăĆůăČğăČşåőŽç¿l’ăĄő
*default-get* ăĄőåĂd’ăĄŇè£ŤăĆŁăĄ¿ăĄŹăĂĆ

- å■ŘèęAçt’ă

| ãČŚăČľăĆăĄčăĄŹăĆăĄĆăĄĚéăĽæŸŐ | | | |
|---|---|---|---|
| subj | string | No | æd’IJçt’ćår¿èśąăĄősubject (äÿżèłđ)ăĄőåĂd’ăĂĄåŔĹăĄŕăĂĄâĂŹ?âĂŹ |
| pred | string | No | æd’IJçt’ćår¿èśąăĄőpredicate (è£řèłđ)ăĄőåĂd’ăĂĄåŔĹăĄŕăĂĄâĂŹ?âĂŹ |
| obj | string | No | æd’IJçt’ćår¿èśąăĄőobject (çŻőçŽĎèłđ)ăĄőåĂd’ăĂĄåŔĹăĄŕăĂĄâĂŹ?âĂŹ |

uniqèęAçt’ăăĄńăĄŕăĂĄå■ŘèęAçt’ăăĄÍăĄŮăĄęăĂĄsubjăĂĄpredăĂĄobj
ăĄőăĄĎăĄŽăĆŇăĄŃiijŚăĄd’ăĄŇæIJĂä¡ÕéŹŘå£ĚèęĄăĄgăĄŹăĂĆåŘŇäÿĂå■ŘèęAçt’ăăĄŇèd’ĞæŢřæŇĞåőŽăĄŢăĆŇăĄ§åăt’åŘ

âĂŸsubjâĂŹăĂĄâĂŹpredâĂŹăĂĄâĂŹobjâĂŹăĄőæŇĞåőŽăĆŠçIJĄçŢěăĄŮăĄ§åăt’åŘĹăĂĄçIJĄçŢěăĄŢăĆŇăĄ§éăĚçŻőăĄőåĚĺ

subjectăĄőäÿĂèęgăĆŠåŔŰå¿ŮăĄŹăĆŃåăt’åŘĹăĂĄäžěäÿŇăĄőægŸăĄńèĺŸè£řăĄŮăĄ¿ăĄŹăĂĆ

çţŘædIJăĄĺăĄŮăĄęăĂĄsubjectăĄőäÿĂèęgăĄŇçl’žçŹ¡åŇžåĹĞăĆŁăĄgåĞžåŁŻăĄŢăĆŇăĄ¿ăĄŹăĄŇăĂĄéĞ■èd’ĞăĄŮăĄ§ăĆĆă

```
<category>
    <pattern>subject list</pattern>
    <template>
        <uniq>
            <subj>?</subj>
        </uniq>
    </template>
</category>
```

äžěäÿŇăĄőä¿ŇăĄgăĄŕăĂĄçţŘædIJçŽĎăĄńăĂĄRDFăČŁăČńăČČăĆÿăČŹăČijăĆźăĄńår¿ăĄŮăĄęăĂĄpredicate=âĂİăĄŕâĂİ,
object=âĂİăČŘăČl’çğŚâĂİ ăĆŠæŇĞåőŽăĄŮăĄ§æd’IJçt’ćăĆŠèąŇăĄčăĄęăĂĄâĂŹsubjectâĂŹăĄőäÿĂèęgăĆŠåŔŰå¿ŮăĄŮăĄęăĄ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>* ãĄŕ *</pattern>
    <template>
        <addtriple>
            <subj><star /></subj>
            <pred>ãĄŕ</pred>
            <obj><star index="2"/></obj>
        </addtriple>
        çŹżéŇšãĄŮãĄ¿ãĄŮãĄ§
    </template>
</category>

<category>
    <pattern>æŐćãĄŮãĄę * * *</pattern>
    <template>
        <uniq>
            <subj><star /></subj>
            <pred><star index="2"/></pred>
            <obj><star index="3"/></obj>
        </uniq>
```

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(continued from previous page)

```
    </template>
</category>
```

Input: æąIJ ãĄŕ ãČŘãČľçğŚ
Output: çŹżéŇšãĄŮãĄ¿ãĄŮãĄ§
Input: èŃž ãĄŕ ãČŘãČľçğŚ
Output: çŹżéŇšãĄŮãĄ¿ãĄŮãĄ§
Input: æŐćãĄŮãĄę æąIJ ãĄŕ ?
Output: ãČŘãČľçğŚ
Input: æŐćãĄŮãĄę ? ãĄŕ ãČŘãČľçğŚ
Output: æąIJ èŃž

éŰćéĂčéăĚçŻő: *addtriple*, *deletetriple*, *select*, *RDFãĆţãČİãČijãČĹ*

### 6.1.64 uppercase

[1.0]

uppercaseèęAçţ'ăãĄŕãĂĄåŕ¿èśąãĄĺãĄłãĆŃæŰĞå■ŮåĹŮåĘĚãĄőå■ŁèğŠèŃśå■ŮãĆŠåď'ğæŰĞå■ŮãĄńãĄŮãĄ¿ãĄŹãĂĆèŃśå■Ůäż

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ * ãĄğãĄŹ</pattern>
    <template>
        ãĄŞãĆŞãĄńãĄąãĄŕ<uppercase><star /></uppercase>ãĄŢãĆŞ
    </template>
</category>
```

<uppercase />ãĄŕãĂĄ<uppercase><star /></uppercase>ãĄĺåŘŇç¿ľãĄğãĄŹãĂĆæŻÿãĄ■æŔŻãĄĹãĆŃãĄĺäżěäÿŃãĄőæğŸãĄńãĄł

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ * ãĄŢãĆŞ</pattern>
    <template>
        ãĄŞãĆŞãĄńãĄąãĄŕ<uppercase />ãĄŢãĆŞ
    </template>
</category>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ george washington ãĄŢãĆŞ
Output: ãĄŞãĆŞãĄńãĄąãĄŕGEORGE WASHINGTONãĄŢãĆŞ

éŰćéĂčéăĚçŻő: *lowercase*

### 6.1.65 vocabulary

[1.0]

vocabularyèęAçţ'ăãĄŕãĂĄBotãĄőå■ŸèłđæŢřãĄĺãĄŮãĄęèţůåŃŢæŹĆãĄńåśŢéŰŃãĄŢãĆŇãĄ§äżěäÿŃãĄőéăĚçŻőãĄőåŘĹèĺĺÆŢř

- *patternèęAçţ'ă* ãĄğèĺŸè£řãĄŢãĆŇãĄ§å■ŸèłđãĄőçůŔæŢřïijĹãČŕãĆď'ãĆńãČL'ãĆńãČijãČL'ãĆĎãĂĄisetç■L'ãĄőå■ŘèęAçţ'ăã

- åĚÍãĄęãĄő *å■Ÿèłđ̃ãČłãĆźãČĹïijĹsetsïijL'ãČŢãĆąãĆd'ãČń* ãĄńèÍŸèijL'ãĄŢãĆŇãĄ§ãČłãĆźãČĹæŢřãĄőåŘĹèÍĹåĂd'ãĂĆ

æŮěæIJňèłđãĄőåät'åŘĹãĂĄå■Ÿèłđå[Ęå[L'šãĄŮãĄ§äÿŁãĄğçl'■çőŮãĄŮãĄ¿ãĄŹãĂĆ
å■ŸèłđãĄőéĞ■èd'ĞãĄŕçš¿æ§żãĄŮãĄęãĄĎãĄłãĄĎãĄ§ãĆĄãĂĄçt'ŕèÍĹåĂd'ãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>ç§ěãĄčãĄęãĄĎãĆŃå■Ÿèłđæ̃řãĄŕïij§</pattern>
    <template>
        <vocabulary />ãĄğãĄŹãĂĆ
    </template>
</category>
```

Input: ç§ěãĄčãĄęãĄĎãĆŃå■Ÿèłđæ̃řãĄŕïij§
Output: 10000ãĄğãĄŹãĂĆ

éŰćéĂčéăĚçŻő: *size*

### 6.1.66 video

[2.1]

videoèęĄçt'ăãĄŕãĂĄãČłãČČãČĄãČąãČĞãĆčãĆćèęĄçt'ăãĄğãĂĄãČŞãČĞãĆłãĄőæČĚåăśãĆŠè£ŤãĄŹãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄ
ãČŞãČĞãĆłãĄőURLãĆĎãČŢãĆąãĆd'ãČńåŘ■ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆ

åŕ¿èl'śãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄãČłãČČãČĄãČąãČĞãĆčãĆćèęĄçt'ăãĄńåŕ¿ãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőçţŘædIJãĆŠè£ŤãĄŮãĄ
åő§éŽŻãĄőçŤżéÍćæŔŔçŤżç■L'ãĄŕãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l'ãĄőclientãĄő *renderer*
ãĄğæŇĞåőŽãĄŮãĄ§åĞęçŘĘãĆŕãČl'ãĆźãĄőåĹűå¿ąãĄńä¿Ìå■ŸãĄŮãĄ¿ãĄŹãĂĆ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>ãČŞãČĞãĆłèąÍçd'ž</pattern>
    <template>
        <video>https://url.for.video</video>
    </template>
</category>
```

### 6.1.67 word

[1.0]

wordèęĄçt'ăãĄŕåĘĚéČÍåĞęçŘĘãĄğçŤ§æĹŘãĄŹãĆŃèęĄçt'ăãĄğãĂĄtemplateåĘĚãĄńèÍŸè£ŕãĄŢãĆŇãĄęãĄĎãĆŃãČĘãĆ■ãĆźãČ

- ä¡£çŤÍä¿Ń

```
<category>
    <pattern>HELLO</pattern>
    <template>Hi there!</template>
</category>
```

ãĄŞãĄőä¡£çŤÍä¿ŃãĄőåät'åŘĹãĂĄâĂŹHi there!âĂŹ ãĄŇwordèęĄçt'ăãĄÍãĄŮãĄęåśŢéŰŃãĄŢãĆŇãĄ¿ãĄŹãĂĆ

### 6.1.68 xml

[1.0]

xmlãĄĺãĄĎãĄĘèęĄçť˘ăăĄŕå■ŸåIJĺãĄŮãĄ¿ãĄŻãĆŞãĄŇãĂĄåŕ¿èľ´śãĆĺãČşãĆŷãČşãĄğä¡£çŤĺåŔŕèČ¡ãĄłèęĄçť˘ăäžěåď˙ŰãĄŇXML
ãĄŞãĆŇãĄńãĆĹãĆŁãĂĄtemplateãĄőå£IJç■ŤãĄőäÿĂéČĺãĄĺãĄŮãĄęãĂĄXMLå¡ćåijŔãĄőèęĄçť˘ăăĆŠèĺŸèijL˘ãĄŹãĆŇãĄŞãĄĺãĄ

- ä¡£çŤĺä¿Ń

```
<category>
    <pattern> * ãĆŠãČIJãČijãČńãČL'èąĺçd'ž</pattern>
    <template>
        <bold><star /></bold>
    </template>
</category>
```

Input: åŕ¿èśąçŕĎåŻšãĆŠãĆŠãČIJãČijãČńãČL'èąĺçd'ž
Output: <bold>åŕ¿èśąçŕĎåŻš</bold>ãĂĆ

CHAPTER 7

# ãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆř

åĚěåŁŻæŰĞãĄÍpatternèęAçt’ãăĄÍãĄőãČđãČČãČĄãČşãĆřãĄŕãĂĄãĄÍãĆŇãĄđãĆŇãĄńår¿ãĄŮãĄęãĆşãČijãČL’åd’L’æŔŻãĆŠèąŇ
ãČđãČČãČĄãČşãĆřãĄğä¡£çŤĺãĄŹãĆŃæŰĞå■ŮãĄŕãĂĄèŃśæŢřèÍŸåŘůãĄŕå■ŁèğŠæŰĞå■ŮãĂĄãĆńãĆ£ãĆńãČŁãĄŕåĚÍèğŠæŰĞ

åĚěåŁŻæŰĞãĄńår¿ãĄŮãĄęãĄŕãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l’ãĄńãĆĹãĆŁãČđãČČãČĄãČşãĆřãĄğä¡£çŤĺãĄ
ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l’ãĄŕãĂĄ*tokenizeråőŽç¿l’* ãĄőpunctuation_charsãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

AIMLãĄőãČŚãĆ£ãČijãČşãČđãČČãČĄãČşãĆřãĄğãĄŕãĂĄãČęãČijãĆűåĚěåŁŻãĄńår¿ãĄŮãĄęãĆřãĆd’ãČńãČL’ãĆńãČijãČL’ãĆŚåĹ
ãČřãĆd’ãČńãČL’ãĆńãČijãČL’ãĄőæŇĞåőŽãĄńãĄŕ ⋆, ^ , _, # ãĄŇãĄĆãĆŁãĂĄåŘĐãĂĚåĹl’çŤĺæŰźæşŢãĄŇçŢřãĄłãĆŁãĄ¿ãĄŹãĄ

ãĄ§ãĄăãĄŮãĂĄãĆřãĆd’ãČńãČL’ãĆńãČijãČL’ãĆŚéĂčçűŽãĄŮãĄęèÍŸè£řãĄŮãĄ§patternèęAçt’ãăĆŠæŇĞåőŽãĄŹãĆŃåăt’åŘĹãĄ
ãĄÍ *zerooremore* ãĄőæůůåŘĹãĄŕéĄ£ãĄŚãĄęãĄŘãĄăãĄŢãĄĐãĂĆèłd’åŃŢä¡IJãĄŇçŹžçŢ§ãĄŹãĆŃåăt’åŘĹãĄŇãĄĆãĆŁãĄ¿ãĄŹã

## 7.1 ⋆ ãČřãĆd’ãČńãČL’ãĆńãČijãČL’

⋆ ãĆŠçŤĺãĄĐãĆŃãĄŞãĄÍãĄğãĂĄãČęãČijãĆűåĚěåŁŻãĄőå■ŸèłđãĆŠæŁ¡åĞžãĄŹãĆŃãĄŞãĄÍãĄŇãĄğãĄ■ãĂĄ1ãĄd’äžěäÿŁãĄő

```
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ ⋆</pattern>
```

ãĄŞãĄőä¿ŃãĄğãĄŕãĂĄ

```
ãĄŞãĆŞãĄńãĄąãĄŕïijĄ
ãĄŞãĆŞãĄńãĄąãĄŕåśśçŤřãĄŢãĆŞ
ãĄŞãĆŞãĄńãĄąãĄŕèłřãĄğãĄŹãĄŇïijş
```

ãĄńãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ ãĄŮãĄŇãĄŮãĂĄãĄŞãĄőä¿ŃãĄğãĄŕâĂİãĄŞãĆŞãĄńãĄąãĄŕâĂİãĄńçűŽãĄŘå■ŸèłđãĆŠæIJ§ã

## 7.2 ^ ãČřãĆd’ãČńãČL’ãĆńãČijãČL’

^ ãĆŠçŤĺãĄĐãĆŃãĄŞãĄÍãĄğãĂĄ0äžěäÿŁãĄőå■ŸèłđãČđãČČãČĄãČşãĆřãĆŠæŇĞåőŽãĄğãĄ■ãĄ¿ãĄŹãĂĆïijĹzeroormoreãČřãĆ
ãĄŹãĄłãĆŘãĄąãĂĄãČřãĆd’ãČńãČL’ãĆńãČijãČL’ãĄńçŻÿå¡ŞãĄŹãĆŃå■ŸèłđãĄŇçĐąãĄŘãĄęãĆĆãĂĄæŇĞåőŽãĄŮãĄ§å■Ÿèłđã

```
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ ^</pattern>
```

ãĄŞãĄőä¿ŃãĄğãĄŕãĂĄ⋆ ãĄÍçŢřãĄłãĆŁãĂĄ

```
ãĄŞãĆŞãĄńãĄąãĄŕ
ãĄŞãĆŞãĄńãĄąãĄŕïijĄ
ãĄŞãĆŞãĄńãĄąãĄŕåśśçŤřãĄŢãĆŞ
ãĄŞãĆŞãĄńãĄąãĄŕèłřãĄğãĄŹãĄŃïijş
```

ãĄÍãĂĄâĂİãĄŞãĆŞãĄńãĄąãĄŕâĂİå■Ÿä¡ŞåĚëåŁŻãĄńãĆĆãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ

## 7.3 _ ãĄÍ # ãČŕãĆďãČńãČL'ãĆńãČijãČL'

⋆ ãĄÍ ^ ãĄŕãĂĄå■ŸèłđãĄőãČđãČČãČĄãČşãĆřãĆĹãĆŁåĎłåĚĹéãĘä¡■ãĄŃä¡ÕãĄĎèl'Ţä¿ąãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ ãĄŹãĄłãĆŔãĄąãĂĄ

```
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ ãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■</pattern>
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ ^</pattern>
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ ⋆</pattern>
```

ãĄÍãĄĎãĄĘåőŽç¿l'ãĄÑãĄŢãĆÑãĄęãĄĎãĄ§åät'åŘĹãĂĄâĂİãĄŞãĆŞãĄńãĄąãĄŕ ãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■âĂİãĄÍãĄĎãĄĘåĚëåŁŻãĄőåät'åŘĹäÿĂçŢłäÿŁãĄő-patternãĄńãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ

ãĄŞãĆÑãĄńår¿ãĄŮãĂĄ _ ãĄÍ # ãĄŕå■ŸèłđãĄőãČđãČČãČĄãČşãĆřãĆĹãĆŁénŸãĄĎåĎłåĚĹéãĘä¡■ãĄğèl'Ţä¿ąãĄŢãĆÑãĄ¿ãĄŹã _ ãĄŕãĂĄ ⋆ åŘÑæğŸãĂĄ1äžĕäÿŁãĄőãČđãČČãČĄãČşãĆřãĄğåŘĹèĞt'åĹd'åőŽãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆïijĹoneormoreãĆřãĆd'ã # ãĄŕãĂĄ ^ åŘÑæğŸãĂĄ0äžĕäÿŁãĄőãČđãČČãČĄãČşãĆřãĄğåŘĹèĞt'åĹd'åőŽãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆïijĹzeroormoreãĆřãĆd'ã

```
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ ãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■</pattern>
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ _</pattern>
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ #</pattern>
```

ãĄÍãĄĎãĄĘåőŽç¿l'ãĄÑãĄŢãĆÑãĄęãĄĎãĄ§åät'åŘĹãĂĄâĂİãĄŞãĆŞãĄńãĄąãĄŕ ãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■âĂİãĄÍãĄĎãĄĘåĚëåŁŻãĄőåät'åŘĹ # ãĄńãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ

## 7.4 åĎłåĚĹå■Ÿèłđæ ÑĞåőŽ

$ æÑĞåőŽãĄŮãĄ§å■ŸèłđãĄŕãĂĄ _ , # ãĆĹãĆŁåĎłåĚĹãĄŮãĄęèl'Ţä¿ąãĄŢãĆÑãĄ¿ãĄŹãĂĆ

```
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ $ãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■</pattern>
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ _</pattern>
<pattern>ãĄŞãĆŞãĄńãĄąãĄŕ #</pattern>
```

ãĄÍãĄĎãĄĘåőŽç¿l'ãĄÑãĄŢãĆÑãĄęãĄĎãĄ§åät'åŘĹãĂĄâĂİãĄŞãĆŞãĄńãĄąãĄŕ ãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■âĂİãĄÍãĄĎãĄĘåĚëåŁŻãĄőåät'åŘĹäÿĂçŢłäÿŁãĄő-patternãĄńãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ

## 7.5 åĹd'åőŽåĎłåĚĹéãĘä¡■

patternãĄğãĄőãČŕãĆd'ãČńãČL'ãĆńãČijãČL'æÑĞåőŽæŹĆãĄőåĎłåĚĹéãĘä¡■ãĄŕäžĕäÿÑãĄőãĆĹãĄĘãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

- $(å■Ÿèłđ)
- # ( 0äžĕäÿŁ )
- _ ( 1äžĕäÿŁ )
- (å■Ÿèłđ)
- ^ ( 0äžĕäÿŁ )

- * ( 1äžĕäÿŁ )

# CHAPTER 8

# ãČŢãĆąãĆďãČńçőąçŘĘ

åŕ¿èľśãČŮãČľãČČãČĹãČŢãĆľãČijãČäãĄğä¡£çŤĺãĄŹãĆŃãČŢãĆąãĆďãČńãĄńéŰćãĄŮãĄęèłňæŸŐãĄŮãĄ¿ãĄŹãĂĆ

äžěéŹ■ãĄőèłňæŸŐãĄğãĄŕãĂĄäÿžãĄńãĂĄåŕ¿èľśãČŮãČľãČČãČĹãČŢãĆľãČijãČäãĄğåĹľçŤĺãĄŹãĆŃãČŢãĆąãĆďãČńçőąçŘĘæ

ãČŢãĆąãĆďãČńçőąçŘĘæŰźåijŔãĄńãĄŕãĂĄãČ■ãČijãĆńãČńãČŢãĆąãĆďãČńäžěåď ŰãĄńãĆĆãĂĄãČĞãČijãĆ£ãČŹãČijãĆźãĄğã

åőŽç¿ľãČŢãĆąãĆďãČńãĄőæŃąåijţå■ŘãĄŕãĂĄãĆůãČŁãČłãĆłãČŢãĆąãĆďãČńãĄŇaimlãĂĄãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹéĂča
ïijĹãĄİãĄőäżŰãĂĄãĆŕãČľãĆźåőŽç¿ľãČŢãĆąãĆďãČńãĄőconfãĄłãĄľãĆĆä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆïijĽ

## 8.1 ãČĞãĆčãČňãĆŕãČĹãČłæğŃæĹŘ

ãĆůãČŁãČłãĆłãČŢãĆąãĆďãČńãĄőãČĞãĆčãČňãĆŕãČĹãČłæğŃæĹŘãĄŕäžěäÿŃãĄőãĄĺãĄŁãĆŁãĄğãĄŹãĂĆ

```
storage åŘĎçĺőãČŢãĆąãĆďãČńãČĞãĆčãČňãĆŕãČĹãČł
âŤIJâŤĂâŤĂ braintree AIMLåśŢéŰŃãČŢãĆąãĆďãČńãČĞãĆčãČňãĆŕãČĹãČł
âŤIJâŤĂâŤĂ categories ãĆůãČŁãČłãĆłãČŢãĆąãĆďãČńãČĞãĆčãČňãĆŕãČĹãČł
âŤĆ   âŤŤâŤĂâŤĂ *.aiml
âŤIJâŤĂâŤĂ conversations åŕ¿èl'śåśěæ■t'æČĚåăśãČĞãĆčãČňãĆŕãČĹãČł
âŤĆ   âŤŤâŤĂâŤĂ *.conv
âŤIJâŤĂâŤĂ debug ãČĞãČŘãČČãĆŕæČĚåăśãČĞãĆčãČňãĆŕãČĹãČł
âŤĆ   âŤIJâŤĂâŤĂ duplicates.txt
âŤĆ   âŤIJâŤĂâŤĂ errors.txt
âŤĆ   âŤIJâŤĂâŤĂ errors_collection.txt
âŤĆ   âŤŤâŤĂâŤĂ *.log
âŤIJâŤĂâŤĂ learnf åŃŢçŽĎçŤ$æĹŘãĆůãČŁãČłãĆłãČŢãĆąãĆďãČńãČĞãĆčãČňãĆŕãČĹãČł
âŤĆ   âŤŤâŤĂâŤĂ *.aiml
âŤIJâŤĂâŤĂ licences ãČl'ãĆd'ãĆżãČşãĆźãČŢãĆąãĆďãČńãČĞãĆčãČňãĆŕãČĹãČł
âŤĆ   âŤŤâŤĂâŤĂ license.keys.txt
âŤIJâŤĂâŤĂ lookups ç¡őæŔŽè¿đæŽÿãČŢãĆąãĆďãČńãČĞãĆčãČňãĆŕãČĹãČł
âŤĆ   âŤIJâŤĂâŤĂ regex.txt
âŤĆ   âŤIJâŤĂâŤĂ denormal.txt
âŤĆ   âŤIJâŤĂâŤĂ gender.txt
```

(continues on next page)

(continued from previous page)

```
âŤĆ   âŤIJâŤĂâŤĂ normal.txt
âŤĆ   âŤIJâŤĂâŤĂ person.txt
âŤĆ   âŤŤâŤĂâŤĂ person2.txt
âŤIJâŤĂâŤĂ maps mapãČłãĆźãČĹãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
âŤĆ   âŤŤâŤĂâŤĂ *.txt
âŤIJâŤĂâŤĂ nodes èęAçt’ååĞęçŘĘãĆŕãČl’ãĆźåőŽç¿l’ãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
âŤĆ   âŤIJâŤĂâŤĂ pattern_nodes.conf
âŤĆ   âŤŤâŤĂâŤĂ template_nodes.conf
âŤIJâŤĂâŤĂ properties ãČŮãČ■ãČŚãČĘãĆčåőŽç¿l’ãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
âŤĆ   âŤIJâŤĂâŤĂ nlu_servers.yaml
âŤĆ   âŤIJâŤĂâŤĂ botnames.yaml
âŤĆ   âŤIJâŤĂâŤĂ rest_templates.yaml
âŤĆ   âŤIJâŤĂâŤĂ defaults.txt
âŤĆ   âŤIJâŤĂâŤĂ properties.txt
âŤĆ   âŤŤâŤĂâŤĂ json␣
↪JSONå¡ćåijŔãČŮãČ■ãČŚãČĘãĆčåőŽç¿l’ãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
âŤĆ       âŤŤâŤĂâŤĂ *.json
âŤIJâŤĂâŤĂ prosessing æŰĞçůÍéŻĘãĆŕãČl’ãĆźåőŽç¿l’ãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
âŤĆ   âŤIJâŤĂâŤĂ preprocessors.conf
âŤĆ   âŤŤâŤĂâŤĂ postprocessors.conf
âŤIJâŤĂâŤĂ rdfs RDFãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
âŤĆ   âŤŤâŤĂâŤĂ *.txt
âŤIJâŤĂâŤĂ security ãĆżãĆ■ãČěãČłãČĘãĆčãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
âŤĆ   âŤŤâŤĂâŤĂ usergroups.yaml
âŤIJâŤĂâŤĂ sets setãČłãĆźãČĹãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
âŤĆ   âŤŤâŤĂâŤĂ *.txt
âŤŤâŤĂâŤĂ spelling ãĆźãČžãČńãČĄãĆğãČčãĆŕãČŢãĆąãĆd’ãČńãČĞãĆčãČńãĆŕãČĹãČł
    âŤŤâŤĂâŤĂ corpus.txt
```

## 8.2 ãĆĺãČşãČĘãĆčãČĘãĆč

åŕ¿èl’śãČŮãČl’ãČČãČĹãČŢãĆl’ãČijãČäĄgãĄŕãĂĄæäijçt’■ãĄŹãĆŃãČĞãČijãĆ£ãĄőçĺőéąđãĄńãĆĹãĄčãĄęãĆĺãČşãČĘãĆčãČĘãĆ

åĹl’çŤĺãĄŹãĆŃãČŢãĆąãĆd’ãČńãĄőægŃæĹŘãĄŕãĂĄãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆd’ãČń(config.yaml)ãĄğåőŽç¿l’ãĄŮãĂĄãĄl’ã

åřŽãĂĄãĆĺãČşãČĘãĆčãČĘãĆčãĄńãĄŕãĂĄåËśéĂŽçŽĐãĄńä¡£çŤĺãĄŹãĆŃãĆĆãĄőãĄĺãĂĄçL’źåőŽèęAçt’ãäĄőãĄ£ãĄğä¡£çŤĺãĄ

äžěäÿŃãĄőãĆĺãČşãČĘãĆčãČĘãĆčãĄőäÿ■ãĄğãĂĄâĂİèĞłåŃŢçŤ§æĹŘâĂİãĄÑâĂİNoâĂİãĄőãČĞãČijãĆ£ãĄŕçůÍéŻĘãĄÑåŔŕèČ¡

âĂIJå■ŸäÿĂãČŢãĆąãĆd’ãČńâĂİãĄÑâĂİYesâĂİãĄőãČĞãČijãĆ£ãĄŕår¿èśąãČŢãĆąãĆd’ãČńãĆŠ1ãĄd’ãĄäãĄŚæŇĞåőŽãĄğãĄ■ã

- åĚśéĂŽãĄőãĆĺãČşãČĘãĆčãČĘãĆč

| ãĆĺãČşãČĘãĆĉãČĘãĆĉåőź | åľŸäÿÄęČĞãĆĘąĘĆĉãČĘ | ãĆĺãČşãČĘãĆĉãČĘãĆĉåőź |
|---|---|---|
| binaries | ãČĎãČłãČijãČĞãČijãĆ£ | No Yes AIMLãĆŠåśŢéŮŃãĄŮãĄ§æďIJçţ'ćçŤĺãČĎãČłãČijãĄőãČŘãĆď'ãČŁ |
| braintree | ãČĎãČłãČijãČĞãČijãĆ£ | No Yes AIMLãĆŠåśŢéŮŃãĄŮãĄ§æďIJçţ'ćçŤĺãČĎãČłãČijãĄőXMLå¡ćåijŔã |
| categories | åŕ¿èľ'śçŤĺAIML | No No åŕ¿èľ'śãĄőåĽűå¿ąãĄńä¡£çŤĺãĄŹãĆŃAIMLãČŢãĆąãĆď'ãČńç¿d'ãĆŠa |
| conversations | åŕ¿èľ'śåśěæ■ť'æČĚåăś | No Yes ãČęãČijãĆűæŕŐãĄőéĄŐåŐżãĆŠåŘńãĆĄąĄ§åŕ¿èľ'śåĞęçŘĘåĘĚåőź(å |
| defaults | ãČŮãČ■ãĆŠãČĘãĆčãČłãĆźãČĹ | Yes No åĹİæIJ§ètůåŃŢæŹĆãĄńåśŢéŮŃãĄŹãĆŃãĆŕãČ■ãČijãČŘãČńåď'L'æŢ |
| duplicates | éĞ■èd'ĞæŇĞåőŽæČĚåăś | Yes Yes (ãČĞãČŘãČČãĆřçŤĺïijL'AIMLãČŢãĆąãĆď'ãČńåśŢéŮŃæŹĆãĄőcate |
| errors | ãĆĺãČl'ãČijæČĚåăś | Yes Yes (ãČĞãČŘãČČãĆřçŤĺïijL'AIMLãČŢãĆąãĆď'ãČńåśŢéŮŃæŹĆãĄőãĆĺa |
| errors_collection | ćŹźéŇšãĆĺãČl'ãČijæČĚåăś | Yes Yes (ãČĞãČŘãČČãĆřçŤĺïijL'è¿đæŽÿãĄłãĄl'ãĄőåŘĎçĺőåőŽç¿l'ãČŢãĆąãĆ |
| license_keys | ãČl'ãĆď'ãĆżãČşãĆźãĆ■ãČij | Yes No åď'ŰéČĺæŐěçűŽçL'ãĄğå£ĚèęĄãĄńãĄłĄĆŃãČl'ãĆď'ãĆżãČşãĆźãĆ■ |
| pattern_nodes | ãĆŕãČl'ãĆźåőŽç¿l'ãČłãĆźãČĹ | Yes No patternãĄőåŘĎèęĄçţ'ăãĄőåĞęçŘĘãĆŕãČl'ãĆźåőŽç¿l'ãČŢãĆąãĆď'ãČ |
| postprocessors | ãĆŕãČl'ãĆźåőŽç¿l'ãČłãĆźãČĹ | Yes No ãČňãĆźãČĺãČşãĆźãĄőå£IJç■ŤæŰĞãĄńåŕ¿ãĄŮãĄęçůĺéŽĘãĆŠèąÑãA |
| preprocessors | ãĆŕãČl'ãĆźåőŽç¿l'ãČłãĆźãČĹ | Yes No ãČłãĆŕãĆĺãĆźãČĹãĄőãČęãČijãĆűçŹžèl'śãĄńåŕ¿ãĄŮãĄęçůĺéŽĘãĆŠè |
| properties | ãČŮãČ■ãĆŠãČĘãĆčãČłãĆźãČĹ | Yes No patternãĄő *bot*ãĂĄåŘŁãĄşãĂĄtemplateãĄő *bot* èęĄçţ'ăãĄğä¡£çŤĺãĄŹãĆŃãČŮãČ■ãĆŠãČĘãĆčåőŽç¿l'ãČŢãĆąãĆď'ãČ |
| properties_json | JSONå¡ćåijŔãČŮãČ■ãĆŠãČĘãĆč | No No äÿżãĄńtemplateãĄő *bot* èęĄçţ'ăãĄğä¡£çŤĺãĄŹãĆŃJSONå¡ćåijŔãČŮãČ■ãĆŠãČĘãĆčãČŢãĆąã |
| spelling_corpus | ãĆźãČŽãČńãČĄãĆğãČČãĆŕæČĚåăś | No No ãĆźãČŽãČńãČĄãĆğãČČãĆŕãĆŠèąÑãĄĘåăţ'åŘĹãĄőãĆĆãĄĺãĄńãĄłã |
| template_nodes | ãĆŕãČl'ãĆźåőŽç¿l'ãČłãĆźãČĹ | Yes No templateãĄőåŘĎèęĄçţ'ăãĄőåĞęçŘĘãĆŕãČl'ãĆźåőŽç¿l'ãČŢãĆąãĆď'ã |

- PatternèęĄçţ'ăçŤĺãĄőãĆĺãČşãČĘãĆčãČĘãĆč

| ãĆĺãČşãČĘãĆĉãČĘãĆĉåőź | åľŸäÿÄęČĞãĆĘąĘĆĉãČĘ | ãĆĺãČşãČĘãĆĉãČĘãĆĉåőź |
|---|---|---|
| regex_templates | ■ćèęŔèąĺçŔ¿ãČłãĆźãČĹ | Yes No *regex* èęĄçţ'ăãĄőtem-plateæŇĞåőŽãĄğä¡£çŤĺãĄŹãĆŃæ■ćèęŔèąĺçŔ¿ãČłãĆźãČĹãČŢãĆąãĆ |
| sets | åŕ¿èśąå■ŸèłđãČłãĆźãČĹ | No No *set* èęĄçţ'ăãĄğä¡£çŤĺãĄŹãĆŃå■ŸèłđãČłãĆźãČĹãČŢãĆąãĆď'ãČńãĆŠ |

- TemplateèęĄçţ'ăçŤĺãĄőãĆĺãČşãČĘãĆčãČĘãĆč

| ãĆĺãČşãČĘãĆĉãČĘãĆĉåőź | åľŸäÿÄęČĞãĆĘąĘĆĉãČĘ | ãĆĺãČşãČĘãĆĉãČĘãĆĉåőź |
|---|---|---|
| denormal | åď'L'æŔŻè¿đæŻÿ | Yes No *denormalize* èęĄçţ'ăãĄğãĄőåď'L'æŔŻãĄńä¡£çŤĺãĄŹãĆŃè¿đæŻÿãČŢ |
| gender | åď'L'æŔŻè¿đæŻÿ | Yes No *gender* èęĄçţ'ăãĄğãĄőåď'L'æŔŻãĄńä¡£çŤĺãĄŹãĆŃè¿đæŻÿãČŢãĆąã |
| learnf | categoryãČłãĆźãČĹ | No YES *learnf* èęĄçţ'ăãĄőåĞęçŘĘãĄğä¡IJæĹŘãĄŢãĆŃãĆŃcategoriesæČĚåă |
| logs | ãČ■ãĆŕæČĚåăś | No YES *log* èęĄçţ'ăãĄőåĞęçŘĘãĄğä¡IJæĹŘãĄŢãĆŃãĄ§ãČ■ãĆŕæČĚåăśãĆŠã |
| maps | ãČŮãČ■ãĆŠãČĘãĆčãČłãĆźãČĹ | No No *map* èęĄçţ'ăãĄğãĄőåď'L'æŔŻãĄńä¡£çŤĺãĄŹãĆŃè¿đæŻÿãČŢãĆąãĆd |
| normal | åď'L'æŔŻè¿đæŻÿ | Yes No *normalize* èęĄçţ'ăãĄğãĄőåď'L'æŔŻãĄńä¡£çŤĺãĄŹãĆŃè¿đæŻÿãČŢãĆ |
| person | åď'L'æŔŻè¿đæŻÿ | Yes No *person* èęĄçţ'ăãĄğãĄőåď'L'æŔŻãĄńä¡£çŤĺãĄŹãĆŃè¿đæŻÿãČŢãĆąã |
| person2 | åď'L'æŔŻè¿đæŻÿ | Yes No *person2* èęĄçţ'ăãĄğãĄőåď'L'æŔŻãĄńä¡£çŤĺãĄŹãĆŃè¿đæŻÿãČŢãĆą |
| rdf | RDFãČĞãČijãĆ£ãČłãĆźãČĹ | No No *RDF* éŰćéĂčèęĄçţ'ăãĄőåĞęçŘĘåŕ¿èśąãĄĺãĄłãĆŃRDFãČĞãČijãĆ£ã |
| usergroups | ãĆżãĆ■ãČěãČłãČĘãĆčæČĚåăś | Yes No *authorise* èęĄçţ'ăãĄğä¡£çŤĺãĄŹãĆŃãČ■ãČijãČńåőŽç¿l'ãČŢãĆąãĆď'ã |

- ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹéĂčæŘžçŤĺãĄőãĆĺãČşãČĘãĆčãČĘãĆč

| ãĆĺãČşãČĘãĆĉãČĘãĆĉåőź | åľŸäÿÄęČĞãĆĘąĘĆĉãČĘ | ãĆĺãČşãČĘãĆĉãČĘãĆĉåőź |
|---|---|---|
| nlu_servers | åĹl'çŤĺNLUæŐěçűŽæČĚåăś | Yes No NLUãČđãĆČãĆĄãČşãĆŕåŕ¿èśąãĄőNLUãĄĺãĂĄ*sraix* èęĄçţ'ăãĄğåő§æŰ¡ãĄŹãĆŃNLUéĂŽä£ąãĄńä¡£çŤĺãĄŹãĆŃãĆčãĆŕã |
| bot_names | åĚňéŰŃBotæŐěçűŽæČĚåăś | Yes No *sraix* èęĄçţ'ăãĄğåő§æŰ¡ãĄŹãĆŃåĚňéŰŃBotãĄĺãĄőéĂŽä£ąãĄńä¡£ç |
| rest_templates | RESTéĂŽä£ąéŽŽå¡ćæČĚåăś | Yes No *sraix* èęĄçţ'ăãĄğåő§æŰ¡ãĄŹãĆŃæśŐçŤĺRESTéĂŽä£ąãĄğä¡£çŤĺãĄ |

## 8.3 ãČ■ãČijãĆńãČńãČŢãĆąãĆď'ãČńåĹľçŤĺæŹĆãĄőåőŽç¿ľä¿Ń

### 8.3.1 ãĆĺãČşãČĘãĆčãČĘãĆčåőŽç¿ľ

äžěäÿŃãĄőä¿ŃãĄŕãĂĄconsole
ãĄĺãĄĎãĄĘåŘ■åĽ■ãĄőãĆŕãČľãĆď'ãĆćãČşãČĹãĆŠä¡£çŤĺãĄŮãĄ§åăť'åŘĹãĄőãĆĺãČşãČĘãĆčãČĘãĆčãĄőåőŽç¿ľä¿ŃãĄğãĄŹãĂ
ãĆŕãČľãĆď'ãĆćãČşãČĹãĄóè■åőŽãĄğãĄŕãĂĄ storage ãĄĺãĄĎãĄĘãĆżãĆŕãĆůãČğãČşãĄńãĂĄ
entities ãĄĺãĄĎãĄĘãĆţãČŰãĆżãĆŕãĆůãČğãČşãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

ãČŢãĆąãĆď'ãČńãĄőçőąçŘĘæŰźæşŢãĄĺãĄŮãĄęãĂĄåŘĎãĆĺãČşãČĘãĆčãČĘãĆčæŕŐãĄńåĚěåĞžåŁŻãĄőåĹűå¿ąãĆŠèąŇãĄĘæŰź
ãĄŞãĄŞãĄğãĄŕãĂĄãĆźãČĹãĆćæŰźåijŔåŘ■ïijŽfile ãĆŠæŇĞåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
console:
  storage:
      entities:
          binaries: file
          braintree: file
          categories: file
          conversations: file
          defaults: file
          duplicates: file
          errors: file
          errors_collection: file
          license_keys: file
          pattern_nodes: file
          postprocessors: file
          preprocessors: file
          properties: file
          properties_json: file
          spelling_corpus: file
          template_nodes: file
          regex_templates: file
          sets: file
          denormal: file
          gender: file
          learnf: file
          logs:   file
          maps: file
          normal: file
          person: file
          person2: file
          rdf: file
          nlu_servers: file
          bot_names: file
          rest_templates: file
          usergroups: file
```

### 8.3.2 fileãĆźãČĹãČńãČijãĆÿãĆĺãČşãĆÿãČşãĄőåőŽç¿ľ

åŘŇãĄŸ storageãĆżãĆŕãĆůãČğãČşãĄőãĆţãČŰãĆżãĆŕãĆůãČğãČşs-
toresãĄğãĂĄãĆźãČĹãĆćåĘĚãĄğãĄőåő§åĞęçŘĘãĆŠèąŇãĄĘãĆźãČĹãČńãČijãĆÿãĆĺãČşãĆÿãČşãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
ãĄŞãĄŞãĄğãĄŕãĂĄãĆźãČĹãĆćåŘ■ïijŽfileãĄńår¿ãĄŮãĄęãĂĄâĂİtype:
fileâĂİãĄğãĂĄãČ■ãČijãĆńãČńãČŢãĆąãĆď'ãČńãĄőåĚěåĞžåŁŻãĆŠèąŇãĄĘãĆźãČĹãČńãČijãĆÿãĆĺãČşãĆÿãČşãĆŠåĽ'çŤĺãĄŹãĆ

ãČ■ãČijãĆńãČńãČŢãĆąãĆď'ãČńåĚěåĞžåŁŻïijĹfileæŇĞåőŽïijL'ãĄőåăť'åŘĹãĂĄåő§åĞęçŘĘãĆŠèąŇãĄĘãĆźãČĹãČńãČijãĆÿãĆĺã
ãĆĺãČşãČĘãĆčãČĘãĆčåŘ■+'_storage' ãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

ãĆĺãČşãČĘãĆčãČĘãĆčæŕŐãĄőãĆźãČĹãČňãČijãĆÿãĆĺãČşãĆÿãČşãĄőèĺ■åőŽãĄŕãĂĄäžëäÿŃãĄőãĆĹãĄĘãĄń
âĂŸconfigâĂŹãĆţãČŰãĆžãĆŕãĆůãČğãČşãĄğèąŇãĄĎãĄ¿ãĄŹãĂĆ

```
stores:
    file:
        type: file
        config:
          binaries_storage:
            file: ./storage/braintree/braintree.bin
          braintree_storage:
            file: ./storage/braintree/braintree.xml
          categories_storage:
            dirs: ./storage/categories
            subdirs: true
            extension: aiml
          conversations_storage:
            dirs: ./storage/conversations
          defaults_storage:
            file: ./storage/properties/defaults.txt
          duplicates_storage:
            file: ./storage/debug/duplicates.txt
          errors_storage:
            file: ./storage/debug/errors.txt
          errors_collection_storage:
            file: ./storage/debug/errors_collection.txt
          license_keys_storage:
            file: ./storage/licenses/license.keys
          pattern_nodes_storage:
            file: ./storage/nodes/pattern_nodes.conf
          postprocessors_storage:
            file: ./storage/processing/postprocessors.conf
          preprocessors_storage:
            file: ./storage/processing/preprocessors.conf
          properties_storage:
            file: ./storage/properties/properties.txt
          properties_json_storage:
            dirs: ./storage/properties/json
            extension: json
          spelling_corpus_storage:
            file: ./storage/spelling/corpus.txt
          template_nodes_storage:
            file: ./storage/nodes/template_nodes.conf
          regex_templates_storage:
            file: ./storage/lookups/regex.txt
          sets_storage:
            dirs: ./storage/sets
            extension: txt
          denormal_storage:
            file: ./storage/lookups/denormal.txt
          gender_storage:
            file: ./storage/lookups/gender.txt
          learnf_storage:
            dirs: ./storage/learnf
          logs_storage:
            dirs: ./storage/debug
          maps_storage:
            dirs: ./storage/maps
            extension: txt
          normal_storage:
            file: ./storage/lookups/normal.txt
          person_storage:
```

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```
    file: ./storage/lookups/person.txt
  person2_storage:
    file: ./storage/lookups/person2.txt
  rdf_storage:
    dirs: ./storage/rdfs
    subdirs: true
    extension: txt
  nlu_servers_storage:
    dirs: ./storage/properties/nlu_servers.yaml
  bot_names_storage:
    dirs: ./storage/properties/botnames.yaml
  rest_templates_storage:
    dirs: ./storage/properties/rest_templates.yaml
  usergroups_storage:
    file: ./storage/security/usergroups.yaml
```

âĂŸconfigâĂŹãĆţãČŰãĆżãĆŕãĆůãČğãČşãĄğãĄőåőŽç¿l'ãĄŕãĂĄåŕ¿èśąãĄĺãĄłãĆŃãĆĺãČşãČĘãĆčãČĘãĆčãĄńãĆĹãĄčãĄęãĂĄå■

### 8.3.3 å■Ÿäÿ ĂãČŢãĆąãĆd'ãČńãĄőãĆĺãČşãČĘãĆčãČĘãĆčãĄőåăť'åŘĹ

å■Ÿäÿ ĂãČŢãĆąãĆd'ãČńãĆŠæŇĞåőŽãĄŹãĆŃãĆĺãČşãČĘãĆčãČĘãĆčãĄőåăť'åŘĹãĂĄâĂŹfileâĂŹåśđæĂğãĄğãČŢãĆąãĆd'ãČńãČ

```
usergroups_storage:
    file: ./storage/security/usergroups.yaml
```

### 8.3.4 èd'ĞæŢřãČŢãĆąãĆd'ãČńãĄőåĽ'çŤĺãĄŇåŔŕèČ¡ãĄłãĆĺãČşãČĘãĆčãČĘãĆd'ãĄőåăť'åŘĹ

èd'ĞæŢřãČŢãĆąãĆd'ãČńãĄŇåĹ'çŤĺåŔŕèČ¡ãĄłãĆĺãČşãČĘãĆčãČĘãĆčãĄőåăť'åŘĹãĂĄäžěäÿŃãĄő3ãĄd'ãĄőåśđæĂğãĆŠæŇĞåőŽ
ãĄ§ãĄăãĄŮãĂĄèĞłåŃŢçŤ§æĹŘår¿èśąãĄőãĆĺãČşãČĘãĆčãČĘãĆčãĄőåăť'åŘĹãĂĄãČĞãĆčãČńãĆŕãČĹãČłãČŠãĆźãĄőãĄ£ãĄőæ

- dirs: år¿èśąãČŢãĆąãĆd'ãČńãČĞãĆčãČńãĆŕãČĹãČłãČŠãĆźãĆŠæŇĞåőŽãĂĆ
- subdirs: år¿èśąãČŢãĆąãĆd'ãČńãČĞãĆčãČńãĆŕãČĹãČłéĖ■äÿŃãĄőãĆţãČŰãČĞãĆčãČńãĆŕãČĹãČłãĆŠãĆţãČijãČĄãĄŹãĆŃ
- extension: ãČ■ãČijãČL'ãĄŹãĆŃãČŢãĆąãĆd'ãČńãĆ£ãĆd'ãČŮãĄőæŃąåijţå■ŘãĆŠæŇĞåőŽãĂĆ

```
categories_storage:
  dirs: ./storage/categories
  subdirs: true
  extension: aiml

conversations_storage:
  dirs: ./storage/conversations
```

åřŽãĂĄèĞłåŃŢçŤ§æĹŘår¿èśąåd'ŰãĄgãĂĄèd'ĞæŢřãČŢãĆąãĆd'ãČńãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄŇåŔŕèČ¡ãĄłãĆźãČĹãČňãČ

- categories_storage
- sets_storage
- maps_storage
- properties_json_storage
- rdf_storage

âĂżsets_storage/maps_storage/properties_json_storageãĄŕãĂĄãČŢãĆąãĆd'ãČńåŘ■ãĆŠè■ŸåĹěå■ŘãĄĺãĄŮãĄęåĹl'çŤĺãĄŹãĆŃãĄ
âĂŸsubdirs: falseâĂŹ ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĆŠæŐĺåěĺãĄŮãĄ¿ãĄŹãĂĆ

## 8.4 ãČĞãČijãĆ£ãČŹãČijãĆźåĹľçŤĺæŹĆãĄőåŐžç¿ľä¿Ń

ãČĞãČijãĆ£ãČŹãČijãĆźãĄğçőąçŘĘãĄŹãĆŃåăť åŘĹãĄőä¿ŃãĄĺãĄŮãĄęãĂĄRedisãĆŠåĹľçŤĺãĄŮãĄ§ä¿ŃãĆŠäžëäÿŃãĄńçď žãA

### 8.4.1 ãĆĺãČşãČĘãĆčãČĘãĆčåőŽç¿ľ

RedisãĄğçőąçŘĘãĄŹãĆŃãĆĺãČşãČĘãĆčãČĘãĆčãĄńår¿ãĄŮãĄęãĂĄstorageãĄőentitiesãĆţãČŰãĆżãĆŕãĆůãČğãČşãĄğãĂĄãĆźãČ ãĆŠæŇĞåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
console:
  storage:
      entities:
          binaries: redis
          braintree: redis
          categories: file
          ïijŽ
```

RedisãĄğãĄőåĚëåĞžåŁŻãĄŇåŔŕèČ¡ãĄłãĆĺãČşãČĘãĆčãČĘãĆčãĄŕãĂĄäžëäÿŃãĄőãĆĆãĄőãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

- binaries ïijŽ AIMLãĆŠåśŢéŰŃãĄŮãĄ§æď IJçť ćçŤĺãČĎãČłãČijãĄőãČŘãĆď ãČŁãČłãČĞãČijãĆ£ãĆŠæăijçť ■ãĂĆ
- braintree ïijŽ AIMLãĆŠåśŢéŰŃãĄŮãĄ§æď IJçť ćçŤĺãČĎãČłãČijãĄőXMLå¡ćåijŔãČĞãČijãĆ£ãĆŠæăijçť ■ãĂĆ
- conversations ïijŽ ãČęãČijãĆűæŕÕãĄőéĄŐåŐżãĆŠåŘńãĆĄãĄ§åŕ¿èľśåĞęçŘĘåĘĚåőź(åď L’æŢřåĂď ãĆŠåŘńãĆĂ)ãĄőåśěæ■
- duplicates ïijŽ (ãČĞãČŘãČČãĆřçŤĺïijL’AIMLãČŢãĆąãĆď ãČńåśŢéŰŃæŹĆãĄőcategoryéĞ■èď ĞæČĚåăśãĆŠæăijçť ■ãĂĆ
- errors ïijŽ (ãČĞãČŘãČČãĆřçŤĺïijL’AIMLãČŢãĆąãĆď ãČńåśŢéŰŃæŹĆãĄőãĆĺãČľ ãČijæČĚåăśãĆŠæăijçť ■ãĂĆ
- errors_collection ïijŽ (ãČĞãČŘãČČãĆřçŤĺïijL’è¿đæŻÿãĄłãĄľ ãĄőåŘĎçĺőåőŽç¿ľ ãČŢãĆąãĆď ãČńçŹżéŇšæŹĆãĄőãĆĺãČľ ãČ
- learnf ïijŽ *learnf* èęĄçť ãäĄőåĞęçŘĘãĄğä¡IJæĹŘãĄŢãĆŇãĆŃcategoriesæČĚåăśãĆŠãĂĄãČęãČijãĆűæŕÕãĄńæăijçť ■ãĂĆ
- logs ïijŽ *log* èęĄçť ãäĄőåĞęçŘĘãĄğä¡IJæĹŘãĄŢãĆŇãĄ§ãČ■ãĆřæČĚåăśãĆŠãĂĄãČęãČijãĆűæŕÕãĄńæăijçť ■ãĂĆ

### 8.4.2 RedisãĆźãČĹãČňãČijãĆÿãĆĺãČşãĆÿãČşãĄőåőŽç¿ľä¿Ń

storageãĆżãĆŕãĆůãČğãČşãĄőstoresãĄőãĆţãČŰãĆżãĆŕãĆůãČğãČşãĄğãĂĄãĆźãČĹãĆćåŘ■ïijŽredisãĄńår¿ãĄŮãĄęãĂĄâĂİtype: redisâĂİãĄğãĂĄRedisãĄńår¿ãĄŹãĆŃåĚëåĞžåŁŻãĆŠèąŇãĄĘãĄŞãĄĺãĆŠæŇĞåőŽãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

âĂŸconfigâĂŹãĆţãČŰãĆżãĆŕãĆůãČğãČşãĄğãĂŕãĂĄRedisãĄőåĹľçŤĺãĄńå£ÈèęĄãĄłåĚśéĂŽãČŠãČľãČąãČijãĆ£ãĆŠæŇĞåőŽãĂ

```
stores:
   redis:
       type: redis
       config:
           host: localhost
           port: 6379
           db: 0
           prefix: programy
           drop_all_first: false
           username: xxx
           password: xxx
           ssl: false
           timeout: 1
```

åřŽãĂĄusername ãĄŕãĂĄredis-server:V6.0äžëéŹ■ãĄőåĹľçŤĺæŹĆãĄńæŇĞåőŽãĄŇåŔŕèČ¡ãĄğãĄŹãĂĆ

## 8.5 åőŽç¿ľãČŢãĆąãĆďãČńãĄőèĺŸè£řæŰźæşŢ

çůĺéŻĘåŔŕèČ¡ãĄłãČŢãĆąãĆďãČńãĄğãĂĄAIMLäžěåď˘ŰãĄńãĂąä¡£çŤĺãĄŹãĆŃãĄŞãĄĺãĄőåď˘ŽãĄĎåőŽç¿ľãČŢãĆąãĆďãČńãĄ

åŘĎåőŽç¿ľãČŢãĆąãĆďãČńãĄŕãĂĄãĆůãČŁãČłãĆŀïijĹAIMLïijL˘ãĄőèğčæđŘåL˘■ãĄńåśŢéŰŃãĄŮãĄ¿ãĄŹãĂĆãĄŞãĄőçĆžãĂĄå
*Brain ãĆşãČşãČŢãĆčãĆřãČńãČijãĆůãČğãČş*
ãĄńäžëäÿŃãĄőåőŽç¿ľãĆŠèąÑãĄĘãĄŞãĄĺãĄğãĂĄåŘĎåőŽç¿ľãČŢãĆąãĆďãČńåśŢéŰŃæŹĆãĄőçŢřåÿÿæČĚåăśãĆŠãĄ¿ãĄĺãĆĄã
`errors_collection`
ãĆĺãČşãČĘãĆčãČĘãĆčãĄğæŇĞåőŽãĄŮãĄ§ãČŢãĆąãĆďãČńãĄńåĞžåŁŻãĄŹãĆŃãĄŞãĄĺãĄÑãĄğãĄ■ãĄ¿ãĄŹãĂĆ

```
brain:
  debugfiles:
    save-errors_collection: true
```

### 8.5.1 ãČŮãČ■ãČŚãČĘãĆčãČłãĆźãČĹãČŢãĆąãĆďãČń

äžěäÿŃãĄőãĆĺãČşãČĘãĆčãČĘãĆčãĄğæŇĞåőŽãĄŹãĆŃãČŢãĆąãĆďãČńãĄŕãĂĄbotãĄőãČŮãČ■ãČŚãČĘãĆčãĆĎåď˘L˘æŢřãĄÿãĄ
âĂŹåŘ■çğř: åĂď˘âĂŹ ãĄőå¡ćåijŔãĄğèĺŸè£řãĄŮãĄ¿ãĄŹãĂĆ

- defaults ïijŽ ãĆřãČ■ãČijãČŘãČńåď˘L˘æŢř(name)ãĄőåĹİæIJ§åĂď˘ãĆŠåőŽç¿ľãĂĆ
- properties : patternãĄő *bot*ãĂĄåŘŁãĄşãĂĄtemplateãĄő *bot* èęĄçţ˘ăăĄğä¡£çŤĺãĄŹãĆŃbotãĄőãČŮãČ■ãČŚãČĘãĆčãĆŠåőŽ

#### defaults

`defaults`
ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĄŕãĂĄãĆůãČŁãČłãĆłãĄğä¡£çŤĺãĄŹãĆŃãĆřãČ■ãČijãČŘãČńåď˘L˘æŢř(name)ãĄőåĂď˘èĺ■åőŽãĆŠåĹİ

ãĄ§ãĄăãĄŮãĂĄãČęãČijãĆűæŕŐãĄőår¿èľśæČĚåăśåśěæ■t˘ãĄŇå■ŸåIJĺãĄŹãĆŃåăt˘åŘĹãĄŕãĂĄåśěæ■t˘äÿŁãĄőæIJĂæŰřåĂď˘ãĄŃ

äžěäÿŃãĄőä¿ŃãĄğãĄŕãĂĄinitial_variable(nameåď˘L˘æŢř)ãĄőåĂď˘ãĄĺãĄŮãĄęãĂĄãČęãČijãĆűæŕŐãĄőåĹİåŻđår¿èľśæŹĆãĄńâĂ

```
initial_variable: åĹİæIJ§åĂd’
```

#### properties

`properties` ãĆĺãČşãČĘãĆčãČĘãĆčãĄŕãĂĄtemplateãĄő *bot*
èęĄçţ˘ăĂĄğãĄőæČĚåăśåŘŮå¿ŮãĄńä¡£çŤĺãĄŹãĆŃãĄĺãĄĺãĆĆãĄńãĂĄãČđãČČãČĄãČşãĆřãĄğæŇĞåőŽãĄŹãĆŃ
*bot* èęĄçţ˘ăĂĄğãĆĆä¡£çŤĺãĄğãĄ■ãĄ¿ãĄŹãĂĆ
JSONå¡ćåijŔãĄőåĂď˘ãĆŠèĺ■åőŽãĄŹãĆŃåăt˘åŘĹãĄńãĄŕãĂĄ`properties_json`
ãĆĺãČşãČĘãĆčãČĘãĆčãĆĆä¡£çŤĺãĄğãĄ■ãĄ¿ãĄŹãĂĆ

| | | |
|---|---|---|
| name | | *bot* |
| birthdate | | *bot* |
| grammar_version | | *bot* |
| app_version | | *bot* |
| version | | *program* |

| | | | |
|---|---|---|---|
| default-response | | | |
| exception-response | | | |
| default-get | | *get* | |
| default-property | | | *property* |
| default-map | | | *map* |
| joiner_terminator | | | |
| splitter_regex | | | |
| punctuation_chars | | | |
| before_punctuation | | | |
| after_punctuation | | | |

`default-get` *json* *select* `default-property` `default-map`

- 

```
name:
birthdate:March 01, 2019

version: v0.0.1
grammar_version:0.0.1
app_version: 0.0.1

default-response:
exception-response:
default-get:
default-property:
default-map:

joiner_terminator:
```

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```
joiner_join_chars: .?!ãĂĆïij$ïijĄ
splitter_split_chars:  ãĂĆ
punctuation_chars: ;'",!()[]ïijžâĂŹâĂİïijżãĂĄãĂĆïijĄïijĹïijL’ãĂÑãĂ■
before_concatenation_rule: .*[a-z]
after_concatenation_rule: [a-z].*
```

JSONå¡ćåijŔãĄőåőŽç¿l’ãĆŠpropertyãĄĺãĄŮãĄęèĺ■åőŽãĄŹãĆŃåät’åŘĹãĂĄæŤźèąÑãĆŠåŘńãĆĄãĄęèÍŸåĚěãĄŹãĆŃãĄŞãĄĺãĄğ
ãĆĺãČşãČĘãĆčãČĘãĆčãĆŠä¡£çŤĺãĄŹãĆŃãĄŞãĄĺãĄÑãĄğãĄ■ãĄ¿ãĄŹãĂĆ

`properties_json` ãĆĺãČşãČĘãĆčãČĘãĆčãĄŕãĂĄtemplateãĄő *bot* èęĄçť’ăãĄğãĄőJ-
SONå¡ćåijŔãĄőæČĚåăšåŘŮå¿ŮãĄńä¡£çŤĺãĄŹãĆŃãĆĆãĄõãĄğãĂĄãČđãČČãČąãČşãĆřãĄğä¡£çŤĺãĄŹãĆŃãĄŞãĄĺãĄŕæŐĺåěĺãA
`properties_json` ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĄŕãĂĄãĄİãĄőéĚ■äÿŃãĄńJ-
SONãČŢãĆąãĆd’ãČńãĆŠéĚ■ç¡őãĄŹãĆŃãĄŞãĄĺãĄğãĂĄãČŢãĆąãĆd’ãČńåŘ■ïijĹæŃąåijţå■ŘãĆŠéŹd’ãĄŔïijL’ãĆŠãĄİãĄõãA¿ãA

åřŽãĂĄpropertyãĄőåÄd’ãĄńãĄŕãĂĄJSONãČŢãĆąãĆd’ãČńãĄőåĘĚåőźãĄİãĄõãĆĆãĄõãĄğãĄŕãĄłãĄŔãĂĄJSONãČĞãČijãĆ£ãA

### joiner_terminator

å£IJç■ŤæŰĞãĄőèłđåř¿åŔěç■L’ãĆŠèĞłåŃŢçŽĎãĄńäżŸäÿŐãĄŹãĆŃæŰĞå■ŮåĹŮãĆŠæŇĞåőŽãĄŮãA¿ãĄŹãĂĆ
èÍ■åőŽä¿ÑãĄńãĂĄâĂİãĄŞãĆŞãĄńãAąãĄŕâĂİãĆŠæŇĞåőŽãĄŮãĄ§åät’åŘĹãĂĄ

- èÍ■åőŽä¿Ń

```
joiner_terminator: ãĂĆ
```

```
<category>
    <pattern>ãĄŞãĆŞãĄńãAąãĄŕ</pattern>
    <template>äżŁæŮěãĆĆåĚČærŮãĄńèąÑãA■ãA¿ãĄŮãĆĞãĄĘ</template>
</category>
```

Input: ãĄŞãĆŞãĄńãAąãĄŕ
Output: äżŁæŮěãĆĆåĚČærŮãĄńèąÑãA■ãA¿ãĄŮãĆĞãĄĘãĂĆ

åŕ¿èl’śAPIãĄőãČńãĆźãČİãČşãĆźãĄőå£IJç■ŤæŰĞïijŽresponseãĄőæŰĞæIJńãĄńèĞłåŃŢçŽĎãĄńäżŸäÿŐãĄŢãĆŃãĆŃåŔěçĆźãĂN
ïijĹâĂİ:âĂİãĄőå¿ÑãĆ■ãĄńä¡ŢãĆĆæŇĞåőŽãĄŮãĄłãĄĎãĄŞãĄĺãĄğãĂĄçĎąåŁźåŃŰãĄŹãĆŃãĄŞãĄĺãĄÑãĄğãA■ãA¿ãĄŹãĂĆï

```
joiner_terminator:
```

æIJłæŇĞåőŽãĄńãĄŹãĆŃãĄĺãĂĄå£IJç■ŤæŰĞãĄńåŔěçĆźãĄÑäżŸäÿŐãĄŢãĆŃãA¿ãĄŻãĆŞãĂĆ

Input: ãĄŞãĆŞãĄńãAąãĄŕ
Output: äżŁæŮěãĆĆåĚČærŮãĄńèąÑãA■ãA¿ãĄŮãĆĞãĄĘ

### joiner_join_chars

joiner_join_charsïijĹçţŘåŘĹéŹd’åd’ŰæŰĞå■ŮïijL’ãĄŕãĂĄjoiner_terminator(æŰĞçţĆçńŕæŰĞå■Ů)ãĆŠèĞłåŃŢäżŸäÿŐãĄŹãĆŃé
joiner_join_charsæIJłæŇĞåőŽãĄőåät’åŘĹãĂĄ
å£IJç■ŤæŰĞãĄńâĂİäżŁæŮěãĆĆåĚČærŮãĄńèąÑãA■ãA¿ãĄŮãĆĞãĄĘãĂĆâĂİãĂĄâĂİãĄĎãĄĎærŮåĹĘãĄğãĄŹãA■ïijĄâĂİãĄŁ

âĂIJäżŁæŮěãĆĆåĚČærŮãĄńèąÑãĄ■ãĄ¿ãĄŮãĆĞãĄĘãĂĆãĂĆâĂİãĂĄâĂİãĄĐãĄĐærŮåĹĘãĄğãĄŹãĄ■ïijĄãĂĆâĂİãĄőãĆĹãĄ

joiner_join_charsãĆŠæÑĞåőŽãĄŮãĄęãĄŁãĄŔãĄĺãĂĄâĂİãĄİãĄĘãĄğãĄŹãĄ■!âĂİãĂĄâĂİãĄŞãĆŞãĄńãĄąãĄŕãĂĆâĂİãĄĺãĂĄ

- èĺ■åőŽä¿Ń

```
joiner_terminator: ãĂĆ
joiner_join_chars: .?!ãĂĆïij$ïijĄ
```

```
<category>
    <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ</pattern>
    <template>äżŁæŮěãĆĆåĚČærŮãĄńèąÑãĄ■ãĄ¿ãĄŮãĆĞãĄĘãĂĆ</template>
</category>
<category>
    <pattern>äżŁæŮěãĆĆãĄĐãĄĐåd'l'ærŮãĄğãĄŹãĄ■</pattern>
    <template>ãĄĐãĄĐærŮåĹĘãĄğãĄŹãĄ■ïijĄ</template>
</category>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: äżŁæŮěãĆĆåĚČærŮãĄńèąÑãĄ■ãĄ¿ãĄŮãĆĞãĄĘãĂĆ
Input: äżŁæŮěãĆĆãĄĐãĄĐåd'l'ærŮãĄğãĄŹãĄ■
Output: ãĄĐãĄĐærŮåĹĘãĄğãĄŹãĄ■ïijĄ

joiner_join_charsãĆŠæIJłæÑĞåőŽãĄńãĄŹãĆŃãĄĺãĂĄjoiner_terminatorãĄğæÑĞåőŽãĄŮãĄ§æŰĞå■ŮãĄÑå£ĚãĄŽçţŘåŘĹãĄŢã

```
joiner_terminator: ãĂĆ
joiner_join_chars:
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: äżŁæŮěãĆĆåĚČærŮãĄńèąÑãĄ■ãĄ¿ãĄŮãĆĞãĄĘãĂĆãĂĆ
Input: äżŁæŮěãĆĆãĄĐãĄĐåd'l'ærŮãĄğãĄŹãĄ■
Output: ãĄĐãĄĐærŮåĹĘãĄğãĄŹãĄ■ïijĄãĂĆ

### splitter_split_chars

åĘĚéČĺçŽĐãĄńæŰĞçńäåĹĘåL'šãĆŠèąÑãĄĘæŰĞå■ŮãĆŠæÑĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
æÑĞåőŽãĄŢãĆÑãĄ§æŰĞå■ŮåĹŮãĄÑæŰĞäÿ■ãĄńåŘńãĄ¿ãĆÑãĄęãĄĐãĆÑãĄĺãĂĄèd'ĞæŢřæŰĞãĄĺãĄŮãĄęæL'śãĄĐãĂĄres
splitter_split_charsãĄńâĂİãĂĆâĂİãĆŠæÑĞåőŽãĄŮãĄ§åät'åŘĹãĂĄçŹžèl'śæŰĞãĄÑâĂİãĄŞãĆŞãĄńãĄąãĄŕãĂĆäżŁæŮěãĆĆãĄ
åĹĘåL'šåĞęçŘĘãĄŢãĆÑ âĂIJãĄŞãĆŞãĄńãĄąãĄŕâĂİãĄĺâĂİäżŁæŮěãĆĆãĄĐãĄĐåd'l'ærŮãĄğãĄŹãĄ■âĂİãĄő2æŰĞãĄńãĄłãĆŁ

- èĺ■åőŽä¿Ń

```
joiner_terminator: ãĂĆ
splitter_split_chars: ãĂĆ
```

```
<category>
    <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ</pattern>
    <template>äżŁæŮěãĆĆåĚČærŮãĄńèąÑãĄ■ãĄ¿ãĄŮãĆĞãĄĘ</template>
</category>
<category>
    <pattern>äżŁæŮěãĆĆãĄĐãĄĐåd'l'ærŮãĄğãĄŹãĄ■</pattern>
```

(continues on next page)

(continued from previous page)

```
    <template>ãĄĐãĄĐæřŮåĹĘãĄğãĄŹãĄ■</template>
</category>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕãĂĆäżŁæŮěãĆĆãĄĐãĄĐåď'l'æřŮãĄğãĄŹãĄ■ãĂĆ
Output: äżŁæŮěãĆĆåĚČæřŮãĄńèąŇãĄ■ãĄ¿ãĄŮãĆĞãĄĘãĂĆãĄĐãĄĐæřŮåĹĘãĄğãĄŹãĄ■ãĂĆ

splitter_split_charsãĆŠæIJłæŇĞåőŽãĄńãĄŹãĆŃãĄĺãĂĄçŹžèl'śæŰĞãĄŇåĹĘåL'šãĄŢãĆŇãĄłãĄĐãĄ§ãĆĄãĂĄâĂİãĄŞãĆŞãĄńã

```
splitter_split_chars:
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕãĂĆäżŁæŮěãĆĆãĄĐãĄĐåď'l'æřŮãĄğãĄŹãĄ■ãĂĆ
Output: ãĄŹãĄ£ãĄ¿ãĄŻãĆŞãĂĄæĎŔåŚşãĄŇãĆŔãĄŃãĆŁãĄ¿ãĄŻãĆŞãĄğãĄŮãĄ§ãĂĆ

### punctuation_chars

åĚěåŁŻæŰĞãĄőåŇžåĹĞãĆŁæŰĞå■ŮæL'śãĄĐãĆŠèąŇãĄĘæŰĞå■ŮãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆåŇžåĹĞãĆŁæŰĞå■ŮãĄŕãĆd
âĂIJãĄŞãĆŞãĄńãĄąãĄŕãĂĆâĂİãĄŁãĆĹãĄşâĂİãĄŞãĆŞãĄńãĄąãĄŕâĂİãĄĺãĄĐãĄĘåĚěåŁŻãĄŇãĄĆãĆŃåăť'åŘĹãĂĄpunctuatio

- èÍ■åőŽä¿Ń

```
punctuation_chars: ;'",!()[]ïijžâĂźâĂİïijżãĂĄãĂĆïijĄïijĹïijL'ãĂŇãĂ■
```

```
<category>
    <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ</pattern>
    <template>äżŁæŮěãĆĆåĚČæřŮãĄńèąŇãĄ■ãĄ¿ãĄŮãĆĞãĄĘ</template>
</category>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕãĂĆ
Output: äżŁæŮěãĆĆåĚČæřŮãĄńèąŇãĄ■ãĄ¿ãĄŮãĆĞãĄĘãĂĆ
Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: äżŁæŮěãĆĆåĚČæřŮãĄńèąŇãĄ■ãĄ¿ãĄŮãĆĞãĄĘãĂĆ

punctuation_charsãĆŠæIJłæŇĞåőŽãĄńãĄŹãĆŃãĄĺãĂĄâĂİãĂĆâĂİãĆĆãČđãČČãČĄåŕ¿èśąãĄĺãĄłãĆŃãĄ§ãĆĄãĂĄâĂİãĄŞãĆŞã

```
punctuation_chars:
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: äżŁæŮěãĆĆåĚČæřŮãĄńèąŇãĄ■ãĄ¿ãĄŮãĆĞãĄĘãĂĆ
Input: ãĄŞãĆŞãĄńãĄąãĄŕãĂĆ
Output: ãĄŹãĄ£ãĄ¿ãĄŻãĆŞãĂĄæĎŔåŚşãĄŇãĆŔãĄŃãĆŁãĄ¿ãĄŻãĆŞãĄğãĄŮãĄ§ãĂĆ

### concatenation_rule

templateèèęAçt'ăãĄőåśŢéŰŃåĞęçŘĘãĄğãĄŕãĂĄå■ŘèęAçt'ăæŕŐãĄőçţŘæđIJæŰĞå■ŮåĹŮãĆŠçţŘåŘĹãĄŮãĄęå£IJç■ŤæŰĞãĆŠç

èŃśæŰĞãĄğãĄĆãĆŃãĄřäÿĂå¿ŃãĄńå■Ÿè‡đéŰŞãĄńçľžçŹ¡ãĆŠæŃ£åĚěãĄŮãĄęçţŘåŘĹãĄŮãĄ¿ãĄŹãĄŃãĂĄæŮëèŃśæůůåŘĹæ

```
before_concatenation_rule: .*[ -~] ␣
↪(åL'■æŰĞå■ŮåĹŮãĄőè‡đåř¿ãĄŃå■Łèğ$èŃśæŢřå■ŮãĄ¿ãĄ$ãĄŕèÍŸåŔů)
after_concatenation_rule: [ -~].* ␣
↪(å¿ŇæŰĞå■ŮåĹŮãĄőåĚĹéă■ãĄŃå■Łèğ$èŃśæŢřå■ŮãĄ¿ãĄ$ãĄŕèÍŸåŔů)
```

- èÍ■åőŽä¿ŃãĂĂïijĹåL'■æŰĞå■ŮåĹŮãĄőè‡đåř¿ãĄŃå■Łèğ$èŃśå■ŮãĄğãĂĄå¿ŇæŰĞå■ŮåĹŮãĄőåĚĹéă■ãĄŃå■Łèğ$èŃśå■

```
before_concatenation_rule: .*[a-z]
after_concatenation_rule: [a-z].*
```

```
<category>
    <pattern>* and *</pattern>
    <template><star /><star index="2" /></template>
</category>
```

Input: sugar and milk
Output: sugar milkãĂĆ
Input: sugar and ãČ§ãČńãĆŕ
Output: sugarãČ§ãČńãĆŕãĂĆ
Input: çăĆçşŰ and milk
Output: çăĆçşŰmilkãĂĆ
Input: çăĆçşŰ and ãČ§ãČńãĆŕ
Output: çăĆçşŰãČ§ãČńãĆŕ

åĚÍèğ$èŃśå■ŮãĆŠåŘńãĆĄãĄęåŕ¿å£IJãĄŹãĆŃåăť'åŘĹãĄőæŇĞåőŽãĄŕãĂĄäžëäÿŃãĄőæğŸãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ(æ■čèęŔèąĺ

```
before_concatenation_rule: .*[a-zïijąïijž]
after_concatenation_rule: [a-zïijąïijž].*
```

èŃśæŢřå■ŮãĄĺéĂŽèšĺèÍŸåŔůãĄőéŰŞãĄńçľžçŹ¡ãĆŠæŃ£åĚěãĄŹãĆŃåăť'åŘĹãĄńãĄŕãĂĄäžëäÿŃãĄőèĺ■åőŽãĆŠèąŇãĄĐãĄ¿ãĄ

```
before_concatenation_rule: .*[a-z0-9]
after_concatenation_rule: [a-z0-9$Âě].*
```

### 8.5.2 ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹåőŽç¿ľãČŢãĆąãĆd'ãČń

äžëäÿŃãĄőãĆĺãČşãČĘãĆčãČĘãĆčãĄğæŇĞåőŽãĄŹãĆŃãČŢãĆąãĆd'ãČńãĄŕãĂĄåĹl'çŤĺãĄŹãĆŃãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹ
yaml¡ćåijŔãĄőåăť'åŘĹãĂĄèÍŸåŔůãĄŃæĐŔåŠşãĆŠæŇąãĄd'åăť'åŘĹãĄŃãĄĆãĆŃãĄ§ãĆąãĂĄèÍŸåŔůãĆŠåŘńãĆĂæŰĞå■ŮåĹ
âĂIJâĂŹâĂİ ãĄğåŽšãĆĂå£ĚèęĄãĄŃãĄĆãĆŁãĄ¿ãĄŹãĂĆ

- nlu_servers : åĹl'çŤĺãĄŹãĆŃNLUãĆţãČijãČŘãĄńéŰćãĄŹãĆŃãĆćãĆŕãĆżãĆźæČĚåăśãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
- bot_names : åĹl'çŤĺãĄŹãĆŃåĚňéŰŃBotãĄńéŰćãĄŹãĆŃãĆćãĆŕãĆżãĆźæČĚåăśãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
- rest_templates : åĹl'çŤĺãĄŹãĆŃRESTãĆţãČijãČŘãĄńéŰćãĄŹãĆŃãĆćãĆŕãĆżãĆźæČĚåăśãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ

#### nlu_servers

`nlu_servers` ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĄŕãĂĄæňąãĄőïijŞãĄd'ãĄőåőŽç¿l'ãĆŠèąŇãĄĐãĄ¿ãĄŹãĂĆ

- *sraix* èęĄçt'ãäĄğä¡£çŤĺãĄŹãĆŃNLUãĆţãČijãČŘãĄőãĆćãĆŕãĆżãĆźåĚĹæČĚåăśãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ

- ãČđãČČãČĄåĞęçŘĘãĄńä¡£çŤĺãĄŹãĆŃNLUãĆţãČijãČŘãĄőãĆćãĆŕãĆżãĆźåĚĹæČĚåăśãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
- ãČđãČČãČĄåĞęçŘĘæŹĆãĄőNLUãĆţãČijãČŘæŕŐãĄőéĂŽä£ąæŹĆéŰŞãĄőæIJĂåd'ğåÅd'ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

âĂŸsraixâĂŹèęAçt'ăãĄğä¡£çŤĺãĄŹãĆŃNLUãĆţãČijãČŘæČĚåăśãĄńãĄŕãĂĄãĆĺãĆd'ãČłãĆćãĆźåŘ■æŕŐãĄńãĂĄãĆćãĆŕãĆżãĆźå
nlu ãĄğãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğåĹl'çŤĺãĄğãĄ■ãĄ¿ãĄŹãĂĆ

åřŽãĂĄãĆćãĆŕãĆżãĆźåĚĹURLãĄőæŇĞåőŽãĄŕå£ĚéăĹãĄğãĂĄãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄŕãĂĄèŃśå■ŮïijŽå■ŁèğŠåd'ğæŰĞå■Ůã

äžěäÿŃãĄőä¿ŃãĄŕãĂĄ2ãĄd'ãĄőãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄőåőŽç¿l'ãĆŠèąŇãĄčãĄ§ä¿ŃãĄğãĄŹãĂĆ1ãĄd'çŻőãĄŕURLãĄńAPIãĆ

```
servers:
  ãĆĺãĆd'ãČłãĆćãĆźåŘ■_1:
    url: http://localhost:5200/run
  ãĆĺãĆd'ãČłãĆćãĆźåŘ■_2:
    url: http://localhost:3000/run
    apikey: test_key
```

ãČđãČČãČĄåĞęçŘĘãĄńä¡£çŤĺãĄŹãĆŃNLUãĆţãČijãČŘæČĚåăśãĄńãĄd'ãĄĎãĄęãĆĆãĂĄãĆćãĆŕãĆżãĆźåĚĹURL(ãĆĺãČşãČL'ã
ïijĹnameæŇĞåőŽãĆŠéŹd'ãĄ■ãĂĄãĆćãĆŕãĆżãĆźåĚĹURLãĄőæŇĞåőŽãĄŕå£ĚéăĹãĄğãĄŹãĂĆïijL'

èd'ĞæŢřãĄőNLUãĆţãČijãČŘãĆŠåĹl'çŤĺãĄŹãĆŃåăt'åŘĹãĄÑãĄĆãĆŃãĄ§ãĆĄãĂĄyamlèĺŸè£řãĄńãĄŕãČłãĆźãČĹïijĹèąŇéă■èĺŸ
âĂŹïijL'æŇĞåőŽãĆŠèąÑãĄĎãĂĄèĺŸè£řéăĘåžŘãĄńå¿ŞãĄčãĄęãĂĄãČđãČČãČĄåĞęçŘĘæŹĆãĄőNLUãĆţãČijãČŘéĂŽä£ąãĆŠèą
ïijĹïijŚãĄd'ãĄőNLUãĆţãČijãČŘãĄőãĄ£ãĆŠåĹl'çŤĺãĄŹãĆŃåăt'åŘĹãĄŕãĂĄèąŇéă■èĺŸåŕůïijŽâĂŹ-
âĂŸãĄőæŇĞåőŽãĄŕçIJĄçŢěãĄŇåŕŕèČ¡ãĄğãĄŹãĂĆïijL'

åřŽãĂĄNLUãČđãČČãČĄãČşãĆŕãĄğãĄŕãĂĄåŘŇäÿĂãĄőURLãĄńåŕ¿ãĄŹãĆŃéĞ■èd'ĞéĂŽä£ąãĆŠæŁŚæ■ćãĄŹãĆŃãĄ§ãĆĄãĂ

äžěäÿŃãĄőä¿ŃãĄŕãĂĄ1ãĄd'çŻőãĄŕURLæŇĞåőŽãĄőAPIãĆ■ãČijèĺ■åőŽãĄłãĄŮãĂĄ2ãĄd'çŻőãĄŕURLæŇĞåőŽãĄĺãĄĺãĆĆãĄ

```
nlu:
  - url: http://localhost:5201/run
  - url: http://localhost:3000/run
    apikey: test_key
  - name: ãĆĺãĆd'ãČłãĆćãĆźåŘ■_1
```

NLUãĆţãČijãČŘæŕŐãĄőéĂŽä£ąæŹĆéŰŞãĄőæIJĂåd'ğåÅd'ãĄőæŇĞåőŽãĄŕçğŠå■Ÿä¡■ãĄğãĂĄåŘĎãĆţãČijãČŘãĄńåĚśéĂŽãĄő

åřŽãĂĄæIJńæŇĞåőŽãĄŕNLUãĆŠåĹl'çŤĺãĄŮãĄ§ãČđãČČãČĄåĞęçŘĘãĆŠèąÑãĄĘåăt'åŘĹãĄńæIJL'åŁźãĄğãĂĄçIJĄçŢěæŹĆãĄ

```
timeout: 1
```

ãČđãČČãČĄåĞęçŘĘãĄńä¡£çŤĺãĄŹãĆŃNLUãĆţãČijãČŘæČĚåăśãĆŠæIJńãČŢãĆąãĆd'ãČńãĄğæŇĞåőŽãĄŹãĆŃåăt'åŘĹãĄńãĄŕã

ãĄŞãĄőæŇĞåőŽãĄÑãĄłãĄĎåăt'åŘĹãĆĎãĂĄæIJńãČŢãĆąãĆd'ãČńãĄńãČđãČČãČĄåĞęçŘĘãĄńä¡£çŤĺãĄŹãĆŃNLUãĆţãČijãČŘ

ïijĹãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿ľãĄğãĆĆNLUãĆţãČijãČŘãĄőæČĚåăśãĄŇæŇĞåőŽãĄŢãĆŇãĄęãĄĎãĄłãĄĎåăt'

```
brain:
  nlu:
    use_file: true
```

### bot_names

bot_names ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĄŕãĂĄ*sraix*
èęAçt'ăăĄğä¡£çŤĺãĄŹãĆŃåĚňéŰŃBotãĄőãĆćãĆŕãĆżåĚĹæČĚåăśãĄĺãĄŮãĄęãĂĄãĆĺãĆd'ãČłãĆćãĆźåŘ■æŕŐãĄńãĂĄäÿżãĄ
sraixèęAçt'ăăĄğãĄŕåśđæĂğïijŽ botName
ãĄğãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğåĚňéŰŃBotãĆŠåĹl'çŤĺãĄğãĄ■ãĄ¿ãĄŹãĂĆ

(æŇĞåőŽãĄŹãĆŃåĂd'ãĄŕãĂĄBotçŤ§æĹŘæŹĆãĄńçćžåőŽãĄŮãĄ¿ãĄŹãĄőãĄğãĂĄåĚňéŰŃBotãĄőæŔŘä¿ŻèĂĚãĄńçćžèł■ãĄŹ

åřŽãĂĄãĆćãĆŕãĆżãĆźåĚĹURLãĄőæŇĞåőŽãĄŕå£ĚéăĹãĄğãĂĄãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄŕãĂĄèŃśå■ŮïijŽå■ŁèğŠåd'ğæŰĞå■Ůã

äžěäÿŃãĄőä¿ŃãĄŕãĂĄ2ãĄd'ãĄőãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄőèĺ■åőŽãĆŠèąŇãĄčãĄ§ä¿ŃãĄğãĄŹãĂĆ1ãĄd'çŻőãĄŕURLãĄńAPIãĆ

```
bot:
  ãĆĺãĆd'ãČłãĆćãĆźåŘ■_1:
    url: http://localhost:5400/bots/botId_1/ask
  ãĆĺãĆd'ãČłãĆćãĆźåŘ■_2:
    url: http://localhost:5401/bots/botId_1/ask
    apikey: test_key
```

åĚňéŰŃBotãĄĺãĄőéĂŽä£ąãĄğãĄŕãĂĄåŘĎçĺõãĄőãČŚãČl'ãČąãČijãĆ£ãĄŇæŇĞåőŽãĄğãĄ■ãĆŃãĄ§ãĆĄãĂĄãĆĺãĆd'ãČłãĆćãĆ
åřŽãĂĄéĂŽä£ąæŹĆãĄńä¡£çŤĺãĄŢãĆŃãĆŃãČŚãČl'ãČąãČijãĆ£ãĄőåĂd'ãĄńãĄŕãĂĄ*sraix*
èęAçt'ăăĄğãĄőå■ŘèęAçt'ăæŇĞåőŽãĄőåĘĚåőźãĄŇåĎłåĚĹãĄŮãĄęèĺ■åőŽãĄŢãĆŃãĄ¿ãĄŹãĂĆ

```
bot:
  ãĆĺãĆd'ãČłãĆćãĆźåŘ■:
    url: http://localhost:5401/bots/botId_1/ask
    apikey: test_key
    metadata: Send Data
    locale: ja-JP
    time: 2018-07-01T12:18:45+09:00
    topic: test
    deleteVariable: false
    config: '{"loglevel": "info"}'
```

### rest_templates

rest_templates ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĄŕãĂĄ*sraix*
èęAçt'ăăĄğèąŇãĄĘæśŐçŤĺRESTéĂŽä£ąãĄğä¡£çŤĺãĄŹãĆŃéŻŽå¡ćæČĚåăśãĆŠãČĘãČşãČŮãČňãČijãČĹåŘ■æŕŐãĄńèĺ■åőŽãĄŮã
âĂŸsraixâĂŹèęAçt'ăăĄğãĄŕåśđæĂğïijŽ template
ãĄğãČĘãČşãČŮãČňãČijãČĹåŘ■ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğæśŐçŤĺRESTéĂŽä£ąãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ
åřŽãĂĄãĆćãĆŕãĆżãĆźåĚĹæČĚåăśãĄğãĄĆãĆŃ âĂŸhostâĂŹ
ãĄőæŇĞåőŽãĄŕå£ĚéăĹãĄğãĂĄãČĘãČşãČŮãČňãČijãČĹåŘ■ãĄŕãĂĄèŃśå■ŮïijŽå■ŁèğŠåd'ğæŰĞå■ŮãĂĄæŢřå■ŮãČżèĺŸåŕůïijŽ

èĺ■åőŽéăĚçŻőãĄĺãĄŮãĄęãĄŕãĂĄæśŐçŤĺRESTéĂŽä£ąãĄğæŇĞåőŽãĄğãĄ■ãĆŃåĚĺãČŚãČl'ãČąãČijãĆ£ãĄőæŇĞåőŽãĄŇåŔŕèČ
èęAçt'ăăĄğãĄőå■ŘèęAçt'ăæŇĞåőŽãĄőåĘĚåőźãĄŇåĎłåĚĹãĄŮãĄęèĺ■åőŽãĄŢãĆŃãĄ¿ãĄŹãĂĆ

äžěäÿÑãĄőä¿ÑãĄŕãĂĄ2ãĄd'ãĄőãČęãČşãČŮãČňãČijãČĹåŘ■ãĄőèĺ■åőŽãĆŠèąÑãĄčãĄ§ä¿ÑãĄğãĄŹãĂĆ1ãĄd'çŻőãĄŕå£ĚéăĹåĉ

```
rest:
  ãČĘãČşãČŮãČňãČijãČĹåŘ■_1:
    host: 'http://localhost:5300/rest'
  ãČĘãČşãČŮãČňãČijãČĹåŘ■_2:
    host: 'http://localhost:5300/rest'
    method: POST
    query:  '"item":"1234"'
    header: '"Content-Type": "applicaton/json"'
    body: '{"key": "Send Data"}'
```

### 8.5.3 å■ŸèłđãČłãĆźãČĹãČŢãĆąãĆd'ãČń

äžěäÿÑãĄőãĆĺãČşãČĘãĆčãČĘãĆčãĄğæÑĞåőŽãĄŹãĆÑãČŢãĆąãĆd'ãČńãĄğãĄŕãĂĄåĞęçŘĘår¿èśąãĄĺãĄłãĆÑå■ŸèłđãČżæŰĞå

- sets ïijŽ *set* èęAçt'ããĄğä¡£çŤĺãĄŹãĆÑãČđãČČãČĄåĞęçŘĘår¿èśąãĄőå■ŸèłđãČłãĆźãČĹãĆŠåőŽç¿l'ãĂĆ

```
sets
ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĄŕãĂĄsetèęAçt'ããĄğãĄőæČĚåăśåŔĆçĚğãĄÑãČŢãĆąãĆd'ãČńåŘ■ïijĹæÑąåijţå■ŘãĆŠéŹd'ãĄŔïijL'ãĄ

è■ŸåĹěåŘ■ãĄŕãĂĄãČŢãĆąãĆd'ãČńåŘ■ïijĹæÑąåijţå■ŘãĆŠéŹd'ãĄŔïijL'ãĆŠãĂĄèÑśå■ŮïijŽå■ŁèğŠåd'ğæŰĞå■ŮãĂĄæŢřå■ŮãČ

ãČđãČČãČĄåĞęçŘĘãĆĆãĂĄèÑśå■ŮïijŽå■ŁèğŠåd'ğæŰĞå■ŮãĂĄæŢřå■ŮãČżèÍŸåŔůïijŽå■ŁèğŠãĂĄãĆńãĆ£ãĆńãČŁïijŽåĚíèğŠ
star
èęAçt'ããĄğåŔŰå¿ŮãĄŢãĆÑãĆÑåĂd'ãĄŕãČŢãĆąãĆd'ãČńãĄńèÍŸè£řãĄŮãĄ§ãĆĆãĄőãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

åřŽãĂĄæŮěæIJňèłđãĄőåăt'åŘĹãĂĄãČđãČČãČĄåĞęçŘĘæŹĆãĄńèąÑãĄĘå■ŸèłđåĹĘåL'šãĄőçţŘæđIJãĄńãĆĹãĄčãĄęäÿĂèĞt'ãĄ
äžěäÿÑãĄőä¿ÑãĄŕãĂĄéČ¡éĄŞåžIJçIJÑåŘ■ãĆŠåĹŮèÍŸãĄŮãĄ§prefecture.txtãĄőä¿ÑãĄğãĄŹãĂĆ

```
æİśäžňéČ¡
æİśäžň
çěđåěĹåůİçIJÑ
çěđåěĹåůİ
åd'ğéŸłåžIJ
åd'ğéŸł
 ïijŽ
```

èÑśæŰĞãĄőåăt'åŘĹãĄğãĆĆãĂĄèd'ĞæŢřå■ŸèłđãĄÑãĆL'ãĄłãĆÑæŰĞå■ŮåĹŮãĆŠæÑĞåőŽãĄŹãĆÑãĄŞãĄĺãĄÑåŔŕèČ¡ãĄğãĂ
åřŽãĂĄèÑśå■ŮãČłãĆźãČĹãĄĺæŮěæIJňèłđãČłãĆźãČĹãĄĺãĄğãĄŕåĞęçŘĘæŰźåijŔãĄÑçŢřãĄłãĆÑãĄ§ãĆąãĂĄïijŠãĄd'ãĄőãČŢã

### 8.5.4 æ■čèęŔèąÍçŔ¿ãČłãĆźãČĹãČŢãĆąãĆd'ãČń

äžěäÿÑãĄőãĆĺãČşãČĘãĆčãČĘãĆčãĄğæÑĞåőŽãĄŹãĆÑãČŢãĆąãĆd'ãČńãĄğãĄŕãĂĄ âĂŹæ■čèęŔèąÍçŔ¿åŘ■ :
æ■čèęŔèąÍçŔ¿æŰĞå■ŮåĹŮâĂŹ ãĄőå¡ćåijŔãĄğèÍŸè£řãĄŮãĄ¿ãĄŹãĂĆ

- regex_templates ïijŽ *regex* èęAçt'ããĄőtemplateæÑĞåőŽãĄğä¡£çŤĺãĄŹãĆÑæ■čèęŔèąÍçŔ¿ãČłãĆźãČĹãĆŠåőŽç¿l'ãĂĆ

```
regex_templates
ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĄŕãĂĄregexèęAçt'ããĄğèąÑãĄĘãČđãČČãČĄåĞęçŘĘãĄńä¡£çŤĺãĄŹãĆÑæ■čèęŔèąÍçŔ¿æŰĞå■ŮåĹŮ

regexèęAçt'ãåĄt'ãĄğãĄŕãĂĄtemplateåśđæĂğãĄğæ■čèęŔèąÍçŔ¿åŘ■ãĆŠæÑĞåőŽãĄŮãĄ¿ãĄŹãĂĆåřŽãĂĄæ■čèęŔèąÍçŔ¿ãĄőèÍŸ
```
```

åřŽãĂĄæ■čèęŔèąĺçŔ¿åŘ■ãĄŕãĂĄĂąèŃśå■ŮïijŽå■ŁèğŠåď˙ğæŰĞå■ŮãĂĄæŢřå■ŮãČżèĺŸåŔůïijŽå■ŁèğŠãĂĄãĆńãĆ£ãĆńãČŁïijŽåĚ
èĺŸè£řä¿ŃãĄŕãĂĄäżěäÿŃãĄőæğŸãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
konnichiwa : ãĄŞãĆŞãĄńãĄą[ãĄŕ|ãĆŔ]
tomorrow : æŸŐæůě|ãĄĆãĄŹ|ãĄĆãĄůãĄ§
today : äżŁæůě|ãĄ■ãĆĞãĄę
  ïijŽ
```

### 8.5.5 åď˙L'æŔŻè¿đæŻÿãČŢãĆąãĆď˙ãČń

äżěäÿŃãĄőãĆĺãČşãČęãĆčãČęãĆčãĄąğæŇĞåőŽãĄŹãĆŃãČŢãĆąãĆď˙ãČńãĄŕãĂĄåď˙L'æŔŻçŤĺãĄőãČęãČijãČŰãČńãĆŠä¡IJæĹŘã
åď˙L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮãĄĺåď˙L'æŔŻå¿ŇæŰĞå■ŮåĹŮãĄőéŰćä£ĆãĆŠåĹŮèĺŸãĄŮãĄ¿ãĄŹãĂĆ

- maps ïijŽ *map* èęĄçť˙ăçŤĺãĄőåď˙L'æŔŻãČęãČijãČŰãČńãĄőãČłãĆźãČĹãĆŠåőŽç¿l'ãĂĆ
- normal ïijŽ *normalize* èęĄçť˙ăçŤĺãĄőåď˙L'æŔŻãČęãČijãČŰãČńãĄőãČłãĆźãČĹãĆŠåőŽç¿l'ãĂĆ
- denormal ïijŽ *denormalize* èęĄçť˙ăçŤĺãĄőåď˙L'æŔŻãČęãČijãČŰãČńãĄőãČłãĆźãČĹãĆŠåőŽç¿l'ãĂĆ
- gender ïijŽ *gender* èęĄçť˙ăçŤĺãĄőåď˙L'æŔŻãČęãČijãČŰãČńãĄőãČłãĆźãČĹãĆŠåőŽç¿l'ãĂĆ
- person ïijŽ *person* èęĄçť˙ăçŤĺãĄőåď˙L'æŔŻãČęãČijãČŰãČńãĄőãČłãĆźãČĹãĆŠåőŽç¿l'ãĂĆ
- person2 ïijŽ *person2* èęĄçť˙ăçŤĺãĄőåď˙L'æŔŻãČęãČijãČŰãČńãĄőãČłãĆźãČĹãĆŠåőŽç¿l'ãĂĆ

#### maps

maps
ãĆĺãČşãČęãĆčãČęãĆčãĄğãĄŕãĂĄmapèęĄçť˙ãäĄőæČĚåăśåŔĆçĚğãĆŠãČŢãĆąãĆď˙ãČńåŘ■ïijĹæŃąåijţå■ŘãĆŠéŹď˙ãĄŔïijL'ãĄğè

ãČŢãĆąãĆď˙ãČńåŘ■ïijĹæŃąåijţå■ŘãĆŠéŹď˙ãĄŔïijL'ãĄŕãĂĄèŃśå■ŮïijŽå■ŁèğŠåď˙ğæŰĞå■ŮãĂĄæŢřå■ŮãČżèĺŸåŔůïijŽå■ŁèğŠã
ãČŢãĆąãĆď˙ãČńæŕŐãĄőèĺŸè£řãĄŕãĂĄâĂŹåď˙L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮ: åď˙L'æŔŻå¿ŇæŰĞå■ŮåĹŮâĂŹ
ãĄőå¡ćåijŔãĄğåĹŮèĺŸãĄŮãĄ¿ãĄŹãĂĆ

åď˙L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮãĄőäÿĂèĞť˙åĹď˙åőŽãĄŕãĂĄèŃśå■ŮïijŽå■ŁèğŠåď˙ğæŰĞå■ŮãĂĄæŢřå■ŮãČżèĺŸåŔůïijŽå■ŁèğŠãĂ
åď˙L'æŔŻçţŘæđIJãĄńãĄŕæŇĞåőŽãĄŢãĆŇãĄ§åď˙L'æŔŻå¿ŇæŰĞå■ŮåĹŮãĄŃèĺ■åőŽãĄŢãĆŇãĄ¿ãĄŹãĂĆ

äżěäÿŃãĄőä¿ŃãĄŕãĂĄéČ¡éĄŞåžIJçIJŇãĄĺçIJŇåžĄæL'ĂåIJĺåIJřãĄőéŰćä£ĆãĆŠåĹŮèĺŸãĄŮãĄ§prefectural_office.txtãĄőä¿ŃãĄ

```
æİśäžňéČ¡:æİśäžň
æİśäžň:æİśäžň
çěđåěĹåůİçIJŇ:æĺłæţIJåÿĆ
çěđåěĹåůİ:æĺłæţIJåÿĆ
åd'ğéŸłåžIJïijŽåd'ğéŸłåÿĆ
åd'ğéŸłïijŽåd'ğéŸłåÿĆ
 ïijŽ
```

#### normal

normal
ãĆĺãČşãČęãĆčãČęãĆčãĄğãĄŕãĂĄâĂŹâĂİåď˙L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮâĂİ,âĂİåď˙L'æŔŻå¿ŇæŰĞå■ŮåĹŮâĂİâĂŹ
ãĄőå¡ćåijŔãĆŠåĹŮèĺŸãĄŹãĆŃãĄŞãĄĺãĄğãĂĄæŰĞå■ŮåĹŮåĘĚãĄőèĺŸåŮç■L'ãĆŠçŃňçńŃãĄŮãĄ§å■ŸèłđãĄńåď˙L'æŔŻãĄŮã
èŃśå■ŮãĄőåăť˙åŘĹãĂĄâĂİåď˙L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮâĂİãĄő1æŰĞå■ŮçŽőãĄŇâĂŹ
âĂŸ(çľžçŹ¡)ãĄğãĄłãĄĎåăť˙åŘĹãĂĄèĺŸåŮãĄőåď˙L'æŔŻãĆŠåL'■æŔŘãĄĺãĄŮãĄęãĂĄåŕ¿èśąæŰĞå■ŮåĹŮåĘĚãĄğäÿĂèĞť˙ãĄŹ

åŕ¿ãĄŮãĄęãĂĄ1æŰĞå■ŮçŻőãĄŇâĂŹ
âĂŸ(çľžçŹ¡)ãĄőåăť åŘĹãĄńãĄŕãĂĄå■Ÿèłđã ĆŠå■Ÿä¡■ãĄĺãĄŮãĄ§åď L'æŔŻãĆŠèąŇãĄĎãĄ¿ãĄŹ(å■Ÿèłđç¡őæŔŻ)ãĂĆ

èŃśæŰĞãĄńåŕ¿ãĄŹãĆŃnormalizeãĄğãĄőåď L'æŔŻåĞęçŘĘãĄŕãĂĄæŰĞå■Ůåď L'æŔŻãĂĄå■Ÿèłđåď L'æŔŻãĄőéãĘãĄğèąŇãĄĎ
2ãĄď ãĄőåď L'æŔŻãĆŠçţĎãĄ£åŘĹãĆŔãĄŻãĄ§ä¿ŃãĄĺãĄŮãĄęãĂĄâĂİ.âĂİãĆŠâĂİdotâĂİãĂĄâĂİ
MrâĂİãĆŠâĂİmisterâĂİãĄğæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğãĂĄâĂİMr.âĂİãĆŠâĂİmister
dotâĂİãĄńåď L'æŔŻãĄŹãĆŃãĄŞãĄĺãĆĆãĄğãĄ■ãĄ¿ãĄŹãĂĆ
åřŽãĂĄæŮěæIJňèłđãĄőåăť åŘĹãĂĄå■Ÿèłđã ĆŠå■Ÿä¡■ãĄĺãĄŮãĄęåď L'æŔŻãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ

```
".","dot"
"/","slash"
":","colon"
"*","_"
" Mr","mister"
" can t","can not"
```

### denormal

normal ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĄőåď L'æŔŻãĄĺåŕ¿ãĆŠãĄłãĄŹãĂĄdenormal
ãĆĺãČşãČĘãĆčãČĘãĆčãĄğãĆĆãĂĄâĂŹâĂİåď L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮâĂİ,âĂİåď L'æŔŻå¿ŇæŰĞå■ŮåĹŮâĂİâĂŹ
ãĄőå¡ćåijŘãĆŠåĹŮèĺŸãĄŮãĂĄå■Ÿèłđã ĄŃãĆĽ'èĺŸåŘůç■L'ãĄőæŰĞå■ŮåĹŮãĄńæĹżãĄŮãĄ¿ãĄŹãĂĆ

èŃśå■ŮãĄőåăť åŘĹãĂĄâĂİåď L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮâĂİãĄŕå■Ÿèłđã ĄğãĄĆãĆŁãĂĄâĂİåď L'æŔŻå¿ŇæŰĞå■ŮåĹŮâĂİãĄńã
âĂŸ(çľžçŹ¡)ãĄőèęĄåŘęãĆŠåŘńãĆĄãĄęæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆçľžçŹ¡ãĄŇçĎąãĄĎåăť åŘĹãĄńãĄŕãĂĄåĽ■å¿ŇãĄőæŰĞå■Ů
normalizeãĄőéĂĘãĄőä¿ŃãĄĺãĄŮãĄęãĂĄâĂİmister dotâĂİãĆŠâĂİ
Mr.âĂİãĄńæĹżãĄŹåăť åŘĹãĂĄåĽèãĄőæŇĞåőŽæŰźæşŢãĄĺãĄŮãĄęãĂĄâĂİdotâĂİãĆŠâĂİ.âĂİãĂĄâĂİmisterâĂİãĆŠâĂİ
MrâĂİãĄő2ãĄď ãĄńåĹĘãĄŚãĄęæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĆĆãĄğãĄ■ãĄ¿ãĄŹãĂĆ

```
"dot","."
"slash","/"
"colon",":"
"_","*"
"mister dot"," Mr."
"can not"," can't "
```

### gender,person,person2

genderãĂĄpersonãĂĄperson2
ãĄőåŘĎãĆĺãČşãČĘãĆčãČĘãĆčãĄŕãĂĄå■Ÿèłđå■Ÿä¡■ãĄğåď L'æŔŻãĆŠèąŇãĄĘãĆĆãĄõãĄğãĂĄâĂŹâĂİåď L'æŔŻåŕ¿èśąæŰĞå■
ãĄőå¡ćåijŘãĆŠåĹŮèĺŸãĄŮãĄ¿ãĄŹãĂĆ

åď L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮãĂĄåď L'æŔŻå¿ŇæŰĞå■ŮåĹŮãĄńçľžçŹ¡ãĆŠåŘńãĆĂèď ĞæŢřå■Ÿèłđã ĄőæŰĞå■ŮåĹŮãĆŠæŇĞåć

åď L'æŔŻåŕ¿èśąæŰĞå■ŮåĹŮãĄőäÿĂèĞt'åĹď åőŽãĄŕãĂĄèŃśå■ŮïijŽå■ŁèğŠåď ğæŰĞå■ŮãĂĄæŢřå■ŮãČżèĺŸåŘůïijŽå■ŁèğŠãĂ
åď L'æŔŻçţŘædIJãĄńãĄŕæŇĞåőŽãĄŢãĆŇãĄ§åĂď ãĄŃèĺ■åőŽãĄŢãĆŇãĄ¿ãĄŹãĂĆ

ä¿ŃãĄĺãĄŮãĄęãĂĄgenderãĄğãĄŕäżěäÿŃãĄőæğŸãĄńåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ

```
"he","she"
"his","her"
"him","her"
```

(continues on next page)

(continued from previous page)

```
"her","him"
"she","he"
"ãĄŃãĆŇ","å¡ijåěş"
"ãĄŃãĄőãĄŸãĆĞ","å¡ij"
"ãĄŃãĆŇãĄŮ","å¡ijåěş"
"å¡ij","å¡ijåěş"
"å¡ijåěş","å¡ij"
"å¡ijæřŕ","å¡ijåěş"
```

### 8.5.6 AIMLèęAçťăăĄőåőŽç¿ľãČŢãĆąãĆďãČń

äžěäÿŃãĄőãĆĺãČşãČEãĆčãČEãĆčãĄğãĄŕãĂĄåŕ¿èľśãĆĺãČşãĆÿãČşãĄğä¡£çŤĺåŔŕèČ¡ãĄłAIMLèęAçťăăĄĺåĞęçŘEãĆŕãČľãĆźãĆ
èľşçťřãĄŕ *ãĆńãĆźãĆ£ãČăèęAçť'ă* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăăĄŢãĄĎãĂĆ

- pattern_nodes ïijŽ patternãĄőåŘĎèęAçťăăĄőåĞęçŘEãĆŕãČľãĆźåőŽç¿ľãČŢãĆąãĆďãČńãĆŠæŇĞåőŽãĂĆ
- template_nodes ïijŽ templateãĄőåŘĎèęAçťăăĄőåĞęçŘEãĆŕãČľãĆźåőŽç¿ľãČŢãĆąãĆďãČńãĆŠæŇĞåőŽãĂĆ

### 8.5.7 ãĄİãĄőäżŰãĄõãĆĺãČşãČEãĆčãČEãĆč

`rdf` ãĆĺãČşãČEãĆčãČEãĆčãĄğæŇĞåőŽãĄŹãĆŃãČŢãĆąãĆďãČńå¡ćåijŔãĄŕãĂĄ*RDFãĆţãČİãČijãČĹ*
ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăăĄŢãĄĎãĂĆ

`usergroups` ãĆĺãČşãČEãĆčãČEãĆčãĄğæŇĞåőŽãĄŹãĆŃãČŢãĆąãĆďãČńå¡ćåijŔãĄŕãĂĄSecurityãĄő
*ãČęãČijãĆúãĆřãČńãČijãČŮãČŢãĆąãĆďãČń* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăăĄŢãĄĎãĂĆ

äžěäÿŃãĄőãĆĺãČşãČEãĆčãČEãĆčãĄńãĄďãĄĎãĄęãĄŕãĂĄåő§èčĚ(ãĆŕãČľãĆźåőŽç¿ľç■Ľ)ãĄńä¿Ĺå■ŸãĄŹãĆŃåĘĚåőźãĆŠåŘńã

- license_keys ïijŽ åď´ŰéČĺæŐěçűŽç■Ľ'ãĄğå£ĚèęĄãĄńãĄłãĆŃãČľãĆďãĆżãČşãĆźãĆ■ãČijãČŢãĆąãĆďãČńãĂĆ
- postprocessors ïijŽ ãČñãĆźãČĺãČşãĆźãĄőå£IJç■ŤæŰĞãĄńåŕ¿ãĄŮãĄęçůĺéŻĘãĆŠèąÑãĄĘåăť´åŘĹãĄőåĞęçŘEãĆŕãČľãĆźå
- preprocessors ïijŽ ãČłãĆŕãĆĺãĆźãČĹãĄőãČęãČijãĆűçŹžèľśãĄńåŕ¿ãĄŮãĄęçůĺéŻĘãĆŠèąÑãĄĘåăť´åŘĹãĄőåĞęçŘEãĆŕãČľã
- spelling_corpus ïijŽ ãĆźãČŽãČńãČąãĆğãČČãĆŕãĆŠèąÑãĄĎåăť´åŘĹãĄőãĆĆãĄĺãĄńãĄłãĆŃãĆşãČijãČŠãĆźãČŢãĆąãĆď'ãĆ

# CHAPTER 9

# JSON

JSONãĆŠAIMLãĄğåĹľçŤĺãĄŹãĆŃãĄ§ãĆĄãĄőæľ§èČ¡ãĄğãĄŹãĂĆ SubAgent,metadata,æĎŔåŻşèğčéĞĹçţŘæđIJãĄłãĄľãĄőJS

name/var/dataãĄğæŇĞåőŽãĄŹãĆŃåd'L'æŢřåŘ■ãĄńãĄŕãĂĄget/setãĄğåőŽç¿l'ãĄŮãĄ§åd'L'æŢřåŘ■ãĆŠä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆ
varãĄŕãČ■ãČijãĆńãČńåd'L'æŢřãĂĄnameãĄŕãĆřãČ■ãČijãČŘãČńåd'L'æŢřãĂĄdataãĄŕãĆřãČ■ãČijãČŘãČńåd'L'æŢřiijĹAPIãĄŃãĆ
ãĄ¿ãĄ§ãĂĄãČąãĆ£ãČĞãČijãĆ£ãĂĄãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄőæĹżãĆŁåĂd'ç■L'ãĄőãĆůãĆźãČĘãČăåŻžåőŽåd'L'æŢřåŘ

- åśđæĂğ

| ãČŠãČľãĆąãĆĆãĆĄãĆĆãĆĄãĆĆãĆĄ

## 9.1 å§žælJňåĹľçŤĺæŰźæşŢ

JSONèęAçť ăăAńnameãĂĄdataãĂĄãĆĆãĄŮãĄŘãAŕãĂĄvaråśđæĂğãĄğãĂĄår¿èśąãAĺãAłãĆŃJSONãČĞãČijãĆ£ãĆŠæŇĞåőŽãA
JSONèęAçť ăăAńåĘĚåőźãĆŠèĺ■åőŽãĄŮãA§åăť åŘĹãĂĄår¿èśąãAĺãAłãĆŃJSONãČĞãČijãĆ£ãAńåĂđ ãĆŠèĺ■åőŽãĂĄæŽť æŰřãA
JSONèęAçť ăăAńåĘĚåőźãĆŠèĺ■åőŽãĄŮãAłãĄŇãAčãA§åăť åŘĹãĂĄåL'ŁéŹđ ãĄőåăť åŘĹãĆŠéŹđ ãĄ■ãĂĄår¿èśąãAĺãAłãĆŃãĆ■ã
*get* ãĄĺåŘŇæğŸãAńãĂĄConfigç■L'ãĄğèĺ■åőŽãĄŢãĆŇãA§âĂİdefault-getâĂİãĄőåĂđ ãĄŇè£ŤãĆŁãA¿ãĄŹãĂĆ
äžëäÿŇãAńãĂĄJSONãĆŠår¿èśąãAĺãAŮãA§åăť åŘĹãAõãČĞãČijãĆ£ãĄőåŘŰå¿ŮæŰźæşŢãĂĄèĺ■åőŽæŰźæşŢãĆŠèłňæŸŐãAŮãA
ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄőæĹžãĆŁåĂđ ãĆŠåĹľçŤĺãĄŹãĆŃä¿ŃãĄğèłňæŸŐãAŮãA¿ãĄŹãĂĆãĆţãČŰãĆĺãČijãĆÿãĆğãČş
`__SUBAGENT__.family` ãĄńä£ĺæŇąãĄŢãĆŇãĄęãĄĎãĆŃåL'■æŘŘãĄğãĄŹãĂĆ

```
{
    "family": {
        "åŘ■åL'■": "äÿĂéČŐ",
        "èłŢçŤ§æŮě": "19700101",
        "åźt'é¡ć": 48,
        "æĂğåĹě": "male",
        "èĞłåőĚ": { "ä¡ŔæL'Ă": "æİśäžňéČ¡æÿŕåŇž","åžğæĺŹ": "x,y" },
        "åőűæŮŘ": {
            "çĹű": "åd'łéČŐ",
            "ær■": "èŁśå■Ř",
            "åĚĎåijş": [ "äžŇéČŐ", "èŔŁå■Ř" ],
            "å■Ř": [ "äÿL'éČŐ", "æąČå■Ř" ]
        },
        "èęłæĹŽ": {
            "çěŰçĹű": [ "åčńéČŐ", "äžŤéČŐ" ],
            "çěŰær■": [ "äźĚéĞŇå■Ř", "æćĚå■Ř" ],
            "å¿ŞåğL'åęź": [ "åŘšéČŐ", "åŠšå■Ř" ],
            "å■ń": [ "çt'ŮåÿŇå■Ř" ]
        },
        "åŔŇäžž": [ "åŠŇåőŔ", "äžňå■Ř" ],
        "èűčåŚş": [ "ãĆt'ãČńãČŢ", "éĞŐçŘČ" ],
        "çŮĚæ■t'": [ "énŸèąĂåIJğ", "èŁśçšL'çŮĞ" ],
        "ãĆćãČňãČńãĆõãČij": [ "çL'Żäźş", "ãĄİãĄř" ]
    }
}
```

### 9.1.1 JSONãČĞãČijãĆ£ãĄőåŘŰå¿ŮæŹĆãĄőåśđæĂğ/å■ŘèęAçť ăæŇĞåőŽæŰźæşŢ

åśđæĂğãĄŁãĆĹãĄşå■ŘèęAçť ăăĄőæŇĞåőŽæŰźæşŢãĆŠèłňæŸŐãĄŮãA¿ãĄŹãĂĆ
èĺŸèijL'æŰźæşŢãĄŕçŢřãĄłãĆŁãA¿ãĄŹãĄŃãĂĄĞęçŘEçţŘædIJãĄŕåŘŇãĄŸçţŘædIJãĄńãĄłãĆŁãA¿ãĄŹãĂĆ

#### ãĆ■ãČijæŇĞåőŽãĄőåĂđåŘŰå¿Ů

âĂIJçĹűâĂİãĄőåĂđ ãĆŠåŘŰå¿ŮãĄŹãĆŃåăť åŘĹãĂĄäžëäÿŇãĄőèĺŸè£řãĆŠèąŇãĄĐãA¿ãĄŹãĂĆ
åśđæĂğãĄőåăť åŘĹãĂĄ . åŇžåĹĞãĆŁãĄğåŘŰå¿ŮãĄŮãA§ãĄĐãĆ■ãČijãĆŠèĺŸèijL'ãĄŮãA¿ãĄŹãĂĆ
å■ŘèęAçť ăăĄőåăť åŘĹãĂĄ<key> ãĄőåĘĚåőźãĄńåŘŰå¿ŮãĄŮãA§ãĄĐãĆ■ãČijãĆŠèĺŸèijL'ãĄŮãA¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.åőűæŮŘ.çĹű" />
<!-- <json var="__USER_METADATA__.family"><key>åőűæŮŘ.çĹű</key></json> ␣
↪äÿŁèĺŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

#### éĚ■åĹŮãĄőåŘŰå¿Ů

éĚ■åĹŮãĄńãĄłãĄčãĄęãĄĐãĆŃãĂĄâĂİåĚĎåij§âĂİãĄőåĂđ ãĆŠåŘŰå¿ŮãĄŹãĆŃåăť åŘĹãĂĄ
åĂđ ãĄőåŘŰå¿ŮåŘŇæğŸãĂĄ . åŇžåĹĞãĆŁãĄğåŘŰå¿ŮãĄŮãA§ãĄĐãĆ■ãČijãĆŠèĺŸèijL'ãĂĄãĆĆãĄŮãĄŔãĄŕå■ŘèęAçť ă

<key> ãĆŠãĄńèÍŸè£řãĄŹãĆŃãĄŞãĄÍãĄğæŇĞåőŽãĄŮãĄ§éĚ■åĹŮãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ
åő§èąŇçţŘæđIJãĄÍãĄŮãĄęãĂĄ ["äžŇéČŐ", "èŔŁå■Ř"] ãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.åőűæŮŔ.åĚĎåij§" />
<!-- <json var="__USER_METADATA__.family.åőűæŮŔ"><key>åĚĎåij§</key></json> ␣
↪äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

### éĚ■åĹŮéŢůãĄőåŘŰå¿Ů

functionãĄńâĂÍlenâĂÍãĆŠæŇĞåőŽãĄŹãĆŃãĄÍéĚ■åĹŮéŢůãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ
âĂIJåĚĎåij§âĂÍãĄőåät'åŘĹãĂĄ 2 ãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.åőűæŮŔ.åĚĎåij§" function="len"/>
<!-- <json var="__USER_METADATA__.family.åőűæŮŔ.åĚĎåij§"><function>len</function></
↪json>   äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

### éĚ■åĹŮåĂd'ãĄőåŘŰå¿Ů

éĚ■åĹŮãĄőåĘĚåőźãĆŠåŘŰå¿ŮãĄŹãĆŃåät'åŘĹãĂĄéĚ■åĹŮãĄőãĆd'ãĆşãĆĞãĆČãĆŕãĆźãĆŠèÍŸèijL'ãĄŮãĄ¿ãĄŹãĂĆ
âĂIJåĚĎåij§âĂÍãĄő0çŢłçŽőãĄőåĂd'ãĂĄ äžŇéČŐ ãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.åőűæŮŔ.åĚĎåij§" index="0"/>
<!-- <json var="__USER_METADATA__.family.åőűæŮŔ.åĚĎåij§"><index>0</index></json> ␣
↪äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

### JSONãĆłãČŰãĆÿãĆğãĆŕãČĹãĄőèęĄçť'äæŢřåŘŰå¿Ů

JSONãĆłãČŰãĆÿãĆğãĆŕãČĹãĄőèęĄçť'äæŢřãĆŠåŘŰå¿ŮãĄŹãĆŃåät'åŘĹãĂĄfunctionãĄń len
ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ familyãĆŠæŇĞåőŽãĄŮãĄ§åät'åŘĹãĄőèęĄçť'äæŢřãĄf 11
ãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family" function="len"/>
<!-- <json var="__USER_METADATA__.family"><function>len</function></json> ␣
↪äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

### JSONãĆłãČŰãĆÿãĆğãĆŕãČĹãĄőãĆ■ãČijãĆŠåŘŰå¿ŮãĄŹãĆŃåät'åŘĹ

JSONãĆłãČŰãĆÿãĆğãĆŕãČĹãĄőãĆ■ãČijãĆŠåŘŰå¿ŮãĄŹãĆŃåät'åŘĹãĂĄitemãĄń key
ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ familyãĄő5çŢłçŽőãĆŠæŇĞåőŽãĄŹãĆŃãĄÍãĂĄ åőűæŮŔ
ãĆŠåŘŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family" item="key" index="5"/>
<!-- <json var="__USER_METADATA__.family"><item>key</item><index>5</index></json> ␣
↪äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

## 9.1.2 JSONãČĞãČijãĆ£ãĄőæŻť'æŰř

JSONãČĞãČijãĆ£ãĄńæŮćãĄńãĄĆãĆŃãĆ■ãČijãĄőåĂd'ãĆŠåd'L'æŻť'ãĄŹãĆŃåät'åŘĹãĂĄJSONèęĄçť'ãäĄőåĘĚåőźãĄńåĂd'ãĆŠ
åĘĚåőźãĆŠèÍŸèijL'ãĄŹãĆŃãĄŞãĄÍãĄğãĂĄâĂÏä¡ŔæL'ĂâĂÏãĆŠâĂÏæŰřæĺłæţIJåĂÏãĄńæŻť'æŰřãĄŮãĄ¿ãĄŹãĂĆ
çľžãĄőåĘĚåőźãĄńãĄŹãĆŃåät'åŘĹãĂĄ "" ãĆŠæŇĞåőŽãĄŮãĄęãĄŔãĄäãĄŢãĄĎãĂĆ

```
<json var="__USER_METADATA__.family.èĞłåőĚ.ä¡ŕæL’Ă">æŰřæĺłætIJ</json>
<json var="__USER_METADATA__.family.èĞłåőĚ.åžğæĺŹ">""</json>
<!-- <json var="__USER_METADATA__.family.èĞłåőĚ"><key>ä¡ŕæL’Ă</key>æŰřæĺłætIJ</
↪json>
    <json var="__USER_METADATA__.family.èĞłåőĚ"><key>åžğæĺŹ</key>""</json> ␣
↪äÿŁèÍŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

æŻť'æŰřåL'■

```
"èĞłåőĚ": {"ä¡ŕæL’Ă": "æİśäžňéČ¡æÿŕåŇž", "åžğæĺŹ": "x,y"},
```

æŻť'æŰřå¿Ň

```
"èĞłåőĚ": {"ä¡ŕæL’Ă": "æŰřæĺłætIJ", "åžğæĺŹ": ""},
```

### JSONãČĞãČijãĆ£ãĄÿãĄőè£¡åŁă

æŰřãĄŮãĄĎãĆ■ãČijãĆŠè£¡åŁãăĄŹãĆŃåăť'åŘĹãĂĄæŰřãĄŮãĄĎãĆ■ãČijãĄńåĂď'ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğæŰřãĄ§ãĄ

```
<json var="__USER_METADATA__.family.éČţä¿£çŢłåŕů">222-0033</json>
<!-- <json var="__USER_METADATA__.family"><key>éČţä¿£çŢłåŕů</key>222-0033</json> ␣
↪äÿŁèÍŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

æŻť'æŰřåL'■

```
{
    "family":{
        "çŮĚæ■t’": ["éńŸèąĂåIJğ", "èŁśçšL’çŮĞ"],
        "ãĆćãČňãČńãĆőãČij": ["çL’Żäźş", "ãĄİãĄř"]
    }
}
```

æŻť'æŰřå¿Ň

```
{
    "family":{
        "çŮĚæ■t’": ["éńŸèąĂåIJğ", "èŁśçšL’çŮĞ"],
        "ãĆćãČňãČńãĆőãČij": ["çL’Żäźş", "ãĄİãĄř"],
        "éČţä¿£çŢłåŕů": "222-0033"
    }
}
```

### éĚ■åĹŮãĄőåĘĚåőźãĄőåď'L'æŻť

éĚ■åĹŮãĄőåĘĚåőźãĆŠåď'L'æŻť'ãĄŹãĆŃåăť'åŘĹãĂĄéĚ■åĹŮãĄőãĆd'ãČşãČĞãČČãĆŕãĆźãĆŠèÍŸèijL'ãĄŮãĄ¿ãĄŹãĂĆ
âĂIJèűčåŚşâĂİãĄő0çŢłçŻőãĄőåĂď'ãĆŠåď'L'æŻť'ãĄŹãĆŃåăť'åŘĹãĂĄäžëäÿŇãĄőãĆĹãĄĘãĄńåŔŮå¿ŮãĄŮãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.èűčåŚş" index="0">ãĆţãČČãĆńãČij</json>
<!-- <json var="__USER_METADATA__.family"><key>èűčåŚş</key><index>0</index>
↪ãĆţãČČãĆńãČij</json>  äÿŁèÍŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

æŻť'æŰřåL'■

```
{
    "family":{
        "èűčåŚş": ["ãĆt’ãČńãČŢ", "éĞŐçŘČ"]
    }
}
```

æŻťæŰřå¿Ň

```
{
    "family":{
        "èŭčåŚş": ["ãĆţãĈČãĆńãČij", "éĞŐçŘČ"]
    }
}
```

### éĚ■åĹŮãĄőåď˙L'æŻť

éĚ■åĹŮãĄńãĄłãĄčãĄęãĄĎãĆŃâĂİèŭčåŚşâĂİãĄőèęĄçť˙ăãĆŠåĚĺãĄęåď˙L'æŻť˙ãĄŹãĆŃåăť˙åŘĹãĂĄ
åĂŃãĂĚãĄőèęĄçť˙ăãĆŠãĈĂãĈŰãĈńãĆŕãĆľ˙ãČijãĈĹãĄğåŻšãĄ£ãĂĄãĆńãČşãĈđãĄğåŇžåĹĞãĆŁãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.èŭčåŚş">"ãĆţãĈČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ"
↪</json>
<!-- <json var="__USER_METADATA__.family"><key>èŭčåŚş</key>"ãĆţãĈČãĆńãČij","éĞčãĆŁ
↪","æŸäçŤżéŚŚèşđ"</json>  äÿŁèÍŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

ãĆŠæŇĞåőŽãĄŹãĆŃãĄĺãĂĄ

æŻťæŰřåĽ■

```
"èŭčåŚş": ["ãĆt'ãČńãČŢ", "éĞŐçŘČ"],
```

æŻťæŰřå¿Ň

```
"èŭčåŚş": ["ãĆţãĈČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ"],
```

### éĚ■åĹŮãĄÿãĄőèęĄçť˙ãè£¡åŁă

éĚ■åĹŮãĄÿãĄőèęĄçť˙ãè£¡åŁããĄfunctionãĄńinsertãĆŠæŇĞåőŽãĄŮãĂĄindexãĄğæŇ£åĚèçőĞæĽ˙ĂãĆŠèĺ■åőŽãĄŮãĄ¿ãĄŹãĂĆ
åĚĹéă■ãĄńåĂď˙ãĆŠè£¡åŁããĄŹãĆŃåăť˙åŘĹãĂĄindexãĄń0ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
ãĈđãĆd˙ãĈŁãĆźãĆd˙ãČşãĈĞãĈČãĆŕãĆźãĄŕå¿ŇãĆ■ãĄŃãĆĽ˙ãĄőãĆd˙ãČşãĈĞãĈČãĆŕãĆźåĂď˙ãĆŠèąĺãĄŮãĂĄindexãĄń-
1ãĆŠæŇĞåőŽãĄŹãĆŃãĄĺéĚ■åĹŮãĄőæIJĂå¿ŇãĄńåĂď˙ãĆŠè£¡åŁããĄŮãĄ¿ãĄŹãĂĆ
åĂŃãĂĚãĄőèęĄçť˙ãăĆŠãĈĂãĈŰãĈńãĆŕãĆľ˙ãČijãĈĹãĄğåŻšãĄ£ãĂĄãĆńãČşãĈđãĄğåŇžåĹĞãĆŁãĄ¿ãĄŹãĂĆ

äžëäÿŃãĄőä¿ŃãĄğãĄŕãĂĄéĚ■åĹŮãĄńãĄłãĄčãĄęãĄĎãĆŃâĂİèŭčåŚşâĂİãĄńåŕ¿ãĄŮindex=âĂİ0âĂİãĆŠæŇĞåőŽãĄŮãĂĄéĚ■å

```
<json var="__USER_METADATA__.family.èŭčåŚş" function="insert" index="0">
↪"ãĆţãĈČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ","æŮĚèąŇ(æţůåd'Ű,åŻ¡åĘĚ)"</json>
<!-- <json var="__USER_METADATA__.family"><key>èŭčåŚş</key><function>insert</
↪function><index>0</index>"ãĆţãĈČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ","æŮĚèąŇ(æţůåd'Ű,
↪åŻ¡åĘĚ)"</json>  äÿŁèÍŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

æŻťæŰřåĽ■

```
"èŭčåŚş": ["ãĆt'ãČńãČŢ", "éĞŐçŘČ"],
```

æŻťæŰřå¿Ň

```
"èŭčåŚş": ["ãĆţãĈČãĆńãČij", "éĞčãĆŁ", "æŸäçŤżéŚŚèşđ", "æŮĚèąŇ(æţůåd'Ű,åŻ¡åĘĚ)",
↪"ãĆt'ãČńãČŢ", "éĞŐçŘČ"],
```

äžëäÿŃãĄőä¿ŃãĄğãĄŕãĂĄéĚ■åĹŮãĄńãĄłãĄčãĄęãĄĎãĆŃâĂİèŭčåŚşâĂİãĄńåŕ¿ãĄŮéĚ■åĹŮèęĄçť˙ăæŢřãĄőindex=âĂİ2âĂİãĆŚ

```
<json var="__USER_METADATA__.family.èŭčåŚş" function="insert" index="2">
↪"ãĆţãĈČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ","æŮĚèąŇ(æţůåd'Ű,åŻ¡åĘĚ)"</json>
<!-- <json var="__USER_METADATA__.family"><key>èŭčåŚş</key><function>insert</
↪function><index>2</index>"ãĆţãĈČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ","æŮĚèąŇ(æţůåd'Ű,
↪åŻ¡åĘĚ)"</json>  äÿŁèÍŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

æŻť æŰřåĽ■

```
"èűčåŚş": ["ãĆt’ãČńãČŢ", "éĞŐçŘČ"],
```

æŻť æŰřå¿Ň

```
"èűčåŚş": ["ãĆt’ãČńãČŢ", "éĞŐçŘČ", "ãĆţãČČãĆńãČij", "éĞčãĆŁ", "æŸäçŤżéŚŚèşđ",
↪"æŮĚèąŇ(æţůåd’Ű,åŻ¡åĘĚ)"],
```

ãĄ¿ãĄ§ãĂĄindex=âĂİ-1âĂİãĄgãĆĆåŘŇægŸãĄńãĂĄéĚ■åĹŮãĄőæIJĂå¿ŇãĄńåĂd’ãĆŠè£¡åŁããĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.èűčåŚş" function="insert" index="-1">
↪"ãĆţãČČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ","æŮĚèąŇ(æţůåd’Ű,åŻ¡åĘĚ)"</json>
<!-- <json var="__USER_METADATA__.family"><key>èűčåŚş</key><function>insert</
↪function><index>-1</index>"ãĆţãČČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ",
↪"æŮĚèąŇ(æţůåd’Ű,åŻ¡åĘĚ)"</json>  äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

æŻť æŰřåĽ■

```
"èűčåŚş": ["ãĆt’ãČńãČŢ", "éĞŐçŘČ"],
```

æŻť æŰřå¿Ň

```
"èűčåŚş": ["ãĆt’ãČńãČŢ", "éĞŐçŘČ", "ãĆţãČČãĆńãČij", "éĞčãĆŁ", "æŸäçŤżéŚŚèşđ",
↪"æŮĚèąŇ(æţůåd’Ű,åŻ¡åĘĚ)"],
```

### éĚ■åĹŮãĄőä¡IJæĹŘ

ãĆńãČşãČđåŇžåĹĞãĆŁãĄőèęAçţ’ããĆŠèÍ■åőŽãĄŹãĆŃãĄÑãĂĄfunctionãĄńinsertãĆŠæŇĞåőŽãĄŮindexãĆŠ0ãĄŃ-1ãĆŠèÍ■åőŽãĄŮãĄ§åăţ’åŘĹãĄńéĚ■åĹŮãĆŠä¡IJæĹŘãĄŮãĄ¿ãĄŹãĂĆ(indexãĄń0ãĆĆãĄŮãĄŔãĄŕ-1äžěåd’ŰãĆŠæŇĞåőŽãĄŮãĄ§åăţ’åŘĹä¡IJæĹŘãĄŢãĆŃãĄ¿ãĄŻãĆŞ)

äžěäÿŃãĄőä¿ŃãĄgãĄŕãĂĄæŰřãĄ§ãĄłéĚ■åĹŮèęAçţ’ããĄÍãĄŮãĄęâĂİå■ęæ■t’âĂİãĆŠä¡IJæĹŘãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.å■ęæ■t’" >"AåřŔå■ęæăą","Bäÿ■å■ęæăą","CéńŸæăą",
↪"Dåd’ğå■ę"</json>
<!-- <json var="__USER_METADATA__.family.å■ęæ■t’" function="insert" index="0">
↪"AåřŔå■ęæăą","Bäÿ■å■ęæăą","CéńŸæăą","Dåd’ğå■ę"</json>  äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ--
↪>
<!-- <json var="__USER_METADATA__.family.å■ęæ■t’" function="insert" index="-1">
↪"AåřŔå■ęæăą","Bäÿ■å■ęæăą","CéńŸæăą","Dåd’ğå■ę"</json>  äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ--
↪>
<!-- <json var="__USER_METADATA__.family"><key>å■ęæ■t’</key><function>insert</
↪function><index>0</index>"AåřŔå■ęæăą","Bäÿ■å■ęæăą","CéńŸæăą","Dåd’ğå■ę"</json> ␣
↪äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

ä¡IJæĹŘå¿Ň

```
"å■ęæ■t’": ["AåřŔå■ęæăą","Bäÿ■å■ęæăą","CéńŸæăą","Dåd’ğå■ę"]
```

1èęAçţ’ããĄőåăţ’åŘĹãĄŕãĂĄfunctionãĄńinsertæIJłæŇĞåőŽãĄgJSONãĆłãČŰãĆŷãĆğãĆŕãČĹãĆŠä¡IJæĹŘãĄŹãĆŃãĄŞãĄĺãĄÑãĄ
1èęAçţ’ããĄgãĆĆèęAçţ’ããĄÑåćŮãĄĹãĆŃåăţ’åŘĹãĄŕãĂĄéĚ■åĹŮèęAçţ’ããĄĺãĄŮãĄęä¡IJæĹŘãĄŹãĆŃå£ĚèęĄãĄÑãĄČãĆŁãĄ¿ã

```
<!-- <json var="__USER_METADATA__.family.å■ęæ■t’" function="insert" index="0">
↪"Dåd’ğå■ę"</json>  äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
<!-- <json var="__USER_METADATA__.family.å■ęæ■t’" function="insert" index="-1">
↪"Dåd’ğå■ę"</json>  äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
<!-- <json var="__USER_METADATA__.family"><key>å■ęæ■t’</key><function>insert</
↪function><index>0</index>"Dåd’ğå■ę"</json>  äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

æŻť æŰřå¿ŇãĂĄ1èęAçţ’ããĄőéĚ■åĹŮãĄŇä¡IJæĹŘãĄŢãĆŃãĄ¿ãĄŹãĂĆ

```
"å■ęæ■t’": ["Dåd’ğå■ę"]
```

functionãĄńinsertæIJłæŇĞåőŽãĄőåăť åŘĹãĂĄ

```
<json var="__USER_METADATA__.family.å■ęæ■t’" >"Dåd’ğå■ę"</json>
```

æŻť æŰřå¿ŇãĄŕJSONãĆłãČŰãĆÿãĆğãĆŕãČĹãĄŇä¡IJæĹŘãĄŢãĆŇãĄ¿ãĄŹãĂĆ

```
"å■ęæ■t’": "Dåd’ğå■ę"
```

### 9.1.3 JSONãČĞãČijãĆ£ãĄőåL’ŁéŹď

#### éĚ■åĹŮãĄőèęĄçť ăåL’ŁéŹď

éĚ■åĹŮãĄőèęĄçť ăãĆŠåL’ŁéŹď ãĄŹãĆŃãĄńãĄŕãĂĄfunctionãĄńdeleteãĂĄindexãĄńåL’ŁéŹď ãĄŹãĆŃèęĄçť ăãĄőçŢłåŔůãĆŠèĺ
æŇĞåőŽãĄŮãĄ§indexãĄőåĂď ãĆŠåL’ŁéŹď ãĄŮãĄ¿ãĄŹãĂĆ ãČđãĆď ãČŁãĆźãĆď ãČşãČĞãČČãĆŕãĆźãĄŕå¿ŇãĆ■ãĄŇãĆL’ãĄőã
1ãĆŠæŇĞåőŽãĄŹãĆŃãĄĺéĚ■åĹŮãĄőæIJĂå¿ŇãĄőåĂď ãĆŠåL’ŁéŹď ãĄŮãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.èűčåŚş" index="0" function="delete" />
<!-- <json var="__USER_METADATA__.family.èűčåŚş"><index>0</index><function>delete</
↪function></json>  äÿŁèĺŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
<json var="__USER_METADATA__.family.èűčåŚş" index="-1" function="delete" />
<!-- <json var="__USER_METADATA__.family.èűčåŚş"><index>-1</index><function>delete
↪</function></json>  äÿŁèĺŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

æŻť æŰřåL’■

```
"èűčåŚş": ["ãĆt’ãČńãČŢ", "éĞŐçŘČ","èł■æŻÿ"],
```

æŻť æŰřå¿Ň

```
"èűčåŚş": ["éĞŐçŘČ"],
```

#### ãĆ■ãČijãĄőåL’ŁéŹď

ãĆ■ãČijãĆŠåL’ŁéŹď ãĄŹãĆŃåăť åŘĹãĄŕãĂĄfunctionãĄńdeleteãĆŠèĺ■åőŽãĄŮãĄ¿ãĄŹãĂĆ
æŇĞåőŽãĄŢãĆŇãĄ§ãĆ■ãČijãĄŁãĆĹãĄşåĂď ãĄŇåL’ŁéŹď ãĄŢãĆŇãĄ¿ãĄŹãĂĆ

âĂIJfunctionâĂİãĄńâĂİdeleteâĂİãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğâĂİèűčåŚşâĂİãĆ■ãČijãĄĺåĂď ãĆŠåL’ŁéŹď ãĄŮãĄ¿ãĄŹãĂĆ

```
<json var="__USER_METADATA__.family.èűčåŚş" function="delete" />
<!-- <json var="__USER_METADATA__.family.èűčåŚş"><function>delete</function></json>
↪   äÿŁèĺŸåĘĚåőźãĄĺåŘŇåŃŢä¡IJ-->
```

æŻť æŰřåL’■

```
"åŔŃäžž": ["åŠŇåőŔ", "äžňå■Ř"],
"èűčåŚş": ["ãĆt’ãČńãČŢ", "éĞŐçŘČ"],
"çŮĚæ■t’": ["énŸèąĂåIJğ", "èŁśçšL’çŮĞ"],
```

æŻť æŰřå¿Ň

```
"åŔŃäžž": ["åŠŇåőŔ", "äžňå■Ř"],
"çŮĚæ■t’": ["énŸèąĂåIJğ", "èŁśçšL’çŮĞ"],
```

### 9.1.4 JSONå¡ćåijŕãČĞãČijãĆ£ãĄőæŇĞåőŽ

èęAçť ăãĄĺãĄŮãAęãĂĄJSONå¡ćåijŕãĄőãČĞãČijãĆ£ãĆŠèĺåőŽãĄŹãĆŃåăť åŘĹãĂĄæşćæŃňåijğïijŽ{}ãĄğåŻšãĆŞãĄąJSONãĄć
éĚåĹŮãĄőæŞä¡IJãĄğãĆĆæŇĞåőŽãĄğãĄãĄ¿ãĄŹãĄÑãĂĄJSONæŰĞåŮåĹŮå¡ćåijŕãĄőèÍŸè£řãĆŠãČłãĆźãČĹãĄğæŇĞåőŽ

JSONå¡ćåijŕãĄĺãĄŮãAęäÿæãčãĄÑãĄĆãĆŃåăť åŘĹãĂĄèĺåőŽãĄŹãĆŃãĄŞãĄĺãĄŕãĄğãĄãĄ¿ãĄŻãĆŞãĂĆ

```
<json var="__USER_METADATA__.family.åőűæŮŔ.çĹű">{"åŘåL’": "åd’łéČŐ", "åźt’é¡ć":␣
↪80}</json>
<!-- <json var="__USER_METADATA__.family.åőűæŮŔ"><key>çĹű</key>{"åŘåL’": "åd’łéČŐ
↪", "åźt’é¡ć": 80}</json>  äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

æŻť æŰřåL’

```
"çĹű": "åd’łéČŐ",
```

æŻť æŰřå¿Ň

```
"çĹű": {
       "åŘåL’": "åd’łéČŐ",
       "åźt’é¡ć": 80
       },
```

åřŽãĂąæIJňæľ§èČ¡ãĄŕJSONãĄőãĆãČijãĄńåŕ¿ãĄŮãĄęåĘĚåőźãĆŠèÍåőŽãĄŹãĆŃãĆĆãĄőãĄğãĄĆãĆŁãĂąäžëäÿŇãĄőæğŸãA
åd’L’æŢřãĄńJSONå¡ćåijŕãĄőåĘĚåőźãĆŠèÍåőŽãĄŹãĆŃåăť åŘĹãĄńãĄŕãĂĄ*set*
èęAçť ăãĆŠä¡£çŤĺãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

```
<!-- èÍåőŽäÿåŔŕ --> <json var="__USER_METADATA__">{"family": {"åőűæŮŔ": {"çĹű": {
↪"åŘåL’": "åd’łéČŐ", "åźt’é¡ć": 80}}}}</json>

<!-- èÍåőŽåŔŕèČ¡ --> <set var="__USER_METADATA__">{"family": {"åőűæŮŔ": {"çĹű": {
↪"åŘåL’": "åd’łéČŐ", "åźt’é¡ć": 80}}}}</set>
```

### 9.1.5 ãČłãĆźãČĹå¡ćåijŕãČĞãČijãĆ£ãĄőæŇĞåőŽ

èęAçť ăãĄĺãĄŮãAęãĂĄãČłãĆźãČĹå¡ćåijŕãĄőãČĞãČijãĆ£ãĆŠèÍåőŽãĄŹãĆŃåăť åŘĹãĂĄèğŠæŇňåijğïijŽ[]ãĄğåŻšãĄ£ãĂĄèÍå
ãČłãĆźãČĹå¡ćåijŕãĄĺãĄŮãAęäÿæãčãĄÑãĄĆãĆŃåăť åŘĹãĂĄèÍåőŽãĄŹãĆŃãĄŞãĄĺãĄŕãĄğãĄãĄ¿ãĄŻãĆŞãĂĆ

```
<json var="__USER_METADATA__.family.èűčåŚş">["ãĆţãČČãĆńãČij","éĞčãĆŁ","æŸäçŤżéŚŚèşđ
↪"]</json>
<!-- <json var="__USER_METADATA__.family"><key>èűčåŚş</key>["ãĆţãČČãĆńãČij","éĞčãĆŁ
↪","æŸäçŤżéŚŚèşđ"]</json>  äÿŁèÍŸåĘĚåőźãĄÍåŘŇåŃŢä¡IJ-->
```

æŻť æŰřåL’

```
"èűčåŚş": ["ãĆt’ãČńãČŢ", "éĞŐçŘČ"],
```

æŻť æŰřå¿Ň

```
"èűčåŚş": ["ãĆţãČČãĆńãČij", "éĞčãĆŁ", "æŸäçŤżéŚŚèşđ"],
```

åřŽãĂąæIJňæľ§èČ¡ãĄŕJSONãĄőãĆãČijãĄńåŕ¿ãĄŮãĄęåĘĚåőźãĆŠèÍåőŽãĄŹãĆŃãĆĆãĄőãĄğãĄĆãĆŁãĂąäžëäÿŇãĄőæğŸãA

```
<!-- èÍåőŽäÿåŔŕ --> <json var="__USER_METADATA__">["ãĆţãČČãĆńãČij","éĞčãĆŁ",
↪"æŸäçŤżéŚŚèşđ"]</json>
```

### 9.1.6 æŢřåĂď'ãĂĄçIJ§åĄ¡åĂď'ãĂĄnullãĄőåŘŰãĆŁæĽ'śãĄĎ

AIMLãĄğãĄŕæŰĞå■ŮåĹŮãĄĺãĄŮãĄęãĄőæĽ'śãĄĎãĄŮãĄŃãĄłãĄŘãĂĄJSONãĄőæŢřåĂď'ãĂĄçIJ§åĄ¡åĂď'ãĂĄnullãĆŠçŻť'æ
ãĄŞãĆŇãĆĽ'ãĄőåĘĚåőźãĆŠJSONèęAçť'ããĄńèĺ■åőŽãĄŁãĆĹãĄşåŘŰå¿ŮãĄŹãĆŃåăť'åŘĹãĄőåŃŢä¡IJãĆŠèłňæŸŐãĄŮãĄ¿ãĄŹã

#### èĺ■åőŽ

èĺ■åőŽæŹĆãĄńãĂĄæŢřåĂď'ãĄõãĄ£ãĆŠæŇĞåőŽãĄŹãĆŃãĄĺåĘĚéĆĺãĄğãĄŕæŢřåĂď'ãĄĺãĄŮãĄęåŘŰãĆŁæĽ'śãĄĎãĄ¿ãĄŹãĂĆ
æŢřåĂď'äžěåď'ŰãĄőæŰĞå■ŮåĹŮãĄŇåŘńãĄ¿ãĆŇãĆŃãĄĺæŰĞå■ŮåĹŮæĽ'śãĄĎãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

çIJ§åĄ¡åĂď'ãĆŠçď'žãĄŹãĂĄâĂİtrueâĂİ,âĂİfalseâĂİãĆŠèĺ■åőŽãĄŮãĄ§åăť'åŘĹãĂĄçIJ§åĄ¡åĂď'ãĄĺãĄŮãĄęJSONãĄńçŹžéŇšãĄ
åĂď'ãĄńnullãĆŠèĺ■åőŽãĄŮãĄ§åăť'åŘĹãĂĄJSONãĄńãĄŕnullãĆŠèĺ■åőŽãĄŮãĄ¿ãĄŹãĂĆ
æŢřåĂď'ãĂĄtrue,false,nullãĆŠæŰĞå■ŮåĹŮãĄĺãĄŮãĄęèĺ■åőŽãĄŹãĆŃåăť'åŘĹãĂĄtypeãĄń `string`
ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

ä¿Ń:

```
<json var="__USER_METADATA__.family.åźt'é¡ć">30</json>
<json var="__USER_METADATA__.family.æžĂåźt'é¡ć">31æ■ş</json>
<json var="__USER_METADATA__.family.èłŢçŤ§æŮě" type="string">19700101</json>
<json var="__USER_METADATA__.family.èĞłåůśçt'źäżŃ">null</json>
<json var="__USER_METADATA__.family.éŽżèl'śçŢłåŕůèł■èĺij">true</json>
<json var="__USER_METADATA__.family.ãČąãČijãČńèł■èĺij" type="string">false</json>
```

ä¿ŃãĄőèĺ■åőŽçţŘæđIJãĄŕäżěäÿŃãĄőJSONãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
{
    "family": {
        "åźt'é¡ć": 30,
        "æžĂåźt'é¡ć": "31æ■ş",
        "èłŢçŤ§æŮě": "19700101",
        "èĞłåůśçt'źäżŃ": null,
        "éŽżèl'śçŢłåŕůèł■èĺij": true,
        "ãČąãČijãČńèł■èĺij": "false"
    }
}
```

#### åŘŰå¿Ů

JSONèęAçť'ããĄğæŢřåĂď'ãĂĄçIJ§åĄ¡åĂď'ãĂĄnullãĆŠåŘŰå¿ŮãĄŹãĆŃåăť'åŘĹãĂĄãĄŞãĆŇãĆĽ'ãĄŕæŰĞå■ŮåĹŮãĄĺãĄŮãĄęå
æŢřåĂď'ãĄőåăť'åŘĹãĂĄæŢřåĂď'æŰĞå■ŮåĹŮãĂĄçIJ§åĄ¡åĂď'ãĄőåăť'åŘĹâĂİtrueâĂİ,âĂİfalseâĂİãĄőæŰĞå■ŮåĹŮãĂĄnullãĄ

ä¿Ń:

```
<json var="__USER_METADATA__.family.åźt'é¡ć"/>
<json var="__USER_METADATA__.family.æžĂåźt'é¡ć"/>
<json var="__USER_METADATA__.family.èłŢçŤ§æŮě"/>
<json var="__USER_METADATA__.family.éŽżèl'śçŢłåŕůèł■èĺij"/>
<json var="__USER_METADATA__.family.ãČąãČijãČńèł■èĺij"/>
<json var="__USER_METADATA__.family.èĞłåůśçt'źäżŃ"/>
```

åŘŰå¿ŮåĂď'ãĄŕãĂĄäżěäÿŃãĄõãĄĺãĄŁãĆŁåŘĎãĂĚãĄŇæŰĞå■ŮåĹŮãĄğåŘŰå¿ŮãĄŢãĆŇãĆŃãĄ§ãĆĄãĂĄãĆůãČŁãČłãĆłèĺ■

```
30
31æ■ş
19700101
```

(continues on next page)

(continued from previous page)

```
true
false
null
```

éŰćéĂčéăĚçŻő: *SubAgent* ãĂĄ*metadata* ãĂĄ*æĎŔåŻşèğčéĞĹ*

CHAPTER 10

# NLU

å§žæIJňãĄíãĄŮãĄęãĂĄpatternèęAçt'ăãĄğãĂĄæĎŘåŽşèğčéĞĹåĞęçŘĘãĆŠèąÑãĄĘãĄ§ãĆĄãĄőåőŽç¿l'ãĄğãĄŹãĄÑãĂĄtempla

patternãĄőå■ŘèęAçt'ăãĄíãĄŮãĄę `nlu`
ãĆŠåőŽç¿l'ãĄŹãĆÑãĄíãĂĄéńŸåžęæĎŘåŽşèğčéĞĹãĄõãĆd'ãČşãČĘãČşãČĹãĄíãĄõãČđãČČãČĄãČşãĆřãĄőèl'Ţä¿ąãĆŠèąÑãĄĎã

åŕ¿èl'śåĹűå¿ąãĄğãĄŕãĂĄãĆůãČŁãČłãĆłãĄőèíŸè£řãĄńå¿ŞãĄĎãČńãČijãČńãČŹãČijãĆźãĄőæĎŘåŽşèğčéĞĹãĆŠèąÑãĄčãĄęãĂĄ

ãĄŞãĆÑãĄŕæĎŘåŽşèğčéĞĹãĄõçţŘædIJãĆĹãĆŁãĂĄãĆůãČŁãČłãĆł¡IJæĹŘèĂĚãĄÑèíŸè£řãĄŹãĆÑåĘĚåőźãĆŠåĎłåĚĹãĄŢãĄŹ

ä¿Ńåd'ŰãĄíãĄŮãĄęãĂĄpatternãĄńãČŕãĆd'ãČńãČL'ãĆńãČijãČL'ãĄõãĄ£ãĄÑèíŸè£řãĄŢãĆÑãĄ§categoryãĄÑå■ŸåIJíãĄŹãĆÑåă

å■ŘèęAçt'ăãĄőnluãĆŠåőŽç¿l'ãĄŮãĄ§åăt'åŘĹãĄğãĆĆãĂĄpatternèęAçt'ăãĄőåĘĚåőźãĆŠèíŸèijL'ãĄŹãĆÑãĄíéĂŽåÿÿãĄőãČŠãĆ£
nluèęAçt'ăãĄőåśđæĂğãĄŕãĂĄ*nlu* ãĆŠåŘĆçĚğãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

åřŽãĂĄãĆůãČŁãČłãĆłåĘĚãĄńnluå■ŘèęAçt'ăãĄÑæÑĞåőŽãĄŢãĆÑãĄ§patternãĄÑïijŚãĄd'ãĆĆçĎąãĄĎåăt'åŘĹãĂĄæĎŘåŽşèğč

templateãĄőå■ŘèęAçt'ă *sraix* ãĄőåśđæĂğãĄíãĄŮãĄę `nlu`
ãĆŠæÑĞåőŽãĄŹãĆÑãĄíãĂĄäżżæĎŘãĄőéńŸåžęæĎŘåŽşèğčéĞĹãĆíãČşãĆÿãČşïijĹNLUãĆţãČijãČŘ)ãĄÑãĆL'æĎŘåŽşèğčéĞĹç
NLUãĆţãČijãČŘãĄíãĄőéĂŽä£ąæŰźæşŢãĄńãĄd'ãĄĎãĄęãĄŕãĂĄSubAgentãĄő
*NLUéĂŽä£ąãĆd'ãČşãĆ£ãČŢãĆğãČijãĆź* ãĆŠåŘĆçĚğãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

## 10.1 å§žælJňåĹľçŤĺæŰźæşŢ

éńŸåžęæĎŘåŽşèğčéĞĹãĄÑãĆL'äżěäÿÑãĄõãČŢãĆl'ãČijãČđãČČãČĹãĄğãĂĄãĆd'ãČşãČĘãČşãČĹãĂĄãĆźãČ■ãČČãČĹãĄőæČĚå

```
{
    "intents": [
        {"intent": "transportation", "score": 0.9 },
        {"intent": "aroundsearch", "score": 0.8 }
    ],
    "slots": [
```

(continues on next page)

(continued from previous page)

```
        {"slot": "departure", "entity": "æÌśäžň", "score": 0.85, "startOffset": 3,
↪"endOffset": 5 },
        {"slot": "arrival", "entity": "äžňéČ¡", "score": 0.86, "startOffset": 8,
↪"endOffset": 10 },
        {"slot": "departure_time", "entity": "2018/11/1 19:00", "score": 0.87,
↪"startOffset": 12, "endOffset": 14 },
        {"slot": "arrival_time", "entity": "2018/11/1 11:00", "score": 0.88,
↪"startOffset": 13, "endOffset": 18 }
    ]
}
```

### 10.1.1 ãĆďãČşãČĘãČşãČĹãĄğãĄóãČđãČČãČĄãČşãĆř

AIMLãĄőpatternãĄőå■ŘèęÀçťăăĄÍãĄŮãĄęnluaĆŠèÍŸèijĽãĄŮãĄ¿ãĄŹãĂĆ
äžěäÿŃãĄőä¿ŃãĄğãĄŕãĂĄéńŸåžęæĎŔåŽşèğčéĞĹãĄŃãĆĽè£Ťå■t’ãĄŢãĆŇãĄ§ãĆd’ãČşãČĘãČşãČĹãĄŇ
âĂŸtransportationâĂŹ ãĄńãČđãČČãČĄãĄŮãĂĄå£IJç■ŤæŰĞãĄŇè£ŤãĆŁãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>
        <nlu intent="transportation" />
    </pattern>
    <template>
        äźŮãĆŁæŔŻãĄĹæąĹåĘĚãĄğãĄŹãĄ■ïij§
    </template>
</category>
```

Input: æÌśäžňãĄŃãĆĽäžňéČ¡ãĄńèąŇãĄ■ãĄ§ãĄĎãĂĆ
Output: äźŮãĆŁæŔŻãĄĹæąĹåĘĚãĄğãĄŹãĄ■ïij§

### 10.1.2 ãĆďãČşãČĘãČşãČĹåĂŹèčIJãĄńãĄŕãĄĆãĆŃãĄŇãČđãČČãČĄãĄŮãĄłãĄĎãČŚãĆ£ãČijã

äžěäÿŃãĄőä¿ŃãĄŕãĂĄéńŸåžęæĎŔåŽşèğčéĞĹãĄőãĆďãČşãČĘãČşãČĹãĄŇ âĂŸaroundsearchâĂŹ
ãĄőåăť’åŘĹãĄğãĄŹãĂĆ
âĂŸaroundsearchâĂŹ
ãĄŕãĆď’ãČşãČĘãČşãČĹãĄőåĂŹèčIJãĄńãĄĆãĆŁãĄ¿ãĄŹãĄŇãĂĄæIJĂåŕď’åĂŹèčIJãĄğãĄŕãĄłãĄĎãĄ§ãĆĄãČđãČČãČĄãĄŮãĄ
(âĂŸaroundsearchâĂŹ ãĄőåŕď’åžęãĄŇãĂĄâĂŹtransportationâĂŹ
ãĄĺåŘŇãĄŸåăť’åŘĹãĄńãĄŕãČđãČČãČĄãĄŮãĄ¿ãĄŹãĂĆ)

```
<category>
    <pattern>
        <nlu intent="aroundsearch" />
    </pattern>
    <template>
        åŚÍè¿žæd’IJçt’ćãĄğãĄŹãĄ■ïij§
    </template>
</category>
```

Input: æÌśäžňãĄŃãĆĽäžňéČ¡ãĄńèąŇãĄ■ãĄ§ãĄĎãĂĆ
Output: NO_MATCH

### 10.1.3 æIJÅåřď'åĂŹèčIJãĄğãĄłãĄĎåăť'åŘĹãĄőãČđãČČãČĄãČşãĆř

ãĆď'ãČşãČĘãČşãČĹ âĂŸaroundsearchâĂŹ
ãĄŇæIJÅåřď'åĂŹèčIJãĄğãĄłãĄŘãĄęãĆĆåŘńãĄ¿ãĆŇãĆŃåăť'åŘĹãĄńãČđãČČãČĄãČşãĆřãĄŢãĄŻãĄ§ãĄĎåăť'åŘĹãĂĄåśđæĂğ
`maxLikelihood` ãĄń `false` ãĆŠèĺ■åőŽãĄŮãĄ¿ãĄŹãĂĆ
`maxLikelihood` ãĄŇæIJłæŇĞåőŽãĄőåăť'åŘĹãĂĄ`true`
ãĆŠæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĄĺåŘŇãĄŸåŃŢä¡IJãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>
        <nlu intent="aroundsearch" maxLikelihood="false" />
    </pattern>
    <template>
        åŚĺè¿žæd'IJçt'ćãĄğãĄŹãĄ■ïij§
    </template>
</category>
```

Input: æİśäžňãĄŃãĆL'äžňéČ¡ãĄńèąŇãĄ■ãĄ§ãĄĎãĂĆ
Output: åŚĺè¿žæd'IJçt'ćãĄğãĄŹãĄ■ïij§

### 10.1.4 scoreæŇĞåőŽãĄğãĄőãČđãČČãČĄ

ãĆď'ãČşãČĘãČşãČĹãĄőscoreåĂd'ãĄńãĆĹãĆŃãČđãČČãČĄãČşãĆřæİąäżűãĄńãĄd'ãĄĎãĄęèłňæŸŐãĄŮãĄ¿ãĄŹãĂĆ
åśđæĂğãĄĺãĄŮãĄęãĂĄ scoreGtãĂĄscoreGeãĂĄscoreãĂĄscoreLeãĂĄs-
coreLtãĄő5çĺőéąđãĄőæŇĞåőŽãĄŇåŘŕèČ¡ãĄĺãĄłãĆŁãĂĄèĺ■åőŽåĘĚåőźãĄŕäżëäÿŃãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

ãĄ¿ãĄ§ãĂĄãĄŞãĄőåśđæĂğãĆŠæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĂĄä£ąéäijåžęãĄğãĄőæŕŤèijČãČđãČČãČĄãČşãĆřãĆŠèąŇãĄĘãĄ§ãĆ
`maxLikelihood` ãĄŕ `false` æĽśãĄĎãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

| ãČŚãČľãČąđŐŕjãĆ§åĚ■æŸŐ | | |
|---|---|---|
| scoreGt | > | åŕ¿èśąãĆd'ãČşãČĘãČşãČĹãĄőä£ąéäijåžęãĄŇæŇĞåőŽãĄŮãĄ§åĂd'ãĆĹãĆŁåd'ğãĄ■ãĄĎåăť'åŘĹãĄńãČ |
| scoreGe | >= | åŕ¿èśąãĆd'ãČşãČĘãČşãČĹãĄőä£ąéäijåžęãĄŇæŇĞåőŽãĄŮãĄ§åĂd'äžëäÿŁãĄőåăť'åŘĹãĄńãČđãČČãČĄą |
| score | = | åŕ¿èśąãĆd'ãČşãČĘãČşãČĹãĄőä£ąéäijåžęãĄŇæŇĞåőŽãĄŮãĄ§åĂd'ãĄőæŹĆãĄńãČđãČČãČĄãĄŮãĄ¿ãĄ |
| scoreLe | <= | åŕ¿èśąãĆd'ãČşãČĘãČşãČĹãĄőä£ąéäijåžęãĄŇæŇĞåőŽãĄŮãĄ§åĂd'äžëäÿŃãĄőåăť'åŘĹãĄńãČđãČČãČĄ |
| scoreLt | < | åŕ¿èśąãĆd'ãČşãČĘãČşãČĹãĄőä£ąéäijåžęãĄŇæŇĞåőŽãĄŮãĄ§åĂd'ãĆĹãĆŁåřŔãĄŢãĄĎåăť'åŘĹãĄńãČđ |

scoreXxæŇĞåőŽæŹĆãĄőåŃŢä¡IJãĄŕäżëäÿŃãĄőãČđãČČãČĄãČşãĆřãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<nlu intent="transportation" scoreGt="0.9"/>
↪transportationãĄńãČđãČČãČĄãČşãĆřãĄŮãĄ¿ãĄŻãĆŞãĂĆ
<nlu intent="transportation" scoreGe="0.9"/>
↪transportationãĄńãČđãČČãČĄãČşãĆřãĄŮãĄ¿ãĄŹãĂĆ
<nlu intent="transportation" score="0.9"/>
↪transportationãĄńãČđãČČãČĄãČşãĆřãĄŮãĄ¿ãĄŹãĂĆ
<nlu intent="aroundsearch" scoreLe="0.8"/>
↪aroundsearchãĄńãČđãČČãČĄãČşãĆřãĄŮãĄ¿ãĄŹãĂĆ
<nlu intent="aroundsearch" scoreLt="0.8"/>
↪aroundsearchãĄńãČđãČČãČĄãČşãĆřãĄŮãĄ¿ãĄŻãĆŞãĂĆ
```

åřŽãĂąäžěäÿÑãĄőã¿ÑãĄőãĆĹãĄĘãĄńãĂąéŸåžęæĎŔåŻşèğčéĞĹãĄőçţŘæđIJãĄńãĆĹãĄčãĄęèd'ĞæŢřãĄőæİąäžűãĄÑæĹŘçńN

èd'ĞæŢřãĄőAIMLãČŢãĆąãĆd'ãČńãĆŠåĹl'çŤĺãĄŹãĆŃåăt'åŘĹãĂĄAIMLãĄőåśŢéŰŃåĞęçŘĘãĆŠãČĞãĆd'ãČńãĆřãČĹãČłåŘ■ãČ

ïijĹãĆţãČŰãČĞãĆčãČńãĆřãČĹãČłãĆŠä¡£çŤĺãĄŹãĆŃåăt'åŘĹãĂąäÿŁä¡■ãČĞãĆčãČńãĆřãČĹãČłåĘĚãĄőãČŢãĆąãĆd'ãČńãĆŠåĞ

```
<category>
    <pattern><nlu intent="transportation" scoreGe="0.8"/></pattern>
    <template>äźŮãĆŁæŔŻãĄĹæąĺåĘĚãĄğãĄŹãĄ■ïijş</template>
</category>

<category>
    <pattern><nlu intent="aroundsearch" scoreGe="0.8"/></pattern>
    <template>åŚÍè¿žæd'IJçt'ćãĄğãĄŹãĄ■ïijş</template>
</category>
```

### 10.1.5 ãĆd'ãČşãČĘãČşãČĹãČđãČČãČĄãĄĺãČŕãĆd'ãČńãČL'ãĆńãČijãČL'

äžěäÿÑãĄŕãĂąãČńãČijãČńãČŹãČijãĆźãĂąæĎŔåŻşèğčéĞĹçţŘæđIJãĄńãČđãČČãČĄãĄŮãĄłãĄÑãĄčãĄş§åăt'åŘĹãĂąéŻŚèńĞãĆ
patternãĄĺãĄŮãĄęãČŕãĆd'ãČńãČL'ãĆńãČijãČL'ãĄőãĄ£ãĄÑèĺŸè£řãĄŢãĆÑãĄ§categoryãĄÑå■ŸåIJĺãĄŹãĆŃåăt'åŘĹãĂąãĆůãČ

```
<aiml>
    <category>
        <pattern>ãĄşãĆşãĄńãĄąãĄŕ</pattern>
        <template>ãĄşãĆşãĄńãĄąãĄŕ</template>
    </category>

    <category>
        <pattern><nlu intent="aroundsearch" /></pattern>
        <template>
            åŚÍè¿žæd'IJçt'ćãĄŮãĄ¿ãĄŹ
        </template>
    </category>

    <category>
        <pattern>
            *
        </pattern>
        <template>
            <sraix service="éŻŚèńĞ"><get var="__USER_UTTERANCE__" /></sraix>
        </template>
    </category>
</aiml>
```

Input: ãĄşãĆşãĄńãĄąãĄŕ
Output: ãĄşãĆşãĄńãĄąãĄŕ
Input: ãĄşãĄőè¿žãĆĹãĄőãĆşãČşãČşãČŃ
Output: åŚÍè¿žæd'IJçt'ćãĄŮãĄ¿ãĄŹ
Input: éŻŚèńĞåŕ¿èl'ś
Output: éŻŚèńĞåŕ¿èl'śãĄőçţŘæđIJãĄğãĄŹ

### 10.1.6 sraiãĄńåŕ¿ãĄŹãĆŃNLUãČđãČČãČĄ

ãČđãČČãČąţŘæđIJãĄőtemplateãĄń âĂŸsraiâĂŹ èęĄçt'ããĄŇæŇĞåőŽãĄŢãĆŇãĄęãĄĐãĆŃåät'åŘĹãĂĄs-
raiåŕ¿èśąãĄőçŹžèl'śæŰĞãĄŇãĂĄçŔ¿åIJĺä£ÍæŇĄãĄŮãĄęãĄĐãĆŃéńŸåžęçůŕåžęèğčéĞĹçţŘæđIJãĄőåŘŰå¿ŮæŹĆãĄőçŹžèl'śæŰ
åŕ¿èśąçŹžèl'śæŰĞãĄŇçŢřãĄłãĆŃåät'åŘĹãĄńãĂĄsraiåŕ¿èśąãĄőçŹžèl'śæŰĞãĄńåŕ¿ãĄŹãĆŃéńŸåžęæĐŔåŻşèğčéĞĹçţŘæđIJãĄőã

äžěäÿŇãĄőåät'åŘĹãĂĄsraiåĞęçŘĘãĄğãĄőéńŸåžęæĐŔåŻşèğčéĞĹçţŘæđIJãĄőåĘ■åŘŰå¿ŮãĄŕèąŇãĄĐãĄ¿ãĄŻãĆŞãĂĆ

```
<aiml>
    <category>
        <pattern><nlu intent="transportation" /></pattern>
        <template>
            ãĄŤåÿŇæIJŻ
            <srai><input /></srai>
        </template>
    </category>

    <category>
        <pattern>
            *
        </pattern>
        <template>
            æL'£ãĆŁãĄ¿ãĄŮãĄ§
        </template>
    </category>
</aiml>
```

Input: æİśäžñãĄŃãĆL'äžńéČ¡ãĄńèąŇãĄ■ãĄ§ãĄĐãĂĆ
Output: ãĄŤåÿŇæIJŻæL'£ãĆŁãĄ¿ãĄŮãĄ§ãĂĆ

## 10.2 NLUãČĞãČijãĆ£ãĄőåŘŰå¿Ů

NLUãĄőãČĞãČijãĆ£ãĄŕãĂĄãČ■ãČijãĆńãČńåd'L'æŢř(var) __SYSTEM_NLUDATA__
ãĄńåśŢéŰŃãĄŢãĆŇãĄ¿ãĄŹãĄŇãĂĄAPIåd'L'æŢřãĄĺåŘŇægŸãĄńæL'śãĄĘãĄ§ãĆĄãĂĄãČňãĆźãČĺãČşãĆźãĆŠè£Ťå■t'ãĄŹãĆŃ

ãĄ§ãĄăãĄŮãĂĄsraiåĞęçŘĘæŹĆãĄńéńŸåžęæĐŔåŻşèğčéĞĹçţŘæđIJãĄőåĘ■åŘŰå¿ŮãĄŇèąŇãĆŔãĆŇãĄ§åät'åŘĹãĂĄåĘĚåőźãĄ
JSONèęĄçt'ããĆŠçŤĺãĄĐ *æĐŔåŻşèğčéĞĹçţŘæđIJ*
ãĄőãČĞãČijãĆ£ãĆŠåŘŰå¿ŮãĄŹãĆŃä¿ŃãĆŠçd'žãĄŮãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>
        <nlu intent="transportation" />
    </pattern>
    <template>
        <think>
                <set var="slot"><json var="__SYSTEM_NLUDATA__.slots"><index>1</
↪index></json></set>
                <set var="entity"><json var="slot.entity" /></set>
                <set var="score"><json var="slot.score" /></set>
        </think>
        <get var="entity"/>ãĄőscoreãĄŕ<get var="score" />ãĄğãĄźãĂĆ
    </template>
</category>
```

Input: æÌśäžňãĄŃãĆĽäžňéČ¡ãĄńèąŇãĄ■ãĄ§ãĄĎãĂĆ
Output: æÌśäžňãĄőscoreãĄŕ0.85ãĄğãĄŹãĂĆ

éŰćéĂčéăĚçŻő: *nlu*ãĂĄ *JSONèęÀçţ'ă*

## 10.3 NLUãĆd'ãČşãČĘãČşãČĹãĄőåŔŰå¿Ů

templateãĄğãĆd'ãČşãČĘãČşãČĹãĄőåĘĚåőźãĆŠåŔŰå¿ŮãĄŹãĆŃåăt'åŘĹãĂĄ *nluintent* ãĆŠä¡£çŤĺãĄŮãA¿ãĄŹãĂĆ

NLUåĞęçŘĘçţŘæđIJãĄĺãĄŮãĄęãĂĄäżěäÿŃãĄőçţŘæđIJãĆŠåŔŰå¿ŮãĄŮãĄęãĄĎãĆŃåL'■æŔŘãĄğãĆd'ãČşãČĘãČşãČĹæČĚåăś

```
{
    "intents": [
        {"intent": "restaurantsearch", "score": 0.9 },
        {"intent": "aroundsearch", "score": 0.4 }
    ],
    "slots": [
        {"slot": "genre", "entity": "ãĆd'ãĆ£ãČłãĆćãČş", "score": 0.95, "startOffset
↪": 0, "endOffset": 5 },
        {"slot": "genre", "entity": "ãČŢãČñãČşãČĄ", "score": 0.86, "startOffset":␣
↪7, "endOffset": 10 },
        {"slot": "genre", "entity": "äÿ■èŔŕ", "score": 0.75, "startOffset": 12,
↪"endOffset": 14 }
    ]
}
```

NLUãĄğåĞęçŘĘãĄŮãĄ§ãĆd'ãČşãČĘãČşãČĹæČĚåăśãĆŠåŔŰå¿ŮãĄŹãĆŃä¿ŃãĄğãĄŹãĂĆmapãĄńãĄŕæŢřåĂd'ãĆŠãĆńãĆęãČşintentCountãĄńãĆd'ãČşãČĘãČşãČĹæŢřãĆŠä£ÌæŃĄãĄŮconditionãĄőæÌąäżűãĄĺãĄŮãĄęintentCountæŢřãĄńãĄłãĆŃãA¿ãĄğãĂA

```
<category>
    <pattern>
        <nlu intent="restaurantsearch"/>
    </pattern>
    <template>
        <think>
          <set var="count">0</set>
          <set var="intentCount"><nluintent name="*" item="count" /></set>
        </think>
        <condition>
            <li var="count"><value><get var="intentCount" /></value></li>
            <li>
                intent:<nluintent name="*" item="intent"><index><get var="count" />
↪</index></nluintent>
                score:<nluintent name="*" item="score"><index><get var="count" /></
↪index></nluintent>
                <think>
                    <set var="count"><map name="upcount"><get var="count" /></map>
↪</set>
                </think>
                <loop/>
            </li>
        </condition>
    </template>
</category>
```

Input: ãĆd'ãĆ£ãČłãĆćãČşãĄŃãČŢãČňãČşãČĄãĄŃäÿ■èŘŕãĆŠæŐćãĄŮãĄęãĂĆ
Output: intent:restaurantsearch score:0.9 intent:aroundsearch score:0.4

åřŽãĂĄtemplateãĄőå■ŘèęAçt'ăsraixãĆŠåĹ'çŤĺãĄŮãĄęæĎŘåŽşèğčéĞĹçţŘæđIJãĆŠåŘŰå¿ŮãĄŮãĄşåät'åŘĹãĂĄnluintentãĄőåś
__SUBAGENT_NLU__.ãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄőæŇĞåőŽãĄŇå£ÈèęĄãĄğãĄŹãĄŇãĂĄåŘŇæğŸãĄőæŞ■ä¡IJãĄŇèąŇãĄ

éŰćéĂčéăĚçŻő: *nluintent*

## 10.4 NLUãĆźãČ■ãČČãČĹãĄőåŘŰå¿Ů

templateãĄğNLUåĞęçŘEçţŘæđIJãĄőãĆźãČ■ãČČãČĹãĄőåĘĚåőźãĆŠåŘŰå¿ŮãĄŹãĆŃåät'åŘĹãĂĄ *nluslot*
ãĆŠä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆ

NLUåĞęçŘEçţŘæđIJãĄĺãĄŮãĄęäźëäÿŃãĄőçţŘæđIJãĆŠåŘŰå¿ŮãĄŮãĄęãĄĎãĆŃãĄŞãĄĺãĆŠåĽ■æŘŘãĄĺãĄŮãĄęãĆźãČ■ãČČã

```
{
    "intents": [
        {"intent": "restaurantsearch", "score": 0.9 },
        {"intent": "aroundsearch", "score": 0.4 }
    ],
    "slots": [
        {"slot": "genre", "entity": "ãĆd'ãĆ£ãČłãĆćãČş", "score": 0.95, "startOffset
↪": 0, "endOffset": 5 },
        {"slot": "genre", "entity": "ãČŢãČňãČşãČĄ", "score": 0.86, "startOffset":␣
↪7, "endOffset": 10 },
        {"slot": "genre", "entity": "äÿ■èŘŕ", "score": 0.75, "startOffset": 12,
↪"endOffset": 14 }
    ]
}
```

NLUãĄğåĞęçŘEąĄŮãĄşãĆźãČ■ãČČãČĹæČĚåăśãĆŠåŘŰå¿ŮãĄŹãĆŃä¿ŃãĄğãĄŹãĂĆmapãĄńãĄŕæŢřåĂd'ãĆŠãĆńãĆęãĆşãČĹ
slotCountãĄńãĆźãČ■ãČČãČĹæŢřãĆŠä£ÍæŇĄãĄŮconditionãĄőæÍąäżűãĄĺãĄŮãĄęslotCountæŢřãĄńãĄłãĆŃãĄ¿ãĄğãĂĄåŘĎãĆ

```
<category>
    <pattern>
        <nlu intent="restaurantsearch" />
    </pattern>
    <template>
        <think>
          <set var="count">0</set>
          <set var="slotCount"><nluslot name="*" item="count" /></set>
        </think>
        <condition>
            <li var="count"><value><get var="slotCount" /></value></li>
            <li>
                slot:<nluslot name="*" item="slot"><index><get var="count" /></
↪index></nluslot>
                entity:<nluslot name="*" item="entity"><index><get var="count" /></
↪index></nluslot>
                score:<nluslot name="*" item="score"><index><get var="count" /></
↪index></nluslot>
                <think>
                    <set var="count"><map name="upcount"><get var="count" /></map>
↪</set>
                </think>
                <loop/>
            </li>
```

(continues on next page)

(continued from previous page)

```
        </condition>
    </template>
</category>
```

Input: ãĆd'ãĆ£ãČłãĆćãČşãĄÑãČŢãČňãČşãČĄãĄÑäÿ■èŔfãĆŠæŐćãĄŮãĄęãĂĆ
Output: slot:genre entity:ãĆd'ãĆ£ãČłãĆćãČş score:0.95 slot:genre entity:ãČŢãČňãČşãČĄ score:0.86 slot:genre entity:äÿ■èŔf score:0.75

åřŽãĂĄtemplateãĄőå■ŘèęAçt'ăsraixãĆŠåĹl'çŤĺãĄŮãĄęæĎŔåŻşèğčéĞĹçţŘæđIJãĆŠåŔŰå¿ŮãĄŮãĄ§åăt'åŘĹãĂĄnluslotãĄőåśđa
__SUBAGENT_NLU__.ãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄőæŇĞåőŽãĄŇå£ÉèęĄãĄgãĄŹãĄÑãĂĄåŘŇægŸãĄőæŞ■ä¡IJãĄÑèąÑãA
éŰćéĂčéăĚçŻő: *nluslot*

## 10.5 èd'ĞæŢřãĄőNLUãĆţãČijãČŘåĹl'çŤĺ

énŸåžęæĎŔåŻşèğčéĞĹãĄőçţŘæđIJåŔŰå¿ŮãĄńèd'ĞæŢřãĄőNLUãĆţãČijãČŘãĆŠåĹl'çŤĺãĄŹãĆŃåăt'åŘĹãĂĄ
*nlu_serversãČŢãĆąãĆd'ãČń* ãĆŠä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆ

nlu_serversãČŢãĆąãĆd'ãČńãĄğèd'ĞæŢřãĄőNLUãĆţãČijãČŘãĆŠæŇĞåőŽãĄŮãĄ§åăt'åŘĹãĂĄèĺŸè£řãĄŢãĆŃãĄ§éăĘåžŔãĄńå¿

ïijĹéĂŤäÿ■ãĄőNLUãĆţãČijãČŘãĄĺãĄőéĂŽä£ąãĄńåd'śæŢŮãĄŮãĄ§åăt'åŘĹãĄğãĆĆãĂĄæňąãĄőNLUãĆţãČijãČŘãĄĺãĄőéĂŽä£

patternãĄĺãĄŮãĄęãČŕãĆd'ãČńãČL'ãĆńãČijãČL'ãĄõãĄ£ãĄŇèĺŸè£řãĄŢãĆŃãĄ§categoryãĄŇå■ŸåIJĺãĄŹãĆŃåăt'åŘĹãĂĄæŇĞåő

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l'ä¿Ń

```
brain:
  nlu:
    classname: programy.nlu.cotobadesignNlu.CotobadesignNlu
    use_file: true
```

nlu_serversãČŢãĆąãĆd'ãČńåőŽç¿l'ä¿Ń

```
nlu:
  - url: http://localhost:5201/run
  - url: http://localhost:3000/run
    apikey: test_key
```

ãĆůãČŁãČłãĆłãĄőèĺŸè£řãĄńãĄŕçL'źåĹěãĄłæŇĞåőŽãĄŕãĄĆãĆŁãĄ¿ãĄŻãĆŞãĂĆ

åřŽãĂĄnlu_serversãČŢãĆąãĆd'ãČńãĄőèĺŸè£řãĄńæIJL'åŁźãĄłãĆţãČijãČŘïijĹURLïijL'åőŽç¿l'ãĄŇçĎąãĄĎåăt'åŘĹãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l'ãĄńãĆĆæIJL'åŁźãĄłURLãĄŇçĎąãĄĎåăt'åŘĹãĂĄéńŸåžęæĎŔåŻşèğčéĞĹéĂčæŘž

## 10.6 NLUãĆţãČijãČŘãĄĺãĄőéĂŽä£ąææŹĆéŰŞçőąçŘĘ

ãČđãČČãČĄåĞęçŘĘãĄgèąÑãĄĘNLUãĆţãČijãČŘãĄĺãĄőéĂŽä£ąãĄńår¿ãĄŮãĄęãĂĄæIJĂåd'ğãĄőéĂŽä£ąæŹĆéŰŞãĆŠæŇĞåőŽ

ïijĹèd'ĞæŢřãĆţãČijãČŘãĆŠåĹl'çŤĺãĄŹãĆŃåăt'åŘĹãĄńãĄŕãĂĄæňąãĄőãĆţãČijãČŘãĄÿãĄőéĂŽä£ąãĄńçğżãĆŁãĄ¿ãĄŹãĂĆïijL'

äžěäÿÑãĄőïijŠéĂŽãĆŁãĄőæŇĞåőŽãĄŇåŔŕèČ¡ãĄgãĂĄnlu_serversãČŢãĆąãĆd'ãČńãĄőåőŽç¿l'ãĄŇåĎłåĚĹãĄŢãĆŃãĄ¿ãĄŹãĂĆ

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşåőŽç¿l'ä¿Ń

```
brain:
  nlu:
    classname: programy.nlu.cotobadesignNlu.CotobadesignNlu
    url: http://localhost:5201/run
    timeout: 1
```

nlu_serversãČŢãĆąãĆd'ãČńåőŽç¿l'ä¿Ń

```
nlu:
  url: http://localhost:5201/run
timeout: 1
```

åŔĹãĂĄåŘĎNLUãĆţãČijãČŘãĄĺãĄőéĂŽä£ąæŹĆéŰŞïijĹãČňãĆd'ãČĘãČşãĆůïijL'ãĄŕãĂĄäżěäÿÑãĄőJSONå¡ćåijŔãĄğãĂĄãČ■ã
ãĄńæăijçţ'■ãĄŢãĆŇãĄ¿ãĄŹãĂĆ

ä¡ĘãĄŮãĂĄãĆůãČŁãČłãĆłãĄğãĄŞãĄőåd'L'æŢřåĂd'ãĆŠåŔŰå¿ŮãĄŹãĆŃçĆžãĄńãĄŕãĂĄãČđãČČãČĄãĄŹãĆŃCategoryãĆŠä¡£

âĂżãČĞãČŘãČČãĆřAPIãĄğåĞžåŁŻãĄŢãĆŇãĆŃåŕ¿èl'śåśěæ■ť'æČĚåăśãĄńãĄŕæăijçţ'■ãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
{
  "latency": [
    {"ãĆţãČijãČŘåŘ■", çğŠå■Ÿä¡■ãĄőåřŔæŢřçĆźäżŸãĄ■æŢřåĂd'},
      :
  ]
}
```

âĂżãĆţãČijãČŘåŘ■ãĄńãĄŕãĂĄnlu_serversãČŢãĆąãĆd'ãČńãĄőåőŽç¿l'ãĄńåŘĹãĆŔãĄŻãĄ§ âĂŸNONAME-
åőŽç¿l'éăĘ(0~)âĂŹãĂĄåŔĹãĄŕãĂĄâĂŹserversâĂŹ ãĄğäżŸäÿŐãĄŮãĄ§ãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄŇèĺ■åőŽãĄŢãĆŇãĄ¿ãĄŹãĂĆ

CHAPTER 11

# metadata

## 11.1 æęĆèęĄ

åŕ¿èľśAPIãČłãĆŕãĆĺãĆźãČĹãČIJãČĞãĆčãĄńèĺ■åőŽãĄŢãĆŇãĄ§ meta-
dataæČĚåăśãĄŕãĂĄãĆůãČŁãČłãĆłãĄőåď'L'æŢřãČĞãČijãĆ£(ãČĘãĆ■ãĆźãČĹãĂąãĄ¿ãĄ§ãĄŕãĂĄJSON)ãĄĺãĄŮãĄęçŤĺãĄĎãĆŇ
ãĄ¿ãĄ§ãĂĄåŕ¿èľśAPIãČňãĆźãČĺãČşãĆźãČIJãČĞãĆčãĄńèĺ■åőŽãĄŹãĆŇ meta-
dataæČĚåăśãĆĆãĂĄãĆůãČŁãČłãĆłãĄőåď'L'æŢřãČĞãČijãĆ£ãĄĺãĄŮãĄęèĺ■åőŽãĄŹãĆŇãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆ

## 11.2 åŕ¿èľśAPIãĄğèĺ■åőŽãĄŢãĆŇãĄ§metadataãĄőåĽ'çŤĺ

åŕ¿èľśAPIãČłãĆŕãĆĺãĆźãČĹãĄğJSONãĄőèęĄçţ'ăăĄĺãĄŮãĄęæŇĞåőŽãĄŢãĆŇãĄ§ meta-
dataæČĚåăśãĆŠãĂĄåŕ¿èľśãĆůãČŁãČłãĆłãĄğåĽľçŤĺåŔŕèČ¡ãĄłåď'L'æŢřãĄńåśŢéŰŇãĄŮãĄ§çŁűæĚŇãĄğä£ÌæŇĄãĄŮãĄ¿ãĄŹãĄ
APIãĄŃãĆL'æÿąãĄŢãĆŇãĄ§JSONåĘĚãĄő `metadata` èęĄçţ'ăăĄŕãĂĄåď'L'æŢřåŘ■ `__USER_METADATA__`
ãĄńåśŢéŰŇãĄŮãĄ¿ãĄŹãĂĆ
metadataèęĄçţ'ăăĄŃJSONå¡ćåijŔãĄőåăţ'åŘĹãĂĄ *json*
ãĆ£ãĆŕãĆŠçŤĺãĄĎãĆŇãĄŞãĄĺãĄğãĂĄ__USER_METADATA__åĘĚãĄőèęĄçţ'ăăĆŠåŔŰå¿ŮãĄŹãĆŇãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄ

__USER_METADATA__ãĄőåĘĚåőźãĄŕãĂĄåŕ¿èľśAPIãĄőãČňãĆźãČĺãČşãĆźãĆŠè£ŤåŁt'ãĄŹãĆŇãĄ¿ãĄğãĄőéŰŞæIJL'åŁźãĄğã

ãČąãĆ£ãČĞãČijãĆ£åď'L'æŢř__USER_METADATA__ãĄŕãČ■ãČijãĆńãČńåď'L'æŢřïijĹvarïijL'ãĄĺãĄŮãĄęæL'śãĄĎãĄ¿ãĄŹãĄŃãĄ

### 11.2.1 metadataãĄőåď'L'æŢřãĄÿãĄőåśŢéŰŇæŰźæşŢ

åŕ¿èľśAPIãĄŃãĆL'metadataãĄĺãĄŮãĄęæÿąãĄŢãĆŇãĄ§ãČĞãČijãĆ£ãĆŠãĂĄåď'L'æŢř__USER_METADATA__ãĄńåśŢéŰŇãĄŮ

metadataãĄńãĄŕãĂĄãČĘãĆ■ãĆźãČĹãČĞãČijãĆ£ãĄĺãĂĄJSONãČĞãČijãĆ£ãĆŠèĺ■åőŽãĄŹãĆŇãĄŞãĄĺãĄŇãĄğãĄ■ãĂĄåŘĎãĂ

åřŽãĂĄäžěäÿŇãĄőèłňæŸÕãĄğãĄŕãĂĄmyServiceãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĆŠåĹľçŤĺãĄŮãĄęæČĚåăśãĆŠåŔŰå¿ŮãĄŮãĂ

è£Ťå■ť'ãĄŢãĆŇãĄ§ãČĞãČijãĆ£ãĄŕãĂĄåď'L'æŢř __SUBAGENT__.myService
ãĄńåśŢéŰŇãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹãĂĆãĆţãČŰãĆĺãČijãĆÿãĆĞãČşãČĹéĂčæŘžãĄńãĄď'ãĄĎãĄęãĄőèľşçť'řãĄŕãĂĄ
*SubAgent* ãĆŠåŔĆçĔĞãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

```
{
    "transportation": {
        "station": {
            "departure": "æİśäžň",
            "arrival": "äžňéČ¡"
        },
        "time": {
            "departure": "2018/11/1 11:00",
            "arrival": "2018/11/1 13:30"
        },
        "facility": ["éź£èŃŚåŕž", "æÿĔært'åŕž", "äijŔèęŃçÍšè■ůåd'ğçd'¿"]
    }
}
```

### ãČĘãĆ■ãĆźãČĹãČĞãČijãĆ£ãĄĺãĄŮãĄęãĄőåŔŰãĆŁæĽśãĄĎæŰź

ãČĘãĆ■ãĆźãČĹãČĞãČijãĆ£ãĄőåăť'åŘĹãĂĄåď'L'æŢř__USER_METADATA__ãĄńåŕ¿ãĄŹãĆŃ *get*
ãĆ£ãĆŕãĄğåĘĔåőźãĆŠåŔŰå¿ŮãĄŹãĆŃãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆ

åŕ¿èľśAPIãĆşãČijãČńãĄőmetadataãĄĺãĄŮãĄęãĂĄäžěäÿŃãĄőãĆĹãĄĘãĄńæŰĞå■ŮåĹŮãĄŇäÿÕãĄĹãĆL'ãĆŃãĄ§åăť'åŘĹãĆŠèł

```
{
    "locale": "ja-JP",
    "time": "2018-07-01T12:18:45+09:00",
    "topic": "*",
    "utterance": "subagent ãĄŞãĆŞãĄńãĄąãĄŕ",
    "metadata": "ãČąãĆ£ãČĞãČijãĆ£ãČĘãĆźãČĹ"
}
```

ãĆůãČŁãČłãĆłãĄńãĄŕäžěäÿŃãĄőãĆĹãĄĘãĄńèÍŸèijL'ãĄŮãĄ¿ãĄŹãĂĆ
__USER_METADATA__ãĄőåĘĔåőźãĆŠ *get* ãĆ£ãĆŕãĄğåŔŰå¿ŮãĄŮãĂĄ *sraix*
ãĆ£ãĆŕãĄőåĘĔåőźãĄĺãĄŮãĄęèĺ■åőŽãĄŹãĆŃãĄŞãĄĺãĄğãĂĄmyService
ãĆţãČŰãĆĺãČijãĆÿãĆĞãČşãČĹãĄńåijŢãĄ■æÿąãĄŮãĄ¿ãĄŹãĂĆ
ãĆţãČŰãĆĺãČijãĆÿãĆĞãČşãČĹãĄőè£Ťå■ť'ãČĞãČijãĆ£ãĄŕãĂĄ __SUBAGENT__.myService
ãĄńä£ÍæŇãĄŢãĆŇãĄęãĄŁãĆŁ( èľşçť'řãĄf *SubAgent*
ãĄńèÍŸèijL')ãĂĄèęĄçť'ãäĄőãĆ■ãČijãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğJSONåĘĔãĄőåĂď'ãĆŠåŔŰå¿ŮãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
<aiml>
    <!-- sub agent execute -->
    <category>
        <pattern>subagent *</pattern>
        <template>
            <think>
                <sraix service="myService">
                    <star /><space />
                    <get var="__USER_METADATA__" />
                </sraix>
                <set name="departure"><json var="__SUBAGENT__.myService.
↪transportation.station.departure" /></set>
                <set name="arrival"><json var="__SUBAGENT__.myService.
↪transportation.station.arrival" /></set>
```

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```
            </think>
            <get name="departure"/>ãĄŃãĆL'<get name="arrival"/>
↪ãĄ¿ãĄğãĆŠæd'IJçt'ćãĄůãĄ¿ãĄŹãĂĆ
        </template>
    </category>
</aiml>
```

ãČęãČijãĆűçŹžèl'śãĄŇãĂŇsubagent ãĄŞãĆŞãĄńãĄąãĄŕãĂ■ãĄőåät'åŘĹãĂĄäžëäÿŃãĄőãĆĹãĄĘãĄńåśŢéŰŃãĄŢãĆŇãĄ§ãČĞãČ

| åijŢæŢřçŢłåŔů | ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄńæÿąãĄŢãĆŇãĄ§åĘĚåőź |
|---|---|
| çňň1åijŢæŢř | ãĄŞãĆŞãĄńãĄąãĄŕ |
| çňň2åijŢæŢř | ãČąãĆ£ãČĞãČijãĆ£ãČĘãĆźãČĹ |

âĂż åijŢæŢřãĆŠçl'žçŹ¡ãĄğåĹĘéŻćãĄŹãĆŃçĆžãĄńãĂĄspaceèęĄçt'ããĆŠä¡£çŤĺãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

### JSONãČĞãČijãĆ£ãĄĺãĄŮãĄęãĄőåŘŰãĆŁæL'śãĄĎæŰź

åŕ¿èl'śAPIãĆşãČijãČńãĄőmetadataãĄĺãĄŮãĄęãĂĄäžëäÿŃãĄőãĆĹãĄĘãĄńJSONãČĞãČijãĆ£ãĄŇäÿÕãĄĹãĆL'ãĆŇãĄ§åät'åŘĹã

```
{
    "locale": "ja-JP",
    "time": "2018-07-01T12:18:45+09:00",
    "topic": "*",
    "utterance": "subagent ãĄŞãĆŞãĄńãĄąãĄŕ",
    "metadata": {"arg1": "value1", "arg2": "value2", "arg3": "value3"}
}
```

metadataãĄŇJSONãĄőåät'åŘĹãĂĄ *json*
ãĆ£ãĆřãĆŠä¡£çŤĺãĄŹãĆŃãĄŞãĄĺãĄğãĂĄJSONå¡ćåijŔãĄõãČĞãČijãĆ£ãĄĺãĄŮãĄęåŘŰãĆŁæL'śãĄĘãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄ
JSONãĄőåĂd'ãĆŠåŘŰå¿ŮãĄŮãĄęåĂŃãĂĚãĄńèĺ■åőŽãĄŹãĆŃåät'åŘĹãĄńãĄŕãĂĄ *json*
ãĆ£ãĆřãĄńãĆ■ãČijãĆŠæŇĞåőŽãĄŮãĄęåŕ¿èśąãĄĺãĄŁãĆŃåĂd'ãĆŠåŘŰå¿ŮãĄŮãĂĄãĄİãĄőåĂd'ãĆŠ
*sraixãĆ£ãĆř*
ãĄőåĘĚåőźãĄĺãĄŮãĄęèĺ■åőŽãĄŹãĆŃãĄŞãĄĺãĄğãĂĄãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄńåijŢãĄ■æÿąãĄŹãĄŞãĄĺãĄŇãĄğãĄ■ã

```
<aiml>
    <!-- sub agent execute -->
    <category>
        <pattern>subagent *</pattern>
        <template>
            <think>
                <sraix service="myService">
                    <star /><space />
                    <json var="__USER_METADATA__.arg1" /><space />
                    <json var="__USER_METADATA__.arg2" /><space />
                    <json var="__USER_METADATA__.arg3" />
                </sraix>
                <set name="departure"><json var="__SUBAGENT__.myService.
↪transportation.station.departure" /></set>
                <set name="arrival"><json var="__SUBAGENT__.myService.
↪transportation.station.arrival" /></set>
            </think>
            <get name="departure"/>ãĄŃãĆL'<get name="arrival"/>
↪ãĄ¿ãĄğãĆŠæd'IJçt'ćãĄůãĄ¿ãĄŹãĂĆ
        </template>
```

(continues on next page)

(continued from previous page)

```
    </category>
</aiml>
```

ãČęãČijãĆűçŹžèľśãĄÑãĂŇsubagent ãĄŞãĆŞãĄńãĄąãĄŕãĂ■ãĄőåät'åŘĹãĂĄäżëäÿÑãĄőãĆĹãĄĘãĄńåśŢéŰÑãĄŢãĆÑãĄ§ãČĞãČ

| åijŢæŢřçŢłåŔů | ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄńæÿąãĄŢãĆÑãĄ§åĘĚåőź |
|---|---|
| çňň1åijŢæŢř | ãĄŞãĆŞãĄńãĄąãĄŕ |
| çňň2åijŢæŢř | value1 |
| çňň3åijŢæŢř | value2 |
| çňň4åijŢæŢř | value3 |

âĂż åijŢæŢřãĆŠçľžçŹ¡ãĄğåĹĘéŻćãĄŹãĆŃçĆžãĄńãĂĄspaceèęĄçt'ããĆŠä¡£çŤĺãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

### 11.2.2 ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄńmetadataåĚĺãĄęãĆŠåijŢãĄ■æÿąãĄŹæŰźæşŢ

åŕ¿èľśAPIãĄÑãĆL'metadataãĄĺãĄŮãĄęæÿąãĄŢãĆÑãĄ§JSONãČĞãČijãĆ£ãĆŠãĂąãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄńãĄİãĄőãĄ
*json*
ãĆ£ãĆřãĄőåśđæĂğãĄń__USER_METADATA__ãĆŠæŇĞåőŽãĄŹãĆÑãĄŞãĄĺãĄğãĂĄmetadataãĄńèĺ■åőŽãĄŢãĆÑãĄ§ãČĞãČijã

```
<aiml>
    <!-- sub agent execute -->
    <category>
        <pattern>subagent *</pattern>
        <template>
            <think>
                <sraix service="myService">
                    <star /><space />
                    <json var="__USER_METADATA__" />
                </sraix>
                <set name=departure><json var="__SUBAGENT__.myService.
↪transportation.station.departure" /></set>
                <set name=arrival><json var="__SUBAGENT__.myService.transportation.
↪station.arrival" /></set>
            </think>
            <get name='departure'>ãĄÑãĆL'<get name='arrival'>
↪ãĄ¿ãĄğãĆŠæd'IJçt'ćãĄŮãĄ¿ãĄŹãĂĆ
        </template>
    </category>
</aiml>
```

ãČęãČijãĆűçŹžèľśãĄÑãĂŇsubagent ãĄŞãĆŞãĄńãĄąãĄŕãĂ■ãĄőåät'åŘĹãĂĄmySer-
viceãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄńår¿ãĄŹãĆÑçňň2åijŢæŢřãĄğæŇĞåőŽãĄŢãĆÑãĄ§JSONãĄÑãĄİãĄőãĄ¿ãĄ¿æÿąãĆŁãĄ¿ã

| åijŢæŢřçŢłåŔů | ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄńæÿąãĄŢãĆÑãĄ§åĘĚåőź |
|---|---|
| çňň1åijŢæŢř | ãĄŞãĆŞãĄńãĄąãĄŕ |
| çňň2åijŢæŢř | {âĂŸarg1âĂŹ: âĂŸvalue1âĂŹ, âĂŸarg2âĂŹ: âĂŸvalue2âĂŹ, âĂŸarg3âĂŹ: âĂŸ-value3âĂŹ} |

âĂż åijŢæŢřãĆŠçľžçŹ¡ãĄğåĹĘéŻćãĄŹãĆŃçĆžãĄńãĂĄspaceèęĄçt'ããĆŠä¡£çŤĺãĄŮãĄęãĄĎãĄ¿ãĄŹãĂĆ

## 11.3 år¿èľśAPIãĄńè£ŤãĄŹmetadataãĄőèĺ■åőŽ

år¿èľśAPIãĄőãČňãĆźãČİãČşãĆźãĄńèĺ■åőŽãĄŹãĆŃmetadataèęAçt'ããĄőæŇĞåőŽãĄŕãĂąãĆůãČŁãČłãĆłãĄőè£Ťå■t'çŤĺãČąãĆ£ã

ãČňãĆźãČİãČşãĆźãĄőmetadataèęAçt'ããĄńãĄŕãĂąãČĘãĆ■ãĆźãČĹãČĞãČijãĆ£ãĂąãĄ¿ãĄ§ãĄŕãĂĄJSONãČĞãČijãĆ£ãĆŠèĺ■åő

ãČąãĆ£ãČĞãČijãĆ£åd'L'æŢř__SYSTEM_METADATA__ãĄŕãČ■ãČijãĆńãČńåd'L'æŢřïijĹvarïijL'ãĄĺãĄŮãĄęæL'śãĄĎãĄ¿ãĄŹãĄ

### 11.3.1 ãČĘãĆ■ãĆźãČĹãČĞãČijãĆ£ãĄĺãĄŮãĄęãĄőåŔŰãĆŁæL'śãĄĎæŰź

äžěäÿŇãĄőä¿ŇãĄğãĄŕãĂĄmyServiceãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄŃãĆL'åŔŰå¿ŮãĄŮãĄ§ãČĞãČijãĆ£ãĄőäÿ■ãĄőâĂİåĞžç

ãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄŃãĆL'è£Ťå■t'ãĄŢãĆŇãĄ§JSONãĄŃãĆL'ãĂąåĞžçŹžåIJřïijŽâĂİstation.departureâĂİãĄőèęAçt'

ãĄŞãĆŇãĄńãĆĹãĄčãĄęãĂĄår¿èľśAPIãĄőãČňãĆźãČİãČşãĆźãĄőmetadataèęAçt'ããĄĺãĄŮãĄęãĂĄãČĘãĆ■ãĆźãČĹãČĞãČijãĆ£ã

```
<aiml>
    <!-- sub agent execute -->
    <category>
        <pattern>subagent *</pattern>
        <template>
            <think>
                <sraix service="myService">
                    <star />
                </sraix>
                <set var="__SYSTEM_METADATA__"><json var="__SUBAGENT__.myService.
↪transportation.station.departure" /></set>
            </think>
            ãČąãĆ£ãČĞãČijãĆ£ãĄńåĞžçŹžåIJřãĆŠèĺ■åőŽãĄŮãĄ¿ãĄŮãĄ§ãĂĆ
        </template>
    </category>
</aiml>
```

Input: subagent æİśäžň
Output: ãČąãĆ£ãČĞãČijãĆ£ãĄńåĞžçŹžåIJřãĆŠèĺ■åőŽãĄŮãĄ¿ãĄŮãĄ§ãĂĆ
metadataãĄőåĘĚåőź: âĂIJæİśäžňâĂİ

### 11.3.2 JSONãČĞãČijãĆ£ãĄĺãĄŮãĄęãĄőåŔŰãĆŁæL'śãĄĎæŰź

äžěäÿŇãĄőä¿ŇãĄğãĄŕãĂĄmyServiceãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄŃãĆL'åŔŰå¿ŮãĄŮãĄ§JSONãČĞãČijãĆ£ãĆŠãĂąè£Ťå■
*json*
ãĆ£ãĆřãĄğãĂĄãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄŃãĆL'è£Ťå■t'ãĄŢãĆŇãĄ§JSONãČĞãČijãĆ£åĚĺą¸ŞãĆŠ__SYSTEM_METADA

ãĄŞãĆŇãĄńãĆĹãĄčãĄęãĂĄår¿èľśAPIãĄőãČňãĆźãČİãČşãĆźãĄőmetadataèęAçt'ããĄĺãĄŮãĄęãĂĄJSONãČĞãČijãĆ£ãĄŃè£Ťå■

```
<aiml>
    <!-- sub agent execute -->
```

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```
    <category>
        <pattern>subagent *</pattern>
        <template>
            <think>
                <sraix service="myService">
                    <star />
                </sraix>
                <set var="__SYSTEM_METADATA__"><json var="__SUBAGENT__.myService" /
↪></set>
            </think>

↪ãČąãĆ£ãČĞãČijãĆ£ãĄńãĆţãČŰãĆÍãČijãĆÿãĆğãČşãČĹãĄőåĞęçŘĘçţŘæđIJãĆŠèÍ■åőŽãĄŮãĄ¿ãĄŮãĄ§ãĂĆ
        </template>
    </category>
</aiml>
```

Input: subagent æİśäžň

Output:
ãČąãĆ£ãČĞãČijãĆ£ãĄńãĆţãČŰãĆÍãČijãĆÿãĆğãČşãČĹãĄőåĞęçŘĘçţŘæđIJãĆŠèÍ■åőŽãĄŮãĄ¿ãĄŮãĄ§ãĂĆ metadataãĄőåĘĚåőź: {âĂIJtransportationâĂİ: {âĂIJstationâĂİ: {âĂIJdepartureâĂİ: âĂIJæİśäžňâĂİ, âĂIJarrivalâĂİ: âĂIJäžňéČ¡âĂİ}, âĂIJtimeâĂİ: {âĂIJdepartureâĂİ: âĂIJ2018/11/1 11:00âĂİ, âĂIJarrivalâĂİ: âĂIJ2018/11/1 13:30âĂİ}, âĂIJfacility: [âĂIJéź£èŃŚåŕžâĂİ, âĂIJæÿĚæřť åŕžâĂİ, âĂIJäijŔèęŃçĺšè■ůåď ğçď¿âĂİ]}}

éŰćéĂčéăĚçŻő: *åŕ¿èl'śAPI*ãĂĄ *åŕ¿èl'śAPIãČĞãČijãĆ£ãĄőåď'L'æŢřåĹl'çŤĺ*ãĂĄ *JSON*ãĂĄ *SubAgent*

CHAPTER 12

# åŕ¿èľśAPIãČĞãČijãĆ£ãĄőåďĽæŢřåĹľçŤĺ

## 12.1 æęĆèęĄ

*åŕ¿èľśAPI* ãĄğæŇĞåőŽãĄŢãĆŇãĄ§ãČĞãČijãĆ£ãĄőåĹľçŤĺæŰźæşŢãĆŠèłňæŸŐãĄŮãĄ¿ãĄŹãĂĆ

## 12.2 åŕ¿èľśAPIãČĞãČijãĆ£ãĄőåďĽæŢř

åŕ¿èľśAPIãĄğäÿŐãĄĹãĆĽãĆŇãĄ§ãČĞãČijãĆ£ãĄŕãĂĄåŕ¿èľśãĆůãČŁãČłãĆłãĄğåĹľçŤĺåŔŕèČ¡ãĄłåďĽæŢřãĄńåśŢéŰŇãĄŮãĄ§
ä£ÍæŇĄæIJ§éŰŞãĄŕãĆŕãČľãĆďãĆćãČşãČĹãĄńãČňãĆźãČÍãČşãĆźãĆŠè£Ťå■ť ãĄŹãĆŇãĄ¿ãĄğãĄğãĄŹãĂĆçűŹçűŽãĄŮãĄęåĘĚ
åŕ¿èľśAPIãČłãĆŕãĆÍãĆźãČĹæŹĆãĄńèľšå¡Şåď˙ĽæŢřãĄŇæIJłèĺ■åőŽãĄőåăť åŘĹãĂĄâĂŹNoneâĂŹãĄŇè£ŤãĆŁãĄ¿ãĄŹãĂĆ

åŕ¿èľśAPIãČĞãČijãĆ£ãĆŠä£ÍæŇĄãĄŹãĆŇåď˙ĽæŢřåŘ■ãĄŕäÿŃèąĺãĄőãĄĺãĄŁãĆŁãĄğãĄŹãĂĆ

| éăĚçŽőåŘ■ | åď˙ĽæŢřåŘ■ | åđŃ | èłňæŸŐ |
|---|---|---|---|
| ãČ■ãĆśãČijãČń | __USER_LOCALE__ | string | åŕ¿èľśAPI `locale` ãĄğæŇĞåőŽãĄŮãĄ§èĺĂèłđãĆşãČijãČĽãĂĆ |
| æŹĆéŰŞæČĚåăś | __USER_TIME__ | string | åŕ¿èľśAPI `time` ãĄğæŇĞåőŽãĄŮãĄ§æŹĆåĹżæČĚåăśãĂĆ |
| ãČęãČijãĆűID | __USER_USERID__ | string | åŕ¿èľśAPI `userId` ãĄğæŇĞåőŽãĄŮãĄ§ãČęãČijãĆűIDãĂĆ |
| ãČęãČijãĆűçŹžèľś | __USER_UTTERANCE__ | string | åŕ¿èľśAPI `utterance` ãĄğæŇĞåőŽãĄŮãĄ§ãČęãČijãĆűçŹžèľśåĘĚåőźãĂĆ |
| ãČąãĆ£ãČĞãČijãĆ£ | __USER_METADATA__ | string | åŕ¿èľśAPI `metadata` ãĄğæŇĞåőŽãĄŮãĄ§ãČąãĆ£ãČĞãČijãĆ£ãĂĆåď˙ĽæŢřãĄĺãĄ *json* ãĆ£ãĆŕãĄğåŔŰãĆŁæĽśãĄĘåăť åŘĹãĄŕJSONãČĞãČijã |

åřŽãĂĄåŘĎåď˙ĽæŢřãĄŕãČ■ãČijãĆńãČńåď˙ĽæŢřïijĹvarïijĽãĄĺãĄŮãĄęæĽśãĄĐãĄ¿ãĄŹãĄŇãĂĄãČęãČijãĆűæŕÓãĄőçőąçŘĘæČ

ïijĹåŘĎåď˙ĽæŢřåĂď˙ãĆŠãĆůãČŁãČłãĆłãĄğåď˙ĽæŻť˙ãĄŮãĄęåĹľçŤĺãĄŹãĆŇãĄŞãĄĺãĄŕåŔŕèČ¡ãĄğãĄŹãĄŇãĂĄäÿĂéČĺãĄőèę

## 12.3 åĹľçŤíä¿Ń

ãĆŕãČľãĆđ'ãĆćãČşãČĹãĄŃãĆL'ãĄőår¿èľ'śAPIãĄğäžëäÿŃãĄőãĆĹãĄĘãĄńãĂĄår¿èľ'śAPIãČĞãČijãĆ£ãĄŇäÿŐãĄĹãĆL'ãĆŇãĄ§

```
{
    "locale": "ja-JP",
    "time": "2018-07-01T12:18:45+09:00",
    "userId": "E8BDF659B007ADA2C4841EA364E8A70308E03A71",
    "topic": "*",
    "utterance": "ãĄŞãĆŞãĄńãĄąãĄŕ",
    "metadata": {"arg1": "value1", "arg2": "value2"}
}
```

ãĆůãČŁãČłãĆłãĄğãĄőæL'śãĄĎæŰźãĄŕãĂĄäžëäÿŃãĄőãĆĹãĄĘãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<aiml>
    <category>
        <pattern>ãĄŞãĆŞãĄńãĄąãĄŕ</pattern>
        <template>
            <get var="__USER_LOCALE__" /> ,
            <get var="__USER_TIME__" /> ,
            <get var="__USER_USERID__" /> ,
            <get var="__USER_UTTERANCE__" />
        </template>
    </category>
</aiml>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output:
ja-JP,2018-07-01T12:18:45+09:00,E8BDF659B007ADA2C4841EA364E8A70308E03A71,ãĄŞãĆŞãĄńãĄąãĄŕ

metadataãĄńãĄd'ãĄĎãĄęãĄŕãĂĄ *metadata* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

CHAPTER 13

# SubAgent

## 13.1 æęĆèęĄ

ãĆţãČŰãĆÍãČijãĆÿãĆğãČşãČĹ(SubAgent)ãĄŕãĂĄsraixèęĄçţ'ăãĆŠä¡£çŤÍãĄŮãĄęåŚijãĄşåĞžãĄŹåď'ŰéČÍãĄőãĆţãČijãČŞãĆźãĄ
sraixãĄğæŇĞåőŽãĄŹãĆŃåď'ŰéČÍãĆţãČijãČŞãĆźãĄőåŚijãĄşåĞžãĄŮæŰźæşŢãĆŠèłňæŸŐãĄŮãĄ¿ãĄŹãĂĆ

åď'ŰéČÍãĆţãČijãČŞãĆźãĄőåŚijãĄşåĞžãĄŮãĄőæŰźæşŢãĄńãĄŕãĂĄæňąãĄőïijŤçÍőéąđãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

- **æśŐçŤÍRESTãĆd'ãČşãĆ£ãČŢãĆğãČijãĆź** åśđæĂğãĄńãĂĄâĂİtemplateâĂİãĆŠæŇĞåőŽãĄŮãĄ§åăt'åŘĹãĂĄãĄ¿ãĄ§ãA APIãĄÍãĄŮãĄęåď'ŰéČÍãĆţãČijãČŞãĆźãĆŠåŚijãĄşåĞžãĄŮãĄ¿ãĄŹãĂĆ
- **år¿èl'śãČŮãČl'ãČČãČĹãČŢãĆl'ãČijãČăãĄğãĂĄåĚňéŰŃãĄŢãĆŇãĄęãĄĐãĆŃbotåŚijãĄşåĞžãĄŮ** åśđæĂğãĄńãĂĄâĂİbotNameâĂİãĆŠæŇĞåőŽãĄŮãĄ§åăt'åŘĹãĂĄår¿èl'śãČŮãČl'ãČČãČĹãČŢãĆl'ãČijãČăãĄğåĚňéŰ
- **NLUéĂŽä£ąãĆd'ãČşãĆ£ãČŢãĆğãČijãĆź** åśđæĂğãĄńãĂĄâĂİnluâĂİãĆŠæŇĞåőŽãĄŮãĄ§åăt'åŘĹãĂĄæĎŔåŽşèğčéĞĹ
- **ãĆńãĆźãĆ£ãČăåd'ŰéČÍãĆţãČijãČŞãĆźåő§èčĚ** åśđæĂğãĄńãĂĄâĂİserviceâĂİãĆŠæŇĞåőŽãĄŮãĄ§åăt'åŘĹãĂĄãĆńãĆ
- åśđæĂğ

| ãČŚãČl'åČãĄąãĆźãĆjãĆãĄâĂĚéěĺňæŸŐ | | | |
|---|---|---|---|
| *æIJłæŇĞåőŽ* | | No | å■ŘèęĄçt'ăãĄńãĆĹãĆŃæśŐçŤÍREST APIåŚijãĄşåĞžãĄŮãĂĆ |
| *template* | string | No | æśŐçŤÍRESTéĂŽä£ąçŤÍãĄőãČĘãČşãČŮãČñãČijãČĹåŘ■ãĂĆ |
| *botName* | string | No | åĚňéŰŃBotéĂŽä£ąçŤÍãĄőãĆÍãĆd'ãČłãĆćãĆźåŘ■ãĂĆ |
| *nlu* | string | No | NLUéĂŽä£ąçŤÍãĄőãĆÍãĆd'ãČłãĆćãĆźåŘ■ãĂĆ |
| *service* | string | No | ãĆńãĆźãĆ£ãČăåd'ŰéČÍãĆţãČijãČŞãĆźãĄőãĆţãČijãČŞãĆźåŘ■ãĂĆ |
| *default* | string | No | åď'ŰéČÍåŚijãĄşåĞžãĄŮåď'śæŢŮæŹĆãĄőå£IJç■ŤæŰĞãĂĆ |
| *timeout* | string | No | éĂŽä£ąãĆ£ãĆd'ãČăãĆćãĆęãČĹæŹĆéŰŞïijĹçğŠå■Ÿä¡■ïijL'ãĆŠ âĂŸ1âĂŹ äžěäÿŁãĄőæŢt'æŢřãĄgæŇĞåőŽãĂĆæIJłæŇĞåőŽæŹĆãĄŕ âĂŸ10âĂŹãĂĆ |

SubAgentãĄŃãĆL'ãĄőãČńãĆźãČÍãČşãĆźãČIJãČĞãĆčãĄŕãĂĄãĆůãČŁãČłãĆł(AIML)ãĄğåĹl'çŤÍåŔŕèČ¡ãĄłãČ■ãČijãĆńãČńåď'L'ã
ãČńãĆźãČÍãČşãĆźãČIJãČĞãĆčãĄőåĘĚåőźãĄŃJSONãĄőåăt'åŘĹãĂĄ *json*
ãĆ£ãĆřãĄğJSONåĘĚéČÍãĄőãČŚãČl'ãČąãČijãĆ£ãĆŚåŘŰå¿ŮãĄğãA■ãA¿ãĄŹãĂĆ

ãČ■ãČijãĆńãČńåď'L'æŢř(var)ãĄńåśŢéŰŃãĄŢãĆŇãĄ§åĘĚåőźãĄŕãĂĄAIMLãĄőcategoryãĄőçŕĎåŽšãĄőãĄ£ãĄğæIJL'åŁźãĄłãĄ§

ãĄ¿ãĄ§ãĂĄcategoryåĘĕãĄğãĂĄèď'ĞæŢřåŻđãĂĄãĆţãČŰãĆĺãČijãĆÿãĆğãČşãČĹãĄőåŚijãĄşåĞžãĄŮãĆŠèąŇãĄčãĄ§åăť'åŘĹãĂ

âĂIJdefaultâĂİåšđæĂğãĄŕïijŤçĺőéąđãĄőåď'ŰéČĺãĆţãČijãČŞãĆźãĄőåŚijãĄşåĞžãĄŮæŰźæşŢãĄńåĚšéĂŽãĄğæŇĞåőŽãĄğãĄ■ãĂ

âĂIJtimeoutâĂİåšđæĂğãĆĆïijŤçĺőéąđãĄőåď'ŰéČĺãĆţãČijãČŞãĆźãĄőåŚijãĄşåĞžãĄŮæŰźæşŢãĄńåĚšéĂŽãĄğæŇĞåőŽãĄğãĄ■ã

## 13.2 åĚšéĂŽäżŢæğŸ

åŘĎåď'ŰéČĺãĆţãČijãČŞãĆźåŚijãĄşåĞžãĄŮãĄńåĚšéĂŽãĄŹãĆŇæľ§èČ¡ãĄĺãĄŮãĄęãĂĄéĂŽä£ąåď'śæŢŮãĄőæď'IJåĞžãĄĺèęĄåŽ

### 13.2.1 éĂŽä£ąåď'śæŢŮæŹĆãĄőå£lJç■ŤæŰĞ(default)

éĂŽä£ąåď'śæŢŮæŹĆãĄńãĄŕãĂĄsraixãĄőæĹżãĆŁåĂď'ãĄĺãĄŮãĄęâĂİâĂİïijĹçľ'žæŰĞå■ŮïijL'ãĄŇèĺ■åőŽãĄŢãĆŇãĄ¿ãĄŹãĄŇã

äżěäÿŇãĄŕãĂĄãĆńãĆźãĆ£ãČăåď'ŰéČĺãĆţãČijãČŞãĆźåő§èčĚãĆŠåĹľçŤĺãĄŹãĆŇåăť'åŘĹãĄőä¿ŇãĄğãĄŹãĂĆ

```
<category>
    <pattern>botãĆźãČĘãČijãĆ£ãĆźãČĄãĆğãČČãĆŕ *</pattern>
    <template>
        <star />ãĄőãĆźãČĘãČijãĆ£ãĆźãĄŕãĂĄ<sraix service="someBot" default=
↪"éĂŽä£ąåď'śæŢŮ"><star /></sraix>ãĄğãĄŹãĂĆ
     </template>
</category>
```

Input: botãĆźãČĘãČijãĆ£ãĆźãČĄãĆğãČČãĆŕ åĚňéŰŃbot
Output: åĚňéŰŃbotãĄőãĆźãČĘãČijãĆ£ãĆźãĄŕãĂĄéĂŽä£ąåď'śæŢŮãĄğãĄŹãĂĆ

### 13.2.2 ãĆ£ãĆď'ãČăãĆćãĆęãČĹæŇĞåőŽ(timeout)

åď'ŰéČĺãĆţãČijãČŞãĆźãĄĺãĄőéĂŽä£ąæŹĆéŰŞãĆŠæŇĞåőŽãĄŢãĆŇãĄ§æŹĆéŰŞãĄğåĹűéŹŘãĄŮãĄ¿ãĄŹãĂĆãĆ£ãĆď'ãČăãĆćã

âĂIJdefaultâĂİåšđæĂğãĆŠæŇĞåőŽãĄŹãĆŇãĄŞãĄĺãĄğãĂĄæŇĞåőŽãĄŢãĆŇãĄ§æŰĞå■ŮåĹŮãĆŠsraixãĄőæĹżãĆŁåĂď'ãĄĺãĄ

æŇĞåőŽãĄŕçğŠå■Ÿä¡■ïijĹçIJĄçŢěåĂď'ïijŽ10çğŠïijL'ãĄğèąŇãĄĐãĄ¿ãĄŹãĄŇãĂĄåŃŢä¡IJçŠřáćČãĄńãĆĹãĄčãĄęãĄŕæŇĞåőŽã

äżěäÿŇãĄŕãĂĄãĆńãĆźãĆ£ãČăåď'ŰéČĺãĆţãČijãČŞãĆźåő§èčĚãĆŠåĹľçŤĺãĄŮãĆ£ãĆď'ãČăãĆćãĆęãČĹãĄŇçŹžçŢ§ãĄŮãĄ§åăť'åŘ

```
<category>
    <pattern>botãĆźãČĘãČijãĆ£ãĆźãČĄãĆğãČČãĆŕ *</pattern>
    <template>
        <star />ãĄőãĆźãČĘãČijãĆ£ãĆźãĄŕãĂĄ<sraix service="someBot" timeout="10">
↪<star /></sraix>ãĄğãĄŹãĂĆ
     </template>
</category>
```

Input: botãĆźãČĘãČijãĆ£ãĆźãČĄãĆğãČČãĆŕ åĚňéŰŃbot
Output: åĚňéŰŃbotãĄőãĆźãČĘãČijãĆ£ãĆźãĄŕãĂĄãĄğãĄŹãĂĆ

### 13.2.3 HTTPãĆźãČĘãČijãĆ£ãĆźãĆşãČijãČL'ãĄőåŘŰå¿Ů

éĂŽä£ąåd'śæŢŮãĄőèęĄåŻäãĄńãĄŕãĂĄãČŚãČl'ãČąãČijãĆ£ãĄőæŇĞåőŽçŢřåÿÿãĄłãĄl'ãĆŠåŘńãĆĄåŘĎçĺőãĄĆãĆŁãA¿ãĄŹãĄŇ
ãČ■ãČijãĆńãČńåd'L'æŢř(var)ïijŽ __SUBAGENT_STATUS_CODE__ ãĄńãĂĄHTTPãĆźãČĘãČijãĆ£ãĆźãĆşãČijãČL'ãĄőåÄd'ãĄŇ

- åŘŰå¿Ůåd'śæŢŮ : éĂŽä£ąåĞęçŘĘãĄŇèąŇãĆŔãĆŇãĄłãĄŇãĄčãĄ§ãĂĆ
- 000 : éĂŽä£ąèęĄæśĆãĄńåŢŔéąŇãĄŇãĄĆãĆŁéĂŽä£ąãĄŇèąŇãĆŔãĆŇãĄłãĄŇãĄčãĄ§ãĂĄãĄ¿ãĄ§ãĄŕãĂĄéĂŽä£ąçţŘæć
- 001 : éĂŽä£ąãĆ£ãĆd'ãČããĆćãĆęãČĹãĄŇçŹžçŢ§ãĄŮãĄ§ãĂĆ
- 200 : éĂŽä£ąãĄŇæ■čåÿÿãĄńèąŇãĆŔãĆŇãĄ§ãĂĆ
- ãĄİãĄőäżŰ : éĂŽä£ąçţŘæđIJãĄÍãĄŮãĄęãĂĄçŢřåÿÿãĆŠçd'žãĄŹãĆźãČĘãČijãĆ£ãĆźãĆşãČijãČL'ãĄŇéĂŽç§ěãĄŢãĆŇãĄ§ã

äżěäÿŇãĄŕãĂĄRESTéĂŽä£ąãĄőhostãĄńæŐěçűŽãĄğãĄ■ãĄłãĄĐURLãĆŚæŇĞåőŽãĄŮãĄ§åät'åŘĹãĄőä¿ŇãĄğãĄŹãĂĆ

```
<category>
    <pattern>äÿ■æ■čRESTãĆţãČijãČŘæŇĞåőŽ</pattern>
    <template>
        <think>
            <sraix><host>https://otherhost.com:5000</host><body>data</body></sraix>
        </think>
        ãĆźãČĘãČijãĆ£ãĆźãĆşãČijãČL'ãĄŕãĂĄ<get var="__SUBAGENT_STATUS_CODE__" />
↪ãĄğãĄŹ
     </template>
</category>
```

Input: äÿ■æ■čRESTãĆţãČijãČŘæŇĞåőŽ
Output: ãĆźãČĘãČijãĆ£ãĆźãĆşãČijãČL'ãĄŕãĂĄ000ãĄğãĄŹãĂĆ

### 13.2.4 ãČňãĆd'ãČĘãČşãĆůãĄőåŘŰå¿Ů

åd'ŰéČĺãĆţãČijãČŞãĆźãĄĺãĄőéĂŽä£ąæŹĆéŰŞïijĹãČňãĆd'ãČĘãČşãĆůïijL'ãĄŕåŃŢä¡IJçŠřáćČãĆĎãČ■ãČČãČĹãČŕãČijãĆŕçŁűæş
éĂŽĄåŘŮä£ąãĄńèęĄãĄŮãĄ§æŹĆéŰŞãĆŠçźèł■ãĄğãĄ■ãĆŃægŸãĄńãĂĄãČ■ãČijãĆńãČńåd'L'æŢř(var)ïijŽ
__SUBAGENT_LATENCY__
ãĄńãĂĄéĂĄåŘŮä£ąæŹĆéŰŞãĆŠçğŠå■Ÿä¡■ãĄőåřŔæŢřçĆźäżŸãĄ■æŢřåÄd'ãĄğèĺ■åőŽãĄŮãĄ¿ãĄŹãĂĆ

éĂŽä£ąãĄŇèąŇãĆŘãĆŇãĄłãĄŇãĄčãĄ§ãĂĄ'åŘĹãĄńãĄŕãĂĄåd'L'æŢřåÄd'ãĄőåŘŰå¿ŮãĄńåd'śæŢŮãĄŮãĄ¿ãĄŹãĂĆ

äżěäÿŇãĄŕãĂĄRESTéĂŽä£ąãĄőhostãĄńéĂŽä£ąãĄğãĄ■ãĄłãĄĐURLãĆŚæŇĞåőŽãĄŮãĄęãĆ£ãĆd'ãČããĆćãĆęãČĹãĄŇçŹžçŢ§ã

```
<category>
    <pattern>éĂŽä£ąãĆ£ãĆd'ãČããĆćãĆęãČĹ</pattern>
    <template>
        <think>
            <sraix timeout="1"><host>https://anyhost.com</host><body>data</body></
↪sraix>
        </think>
        éĂŽä£ąæŹĆéŰŞãĄŕãĂĄ<get var="__SUBAGENT_LATENCY__" />çğŠãĄğãĄŹ
     </template>
</category>
```

Input: éĂŽä£ąãĆ£ãĆd'ãČããĆćãĆęãČĹ
Output: éĂŽä£ąæŹĆéŰŞãĄŕãĂĄ1.010000çğŠãĄğãĄŹãĂĆ

## 13.3 æśŐçŤÍRESTãĆď'ãČşãĆ£ãČŢãĆğãČijãĆź

sraixãĄőåśđæĂğãĄńâĂİtemplateâĂİãĆŠæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĂąãĄ¿ãĄ§ãĄŕãĂĄåśđæĂğãĄğãĂĄâĂİbotNameâĂİãĂĄâĂİn
å■ŘèęAçť'ăãĄőhost, header, query, bodyç■L'ãĆŠåĽ'çŤÍãĄŮãĄęãĂĄREST
APIãĄÍãĄŮãĄęåď'ŰéČÍãĆţãČijãČŞãĆźãĆŠåŚijãĄşåĞžãĄŮãĄ¿ãĄŹãĂĆ

åśđæĂğãĄńâĂİtemplateâĂİãĆŠæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĄőåĂd'ãĄńãĄŕãĂĄ*rest_templates*
ãČŢãĆąãĆd'ãČńãĄğçŹżéŇšãĄŮãĄ§ãČEãČşãČŮãČňãČijãČĹåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

ïijĹçŹżéŇšãĄŢãĆŇãĄęãĄĎãĄłãĄĎãČEãČşãČŮãČňãČijãČĹåŘ■ãĆŠæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĄńãĄŕãĂĄAIMLåśŢéŰŇæŹĆãA

âĂIJtemplateâĂİæŇĞåőŽãĄőåăť'åŘĹãĄńãĆĆå■ŘèęAçť'ăãĄőæŇĞåőŽãĆŠèąÑãĄEãĄŞãĄÍãĄğãĂĄéĂĄä£ąãĄŹãĆŇåĘĚåőźãĆŠå

### 13.3.1 éĂĄä£ą

- å■ŘèęAçť'ă

| ãČŚãČľãČąãĆĆãĆąãĆĆãĆĆãĆĆ

(continued from previous page)

```
{
    "question": "Ask this question"
}
```

åf¿èl'śAPIãĄğæŇĞåőŽãĄŢãĆŇãĄ§ metadata ãĆŠãČIJãČĞãĆčãĄńæŇĞåőŽãĄŹãĆŃåăt'åŘĹãĄŕãĂAj-sonãĆ£ãĆřãĄğ __USER_METADATA__ ãĆŠåŘŰå¿ŮãĄŮãĂĄå■ŘèęAçt'ăâĂİbodyâĂİãĄńèĺ■åőŽãĄŮãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>XXX</pattern>
    <template>
        <sraix>
            <host>https://otherhost.com/ask</host>
            <method>POST</method>
            <query>"userid":"1234567890","q":"question"</query>
            <header>"Authorization":"yyyyyyyyyyyyyyyyy","Content-Type":
↪"application/json;charset=UTF-8"</header>
            <body><json var="__USER_METADATA__" /></body>
        </sraix>
    </template>
</category>
```

### 13.3.2 ãČĘãČşãČŮãČňãČijãČĹãĆŠä¡£çŤĺãĄŮãĄ§éĂĄä£ą

rest_templatesãČŢãĆąãĆd'ãČńãĄğäžëäÿŇãĄőåőŽç¿l'ãĆŠèąŇãĄčãĄ§åăt'åŘĹãĄőãČĘãČşãČŮãČňãČijãČĹãĄőä¡£çŤĺä¿ŇãĆŠçd'ž

```
rest:
  ãČĘãČşãČŮãČňãČijãČĹ:
    host: 'https://otherhost.com/ask'
    method: POST
    query:  '"item":"1234"'
    header: '"Content-Type": "applicaton/json"'
    body: '{"key": "Send Data"}'
```

sraixãĄőèĺŸè£řãĄğå■ŘèęAçt'ăãĆŠæŇĞåőŽãĄŮãĄłãĄĐåăt'åŘĹãĂĄãČĘãČşãČŮãČňãČijãČĹãĄőåőŽç¿l'åĘĚåőźãĄğéĂĄä£ąãĆŠ

ãČĘãČşãČŮãČňãČijãČĹãĄőåőŽç¿l'ãĆŠçĐąåŁźãĄńãĄŹãĆŃåăt'åŘĹãĂĄsraixãĄőèl'šå¡Şå■ŘèęAçt'ăãĄńçl'žæŰĞå■ŮãĆŠæŇĞåőŽ äžëäÿŇãĄőä¿ŇãĄğãĄŕãĂĄqueryãĆŠçĐąåŁźåŇŰãĄŮãĄęãĄĐãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>XXX</pattern>
    <template>
        <sraix template="ãČĘãČşãČŮãČňãČijãČĹ">
            <query></query>
        <sraix>
    </template>
</category>
```

éĂĄä£ąåĘĚåőź

```
POST /ask HTTP/1.1
Host: otherhost.com
Content-Type: application/json
```

(continues on next page)

(continued from previous page)

```
{
  "key": "Send Data"
}
```

sraixãĄĝå■ŘèęAçt’ăăĆŠæŇĞåőŽãĄŮãĄ§åăt’åŘĹãĂąãČĘãČşãČŮãČňãČijãČĹãĄőåőŽç¿l’ãĆĹãĆŁåĎłåĚĹãĄŮãĄęèí■åőŽãĄŢãĆ

ãČĘãČşãČŮãČňãČijãČĹãĄőqueryãĂąheaderåőŽç¿l’ãĄÑãĄĆãĆŃåăt’åŘĹãĄńãĂąäÿĂéČĺãĄőãĆ■ãČijãĄőæČĚåăśãĆŠçĎąåŁźãĄ
{år¿èśąãĆ■ãČij: None} ãĆŠèí■åőŽãĄŮãĄ¿ãĄŹãĂĆ

bodyãĄńãĄd’ãĄĎãĄęãĄŕãĂąãČĘãČşãČŮãČňãČijãČĹåőŽç¿l’ãĄĺsraixãĄőå■ŘèęAçt’ăæŇĞåőŽãĄőäÿąæŰźãĄŇJSONå¡ćåijŔãĄő

ãČĘãČşãČŮãČňãČijãČĹåőŽç¿l’ãĄőbodyãĄŇJSONå¡ćåijŔãĄgãĂąäÿĂéČĺãĄőãĆ■ãČijãĆŠéŹd’åd’ŰãĄŮãĄęéĂąä£ąãĄŮãĄ§ãĄĽ
null}
ãĆŠèí■åőŽãĄŮãĄ¿ãĄŹãĂĆïijĹçňňäÿĂéŽŐåśd’ãĄőãĆ■ãČijãĄőãĄ£ãĄŇår¿èśąãĄĺãĄłãĆŁãĄ¿ãĄŹïijL’ãĂĆ
åřŽãĂąãČĘãČşãČŮãČňãČijãČĹåőŽç¿l’ãĄĺãĄŮãĄę
hostãĄőæŇĞåőŽãĄŕå£ĚéáĹãĄgãĄŹãĄŇãĂąsraixãĄőèÍŸè£řãĄğç¡õãĄ■æŔŻãĄĹãĆŃãĄŞãĄĺãĄŇãĄgãĄ■ãĄ¿ãĄŹãĂĆ

äžěäÿŃãĄőä¿ŃãĄgãĄŕãĂąhostãĆŠç¡õæŔŻãĄŮãĂąmethodãĄĺãĄĺãĆĆãĄńãĂąqueryãĄőâĂİitemâĂİèęAçt’ăăĆŠçĎąåŁźåŇŰãĄ

```
<category>
    <pattern>XXX</pattern>
    <template>
        <sraix template="ãČĘãČşãČŮãČňãČijãČĹ">
            <host>https://otherhost.com/ask</host>
            <method></method>
            <query>"item": None, "userid":"1234567890"</query>
            <header>"Authorization":"yyyyyyyyyyyyyyyyy"</header>
            <body>{"key2": "added data"}</body>
        <sraix>
    </template>
</category>
```

éĂąä£ąåĘĚåőź

```
GET /ask?userid=1234567890 HTTP/1.1
Host: otherhost.com
Content-Type: application/json
Authorization: yyyyyyyyyyyyyyyyy

{
  "key": "Send Data", "key2": "added data"
}
```

### 13.3.3 åŔŮä£ą

åŔŮä£ąçţŘædIJãĄõãCIJãČĞãĆčåĘĚåőźãĆŠãĂąsraixãĄõçţŘædIJãĄĺãĄŮãĄęè£ŤãĄŮãĄ¿ãĄŹãĂĆ

AIMLãĄgåĞęçŘĘãĄgãĄ■ãĆŃãĄõãĄŕãČĘãĆ■ãĆźãČĹãĄõãĄ£ãĄłãĄõãĄgãĂąãČŘãĆd’ãČŁãČłãĄõãČIJãČĞãĆčãĄŕãĆţãČİãČijã
åŔŮä£ąçţŘædIJãĄŕãĂąãČ■ãČijãĆńãČńåd’L’æŢř(var)ïijŽ__SUBAGENT_BODY__
ãĄńãĆĆåśŢéŰŃãĄŮãĄ¿ãĄŹãĂĆ getãĄgãĂą<get var=âĂİ__SUBAGENT_BODY__âĂİ
/>ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄgãĂąãČIJãČĞãĆčãĄõæŰĞå■ŮåĹŮãĆŠåŔŰå¿ŮãĄgãĄ■ãĄ¿ãĄŹãĂĆ

ãČ■ãČijãĆńãČńåd’L’æŢř(var)ãĄõåĘĚåőźãĄŕcategoryå■Ÿä¡■ãĄgä£ÏæŇąãĄŢãĆŃãĆŃãĄ§ãĆąãĂąçűŹçűŽãĄŮãĄęãČňãĆźãČİãČ

ãĄ¿ãĄ§ãĂĄcategoryåĘĚãĄğãĂĄèď'ĞæŢřåŻđãĂĄæśŐçŤÍRESTãĆď'ãČşãĆ£ãČŢãĆğãČijãĆźåŚijãĄşåĞžãĄŮãĄ§åăť'åŘĹãĂĄ__
ãĄŕäÿŁæŻÿãĄ■ãĄŢãĆŇãĆŃãĄ§ãĆĄãĂĄå£ĚèęĄãĄłãČňãĆźãČĺãČşãĆźåĘĚåőźãĄŕäżŮãĄőåď'L'æŢřãĄńäžčåĚěãĄŮãĄęãĄŘãĄă

sraixãĄőçţŘæđIJãĄĺãĂĄãČ■ãČijãĆńãČńåď'L'æŢřãĄőæăijçţ'■åĂď'ãĄŕåŘŇãĄŸå¡ćåijŔãĄłãĄőãĄğãĂĄäžěäÿŃãĄőïijŠãĄď'ãĄőèĺŸ

```
<category>
    <pattern>XXX</pattern>
    <template>
        <sraix template="ãČĘãČşãČŮãČňãČijãČĹ" />
    </template>
</category>
```

```
<category>
    <pattern>XXX</pattern>
    <template>
        <think>
            <sraix template="ãČĘãČşãČŮãČňãČijãČĹ" />
        </think>
        <get var="__SUBAGENT_BODY__" />
    </template>
</category>
```

åŘŮä£ąçţŘæđIJãĄőãČIJãČĞãĆčåĘĚåőźãĄŇJSONãĄőåăť'åŘĹãĂĂ *json* ãĆ£ãĆřãĄğJSONåĘĚéČĺãĄőãČŚãČľ'ãČąãČijãĆ£ãĆŠåŘŮ

```
{
    "transportation": {
        "station": {
            "departure": "æİśäžň",
            "arrival": "äžňéČ¡"
        },
        "time": {
            "departure": "2018/11/1 11:00",
            "arrival": "2018/11/1 13:30"
        }
    },
    "facility": ["éź£èŃŚåŕž", "æÿĚært'åŕž", "äijŔèęŃçĺšè■ůåd'ğçd'¿"]
 }
```

ãĄĺãĄĎãĄęãČIJãČĞãĆčåĘĚåőźãĄőåăť'åŘĹãĂĄäžěäÿŃãĄőèĺŸè£řãĄğãĂĄJSONãĆ£ãĆřãĄńãĆĹãČŁãČIJãČĞãĆčãĄőåĘĚéČĺæČ

```
<json var="__SUBAGENT_BODY__.transportation.station.departure" />   <!--␣
↪åŘŮå¿ŮçţŘæđIJïijž æİśäžň -->
<json var="__SUBAGENT_BODY__.facility" function="len" />            <!--␣
↪åŘŮå¿ŮçţŘæđIJïijž 3 -->
<json var="__SUBAGENT_BODY__.facility"><index>1</index></json>      <!--␣
↪åŘŮå¿ŮçţŘæđIJïijž æÿĚært'åŕž -->
```

## 13.4 åŕ¿èľśãČŮãČľãĆČãČĹãČŢãĆľãČijãČãäĄğãĂĄåĚňéŰŃãĄŢãĆŇãĄęãĄĎã

sraixãĄőåśđæĂğãĄńãĂĄâĂİbotNameâĂİãĆŚæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĂĄåŕ¿èľśãČŮãČľãĆČãČĹãČŢãĆľãČijãČãäĄğåĚňéŰŃã
åśđæĂğâĂİbotNameâĂİãĄőåĂď'ãĄńãĄŕãĂĄ*bot_names*
ãČŢãĆąãĆď'ãČńãĄğçŹżéŇšãĄŮãĄ§ãĆĺãĆď'ãČłãĆćãĆźåŘ■ãĆŚæŇĞåőŽãĄŮãĄ¿ãĄŹãĄĂ

sraixãĄőåĘĚåőźãĄŇåĚňéŰŃbotãĄÿãĄőåĚěåŁŻæŰĞ(çŹžèľśæŰĞ)ãĄĺãĄŮãĄęéĂĄä£ąãĄŢãĆŇãĄ¿ãĄŹãĄŇãĂĄåĚěåŁŻæŰĞãĄ

ïijĹçŹżéŇšãĄŢãĆŇãĄęãĄĎãĄłãĄĎãĆĺãČłãĆćãĆźåŘ■ãĆŚæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĄńãĄŕãĂĄAIMLåśŢéŰŃæŹĆãĄńçŢřå

ãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĄőåőŽç¿l'ãĄgåŘĎçĺőãČŚãČl'ãČąãČijãĆ£ãĆŚæŇĞåőŽãĄŮãĄ§åät'åŘĹãĄńãĆĆãĂĄå■ŘèęAçt'ãäĄőæŇĞ
åĚňéŰŃbotãĄŃãĆL'ãĄőæĹżãĄčãĄęãĄŔãĆŃåĘĚåőźãĄŕãĂĄ*år¿èl'śAPI*
ãĄőåŔŮä£ąãČĞãČijãĆ£ãĄgèęŔåőŽãĄŢãĆŇãA§JSONå¡ćåijŔãĄgãĄĆãĆŁãĂĄsraixãĄőæĹżãĆŁåĂd'ãĄńãĂĄãĄİãĄőäÿ■ãĄőresp

### 13.4.1 éĂĄä£ą

åĚňéŰŃbotåĹl'çŤĺæŹĆãĄõãČŚãČl'ãČąãČijãĆ£ãĄŕå■ŘèęAçt'ãäĄĺãĄŮãĄęèÍŸèijL'ãĄŮãĄ¿ãĄŹãĂĆå■ŘèęAçt'ãäĄőåĘĚåőźãĄŕãĂ
ãĄőãČIJãČĞãĆčãĄőåĘĚåőźãĄĺãĄŮãĄęéĂĄä£ąãĄŢãĆŇãĄ¿ãĄŹãĂĆ
å■ŘèęAçt'ãäĄńãĄd'ãĄĎãĄęãĄŕãĂĄ*år¿èl'śAPI* ãĆŠåŘĆçĚğãĄŮãĄęãĄŔãĄäãĄŢãĄĎãĂĆ

sraixãĄgãĂĄãČęãČijãĆűIDãĄŇæIJłæŇĞåőŽãĄőåät'åŘĹãĂĄår¿èl'śAPIãĄgæŇĞåőŽãĄŢãĆŇãĄ§ãČęãČijãĆűIDãĆŠåijŢãĄ■çűŹã

åĚňéŰŃBotãĆŠåĹl'çŤĺãĄŹãĆŃåät'åŘĹãĂĄsraixãĄńãĄŕãČęãČijãĆűçŹžèl'śãĆŠèĺ■åőŽãĄŹãĆŃå■ŘèęAçt'ãäĄŕãĄłãĄŔãĂĄsraixã

sraixãĄőåĘĚåőźãĄŇçĎąãĄĎïijĹåŘńãĆĂãĂĄçl'žæŰĞå■ŮïijL'ãĄőåät'åŘĹãĂĄåĚňéŰŃBotãĄÿãĄőéĂŽä£ąãĄŕèąŇãĆŔãĆŇãĄŽã

- å■ŘèęAçt'ă

| ãČŚãČl'ãČąãČijãĆãĆ£ãĆd'ãČłĚëãĺæŸŐ | | | | |
|---|---|---|---|---|
| userId | | string | No | ãČęãČijãĆűIDãĂĆæIJłæŇĞåőŽãĄőåät'åŘĹãĂĄår¿èl'śAPIãĄőæŇĞåőŽåd'ãĆŠåijŢãĄ■çűŹ |
| locale | | string | No | ãČ■ãĆśãČijãČńãĂĆèĺĂèłđæŇĞåőŽISO-639 èĺĂèłđãĆşãČijãČL'ãĄĺISO-3166 åŽ¡ãĆşãČijãČL'ãĆŠãČŔãĆd'ãČŢãČşçźŇãĄĐãĄăçţĐãĄ£åŘĹãĆŔãĄŽãĆŠæŇĞåőŽãĄŮ |
| time | | string | No | æŹĆéŰŞæČĚåăśãĂĆISO8601(RFC3339)å¡ćåijŔãĄgæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |
| topic | | string | No | ãČĹãČŤãČČãĆŕIDãĂĆtopicæČĚåăśãĆŠåd'L'æŽt'ãĄŹãĆŃåät'åŘĹãĄńãĄőãĄ£æŇĞåőŽãĄŮ |
| deleteVariable | | boolean | No | ãĆ£ãĆźãĆŕåd'L'æŢřåL'ŁéŹd'æŇĞåőŽãĂĆâĂŹtrueâĂŹãĄŇæŇĞåőŽãĄŢãĆŇãĄ§åät'åŘĹãĄ |
| metadata | | string | No | ãČąãĆ£ãČĞãČijãĆ£ãĂĆTextå¡ćåijŔãĂĄãĄ¿ãĄ§ãĄŕãĂĄJSONå¡ćåijŔãĄgæŇĞåőŽãĄŮãĄ¿ã |
| config | | | No | ãĆşãČşãČŢãĆčãĆŕæŇĞåőŽãĂĆJSONå¡ćåijŔãĄgæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ |
| | logLevel | string | No | ãČ■ãĆŕãČñãČŹãČńãĂĆâĂŹnoneâĂŹ,âĂŹerrorâĂŹ,âĂŹwarningâĂŹ,âĂŹinfoâĂŹ,âĂŹdebu |

userIdäžěåd'ŰãĄőå■ŘèęAçt'ãäĄŇæIJłæŇĞåőŽãĄőåät'åŘĹãĂĄèl'šå¡ŞãĄõèęAçt'ãäĄŕéĂĄä£ąãĄŢãĆŇãĄ¿ãĄŻãĆŞãĂĆ

sraixãĄőåĞęçŘĘåő§èąŇæŹĆãĄńå■ŘèęAçt'ãäĄőäÿ■æ■čãĆŠæd'IJåĞžãĄŮãĄ§åät'åŘĹãĄńãĄŕãĂĄåĞęçŘĘä¿Ńåd'ŰãĄŇçŹžçŤ§ã
ïijĹä¿Ńåd'ŰçŹžçŤ§æŹĆãĄőå£IJç■ŤæŰĞãĄŕãĂĄ*properties* ãĄő `exception-response`
ãĄgæŇĞåőŽãĄgãĄ■ãĄ¿ãĄŹãĂĆïijL'

äžěäÿŃãĄőä¿ŃãĄŕãĂĄuserId, topicãĂĄdeleteVariableãĂĄmetadataãĂĄconfigãĆŠãĆůČŁãČłãĆłãĄgæŇĞåőŽãĄŮãĂĄlocaleãĂ
åřŽãĂĄ*bot_names* ãČŢãĆąãĆd'ãČńãĄgãĄŕãĂĄURLãĄĺapikeyãĄőãĄ£ãĆŚæŇĞåőŽãĄŮãĄ§åät'åŘĹãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
bot:
  someBot:
    url: https://somebot.com/bots/botId_1/ask
    apikey: test_apikey
```

```
<category>
    <pattern>botãĆźãČĘãČijãĆ£ãĆźãČĄãĆğãČČãĆŕ *</pattern>
    <template>
        <think>
            <json var="askSubagent.éČţä¿£çŢłåŔů">222-0033</json>
            <json var="config.logLevel">debug</json>
```

(continues on next page)

(continued from previous page)

```
        </think>
        <sraix botName="someBot">
            <star />
            <userId>someUser</userId>
            <topic>test</topic>
            <deleteVariable>true</deleteVariable>
            <metadata><json var="askSubagent"/></metadata>
            <config><json var="config"/></config>
        </sraix>
    </template>
</category>
```

Input: botãĆźãČĘãČijãĆ£ãĆźãČĄãĆğãČČãĆŕ éČţä¿£çŢłåŔůæd'IJçt'ć
Output: æŰřæĺłæţIJ

éĂĄä£ąåĘĚåőź

```
POST /bots/botId_1/ask HTTP/1.1
Host: somebot.com
Content-Type: application/json;charset=UTF-8
x-api-key: test_apikey

{
    "userId": "someUser",
    "topic": "test",
    "deleteVariable": true,
    "metadata": {"éČţä¿£çŢłåŔů": "222-0033"},
    "config": {"logLevel": "debug"},
    "utterance": "éČţä¿£çŢłåŔůæd'IJçt'ć"
}
```

### 13.4.2 bot_namesãĄğãČŚãČľãČąãČijãĆ£ãĆŠèĺ■åőŽãĄŮãĄ§åăťåŘĹãĄőéĂĄä£ą

bot_namesãČŢãĆąãĆd'ãČńãĄğäžěäÿŃãĄőåőŽç¿l'ãĆŠèąŇãĄčãĄ§åăťåŘĹãĄőéĂĄä£ąä¿ŃãĆŠçd'žãĄŮãĄ¿ãĄŹãĂĆ

```
bot:
  someBot:
    url: https://somebot.com/bots/botId_1/ask
    locale: ja-JP
    time: 2018-07-01T12:18:45+09:00
    topic: test
    deleteVariable: false
    config: '("loglevel": "info"}'
    metadata: Send Data
```

sraixãĄőèÍŸè£řãĄğå■ŘèęAçt'ăăĆŠæŇĞåőŽãĄŮãĄłãĄĎåăť'åŘĹãĂĄbot_namesãĄőåőŽç¿l'åĘĚåőźãĄğéĂĄä£ąãĆŠèąŇãĄĎãĄ¿ã

bot_namesãĄőåőŽç¿l'ãĆŠçĎąåŁźãĄńãĄŹãĆŃåăť'åŘĹãĂĄsraixãĄőèl'šå¡Şå■ŘèęAçt'ăãĄńçl'žæŰĞå■ŮãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹã

äžěäÿŃãĄőä¿ŃãĄğãĄŕãĂĄtimeãĂĄtopicãĆŠçĎąåŁźåŇŰãĄŮãĄęãĄĎãĄ¿ãĄŹïijĹdeleteVariableãĄŕâĂŹfalseâĂŹãĄőãĄ§ãĆĄéĂ

åřŽãĂĄuserIdãĄŕbot_namesãĄğãĄŕèĺ■åőŽãĄğãĄ■ãĄłãĄĎãĄ§ãĆĄãĂĄåŃåĹěãĄńæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ(çIJAçŢěæŹĆãĄń
__USER_USERID__ ãĄőåĂd'ãĆŠä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆ)

```
<category>
    <pattern>XXX</pattern>
    <template>
        <sraix botName="someBot">
            <userId>someUser</userId>
            <time></time>
            <topic></topic>
            ãĄŞãĆŞãĄńãĄąãĄŕ
        <sraix>
    </template>
</category>
```

éĂĄä£ąåĘĚåőź

```
POST /bots/botId_1/ask HTTP/1.1
Host: somebot.com
Content-Type: application/json;charset=UTF-8
x-api-key:

{
    "userId": "someUser",
    "locale": "ja-JP",
    "config": {"logLevel": "info"},
    "utterance": "ãĄŞãĆŞãĄńãĄąãĄŕ",
    "metadata": "Send Data"
}
```

sraixãĄğå■ŘèęAçť´ăăĆŠæŇĞåőŽãĄŮãĄ§åăť´åŘĹãĂĄbot_namesãĄőåőŽç¿l'ãĆĹãĆŁåĎłåĚĹãĄŮãĄęèĺ■åőŽãĄŢãĆŇãĄ¿ãĄŹãĂĆ

metadataãĄńãĄd'ãĄĎãĄęãĄŕãĂĄbot_namesåőŽç¿l'ãĄĺsraixãĄőå■ŘèęAçť´ăæŇĞåőŽãĄőäÿąæŰźãĄŇJSONå¡ćåijŔãĄőåăť´åŘĹãĄ

bot_namesåőŽç¿l'ãĄőmetadataãĄŇJSONå¡ćåijŔãĄğãĂĄäÿĂéČĺãĄőãĆ■ãČijãĆŠéŹd'åd'ŰãĄŮãĄęéĂĄä£ąãĄŮãĄ§ãĄĎåăť´åŘĹãĄ
çŻť´åĂd':âĂŹnullâĂŹ
ãĆŠèĺ■åőŽãĄŮãĄ¿ãĄŹãĂĆïijĹçňňäÿĂéŽŐåśd'ãĄőãĆ■ãČijãĄőãĄ£ãĄŇår¿èśąãĄĺãĄłãĆŁãĄ¿ãĄŹïijL'ãĂĆ

äžëäÿŇãĄőä¿ŇãĄğãĄŕãĂĄtopicãĄĺdeleteVariableãĆŠç¡őæŔŻãĄŮãĂĄmetadataãĆŠçůĺéŻĘãĄŮãĄ§åĂd'ãĆŠéĂĄä£ąãĄŮãĄęãĄĽ

åřŽãĂĄmetadataãĄńéŰćãĄŹãĆŃJSONçţŘåŘĹåĞęçŘĘä¿ŇãĆŠçd'žãĄŹãĄ§ãĆąãĂĄåL'■è£řãĄőbot_namesåőŽç¿l'ãĄőmetadataã

```
metadata: '{"key1":"value1", "key2": "value2", "key3": "value3"}'
```

```
<category>
    <pattern>XXX</pattern>
    <template>
        <sraix botName="someBot">
            <userId>someUser</userId>
            <topic>test</topic>
            <deleteVariable>true</deleteVariable>
            <metadata>{"key1": null, "key2": {"modify": "data"}, "key4": "added"}</
↪metadata>
            ãĄŞãĆŞãĄńãĄąãĄŕ
        </sraix>
    </template>
</category>
```

éĂĄä£ąåĘĚåőź

```
POST /bots/botId_1/ask HTTP/1.1
Host: somebot.com
Content-Type: application/json;charset=UTF-8
x-api-key:

{
    "userId": "someUser",
    "locale": "ja-JP",
    "time": "2018-07-01T12:18:45+09:00",
    "topic": "test",
    "deleteVariable": true,
    "config": {"logLevel": "info"},
    "utterance": "ãĄŞãĆŞãĄńãĄąãĄŕ",
    "metadata": {"key2":{"modify": "data"}, "key3": "value3", "key4": "added"}
}
```

### 13.4.3 åŔŮä£ą

åĚňéŰŃBotãĄŃãĆL'ãĄőåŔŮä£ąãĄŮãĄ§ãČIJãČĞãĆč(JSONå¡ćåijŔ)ãĄőäÿ■ãĄő
responseèęAçt'ããĄÑãĂĄsraixãĄőæĹżãĆŁåĂd'ãĄÍãĄŮãĄęèÍ■åőŽãĄŢãĆŃãĄ¿ãĄŹãĂĆ
åŔŮä£ąãĄŮãĄ§ãČIJãČĞãĆčãĄŃJSONå¡ćåijŔãĄğãĄłãĄĎåăt'åŘĹãĆĎãĂĄJSONåĘĚãĄń respon-
seèęAçt'ããĄÑçĎąãĄĎåăt'åŘĹãĄńãĄŕåĚňéŰŃBotãĄÍãĄőéĂŽä£ąãĄÍãĄŮãĄęçŢřåÿÿãĄÍãĄŮãĂĄåśđæĂğïijŽdefaultãĄÑæIJłèÍ■åĉ

äżěäÿÑãĄőãĆůãČŁãČłãĆłãĄğãĂĄ

```
<category>
     <pattern>*</pattern>
     <template>
        <sraix botName="someBot"><star /></sraix>
     </template>
</category>
```

åĚňéŰŃBotïijŽsomeBotãĄÑãĆL'ãĄőåŔŮä£ąãČĞãČijãĆ£ãĄÑ

```
HTTP/1.1 200 Ok
Content-Type: application/json;charset=UTF-8

{
    "response": "ãĄŞãĆŞãĄńãĄąãĄŕãĂĄäżŁæŮěãĆĆãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■ãĂĆ",
    "topic": "greeting"
}
```

ãĄăãĄčãĄ§åăt'åŘĹãĂĄçţŘæđIJãĄŕãĂĄ

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: ãĄŞãĆŞãĄńãĄąãĄŕãĂĄäżŁæŮěãĆĆãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■ãĂĆ

ãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

åĚňéŰŃBotãĄÑãĆL'ãĄőåŔŮä£ąåĘĚåőźãĄŕãĂĄãČ■ãČijãĆńãČńåd'L'æŢř(var)
__SUBAGENT_EXTBOT__.ãĆÍãĆd'ãČłãĆćãĆźåŘ■
ãĄńJSONå¡ćåijŔãĄğåśŢéŰÑãĄŢãĆÑãĂĄjsonãĆ£ãĆřãĄğåŔŰå¿ŮãĄŹãĆÑãĄŞãĄÍãĄÑãĄğãĄ■ãĄ¿ãĄŹãĂĆ

åřŽãĂĄèl'šå¡Şåd'L'æŢřãĄřcategoryå■Ÿä¡■ãĄńä£ÌæÑĄãĄŢãĆÑãĆÑãĄ§ãĆąĂĄçűŹçűŽåĹl'çŤÍãĄőåăt'åŘĹãĄŕãĂĄãĆřãČ■ãČijã

ãĄ¿ãĄ§ãĂĄcategoryåĘĕãĄğãĂĄèď´ĞæŢřåŻđãĂĄåĔňéŰŃBotãĆŠåŚijãĄşåĞžãĄŮãĄ§åăť´åŘĹãĂĄ__SUBAGENT_EXTBOT__
ãĄŕäýŁæŻÿãĄ■ãĄŢãĆŇãĆŃãĄ§ãĆĄãĂĄå£ĚèęĄãĄłãČňãĆźãČĺãČşãĆźåĘĚåőźãĄŕäżŰãĄőåď´L'æŢřãĄńäžčåĚěãĄŮãĄęãĄŘãĄă

```
<category>
     <pattern>*</pattern>
     <template>
        <think>
            <sraix botName="someBot"><star /></sraix>
        </think>
        <json var="__SUBAGENT_EXTBOT__.someBot" />
     </template>
</category>
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: {âĂIJresponseâĂİ: âĂIJãĄŞãĆŞãĄńãĄąãĄŕãĂĄäżŁæŮěãĆĆãĄĎãĄĎåď´l'ærŮãĄğãĄŹãĄ■ãĂĆâĂİ,
âĂIJtopicâĂİ: âĂIJgreetingâĂİ}ãĂĆ

getãĆ£ãĆřãĄğåŘŰå¿ŮãĄŹãĆŃåăť´åŘĹãĄńãĄŕãĂĄåď´L'æŢřåŘ■ãĄőãĄ£ãĆŠæŇĞåőŽãĄŹãĆŃå£ĚèęĄãĄŇãĄĆãĆŁãĂĄçňňäÿĂé
åL'■è£řãĄőjsonãĆ£ãĆřãĆŠgetãĆ£ãĆřãĄńåď´L'æŻť´ãĄŹãĆŃãĄĺãĂĄäžěäÿŃãĄőæğŸãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<get var="__SUBAGENT_EXTBOT__" />
```

Input: ãĄŞãĆŞãĄńãĄąãĄŕ
Output: {âĂIJsomeBotâĂİ: {âĂIJresponseâĂİ:
âĂIJãĄŞãĆŞãĄńãĄąãĄŕãĂĄäżŁæŮěãĆĆãĄĎãĄĎåď´l'ærŮãĄğãĄŹãĄ■ãĂĆâĂİ, âĂIJtopicâĂİ:
âĂIJgreetingâĂİ}}ãĂĆ

åĔňéŰŃBotãĄŃãĆL'ãĄőåŘŮä£ąãČIJãČĞãĆčãĄőåĘĚåőźãĄŕJSONãĄőãĄ§ãĆĄãĂĄ
*json* ãĆ£ãĆřãĄğJSONåĘĚéČĺãĄőãČŠãČľãČąãČijãĆ£ãĆŠåŘŰå¿ŮãĄğãĄ■ãĄ¿ãĄŹãĂĆ
ãĄ¿ãĄ§ãĂĄmetadata ãĄőåĘĚåőźãĄŃJSONãĄğãĄĆãĆŃåăť´åŘĹãĂĄJSONãĆ£ãĆřãĄğ metadata
åĘĚãĄőãČŠãČľãČąãČijãĆ£ãĆĆåŘŰå¿ŮãĄğãĄ■ãĄ¿ãĄŹãĂĆ

åĔňéŰŃBotãĄŃãĆL'ãĄőãČIJãČĞãĆčãĄőåĘĚåőźãĄŃãĂĄ

```
{
    "utterance": "ãĄŞãĆŞãĄńãĄąãĄŕ",
    "response": "ãĄŞãĆŞãĄńãĄąãĄŕãĂĄäżŁæŮěãĆĆãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■ãĂĆ",
    "topic": "greeting"
    "metadata":{"broadcaster":"OBS","title":"å■Ĺå¿ŇãĄőãČŃãČěãČijãĆź"}
}
```

ãĄőåăť´åŘĹãĂĄ

```
<json var="__SUBAGENT_EXTBOT__.someBot.response" />              <!--␣
↪åŘŰå¿ŮçţŘædIJïijž ãĄŞãĆŞãĄńãĄąãĄŕãĂĄäżŁæŮěãĆĆãĄĎãĄĎåd'l'ærŮãĄğãĄŹãĄ■ãĂĆ -->
<json var="__SUBAGENT_EXTBOT__.someBot.utterance" />             <!--␣
↪åŘŰå¿ŮçţŘædIJïijž ãĄŞãĆŞãĄńãĄąãĄŕ -->
<json var="__SUBAGENT_EXTBOT__.someBot.topic" />                 <!--␣
↪åŘŰå¿ŮçţŘædIJïijž greeting -->
<json var="__SUBAGENT_EXTBOT__.someBot.metadata" />              <!--␣
↪åŘŰå¿ŮçţŘædIJïijž {"broadcaster":"OBS","title":"å■Ĺå¿ŇãĄőãČŃãČěãČijãĆź"} -->
<json var="__SUBAGENT_EXTBOT__.someBot.metadata.broadcaster" />  <!--␣
↪åŘŰå¿ŮçţŘædIJïijž OBS -->
```

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```
<json var="__SUBAGENT_EXTBOT__.someBot.metadata.title" />        <!--␣
↪åŘŮå¿ŮçţŘædIJïijž å■Ĺå¿ÑãĄőãČŃãČěãČijãĆź -->
```

ãĄĺãĄŮãĄęãĂĄåĚňéŰŃbotãĄŃãĆL'ãĄőæĹżãĆŁåĂd'ãĂĄåŔŁãĄşãĂĄmetadataãĄőæČĚåăśãĆŠåŔŮå¿ŮãĄŹãĆŃãĄŞãĄĺãĄŃãA

ïijĹãČĞãČŘãČČãĆřæČĚåăśïijL'

ãĂĂåĚňéŰŃBotãĄŃãĆL'ãĄőåŔŮä£ąãČĞãČijãĆ£å¡ćåijŔãĄŃäÿ■æ■čãĄłåăt'åŘĹãĄńãĄŕéĂŽä£ąçŢřåÿÿãĄĺãĄŮãĄęæL'śãĄĐãA¿ã
ãĆĺãĆd'ãČłãĆćãĆźåŘ■
ãĄńæăijçţ'■ãĄŮãA¿ãĄŹãĂĆ

## 13.5 NLUéĂŽä£ąãĆd'ãČşãĆ£ãČŢãĆğãČijãĆź

sraixãĄőåśđæĂğãĄńãĂĄâĂInluâĂĪãĆŠæŇĞåőŽãĄŮãA§åăt'åŘĹãĂĄæĎŔåŽşèğčéĞĹãĆĺãČşãĆÿãČşïijĹNLUãĆţãČijãČŘïijL'ãĆŠ
åśđæĂğâĂInluâĂĪãĄőåĂd'ãĄńãĄŕãĂĄ*nlu_servers*
ãČŢãĆąãĆd'ãČńãĄğçŹżéŇšãĄŮãĄ§ãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĆŠæŇĞåőŽãĄŮãĂĄsraixãĄőåĘĚåőźãĆŠNLUãĆţãČijãČŘãĄÿãĄőål

ïijĹçŹżéŇšãĄŢãĆŃãĄęãĄĐãĄłãĄĐãĆĺãĆd'ãČłãĆćãĆźåŘ■ãĆŠæŇĞåőŽãĄŮãĄ§ãăt'åŘĹãĄńãĄŕãĂĄAIMLåśŢéŰŃæŹĆãĄńçŢřå
NLUãĆţãČijãČŘãĄŃãĆL'ãĄőæĹżãĄčãĄęãĄŔãĆŃåĘĚåőźãĄŕãĂĄ*æĎŔåŽşèğčéĞĹãĆĺãĆşãĆÿãČşäžŢæğŸ*
ãĄğèęŔåőŽãĄŢãĆŃãĄ§JSONå¡ćåijŔãĄğãĄĆãĆŁãĂĄsraixãĄőæĹżãĆŁåĂd'ãĄńãĂĄJSONå¡ćåijŔãĄőãČĞãČijãĆ£ãĆŠè£ŤãĄŮã

äžěéŹ■ãĄőèłňæŸŐãĄğãĄŕãĂĄNLUãĆţãČijãČŘãĄŃãĆL'äžěäÿŃãĄőJSONå¡ćåijŔãĄőãČĞãČijãĆ£ãĄŇè£Ťå■t'ãĄŢãĆŃãĄ§ä¿Ńã

```
{
    "intents": [
        {"intent": "transportation", "score": 0.9}
    ],
    "slots": [
        {"slot": "departure", "entity": "æİśäžň", "score": 0.85}
    ]
}
```

ãĄ¿ãĄ§ãĂĄnlu_serversãĄőåőŽç¿l'ãĄŕäžěäÿŃãĄőãĆĆãĄőä¡£çŤĺãĄŹãĆŃãĆĆãĄőãĄĺãĄŮãĄ¿ãĄŹãĂĆ

```
servers:
  someNlu:
    url: https://***.com/run
    apikey: test_key
```

### 13.5.1 éĂĄä£ą

NLUéĂŽä£ąãĆŠåĹl'çŤĺãĄŹãĆŃåăt'åŘĹãĂĄsraixãĄńãĄŕãČęãČijãĆűçŹžèl'śãĆŠèĺ■åőŽãĄŹãĆŃå■ŘèęAçt'ãăĄŕãĄłãĄŘãĂĄsraix

sraixãĄőåĘĚåőźãĄŃçĎąãĄĎïijĹåŘńãĆĂãĂĄçl'žæŰĞå■ŮïijL'ãĄőåăt'åŘĹãĂĄNLUãĄÿãĄőéĂŽä£ąãĄŕèąŇãĆŘãĆŃãĄŽãĂĄåśđ
äžěäÿŃãĄŕãĂĄNLUåŚijãĄşåĞžãĄŮæŹĆãĄőåŃŢä¡IJä¿ŃãĄğãĄŹãĂĆ

```
<category>
    <pattern>nluéĂŽä£ą *</pattern>
```

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```
    <template>
        <sraix nlu="someNlu"><star /></sraix>
     </template>
</category>
```

éĂAä£ąåĘĚåőź

```
POST /run HTTP/1.1
Host: someNlu.com
Content-Type: application/json;charset=UTF-8
x-api-key: test_key

{
    "utterance": "ãĄŁåĞžãĄŃãĄŚãĄź"
}
```

Input: nluéĂŽä£ą ãĄŁåĞžãĄŃãĄŚãĄź
Output: {âĂIJintentsâĂİ: [{âĂIJintentâĂİ: âĂIJtransportationâĂİ, âĂIJscoreâĂİ: 0.9 }], âĂIJslotsâĂİ: [{âĂIJslotâĂİ: âĂIJdepartureâĂİ, âĂIJentityâĂİ: âĂIJæİśäžñâĂİ, âĂIJscoreâĂİ: 0.85}]}ãĂĆ

### 13.5.2 åŔŮä£ą

éĂAä£ąæŹĆãĄőä¿ŃãĄğçd'žãĄŮãĄ§éĂŽãĆŁãĂĄNLUãĆţãČijãČŘãĄŃãĆĽåŔŮä£ąãĄŮãĄ§ãČIJãČĞãĆč(JSONå¡ćåijŔ)ãĄŃãĂ

åŔŮä£ąãĄŮãĄ§ãČIJãČĞãĆčãĄŃJSONå¡ćåijŔãĄğãĄłãĄĎåăt'åŘĹãĄfNLUãĄĺãĄőéĂŽä£ąãĄĺãĄŮãĄęçŢřåÿÿãĄĺãĄŮãĂĄåśđæĂ

NLUãĄŃãĆĽãĄőåŔŮä£ąåĘĚåőźãĄŕãĂĄãČ■ãČijãĆńãČńåd'Ľ'æŢř(var)
__SUBAGENT_NLU__.ãĆĺãĆd'ãČłãĆćãĆźåŘ■
ãĄńJSONå¡ćåijŔãĄğåśŢéŮŃãĄŢãĆŃãĂĄjsonãĆ£ãĆřãĄğåŔŮå¿ŮãĄŹãĆŃãĄŞãĄĺãĄŃãĄğãĄ■ãĄ¿ãĄŹãĂĆ

åřŽãĂĄèl'šå¡Şåd'Ľ'æŢřãĄŕcategoryå■Ÿä¡■ãĄńä£İæŇĄãĄŢãĆŃãĆŃãĄ§ãĆĄãĂĄçűŹçűŽåĹl'çŤĺãĄőåăt'åŘĹãĄŕãĂĄãĆřãČ■ãČijã

ãĄ¿ãĄ§ãĂĄcategoryåĘĚãĄğãĂĄèd'ĞæŢřåŻđãĂĄåĚňéŰŃBotãĆŠåŚijãĄşåĞžãĄŮãĄ§åăt'åŘĹãĂĄ__SUBAGENT_NLU__
ãĄŕäÿŁæŻÿãĄ■ãĄŢãĆŃãĆŃãĄ§ãĆĄãĂĄå£ĚèęĄãĄłãČňãĆźãČĺãČşãĆźåĘĚåőźãĄŕäžŰãĄőåd'Ľ'æŢřãĄńäžčåĚĚãĄŮãĄęãĄŔãĄăã

```
<category>
     <pattern>*</pattern>
     <template>
        <think>
            <sraix nlu="someNlu"><star /></sraix>
        </think>
        <json var="__SUBAGENT_NLU__.someNlu" />
     </template>
</category>
```

Input: ãĄŁåĞžãĄŃãĄŚãĄź
Output: {âĂIJintentsâĂİ: [{âĂIJintentâĂİ: âĂIJtransportationâĂİ, âĂIJscoreâĂİ: 0.9 }], âĂIJslotsâĂİ: [{âĂIJslotâĂİ: âĂIJdepartureâĂİ, âĂIJentityâĂİ: âĂIJæİśäžñâĂİ, âĂIJscoreâĂİ: 0.85}]}ãĂĆ

getãĆ£ãĆřãĄgåŔŰå¿ŮãĄŹãĆŃåät'åŘĹãĄńãĄŕãĂĄåd'L'æŢřåŘ■ãĄőãĄ£ãĆŠæŇĞåőŽãĄŹãĆŃå£ËèęĄãĄŇãĄĆãĆŁãĂĄçňñäÿĂé
åL'■è£řãĄőjsonãĆ£ãĆřãĆŠgetãĆ£ãĆřãĄńåd'L'æŻt'ãĄŹãĆŃãĄĺãĂĄäžëäÿŃãĄőægŸãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<get var="__SUBAGENT_NLU__" />
```

Input: ãĄŁåĞžãĄŇãĄŠãĄŕ
Output: {âĂIJsomeNluâĂİ: {âĂIJintentsâĂİ: [{âĂIJintentâĂİ: âĂIJtransportationâĂİ, âĂIJscoreâĂİ: 0.9 }],
âĂIJslotsâĂİ: [{âĂIJslotâĂİ: âĂIJdepartureâĂİ, âĂIJentityâĂİ: âĂIJæĺśäžňâĂİ, âĂIJscoreâĂİ: 0.85}]}}ãĂĆ

NLUãĄŇãĆL'ãĄőåŔŮä£ąãČIJãČĞãĆčãĄőåĘĚåőźãĄŕJSONãĄőãĄ§ãĆĄãĂĄ *json*
ãĆ£ãĆřãĄgJSONåĘĚéČĺãĄőãČŠãČľãČąãČijãĆ£ãĆŠåŔŰå¿ŮãĄgãĄ■ãĄ¿ãĄŹãĂĆ

```
<json var="__SUBAGENT_NLU__.someNlu.intents" />            <!-- åŔŰå¿ŮçţŘædIJïijŽ␣
↪[{"intent": "transportation", "score": 0.9}] -->
<json var="__SUBAGENT_NLU__.someNlu.intents" index="0" />   <!-- åŔŰå¿ŮçţŘædIJïijŽ
↪{"intent": "transportation", "score": 0.9} -->
<json var="__SUBAGENT_NLU__.someNlu.slots" />               <!-- åŔŰå¿ŮçţŘædIJïijŽ␣
↪[{"slot": "departure", "entity": "æĺśäžň", "score": 0.85}] -->
<json var="__SUBAGENT_NLU__.someNlu.slots" index="0" />     <!-- åŔŰå¿ŮçţŘædIJïijŽ
↪{"slot": "departure", "entity": "æĺśäžň", "score": 0.85} -->
```

ïijĹãČĞãČŘãČČãĆřæČĚåăśïijL'

ãĂĂNLUãĄŇãĆL'ãĄőåŔŮä£ąãČĞãČijãĆ£å¡ćåijŔãĄŇäÿ■æ■čãĄłåät'åŘĹãĄńãĄŕéĂŽä£ąçŢřåÿÿãĄĺãĄŮãĄęæL'śãĄĐãĄ¿ãĄŹãĄ
ãĆĺãĆd'ãČłãĆćãĆźåŘ■
ãĄńæäijçt'■ãĄŮãĄ¿ãĄŹãĂĆ

### 13.5.3 nluintent / nluslotãĄgãĄőãČĞãČijãĆ£åŔŰå¿Ů

NLUãĆţãČijãČŘãĄŇãĆL'ãĄőåŔŮä£ąãĄŮãĄ§ãČĞãČijãĆ£ãĆŠãĂĄtemplateèęĄçt'ăãĄő *nluintent*
ãĂĄ*nluslot* ãĆŠåĽ'çŤĺãĄŮãĄęãĂĄ ãČđãČČãČĄåĞęçŘĘãĄgåŔŰå¿ŮãĄŮãĄ§NLUãČĞãČijãĆ£ïijŽ
__SYSTEM_NLUDATA__ ãĄńår¿ãĄŹãĆŃåĞęçŘĘãĄĺåŘŇægŸãĄőæŞ■ä¡IJãĆŠèąŇãĄĘãĄŞãĄĺãĄŇãĄgãĄ■ãĄ¿ãĄŹãĂĆ

äžëäÿŃãĄńãĂĄNLUãĆţãČijãČŘãĄŇãĆL'åŔŰä£ąãĄŮãĄ§ãČĞãČijãĆ£ãĄńår¿ãĄŮãĄęãĂĄnluintentãĄgåĘĚåőźãĆŠåŔŰå¿ŮãĄŹã

```
<nluintent name="*" item="count" target="__SUBAGENT_NLU__.someNlu" />              ␣
↪    <!-- åŔŰå¿ŮçţŘædIJïijŽ 1 -->
<nluintent name="*" item="intent" index="0" target="__SUBAGENT_NLU__.someNlu" />   ␣
↪    <!-- åŔŰå¿ŮçţŘædIJïijŽ transportation -->
<nluintent name="transportation" item="score" target="__SUBAGENT_NLU__.someNlu" />␣
↪    <!-- åŔŰå¿ŮçţŘædIJïijŽ 0.9 -->
```

åŘŇægŸãĄńãĂĄnluslotãĄgåĘĚåőźãĆŠåŔŰå¿ŮãĄŹãĆŃä¿ŃãĄŕäžëäÿŃãĄőægŸãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<nluslot name="*" item="count" target="__SUBAGENT_NLU__.someNlu" />               ␣
↪ <!-- åŔŰå¿ŮçţŘædIJïijŽ 1 -->
<nluslot name="*" item="slot" index="0" target="__SUBAGENT_NLU__.someNlu" />      ␣
↪ <!-- åŔŰå¿ŮçţŘædIJïijŽ departure -->
<nluslot name="departure" item="entity" target="__SUBAGENT_NLU__.someNlu" />      ␣
↪ <!-- åŔŰå¿ŮçţŘædIJïijŽ æĺśäžň -->
```

åřŽãĂĄ *nluintent* ãĂĄ*nluslot* ãĄgãĂĄJSONåđŃãĄőåd'L'æŢřåŘ■ïijĹåŇžåĹĞãĆŁæŰĞå■ŮïijŽâĂŹ.âĂŹ
ãĆŠåĽ'çŤĺïijL'ãĆŠæŇĞåőŽãĄgãĄ■ãĆŃãĄőãĄŕãĂĄ ãČ■ãČijãĆńãČńåd'L'æŢř(var) ãĄő
__SUBAGENT_NLU__.xxx ãĄőå¡ćåijŔãĄőåät'åŘĹãĄőãĄ£ãĄgãĄŹãĂĆ

## 13.6 ãĆńãĆźãĆ£ãČååď'ŰéČĺãĆţãČijãČŞãĆźåő§èčĚ

åśđæĂğãĄńãĂĄâĂİserviceâĂİãĆŠæŇĞåőŽãĄŮãĄ§åăť'åŘĹãĂĄãĆńãĆźãĆ£ãČååő§èčĚãĆŠèąŇãĄłãĄčãĄ§åĞęçŘĘãĆŠåĹl'çŤĺãĄ
ãĆńãĆźãĆ£ãČååď'ŰéČĺãĆţãČijãČŞãĆźãĄŕãĂĄåĹl'çŤĺãĄŹãĆŃãĆţãČijãČŞãĆź(SubAgent)æŕÕãĄńåő§èčĚãĄŇå£ĚèęĄãĄłåŚijãĄ

```
programy.services.service.Service
```

åĞęçŘĘãĆŕãČl'ãĆźãĄőåő§èčĚãĄğãĄŕãĂĄå§žåžŢãĆŕãČl'ãĆźãĆŠçűŹæL'£ãĄŮãĄ§ãĆŕãČl'ãĆźãĆŠä¡IJæĹŘãĄŮãĂĄask_question
åď'ŰéČĺãĆţãČijãČŞãĆźãĄĺãĄőéĂčæŘžãĆŠèąŇãĄĘåăť'åŘĹãĂĄask_question()åĘĚãĄńãĂĄRESTéĂŽä£qæl'§èČ¡ãĆŠåő§èčĚãĄŹ

```
from programy.services.service import Service

class StatusCheck(Service):
   __metaclass__ = ABCMeta

   def __init__(self, config: BrainServiceConfiguration):
       self._config = config

   @property
   def configuration(self):
       return self._config

   def load_additional_config(self, service_config):
       pass

   @abstractmethod
   def def ask_question(self, client_context, question: str):
       return "OK"
```

æňąãĄńãĂĄBrainãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄő *services* ãĄńãĂĄæňąãĄőãĆĹãĄĘãĄńãĆńãĆźãĆ£ãČååď'ŰéČĺãĆţãČ

```
myService:
    classname: programy.services.myService.StatusCheck
    url: https://myService.com/api/statuscheck
```

AIMLãĄğåĹl'çŤĺãĄŹãĆŃåăť'åŘĹãĄńãĄŕãĂĄäžëäÿŇãĄőä¿ŃãĄőãĆĹãĄĘãĄńãĂĄsraixãĄőåśđæĂğâĂİserviceâĂİãĄńãĂĄãĆńãĆ
sraixãĄőãĆńãĆźãĆ£ãČååď'ŰéČĺãĆţãČijãČŞãĆźãĄőåĞęçŘĘãĄĺãĄŮãĄęãĄŕãĂĄãĆńãĆźãĆ£ãČååď'ŰéČĺãĆţãČijãČŞãĆźãĄőãĆĺãČ
éŰćæŢřijŽask_question()ãĄőæĹžãĆŁåĂď'ãĄŇãĂĄsraixãĄőçţŘædIJãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<category>
    <pattern>ãĆźãČĘãČijãĆ£ãĆźãČĄãĆğãČČãĆŕ *</pattern>
    <template>
        <star />ãĄőãĆźãČĘãČijãĆ£ãĆźãĄŕãĂĄ<sraix service="myService"><star /></
↪sraix>ãĄğãĄŹãĂĆ
    </template>
</category>
```

Input: ãĆźãČĘãČijãĆ£ãĆźãČĄãĆğãČČãĆŕ ãĆńãĆźãĆ£ãČă
Output: ãĆńãĆźãĆ£ãČăãĄőãĆźãČĘãČijãĆ£ãĆźãĄŕOKãĄğãĄŹãĂĆ

### 13.6.1 ãĆńãĆźãĆ£ãČååď'ŰéČĺãĆţãČijãČŞãĆźãĄÿãĄőåijŢæŢřãĄŁãĆĹãĄşæĹžãĆŁåĂď

#### åijŢæŢř

sraix service=âĂİmyServiceâĂİãĄŇãĆńãĆźãĆ£ãČååď'ŰéČĺãĆţãČijãČŞãĆźåŚijãĄşåĞžãĄŮãĄğãĂĄsraixèęAçt'ăåĘĚãĆŠåijŢæŢřã
åijŢæŢřãĄőåőŽç¿l'ãĄŕåĂŃãĂĚãĄőãĆńãĆźãĆ£ãČååď'ŰéČĺãĆţãČijãČŞãĆźãĄőåijŢæŢřI/FãĄńä¿Ìå■ŸãĄŮãĄęãĄŁãĆŁãĂĄåĂŃã

äžëäÿÑãĄőä¿ÑãĄŕmyServiceãĄÍãĄĐãĄĘåď ŰéČÍãĆţãČijãČŞãĆźãĆŠåĹľçŤÍãĄŹãĆŃä¿ÑãĄğãĂĄåijŢæŢř4ãĄď ãĆŠçľžçŹ¡åŇžåĹ

åřŽãĂĄæŮěæIJñèłđãĄőåäť åŘĹãĂĄsraixèęĄçť ăãĄőåĘĚåőźãĄŇåĚÍãĄęçţŘåŘĹãĄŢãĆŃãĄęçľžçŹ¡åŇžåĹĞãĆŁãĄńãĄłãĆL'ãĄłã
*spaceèęĄçť ă* ãĆŠæŇĞåőŽãĄŮãĄęãĄĐãĄ¿ãĄŹãĂĆ

```
<aiml>
    <!-- sub agent execute -->
    <category>
        <pattern>subagent *</pattern>
        <template>
            <set var="text">
                <sraix service="myService">
                    <star />
                    <space />
                    <json var="__USER_METADATA__.arg1" />
                    <space />
                    <json var="__USER_METADATA__.arg2" />
                    <space />
                    <json var="__USER_METADATA__.arg3" />
                </sraix>
            </set>
            <think>
                <set name="departure"><json var="__SUBAGENT__.myService.
↪transportation.station.departure" /></set>
                <set name="arrival"><json var="__SUBAGENT__.myService.
↪transportation.station.arrival" /></set>
            </think>
            <get name="departure">ãĄŃãĆL'<get name="arrival">
↪ãĄ¿ãĄğãĆŠæd'IJçt'ćãĄŮãĄ¿ãĄŹãĂĆ
        </template>
    </category>
</aiml>
```

### æĹżãĆŁåĂď

ãĆńãĆźãĆ£ãČăåď ŰéČÍãĆţãČijãČŞãĆźãĄőæĹżãĆŁåĂď ãĂĄãĄď ãĄ¿ãĆŁãĂĄåĂŃåĹěåő§èčĚãĄőask_question()éŰćæŢřãĄőæĹż
__SUBAGENT__.ãĆţãČijãČŞãĆźåŘ■ ãĄńåśŢéŰÑãĄŢãĆŃãĄ¿ãĄŹãĂĆ

èľšå¡Şåď L'æŢřãĄŕcategoryå■Ÿä¡■ãĄńä£ÍæŇĄãĄŢãĆŃãĆŃãĄ§ãĆĄãĂĄçűŹçűŽåĹľçŤÍãĄőåäť åŘĹãĄŕãĂĄãĆřãČ■ãČijãČŘãČńå

ãĄ¿ãĄ§ãĂĄcategoryåĘĚãĄğãĂĄèď ĞæŢřåŻđãĂĄãĆńãĆźãĆ£ãČăåď ŰéČÍãĆţãČijãČŞãĆźãĆŠåŚijãĄşåĞžãĄŮãĄ§åäť åŘĹãĂĄ__
ãĄŕäÿŁæŻÿãĄ■ãĄŢãĆŃãĆŃãĄ§ãĆĄãĂĄå£ĚèęĄãĄłãČñãĆźãČÍãČşãĆźåĘĚåőźãĄŕäżŰãĄőåď L'æŢřãĄńäžčåĚěãĄŮãĄęãĄŔãĄăã

åď L'æŢřãĄńæăijçť ■ãĄŢãĆŃãĆŃå¡ćåijŔãĄŕãĂĄãČęãĆ■ãĆźãČĹãĂĄãĄ¿ãĄ§ãĄŕãĂĄJSONå¡ćåijŔãĄÍãĄłãĆŁãĂĄãĆńãĆźãĆ£ãČ

äžëäÿÑãĄőä¿ÑãĄğãĄŕãĂĄmyServiceãĄńåŕ¿ãĄŹãĆŃåĞęçŘĘãĄőæĹżãĆŁåĂď ãĄŇ __SUBAGENT__.
myService ãĄńåśŢéŰÑãĄŢãĆŃãĄęãĄĐãĄ¿ãĄŹãĄŇãĂĄãĄÍãĄőåĘĚåőźãĄŇJSONå¡ćåijŔãĄğãĂĄ

```
{
    "transportation": {
        "station": {
            "departure" :"æÍśäžň",
            "arrival" : "äžňéČ¡"
        },
        "time": {
```

(continues on next page)

(continued from previous page)

```
            "departure": "2018/11/1 11:00",
            "arrival": "2018/11/1 13:30"
        },
        "facility": ["éź£èŃŚåŕž", "æÿĚæřt’åŕž", "äijŔèęŃçÍšè■ůåd’ğçd’¿"]
    }
}
```

ãĄőåăť’åŘĹãĂĄ

```
<json var="__SUBAGENT__.myService.transportation.station.departure" />
<json var="__SUBAGENT__.myService.transportation.station.arrival" />
```

ãĄÍãĄŮãĄęãĂĄjsonãĆ£ãĆřãĆŠåĹľçŤÍãĄŮãĄęãĂĄãČIJãČĞãĆčãĄőåĘĚéČÍæČĚåăśãĆŠåŘŰå¿ŮãĄŹãĆŃãĄŞãĄÍãĄŇãĄğãĄ■ãA

ãĆńãĆźãĆ£ãČăåď’ŰéČÍãĆţãČijãČŞãĆźãĄőæĹżãĆŁåĂď’ãĄŇãČĘãĆ■ãĆźãČĹãĄőåăť’åŘĹãĂĄ__SUBAGENT__.
myService
ãĆŠåď’L’æŢřåŘ■ãĄÍãĄŮãĄęãĂĄgetãĆ£ãĆřãĄğåŘŰå¿ŮãĄŹãĆŃãĄŞãĄÍãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

âĂżsraixãĄőçţŘæđIJãČĞãČijãĆ£ãĄőåĞęçŘĘæŰźåijŔãĆŠçţśäÿĂãĄŹãĆŃèęşçĆźãĄŃãĆL’ãĂĄãĆńãĆźãĆ£ãČăåő§èčĚãĄńãĄŁãĄ

```
<get var="__SUBAGENT__.myService />
```

éŰćéĂčéăĚçŻő: *metadata*, *åŕ¿èl’śAPI*, *JSON*

CHAPTER 14

# Extensions

## 14.1 æęĆèęĄ

ExtensionsãĄĺãĄŕãĂĄæŃąåijţæľ§èČ¡ãĆŠåĂŃåĹěãĄńåő§èčĚãĄŹãĆŃãĄ§ãĆĄãĄőæľ§èČ¡ãĄğãĂĄtemplateãĄőextensionèęĄçţ'ă

## 14.2 ãĆńãĆźãĆ£ãČăăĆĺãĆŕãĆźãČĘãČşãĆůãČğãČşãĄőåő§èčĚ

ãĆńãĆźãĆ£ãČăăĆĺãĆŕãĆźãČĘãČşãĆůãČğãČşãĄőåő§èčĚãĆŕãČľãĆźãĄğãĄŕãĂĄäżëäÿŃãĄőå§žåžŢãĆŕãČľãĆźãĆŠçűŹæĽ£ãĄŹã

```
programy.extensions.base.Extension
```

æňąãĄńåő§èčĚä¿ŃãĆŠçd'žãĄŮãĄ¿ãĄŹãĂĆ
ãĆĺãĆŕãĆźãČĘãČşãĆůãČğãČşãĄőåĞęçŘĘãĆŠåő§èąŇãĄŹãĆŃãČąãĆ¡ãČČãČĽãĄŕ `execute()`
ãĄğãĂĄãĆĺãĆŕãĆźãČĘãČşãĆůãČğãČşãĄőãĆŕãČľãĆźãĄńãĄŕãĂĄ`context` ãĄĺ `data`
ãĆŠåijŢæŢřãĄĺãĄŮãĄ§executeãČąãĆ¡ãČČãČĽãĆŠåő§èčĚãĄŮãĄ¿ãĄŹãĂĆ
`context`
ãĄńãĄŕãĂĄãĆŕãČľãĆd'ãĆćãČşãČĹãĊżãČęãČijãĆűæŕÕãĄőçőąçŘĘæČĚåăšãĆŠæăijçţ'■ãĄŮãĄ§ClientContextãĆŕãČľãĆźïijĹprog
`data` ãĄńãĄŕãĂĄextensionãĆ£ãĆŕãĄőåĘĚåőźãĄŇæŰĞå■ŮåĹŮãĄğèĺ■åőŽãĄŢãĆŃãĄ¿ãĄŹãĂĆ

äžëäÿŃãĄŕãĂĄæŢřåĂd'æijŤçőŮãĆŠèąŇãĄĘãĆńãĆźãĆ£ãČăăĆĺãĆŕãĆźãČĘãČşãĆůãČğãČşãĄőä¿ŃãĄğãĄŹãĂĆ

```
# programy/extensions/calc.py

from programy.extensions.base import Extension

class CalcExtension(Extension):

    def execute(self, context, data):
        try:
            result = str(eval(data))
            return result
```

(continues on next page)

(continued from previous page)

```
        except Exception:
            return None
```

AIMLãĄğãĆńãĆźãĆ£ãČäãĆĺãĆřãĆźãČĘãČşãĆůãČğãČşãĆŠåĹľçŤĺãĄŹãĆŃåăť åŘĹãĂĄäžëäÿŃãĄőæğŸãĄńextensionèęAçť ăăĆŠ

AIMLãĄőextensionèęAçť ăăĄőåĞęçŘĘãĄĺãĄŮãĄęãĄŕãĂĄpathåśđæĂğãĄğæŇĞåőŽãĄŢãĆŃãĄ§ãĆřãČľãĆźãĆŠãČ■ãČijãČL'ãĄ
ãĆŠåŚijãĄşåĞžãĄŮãĄ¿ãĄŹãĂĆ
execute() ãĄőæĹżãĆŁåĂd'ãĄŇãĂĄexten-
sionèęAçť ăăĄőçţŘædIJãĄńãĄłãĆŁãĄ¿ãĄŹãĄõãĄğãĂĄæĹżãĆŁåĂd'ãĄńãĄŕæŰĞå■ŮåĹŮãĆŠèĺ■åőŽãĄŹãĆŃå£Ëèę ĄãĄŇãĄĆã

ãĄłãĄŁãĂĄpathåśđæĂğãĄğæŇĞåőŽãĄŢãĆŃãĄ§ãĆřãČľãĆźãĄõãČ■ãČijãČL'åd'śæŢŮãĆĎãĂĄexecute()
åĞęçŘĘãĄńçŢřåÿÿãĄŇãĄĆãĆŃåăť åŘĹãĂĄår¿èl'śãĆĺãČşãĆÿãČşãĄŕåĞęçŘĘäÿ■ãĄõä¿Ńåd'ŰçŹžçŢ§ãĄĺãĄŮãĄęæL'śãĄĎãĄ¿ãĄ
(å£IJç■ŤæŰĞåőŽç¿l'ãĄő *exception_response* ãĄŇæŇĞåőŽãĄŢãĄęãĄĎãĆŃåăť åŘĹãĂĄæŇĞåőŽãĄőæŰĞå■ŮåĹŮãĄŇè£ŤãĆŁã

```
<category>
    <pattern>
        æijŤçőŮ *
    </pattern>
    <template>
         çţŘædIJãĄŕãĂĄ
         <extension path="programy.extensions.calc.CalcExtension">
             <star />
         </extension>
         ãĄğãĄŹãĂĆ
    </template>
</category>
```

Input: æijŤçőŮ 1 + 2 * 3 / 4 - 5
Output: çţŘædIJãĄŕãĂĄ-2.5ãĄğãĄŹãĂĆ

ãĄŞãĄőåăť åŘĹãĂĄexecute() ãĄődataåijŢæŢřãĄńãĄŕ <star /> ãĄőåśŢéŰŃæŰĞå■ŮåĹŮãĄĺãĄŮãĄęãĂĄâĂŹ1
+ 2 * 3 / 4 - 5âĂŹ ãĄŇåijŢãĄ■æÿąãĄŢãĆŃãĄ¿ãĄŹãĂĆ

## 14.3 ãĆůãČŁãČłãĆłåd'L'æŢřãĄőåĹľçŤĺ

ãĆńãĆźãĆ£ãČäãĆĺãĆřãĆźãČĘãČşãĆůãČğãČşåő§èąŇæŹĆãĄńåijŢæŢřãĄĺãĄŮãĄęéĂŽç§ëãĄŢãĆŃãĆŃãĆřãČľãĆd'ãĆćãČşãČĹãČ

åŘĎåd'L'æŢřãĄŕår¿èl'śåĘĚåőźãĄńãĆĹãĆŁåd'L'åŃŢãĄŹãĆŃçĆžãĂĄãĆřãČľãĆd'ãĆćãČşãČĹãČżãČęãČijãĆűæŕŐãĄőår¿èl'śæČĚ

```
def execute(self, context, data):

    conversation = context.bot.get_conversation(context)
```

år¿èl'śæČĚåăśãĆŠåŔŰå¿ŮãĄŹãĆŃãĄŞãĄĺãĄğãĂĄåd'L'æŢřåĘĚåőźãĄőåŔĆçĚğãĆĎãĂĄèĺ■åőŽãĆŠèąŇãĄĘãĄŞãĄĺãĄŇåŔŕèČ¡ã
*get* ãĄőèÍŸè£ŕãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

ãĄłãĄŁãĂĄåŘĎåd'L'æŢřãĄőåĂd'ãĄŕæŰĞå■ŮåĹŮå¡ćåijŔãĄğæăijçţ'■ãĄŢãĆŃãĄęãĄĎãĄ¿ãĄŹãĂĆJSONå¡ćåijŔãĄőãČĞãČijãĆ

- åŔŰå¿ŮæŹĆïijŽ <JSONåd'L'æŢřïijŽè¿đæŻÿåđŃ> = json.loads(<ãĆůãČŁãČłãĆłåd'L'æŢř:æŰĞå■ŮåĹŮåđŃ>)

- æăijçť■æŹĆïijŽ <ãĆůãČŁãČłãĆłåď'L'æŢř:æŰĞå■ŮåĹŮåđŃ> = json.dumps(<JSONåď'L'æŢřïijŽè¿đæŻÿåđŃ>, ensure_ascii=False)

### 14.3.1 çűŹçűŽä£ÌæŇĄãĆřãČ■ãČijãČŘãČńåď'L'æŢř(name)ãĄőåĹľçŤÍ

nameåď'L'æŢřãĄŕãĂĄåŕ¿èľśæČĚåšśåĘĚãĄő properties ãĄńè¿đæŻÿãČĞãČijãĆ£ãĄÍãĄŮãĄęæăijçť■ãĄŢãĆŇãĄęãĄĐãĄ¿ãĄ

```
name_list = conversation.properties                    #␣
↪åď'L'æŢřïijĹè¿đæŻÿïijL'ãČłãĆźãČĹãĄőåŔŰå¿Ů
get_value = conversation.property('åď'L'æŢřåŘ■')              #␣
↪äżżæĎŔåď'L'æŢřåĂd'ãĄőåŔŰå¿Ů
set_value = conversation.set_property('åď'L'æŢřåŘ■', 'åĂd'')   #␣
↪äżżæĎŔåď'L'æŢřãĄőè£¡åŁããČżåď'L'æŻt'
remove = conversation.set_property('åď'L'æŢřåŘ■', âĂŹâĂŹ)        #␣
↪äżżæĎŔåď'L'æŢřãĄőåL'ŁéŹd'ïijĹåĂd'ãĄńçl'žæŰĞå■ŮãĆŠæŇĞåőŽïijL'
```

### 14.3.2 æŇĞåőŽçŕĎåŽšä£ÌæŇĄãĆřãČ■ãČijãČŘãČńåď'L'æŢř(data)ãĄőåĹľçŤÍ

dataåď'L'æŢřãĄŕãĂĄåŕ¿èľśæČĚåšśåĘĚãĄő data_properties ãĄńè¿đæŻÿãČĞãČijãĆ£ãĄÍãĄŮãĄęæăijçť■ãĄŢãĆŇãĄęãĄĐã

```
data_list = conversation.data_properties                    #␣
↪åď'L'æŢřïijĹè¿đæŻÿïijL'ãČłãĆźãČĹãĄőåŔŰå¿Ů
get_value = conversation.data_property('åď'L'æŢřåŘ■')              #␣
↪äżżæĎŔåď'L'æŢřåĂd'ãĄőåŔŰå¿Ů
set_value = conversation.set_data_property('åď'L'æŢřåŘ■', 'åĂd'')   #␣
↪äżżæĎŔåď'L'æŢřãĄőè£¡åŁããČżåď'L'æŻt'
remove = conversation.set_data_property('åď'L'æŢřåŘ■', âĂŹâĂŹ)        #␣
↪äżżæĎŔåď'L'æŢřãĄőåL'ŁéŹd'ïijĹåĂd'ãĄńçl'žæŰĞå■ŮãĆŠæŇĞåőŽïijL'
```

### 14.3.3 ãČ■ãČijãĆńãČńåď'L'æŢř(var)ãĄőåĹľçŤÍ

varåď'L'æŢřãĄŕ category内■Ÿä¡■ãĄőåĞęçŘĘåĘĚãĄğãĄőãĄ£æIJL'åŁźãĄłåď'L'æŢřãĄőãĄ§ãĆĄãĂĄåŕ¿èľśæČĚåšśãĄńãĄŁãĄĐãĄ _properties ãĄńè¿đæŻÿãČĞãČijãĆ£ãĄÍãĄŮãĄęæăijçť■ãĄŢãĆŇãĄęãĄĐãĄ¿ãĄŹãĂĆ æŞ■ä¡IJãĆŠèąŇãĄĘãĄ§ãĆĄãĄńãĄŕãĂĄäžëäÿŇãĄőæğŸãĄńãĂĄçŔ¿åIJĺåĞęçŘĘäÿ■ãĄő question ãĆŕãČl'ãĆźãĆŠåŔŰå¿ŮãĄŮãĄ§äÿŁãĄğæŞ■ä¡IJéŰćæŢřãĆŠä¡£çŤÍãĄŮãĄ¿ãĄŹãĂĆ

```
question = conversation.current_question()

var_list = question._properties                    #␣
↪åď'L'æŢřïijĹè¿đæŻÿïijL'ãČłãĆźãČĹãĄőåŔŰå¿Ů
get_value = question.property('åď'L'æŢřåŘ■')              #␣
↪äżżæĎŔåď'L'æŢřåĂd'ãĄőåŔŰå¿Ů
set_value = question.set_property('åď'L'æŢřåŘ■', 'åĂd'')   #␣
↪äżżæĎŔåď'L'æŢřãĄőè£¡åŁããČżåď'L'æŻt'
remove = question.set_property('åď'L'æŢřåŘ■', âĂŹâĂŹ)        #␣
↪äżżæĎŔåď'L'æŢřãĄőåL'ŁéŹd'ïijĹåĂd'ãĄńçl'žæŰĞå■ŮãĆŠæŇĞåőŽïijL'
```

### 14.3.4 botåŽžæIJL'ãČŮãČ■ãČŚãČĘãĆčãĄőåŔŰå¿Ů

botåŽžæIJL'ãĄőãČŮãČ■ãČŚãČĘãĆčïijĹåŽžåőŽåĂd'ïijL'ãĄőåŔŰå¿ŮãĄńãĄŕãĂĄäžëäÿŇãĄőæŞ■ä¡IJéŰćæŢřãĆŠä¡£çŤÍãĄŮãĄ¿ãĄ

```
bot_property = conversation.bot.brain.properties.property('ãČŮãČ■ãČŚãČĘãĆčåŘ■')
```

# CHAPTER 15

# OOB

OOB(Out of Band) ãĄŕãĂĄåŃŢçŽĎãĄńãČ■ãČijãČL'ãĄŢãĆŇãĆŃãĆŕãČľãĆźãĄÍAIM-LãĄőoobèęAçť'ăãĄğæŇĞåőŽãĄŹãĆŃOOBæľ§èČ¡ãĄőåŘ■çğřãĄőçţĎãĄ£åŘĹãĆŔãĄŻãĄğåő§çŔ¿ãĄŮãĄ¿ãĄŹãĂĆä¡£çŤĺãĄŹãĆŃOOBæľ§èČ¡æŕŐãĄńãĂĄPythonãĆŕãČľãĆźãĆŠåő§èčĚãĄŮãĂĄãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşãĄő *OOBèĺ■åőŽ* ãĄğãĂĄäžëäÿŇãĄőæğŸãĄńæľ§èČ¡åŘ■ãĄĺéŰćéĂčäżŸãĄŠãĆŠèąŇãĄĘå£ĖèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

| ãČŚãČľãČąãČijãĆźåžåŘ■ŸŐ | | |
|---|---|---|
| OOBãĄőåŘ■çğř | | ãĄŞãĄőéăĚçŽőãĄńèĺ■åőŽãĄŮãĄ§åŘ■çğřãĄŇãĂĄAIMLãĄğæŇĞåőŽãĄŹãĆŃOOBåŘ |
| | classname | åő§èčĚãĆŠèąŇãĄĘOOBãĄőpythonãĄőãĆŕãČľãĆźãČŠãĆźãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ |

OOBãĄőåő§èčĚå§žåžŢãĆŕãČľãĆźãĄŕæňąãĄőãĆĹãĄĘãĄńåőŽç¿ľãĄŢãĆŇãĄęãĄĎãĄ¿ãĄŹãĂĆ

```
# programy/oob/defaults/oob.py

import xml.etree.ElementTree as ET

class OutOfBandProcessor(object):

    def __init__(self):
        self._xml = None

    # Override this method to extract the data for your command
    # See actual implementations for details of how to do this
    def parse_oob_xml(self, oob: ET.Element):
        self._xml = oob
        return True

    # Override this method in your own class to do something
    # useful with the command data
    def execute_oob_command(self, client_context):
        raise NotImplementedError()

    def process_out_of_bounds(self, client_context, oob: ET.Element):
        if self.parse_oob_xml(oob) is True:
            return self.execute_oob_command(client_context)
        return ""
```

éŻżå■ŘãČąãČijãČńãĆŠéĂąä£ąãĄŹãĆŃOOBæľ§èČ¡ãĄŇãĄĆãĆŃåăť'åŘĹãĂĄOOBãĆŠåĹľçŤĺãĄŹãĆŃAIMLãĄŕæňąãĄőãĆĹãA

```
<oob>
    <email>
        <to>åőŻåĚĹ</to>
        <subject>äżűåŘ■</subject>
        <body>æIJňæŰĞ</body>
    </email>
</oob>
```

ãĄŞãĄőåät'åŘĹãĂĄOOBãĄőåĞęçŘĘãĆřãČl'ãĆźãĄńæÿąãĄŢãĆŇãĆŃåijŢæŢřãĄfäżëäÿŃãĄőXMLãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<oob>
    <to>åőŻåĚĹ</to>
    <subject>äżűåŘ■</subject>
    <body>æIJňæŰĞ</body>
</oob>
```

åő§èčĚãĆřãČl'ãĆźãĄfæňąãĄőãĆĹãĄĘãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ parse_oob_xml()ãČąãĆ¡ãĆČãČL'ãĄğAIMLãĄőoobèęAçt'ããĄğæŇ

```
# programy/oob/email/email.py

from programy.oob.defaults.oob import OutOfBandProcessor

class EmailOutOfBandProcessor(OutOfBandProcessor):

    def __init__(self):
        OutOfBandProcessor.__init__(self)
        self._to = None
        self._subject = None
        self._body = None

    def parse_oob_xml(self, oob: ET.Element):
        for child in oob:
            if child.tag == 'to':
                self._to = child.text
            elif child.tag == 'subject':
                self._subject = child.text
            elif child.tag == 'body':
                self._body = child.text
            else:
                logging.error ("Unknown child element [%s] in email oob"%(child.
↪tag))

            if self._to is not None and \
                self._subject is not None and \
                self.body is not None:
                return True

            logging.error("Invalid email oob command")
            return False

    def execute_oob_command(self, client_context):
        logging.info("EmailOutOfBandProcessor: Emailing=%s", self._to)
        return ""
```

OOBæl'§èČ¡ãĆŠåĹl'çŤĺãĄŹãĆŃãĄ§ãĆĄãĄőåőŽç¿l'ãĄĺãĄŮãĄęãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄğäżëäÿŃãĄőèĺ■åő

```
oob:
    email:
        classname: programy.oob.email.email.EmailOutOfBandProcessor
```

OOBãĄőèl'şçt'řèĺ■åőŽæŰźæşŢãĄfãĂĄ *OOBãĄőèĺ■åőŽ* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

# CHAPTER 16

# RDFãĆţãČİãČijãČĹ

RDF(Resource Descriptor Frame-
work)ãĄŕW3CãĄŇåŃğåŚŁãĄŹãĆŃãĂĄXMLãĆŠãČŹãČijãĆźãĄńãČąãĆ£ãĆşãČşãČĘãČşãČĎãĆŠèĺŸè£řãĄŹãĆŃãĄ§ãĆĄãĄőèę
RDFãĄğå§žæIJňãĄĺãĄłãĆŃãČĞãČijãĆ£æğŃéĂăãĄŕ `triple`
ãĄĺåŚijãĄřãĆŃãĆŃ3ãĄď ãĄőãČĞãČijãĆ£ãĄőçţĎãĄğãĂĄäÿżèłđ(subject)ãĂĄè£řèłđ(predicate)ãĂĄçŻőçŽĎèłđ(object)ãĄőçţĎãĄ
èľşçţ'řãĄŕãĂĄ RDF Concepts And Abstract ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

tripleãĄőãČĞãČijãĆ£ãĄŕãĂĄsubjectãĂĄpredicateãĂĄobjectãĆŠãĆşãČ■ãČş
âĂŸïijŽâĂŹãĄğåŇžåĹĞãĄčãĄ§ãČĘãĆ■ãĆźãČĹãĄğèąĺèĺŸãĄŹãĆŃãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆ

äżěäÿŃãĄŕãĂĄéčŻèąŇæľ§ãĄńéŰćãĄŹãĆŃæČĚåăśãĆŠtripleåŇŰãĄŮãĄęåĹŮèĺŸãĄŮãĄ§ä¿ŃãĄğãĂĄâĂİAIRPLANEâĂİãĄĺãA

```
AIRPLANE:hasPurpose:to transport us through the air
AIRPLANE:hasSize:9
AIRPLANE:hasSpeed:12
AIRPLANE:hasSyllables:1
AIRPLANE:isa:Aircraft
AIRPLANE:isa:Transportation
AIRPLANE:lifeArea:Physical
```

æIJňåŕ¿èľ śãĆĺãČşãĆÿãČşãĄőRDFãĆţãČİãČijãČĹãĄŕãĂĄW3CåŃğåŚŁãĄńãĄĆãĆŃåď ŰéČĺãČłãĆ¡ãČijãĆźãĆŠåĹľçŤĺãĄŮãĄ§ãČ

ãĄ¿ãĄ§ãĂĄæď IJçť ćæľ §èČ¡ãĄńãĄď ãĄĎãĄęãĆĆãĂĄå■Ÿçť ŤãĄłæď IJçť ćãĄńåŕ¿å£IJãĄŹãĆŃãĄŞãĄĺãĆŠçŻőçŽĎãĄĺãĄŮãĄęã

## 16.1 RDFãČĞãČijãĆ£åĞęçŘEçŤĺãĄőAIMLãĆ£ãĆř

æIJňåŕ¿èľ śãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄtemplateèęĄçť ăãĄğãĄőRDFãČĞãČijãĆ£åĞęçŘEçŤĺãĄĺãĄŮãĄęäżěäÿŃãĄőAIMLãĆ£ãĆřã

- `addtriple` ïijŽ RDFãČĞãČijãĆ£ãĄőè£¡åŁăãĂĆ
- `deletetriple` ïijŽ RDFãČĞãČijãĆ£ãĄőåĽ'ŁéŹď ãĂĆ

- `uniq` ïijŽ RDFãČĞãČijãĆ£ãĄńår¿ãĄŹãĆŃæď IJçť ćïijĹå■Ÿäÿ ĂçţŘæđIJåĞžåŁŻçŤĺïijL˘ãĂĆ
- `select` ïijŽ RDFãČĞãČijãĆ£ãĄńår¿ãĄŹãĆŃæď IJçť ćïijĹèď ĞåŘĹçţŘæđIJåĞžåŁŻçŤĺïijL˘ãĂĆ

ãĄ¿ãĄ§ãĂĄæď IJçť ćçţŘæđIJãĆŠåď L˘æŢřãĄńåĞžåŁŻãĄŮãĄ§åät˙åŘĹãĄńãĄŕãĂĄäžëäÿŇãĄőAIMLãĆ£ãĆřãĄŇä¡£çŤĺãĄğãĄ■ã

- `get` ïijŽ æď IJçť ćçţŘæđIJãČĞãČijãĆ£ãĆŠåŔŰå¿ŮãĂĆäÿĂéČĺãĄőãČĞãČijãĆ£ãĄőãĄ£ãĆŠåŔŰå¿ŮãĄŹãĆŃåät˙åŘĹãĂĄ■ ãĆŠåĽ˘çŤĺãĄŮãĄ¿ãĄŹãĂĆ
- `first` ïijŽ æď IJçť ćçţŘæđIJãČĞãČijãĆ£ãĄŃãĆL˘ãĂĄåĚĹéă■ãĄőæď IJçť ćçţŘæđIJãĆŠåŔŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ
- `rest` ïijŽ æď IJçť ćçţŘæđIJãČĞãČijãĆ£ãĄŃãĆL˘ãĂĄïijŠçŢłçŻőäžëéŹ■ãĄőæď IJçť ćçţŘæđIJãĆŠåŔŰå¿ŮãĄŮãĄ¿ãĄŹãĂĆ
- `set` ïijŽ æď IJçť ćçţŘæđIJãČĞãČijãĆ£ãĄőäžŰåď L˘æŢřãĄÿãĄőäžčåĚěãĂĆ

## 16.2 RDFãČĞãČijãĆ£çőąçŘĘ

år¿èl˘śãĆĺãČşãĆÿãČşãĄğãĄŕãĂĄsubjectãĂĄpredicateãĂĄobjectãĄőçţĐãĄ£åŘĹãĆŔãĄŻãĆŠäÿĂæĐŔãĄőãČĞãČijãĆ£ãĄĺãĄŮã
RDFãČĞãČijãĆ£ãĄőåŘĐãĆĺãČňãČąãČşãČĹãĄŕãĂĄår¿èl˘śãĆĺãČşãĆÿãČşèţůåŃŢæŹĆãĄőåĹİæIJ§ãČ■ãČijãČL˘ãĄĺãĄĺãĆĆãĄńãĂ

### 16.2.1 åĹİæIJ§ãČ■ãČijãČL˘

år¿èl˘śãĆĺãČşãĆÿãČşãĄőèţůåŃŢæŹĆãĄńãĂĄäžŃåL˘■ãĄńçŤĺæĐŔãĄŮãĄ§ãČŢãĆąãĆd˘ãČńç¿d˘ãĄŃãĆL˘åŘĐãĆĺãČňãČąãČşãČĹ

år¿èśąãČŢãĆąãĆd˘ãČńãĄőæŇĞåőŽãĄŕãĂĄ*ãČŢãĆąãĆd˘ãČńçőąçŘĘãĄőãĆĺãČşãČĘãĆčãČĘãĆč* ãĄő `rdf`
ãĄğèąŇãĄĐãĂĄèl˘šå¡ŞãĄŹãĆŃåĚĺãĄęãĄőåőŽç¿l˘ãČŢãĆąãĆd˘ãČńãĆŠèł■ãĄ£è¿ijãĆŞãĄğãĂĄãĆĺãČňãČąãČşãČĹãĆŠåśŢéŰŃãA

ïijŁçL˘źåőŽãĄőãČŢãĆl˘ãČńãČĂéĚ■äÿŇãĄő âĂŸ*.txtâĂŹ ãĄŃãĆL˘åśŢéŰŃãĄŹãĆŃåät˙åŘĹãĄőä¿ŃïijĹãĆţãČŰãČŢãĆl˘ãČńãČĂa

```
client_type:
    storage:
        entities:
            rdf: file

        stores:
            file:
                type: file
                config:
                    rdf_storage:
                        dirs: ../storage/rdfs
                        subdirs: true
                        extension: txt
```

åőŽç¿l˘ãČŢãĆąãĆd˘ãČńãĄŕãĂĄãĆĺãČňãČąãČşãČĹæŕÕãĄńãĂĄsubjectãĂĄpredicateãĂĄobjectãĆŠãĆşãČ■ãČş
âĂŸïijŽâĂŹãĄğåŇžåĹĞãĄčãĄęåĹÛèĺŸãĄŮãĄ¿ãĄŹãĂĆsubjectãĂĄpredicateãĂĄobjectãĄőãĄĐãĄŽãĆŃãĄŃãĄŅçl˘žæŰĞå■Ůã

åŘŇãAŸçţĐãĄ£åŘĹãĆŔãĄŽãĄőãĆĺãČňãČąãČşãČĹãĄŅèd˘ĞæŢřæŇĞåőŽãĄŢãĆŃãĄęãĄĐãĆŃåät˙åŘĹãĄğãĆĆãĂĄéĞ■èd˘ĞçŹ

ãĄłãĄŁãĂĄRDFãČĞãČijãĆ£ãĄńår¿ãĄŹãĆŃæď IJçť ćãĆŠåŁźçŐĞçŽĐãĄńèąŇãĄęãĄ§ãĆĄãĂĄçŹżéŇšãĄŢãĆŃãĄ§ãČĞãČijãĆ

äžëéŹ■ãĄğãĄŕãĂĄæňąãĄőèĺŸè£řãĆŠãĄŮãĄ§åőŽç¿l˘ãČŢãĆąãĆd˘ãČńãĆŠåĹİæIJ§ãČ■ãČijãČL˘ãĄŮãĄ§ãĆĆãĄőãĄĺãĄŮãĄęèłńæ

```
ant:legs:6
ant:sound:scratch
bat:legs:2
bat:sound:eee
bear:legs:4
```

(continues on next page)

(continued from previous page)

```
bear:sound:grrrrr
buffalo:legs:4
buffalo:sound:moo
cat:legs:4
cat:sound:meow
chicken:legs:2
chicken:sound:cluck cluck
dolphin:legs:0
dolphin:sound:meep meep
fish:legs:0
fish:sound:bubble bubble
```

### 16.2.2 ãĆÍãČňãČąãČşãČĹè£¡åŁă

templateèęAçt'ăãAő *addtriple* èęAçt'ăãĆŠåĹ'çŤĺãĄŹãĆŃãĄŞãĄĺãĄğãĂĄåŃŢçŽĎãĄńæŰřãĄŮãĄĎãĆÍãČňãČąãČşãČĹãĆŠè£¡åŁ

```
<addtriple>
  <subj>Subject</subj><pred>Predicate</pred><obj>Object</obj>
</addtriple>
```

åŃŢçL'l'ãĄőçL'źæĂğãĆŠè£¡åŁăãĄŹãĆŃä¿ŃãĄğãĄŹãĂĆ

```
<addtriple>
    <subj>cow</subj><pred>sound</pred><obj>moo</obj>
</addtriple>
<addtriple>
    <subj>dog</subj><pred>sound</pred><obj>woof</obj>
</addtriple>
```

åĹİæIJ§ãČ■ãČijãČL'ãĄåŘŇæğŸãĄńæŰĞå■ŮãĆşãČijãČL'åd'L'æŔŻãĆŠèąŇãĄčãĄęçŹżéŇšãĄŹãĆŃãĄ§ãĆĄãĂĄäžëäÿŃãĄőRD

```
COW:SOUND:MOO
DOG:SOUND:WOOF
```

ãĄłãĄŁãĂĄaddtripleãĄğè£¡åŁăãĄŮãĄ§ãČĞãČijãĆ£ãĄŕæřÿçűŽçŽĎãĄğãĄŕãĄłãĄŘãĂĄåŕ¿èl'śãĆÍãČşãĆÿãČşãĆŠåĘ■èţůåŃŢãĄ

### 16.2.3 ãĆÍãČňãČąãČşãČĹåL'ŁéŹd'

templateèęAçt'ăãAő *deletetriple* èęAçt'ăãĆŠåĹ'çŤĺãĄŹãĆŃãĄŞãĄĺãĄğãĂĄad-
dtripleèęAçt'ăãAğè£¡åŁăãĄŮãĄ§ãĆÍãČňãČąãČşãČĹãĄăãĄŚãĄğãĄŕãĄłãĄŘãĂĄåĹİæIJ§ãČ■ãČijãČL'ãĄŮãĄ§ãĆÍãČňãČąãČşãČĹ

```
<deletetriple>
  <subj>Subject</subj><pred>Predicate</pred><obj>Object</obj>
</deletetriple>
```

3ãĄd'ãĄőèęAçt'äïijĹsubjectãĂĄpredicateãĂĄobjectïijL'ãĆŠæŇĞåőŽãĄŹãĆŃãĄĺãĂĄåĚĺãĄęåŘĹèĞt'ãĄŮãĄ§ãĆÍãČňãČąãČşãČĹ

subjectãĄĺpredicateãĄăãĄŚãĆŠæŇĞåőŽãĄŮãĄ§åăt'åŘĹãĂĄobjectãĄőåĂd'ãĄńéŰćä£ĆãĄłãĄŘãĂĄåŘĹèĞt'ãĄŹãĆŃãĆÍãČňãČą

subjectãĄăãĄŚãĆŠæŇĞåőŽãĄŮãĄ§åăt'åŘĹãĂĄãĄİãĄősubjectãĄńåŘĹèĞt'ãĄŹãĆŃåĚĺãĄęãĄőãĆÍãČňãČąãČşãČĹãĆŠåL'ŁéŹd'ã

addtripleãĄğè£¡åŁăãĄŮãĄ§ãĆÍãČňãČąãČşãČĹãĄĺãĂĄåĹİæIJ§ãČ■ãČijãČL'ãĄŮãĄ§ãĆÍãČňãČąãČşãČĹãĆŠåL'ŁéŹd'ãĄŹãĆŃä¿Ń

```
<deletetriple>
  <subj>cow</subj><pred>sound</pred><obj>moo</obj>
</deletetriple>
<deletetriple>
  <subj>ant</subj><pred>sound</pred><obj>scratch</obj>
</deletetriple>
```

ãĄłãĄŁãĂĄdeletetripleãĆĆæřÿçűŽçŽĎãĄğãĄŕãĄłãĄŔãĂĄår¿èľśãĆĺãČşãĆÿãČşãĆŠåĘ■èţůåŃŢãĄŮãĄ§æŹĆçĆźãĄğåĹİæIJ§çŁú

## 16.3 RDFãČĞãČijãĆ£ãĄőæďIJçťć

RDFãČĞãČijãĆ£ãĄőæďIJçťćèęAçťăãĄńãĄŕïijŠçĺőéąđãĄÑãĄĆãĆŁãĄ¿ãĄŹãĄÑãĂĄãĄİãĆŇãĄđãĆŇãĄőäżŢægŸãĄŕäžěäÿŃãĄ

- `uniqèęAçt'ă`

  ïijŠãĄď ãĄőæď IJçť ćæİąäżűãĆŠæŇĞåőŽãĄŮãĂĄæď IJçť ćçţŘæđIJãĄńår¿ãĄŮãĄęéĞ■èď ĞãĄŮãĄ§æŰĞå■ŮåĹŮãĆŠ

- `selectèęAçt'ă`

  èď ĞæŢřãĄőæď IJçť ćæİąäżűãĄőæŇĞåőŽãĄÑåŔřèČ¡ãĄğãĂĄæď IJçť ćçţŘæđIJãĆŠãĆĺãČñãČąãČşãČĹãĆŠå■Ÿä¡■ãĄĺã

### 16.3.1 uniqãĄńãĆĹãĆŃæďIJçťć

templateèęAçťăãĄő *uniq* èęAçťăãĆŠçŤĺãĄĎãĄęãĂĄRDFãČĞãČijãĆ£ãĄőæď IJçť ćãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ
uniqãĄğãĄőæď IJçť ćãĄğãĄŕãĂĄåŔŰå¿ŮãĄŮãĄ§ãĄĎéäĚçŻõãĄńår¿ãĄŮãĄę âĂŸ?âĂŹ
ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

çĽźåőŽãĄőæČĚåăśãĆŠåŔŰå¿ŮãĄŹãĆŃåăť åŘĹãĂĄäżěäÿŃãĄőæğŸãĄńèÍŸè£ŕãĄŮãĄ¿ãĄŹãĂĆ

```
<uniq>
    <subj>ant</subj>
    <pred>sound</pred>
    <obj>?</obj>
</uniq>
```

çţŘæđIJãĄĺãĄŲãĄęãĂĄsubjectãĂĄpredicateãĄÑäÿĂèĞť ãĄŹãĆÑãĆĺãČñãČąãČşãČĹãĄőobjectãĄőåĂd'ãĄŇåŔŰå¿ŮãĄğãĄ■ãĄ
SCRATCH

æď IJçť ćæŹĆãĄńãĆĺãČñãČąãČşãČĹèęAçť ăãĄőæŇĞåőŽãĆŠçIJĄçŢěãĄŹãĆÑãĄŞãĄĺãĄŇåŔřèČ¡ãĄğãĂĄsubjectãĄőäÿĂèęğãĆŠ

```
<uniq>
    <subj>?</subj>
</uniq>
```

çţŘæđIJãĄĺãĄŮãĄęãĂĄsubjectãĄőäÿĂèęğãĄÑçľžçŹ¡åŇžåĹĞãĆŁãĄğåĞžåŁŻãĄŢãĆÑãĄ¿ãĄŹãĂĆuniqãĄğãĄŕéĞ■èď ĞãĄŹãĆ
ANT BAT BEAR BUFFALO CAT CHICKEN DOLPHIN FISH

çĽźåőŽãĄőæİąäżűãĆŠæŇĞåőŽãĄŹãĆÑä¿ÑãĄĺãĄŮãĄęãĂĄpredicate=âĂİlegsâĂİãĄőæİąäżűãĄğãĂĄobjectãĄőäÿĂèęğãĆŠåŔŰ

```
<uniq>
    <pred>legs</pred>
    <obj>?</obj>
</uniq>
```

çţŘædIJãĄĺãĄŮãĄęãĂĄéĞ■èď˙ĞãĄŮãĄ§ãĆĆãĄőãĄŕéŹď˙åď˙ŰãĄŢãĆŇãĆŃçĆžãĂĄäžëäÿŃãĄőæğŸãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ
6 2 4 0

### 16.3.2 selectãĄńãĆĹãĆŃæďIJçť'ć

templateèęAçť'ããĄő *select* èęAçť'ããĆŠçŤĺãĄĎãĄęãĂĄRDFãČĞãČijãĆ£ãĄőæď'IJçť'ćãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ
selectãĄőæď'IJçť'ćçţŘædIJãĄŕãĂĄ[âĂIJèęAçť'ãåŘ■âĂİ, âĂIJåĂď'âĂİ]
ãĆŠæIJĂåřŕå■Ÿä¡■ãĄĺãĄŮãĄęãĂĄãĆĺãČňãČąãČşãČĹæŕŐãĄńæăijçť'■ãĄŢãĆŇãĆŃçĆžãĂĄäžëäÿŃãĄőæğŸãĄłãČłãĆźãČĹå¡ćåi
[[[âĂIJsubjâĂİ, âĂIJANTâĂİ], [âĂIJpredâĂİ, âĂIJLEGSâĂİ], [âĂIJobjâĂİ, âĂIJ6âĂİ]], [[âĂIJsubjâĂİ,
âĂIJANTâĂİ], [âĂIJpredâĂİ, âĂIJSOUNDâĂİ], âĂę], âĂę]

selectãĄğä¡£çŤĺåŕŕèČ¡ãĄłãĆŕãĆĺãČłçŤĺãĄőå■ŘèęAçť'ããĄńãĄŕ <q>ãĄĺãĄĺãĆĆãĄńãĂĄ<notq>ãĄÑãĄĆãĆŁãĄ¿ãĄŹãĄÑãĂĄ<n

#### å■Ÿçť'Ťæď'IJçť'ć

å■Ÿçť'ŤãĄłæď'IJçť'ćãĄőåăť'åŘĹãĂĄ<q>èęAçť'ããĄőåĘĚåőźãĄĺãĄŮãĄęãĂĄsubjectãĂĄpredicateãĂĄobjectãĄő3ãĄd'ãĆŠæŇĞåő

```
<select>
    <q><subj>dog</subj><pred>sound</pred><obj>woof</obj></q>
</select>
```

åĹİæIJ§ãČ■ãČijãČL'çŁűæĚŃãĄğãĄŕçţŘædIJãĄŇçl'žæŰĞå■ŮãĄńãĄłãĆŃçĆžãĂĄåŘŰå¿Ůåď'śæŢŮæŹĆãĄőå£IJç■ŤæŰĞãĄŇè£
ãĆŠåő§æŰ¡ãĄŹãĆŃãĄĺãĂĄäžëäÿŃãĄőçţŘædIJãĄŇè£ŤãĄčãĄęãĄ■ãĄ¿ãĄŹãĂĆ
[[[âĂIJsubjâĂİ, âĂIJDOGâĂİ], [âĂIJpredâĂİ, âĂIJSOUNDâĂİ], [âĂIJobjâĂİ, âĂIJWOOFâĂİ]]]

çL'źåőŽãĄőïijŚãĄd'ãĄőèęAçť'ããĄőãĄ£ãĆŠåŘŰå¿ŮãĄŹãĆŃåăť'åŘĹãĂĄäžëäÿŃãĄőèÍŸè£řãĄÑãĄğãĄ■ãĄ¿ãĄŹãĂĆ

```
<select>
    <q><subj>cat</subj><pred>sound</pred><obj>?</obj></q>
</select>
```

ãĄŞãĄőåăť'åŘĹãĂĄâĂİ?âĂİãĆŠæŇĞåőŽãĄŮãĄ§èęAçť'ããĄőåĘĚåőźãĆŠçd'žãĄŹãĂĄäžëäÿŃãĄőçţŘædIJãĄŇè£ŤãĄčãĄęãĄ■ãĄ
[[[âĂIJ?âĂİ, âĂIJMEOWâĂİ]]]

#### åď'L'æŢřãĄńãĆĹãĆŃæďIJçť'ć

èď'ĞæŢřãĄőèęAçť'ããĆŠè£ŤãĄŹåăť'åŘĹãĆĎãĂĄäÿĂèĞť'ãĄŹãĆŃèęAçť'ããĄőãČłãĆźãČĹãĆŠåŘŮãĄŚåŘŮãĆŃåăť'åŘĹãĄŕãĂĄåd
åď'L'æŢřãĄŕvarsãĆ£ãĆřãĄőåĘĚåőźãĄğåőŽç¿l'ãĄŮãĂĄåď'L'æŢřåŘ■ãĄőæŐěéã■è¿đãĄĺãĄŮãĄę âĂIJ?âĂİ
ãĆŠäžŸãĄŚãĄ¿ãĄŹãĂĆ

ãĆŕãĆĺãČŀ<q>ãĄğãĆĺãČňãČąãČşãČĹãĄőèęĄçť˘ăãĄńåď˙L'æŢřãĆŠèĺ■åőŽãĄŹãĆŃãĄŞãĄĺãĄŇãĄğãĄ■ãĄ¿ãĄŹãĂĆ
äžëäÿŃãĄőåät'åŘĹãĂĄåď˙L'æŢřïijŽ?x ãĄŕsubjectãĂĄåď˙L'æŢřïijŽ?y ãĄŕpredicateãĂĄåď˙L'æŢřïijŽ?z
ãĄŕobjectãĄőæäijçť˘■åŕ¿èśąãĄĺãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
<select>
    <vars>?x ?y ?z</vars>
    <q><subj>?x</subj><pred>?y</pred><obj>?z</obj></q>
</select>
```

æŇĞåőŽãĄŮãĄ§ãČĞãČijãĆ£ãĄńäÿĂèĞt'ãĄŹãĆŃãĄŹãĄźãĄęãĄőãĆĺãČňãČąãČşãČĹãĄŇãĆL'ãĂĄåď˙L'æŢřãĄńèl'šå¡ŞãĄŹãĆŃ
äžëäÿŃãĄŕãĂĄåŃŢçL'l'ãĄőèűşãĄőæIJňæŢř(legs)ãĆŠæď˙IJçt'ćãĄŹãĆŃä¿ŃãĄğãĄŹãĂĆ

```
<select>
    <vars>?x ?y</vars>
    <q><subj>?x</subj><pred>legs</pred><obj>?y</obj></q>
</select>
```

æď˙IJçt'ćçţŘædIJãĄŇåŘĹèĞt'ãĄŮãĄ§åät'åŘĹãĂĄäžëäÿŃãĄőægŸãĄńåď˙L'æŢřãĄńèl'šå¡ŞãĄŹãĆŃæČĚåäśãĄőãĄ£ãĄőçţŘædIJã
[[[âĂIJ?xâĂİ, âĂIJANTâĂİ], [âĂIJ?yâĂİ, âĂIJ6âĂİ]], [[âĂIJ?xâĂİ, âĂIJBATâĂİ], [âĂIJ?yâĂİ, âĂIJ2âĂİ]],
[[âĂIJ?xâĂİ, âĂIJBEARâĂİ], [âĂIJ?yâĂİ, âĂIJ4âĂİ]], [[âĂIJ?xâĂİ, âĂIJBUFFALOâĂİ], [âĂIJ?yâĂİ,
âĂIJ4âĂİ]], [[âĂIJ?xâĂİ, âĂIJCATâĂİ], [âĂIJ?yâĂİ, âĂIJ4âĂİ]], [[âĂIJ?xâĂİ, âĂIJCHICKENâĂİ],
[âĂIJ?yâĂİ, âĂIJ2âĂİ]], [[âĂIJ?xâĂİ, âĂIJDOLPHINâĂİ], [âĂIJ?yâĂİ, âĂIJ0âĂİ]], [[âĂIJ?xâĂİ,
âĂIJFISHâĂİ], [âĂIJ?yâĂİ, âĂIJ0âĂİ]]]

### èď˙ĞåŘĹæİąäžűæď˙IJçť˙ć

åď˙L'æŢřãĆŠä¡£çŤĺãĄŮãĄ§åät'åŘĹãĄńãĄŕãĂĄèď˙ĞæŢřãĄőãĆŕãĆĺãČłãĆŠä¡£çŤĺãĄŹãĆŃãĄŞãĄĺãĄğæİąäžűãĆŠçţđãĆŁè¿ijãĆĂ

äžëäÿŃãĄőä¿ŃãĄğãĄŕãĂĄïijŚãĄď˙çŻőãĄőãĆŕãĆĺãČłãĄğåŘŰå¿ŮãĄŮãĄ§subjectãĄőãČłãĆźãČĹãĄĺãĂĄïijŠãĄď˙çŻőãĄőãĆŕãĆĺ

```
<select>
    <vars>?x</vars>
    <q><subj>?x</subj><pred>legs</pred><obj>0</obj></q>
    <q><subj>?x</subj><pred>sound</pred></q>
</select>
```

çţŘædIJãĄĺãĄŮãĄęãĂĄpredicate=âĂİlegsâĂİãĄğobject=âĂİ0âĂİãĄŇåőŽç¿l'ãĄŢãĆŃãĄ§subjectãĄőäÿ■ãĄğãĂĄpredicate=âĂİs
[[[âĂIJ?xâĂİ, âĂIJDOLPHINâĂİ]], [[âĂIJ?xâĂİ, âĂIJFISHâĂİ]]]

ãĄŢãĆL'ãĄńåď˙L'æŢřãĆŠä¡£çŤĺãĄŹãĆŃãĄŞãĄĺãĄğãĂĄèl'šå¡ŞãĄŹãĆŃsubjectãĄőäÿ■ãĄŇãĆL'çL'źåőŽãĄőèęĄçť˘ãĄőæČĚåäśã

```
<select>
    <vars>?x ?y</vars>
    <q><subj>?x</subj><pred>legs</pred><obj>0</obj></q>
    <q><subj>?x</subj><pred>sound</pred><obj>?y</obj></q>
</select>
```

çţŘæđIJãĄŕæňąãĄőæğŸãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ
[[[âĂIJ?xâĂİ, âĂIJDOLPHINâĂİ], [âĂIJ?yâĂİ, âĂIJMEEP MEEPâĂİ]], [[âĂIJ?xâĂİ, âĂIJFISHâĂİ], [âĂIJ?yâĂİ, âĂIJBUBBLE BUBBLEâĂİ]]]

### ãČĞãČijãĆ£åŔŰå¿Ů

selectèęAçt'ăãĄŕãĂĄSQLãĄőSELECTæŰĞãĄõãĆĹãĄĘãĄńãČĞãČijãĆ£ãĆżãČČãČĹãĆŠä¡IJæĹŘãĄŹãĆŃãĄ§ãĆĄãĄńä¡£çŤĺãA

äžëäÿŃãĄőä¿ŃãĄğãĄŕãĂĄselectèęAçt'ăãĄőåŔŰå¿ŮçţŘæđIJãĆŠâĂŹsetâĂŹãĆ£ãĆřãĆŠçŤĺãĄĐãĄęãĂĄtuplesãĄńæăijçt'■ãĄŮãA

```
<set var="tuples">
    <select>
        <vars>?x ?y</vars>
        <q><subj>?x</subj><pred>sound</pred><obj>?y</obj></q>
    </select>
</set>
```

ãĄŞãĄőåăt'åŘĹãĄńãĂĄtuplesãĄńäžëäÿŃãĄőåĘĚåőźãĄŇèĺ■åőŽãĄŢãĆŃãĄęãĄĐãĄ¿ãĄŹãĂĆ
[[[âĂIJ?xâĂİ, âĂIJBATâĂİ], [âĂIJ?yâĂİ, âĂIJEEEâĂİ]], [[âĂIJ?xâĂİ, âĂIJBEARâĂİ], [âĂIJ?yâĂİ, âĂIJGRRRRRâĂİ]], [[âĂIJ?xâĂİ, âĂIJBUFFALOâĂİ], [âĂIJ?yâĂİ, âĂIJMOOâĂİ]], [[âĂIJ?xâĂİ, âĂIJCATâĂİ], [âĂIJ?yâĂİ, âĂIJMEOWâĂİ]], [[âĂIJ?xâĂİ, âĂIJCHICKENâĂİ], [âĂIJ?yâĂİ, âĂIJCLUCK CLUCKâĂİ]], [[âĂIJ?xâĂİ, âĂIJDOLPHINâĂİ], [âĂIJ?yâĂİ, âĂIJMEEP MEEPâĂİ]], [[âĂIJ?xâĂİ, âĂIJFISHâĂİ], [âĂIJ?yâĂİ, âĂIJBUBBLE BUBBLEâĂİ]], [[âĂIJ?xâĂİ, âĂIJDOGâĂİ], [âĂIJ?yâĂİ, âĂIJWOOFâĂİ]]]

åL'■è£řãĄőâĂŹselectâĂŹèęAçt'ăãĄŃãĆL'çŤ§æĹŘãĄŢãĆŃãĄ§ãČĞãČijãĆ£ãĆŠåŔŰå¿ŮãĄŹãĆŃåăt'åŘĹãĂĄâĂŹgetâĂŹãĆ£ãĆř

```
<get var="?x">
    <tuple>
        <get var="tuples" />
    </tuple>
</get>
<get var="?y">
    <tuple>
        <get var="tuples" />
    </tuple>
</get>
```

ãĄŞãĄőä¿ŃãĄőåăt'åŘĹãĂĄgetãĄőâĂŹvarâĂŹåśđæĂğãĄńãĂĄselectèęAçt'ăãĄğæŇĞåőŽãĄŮãĄ§åd'L'æŢř
âĂIJ?xâĂİ ãĆŠæŇĞåőŽãĄŮãĄęãĄĐãĄ¿ãĄŹãĂĆ

æňąãĄńãĂĄtupleãĆ£ãĆřãĄğãĂĄselectèęAçt'ăãĄőçţŘæđIJãĆŠæăijçt'■ãĄŮãĄ§âĂİtuplesâĂİ(ãČłãĆźãČĹãĆłãČŰãĆÿãĆğãĆřãČĹ)
âĂIJ?xâĂİ ãĄńèl'šå¡ŞãĄŹãĆŃãČĞãČijãĆ£ãĄŇåŔŰå¿ŮãĄğãĄ■ãĄ¿ãĄŹãĂĆ
çţŘæđIJãĄĺãĄŮãĄęãĂĄåd'L'æŢř âĂIJ?xâĂİ ãĄŃãĆL'ãĄŕäžëäÿŃãĄőåĘĚåőźãĄŇåŔŰå¿ŮãĄğãĄ■ãĄ¿ãĄŹãĂĆ

BAT BEAR BUFFALO CAT CHICKEN DOLPHIN FISH DOG
åŘŇæğŸãĄńãĂĄåd'L'æŢř âĂIJ?yâĂİ ãĄŃãĆL'ãĄŕäžëäÿŃãĄőåĘĚåőźãĄŇåŔŰå¿ůãĄğãĄ■ãĄ¿ãĄŹãĂĆ
EEE GRRRRR MOO MEOW CLUCK CLUCK MEEP MEEP BUBBLE BUBBLE WOOF

ãĄ¿ãĄ§ãĂĄâĂİtuplesâĂİãĄńår¿ãĄůãĄęãĂĄfirstãĆ£ãĆřãĂĄrestãĆ£ãĆřãĆŠåĹl'çŤĺãĄŹãĆŃãĄŞãĄĺãĄğãĂĄäžëäÿŃãĄőæğŸãĄ

```
<get var="?x">
    <tuple>
        <first><get var="tuples" /></first>
    </tuple>
</get>
<get var="?y">
    <tuple>
        <rest><get var="tuples" /></rest>
    </tuple>
</get>
```

çţŘædIJãĄĺãĄůãĄęãĂĄfirstãĆ£ãĆř(åĚĹéă■ãČĞãČijãĆ£åŔŰå¿Ů)ãĄğãĂĄåd'L'æŢř âĂIJ?xâĂİ
ãĄŃãĆL'åŔŰå¿ůãĄůãĄ§åĂd'ãĄŕäžëäÿŃãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ
BAT

åŘŇæğŸãĄńãĂĄrestãĆ£ãĆř(åĚĹéă■äžëåd'ŰãĄőãČĞãČijãĆ£åŔŰå¿Ů)ãĄğãĂĄåd'L'æŢř âĂIJ?yâĂİ
ãĄŃãĆL'åŔŰå¿ůãĄůãĄ§åĂd'ãĄŕäžëäÿŃãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ
GRRRRR MOO MEOW CLUCK CLUCK MEEP MEEP BUBBLE BUBBLE WOOF

# CHAPTER 17

# Security

è‡■èÍijãĄÍæL'£è‡■ãĄő2æőţéŽÕãĄőãĆżãĆ■ãČěãČłãČĘãĆčåőŽç¿l'ãĄÑãĄĆãĆŁãĄ¿ãĄŹãĂĆ

## 17.1 è‡■èÍij(Authentication)

è‡■èÍijæl'§èČ¡ãĄŕèęĄäżűãĄńå£IJãĄŸãĄ§ãČęãČijãĆűçőąçŘĘç■L'ãĄőåĂŃåĹěãĄőåő§èčĚãĄÑå£ĚèęĄãĄńãĄłãĆŃæl'§èČ¡ãĄőãĄ§
ãĄ¿ãĄ§ãĂĄåd'ŰéČÍãĆţãČijãČŞãĆźãĆŠåĹl'çŤÍãĄŮãĄęè‡■èÍijãĆŠèąÑãĄĘãĂĄaccount_linker
ãĄńãĄd'ãĄĎãĄęãĄŕãĂĄår¿èl'śåĞęçŘĘãĄÍãĄŕåĹěãĄńåő§æŰ¡ãĄŹãĄźãĄ■æl'§èČ¡ãĄőãĄ§ãĆĄä¡£çŤÍãĄğãĄ■ãĄ¿ãĄŻãĆŞãĂĆ

åĹěéĂŤãĂĄå£ĚèęĄãĄł è‡■èÍijæL'ŃçűŽãĄ■ãĆŠäÿŁä¡■ãĄőãĆćãČŮãČłãĆśãČijãĆůãČğãČşç■L'ãĄğèąÑãĄčãĄ§äÿŁãĂĄår¿èl'śåĞęç

äžěäÿŇãĄńãĂĄè‡■èÍijãĄńéŰćãĄŹãĆŃå§žæIJňçŽĎãĄłåĹűå¿ąæğŃéĂäãĄńãĄd'ãĄĎãĄęè‡ňæŸÕãĄŮãĄ¿ãĄŹãĂĆ

è‡■èÍijãĄŕãĆşãĆćãĆşãČijãČL'ãĄőbrainåĘĚãĄğåő§æŰ¡ãĄŢãĆŇãĂĄãČęãČijãĆűãĄŇãĆL'ãĄőçŹžèl'śæŰĞæŕÕãĄńåĞęçŘĘãĄŢãĆ
ask_question() åĘĚãĄğåŚijãĄşåĞžãĄŢãĆŇãĄ¿ãĄŹãĂĆ

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄğæŇĞåőŽãĄŢãĆŇãĄ§è‡■èÍijãĆţãČijãČŞãĆźãĆŠåĹl'çŤÍãĄŮãĄęĂĄè‡■èÍijãĄŢãĆŇãĄ§

```
class Brain(object):

    def __init__(self, bot, configuration: BrainConfiguration):
        self._security = SecurityManager(configuration.security)

    def authenticate_user(self, client_context):
        return self._security.authenticate_user(client_context)

    def ask_question(self, bot, clientid, sentence):

        authenticated = self._security.authenticate_user(client_context)
        if authenticated is not None:
            return authenticated
```

èł■èÍijãĆţãČijãČŞãĆźãĄŕãĂĄãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşãĄőåőŽç¿l'ãĄńå¿ŞãĄčãĄęãĂĄSecurityManagerãĄńãĆĹãĄč
SecurityManagerãĄő authenticate_user() ãĆŠåő§æŰ¡ãĄŹãĆÑãĄŞãĄÍãĄğãĂĄèł■èÍijãĆţãČijãČŞãĆźåĘĚãĄő
authenticate() ãĄŇåŚijãĄşåĞžãĄŢãĆÑãĄ¿ãĄŹãĂĆ

```
class Authenticator(object):

    def __init__(self, configuration: BrainSecurityConfiguration):
        self._configuration = configuration

    @property
    def configuration(self):
        return self._configuration

    def get_default_denied_srai(self):
        return self.configuration.denied_srai

    def authenticate(self, clientid: str):
        return False
```

äžëäÿÑãĄőèł■èÍijãĆţãČijãČŞãĆźãĄőä¿ÑãĄğãĄŕãĂĄåŕ¿èl'śåĞęçŘĘãĄõãĆćãČŮãČłãĆśãČijãĆůãČğãČşãĄőè■ŸåĹěåŘ■ãĄÍãĄłãĆ
ãĄŞãĄőåő§èčĚãĄğãĄŕãĂĄclientidïijŽâĂŹconsoleâĂŹãĄğãĆćãĆŕãĆźãĆźãĄŢãĆÑãĄ§ãČęãČijãĆűãĄőâĂŹuseridâĂŹãĆŠâĂŹaut

```
class ClientIdAuthenticationService(Authenticator):

    def __init__(self, configuration: BrainSecurityConfiguration):
        Authenticator.__init__(self, configuration)
        self.authorised = [
            "console"
        ]

    def user_auth_service(self, client_context):
        return False

    def _auth_clientid(self, client_context):
        authorised = self.user_auth_service(client_context)
        if authorised is True:
            self.authorised.append(client_context.userid)
        return authorised

    def authenticate(self, client_context):
        try:
            if client_context.userid in self.authorised:
                return True
            else:
                if self._auth_clientid(client_context) is True:
                    return True

                return False
        except Exception as excep:
            YLogger.error(client_context, str(excep))
            return False
```

äÿŁèÍŸæl'§èČ¡ãĆŠä¡£çŤÍãĄŹãĆÑãĄńãĄŕãĂĄBrainãĆşãČşãČŢãĆčãĆŕãČňãČijãĆůãČğãČşãĄő *security*
ãĄğãĂĄäžëäÿÑãĄőéăĚçŽõãĆŠåőŽç¿l'ãĄŹãĆÑå£ĚèęĄãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

```
brain:
    security:
        authentication:
            classname: programy.security.authenticate.clientidauth.
↪ClientIdAuthenticationService
```

## 17.2 æL'£èł■(Authorisation)

æL'£èł■ãAŕãĂĄtemplateãĄő *authorise*
èęAçt'ăãAńãĄŁãĄĎãAęãĂĄéĚ■äÿŃãAńãĄĆãĆŃåŘĎèęAçt'ăãAőåśŢéŰŃãĆŠåĹűå¿ąãĄŹãĆŃçĆžãAńèąŇãĄĎãA¿ãĄŹãĂĆ

æL'£èł■ãĆĆèł■èĺijãAĺåŘŇãAŸãĄŔèęAäżűãAńå£IJãAŸãA§åĞęçŘĘãAŇå£ĚèęĄãAğãĄĆãĆŁãĂĄåd'L'æŻt'ãĆŠåŔŕèČ¡ãAńãĄŹãĆ

`authorise` èęAçt'ăãAğãAőæL'£èł■åĞęçŘĘãAŕãĂĄäžëäÿŃãAőæğŸãAńèąŇãAčãAęãĄĎãA¿ãĄŹãĂĆ

```
class TemplateAuthoriseNode(TemplateNode):

    def resolve_to_string(self, client_context):

        if client_context.brain.security.authorisation is not None:
            try:
                allowed = client_context.brain.security.authorisation.
↪authorise(client_context.userid, self.role)
            except AuthorisationException:
                allowed = False
```

æL'£èł■ãĆţãČijãČŞãĆźãAŕãĂĄãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãAőåőŽç¿l'ãAńå¿ŞãĄčãAęãĂĄbrain.security.authorisation
ãAńãČ■ãČijãČL'ãĄŢãĆŃãĆŃãĆřãČl'ãĆźãAğãĂĄãAİãAőå§žåžŢãĆřãČl'ãĆźãAŕæňąãAőãĆĹãĄĘãAńåőŽç¿l'ãĄŢãĆŃãAęãĄĎãA¿

```
class Authoriser(object):

    def __init__(self, configuration: BrainSecurityConfiguration):
        self._configuration = configuration

    @property
    def configuration(self):
        return self._configuration

    def get_default_denied_srai(self):
        return self.configuration.denied_srai

    def authorise(self, userid, role):
        return False
```

äžëäÿŃãAńãĂĄauthoriseèęAçt'ăãAğä¡£çŤĺãĄŮãAęãĄĎãĆŃãĂĄãČęãČijãĆűãAőè■ŸåĹěåŘ■âĂŹuseridâĂŹãĆŠåĚČãAńèąŇãĄĘ

ãĆůãČŁãČłãĆłãAğãAőæL'£èł■ãĆŠçŤĺãĄĎãA§èÍŸèijL'ãAŕãĂĄåĹl'çŤĺåĹűéŹŘãĆŠãĄŃãĄŠãĆŃtemplateèęAçt'ăãĆŠãĂĄauthor
ãĆ£ãĆřãAğåŻšãĆĂãĄŞãAĺãAğæŇĞåőŽãĄŮãA¿ãĄŹãĂĆ
äžëäÿŃãAőãĆůãČŁãČłãĆłãAőåät'åŘĹãĂĄçŹžèl'śæŰĞãAğâĂŹALLOW
ACCESSâĂŹãĄŃåĚěåŁŻãĄŢãĆŃãĄŃãA§åät'åŘĹãĂĄæŇĞåőŽãĄŢãĆŃãĄŃãA§âĂŹuseridâĂŹãĄŃ âĂŸrootâĂŹ
ãAőæĺl'éŹŘ(role)ãĆŠæŇĄãAčãAęãĄĎãĆŃåät'åŘĹãĂĄâĂŹAccess AllowedâĂŹ
ãAőæŰĞå■ŮãĄŃåd'L'ãĄĹåĚěãĆŁãA¿ãĄŹãĄŃãĂĄæŇĄãAčãAęãĄĎãĄłãĄĎåät'åŘĹãAńãAŕçl'žæŰĞå■ŮãĄŃè£ŤãĆŁãA¿ãĄŹã

```
<category>
    <pattern>ALLOW ACCESS</pattern>
    <template>
        <authorise role="root">
            Access Allowed
        </authorise>
    </template>
</category>
```

æL'£èł■åĞęçŘĘãĆŠèąÑãĄĘãĆŕãČľãĆźãĄőåő§èčĚãĄŕäżěäÿÑãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

```
class BasicUserGroupAuthorisationService(Authoriser):

    def __init__(self, config: BrainSecurityAuthorisationConfiguration):
        Authoriser.__init__(self, config)
        self._users = {}
        self._groups = {}

    @property
    def users(self):
        return self._users

    @property
    def groups(self):
        return self._groups

    def initialise(self, client):
        self.load_users_and_groups(client)

    def load_users_and_groups(self, client):
        if client.storage_factory.entity_storage_engine_available(StorageFactory.
↪USERGROUPS) is True:
            storage_engine = client.storage_factory.entity_storage_
↪engine(StorageFactory.USERGROUPS)
            usergroups_store = storage_engine.usergroups_store()
            usergroups_store.load_usergroups(self)
        else:
            YLogger.warning(self, "No user groups defined, authorisation tag will␣
↪not work!")

    def authorise(self, userid, role):
        if userid not in self._users:
            raise AuthorisationException("User [%s] unknown to system!" % userid)

        if userid in self._users:
            user = self._users[userid]
            return user.has_role(role)
        return False
```

åřŽãĂĄæIJňæľ§èČ¡ãĆŠä¡£çŤĺãĄŹãĆŃçĆžãĂĄBrainãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄő *security*
ãĄğãĂĄäżěäÿÑãĄőéăĚçŻőãĆŠåőŽç¿l'ãĄŹãĆŃå£ĚèęĄãĄÑãĄĆãĆŁãĄ¿ãĄŹãĂĆ

```
security:
    authorisation:
        classname: programy.security.authorise.usergroupsauthorisor.
↪BasicUserGroupAuthorisationService
        denied_srai: AUTHORISATION_FAILED
        denied_text: Access Denied!
```

ãĂĂâĂż `denied_srai` ãĂĄ `denied_text` ãĄŕãĂĄèł■èÍijåď´śæŢŮæŹĆãĄőåŃŢä¡IJãĄńéŰćãĄŹãĆŃãĆłãČŮãĆůãČğãČşãĄğã

### 17.2.1 ãČęãČijãĆűãĆřãČńãČijãČŮãČŢãĆąãĆď'ãČń

æL'£èł■åĞęçŘĘãĆŠåĹűå¿ąãĄŹãĆŃãĄ§ãĆĄãĄńãĂĄãČęãČijãĆűïijĹuserIdïijL'ãĄĺæĺl'éŹŘïijĹroleïijL'ãĄőéŰćä£ĆãĆŠåőŽç¿l'ãĄŹ
*usergroupsãĆĺãČşãČĘãĆčãČĘãĆč* ãĄğæŇĞåőŽãĄŮãĄ§ãČŢãĆąãĆď'ãČńãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

åőŽç¿l'ãĄŕãĂĄyaml¡ćåijŔãĄğèąÑãĄĎãĄ¿ãĄŹãĂĆå§žæIJňçŽĎãĄłèÍŸè£ŕå¡ćåijŔãĄŕãĂĄäżěäÿÑãĄőïijŠãĄď'ãĄőå¡ćåijŔãĄńãĄ

ïijŚãĄď˙çŻőãĄŕãĂĄãČęãČijãĆűæŕŐãĄńæĺľéŹŘãĆŠèĺŸèijĽãĄŹãĆŃæŰźåijŔãĄgãĄŹãĂĆ

```
users:
  ãČęãČijãĆűåŘ■:
    roles: æĺl'éŹŘåŘ■ãČłãĆźãČĹ
```

ïijŠãĄď˙çŻőãĄŕãĂĄãĆřãČńãČijãČŮåŘ■ãĆŠèęŔåőŽãĄŮãĂĄãĆřãČńãČijãČŮæŕŐãĄńæĺľéŹŘãĆŠæŇĞåőŽãĄŮãĂĄèľšå¡ŞãĄŹãĆ

```
groups:
  ãĆřãČńãČijãČŮåŘ■:
    roles: æĺl'éŹŘåŘ■ãČłãĆźãČĹ
    users: ãČęãČijãĆűåŘ■ãČłãĆźãČĹ
```

äżěäÿŃãĄőä¿ŃãĄgãĄŕãĂĄâĂŹadministratorâĂŹãĄőæĺľéŹŘãĄŕâĂŹrootãĄĺâĂŹuserâĂŹãĂĄâĂŹothersâĂŹãĄőæĺľéŹŘãĄŕâĂŹ

èĺ■åőŽä¿Ń

```
users:
  administrator:
    roles: root, user
  others:
    roles: user

groups:
   general:
      users: guest1, guest2
      roles: guest
```

ãA¿ãĄ§ãĂĄgroupsãĆŠå■ŘãĆ£ãĆřãĄgæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄgéŰćä£ĆäżŸãĄŚãĄŇãĄgãĄ■ãĆŃãĄ§ãĆĄãĂĄäżěäÿŃãĄőæ§

ãĄŞãĄőåät˙åŘĹãĄńãĄŕãĂĄçtŘæđIJçŽĎãĄńãĂĄâĂŹconsoleâĂŹãĄőæĺľéŹŘãĄŕâĂŹuserâĂŹãĄńåŁäãĄĹãĄęãĂĄâĂŹrootâĂŹã

èĺ■åőŽä¿Ń

```
users:
  console:
    roles: user
    groups: sysadmin

groups:
  sysadmin:
    roles: root, admin, system
    groups: user
  user:
    roles: ask
```

åřŽãĂĄãĆřãČńãČijãČŮãĆŠéŰćä£ĆäżŸãĄŚãĄęèĺŸè£řãĄŮãĄ§åät˙åŘĹãĂĄæIJĂçtÇçŽĎãĄńãČęãČijãĆűãĄńår¿ãĄŹãĆŃæĺľéŹŘã
åŘĹãĂĄèĺŸè£řçt˙ŤæČĚãĄńéŰćä£ĆãĄłãĄŔ‘‘users‘‘ åőŽç¿l˙ãĄőåśŢéŰŃãĆŠåĚĹãĄńèąŇãĄĘçĆžãĂĄusers
åőŽç¿l˙ãĄgãČęãČijãĆűãĄőæĺľéŹŘãĆŠæŇĞåőŽãĄŮãĄęãĄĎãĆŃåät˙åŘĹãĂĄgroups
åőŽç¿l˙ãĄgåŘŇãĄŸãČęãČijãĆűãĄńåĹěãĄőæĺľéŹŘãĆŠæŇĞåőŽãĄŮãĄęãĆĆãĂĄusers
ãĄgãĄőæŇĞåőŽãĄŇåĎłåĚĹãĄŢãĆŃãA¿ãĄŹãĂĆ

# CHAPTER 18

# Pre/Post Processors

åŕ¿èľ´śãĆĺãČşãĆÿãČşåĘĚãĄńãĄŕPre ProcessorsãĄÍPost
ProcessorsãĄő2çĺőéąđãĄőãČŮãČ■ãĆżãČČãĆţãĄÑãĄĆãĆŁãĄ¿ãĄŹãĂĆ

çŹžèľ´śæŰĞãĄńåŕ¿ãĄŮãĂĄåŕ¿èľ´śãĆĺãČşãĆÿãČşåĘĚãĄğãĄőåŕ¿èľ´śåĞęçŘĘåĽ■ãĄńåŁăåůěãĄŹãĆŃå£ĚèęĄãĄÑãĄĆãĆŃåăť´åŘĹ

- *Pre Processors* ãĄŕãĂĄåŕ¿èľ´śãĆĺãČşãĆÿãČşåĘĚéČĺãĄğåŕ¿èľ´śåĞęçŘĘãĆŠèąÑãĄĘåĽ■ãĄńãĂĄæŰĞå■ŮåĹŮãĄőåĽ■åĞęç
- *Post Processors* ãĄŕãĂĄåŕ¿èľ´śãĆĺãČşãĆÿãČşåĘĚéČĺãĄğåŕ¿èľ´śåĞęçŘĘãĆŠèąÑãĄčãĄ§å£IJç■ŤæŰĞãĄńåŕ¿ãĄŮãĂĄAPIãA

## 18.1 Pre Processors

Pre ProcessorsãĄŕãĂĄäžëäÿÑãĄőæŁ¡èśąå§žæIJñãĆŕãČľãĆźãĄÑãĆL'çűŹæL'£ãĄŮãĄ¿ãĄŹãĂĆ

```
programy.processors.processing.PreProcessor
```

ãĄŞãĄőãĆŕãČľãĆźãĄńãĄŕå■Ÿäÿ̈ĂãĄőãČąãĆ¡ãČČãČL'processãĄÑãĄĆãĆŁãĂĄåĚěåŁŻãĄŢãĆÑãĄ§stringãĄńåŕ¿ãĄŮåL'■åĞęçŘ
è£Ťå■t'ãĄŢãĆÑãĄ§æŰĞå■ŮåĹŮãĆŠåŕ¿èľ´śãĆĺãČşãĆÿãČşåĘĚãĄğåĹľçŤĺãĄŮåŕ¿èľ´śãĆŠéĂšèąÑãĄŮãĄ¿ãĄŹãĂĆ

```
class PreProcessor(Processor):

    def __init__(self):
        Processor.__init__(self)

    @abstractmethod
    def process(self, bot, clientid, string):
        pass
```

## 18.2 Post Processors

Post ProcessorsãĄŕãĂĄäžëäÿÑãĄőæŁ¡èśąå§žæIJñãĆŕãČľãĆźãĄÑãĆL'çűŹæL'£ãĄŮãĄ¿ãĄŹãĂĆ

```
programy.processors.processing.PostProcessor
```

ãĄŞãĄőãĆŕãČl'ãĆźãĄńãĄŕå■Ÿäÿ ĂãĄőãČąãĆ¡ãČČãČL'processãĄÑãĄĆãĆŁãĂĄåĚěåŁŻãĄŢãĆŇãĄ§stringãĄńår¿ãĄŮåL'■åĞęçĚ
è£Ťå■t'ãĄŢãĆŇãĄ§æŰĞå■ŮåĹŮãĆŠãĆĺãČşãČL'ãČęãČijãĆűãĄńår¿ãĄŹãĆŃå£IJç■ŤæŰĞãĄĺãĄŮãĄęä¡£çŤĺãĄŮãĄ¿ãĄŹãĂĆ

```
class PostProcessor(Processor):
    def __init__(self):
        Processor.__init__(self)

    @abstractmethod
    def process(self, bot, clientid, string):
        pass
```

# CHAPTER 19

## ãĆńãĆźãĆ£ãČăèęĄçťă

åŕ¿èľśãĆĺãČşãĆÿãČşãĄŕAIMLãĄőpatternèęĄçťăãČżtemplateèęĄçťăãĄńåŕ¿ãĄŮãĄęãĂą¡£çŤĺåŘŕèČ¡ãĄłèęĄçťăãĄőæŇĞåőŽãĆ

æŰřãĄŮãĄĎèęĄçťăãĆŠè£¡åŁăãĄŹãĆŃåăť åŘĹãĄńãĄŕãĂĄåĹľçŤĺèĂĚãĄőãČŃãČijãĆžãĆĎãĆůãĆźãČĘãČăèęĄäżűãĄńæš£ãĄčã

æŮćå■ŸèęĄçťăãĄńãĄďãĄĎãĄęãĆĆãĂĄåĞęçŘĘåĘĚåőźãĆŠåď Ľ æŻť ãĄŮãĄ§èęĄçťăåő§èčĚãĆŠèď ĞæŢřçŤĺæĎŔãĄŹãĆŃãĄŞ

- *pattern_nodes.conf* ïijŽ patternãĄğåĹľçŤĺãĄğãĄ■ãĆŃèęĄçťăãĄőåőŽç¿l'ãČŢãĆąãĆď ãČńãĂĆ
- *template_nodes.conf* ïijŽ templateãĄğåĹľçŤĺãĄğãĄ■ãĆŃèęĄçťăãĄőåőŽç¿l'ãČŢãĆąãĆď ãČńãĂĆ

# CHAPTER 20

## ãĆńãĆźãĆ£ãČăpatternèęĄçťă

åŕ¿èľśãĆĺãČşãĆÿãČşãĄŕ patternèęĄçťăãĄĮãĄŮãĄęãĂĄpattern_nodes.conf
ãĄğåőŽç¿ľãĄŢãĆŇãĄęãĄĎãĆŃAIMLãĆ£ãĆřãĆŠãĆţãČĺãČijãČĹãĄŮãĄ¿ãĄŹãĂĆ
pattern_nodes.conf
ãĆŠåď˙L'æŻť'ãĄŹãĆŃãĄŞãĄĮãĄğãĂĄèęĄçť'ăãĄńåŕ¿å£IJãĄŹãĆŃåĞęçŘĘãĆřãČľãĆźãĆŠåď˙L'æŻť'ãĄŮãĄ§ãĆŁãĂĄçŃňèĞłãĄőè

èęĄçt'ăãĄőåő§èčĚãĆŠåd'L'æŻt'ãĄŹãĆŃãĄĺãĂĄãČŚãČijãĆţãĄŇåŃŢä¡IJãĄŮãĄłãĄŔãĄłãĄčãĄ§ãĆŁãČŚãČŢã

èęĄçť'ăæŕŐãĄńäżěäÿŃãĄőèĺŸè£řãĆŠåĹŮèĺŸãĄŮãĄ¿ãĄŹãĂĆ

```
AIMLãĆ£ãĆřåŘ■ = pythonåĞęçŘĘãĆřãČl'ãĆźãĄőãČŚãĆź
```

ïijŁèĺŸè£řä¿Ń

```
#AIML 1.0
root = programy.parser.pattern.nodes.root.PatternRootNode
word = programy.parser.pattern.nodes.word.PatternWordNode
priority = programy.parser.pattern.nodes.priority.PatternPriorityWordNode
oneormore = programy.parser.pattern.nodes.oneormore.PatternOneOrMoreWildCardNode
topic = programy.parser.pattern.nodes.topic.PatternTopicNode
that = programy.parser.pattern.nodes.that.PatternThatNode
template = programy.parser.pattern.nodes.template.PatternTemplateNode

#AIML 2.0
zeroormore = programy.parser.pattern.nodes.zeroormore.PatternZeroOrMoreWildCardNode
set = programy.parser.pattern.nodes.set.PatternSetNode
bot = programy.parser.pattern.nodes.bot.PatternBotNode

#Custom
iset = programy.parser.pattern.nodes.iset.PatternISetNode
regex = programy.parser.pattern.nodes.regex.PatternRegexNode
```

æŰřãĄ§ãĄłpatternèęĄçť'ăãĆŠä¡IJæĹŘãĄŹãĆŃåăt'åŘĹãĂĄprogramy.parser.pattern.nodes.base.PatternNode
ãĆŠå§žåžŢãĆřãČl'ãĆźãĄĺãĄŮãĄęçűŹæL'£ãĄŮãĄ¿ãĄŹãĂĆ

æIJňå§žåžŢãĆŕãČľãĆźãĆŠçűŹæL’£ãĄŹãĆŃãĄŞãĄÍãĄğãĂĄAIMLãĄőXMLèęAçť’ăãĆŠpatternãĆŕãČľãĆźãĄőãČŐãČijãČL’åśđæ

äżěäÿŃãĄŇãĂĄãĆłãČijãČŘãČijãČľãĆd’ãČL’ãĄŹãĆŃäÿżãĄłãČąãĆ¡ãČČãČL’ãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

- `__init__(self, attribs, text, userid='*', element=None, brain=None)`

  xmlãĄőèęAçť’ăãĆŠèğčæđŘãĄŮãĄęåśŢéŰŃãĄŮãĄ¿ãĄŹãĂĆxmlãĄőåśđæĂğèÍŸè£řãĄŇ attribs ãĄńãČłãĆźãČĹãĄğãĂĄåĘĚåőźãĄŇ text ãĄğåijŢãĄ■æÿąãĄŢãĆŃãĄ¿ãĄŹãĂĆåśŢéŰŃãĄğãĄ■ãĄłãĄĐåăť’åŘĹãĄŕå£ĚèęĄã

- `def equivalent(self, other)`

  åĞęçŘĘèęAçť’ăãĄŇäżŰãĄőèľŢä¿ąèęAçť’ăãĄÍç■L’ä¿ąãĄŃãĄľãĄĘãĄŃãĆŠåĹd’åőŽãĄŮãĄ¿ãĄŹãĂĆ

- `def equals(self, client_context, words, word_no)`

  åŕ¿èśąæŰĞå■ŮåĹŮãĄŇèęAçť’ăãĄőãČńãČijãČńãĄńãČđãČČãČąãĄŹãĆŃãĄŃãĄľãĄĘãĄŃãĆŠåĹd’åőŽãĄŮãĄ¿ãĄŹãĂĆw
  ãĄğå■Ÿèłđå■Ÿä¡■ãĄőåĹĘåL’šãČłãĆźãČĹãĂąword_no ãĄğèľŢä¿ąéŰŃåğŃä¡■ç¡õãĄŇåijŢãĄ■æÿąãĄŢãĆŃãĄ¿ãĄŹãĂĆ
  åĹd’åőŽçţŘæđIJãĄŕ EqualsMatchãĆŕãČľãĆźïijĹprogramy.parser.pattern.matcher.EqualsMatchïijL’ãĄğè£ŤãĄŮãĂĄEqualsM
  True/False ãĆŠèÍ■åőŽãĄŮãĄ¿ãĄŹãĂĆ

- `def to_string(self, verbose=True)`

  ãČĞãČŘãČČãĆŕãĆĎãČ■ãĆőãČşãĆŕãĄőåĞžåŁŻãĄőçĆžãĄńãĂĄèęAçť’ăæČĚåăśãĆŠæŰĞå■ŮåĹŮèąĺçŔ¿ãĄńåd’L’æŔŻãĄŮ

- `def to_xml(self, client_context, include_user=False)`

  èęAçť’ăãĄőåĘĚåőźãĆŠXMLå¡ćåijŔãĄńåd’L’æŔŻãĄŮãĄ¿ãĄŹãĂĆXMLå¡ćåijŔãĄő *Braintree* ãĆŠåĞžåŁŻãĄŹãĆŃåăť’åŘĹãĄńåĹl’çŤĺãĄŮãĄ¿ãĄŹãĂĆ

# CHAPTER 21

## ãĆńãĆźãĆ£ãČătemplateèęĄçťă

åŕ¿èľśãĆĺãČşãČÿãČşãĄŕ templateèęĄçťăãĄĺãĄŮãĄęãĂĄtemplate_nodes.confãĆŠåŘńãĆĂãĆůãĆźãČĘãČăãĄğåőŽç¿ľãĄŢãĆŃãĄ§åĚĺãĄęãĄőAIMLãĆ£ãĆřãĆŠãĆţãČİãČijãČĹãĄŮãĄ¿ãĄŹãĂtemplate_nodes.conf
ãĆŠåď'L'æŻť'ãĄŹãĆŃãĄŞãĄĺãĄğãĂĄèęĄçť'ăãĄńåŕ¿å£IJãĄŹãĆŃåĞęçŘĘãĆřãČľãĆźãĆŠåď'L'æŻť'ãĄŮãĄ§ãĆŁãĂĄçŃňèĞłãĄőè

èęĄçt'ăãĄőåő§èčĚãĆŠåd'L'æŻt'ãĄŹãĆŃãĄĺãĂĄãČŚãČijãĆţãĄŃåŃŢä¡IJãĄŮãĄłãĄŔãĄłãĄčãĄ§ãĆŁãČŚãČŢã

èęĄçť'ăæŕŐãĄńäżěäÿŃãĄőèĺŸè£řãĆŠåĹŮèĺŸãĄŮãĄ¿ãĄŹãĂĆ

```
AIMLãĆ£ãĆřåŘ■ = pythonåĞęçŘĘãĆŕãČl'ãĆźãĄőãČŚãĆź
```

ïijŁèĺŸè£řä¿Ń

```
word = programy.parser.template.nodes.word.TemplateWordNode
authorise = programy.parser.template.nodes.authorise.TemplateAuthoriseNode
random = programy.parser.template.nodes.rand.TemplateRandomNode
condition = programy.parser.template.nodes.condition.TemplateConditionNode
srai = programy.parser.template.nodes.srai.TemplateSRAINode
sraix = programy.parser.template.nodes.sraix.TemplateSRAIXNode
get = programy.parser.template.nodes.get.TemplateGetNode
set = programy.parser.template.nodes.set.TemplateSetNode
map = programy.parser.template.nodes.map.TemplateMapNode
bot = programy.parser.template.nodes.bot.TemplateBotNode
think = programy.parser.template.nodes.think.TemplateThinkNode
normalize = programy.parser.template.nodes.normalise.TemplateNormalizeNode
denormalize = programy.parser.template.nodes.denormalise.TemplateDenormalizeNode
person = programy.parser.template.nodes.person.TemplatePersonNode
person2 = programy.parser.template.nodes.person2.TemplatePerson2Node
gender = programy.parser.template.nodes.gender.TemplateGenderNode
sr = programy.parser.template.nodes.sr.TemplateSrNode
id = programy.parser.template.nodes.id.TemplateIdNode
size = programy.parser.template.nodes.size.TemplateSizeNode
vocabulary = programy.parser.template.nodes.vocabulary.TemplateVocabularyNode
eval = programy.parser.template.nodes.eval.TemplateEvalNode
explode = programy.parser.template.nodes.explode.TemplateExplodeNode
implode = programy.parser.template.nodes.implode.TemplateImplodeNode
program = programy.parser.template.nodes.program.TemplateProgramNode
```

(continues on next page)

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```
lowercase = programy.parser.template.nodes.lowercase.TemplateLowercaseNode
uppercase = programy.parser.template.nodes.uppercase.TemplateUppercaseNode
sentence = programy.parser.template.nodes.sentence.TemplateSentenceNode
formal = programy.parser.template.nodes.formal.TemplateFormalNode
that = programy.parser.template.nodes.that.TemplateThatNode
thatstar = programy.parser.template.nodes.thatstar.TemplateThatStarNode
topicstar = programy.parser.template.nodes.topicstar.TemplateTopicStarNode
star = programy.parser.template.nodes.star.TemplateStarNode
input = programy.parser.template.nodes.input.TemplateInputNode
request = programy.parser.template.nodes.request.TemplateRequestNode
response = programy.parser.template.nodes.response.TemplateResponseNode
date = programy.parser.template.nodes.date.TemplateDateNode
interval = programy.parser.template.nodes.interval.TemplateIntervalNode
system = programy.parser.template.nodes.system.TemplateSystemNode
extension = programy.parser.template.nodes.extension.TemplateExtensionNode
learn = programy.parser.template.nodes.learn.TemplateLearnNode
learnf = programy.parser.template.nodes.learnf.TemplateLearnfNode
first = programy.parser.template.nodes.first.TemplateFirstNode
rest = programy.parser.template.nodes.rest.TemplateRestNode
log = programy.parser.template.nodes.log.TemplateLogNode
oob = programy.parser.template.nodes.oob.TemplateOOBNode
xml = programy.parser.template.nodes.xml.TemplateXMLNode
addtriple = programy.parser.template.nodes.addtriple.TemplateAddTripleNode
deletetriple = programy.parser.template.nodes.deletetriple.TemplateDeleteTripleNode
select = programy.parser.template.nodes.select.TemplateSelectNode
uniq = programy.parser.template.nodes.uniq.TemplateUniqNode
search = programy.parser.template.nodes.search.TemplateSearchNode
```

æŰřãĄ§ãĄłtemplateèęAçt'ăăĆŠä¡IJæĹŘãĄŹãĆŃåăt'åŘĹãĂĄprogramy.parser.template.nodes.base.TemplateNode ãĆŠå§žåžŢãĆŕãČl'ãĆźãĄĺãĄŮãĄęçűŹæL'£ãĄŮãĄ¿ãĄŹãĂĆ

æIJňå§žåžŢãĆŕãČl'ãĆźãĆŠçűŹæL'£ãĄŹãĆŃãĄŞãĄĺãĄğãĂĄAIMLãĄőXMLèęAçt'ăăĆŠtemplateãĆŕãČl'ãĆźãĄőãČŐãČijãČL'åśđ

ãĆłãČijãČŘãČijãČl'ãĆd'ãČL'ãĄŹãĆŃäÿżèęĄãĄłãČąãĆ¡ãČČãČL'ãĄńãĄŕãĂĄäžëäÿŃãĄőãĆĆãĄőãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

- `def parse_expression(self, graph, expression)`

  xmlãĄőèęAçt'ăăĆŠèğčæđŘãĄŮãĄęåśŢéŮŃãĄŮãĄ¿ãĄŹãĂĆAIMLãČŚãČijãĆţãĄőçŠřåćČãĄŇ graph ãĄğãĂĄèl'šå¡ŞãĆ£ãĆŕãĄőxmlèęAçt'ăăĄŇ expression ãĄğåijŢãĄ■æÿąãĄŢãĆŃãĄ¿ãĄŹãĂĆåśŢéŮŃãĄğãĄ■ãĄłãĄĐåăt'åŘĹ

- `def resolve_to_string(self, client_context)`

  èęAçt'ăăĄőåĘĚåőźãĆŠæŰĞå■ŮåĹŮ(å£IJç■ŤæŰĞ)ãĄńåśŢéŮŃãĄŮãĄ¿ãĄŹãĂĆå¿Ňè£řãĄő resolve() ãĄńãĆĹãĄčãĄęåŚijãĄşåĞžãĄŢãĆŃãĄ¿ãĄŹãĂĆ

- `def resolve(self, client_context)`

  åĂŃãĂĚãĄőtemplateèęAçt'ăăĆŠæŰĞå■ŮåĹŮãĄńåśŢéŮŃãĄŹãĆŃãĄ§ãĆĄãĄńãĂĄbrainãĄńãĆĹãĄčãĄęåŚijãĄşåĞžãĄŢã resolve() ãĆŠåő§èąŇãĄŮãĄęçţŘæđIJæŰĞå■ŮåĹŮãĆŠçŢ§æĹŘïijĹçţŘåŘĹïijL'ãĄŮãĄ¿ãĄŹãĂĆ

- `def to_string(self)`

  ãČĞãČŘãČČãĆŕãĆĎãČ■ãĆőãČşãĆŕãĄőåĞžåŁŻãĄőçĆžãĄńãĂĄèęAçt'ăæČĚåăśãĆŠæŰĞå■ŮåĹŮèąĺçŔ¿ãĄńåd'L'æŔŻãĄŮ

- `def to_xml(self, client_context)`

  èęAçt'ăăĄőåĘĚåőźãĆŠXMLå¡ćåijŔãĄńåd'L'æŔŻãĄŮãĄ¿ãĄŹãĂĆãĄŞãĆŃãĄŕãĂĄ*learnf/learnf* ãĄőçţŘæđIJãĄĺãĄŮãĄęaimlãČŢãĆąãĆd'ãČńãĆŠä¡IJæĹŘãĄŹãĆŃéŽŻãĄńåĹl'çŤĺãĄŮãĄ§ãĆŁãĂĄXMLå¡ćåijŔãĄő *Braintree* ãĆŠåĞžåŁŻãĄŹãĆŃåăt'åŘĹãĄńåĹl'çŤĺãĄŮãĄ¿ãĄŹãĂĆ

CHAPTER 22

# ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČş

## 22.1 ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãČŢãĆąãĆd'ãČń

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãČŢãĆąãĆd'ãČńãĄŕãĂĄåŕ¿èľśåĞęçŘĘãĆŠèąŇãĄĘãĄ§ãĆĄãĄőægŃæĹŘãČżåĞęçŘĘæŰź

- åŕ¿èľśçŤĺãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãČŢãĆąãĆd'ãČń ïijŽ åŕ¿èľśãĆĺãČşãĆÿãČşãĄőægŃæĹŘãČżåĞęçŘĘæŰźåij
- ãČ■ãĆřåĞžåŁŻçŤĺãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãČŢãĆąãĆd'ãČń ïijŽ åŕ¿èľśãĆĺãČşãĆÿãČşãĄőãČ■ãĆřåĞžåŁŻãĄőæŰźåijŔãĆŠæŇĞåőŽãĄŹãĆŃãČŢãĆąãĆd'ãČńãĂĆïijĹäžéźĆ■ãĂĄâĂŹãČ■ãĆ

ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆd'ãČńãĄŕãĂĄåŕ¿èľśãĆĺãČşãĆÿãČşãĄőèţůåŃŢæŹĆãĄńãĂĄ–configãĆłãČŮãĆůãČğãČşãĄğãĂĄãĆş

ãČ■ãĆřãĆşãČşãČŢãĆčãĆřãĄŕãĂĄåŕ¿èľśãĆĺãČşãĆÿãČşãĄőèţůåŃŢæŹĆãĄńãĂĄ–loggingãĆłãČŮãĆůãČğãČşãĄğãĂĄãČ■ãĆřãĆş

ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆd'ãČńãĄğæŇĞåőŽãĄğãĄ■ãĆŃãČŢãĆľãČijãČđãČČãČĹãĄŕãĂĄ.yamlãĂĄ.jsonãĂĄ.xmlãĄőãĄĎãĄ
--cformatãĆłãČŮãĆůãČğãČşãĄğãČŢãĆľãČijãČđãČČãČĹãĆŠæŇĞåőŽãĄŹãĆŃãĄŃãĂĄ-
–configãĆłãČŮãĆůãČğãČşãĄğæŇĞåőŽãĄŹãĆŃãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆd'ãČńãĄőæŃąåijţå■ŘãĄŃãĆĽ'ãČŢãĆľãČijãČđãČČ

èţůåŃŢãĆşãČđãČşãČĽ'ä¿Ń

```
python3 ../../src/programy/clients/console.py --config ./config.yaml --cformat␣
↪yaml --logging ./logging.yaml
```

## 22.2 ãĆşãČđãČşãČĽ'ãČľãĆd'ãČşãĆłãČŮãĆůãČğãČş

èţůåŃŢæŹĆãĄńæŇĞåőŽãĄŹãĆŃãĆşãČđãČşãČĽ'ãČľãĆd'ãČşãĆłãČŮãĆůãČğãČşãĄńãĄŕãĂĄäžěäÿŃãĄőãĆĆãĄőãĄŃãĄĆãĆŁãĄ

ãĄŞãĄőãĆşãČđãČşãČĽ'ãČľãĆd'ãČşãĆłãČŮãĆůãČğãČşãĄŕãĂĄåĚĺãĄęãĄőclientãĄğåŘŃãĄŸãĆłãČŮãĆůãČğãČşæŇĞåőŽãĆŠèą

- --config [ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆď'ãČńãČŚãĆź] ïijŽ clientåő§èąŇæŹĆãĄńä¡£çŤĺãĄŹãĆŃãĆşãČşãČŢãĆčãĆřãČŢãĆąã
- --cformat [yaml|json|xml] ïijŽ ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆď'ãČńãĄőãČŢãĆĺ'ãČijãČđãČČãČĹãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂ
- --logging [ãČ■ãĆřãĆşãČşãČŢãĆčãĆřãČŚãĆź] ïijŽ ãČ■ãĆřãĆşãČşãČŢãĆčãĆřãĄőãČŢãĆąãĆď'ãČńãČŚãĆźãĆŠæŇĞåőŽãĄŮ
- --noloop ïijŽ åŕ¿èľ śåĞęçŘĘãČńãČijãČŮãĆŠåő§èąŇãĄŮãĄłãĄĎãĆłãČŮãĆůãČğãČşãĄğãĄŹãĂĆãĆşãČşãČŢãĆčãĆřãČŢãĆ
- -âĂŤsubs ïijŽ äžčæŻ£ãĄĹåijŢæŢřèĺ■åőŽãČŢãĆąãĆď'ãČńãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆď'ãČń *ãĆşãČđãČşãČĽ'ãČĺ'ãĆď'ãČşãĆłãČŮãĆůãČğãČşãĄőç¡őæŔŻ* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

éĂŽä£ąçşžãĄőclientãĄğãČńãĆźãČİãČşãĆźåĘĚãĄńäžŸåŁäæČĚåăśãĆŠæăijçt'■ãĄŹãĆŃåăt'åŘĹãĄőãĆłãČŮãĆůãČğãČşãĄĺãĄŮãA

- -âĂŤversion ïijŽ åŕ¿èľ śãĆĺãČşãĆÿãČşãĄőversionåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆãČńãĆźãČİãČşãĆźåĘĚãĄńãĂĄ{âĂIJve âĂIJversionåŘ■âĂİ} ãĄőå¡ćåijŔãĄğæăijçt'■ãĄŢãĆŃãA¿ãĄŹãĂĆæIJłæŇĞåőŽãĄőåăt'åŘĹãĄńãĄŕãĂĄãČńãĆźãČİãČşãĆźã

## 22.3 ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆď'ãČń

ãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆď'ãČńãĄŕãĂĄèd'ĞæŢřãĄőãĆżãĆŕãĆůãČğãČşãĄğæğŃæĹŘãĄŢãĆŃãĄęãĄŁãĆŁãĂĄåd'ğãĄ■ãĄŔå

- client : ãĆćãČŮãČłãĆśãČijãĆůãČğãČşåśd'ãĄĺãĄŮãĄęãĄőæğŃæĹŘãĄńéŰćãĄŹãĆŃåőŽç¿l'ãĆŠèąŇãĄĘãĆżãĆŕãĆůãČğãČ
- bot : åŕ¿èľ śèęĄæśĆãĄńåŕ¿ãĄŮãĄęãĂĄåŕ¿èľ śåĞęçŘĘåĚĺä¡ŞãĄőåĹűå¿ąãĆŠèąŇãĄĘåśd'ãĄğãĂĄçŹžèľ śæŰĞãĄőåĹĘèğčãĆ
- brain : çŹžèľ śæŰĞæŕŐãĄőãČđãĆČãĆąåĞęçŘĘãĆĎãĆůãČŁãČłãĆłãĆŠåő§èąŇãĄŹãĆŃåśd'ãĄğãĂĄèęĄçt'ãæŕŐãĄőåŃŢä¡

clientãĄőãĆżãĆŕãĆůãČğãČşãĄğãĄŕãĂĄãĆćãČŮãČłãĆśãČijãĆůãČğãČşïijĹãĆŕãČl'ãĆd'ãĆćãČşãČĹãĆćãČŮãČłïijL'ãĄĺãĄŮãĄęãA

åŃŢä¡IJå¡ćæĚŃãĄńãĄŕãĂĄãĆşãČşãĆ¡ãČijãČńèţůåŃŢãĆĎãĂĄRESTéĂŽä£ąç■L'ãĄőæğŸãĂĚãĄłãĆd'ãČşãĆ£ãČŢãĆğãČijãĆźãA

ãĄŞãĆŇãĄńãĆĹãĆŁãĂĄïijŚãĄd'ãĄőãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆď'ãČńãĄńèd'ĞæŢřãĄőãĆŕãČl'ãĆd'ãĆćãČşãČĹãĆćãČŮãČłçŤ

ïijĹãĆŕãČl'ãĆd'ãĆćãČşãČĹãĆćãČŮãČłåĄt'ãĄŃãĆL'ãĆŕãČl'ãĆd'ãĆćãČşãČĹåŘ■ãĆŠæŇĞåőŽãĄŹãĆŃãĄŞãĄĺãĄğãĂĄåŕ¿å£IJãA

clientãĄőãĆżãĆŕãĆůãČğãČşãĄőåĚśéĂŽçŽĎãĄłåőŽç¿l'ãĄĺãĄŮãĄęãĂĄäžëäÿŃãĄőéäĚçŻőãĄŃèęŔåőŽãĄŢãĆŃãĄęãĄĎãA¿ãĄŹ

- description ïijŽ clientãĄńéŰćãĄŹãĆŃèłňæŸÖæŰĞãĆŠæŇĞåőŽãĄŮãA¿ãĄŹãĂĆ
- renderer ïijŽ åŕ¿èľ śçţŘæđIJãĄńåŕ¿ãĄŹãĆŃçůĺéŻĘç■L'ãĆŠèąŇãĄĘåăt'åŘĹãĄőåĞęçŘĘãĆŕãČl'ãĆźãĆŠæŇĞåőŽãĄŮãA¿ãĄŹ
- bot ïijŽ clientãĄŃåĹl'çŤĺãĄŹãĆŃbotåőŽç¿l'ãĄőåŘ■çğŕãĆŠæŇĞåőŽãĄŮãA¿ãĄŹãĄŃãĂĄåĘĚéČĺåĞęçŘĘãĄĺãĄŮãĄęâĄŹ
- bot_selector ïijŽ èd'ĞæŢřãĄőbotãĄŃå■ŸåIJĺãĄŹãĆŃåăt'åŘĹãĄőãĆżãČńãĆŕãĆ£ãČijãĄőåĞęçŘĘãĆŕãČl'ãĆźãĆŠæŇĞåőŽã

åŘĹãĂĄãĆćãČŮãČłãĆśãČijãĆůãČğãČşãĄőåŃŢä¡IJçŠŕåćČãĄńå£IJãĄŸãĄ§åĂŃåĹĕãĄőéäĚçŻőãĆĆå£ĖèęĄãĄńå£IJãĄŸãĄęåőŽç
ãĆşãČşãĆ¡ãČijãČńãĆŕãČl'ãĆd'ãĆćãČşãČĹãĄőåĂŃåĹĕåőŽç¿l'ä¿Ń

```
console:
    description: Program-Y Console Client
    prompt: ">>>"
```

RESTéĂŽä£ąãĆŕãČl'ãĆd'ãĆćãČşãČĹãĄőåĂŃåĹĕåőŽç¿l'ä¿Ń

```
yadlan:
    description: Program-Y REST Client
    host: 0.0.0.0
    port: 5100
    debug: false
    workers: 4
    config_key: false
```

ãĄŢãĆL'ãĄńãĂĄclientãĆżãĆŕãĆůãČğãČşãĄńãĄŕãĂĄåŕ¿èľ'śåĞęçŘĘãĄğä¡£çŤĺãĄŹãĆŃãČŢãĆąãĆd'ãČńçŠřáćČãĄńéŰćãĄŹãĆŃãèľşçt'řãĄńãĄd'ãĄĐãĄęãĄŕãĂĄ*ãČŢãĆąãĆd'ãČńçőąçŘĘ* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĐãĂĆ

botãĄõãĆżãĆŕãĆůãČğãČşãĄńãĄŕãĂĄäžëäÿŃãĄõãĆţãČŰãĆżãĆŕãĆůãČğãČşãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

- *BotãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČş*
  - conversations ïijŽ åŕ¿èľ'śåśëæ■t'ãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - splitter ïijŽ çŹžèľ'śæŰĞãĄõåĹĘèğčãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - joiner ïijŽ å£IJç■ŤæŰĞçŤ§æĹŘæŹĆãĄőçţĆçńŕæŰĞå■ŮãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - spelling ïijŽ ãĆźãČŽãČńãČĄãĆğãČČãĆŕãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - translation ïijŽ ç£žèĺşåĹűå¿ąãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - sentiment ïijŽ æĎ§æČĚåĹd'åőŽãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ

brainãĄõãĆżãĆŕãĆůãČğãČşãĄńãĄŕãĂĄäžëäÿŃãĄõãĆţãČŰãĆżãĆŕãĆůãČğãČşãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

- *BrainãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČş*
  - overrides ïijŽ æl'§èČ¡æŃąåijţãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - defaults ïijŽ åŔŰå¿Ůåd'śæŢŮæŹĆç■L'ãĄődefaultæŰĞå■ŮåĹŮãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - binaries ïijŽ ãĆůãČŁãČłãĆłãĄõãČŘãĆd'ãČŁãČłãČĞãČijãĆ£åĹl'çŤĺãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹã
  - braintree ïijŽ ãĆůãČŁãČłãĆłãĄõãČĂãČşãČŮåĞžåŁŻãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - services ïijŽ SubAgentéĂčæŘžæl'§èČ¡ãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - nlu ïijŽ NLUéĂŽä£ąãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - security ïijŽ åĹl'çŤĺåĹűéŹŘãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - oob ïijŽ OOB(Out of Band)åĞęçŘĘãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - dynamic ïijŽ åŃŢçŽĎãČĞãČijãĆ£åĞęçŘĘãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - tokenizer ïijŽ å■Ÿèłđå ĹĘèğčãĆĎæŰĞå■ŮåĹŮçţŘåŘĹãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ
  - debugfiles ïijŽ çŢřåÿÿæČĚåăśãĄõåĞžåŁŻãĄńéŰćãĄŹãĆŃéăĚçŻõãĆŠåőŽç¿l'ãĄŮãĄ¿ãĄŹãĂĆ

## 22.4 ãČ■ãĆřãĆşãČşãČŢãĆčãĆř

ãČ■ãĆřãĆşãČşãČŢãĆčãĆřãĄńãĄd'ãĄĐãĄęãĄŕãĂĄ *ãČ■ãĆřèĺ■åőŽ*ãĂĂãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĐãĂĆ

CHAPTER 23

# ãĆşãČşãČŢãĆčãĆřãĄőç¡őæŔŻ

## 23.1 ãČľãĆďãĆżãČşãĆźãĆ■ãČijãĄőç¡őæŔŻ

license.keysãĄőèĺ■åőŽåĂďãĆŠç¡őæŔŻãĄŹãĆŃæľ§èČ¡ãĄğãĄŹãĂĆ

`LICENSE_KEY:VALUE`
ãĆŠãĆşãČşãČŢãĆčãĆřãĄőæğŃæĹŘãĆćãĆďãČĘãČăãĄńæŇĞåőŽãĄŮãĄ§åăťåŘĹãĄńãĂĄlicense.keysãĄőåĂďãĄŇç¡őæŔŻãĄŮ

èĺ■åőŽä¿Ń

äżěäÿŇãĄőãĆĹãĄĘãĄńãĂĄãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆďãČńãĄń `LICENSE_KEY:VALUE`
ãĄĺèĺŸèijL'ãĄŮãĄęãĄŁãĄ■ãĄ¿ãĄŹãĂĆ

`LICENSE_KEY:` ãĄŕåŻžåőŽåĂďãĄğãĂĄ `VALUE`
ãĄŕlicense.keysãĄńèĺŸèijL'ãĄŹãĆŃãĆ■ãČijåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

```
client:
  email:
    username: LICENSE_KEY:EMAIL_USERNAME
    password: LICENSE_KEY:EMAIL_PASSWORD
```

license.keysãĄńäżěäÿŇãĄőãĆĹãĄĘãĄńèĺŸèijL'ãĄŹãĆŃãĄĺãĂĄåő§èąŇæŹĆãĄńäÿŁèĺŸãĄőLICENSE_KEY:VALUEãĆŠlicense.

```
EMAIL_USERNAME=sample@somewere.com
EMAIL_PASSWORD=qwerty
```

gitãĆŠåĹ'çŤĺãĄŹãĆŃåăť åŘĹãĂĄlicense.keysãĆŠ.gitignoreãĄńèĺ■åőŽãĄŹãĆŃãĄŞãĄĺãĄğæĎŔåŻşãĄŻãĄŽçŹżéŇšãĄŮãĄęãĄ

## 23.2 ãĆşãČđãČşãČL'ãČľãĆďãČşãĆłãČŮãĆůãČğãČşç¡őæŔŻ

substitutions.txtãČŢãĆąãĆďãČńãĆŠãĆşãČđãČşãČL'ãČľãĆďãČşåijŢæŢřãĄńãĄŮãĂĄår¿èľśãĆĺãČşãĆÿãČşãĆŠèţůåŃŢãĄŹãĆŃãĄ
ãĆşãČđãČşãČL'ãČľãĆďãČşãĆłãČŮãĆůãČğãČş –subs
ãĄğæŇĞåőŽãĄŮãĄ§ãČŢãĆąãĆďãČńãĄğç¡őæŔŻãĆŠèąŇãĄĐãĄ¿ãĄŹãĂĆ

èÍ■åőŽä¿Ń

äżěäÿŃãĄőãĆĹãĄĘãĄńãĂĄãĆşãČşãČŢãĆčãĆřãČŢãĆąãĆď'ãČńãĄń $ +VALUE
ãĄÍèĺÝèijL'ãĄŮãĄęãĄŁãĄ■ãĄ¿ãĄŹãĂĆ
VALUEãĄŕsubstitutions.txtãĄńèĺÝèijL'ãĄŹãĆŃãĆ■ãČijåŘ■ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

```
client:
  email:
    host: $EMAIL_HOST
    port: $EMAIL_PORT
```

substitutions.txtãĆŠäżěäÿŃãĄőãĆĹãĄĘãĄńèĺÝèijL'ãĄŹãĆŃãĄÍãĂĄåő§èąŇæŹĆãĄńäÿŁèĺŸãĄő$VALUEãĆŠsubstitutions.txtãĄ

```
$EMAIL_HOST:prod_server.com
$EMAIL_PORT:9999
```

ãĄŞãĆŇãĄńãĆĹãĆŁãĂĄ `--subs substitutions.txt` ãĄÍèţůåŃŢæŹĆãĄńç¡őæŘŻãČłãĆźãČĹãĆŠèĺ■åőŽãĄŹãĆŃãĄăãĄŚ

# CHAPTER 24

## ãČ■ãĆřèĺ■åőŽ

åf¿èl'śãĆĺãČşãĆÿãČşãĄőãČ■ãĆřåĞžåŁŻãĄfãĂĄPythonãĄőãČ■ãĆőãČşãĆřæl'§èČ¡ãĆŠçŤĺãĄĎãĄęèąÑãĄĎãĄ¿ãĄŹãĂĆ
ãČ■ãĆřèĺ■åőŽãĆłãČŮãĆůãČğãČşãĆŠæŇĞåőŽãĄŹãĆŃæŰźæşŢãĄőèl'şçt'řãĄńãĄd'ãĄĎãĄęãĄfãĂĄ
PythonãČ■ãĆőãČşãĆřãČL'ãĆ■ãČěãČąãČşãČĹ ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

äžěäÿŃãĄfãĂĄãČ■ãĆřãĆşãČşãČŢãĆčãĆřãĄőæŇĞåőŽãĄĺãĄŮãĄęãĂĄ/tmp/y-bot.logãĄńãČ■ãĆřåĞžåŁŻãĄŹãĆŃèĺ■åőŽä¿ŃãĄğ

```
version: 1
disable_existing_loggers: False

formatters:
  simple:
    format: '%(asctime)s  %(name)-10s %(levelname)-7s %(message)s'

handlers:
  file:
    class: logging.handlers.RotatingFileHandler
    formatter: simple
    filename: /tmp/y-bot.log

root:
  level: DEBUG
  handlers:
      - file
```

# CHAPTER 25

## Bot ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČş

botãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄńãĄŕåĚśéĂŽåőŽç¿l’ãĄÍæl’§èČ¡åĹěåőŽç¿l’ãĄŇãĄĆãĆŁãĂĄåĚśéĂŽåőŽç¿l’ãĄğãĄŕã

- *æğŃœĹŘœČĚåăśåőŽç¿l’*
- *å£IJç■ŤœŰĞåőŽç¿l’*
- *åĹűéŹŘåĂd’åőŽç¿l’*
- *èţůåŃŢçţĆäžĘœŰĞåőŽç¿l’*

ãĄ¿ãĄ§ãĂĄæl’§èČ¡åĹěãĄńãĂĄbotãĄőœŰĞå■ŮåĹŮåĞęçŘĘãĆĎãĂĄäżŸåŁăæl’§èČ¡ãĄńéŰćãĄŹãĆŃœŇĞåőŽãĆŠèąÑãĄĘçĆžã

- *conversations* ïijŽ åŕ¿èl’śåśěæ■t’ãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿l’ãĄŮãĄ¿ãĄŹãĂĆ
- *splitter* ïijŽ çŹžèl’śæŰĞãĄőåĹĘèğčãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿l’ãĄŮãĄ¿ãĄŹãĂĆ
- *joiner* ïijŽ å£IJç■ŤæŰĞçŢ§æĹŘœŹĆãĄőçţĆçńŕæŰĞå■ŮãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿l’ãĄŮãĄ¿ãĄŹãĂĆ
- *spelling* ïijŽ ãĆźãČŽãČńãČĄãĆğãČČãĆŕãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿l’ãĄŮãĄ¿ãĄŹãĂĆ
- *translation* ïijŽ ç£żèĺşåĹűå¿ąãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿l’ãĄŮãĄ¿ãĄŹãĂĆ
- *sentiment* ïijŽ æĎ§æČĚåĹd’åőŽãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿l’ãĄŮãĄ¿ãĄŹãĂĆ

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄőèÍŸè£řæŰźæşŢãĄŕãĂĄyamlãČŢãĆl’ãČijãČđãĆČãČĹãĆŠä¿ÑãĄńèłňæŸŐãĄŮãĄ¿ãĄŹ
jsonãĄŁãĆĹãĄşxmlãĄğãĆĆèÍŸèijL’æŰźæşŢãĄÑçŢřãĄłãĆŃãĄăãĄŚãĄğåŘ■çğřãĄŕåŘÑãĄŸãĄÍãĄłãĆŃãĄ§ãĆąĂĄjsonãĄŁãĆ

èĺ■åőŽä¿Ń

```
bot:
    version: v1.0
    brain: brain

    default_response: unknown
    default_response_srai: YEMPTY
    exception_response: Exception
    empty_string: YEMPTY

    max_question_recursion: 1000
    max_question_timeout: 60
    max_search_depth: 100
    max_search_timeout: 60
    max_search_condition: 20
```

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```
    max_search_srai: 50
    max_categories: 20000
    max_properties: 10000

    initial_question: ãĄŁãĄŕãĆĹãĄĘãĂĆ
    initial_question_srai: ãĆşãČşãČŘãČşãČŕ
    exit_response: çţĆäžĘãĄŮãĄ¿ãĄŹãĂĆ
    exit_response_srai: YEXITRESPONSE

    conversations:
        initial_topic: '*'
        max_histories: 100

    splitter:
        classname: programy.dialog.splitter.splitter_jp.SentenceSplitter
        split_chars: ãĂĆ

    joiner:
        classname: programy.dialog.joiner.joiner_jp.SentenceJoiner
        join_chars: .?!ãĂĆïij$ïijĄ
        terminator: ãĂĆ

    spelling:
        classname: programy.spelling.norvig.NorvigSpellingChecker
        alphabet: ABCDEFGHIJKLMNOPQRSTUVWXYZ
        check_before: false
        check_and_retry: false

    translation:
        classname: programy.translate.textblob_translator.TextBlobTranslator
        from: EN
        to: JP

    sentiment:
        classname: programy.sentiment.textblob_sentiment.TextBlobSentimentAnalyse
        scores: programy.sentiment.scores.SentimentScores
```

## 25.1 åĚśéĂŽåőŽç¿ľéăĚçŻő

### 25.1.1 æğŃæĹŘæČĚåăśåőŽç¿ľ

botãĄőå§žæIJňæČĚåăśãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ

Table 1: èĺ■åőŽéăĚçŻőäÿĂèęğ

| èĺ■åőŽåĎď | åĘĚåőź | åĹĺæIJ§åĎď |
|---|---|---|
| version | templateãĄő *program* èęĄçť ăãĄğåĞžåŁŻãĄŹãĆŃãČŘãČijãĆ<br>propertiesãĄńèĺŸèijL'ãĄŹãĆŃ *version*<br>ãĄŇãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆŃãĄ¿ãĄŹãĂĆ | |
| brain | botãĄŇåĹl'çŤĺãĄŹãĆŃbrainåőŽç¿ľãĄőåŘ■çğřãĂĆïijĹâĂŹb | |
| brain_selector | èď'ĞæŢřãĄőbrainãĄŇå■ŸåIJĺãĄŹãĆŃåăť'åŘĹãĄõãĆżãČňãĆ | |
| tab_parse_output | ãČŠãĆ£ãČijãČşãČđãČČãČĄæŹĆãĄõãČ■ãĆřåĞžåŁŻãĄğãĂĄ | |

### 25.1.2 å£lJç■ŤæŰĞåőŽç¿ľ

å£IJç■ŤæŰĞçŤ§æĹŘæŹĆãĄõãČĞãČŢãĆľãČńãČĹåĞęçŘĘãĄõåĘĚåőźãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ

Table 2: èÍ■åőŽéăĚçŻőäÿÄèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹÍæIJ§åĂď |
|---|---|---|
| default_response_srai | ãČđãČČãČĄãĄŹãĆŃpatternãĄÑãĄłãĄŃãĄčãĄ§åăť'åŘĹãĄńãĄ |
| default_response | ãČđãČČãČĄãĄŹãĆŃpatternãĄÑãĄłãĄŃãĄčãĄ§åăť'åŘĹãĄńãĄ<br>*default-response* ãĄÑãĂĄæIJňèÍ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆŃãĄ¿ãĄ |
| exception_response | åĞęçŘĘä¿Ńåď'ŰãĄÑçŹžçŤ§ãĄŮãĄ§åăť'åŘĹãĄńè£ŤãĄŹåŁIJçĄŢæŰĞãĄĆ<br>*exception-response* ãĄÑãĂĄæIJňèÍ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆŃãĄ¿ãĄ |
| empty_string | pre_processorãĄőåĞęçŘĘçţŘæđIJãĄÑçĎąãĄĎåăť'åŘĹãĄńèÍ■åőŽãĆĹãĆŁãĆĆçŹžèľśæŰĞ |

## 25.1.3 åĹűéŹŘåĂď'åőŽç¿ľ

åŕ¿èľśåĞęçŘĘãĄńãĄŁãĄŚãĆÑãĂĄæŹĆéŰŞãČżæŢřéĞŔãĄńéŰćãĄŹãĆÑåĹűéŹŘåĂď'ãĆŠåőŽç¿ľ'ãĄŮãĄ¿ãĄŹãĂĆ

Table 3: èÍ■åőŽéăĚçŻőäÿÄèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹÍæIJ§åĂď |
|---|---|---|
| max_question_recursion | æŰĞæŐćçť'ćæIJĂåď'ğåŽđæŢřãĂĆéŢůæŰĞãĄÑåĚěåŁŻãĄŢãĆÓÑãĂĄåĹĘåL'šæŰĞå■Ůã<br>*exception-response* ãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ | |
| max_question_timeout | æŰĞæŐćçť'ćæIJĂåď'ğæŹĆéŰŞãĂĆéŢůæŰĞãĄÑåĚěåŁŻãĄŢãĆÑãĂĄåĹĘåL'šæŰĞå■Ů<br>*exception_response* ãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ | 1(åĹűéŹŘãĄłãĄŮ) |
| max_search_timeout | å■ŸèłđæŐćçť'ćæIJĂåď'ğæŹĆéŰŞãĆŠçğŠå■Ÿä¡■ãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆæŰĞæŐ<br>*exception-response* ãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ | 1(åĹűéŹŘãĄłãĄŮ) |
| max_search_depth | å■ŸèłđæŐćçť'ćåĹĘåšŘæIJĂåď'ğæŢřãĂĆ<br>*ãČŕãĆd'ãČńãČL'ãĆńãČijãČL'* ãĂĄ *set*<br>ç■L'ãĄőæŇĞåőŽãĄğå■ŸèłđãĄőæŐćçť'ćãĄŇèĘĺåď'ğãĄńãĄłãĄčãĄ§åăť'åŘĹãĄőå■Ÿèłđ<br>*exception-response* ãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ | 100 |
| max_search_condition | *conditionèęÁçţ'ãăĄğãĄőloop* ãĄőæIJĂåď'ğåŽđæŢřãĂĆ-<br>conditionãĄőloopèÍŸèijĽæŹĆãĄńcondi-<br>tionãĄőæÌąäżűãĄńãČđãČČãČĄãĄŮãĄłãĄŃãĄčãĄ§åăť'åŘĹçĎąéŹŘãČńãČijãČŮãĄńãA<br>*exception-response* ãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ | 100 |
| max_search_srai | *srai* ãĄőæIJĂåď'ğæŐćçť'ćåŽđæŢřãĂĆs-<br>raiãĄőèÍŸè£řãĄŇåĘ■åÿřåŚijãĄşåĞžãĄŮãĄńãĄłãĄčãĄ§åăť'åŘĹãĄőåĘ■åÿřåŚijãĄşåĞž<br>*exception-response* ãĄőèÍ■åőŽåĂď'ãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ | 50 |
| max_categories | æIJĂåď'ğèł■ãĄ£è¿ijãĄ£categoryæŢřãĂĆAIMLãĄőæIJĂåď'ğèł■ãĄ£è¿ijãĄ£categoryæŢř<br>*errors* ãĄődescriptionãĄń `Max categories [n] exceeded` ãĄĺãĄŮãĄęåĞžåŁŻãĄŢãĆÑãĄ¿ãĄŹãĂĆ | 3000 |
| max_properties | åĹ'çŤĺåŔŕèČ¡ãĄłãĆřãČ■ãČijãČŘãČńåď'L'æŢřãĄőæIJĂåď'ğæŹĆãĂĆnameåđÑãČždataåđ<br>*exception-response* ãĆŠè£ŤãĄŮãĄ¿ãĄŹãĂĆ | 256 |

## 25.1.4 èţůåŃŢçţĆäžĘæŰĞåőŽç¿ľ

ãĆşãČşãĆ¡ãČijãČńç■L'ãĄğãĄőåĞęçŘĘãĄőåăť'åŘĹãĄõãĂĄbotèţůåŃŢãČżçţĆäžĘæŹĆãĄőå£IJç■ŤæŰĞãĄńéŰćãĄŹãĆÑåĘĚåőźã

Table 4: èÍ■åőŽéăĚçŻőäÿÄèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹÍæIJ§åĂď |
|---|---|---|
| initial_question_srai | èţůåŃŢæŹĆçŹžèľśæŰĞãĂĆclientèţůåŃŢæŹĆãĄńåĞęçŘĘãĄŹãĂĆçŹžèľśæŰĞãĂĆçŹž | |
| initial_question | èţůåŃŢæŹĆå£IJç■ŤæŰĞãĂĆinitial_question_sraiãĄńår¿å£IJãĄŹãĆÑãĆůãČłãČłãĆłãĄ | |
| exit_response_srai | çţĆäžĘæŹĆçŹžèľśæŰĞãĂĆclientçţĆäžĘæŹĆãĄńåĞęçŘĘãĄŹãĂĆçŹžèľśæŰĞãĂĆçŹž | |
| exit_response | çţĆäžĘæŹĆå£IJç■ŤæŰĞãĂĆexit_response_sraiãĄńår¿å£IJãĄŹãĆÑãĆůãČłãČłãĆłãĄÑ | |

## 25.2 conversations

åŕ¿èľśåśěæ■ť ãĄőçőąçŘĘãĄńéŰćãĄŹãĆŃåĹűå¿ąéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ

Table 5: èĺ■åőŽéăĚçŻőäÿĂèęğ

| èĺ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| initial_topic | åŕ¿èľśåśěæ■ť ãĄőåĹİåŽđçŤ§æĹŘæŹĆãĄńèĺ■åőŽãĄŹãĆŃTopicãĄőåĹİæIJ§åĂď ãĂĆ |
| max_histories | åŕ¿èľśåśěæ■ť ãĄőæIJĂåď ğä£İæŇĄæŢřãĂĆ | 100 |

## 25.3 splitter

åĚěåŁŻãĄŢãĆŇãĄ§çŹžèľśæŰĞãĆŠèď ĞæŢřæŰĞãĄńåĹĘåL'šãĄŹãĆŃãĄ§ãĆĄãĄőåőŽç¿ľãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ

Table 6: èĺ■åőŽéăĚçŻőäÿĂèęğ

| èĺ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| classname | åĹľçŤĺãĄŹãĆŃSplitterãĄőåĞęçŘĘãĆŕãČľãĆńãĄĆ | programy.dialog.splitter.regex.RegexSentenceSplitter |
| split_chars | propertiesãĄńèĺŸèijL'ãĄŹãĆŃ<br>*splitter_split_chars*<br>ãĄŇãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆŇãĄ¿ãĄŹãĂĆçŹžèľśæŰĞãĄőåĹĘ | [:;,.?!] |

æŮěæIJňèłđãĄğãĄőåŕ¿èľśãĆŠèąŇãĄĘåăť åŘĹãĄńãĄŕãĂĄclassname ãĄńãĂĄâĂŹprogramy.dialog.splitter.splitter_jp.SentenceSplitterâĂŹ ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

## 25.4 joiner

æIJĂçţĆçŽĎãĄłå£IJç■ŤæŰĞãĆŠçŤ§æĹŘãĄŹãĆŃéŽŻãĄńãĂĄèď ĞæŢřæŰĞãĆŠçţŘåŘĹãĄŢãĄŽãĆŃãĄ§ãĆĄãĄőåőŽç¿ľãĆŠèąl

Table 7: èĺ■åőŽéăĚçŻőäÿĂèęğ

| èĺ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| classname | åĹľçŤĺãĄŹãĆŃJoinerãĄőåĞęçŘĘãĆŕãČľãĆńãĄĆ | programy.dialog.joiner.joiner.SentenceJoiner |
| terminator | å£IJç■ŤæŰĞãĄőæIJńåř¿ãĄńäžŸåŁãĄŹãĆŃæŰĞå■ŮãĂĆpropertiesãĄńèĺŸèijL'ãĄŹãĆŃ<br>*joiner_terminator*<br>ãĄŇãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆŇãĄ¿ãĄŹãĂĆ | |
| join_chars | terminaterãĄőäžŸåŁãĂĆŠæŁŚæ■ćãĄŹãĆŃãĂĄå£IJç■ŤæŰĞãĄőæIJńåř¿æŰĞå■Ůç¿d'ãĂĆproperti<br>*joiner_join_chars*<br>ãĄŇãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆŇãĄ¿ãĄŹãĂĆ | |

æŮěæIJňèłđãĄğãĄőåŕ¿èľśãĆŠèąŇãĄĘåăť åŘĹãĄńãĄŕãĂĄclassname ãĄńãĂĄâĂŹprogramy.dialog.joiner.joiner_jp.SentenceJoinerâĂŹ ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ

## 25.5 spelling

ãĆźãČŽãČńãČĄãĆğãČČãĆŕãĆŠèąŇãĄĘåăť åŘĹãĄőåőŽç¿ľãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ

Table 8: èÍ■åőŽéăĚçŻőäÿĂèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| classname | åĹľçŤĺãĄŹãĆŃãĆźãČŽãČńãČąãĆğãČČãĆńãČijãĄőåĞęçŘĘãĆŕãČľãĆźãĂĆ | (ãĄłãĄŲ) |
| alphabet | åŕ¿èśąãĄĺãĄłãĆŃãĆćãČńãČŢãĆąãČŹãČČãČĹæŰĞå■Ůç¿ďãĄĆžæŰĞå■Ů | (ąĆžæŰĞå■Ů) |
| check_before | äžŃåL’■ãČĄãĆğãČČãĆŕãĄőåő§æŰ¡æŇĞåőŽãĂĆ | false |
| check_and_retry | ãČĄãĆğãČČãĆŕçŢřåÿÿæŹĆãĄőåĘ■åĞęçŘĘæŇĞåőŽ | false |

## 25.6 translation

å£IJç■ŤæŰĞãĆŠç£żèĺşãĄŮãĄęè£ŤãĄŹåăť’åŘĹãĄőåőŽç¿ľãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ

Table 9: èÍ■åőŽéăĚçŻőäÿĂèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| classname | åĹľçŤĺãĄŹãĆŃTranslatorãĄőåĞęçŘĘãĆŕãČľãĆźãĂĆ | (ãĄłãĄŲ) |
| from | ç£żèĺşãĄőåŕ¿èśąãĄĺãĄłãĆŃèĺĂèłđçĺőåĹěãĂĆISO-639 èÍĂèłđãĆşãČijãČL’ãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ | (çľžæŰĞå■Ů) |
| to | ç£żèĺşå¿ŇãĄőèÍĂèłđçĺőåĹěãĂĆISO-639 èÍĂèłđãĆşãČijãČL’ãĄğæŇĞåőŽãĄŮãĄ¿ãĄŹ | (çľžæŰĞå■Ů) |

## 25.7 sentiment

æĎ§æČĚãĆŠåĹď’åőŽãĄŹãĆŃåăť’åŘĹãĄőåőŽç¿ľãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆïijĹæIJñæľ§èČ¡ãĄŕãĂĄä¡£çŤĺãĄŮãĄęãĄĎãĄ¿ãĄŻãĆ

Table 10: èÍ■åőŽéăĚçŻőäÿĂèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| classname | æĎ§æČĚåĹď’åőŽãĆŠèąÑãĄĘåĞęçŘĘãĆŕãČľãĆźãĂĆ | (ãĄłãĄŲ) |
| scores | æĎ§æČĚãĆŠæŢřåĂď’åŇŰãĄŹãĆŃåĞęçŘĘãĆŕãČľãĆźãĂĆ | (ãĄłãĄŲ) |

CHAPTER 26

# Brain ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČş

brainãĄőãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄğãĄŕãĂĄbrainãĄŇèąŇãĄĘåŕ¿èľśåĞęçŘĘãĄńéŰćãĄŹãĆŃèĺ■åőŽãĆĎãĂĄåŘĽ

æľ§èČ¡åĹěãĄńåőŽç¿ľãĆŠèąŇãĄĘçĆžãĄńãĂĄæňąãĄőãĆţãČŰãĆżãĆŕãĆůãČğãČşãĄğægğŃæĹŘãĄŮãĄ¿ãĄŹãĂĆ

- *overrides* ïijŽ æľ§èČ¡æŃąåijţãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *defaults* ïijŽ åŘŰå¿Ůåď śæŢŮæŹĆç■L'ãĄődefaultæŰĞå■ŮåĹŮãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *binaries* ïijŽ ãĆůãČŁãČłãĆłãĄőãČŘãĆd'ãČŁãČłãČĞãČijãĆ£åĹľçŤĺãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *braintree* ïijŽ ãĆůãČŁãČłãĆłãĄőãČĂãČşãČŮåĞžåŁŻãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *services* ïijŽ SubAgentéĂčæŘžæľ§èČ¡ãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *nlu* ïijŽ NLUéĂŽä£ąãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *security* ïijŽ åĹľçŤĺåĹűéŹŘãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *oob* ïijŽ OOB(Out of Band)åĞęçŘĘãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *dynamic* ïijŽ åŃŢçŽĎãČĞãČijãĆ£åĞęçŘĘãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *tokenizer* ïijŽ å■Ÿèłđå Ĺ Ęèğčã ĆĎæŰĞå■ŮåĹŮçţŘåŘĹãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ
- *debugfiles* ïijŽ çŢřåÿÿæČĚåăśãĄőåĞžåŁŻãĄńéŰćãĄŹãĆŃéăĚçŻőãĆŠåőŽç¿ľãĄŮãĄ¿ãĄŹãĂĆ

ãĆşãČşãČŢãĆčãĆřãČňãČijãĆůãČğãČşãĄőèÍŸè£řæŰźæşŢãĄŕãĂĄyamlãČŢãĆľãČijãČđãĆČãČĹãĆŠä¿ŃãĄńèłňæŸÕãĄŮãĄ¿ãĄŹ
jsonãĄŁãĆĹãĄşxmlãĄğãĆĆèÍŸèijL'æŰźæşŢãĄŇçŢřãĄłãĆŃãĄăãĄŠãĄğåŘ■çğřãĄŕåŘŃãĄŸãĄĺãĄłãĆŃãĄ§ãĆĄãĂĄjsonãĄŁãĆ

èĺ■åőŽä¿Ń

```
brain:

   overrides:
     allow_system_aiml: true

   defaults:
     default-get: unknown
     default-property: unknown
     default-map: unknown
```

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```
  binaries:
    save_binary: true
    load_binary: true
    load_aiml_on_binary_fail: true

  braintree:
    create: true

  services:
    REST:
        classname: programy.services.rest.GenericRESTService
        method: GET
        host: 0.0.0.0
    __PublishedREST__:
        classname: programy.services.publishedrest.PublishedRestService
    __PublishedBot__:
        classname: programy.services.publishedbot.PublishedBotService

  nlu:
      classname: programy.services.rest.GenericRESTService
      url: http://localhost:3000/run
      apikey: test_key
      use_file: false
      max_utterance_length: 300

  security:
      authorisation:
        classname: programy.security.authorise.usergroupsauthorisor.
↪BasicUserGroupAuthorisationService
        denied_srai: AUTHORISATION_FAILED
        denied_text: parmission error

  oob:
    default:
      classname: programy.oob.defaults.default.DefaultOutOfBandProcessor
    alarm:
      classname: programy.oob.defaults.alarm.AlarmOutOfBandProcessor
    camera:
      classname: programy.oob.defaults.camera.CameraOutOfBandProcessor
    clear:
      classname: programy.oob.defaults.clear.ClearOutOfBandProcessor
    dial:
      classname: programy.oob.defaults.dial.DialOutOfBandProcessor
    dialog:
      classname: programy.oob.defaults.dialog.DialogOutOfBandProcessor
    email:
      classname: programy.oob.defaults.email.EmailOutOfBandProcessor
    geomap:
      classname: programy.oob.defaults.map.MapOutOfBandProcessor
    schedule:
      classname: programy.oob.defaults.schedule.ScheduleOutOfBandProcessor
    search:
      classname: programy.oob.defaults.search.SearchOutOfBandProcessor
    sms:
      classname: programy.oob.defaults.sms.SMSOutOfBandProcessor
    url:
      classname: programy.oob.defaults.url.URLOutOfBandProcessor
    wifi:
      classname: programy.oob.defaults.wifi.WifiOutOfBandProcessor

  dynamic:
```

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```
      sets:
          numeric: programy.dynamic.sets.numeric.IsNumeric
          roman:   programy.dynamic.sets.roman.IsRomanNumeral
      maps:
          romantodec: programy.dynamic.maps.roman.MapRomanToDecimal
          dectoroman: programy.dynamic.maps.roman.MapDecimalToRoman
      variables:
          gettime: programy.dynamic.variables.datetime.GetTime

  tokenizer:
    classname: programy.dialog.tokenizer.tokenizer_jp.TokenizerJP
    punctuation_chars: ;'",!()[]ïijŽâĂŹâĂÎïijżãĂĄãĂĆïijĄïijĹïijL’ãĂÑãĂ■
    before_concatenation_rule: '.*[ -~]'
    after_concatenation_rule: '[ -~].*'

  debugfiles:
    save-errors: true
    save-duplicates: true
    save-errors_collection: true
```

## 26.1 overrides

æl’§èČ¡æŕŐãĄőåĞęçŘĘåĹűéŹŘç■L’ãĆŠåĹűå¿ąãĄŹãĆŃåőŽç¿l’ãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ

Table 1: èĺ■åőŽéăĚçŻőäÿĂèęğ

| èĺ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| allow_system_aiml | templateãĄő *system* èęĄçt’ãĂąĞãĄőãĆůãĆźãČĘãČăĂĆşãČđãČąåšČL’ïijĹOSä¿İå■ŸïijL’ãA |

## 26.2 defaults

åŔŰå¿ŮåĞęçŘĘãĆŠèąÑãĄĘèęĄçt’ăãĄğãĄőåŔŰå¿Ůåd’śæŢŮæŹĆãĄőèĺ■åőŽæŰĞå■ŮåĹŮãĆŠåőŽç¿l’ãĄŮãA¿ãĄŹãĂĆ

Table 2: èĺ■åőŽéăĚçŻőäÿĂèęğ

| èĺ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| default-get | æIJłåőŽç¿l’åd’L’æŢřãĄńår¿ãĄŮãĂĄ *get* èęĄçt’ăç■L’ãĄğãČĞãČijãĆ£åŔŰå¿ŮãĆŠèąÑãĄłãĄčãĄ§åăt’åŘĹãĄńèĺ■åőŽãĄŢãĆÑãĆN *default-get* ãĄÑãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆÑãA¿ãĄŹãĂĆ | unknown |
| default-property | *bot* èęĄçt’ăãĄğæIJłåőŽç¿l’ãĄőåd’L’æŢřåŘ■ãĆŠæÑĞåőŽãĄŮãĂĄ§åăt’åŘĹãĄńèĺ■åőŽãĄŢ *default-property* ãĄÑãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆÑãA¿ãĄ | |
| default-map | *map* èęĄçt’ăãĄğåd’L’æŔŽår¿èśąãĄőæŰĞå■ŮåĹŮãĄÑãĄłãĄčãĄ§åăt’åŘĹãĄńèĺ■åő *default-map* ãĄÑãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆÑãA¿ãĄŹãĄ | |

`default-get` ãĄőèĺ■åőŽåĂď’ãĄŕãĂĄ*json* ãĆĎãĂĄRDFãĄőæď’IJçt’ć *select* ç■L’ãĄőèęĄçt’ăãĄğãĄőåŔŰå¿Ůåď’śæŢŮæŹĆãĄńèĺ■åőŽãĄŢãĆÑãĆÑãĄĺãĄĺãĆĆãĄńãĂĄ`default-property` ãĂĄ `default-map` ãĄÑæIJłåőŽç¿l’ãĄőåăt’åŘĹãĄőåĂď’ãĄĺãĄŮãĄęãĆĆä¡£çŤĺãĄŢãĆÑãA¿ãĄŹãĂĆ

## 26.3 binaries

ãĆůãČŁãČłãĆłãĆŠåśŢéŰÑãĄŮãĄ§ãČŘãĆď’ãČŁãČłãČĞãČijãĆ£ãĄőåĹ’çŤĺãĄńéŰćãĄŹãĆÑåőŽç¿l’ãĆŠèąÑãĄĎãA¿ãĄŹãĂĆ

Table 3: èÍ■åőŽéăĚçŻőäÿĂèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹÍæIJ§åĂď |
|---|---|---|
| load_binary | Botètţůå[illegible] | [illegible] |
| save_binary | ãĆůãČŁãČłãĆłåśŢéŰŃæŹĆãĄőãČŘãĆď'ãČŁãČłãČĞãČijãĆ[illegible] | [illegible] |
| load_aiml_on_binary_fail | ãČŘãĆď'ãČŁãČłãČĞãČijãĆ£èł■ãĄ£è¿ijãĄ£åď'śæŢŮæŹĆãĄ[illegible] | [illegible] |

## 26.4 braintree

ãĆůãČŁãČłãĆłãĄőåśŢéŰŃçţŘæđIJãĄőãČĂãČşãČŮåĞžåŁŻãĄńéŰćãĄŹãĆŃåőŽç¿l'ãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ

Table 4: èÍ■åőŽéăĚçŻőäÿĂèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹÍæIJ§åĂď |
|---|---|---|
| create | ãĆůãČŁãČłãĆłãĄőåśŢéŰŃçţŘæđIJãĄőãČŢãĆąãĆď'ãČńçŢ§æ[illegible] | [illegible] |

## 26.5 services

åď'ŰéČĺãĆţãČijãČŞãĆźãĄĺéĂčæŘžãĄŹãĆŃçĆžãĄńãĂĄSubAgentéĂčæŘžæl'§èČ¡ãĄğä¡£çŢĺãĄŹãĆŃåĞęçŘĘãĆŕãČl'ãĆźãĆĎãĂ

äžëäÿŃãĄŕãĂĄãĆţãČijãČŞãĆźåŘ■æŕŐãĄńèÍ■åőŽåŔŕèČ¡ãĄłéăĚçŻőãĄğãĄŹãĄŅãĂĄä¡£çŢĺãĄŢãĆŃãĆŃéăĚçŻőãĄŕåĞęçŘĘãĆŕã
ãĆţãČijãČŞãĆźæŕŐãĄőåĞęçŘĘãĆŕãČl'ãĆźãĄőä¡IJæĹŘãĄńãĄd'ãĄĎãĄęãĄŕãĂĄ*ãĆńãĆźãĆ£ãČååd'ŰéČĺãĆţãČijãČŞãĆźåő§èčĚ*
ãĆŠåŔĆçĚğãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

Table 5: èÍ■åőŽéăĚçŻőäÿĂèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹÍæIJ§åĂď |
|---|---|---|
| classname | åď'ŰéČĺãĆţãČijãČŞãĆźãĄĺéĂŽä£ąãĄŹãĆŃåĞęçŘĘãĆŕãČl'ãĆźãĄğ[illegible] | (ãĄłãĄŮ) |
| url | åď'ŰéČĺãĆţãČijãČŞãĆźãĄőæŐěçűŽURLãĂĆ | (ãĄłãĄŮ) |
| host | åď'ŰéČĺãĆţãČijãČŞãĆźãĆŠæŔŘä¿ŻãĄŹãĆŃãĆţãČijãČŘãĄőãĄğãĄŹãĄŅãĂĄä¿ãĄ§ãĄŕã[illegible] | [illegible] |
| port | åď'ŰéČĺãĆţãČijãČŞãĆźãĆŠæŔŘä¿ŻãĄŹãĆŃãĆţãČijãČŘãĄőãĄğãĄŹãĄŅãĂĄä¿ãĄ§ãĄŕã[illegible] | [illegible] |
| method | HTTPéĂŽä£ąãĄőmethodåŘ■ãĂĆ | (ãĄłãĄŮ) |
| denied_srai | éĂŽä£ąãĄńåď'śæŢŮãĄŮãĄ§åăt'åŔĹãĄńåő§èąÑãĄŹãĆŃçŹźãĄğãĄŮ[illegible] | [illegible] |

èÍ■åőŽä¿ÑãĄńãĄĆãĆŃæňąãĄőãĆţãČijãČŞãĆźåőŽç¿l'ãĄŕãĂĄSubAgentæl'§èČ¡ãĆŠæŔŘä¿ŻãĄŹãĆŃãĄ§ãĆĄãĄőåőŽç¿l'ãĄğãĄ

- __PublishedREST__ ïijŽ *æśŐçŤĺRESTéĂŽä£ą* ãĆŠèąÑãĄĘåĞęçŘĘãĆŕãČl'ãĆźãĄğãĄŹãĂĆ
- __PublishedBot__ ïijŽ *åĚňéŰŃBotéĂčæŘž* ãĆŠèąÑãĄĘåĞęçŘĘãĆŕãČl'ãĆźãĄğãĄŹãĂĆ

## 26.6 nlu

ãČđãČČãČĄåĞęçŘĘãĄńä¡£çŤĺãĄŹãĆŃNLUãĆţãČijãČŘãĄńéŰćãĄŹãĆŃåőŽç¿l'ãĆŠèąÑãĄĎãĄ¿ãĄŹãĂĆ

NLUãĆţãČijãČŘãĄőæŐěçűŽåĚĹæČĚåăśãĄĺãĄŮãĄęæIJL'åŁźãĄłåőŽç¿l'ãĄŃãĄłãĄĎåăt'åŔĹãĄńãĄŕãĂĄNLUãĆŠåĹl'çŤĺãĄŮãĄ
NLUãĄńéŰćãĄŹãĆŃèl'şçt'ŕãĄŕãĂĄ*NLU* ãĆŠåŔĆçĚğãĄŮãĄęãĄŘãĄăãĄŢãĄĎãĂĆ

Table 6: èÍ■åőŽéăĚçŻőäÿĂèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹÍæIJ§åĂď |
|---|---|---|
| classname | NLUãĆţãČijãČŘãĄĺéĂŽä£ąãĄŹãĆŃåĞęçŘĘãĆŕãČl'ãĆźãĂĆ | programy.nlu.nlu.NluRequ |
| url | NLUãĆţãČijãČŘãĄőæŐěçűŽURLãĂĆ | http://localhost:3000/run |
| apikey | NLUãĆţãČijãČŘãĄĺãĄőéĂŽä£ąæŹĆãĄńäżŸåŁããĄŹãĆŃapi-keyãĂĆHTTPãČŸãČČãČĂïijŽâĂŹx-api-keyâĂŹãĄğéĂĄä£ąãĄŮãĄ¿ãĄŹãĂĆ | ę(çl'žæŰĞå■Ů) |
| timeout | NLUãĆţãČijãČŘæŕŐãĄőéĂŽä£ąæŹĆéŰŞãĄőæIJĂåď'ğåĂď'ïijŰçğŠå■Ÿä¡■ïijL'ãĆŠåĚśé | |
| use_file | NLUãĆţãČijãČŘãĄőæŐěçűŽåőŽç¿l'ãĄń *nlu_serversãČŢãĆąãĆď'ãČń* ãĆŠåĹl'çŤĺãĄŹãĆŃæŇĞåőŽãĂĆ | false |
| max_utterance_length | NLUãĆţãČijãČŘãĄńéĂĄä£ąãĄŹãĆŃçŹžèl'śæŰĞãĄőæIJĂåď'ğéŢůãĂĆåĹűéŹŘéŢůãĆŠ | 1(åĹűéŹŘãĄłãĄŮ) |

`classname` ãĄńãĄŕãĂĄâĂŹprogramy.nlu.cotobadesignNlu.CotobadesignNluâĂŹ ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
æIJňåĞęçŘĘãĆŕãČl'ãĆźãĄŕãĂĄsraixèęAçt'ăãĄğçŻt'æŐěNLUãĄŃãĆL'ãĄőçţŘæđIJãĆŠåŘŰå¿ŮãĄŹãĆŃ *NLUéĂŽä£ą* åĞęçŘĘãĄğãĆĆåĹl'çŤĺãĄŮãĄ¿ãĄŹãĂĆ

åřŽãĂĄèd'ĞæŢřãĄőNLUãĆţãČijãČŘãĆŠåĹl'çŤĺãĄŹãĆŃåăt'åŘĹãĄńãĄŕãĂĄ`use_file: true` ãĆŠæŇĞåőŽãĄŮãĄęãĂĄnlu_serversãČŢãĆąãĆď'ãČńãĄğåőŽç¿l'ãĆŠèąÑãĄčãĄęãĄŘãĄăãĄŢãĄĐãĂĆ

## 26.7 security

ãČęãČijãĆűæŕŐãĄğãĄőãĆůãČŁãČłãĆłãĄőåĹl'çŤĺåĹűéŹŘçL'ãĄőåőŽç¿l'ãĆŠèąÑãĄĐãĄ¿ãĄŹãĂĆ
securityãĄőåĹűå¿ąãĄńãĄŕãĂĄæňąãĄőïijŞãĄd'ãĄőçĺőéąđãĄÑãĄĆãĆŁãĄ¿ãĄŹãĂĆ

- authentication ïijŽ brainåĞęçŘĘãĄğãĄőåĹl'çŤĺåĹűéŹŘãĆŠèąÑãĄĐãĄ¿ãĄŹãĂĆïijĹä¡£çŤĺãĄŮãĄęãĄĐãĄ¿ãĄŹãĆŞãĂĆïijL
- account_linker ïijŽ åd'ŰéČĺãĆţãČijãČŞãĆźãĆŠéĂčæŘžãĄŮãĄęåĹl'çŤĺåĹűéŹŘãĆŠèąÑãĄĐãĄ¿ãĄŹãĂĆïijĹä¡£çŤĺãĄŮãĄęã
- authorisation ïijŽ templateãĄő *authorize* èęAçt'ăãĄğåĹl'çŤĺãĆŠåĹűéŹŘãĄŮãĄ¿ãĄŹãĂĆ

å¿ŞãĄčãĄęãĂĄ`authorisation` ãĄőãĄ£ãĄőåőŽç¿l'ãĄÑæIJL'åŁźãĄğãĄŹãĂĆèl'şçt'řãĄńãĄd'ãĄĐãĄęãĄŕãĂĄ*Security* ãĆŠåŔĆçĚğãĄŮãĄęãĄŘãĄăãĄŢãĄĐãĂĆ

Table 7: èÍ■åőŽéăĚçŻőäÿĂèęğ

| èÍ■åőŽåĂď | åĘĚåőź | åĹÍæIJ§åĂď |
|---|---|---|
| classname | åĹl'çŤĺåĹűéŹŘåĹűå¿ąãĆŠèąÑãĄĘåĞęçŘĘãĆŕãČl'ãĆźãĂĆ | (ãĄłãĄŮ) |
| denied_srai | èl■èĺijãĄńåd'śæŢŮãĄŮãĄ§åăt'åŘĹãĄńåő§èąÑãĄŹãĆŃçŹžèl'śæŰĞãĄőæIJĂåď'ğéŢůãĂĆçŹžèl'śæŰĞãĄ | |
| denied_txt | èl■èĺijãĄńåd'śæŢŮãĄŮãĄ§åăt'åŘĹãĄńè£ŤãĄŹæŰĞå■ŮåĹŮãĄŃä¡£çŤĺãĄŢãĆŃãĄ¿ãĄŹãĂĆ | (ãĄłãĄŮ) |

`denied_srai` ãĄĺ `denied_txt` ãĄőäÿąæŰźãĄŃæŇĞåőŽãĄŢãĆŃãĄęãĄĐãĆŃåăt'åŘĹãĂĄ denied_sraiãĄőçţŘæđIJãĄŃçl'žæŰĞå■ŮãĄőåăt'åŘĹãĄńãĂĄdenied_txtãĄőæŰĞå■ŮåĹŮãĄŃä¡£çŤĺãĄŢãĆŃãĄ¿ãĄŹãĂĆ

## 26.8 oob

*OOBãĄőèĺ■åőŽ* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ

## 26.9 dynamic

ãČĞãČijãĆ£ãĄőåŔŰå¿ŮãČżåď'L'æŔŻãĆŠåĂď'ãĆŠåőŽç¿l'ãĄŹãĆŃå¡ćåijŔãĄğãĄŕãĄłãĄŔãĂĄåĞęçŘĘãĆŕãČl'ãĆźãĆŠåĹl'çŤĺãĄ
dynamicãĄŇåĹl'çŤĺãĄğãĄ■ãĆŃéăĚçŻőãĄńãĄŕãĂĄæňąãĄőïijŞãĄď'ãĄőçĺőéąđãĄŇãĄĆãĆŁãĄ¿ãĄŹãĂĆ

- setsïijŽ patternãĄő *set* èęAçt'ăãĄńår¿ãĄŹãĆŃãČđãČČãČĄåĞęçŘĘãĆŠæŇĞåőŽãĄŢãĆŇãĄ§åĞęçŘĘãĆŕãČl'ãĆźãĄğåő§æŰ
- mapsïijŽ templateãĄő *map* èęAçt'ăãĄńår¿ãĄŹãĆŃåď'L'æŔŻåĞęçŘĘãĆŠæŇĞåőŽãĄŢãĆŇãĄ§åĞęçŘĘãĆŕãČl'ãĆźãĄğåő§æ
- variables: ãĆŕãČ■ãČijãČŘãČńåď'L'æŢřïijĹnameïijL'ãĄő *get* ãĄńår¿ãĄŮãĄęåĞęçŘĘãĆŕãČl'ãĆźãĄőçţŘæđIJãĆŠè£ŤãĄŮãĄ¿

ãĄİãĆŇãĄđãĆŇãĄğãĂĄæňąãĄőåőŽç¿l'ãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ

Table 8: èĺ■åőŽéăĚçŻőäÿĂèęğ

| èĺ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| ãĆĺãČşãČĹãČłåŘ■ | ãĆĺãČşãČĹãČłåŘ■ãĄńèl'šå¡ŞãĄŹãĆŃèęAçt'ăãĄőåĞęçŘĘãĆŕãČl'ãĆźãĄğåő§æŰ | ãĄŹãĂĆ |

èĺ■åőŽä¿ŃãĄńãĄĆãĆŃåŘĎåĞęçŘĘãĆŕãČl'ãĆźãĄğãĄŕãĂĄäżěäÿŃãĄőåĞęçŘĘãĆŠèąŇãĄĎãĄ¿ãĄŹãĂĆ

Table 9: èĺ■åőŽéăĚçŻőäÿĂèęğ

| çĺőéąđ | ãĆĺãČşãČĹãČłåŘ■ęçŘĘãĆŕãČl'ãĆź | åĞęçŘĘåĘĚåőź |
|---|---|---|
| sets | numeric | programy.dynamic.sets.numeric.IsNumeric |
| | roman | programy.dynamic.sets.roman.IsRomanDigit |
| maps | romantodec | programy.dynamic.maps.roman.MapRomanToDecimal |
| | dectoroman | programy.dynamic.maps.roman.MapDecimalToRoman |
| variables | gettime | programy.dynamic.variables.datetime.GetTime |

åřŽãĂąãĄŞãĆŃãĆĽãĄőåőŽç¿l'ãĄŇæIJL'åŁźãĄłåät'åŘĹãĂĄåŘĎèęAçt'ăãĄőåĞęçŘĘãĄĺãĄŮãĄęåĎłåĚĹãĄŢãĆŃãĆŃãĄ§ãĆĄã
âĂŸmapsâĂŹ, âĂŸdefaultsâĂŹ ãĄğãĄőåŘŇäÿĂåŘ■çğřãĄőæŇĞåőŽãĄŕçĎąåŁźãĄńãĄłãĆŁãĄ¿ãĄŹãĂĆ

## 26.10 tokenizer

çŹžèl'śæŰĞãĄőå■Ÿèłđå£ęèğčãĆĎãĂĄå£IJç■ŤæŰĞçŤ§æĹŘæŹĆãĄńèąŇãĄĘæŰĞå■ŮåĹŮçţŘåŘĹïijĹtemplateãĄőèęAçt'åå■Ÿä

Table 10: èĺ■åőŽéăĚçŻőäÿĂèęğ

| èĺ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| classname | åĹl'çŤĺãĄŹãĆŃTokenizerãĄőåĞęçŘĘãĆŕãČl'ãĆźãĂĆ | programy.dialog.tokenizer. |
| punctuation_chars | åŇžåĹĞãĆŁæŰĞå■ŮæL'śãĄĎãĆŠèąŇãĄĘæŰĞå■ŮãĆŠæŇĞãĄŹãĄŕãĄłãĄŔãĂĄåŇž<br>*punctuation_chars* ãĄŇãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆŃãĄ¿ |
| before_concatenation_rule | å£IJç■ŤæŰĞçŤ§æĹŘç■L'ãĄğãĂĄçŤ§æĹŘãĄŢãĆŃãĄ§èd'ĞæŢřãĄőæŰĞå■ŮåĹŮãĆŠé<br>*before_concatenation_rule*<br>ãĄŇãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆŃãĄ¿ãĄŹãĂĆ |
| after_concatenation_rule | å£IJç■ŤæŰĞçŤ§æĹŘç■L'ãĄğãĂĄçŤ§æĹŘãĄŢãĆŃãĄ§èd'ĞæŢřãĄőæŰĞå■ŮåĹŮãĆŠé<br>*after_concatenation_rule* ãĄŇãĂĄæIJňèĺ■åőŽãĆĹãĆŁãĆĆåĎłåĚĹãĄŮãĄęä¡£çŤĺãĄŢãĆ |

æŮěæIJňèłđãĄğãĄőåŕ¿èľśãĆŠèąŇãĄĘåăť åŘĹãĄńãĄŕãĂĄclassname
ãĄńãĂĄâĂŹprogramy.dialog.tokenizer.tokenizer_jp.TokenizerJPâĂŹ ãĆŠæŇĞåőŽãĄŮãĄ¿ãĄŹãĂĆ
before_concatenation_rule,after_concatenation_rule
ãĄŕãĂĄæŮěæIJňèłđçŤĺãĄőèĺ■åőŽéäĚçŻőãĄğãĄŹãĂĆ

## 26.11 debugfiles

ãĆůãČŁãČłãĆłãĆĎèĺ■åőŽãČŢãĆąãĆd'ãČńãĄőåśŢéŰŃãĄńãĄŁãĄŚãĆŃçŢřåÿÿæČĚåăśãĄőåĞžåŁŻãĄńéŰćãĄŹãĆŃåőŽç¿l'ãĆŠè

Table 11: èĺ■åőŽéäĚçŻőäÿĂèęğ

| èĺ■åőŽåĂď | åĘĚåőź | åĹİæIJ§åĂď |
|---|---|---|
| save-errors | ãĆůãČŁãČłãĆłåśŢéŰŃæŹĆãĄőçŢřåÿÿèÍŸè£řãĆĎãĂĄæŢť'åŘĹæĂğãĄőäÿ■æ■čãĄńéŰ<br>*errosãĆĺãČşãČĘãĆčãČĘãĆč*<br>ãĄńåŕ¿ãĄŹãĆŃåĞžåŁŻåĞęçŘĘãĄŇèąŇãĆŔãĆŇãĄ¿ãĄŹãĂĆ | |
| save-duplicates | ãĆůãČŁãČłãĆłåśŢéŰŃæŹĆãĄőåőŽç¿l'éĞ■èd'ĞæČĚåăśãĄőåĞžåŁŻæŇĞåőŽãĂĆâĂŹtr<br>*duplicatesãĆĺãČşãČĘãĆčãČĘãĆč*<br>ãĄńåŕ¿ãĄŹãĆŃåĞžåŁŻåĞęçŘĘãĄŇèąŇãĆŔãĆŇãĄ¿ãĄŹãĂĆ | |
| save-errors_collection | åŘĎçĺőèĺ■åőŽãČŢãĆąãĆd'ãČńãĄőçŢřåÿÿãĄńéŰćãĄŹãĆŃæČĚåăśãĄőåĞžåŁŻæŇĞåőŽ<br>*erros_collectionãĆĺãČşãČĘãĆčãČĘãĆč*<br>ãĄńåŕ¿ãĄŹãĆŃåĞžåŁŻåĞęçŘĘãĄŇèąŇãĆŔãĆŇãĄ¿ãĄŹãĂĆãĂĆ | |

# CHAPTER 27

# OOBãĄőèĺ■åőŽ

OOB(Out of Band)åĞęçŘĘãĄńãĄŕãĂĄä¡£çŤĺãĄŹãĆŃOOBãĄőæľ§èČ¡æŕŐãĄńPythonãĆŕãČľãĆźãĄŇå£ĚèęĄãĄğãĄŹãĂĆ
ãĄŞãĄőãĆŕãČľãĆźãĄŕAIMLãĄőoobèęĄçť´ãäĄğåijŢãĄ■æÿąãĄŢãĆŇãĄ§æŰĞå■ŮåĹŮãĆŠåijŢæŢřãĄĺãĄŮãĄęåĞęçŘĘãĄŮãĂĄ

äžěäÿŇãĄŕãĂĄåŕ¿èľśãĆĺãČşãĆÿãČşãĄŇä£ĺæŇĄãĄŹãĆŃåő§èčĚãĆŕãČľãĆźãĄőä¿ŃãĄğãĄŹãĂĆåő§èąŇéŰćæŢřåĘĚãĄŕåijŢæŢř
åő§éŽŻãĄńåĹľçŤĺãĄŹãĆŃåăť´åŘĹãĄŕãĂĄåĂŇãĂĚãĄőãĆůãĆźãČĘãČăãĄńå£IJãĄŸãĄ§åő§èčĚãĄŇå£ĚèęĄãĄğãĄŹãĂĆ

```
oob:
  default:
    classname: programy.oob.defaults.default.DefaultOutOfBandProcessor
  alarm:
    classname: programy.oob.defaults.alarm.AlarmOutOfBandProcessor
  camera:
    classname: programy.oob.defaults.camera.CameraOutOfBandProcessor
  clear:
    classname: programy.oob.defaults.clear.ClearOutOfBandProcessor
  dial:
    classname: programy.oob.defaults.dial.DialOutOfBandProcessor
  dialog:
    classname: programy.oob.defaults.dialog.DialogOutOfBandProcessor
  email:
    classname: programy.oob.defaults.email.EmailOutOfBandProcessor
  geomap:
    classname: programy.oob.defaults.map.MapOutOfBandProcessor
  schedule:
    classname: programy.oob.defaults.schedule.ScheduleOutOfBandProcessor
  search:
    classname: programy.oob.defaults.search.SearchOutOfBandProcessor
  sms:
    classname: programy.oob.defaults.sms.SMSOutOfBandProcessor
  url:
    classname: programy.oob.defaults.url.URLOutOfBandProcessor
  wifi:
    classname: programy.oob.defaults.wifi.WifiOutOfBandProcessor
```

| ãČŚãČľãČąãĄĚãĄŹãĆŁ | ä¿Ń | ãČĞãČŢãĆľãČńãČĹ |
|---|---|---|
| classname | OOBåő§èčĚãĄőãČŢãĆŕPythonãĆŕãČľãĆźãĆŕAlarmOutOfBandProcessor | None |

OOBãĄőåĞęçŘĘæŰźæşŢãĄŕãĂĄ*OOB* ãĆŠåŔĆçĚğãĄŮãĄęãĄŔãĄăãĄŢãĄĎãĂĆ