Quiz for Day 1

Anne is minded by her babysitter.

Q. Assuming the image has been tagged by AI_Tagger with the two Pixel boxes, Agent_1 and Agent_2, how to enable your Cognitive System to correctly align the Agent_1 to “Anne” and the Agent_2 to “babysitter”? You may use the existing knowledge bases and define the rules which are generalisable.

You are expected to

(a) Derive the target *Thematic Role* starting from the below draft
*[**Hint**: Knowledge Base for Preposition can be used]*

Thematic Role (draft)
person : Anne
verb : mind
noun : babysitter

- KB for Preposition

Preposition	Thematic Roles
by	agent, conveyance, location
for	beneficiary, duration
from	source, location
to	destination, event, location
with	co-agent, instrument

Step1: by NER, Anne ->person name->agent, thus Agent: Anne
Step2: based on the KB of “by”, babysitter -> agent/conveyance/location
Step3: by querying the ConceptNet: how to derive the role of babysitter?

In (a), the purpose is to process the Text by creating Thematic Role based on the KB of preposition, KB of Concepts and rulesets.

Step 1

Anne detected automatically as name, by NER (name entity recognition)

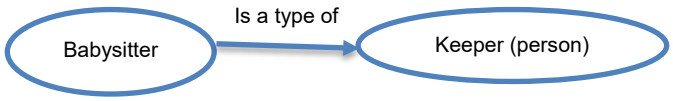
Rule 1: person name->agent, thus Agent: Anne

Step 2

Based on KB of “by”, babysitter -> agent/conveyance/location

Step 3

By searching Concept, the following graph can be retrieved automatically. Since Babysitter -> Keeper (person)-> agent (Rul1).



Pseudo code:

```
Role=""
For relationship in  API_Search(babysitter)
    # the list of useful relations in Conceptnet are predefined
    If relationship in [IsA, Isa_type_of]
    # query the sub-concepts and match (can be as same as a sub-string matching or as other complicated string similarity matching method) with the three candidates offered by Step_2
        For subConcept in API_Get_By_Rela(relationship)
            If subConcept matches [“agent”,”person”]
                Then Role = Agent
            If subConcept matches [“location”]
                Then Role = Loc
            If subConcept matches [“conveyance”]
                Then Role = Convy
```

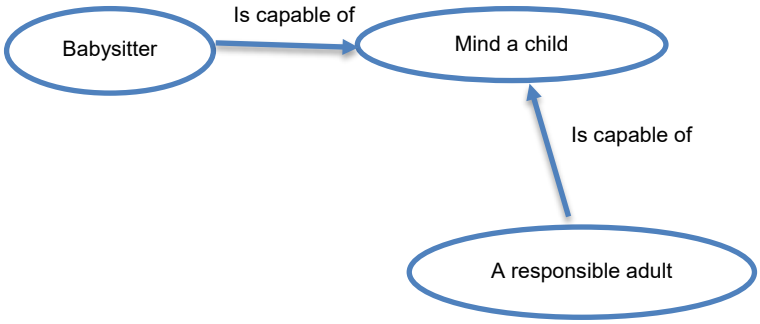
Thematic Role:
- Agent : Anne
- Verb : mind
- Agent : Babysitter

Strictly speaking, till now, from the sentence “***Anne is minded by her babysitter***”, only Roles of Agent should be used for the alignment. Other word tokens can be ruled out.

(b) Define the steps/rules to reason out the alignment level.
*[**Hint**: The pixel size of Agent_1 and Agent_2 can be calculated]*

Rule_2: SizeOfPixel (adult) > SizeOfPixel(child)

(c) Construct a proper Knowledge Base using the ConceptNet that can link the “babysitter” to “adult” and “Anne” to “child”, with the constrain of Thematic Role from (a)
*[**Hint**: Draw the knowledge graph through proper relationships]*



By accessing the sub-concepts of Babysitter, possible to find the match between “babysitter” with “adult”, bridging by the sub-concept of “Mind a child”

Given the **Rule2**, the “adult” having bigger pixel box is aligning with “babysitter”. Thus the remaining *“Anne”* should be in line with the smaller pixel box.
Thus in this case, the alignment is done and the new mapping “Anne”->”Child” can be further inferred.