

Algorithm

- Load the mapping between verbs and categories – for example “get” is a “Transfer in Ownership”.
- Load the schemas which state the 3-sentence pattern, the unknowns, the equation connecting the unknowns as well as the type.

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template = "[owner] had [R] [object] + [owner] [Tin0] [S] [object]"
          + "[owner] has [T] [object]";
formula = "R + S = T";
type = "Tin0";
name = "Transfer in Ownership";
```
- Split given sentences into simple sentences by using Stanford Parser. Identify the verb and display the corresponding noun phrase and verb phrase.
- Use coreference resolution using Stanford Decoref Annotator and replace pronouns by the nouns being referred to.
- Expand the sentences for complex verbs. For example – if David gives 3 apples to Ruth: David forfeits 3 apples and Ruth gets 3 apples are added as two sentences. This is done with a Stanford Dependency Parser which recognizes the entity “3 apples” and can easily identify the two participants David and Ruth.
- Build 3 data structures to hold information about the simplified sentences using the dependency tree
 - Tense of each sentence along with the verb/keyword
 - Nouns in each sentence as well as their type – owner, place or object
 - Entities in each sentence – 3 apples, 5 oranges etc.
- Examine the sentences one by one. Every time a keyword is encountered, trigger the instantiate schema method that is described below.
- Instantiating a schema :
 - Narrow down the list of applicable schemas using the type of nouns in the triggering sentence.
 - Traverse across the applicable schemas and finalize on the one that can map all the nouns and entities in that sentence to the unknowns in the schema's second sentence. If no entity is found in that sentence but an object exists without number, set the value of that unknown as “?”
 - Call the complete schema method described below.
- Completing a schema :
 - Examine all the sentences and try to match the given schema taking the tense and order of sentences into consideration as well as the tense of the underlying schema.
 - Attempt to solve a schema that has one question mark or two complete sentences which can be converted to two sentences and a sentence with a question.
 - Once the attempt is successful, save the answer, remove the other two sentences from the premises and start all over.
- Display all the answers.