

1) a) Morphological knowledge: - This concerns word formation from morphemes. Morphemes - minimal distinctive units of words.

b) Syntactic knowledge: - This concerns sentence formation - as to how words can be put together to form correct sentences. (also determines structural role of each word)

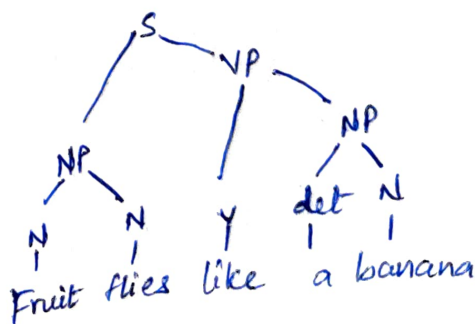
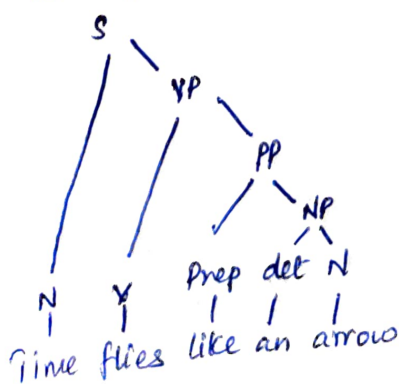
c) Semantic knowledge: - This concerns with meaning of the words & sentences. This is the study of context independent meaning, this is helpful to resolve ambiguities.

d) Pragmatic knowledge: - This concerns with contextual aspects of meaning in particular situations, as to how sentences are used in different situations.

e) Discourse knowledge: - This concerns connected sentences, as to how the immediately preceding sentence affect the interpretation of the next sentence.

f) Phonetic knowledge: - Phonetics - study of language at the level of sounds. Phonology - study of combination of sounds into organized units of speech, the formation of syllables & larger units.

2) These two sentences have a structural ambiguity / syntactic ambiguity.



• Syntactic ambiguity - when a sentence may be interpreted in more than one way due to ambiguous sentence structure.

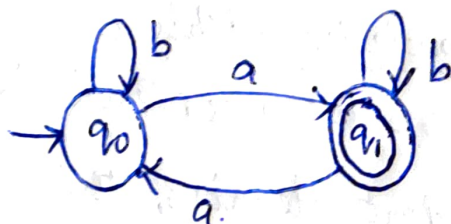
Resolved using: word embedding → type of word representation that allows words with similar meaning to have similar representation.

3) Applying porter stemmer from the rule group,

- a) circus \rightarrow circe
- b) Canaries \rightarrow Canari
- c) boss \rightarrow boss.

4) a) Odd number of a's in an input set of (a,b)

$$R = b^* a b^* (b^* a b^* a b^*)^*$$



b) ~~$R \Rightarrow \text{LETTER}^+ @ \text{LETTER}^+ . \text{LETTER}$~~

~~$$R = ([A-Z] | [A-Z]^+)^+ ($$~~

$$R = ([A-Z] | [a-z]) \cdot ([A-Z]^+ [a-z]^+ [0-9]^+)$$

$$@ ([A-Z] | [a-z])^+ \cdot ([A-Z] [a-z] |$$

$$[a-z] [a-z] | [a-z])$$

Regular exp for email .