Natural Language and Speech Processing
M.E. (CSE), II Sem. 2012
Assignment #1

1. What are the challenges of NLP?

2. Give one example of following ambiguities:

   (a) Phonetic

   (b) Syntactic

   (c) Pragmatic

3. What are the applications of NLP?

4. Draw the tree for the following phrases:

   (a) after 5 pm.

   (b) on Tuesday.

   (c) From Delhi.

   (d) Any delay at Mumbai.

5. Draw the tree structures for the following sentences:

   (a) I would like to fly on air India.

   (b) I need to fly between Delhi and Mumbai.

   (c) Please repeat again.

6. Convert the following passive voice to active voice. Construct the necessary trees and write the steps. (Assume you own grammar.)

   "The passenger were looted by dacoits".

7. Given the parse-tree in figure 1, construct the grammar for this.

8. Construct the grammars and parse tree for the following sentences.

   (a) The boy who was sleeping was awakened.

   (b) The boy who was sleeping on the table was awakened.

   (c) Jack slept on the table.

9. Give an algorithm for top-down parsing.

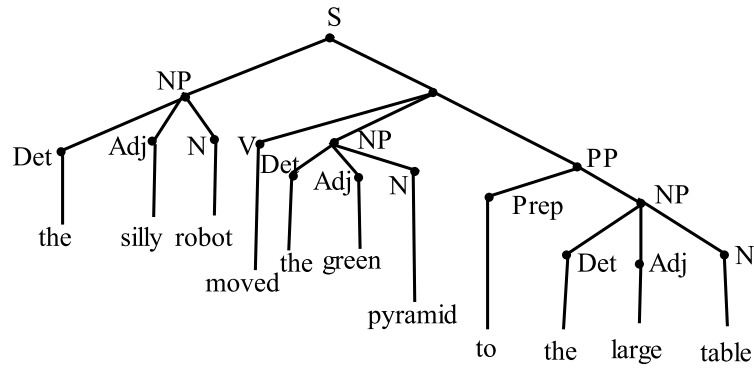10. List the merits and demerits of top-down v/s bottom-up parsing.

Figure 1: Parse-tree.

11. Derive an expression for the worst-case complexity of a grammar having total n number of rules.

12. Derive an expression to compute the probability of parse-tree T for a given sentence S, using of Bayes probability.

13. Design a simple ambiguous context free grammar. Show that your grammar is ambiguous by giving an example of a string that has two distinct parse trees. Draw the two trees.

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