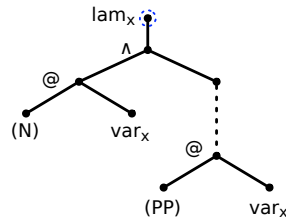


1 Semantics Construction

Derive a dominance graph that describes the five readings of the following sentence:

- (1) [S [NP [Det Every] [N' [N student] [PP [P at] [NP [Det a] [N univer-
sity]]]]] [VP [V presents] [NP [Det a] [N paper]]]].

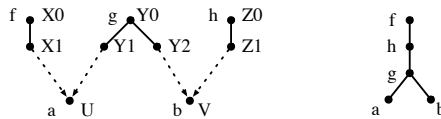
The lexicon entry for the words “at” and “presents” are dominance graphs consisting of a single node with labels at* and present*, respectively; at* and present* are (correspond to) constants of type $\langle e, \langle e, t \rangle \rangle$. The semantic construction rule for $PP \rightarrow P NP$ introduces an application, in the same way as the rules for sentences and verb phrases from the lecture. The rule for $N' \rightarrow N PP$ looks as follows:



Assign a number to each node in the syntax tree, and mark the interface node that belongs to each syntax node with its number.

2 Readings

The graph you constructed in Ex. 1 should have the same structure as the left dominance graph in the figure below, where lower-case letters stand for node labels, and upper case letters for the nodes.



The graph describes five distinct trees. For instance, one can identify (“plug”) X_1 with Z_0 , Z_1 with Y_0 , Y_1 with U , and Y_2 with V to obtain the tree on the right of the figure. Try to find the pluggings for the other four trees described by the graph, and give the corresponding trees.

3 Negation

Consider the two readings of the sentence “every student did not pay attention.”

(a) $\neg\forall x(\text{stud}'(x) \rightarrow \text{pay-attention}'(x))$

(b) $\forall x(\text{stud}'(x) \rightarrow \neg\text{pay-attention}'(x))$

Represent the two readings as trees, and specify a dominance graph that describes the two readings, i.e. a dominance graph that has two solved forms which correspond to the two readings above.

Note: It is not necessary to explicitly construct the graph using the semantics construction rules.

To be turned in by Thursday, 2009-07-16, 10:15