Exercise 2 (Due by May 9)

1. Consider the following LTAG:

(a) Give the derived tree and the derivation tree for

(1) Who did John claim Mary loves

Solution:

Derived tree:

Derivation tree:

(b) Find two more strings which can be derived with the above grammar and give the corresponding derivation trees.
Solution:
Several solutions are possible.

i. Adjoin the did-tree before the claim-tree. Result:
(2) Who John claim did Mary loves ε

Corresponding derivation tree:

ii. Adjoin the did-tree several times. Result:
(3) Who did^n John claim Mary loves ε

Corresponding derivation tree:

iii. . .

2. Give a FTAG for the copy language \( \{ww \mid w \in \{a, b\}^*\} \), for which we have seen the TAG with adjunction constraints in the course.

Solution:

The idea is to choose the features in a way that at nodes which have an NA constraint in the original grammar, unification of features is made impossible.

- Adjunction into the foot nodes is prevented because the values of the ADJTOP features collide.
- Adjunction into the root nodes is prevented because the values of the ADJBOT features collide.
- This holds for both trees since they are identical.