

Dependency Grammar - Exercises (03.11.2009)

Due on Tuesday 17.11.2009, 16:15

November 3, 2009

1. (15 points). For the following sentences:

- (1) He pounded the box flat
- (2) The student seemed to sleep
- (3) Peter and Mary bought a car

Provide a dependency analysis for each sentence. For (1) and (2) consider how you might analyze these sentences if your theory includes one layer of dependency presentation only. Make sure your analysis captures the relations between 'pound', 'box' and 'flat' accurately. Explain your analyses.

2. (15 points). Consider the following sentences:

- (4) I saw the man with the telescope
- (a) Provide labeled dependency trees for both readings of the sentence.
 - (b) Provide an algorithm that converts DG tree relations to phrase structure rules.
The algorithm should be able to handle both readings of example (4).
 - (c) Draw the phrase structure trees.

3. (30 points) Read the following paper: Michael Collins *A New Statistical Parser Based on Bigram Lexical Dependencies* (<http://acl.ldc.upenn.edu/P/P96/P96-1025.pdf>).

- (a) Describe the dependency model presented in the paper and compare it to the models we have seen so far. Elaborate on your views.
- (b) Is the mapping from PS trees to dependencies problematic or not? Explain your answer.

Total points: 60. Pass: 30 points.

Note: We thank PD. Dr. Valia Kordoni for letting us use her materials. Questions (1) and (2) are based on an exercise prepared by Valia Kordoni, question (3) was made by her.