3.1 The lecture slides show how the reading in which “a book” takes scope over “every student” can be derived with the Cooper-storage technique. Show that there is an alternative derivation for this reading.

3.2 Try to extend the syntax rules and the corresponding semantics construction rules from the lecture (slide 34) so that nouns can be modified by a prepositional phrase.

(a) Give a complex λ-term for the preposition “at”. The representation should involve a constant at’ of type ⟨e, ⟨e, t⟩⟩.

Hint 1: The λ-term is similar to the λ-term for transitive verbs.

Hint 2: Assume that the semantic representation for the phrase ”student at a university” is λx(student’(x) ∧ ∃y(university’(y) ∧ at’(y)(x))).

(b) Give semantics construction rules for the syntax rules “N → N PP” and “PP → P NP”

3.3 Compute a semantic representation for the sentence ”every student at a university reads a book,” using either Cooper-Storage or Nested Cooper Storage. Beta-Reduce the result as far as possible.

You may assume λx(student’(x) ∧ ∃y(university’(y) ∧ at’(y)(x))) as the translation of ”student at a university” if you have any troubles with exercise 3.2

To be turned in Tuesday 2011-05-10.