Homework 1 of CS520 Theory of Programming Languages

Submit your solutions to the TAs by putting them in the homework submission box in the third floor of the E3-1 building by 2:00pm of 12 October 2018 (Friday). If you type up your solutions, you can email them to Mr Hyoungjin Lim (lmkmkr@kaist.ac.kr). The numbers in the questions refer to exercise questions in the textbook of the course, i.e. "Theories of Programming Languages" by John C. Reynolds.

Question 1

Solve 1.5(a), 1.5(b) and 1.5(c).

Question 2

Solve 1.7(a) and 1.7(b) only for the case that p there is an integer expression. You may assume the following slightly simpler grammar for integer expressions in your answer.

$$\langle \text{intexp} \rangle ::= 0 \mid 1 \mid, \ldots \mid \langle \text{var} \rangle \mid -\langle \text{intexp} \rangle \mid \langle \text{intexp} \rangle + \langle \text{intexp} \rangle \mid \langle \text{intexp} \rangle * \langle \text{intexp} \rangle$$

Hint: Use the structral induction that we discussed in the lectures.

Question 3

Solve 2.2(a), 2.2(b) and 2.2(c).

Question 4

Solve 2.4.

Question 5

Solve 2.9.