Homework 2 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 31 October 2018 (Wednesday). 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 3.1.

Question 2

Solve the partial correctness variant of the question 3.4. That is, replace the total correctness specification in the question 3.4 by the following partial correctness specification:

$$\Big\{x \geq 0 \wedge x = x_0 \wedge y = y_0\Big\}\ \textbf{while}\ x \neq 0\ \textbf{do}\ (x := x - 1; y := y + x)\ \Big\{y = y_0 + x_0 \times (x_0 - 1)/2\Big\}$$

Then, derive this partial correctness specification using the rules of Hoare logic that you learnt in the lectures.

Question 3

Solve 3.8.