HW 5 – Evaluation Semantics

CS 477 – Spring 2014

Revision 1.0

Assigned April 2, 2014
Due April 9, 2014, 9:00 pm
Extension 48 hours (20% penalty)

1 Change Log

1.0 Initial Release.

2 Objectives and Background

The purpose of this HW is to test your understanding of

- Natural semantics evaluation, transition semantics evaluation, and program transition systems

Another purpose of HWs is to provide you with experience answering non-programming written questions of the kind you may experience on the final.

3 Turn-In Procedure

The pdf for this assignment (`hw5.pdf`) should be found in the `assignments/hw5/` subdirectory of your svn directory for this course. Your solution should be put in that same directory. Using your favorite tool(s), you should put your solution in a file named `hw5-submission.pdf`. If you have problems generating a pdf, please seek help from the course staff. Your answers to the following questions are to be submitted electronically from within `assignments/hw5//` subdirectory by committing the file as follows:

```
svn add hw5-submission.pdf
svn commit -m "Turning in hw5"
```

4 Problems

Each of the probelms will use the same program P give here:

```
i := 1;
while i != 2
 do
  i := i + 1
 od
```

1. (10 pts) Starting in the empty envirnoment, evaluate the program P using Natural Semantics, as described in class.

2. (15 pts) Starting in the empty envirnoment, evaluate the program P using transition semantics, as described in class. You should use transition semantics for evaluating arithmetic and boolean expressions, as well.

5 Extra Credit

3. (5 pts) Translate P into a program transition system. You will need to introduce at least one additional variable. If the value 2 were changed to another value in both P your program, the resulting programs should continue to behave the same as each other in terms of values assigned to `i`.