CS/SE 2S03: Tutorial 7 (Semantics)

October 20, 2013

The Questions

Q1. Give the definition of the function Θ for expressions of the form "t & u", "t && u", "t | u", and "t || u". *Remark:* &, |, &&, || are called "boolean logical AND", "boolean logical OR", "logical AND", and "logical OR", respectively.

& and |: verify both operands,
&&: stops evaluating if the first operand evaluates to false since the result will be false
||: stops evaluating if the first operand evaluates to true since the result will be true

Q2. Define the incomplete conditional test using a complete test and a statement **skip**.

Q3. Give the definition of the function Σ for "**do** s **while**(b)".

Q4. Define the function Σ for "**for**" construct.

Q5. Give the definition of the Σ function for the declaration of a variable without an initial value.

Q6. Consider the following function:

```
static int f (int x, int y) { return (x+1) * (x+y); }
```

Describe the execution of the statement $u = f(a, b)$ in the environment $e = [a = r_1, b = r_2, u = r_3]$, the memory state $m = [r_1 = 2, r_2 = 3, r_3 = 0]$ and the global environment G composed of the environment e and the function declaration f.