

CSC 455 - Assignment 3

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1 Question 1

1. $\langle var \rangle[1].actual_type \leftarrow \text{look-up}(B)$ Rule(4)
2. $\langle expr \rangle.expected_type \leftarrow \langle var \rangle.actual_type$ Rule(1)
3. $\langle var \rangle[2].expected_type \leftarrow \text{look-up}(B)$ Rule(1)
 $\langle var \rangle[3].expected_type \leftarrow \text{look-up}(A)$ Rule(1)
4. $\langle expr \rangle.expected_type \leftarrow \text{type will be real}$ Rule(2)
5. $\langle expr \rangle.expected_type == \langle expr \rangle.actual_type$ false, type mismatch Rule(2)

This will not be a valid statement. The right side will evaluate to a Real variable, following rule 2. A real value cannot be assigned to an int variable.

2 Question 2

1. Find the weakest precondition of the expression $a = a + 2 * _1, \{a > 1\}$

$$a > 1$$

$$a + 2 * b - 1 > 1$$

$$a + 2 * b > 2$$

2. Find the weakest precondition of the expressions

$$a = 2 * b + 1$$

$$b = a - 3$$

$$\{b < 0\}$$

$$b < 0$$

$$a - 3 < 0$$

$$a < 3$$

$$2 * b + 1 < 3$$

$$2 * b < 2$$

$$b < 1$$