

CSE 755, Assignment #3

Due: Feb 21, '12

No late assignments.

Note: The second mid-term will be on Thursday, Feb. 23. Topics will be everything we discuss in class until then (since the first mid-term).

1. (12 points). Which of the following are operationally valid and which invalid? Provide brief justifications for your answers (for the invalid ones your justification must include an example that demonstrates the invalidity of the result):

(a) $\{ x = 1 \} y := x \{ x = 1 \}$

(b) $\{ z = 1 \wedge (z > 0 \Rightarrow x = z) \} y := x \{ x = y = z \}$

(c) $\{ x = 1 \} \text{if } (y = x) \text{ then } y := x \text{ else } y := x \{ y = 1 \}$

(d) $\{ \text{true} \} \text{while } x < 0 \text{ do } x := x - 1 \{ x = 0 \}$

2. (8 points). Derive the following using the axioms and rules of inference we have seen:

(a) $\{ x = 1 \} y := x \{ x > 0 \}$

(b) $\{ z = 1 \wedge (z > 0 \Rightarrow x = z) \} y := x \{ x = y = z \}$