

CS263. Homework Assignment 2

(solutions due February 8)

February 1, 2007

Exercise 1: What was the bug in the proof that well-founded induction is a sound reasoning principle (lecture 3, slide 12)?

Exercise 2: Prove by induction the following statement about the operational semantics:

For any boolean command b and any initial state σ such that $\sigma(x)$ is even, if $\langle \text{while } b \text{ do } x := x + 2, \sigma \rangle \Downarrow \sigma'$ then $\sigma'(x)$ is even. Make sure you state what you induct on, what is the base case and what are the inductive cases. Show representative cases among the latter. Do not do a proof by mathematical induction!