

California Institute of Technology
Department of Computer Science
Introduction to Computation

CS1, Fall 2007

Daily Quiz #7

October 22, 2007

Due: end of class **today**

1. [0.1] Who are you? Give your CS Username: _____
2. [0.2] What is the asymptotic time complexity of `fast-expt`:

```
(define (even? n) (= (remainder n 2) 0))  
(define (fast-expt b n)  
  (cond ((= n 0) 1)  
        ((even? n) (square (fast-expt b (/ n 2))))  
        (else (* b (fast-expt b (- n 1))))))
```



3. [0.2] A balanced binary tree with N leaf nodes has how many internal (non-leaf) tree nodes? (all non-leaf nodes have exactly 2 children)



(0.2 points is for providing an answer to this question, not for getting it correct. This question is entirely to calibrate the course staff on the prior knowledge of the students so we can tune the lecture, assignments, recitations, and tutorials appropriately.)

4. Please answer the lecture feedback questions.