

COMPUTER SCIENCE 20, SPRING 2012
DISCRETE MATHEMATICS FOR COMPUTER SCIENCE
Class #12 (Structural Induction)

Homework, due in hard copy Friday 3/2/2012 at 10:10am

Please write your TF's name on your homework, and list the names of any students with whom you collaborated.

1. Say that a finite, binary string $x \in \{0,1\}^*$ is doubled if it is the empty string, or of the form $0x1$ for some doubled string x , or of the form $1x0$ for some doubled string x , or of the form xy where x and y are doubled. Prove that:
 - (a) Every doubled string has the same number of 0s and 1s.
 - (b) Every string with the same number of 0s and 1s is doubled. *Hint:* What is the equivalent for doubled strings of the counting rule for balanced parentheses?