Chinmay Ratnaparkhi

# 2736356

EECS 368 – Homework 7

--Function ‘*balanced*’ determines if the input binary tree is balanced.

data Tree = Leaf Int | Node Tree Int Tree deriving Show

balanced :: Tree -> Bool

balanced (Leaf \_) = True

balanced (Node left \_ right) = abs (count left - count right) <= 1

&& balanced left && balanced right

count (Leaf \_) = 1

count (Node left \_ right) = count left + count right

{--

**Test Cases**

[1 of 1] Compiling Main

Ok, modules loaded: Main.

\*Main> balanced (Node (Leaf 1) 2 (Leaf 3))

**True**

\*Main> balanced (Node (Node (Leaf 4) 5 (Leaf 6)) 2 (Leaf 3))

**True**

\*Main> balanced (Node (Node (Node (Leaf 7) 8 (Leaf 9)) 5 (Leaf 6)) 2 (Leaf 3))

**False**

\*Main>

balanced (Node (Node (Node (Leaf 7) 8 (Leaf 9)) 5 (Leaf 6)) 2 (Node (Leaf 10) 11 (Leaf12)))

**True**

\*Main> balanced (Node (Leaf 1) 2 (Node (Leaf 3) 4 (Leaf 5)))

**True**

\*Main> balanced (Node (Leaf 1) 2 (Node (Leaf 3) 4 (Node (Leaf 5) 6 (Leaf 7))))

**False**

--}