CSC 212: Data Structures and Abstractions
Fall 2018
University of Rhode Island
Weekly Problem Set #10

Due Thursday 12/7 before class. Please turn in neat, and organized, answers hand-written on standard-sized paper **without any fringe**. At the top of each sheet you hand in, please write your name, and ID.

1 2-3 Trees

1. Draw a 2-3 tree after inserting the following elements: [6, 2, 8, 5, 10, 3, 1, 7, 9, 4]
2. What steps does a 2-3 tree search algorithm take when searching the drawn tree for 5? Assume that the lesser element of a 3-node is checked first.

2 Left Leaning Red-Black Trees

1. Draw a Red-Black tree after inserting the following elements: [1, 2, 3, 4, 5]
2. What happens in general when inserting elements in ascending order?
3. Can Red-Black Trees be represented as 2-3 trees? If so, how?
4. Why is it advantageous to have balanced trees?
5. True or False: as you insert nodes into a Red-Black Tree, the height is non-decreasing?