Assignment #5

Due

Before 9:00 am on Monday March 24. Place the completed worksheet (see below) into the box labelled "CSC 115" in the hallway across from the elevators on the second floor of the ECS building.

➢ Neither late assignments nor assignments handed into offices will be accepted: Early submissions are fine!

Learning Outcomes: Upon successful completion of this assignment you will be able to:

➢ Insert nodes into a Binary Search Tree
➢ Insert nodes into and remove nodes from a Heap.

The Worksheet: Write only the answers (neatly) on the worksheet, use other paper to develop those answers.

The answers to this assignment
➢ **MUST be on the worksheet below, and**
➢ **MUST be placed in the CSC 115 box (ECS 2nd floor) before 9 am on Monday, March 24.**

Complete the worksheet (next page) as follows:

1. Draw a 'Binary Search Tree' created using using `insert()` operations and the array: 15, 6, 12, 20, 17, 5, 10, 22, 18, 14, 10, 9, 3. You can assume the tree was initially empty. Perform the insertions in in the same order as they are listed, starting with 15.

2. Draw a 'MinHeap' created using using `heapInsert()` operations and the array: 15, 6, 12, 20, 17, 5, 10, 22, 18, 14, 10, 9, 3. You can assume the heap was initially empty. Perform the insertions in in the same order as they are listed, starting with 15.

3. Now execute 3 `heapDelete()` operations and determine the 3 values returned and a drawing the final resulting heap.

4. Draw a 'MaxHeap' created using using `heapInsert()` operations and the array: ″csc″,″seng″,″cive″,″mech″,″ceng″, ″engl″, ″engr″, ″ts″,″writ″. You can assume the heap was initially empty. Perform the insertions in in the same order as they are listed, starting with ″csc″.

5. Now execute 2 `heapDelete()` operations and determine the 2 values returned and a drawing the final resulting heap.

1. <u>Binary Search Tree</u>(BST) : Insert 15, 6, 12, 20, 17, 5, 10, 22, 18, 14, 10, 9, 3 into an initially empty BST

2. <u>HeapInsert:</u> Insert 15, 6, 12, 20, 17, 5, 10, 22, 18, 14, 10, 9, 3 into an initially empty (min) Heap

3. <u>HeapDelete</u> : Perform three deletes from the (final) Heap of question #2

Indicate three values returned from the 3 HeapDelete operations: _____   _____   _____

4. <u>HeapInsert:</u> Insert "csc","seng","cive","mech","ceng", "engl", "engr", "ts","writ" into an initially empty (max) Heap

5. <u>HeapDelete</u> : Perform two deletes from the (final) Heap of question #4

Indicate three values returned from the 2 HeapDelete operations: _____   _____