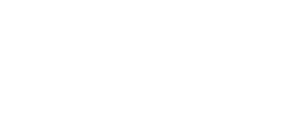


Nov 10

Assignment 8

Comp 2230\_02

Colton isles and kaylee crocker

2024

A close up of a logo

Description automatically generated

**COMP 2230 – Data Structures and Algorithm Analysis**

Assignment #8: Binary Search Trees and Heaps

## Due Date: Section 01 Nov. 14th Section 02 Nov 15th, 2024

**Chapter 20**

Programming problem:

Develop an array implementation of a binary search tree using the computational strategy to locate the children of a node. (2\* n +1) for left child and 2 \* (n + 1) for right child. Note the binary search tree of integers will not be a true binary search tree as define in chapter 20 of the text book. The binaryArrayTree will support the following operations:

1. Default constructor
2. toString in level order
3. Insert(int item)
4. toString2 in preorder

**Assignment Submission:**

Submit a print-out of the program source code and a sample of the output, for each problem. Note you must follow the marking guidelines as identified in the LabMark document.

**Chapter 21**

A drawing of a diagram

Description automatically generated1 Draw the min heap that results from adding the following integers ( 34 45 3 87 65 32 1 12 17)

2 Starting with the previous heap draw the heap that results from performing a removeMin operation.

A drawing of a diagram

Description automatically generated

3 Starting with an empty minheap, draw the heap after each of the following operations

addElement(40)



addElement(25)



RemoveMin



AddElement(10)



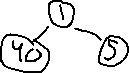
RemoveMin()



AddElement(5)



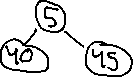
AddElement(1)



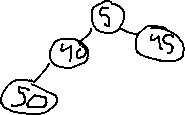
RemoveMin()



AddElement(45)



AddElement(50)

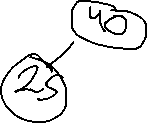


4 Repeat 3, this time with a maxheap

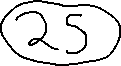
addElement(40)



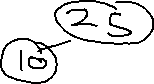
addElement(25)



RemoveMax



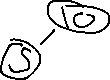
AddElement(10)



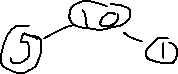
RemoveMax()



AddElement(5)



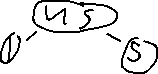
AddElement(1)



RemoveMax()



AddElement(45)



AddElement(50)

