Lab 13

CSE 274

I. The Heap class

The `Heap` class is as follows:

```
class Heap {
      private int Size;
      private Node root;
      public Heap() {Size = 0;}
```

In `Heap` class `Size` is the number of nodes in the heap. The constructor of the class initializes `Size` to zero.

II. The add Method

Develop the `add` method for the `Heap` class using the following logic:

```
public void add(int value)

      if (root == null)
            root = new Node(value);
            Size = Size + 1
            return;

      int Position=Size+1
      String[] Direction = route(Position)
      int level = 1
      Node current = root

      while (true)
            if (current.value < value)
                  Swap current.value and value

            if (level == Direction.length - 1)
                  break;

            if Direction[level] is "DownWard"
                  current should refer to current.down

            if (Direction[level] is "UpWard"
                  current should refer to current.up

            level = level + 1

      if (Direction[level] is "DownWard"
            current.down is a new node having the value

      if (Direction[level].equals("UpWard"))
            current.up is a new node having the value

      Size = Size + 1
```

Use the following lines of code to test the developed method:

```
Heap myHeap = new Heap();
myHeap.add(3);
myHeap.add(1);
myHeap.add(19);
myHeap.add(25);
myHeap.add(4);
myHeap.add(9);
myHeap.add(18);
myHeap.add(7);
myHeap.add(6);
myHeap.add(5);
myHeap.add(12);
myHeap.display();
```

The expected output is printed below: