Gebze Technical University

Computer Engineering

CSE 222 – 2021

Homework #4

Report

Caner AKIN

151044066

Teaching Assistant :

Başak Karakaş

1. SYSTEM REQUIREMENTS

The system implement the Heap structure.

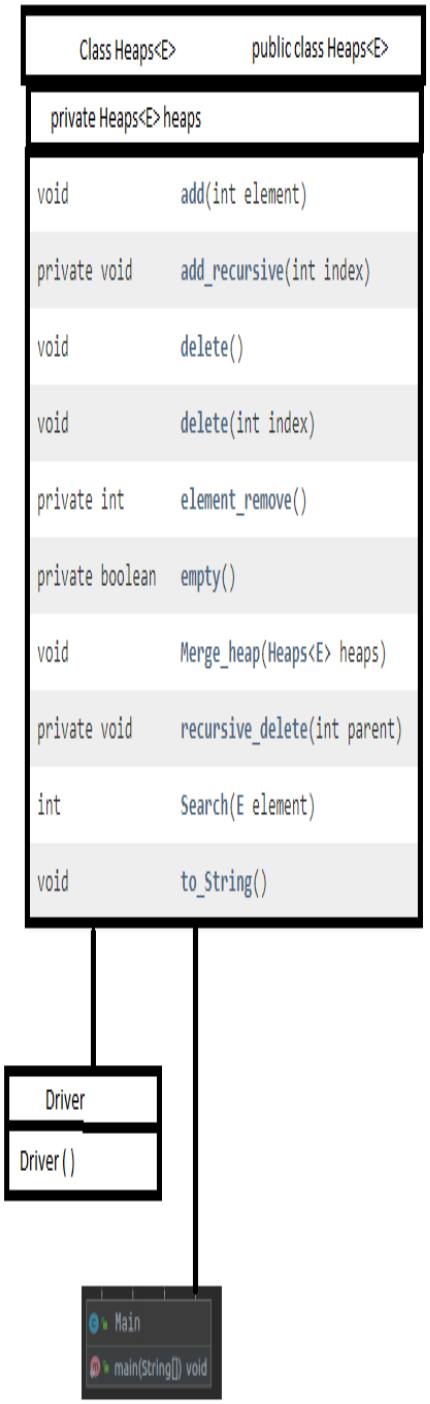
System search for an element.

System merge with another heap.

System need Arraylist for keep data.

İf need added new data , arraylist use for minimum heap and add.

İf system need merge two heap , there load all element to other heap.


Class Heaps<E>
public class Heaps<E>
private Heaps<E> heaps
void add(int element)
private void add_recursive(int index)
void delete()
void delete(int index)
private int element_remove()
private boolean empty()
void Merge_heap(Heaps<E> heaps)
private void recursive_delete(int parent)
int Search(E element)
void to_String()
Driver
Driver()
Main
main(String[]) void

```java
public Driver() {
    System.out.println("Create a new min Heap");
    Heaps<Integer> heaps = new Heaps();

    System.out.println("Try to research element in empty tree");
    heaps.Search( element: 10);
    heaps.add(15);
    heaps.add(20);
    heaps.add(25);
    heaps.add(5);
    heaps.add(35);
    heaps.add(45);
    heaps.add(55);

    System.out.println("Try to research element and take index");
    heaps.Search( element: 35);

    System.out.println("Show all element with index");
    heaps.to_String();

    System.out.println("Try delete element with root");
    heaps.delete();

    System.out.println("Show all element with index");
    heaps.to_String();

    System.out.println("Create new heap for merge ");
    Heaps<Integer> heap2 = new Heaps();
    heap2.add(40);
    heap2.add(50);
    heap2.add(60);
    heap2.add(53);

    System.out.println("Removing i th element");
    heap2.delete( index: 1);

    System.out.println("New heap is :");
    heap2.to_String();

    System.out.println("Merge with another heap");
    heaps.Merge_heap(heap2);

    System.out.println("Last heap element : ");
    heaps.to_String();
```

```
Create a new min Heap
Minumum Heap is creating
Try to research element in empty tree
Element 10 is not in tree
Element 15 is added
Element 20 is added
Element 25 is added
Element 5 is added
Element 35 is added
Element 45 is added
Element 55 is added
Try to research element and take index
Show all element with index
All element : 5 15 25 20 35 45 55
Try delete element with root
Element 5 is deleted
Show all element with index
All element : 15 20 25 55 35 45
Create new heap for merge
Minumum Heap is creating
Element 40 is added
Element 50 is added
Element 60 is added
Element 53 is added
Removing i th element
Element 50 is deleted
New heap is :
All element : 40 53 60
Merge with another heap
Last heap element :
All element : 15 20 25 55 35 45 60 53 40
```