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Lab Manual : 06
Course Code : CSE207
Course Title : Data Structure
Instructor : Tanni Mittra, Lecturer, CSE

Objective:

The objective of this lab is to provide basic concept of Binary Heap. At the end of the lab, students are able:

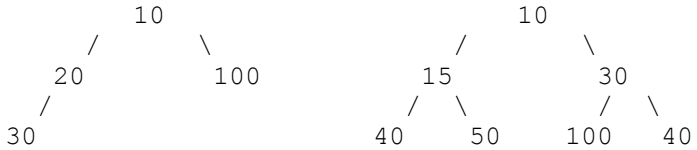
- To learn how to create Heap
- To learn how to perform Insertion, Deletion of heap
- To use Heap to implement priority queue
- To use Heap Sort technique to sort data

Binary Heap:

A Binary Heap is a Binary Tree with following properties.
1) Its a complete tree (All levels are completely filled except possibly the last level and the last level has all keys as left as possible). This property of Binary Heap makes them suitable to be stored in an array.

2) A Binary Heap is either Min Heap or Max Heap. In a Min Binary Heap, the key at root must be minimum among all keys present in Binary Heap. The same property must be recursively true for all nodes in Binary Tree. Max Binary Heap is similar to Min Heap.

Examples of Min Heap:



Exercise 1:

Create a menu-based heap ADT and perform the following operations:

Insert Operation

If we build a heap then we add a new key at the end of the heap array. Here you have to create max heap.

Exercise 2:

Deletion Operation

Perform deletion operation of Binary Heap

Exercise 3:

Smallest and Largest Element

Find maximum and minimum element from Heap

Exercise 4:

Heapify: In exercise 1 create a max heap now build a min heap from the max heap