

DATE: 4 Oct 2019

## **UCS-1302: DATA STRUCTURES – MINI PROJECT**

TOPIC – Organ Management System

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### **DESCRIPTION:**

- The organ management system has been implemented using the priority queue data structure.
- The priority queue is designed using a min binary heap.
- Patient details such as name, gender, id, blood group, time left, and organ required are stored.
- Details of the organs such as organ type and the blood type are stored.
- The system stores the records of organs available in a file.
- When the application is started, patient details are entered and the program puts

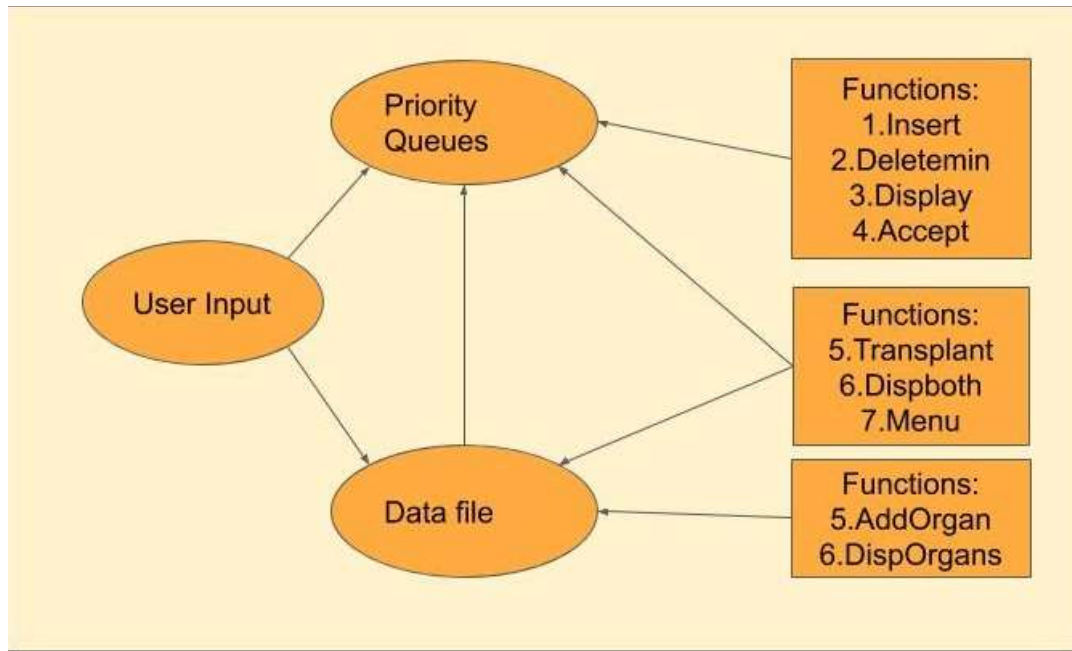
the patients in order based on the time left before which their organ transplantation must be completed.

- The patient's details are stored in 4 different priority queues based on their organ required (heart, liver, kidney, lungs).
- The program then assigns organs to the patients based on their position in the priority queue and availability of organs.
- The patient's blood type is compared with the organ's blood type and only then is the organ assigned to the patient.
- Patients who do not receive their organ wait in the priority queue based on their time left.
- The program is also able to list the waiting list of all the patients and the availability of organs.
- The program is also able to update the organ database to add more organs as and when available.

#### **DATA STRUCTURE USED:**

- Priority queue using min binary heap.

## PROGRAM DESIGN:



## LEARNING EXPERIENCE:

- Learnt to implement and use priority queue using min binary heaps.
- Learnt to use files in C to store and manage records.
- Learnt to insert and delete elements from a priority queue.
- Learnt to create a menu driven program with multiple options
- Learnt to store structures in file.
- Learnt usage of priority queue as application required biased retrieval of data (based on time left). Hence understood the importance of the data structure.

