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**COMSATS University Islamabad (CUI)**

End Semester Project

(Data Structures and Algorithms)

HOSPITAL MANAGEMENT SYTEM

**BCS-3- (B) *By***

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*Bachelor of Science in Computer Science*

Introduction:

“Hospital Management System”

In thisproject we have included all the basic entities of Hospital from patient entry to Generating a Patient Report and giving shortest paths to ambulances. We have implemented 4 data structures including Graphs (Dijkstra Algorithm) to find shortest route from source hospital to all nearby Hospital.

The project has 7 modules which are further divided into sub modules:

* **Patients Record**
* **Doctors Record**
* **Discharge Patients**
* **Emergency Ward**
* **Laboratory Department**
* **Ambulance Management Department**
* **User Feedbacks**
* **Appointment with Doctor**

***Data Structures Used in Project:***

* Priority Queues
* Singly Linked List
* Doubly Linked List
* Stacks
* Binary Search Trees
* Dijkstra

Project Flow and sub-Modules (Hospital Management System):

The project has two main portals:

ADMIN PORTAL:

Admin will have to enter his correct user name and password in order to log in to the system. System will fail to open on incorrect username or password.

After logging in Admin can perform many operations:

* **View\delete\Search and Enter patient record on the basis of patient Id;**
  + This module implements doubly linked list. Admin can add patients record after, admin can also delete the record of existing patient by entering his ID no and search for patient using ID number and patient name. Admin can view the patient in line for four departments (cardiac, ear, eye and ENT).
* **View\delete\Search and Enter Doctors record on the basis of doctor id;**
  + Admin can add patients to binary search tree if he is available, the system check for the condition if the patients attended is less than the total patients doctor have to check the system will not add them to BST, only Doctors which are available will be added to BST.
  + The admin can manually delete the doctor from tree, doctor will automatically get removed from BST if he attends all the 45 patients. Doctor can also search for patients via id no and view all available doctor’s record.
* **View shortest path for Ambulances;**
  + This module will find the shortest routes for Ambulances from source to nearby Hospitals.
* **Add/delete/Search and view emergency patient on basis of Patient Age;**
  + Emergency patients will be treated on the basis of their ages. The one with the largest age will be treated first. The admin can search for search for emergency Patients. The admin can also view the record of all emergency patients.
* **Send Patients to Hospital laboratory;**
  + Patients will be sent to laboratory for medical tests.
* **Search for Patients in Hospital laboratory;**
  + Admin can search for laboratory Patients for.
* **View Medical tests Reports;**
* **Generate a Final Discharge Report of Patient;**
  + Patient will get the discharge report upon entering his id.

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USER:

User do not have to sign up or log in to the system instead he can:

* **Register patients for checkup:**
  + User can enter his record in patient records system. He will get appointed doctor if Available.
* **Search for Patient via his id number:**
  + User can search for any patient via his id number or name and all the details like bed no, ward no, everything will be displayed.
* **Make an Appointment with Doctor:**
* **Submit Feedback and view Hospital Feedbacks:**
  + User can Submit his feedback and view feedback of others.
* **Search for any Doctor**
  + User can search for any doctor via his name or id number, check if he is available and book an appointment with him.

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WORD DIVISION AMONG GROUP MEMBERS

* Muhammad Maarij:
* Ambulance (Dijkstra)
* Normal Patient (Queue)
* Fatima Mahsud:
* Doctor (BST)
* Emergency Patient (Priority Queue)
* Muhammad Hassan Munawar:
* Laboratory (Stack)
* Feedback (Doubly Linked List)