Simplilearn CBAP Certification - Project 4

Hospital Management System for the Mayo Clinic

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DESCRIPTION

Overview and Summary

The Mayo Clinic is an American non-profit academic medical center currently based in three major locations, Rochester, Minnesota; Jacksonville, Florida; and Scottsdale, Arizona focused on integrated patient care, education, and research. Mayo Clinic holds the number 1 rank among hospitals in the United States.

It was opened on the 30th of September 1889. Over the years it grew in size and facilities. It increased the size of its premises and also the number of doctors it employs. The vast number of patients it treated made the management of such a huge hospital an arduous task. The paperwork and storing of all patients' records was becoming unmanageable. It was then the management of the hospital decided to invest money in hospital management software. The Hospital Management System is designed to manage all hospital operations.

The 1980s initiated transformative changes that set the course for the modern Mayo Clinic. As an early adopter of the Internet, Mayo Clinic has been recognized for its online communications with patients.

Note: Hospital Management System is hereby referred to as HMS.

HMS is designed to store patient records, show the availability of beds, manage patients' billing, schedule a doctor's appointment, and will bring about coordination among the different departments.

Business Analysis Core Concept Model (BACCM)

Need:

Handling all operations manually and doing management activities with paperwork is not manageable and difficult to do multiple tasks to deliver on time. So needs an improvement system to support all users to perform efficiently at a time.

Change: To move the hospital management system from a manual operating system to a software processing system.

Solution:

To develop a web-based application for a hospital management system that can facilitate patient registration, patient appointment and remainders, bed occupancy details, lab & radiology reports, billing, and better staff management.

Value:

- Reduce operating costs of the hospital
- Provide reports to senior management for better decision-making
- Saves patients' time
- Keeps patients' medical records secure and stored in the cloud
- Keeps track of empty and filled beds in the hospital
- Easy access to patient data
- Reduces documentation in the hospital

Context:

To implement the new system for increasing the productivity and efficiency of a hospital management system that allows doing all related management activities in a short duration, feasible to use it for 500 people that can be used effectively at a time. The current system is not efficient enough to safely save all of the patient and internal hospital records due to the increase in hospital size and facilities.

Stakeholder: Internal

Doctors and Nurses

Lab Attendants

Patients

Insurance & Hospital staff

Pharmacy

Business Analyst

Stakeholder: External

Customer

Supplier

Project Manager

Domain SME

Implementation SME

Operations team

Testers

Task 1 - Identifying the Stakeholders

Customer – Mayo Clinic. Follow-ups with OPD patients and admitted patients, Tracking and monitoring of revenue generation, operating cost of the hospital

Doctors and Nurses – Doing related actives are safely saving patient records

Lab Attendants – Generates test reports and they upload into the system for the doctor's review

Patients – Registering themselves with the system. Getting an appointment with an appropriate doctor

Insurance & Hospital staff – Registration, Billing activities, related hygiene concerns, and cleaning activity tracking (Staff Management). Keeps track of empty and filled beds in the hospital.

Pharmacy – Medicine prescription uploading in the system for billing activity and tracking of medicine stocks availability

Business Analyst – Ensuring proper collaboration between external and internal stakeholders to implement successful solutions effectively.

Supplier – Deliver the medicines stocks, Hospital needs, Laundry, Contract employee resource management, Car Parking entries

Project Manager – The PM is accountable for the competition of the ordering system with the help of other stakeholders while making sure they are working accordingly

Domain SME – Responsible for making sure the web version of the proposed system is set up correctly and working accordingly

Implementation SME - ISME works on building the online Web-based application through coding.

Operations team – Ensures all the operational and support tasks are met during and after the application launch

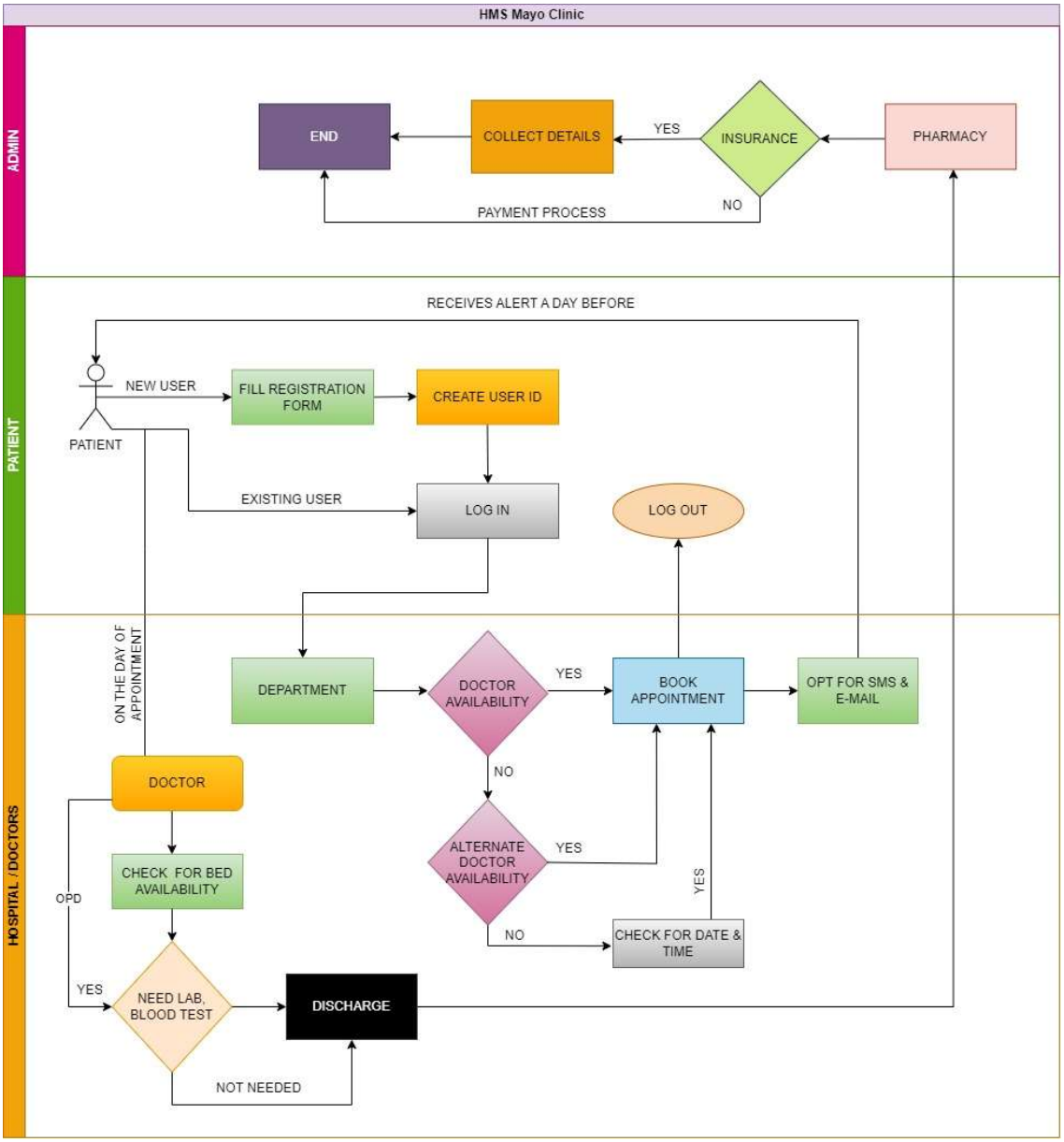
Testers – Testers ensure the functionality of the created system before released to the end users and ensure there are no issues.

RACI Matrix – Responsible, Accounted, Consulted, Informed

Identification of stakeholders that are responsible, accounted for, consulted, and Informed for the implementation of the canteen ordering system.

	Responsible	Accounted	Consulted	Informed
Customer				I
Doctors & Nurses	R			
Lab Attendants	R			
Patients				I
Insurance & Hospital staff	R			
Pharmacy	R			
Business Analyst	R			
Supplier	R			
Project Manager		A		
Domain SME			C	
Implementation SME			C	
Operations team			C	
Testers	R			

Task 2 – Proposed System Workflow



Task 3

Write the In-scope and out-of-scope items for this software.

In-Scope –

Login and New user registration: Gives access once the user fills the necessary registration form and authenticates themselves.

Employee Access: Allows appropriate permission to user-based roles. Authenticates that they are active employees.

Patient Appointment: Log in and Registration for booking appointments. Will display doctors and their availability. Patients can book an appointment with the selected doctor on a selected day and time. Patients will in turn receive a reminder by email and SMS one day prior to the date of appointment.

Data Repository: The system will store all the patient records and necessary data. Each patient will be given a unique ID that would be given that would be used for every visit and stay at the hospital.
All the patient aftercare is also stored in the patient history.

Lab & Radiology: Can receive a prescription from a doctor to do the ordered tests. The reports are then uploaded to the patient file for the doctor's preview.

Billing & Insurance: After patient discharge or doctor's visit the bill is sent for payment processing whereas if active insurance is available the bill is processed accordingly. Patients will be given a bill for payment post not having any active insurance in the record for the payment.

Bed Occupancy: During the patient hospital admission process active checks can be done by nursing staff for efficient admission.

Staff Management: The system will have a live record of all the active staff working in the hospital for effective staffing and scheduling.

Reports:
The system can be used to request the following reports for the management: Bed occupancy for each day. Doctors' appointments and revenue generated through OPDs. Total number of OPD patients and admitted patients. Which doctors generate the maximum revenue... The total amount of earnings through OPD and admitted patients. The total amount of earnings generated through laboratory and radiology.

Out of Scope –

Ordering supplies: The system will not be able to integrate with the vendor system to order supplies or other items. You cannot track the requested order details with this tool.

Schedule or Cancellations: Patients cannot cancel or edit appointments once confirmed from their end.

Payments: Patients cannot track their invoices. Patients cannot track their payment plans from their interface. Patients cannot pay using the interface for the used services

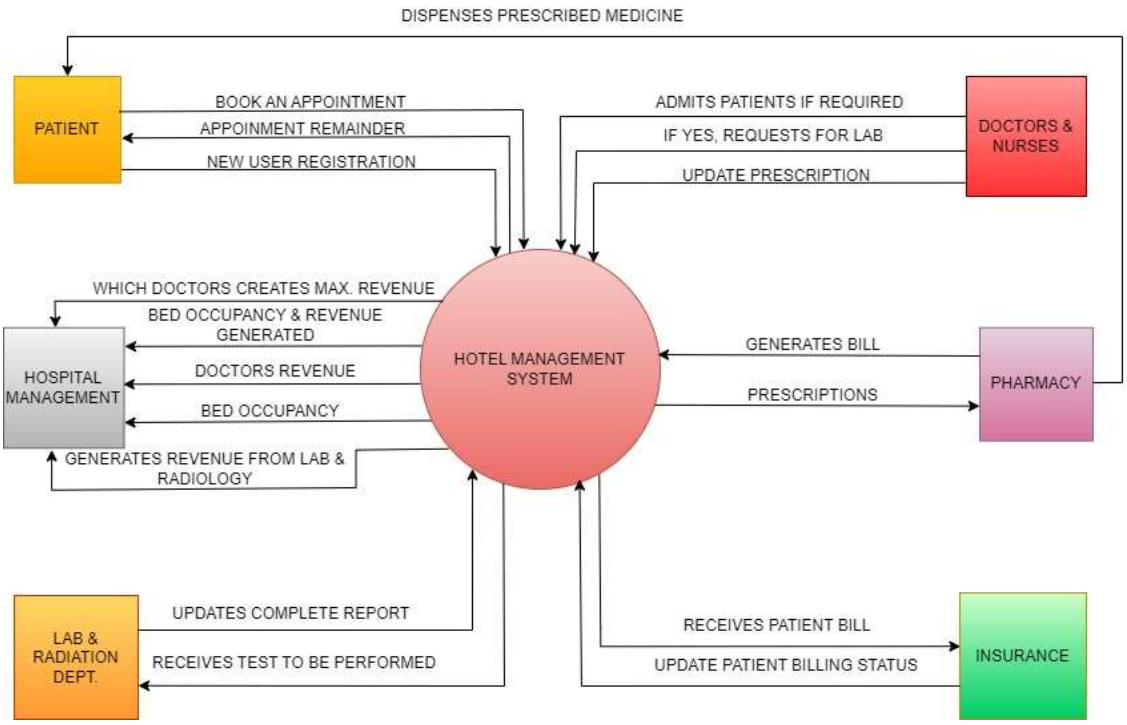
Employee details: Doctors' details will not be maintained in this system other than schedules.

Employee Payroll: Any type of payroll related to hospital employees will not be maintained here.

Task 4

Scope Context Diagram

Illustrated below is the context diagram across various actors that play important roles in maintaining, using, and improvising various functionalities of the Hospital management system proposed to Unilever employees.

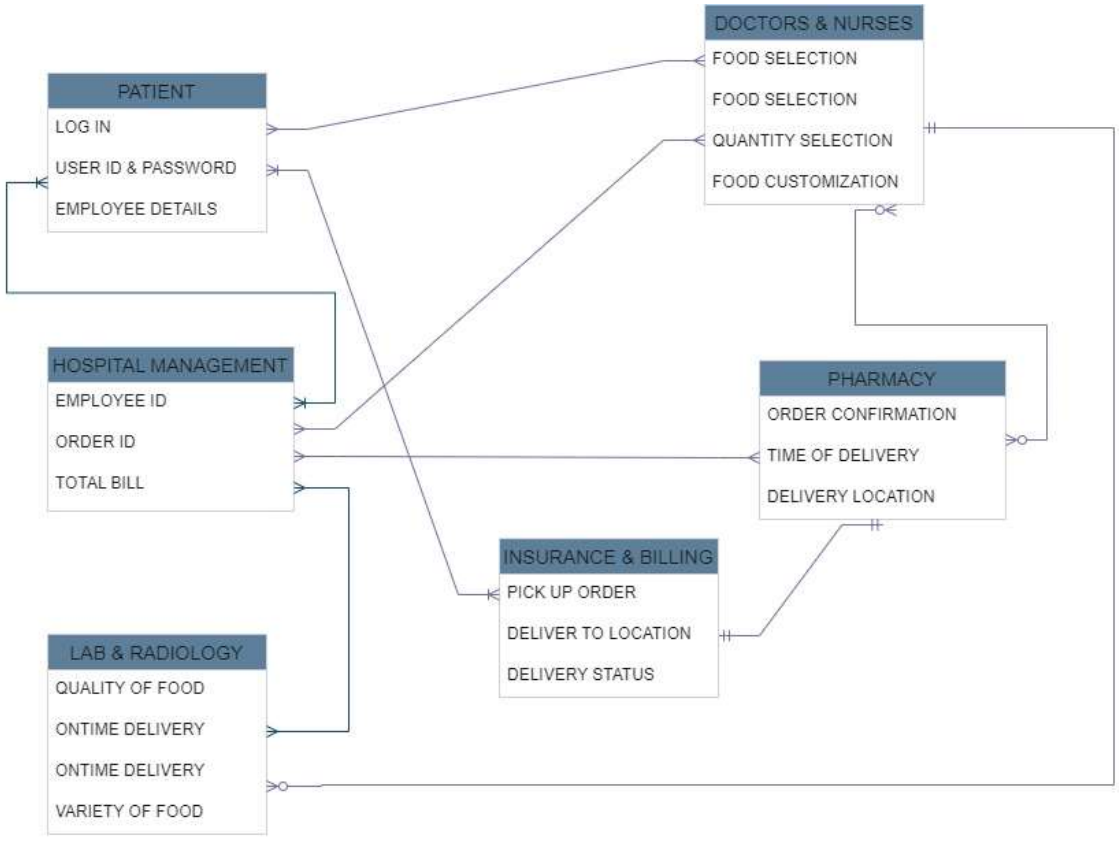


Task 5

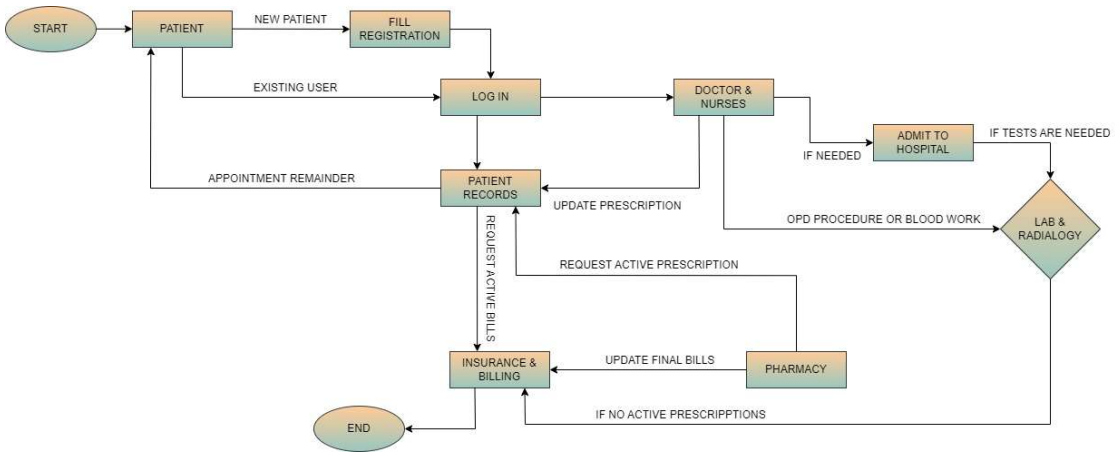
Main features that need to be developed

- Bed occupancy for each day
- Doctors' appointments and revenue generated through OPDs.
- Total number of OPD patients and admitted patients
- Which doctors generate the maximum revenue
- Total amount of earnings through OPD and admitted patients
- Total amount of earnings generated through laboratory and radiology

Task 6 – ER Diagram of system



Task 7 – Data Flow Diagram



Task 8

Solution Requirements (Functional and Non-Functional)

Functional Requirements:

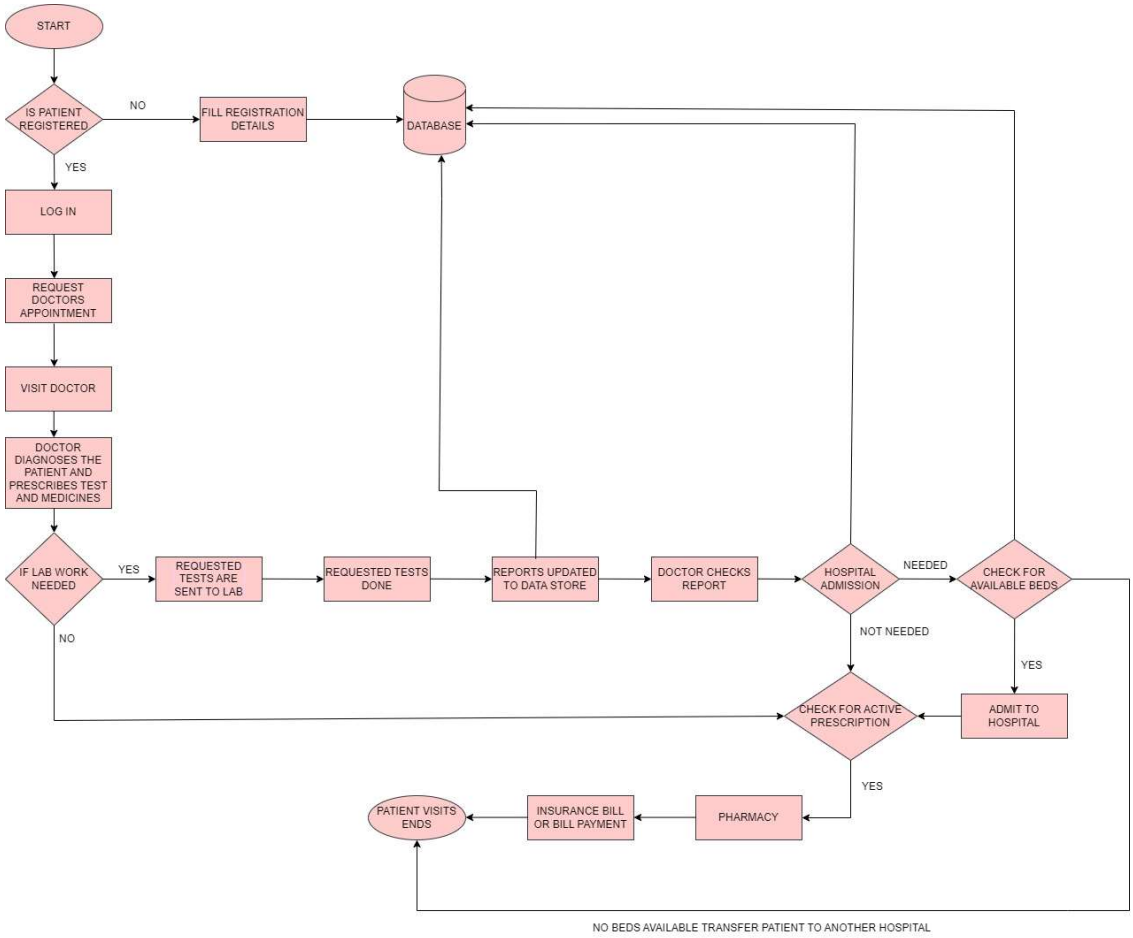
A Hospital management system can reduce paperwork and manage all hospital-related operations including appointment booking, new user registration, patient records (storage & retrieval) doctor prescriptions & Lab records as well information about previous surgery or procedures done safely.

Non-Functional Requirements:

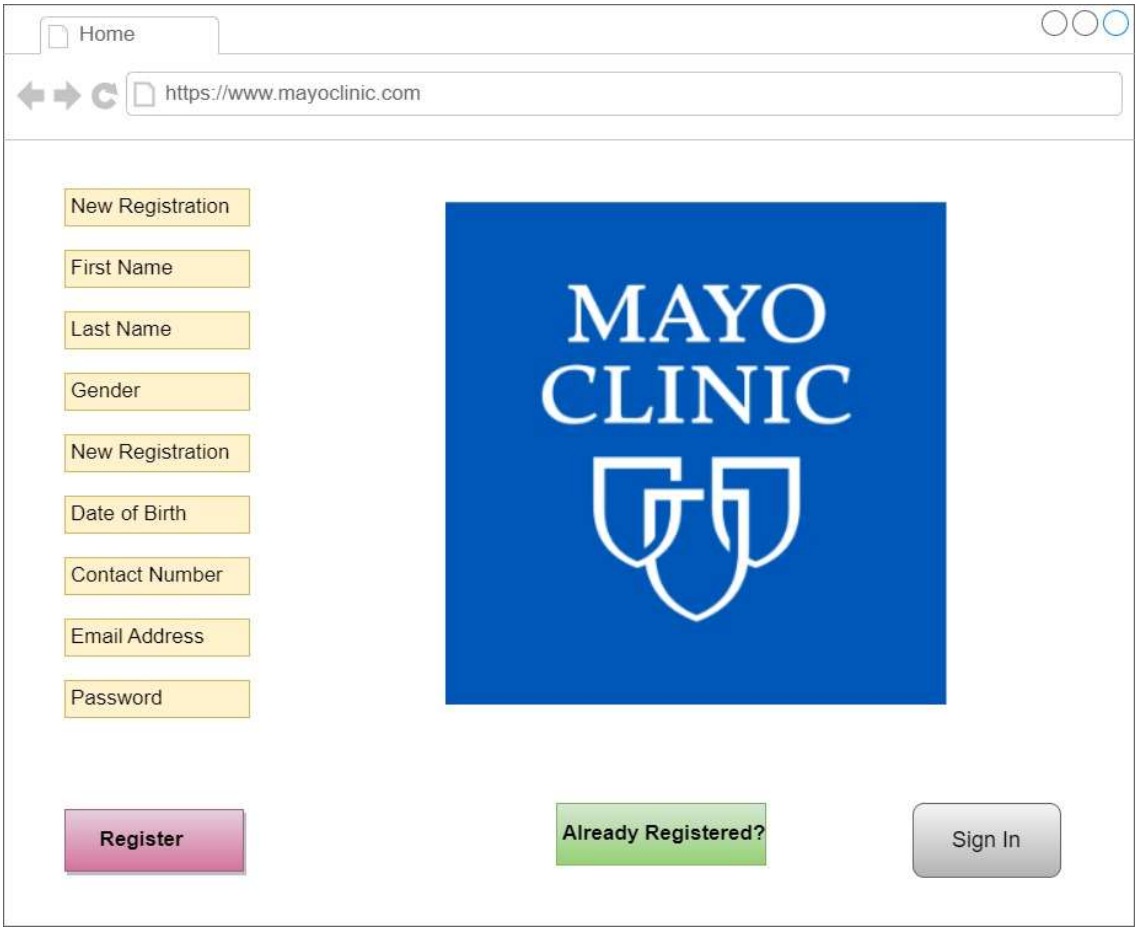
- My SQL Database: can be used since its open source and free
- Operating system: Windows 2019 & above
- Response time: In min time required without interrupting the user's (hospital staff & users) experience.
- Capacity: The system must support 500 people using it at a time
- Errors: keystroke mechanism that can be used to store all errors that can be further used to upgrade the system of any errors causing problems in functionality
- Availability: the system shall be available all the time. The employee can choose their food items with available timings.

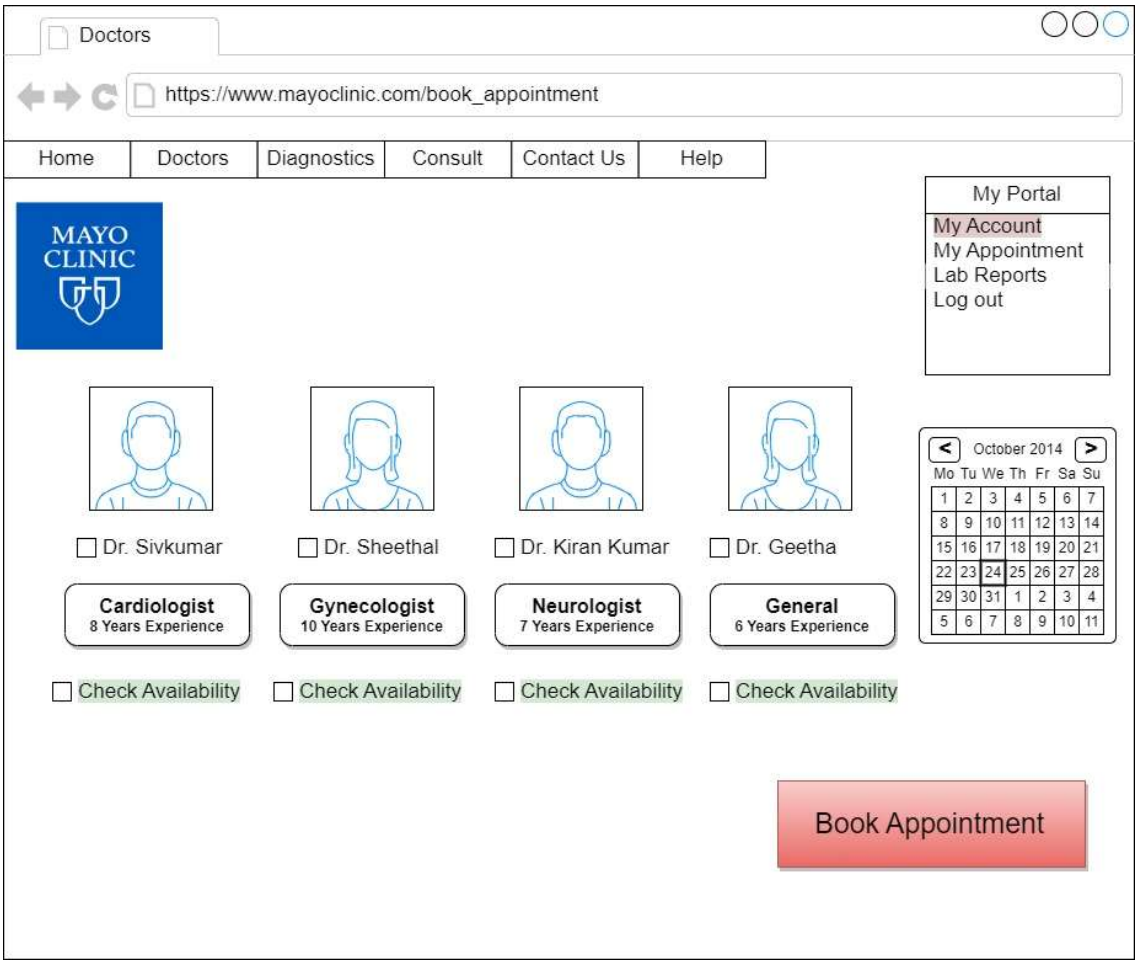
Task 9

Flow chart for the Patient Admission Process



Task 10 – Mock screens for two of the features namely Menu Creation.

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8 Years Experience
Gynecologist
10 Years Experience
Neurologist
7 Years Experience
General
6 Years Experience
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