

# Hospital Management System for The Mayo Clinic

## Description:

The Mayo Clinic is an American nonprofit 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 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 a 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 to patients.

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

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

## Advantages of HMS:

- 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 cloud
- Keeps track of empty and filled beds in the hospital
- Easy access to patient data
- Reduces documentation in the hospital

The client invited Business Analysts to capture the requirements for the creating the HMS.

## **Future State**

### **Client has given them the following requirements:**

#### **1. Patients appointment management:**

The timings of all the hospital doctors to be displayed on the website. Patients can select the doctor they would like to visit based on the appointment slot available for that doctor. The system shall book the appointment for that patient with the doctor selected.

#### **2. Appointment Reminders:**

System shall send email and SMS reminders to the patient one day prior to the appointment date to remind the patient of the appointment.

#### **3. Patient registration:**

When a new patient comes to the hospital, they are registered in the system. The system can store all medical records of the patient and their medical history. The registration staff will give each patient a patient ID. This ID will be used by the patient throughout their stay in hospital. The patient ID will be deleted from the system when the patient checks out.

#### **4. Bed occupancy:**

It keeps tracks of all the beds in the hospital. It will show the list of all the occupied and unoccupied beds in the hospital. Every 6 hours, the person in charge for the hospital floor will update the bed occupancy.

#### **5. Billing:**

HMS will total up all the expenses of a patient at one time and produce a complete bill at the end of the consultation or at discharge. This will save time and effort for each department as they need not produce separate bills for a single patient.

#### **6. Laboratory, blood bank, and radiation departments to be managed:**

If a doctor needs to prescribe any tests for any patient, he will enter the same in HMS. This will be received by the laboratory or radiation department directly. The patient's tests are done, and the reports are uploaded by the department in the HMS. The doctor can log in the system and enter the patient ID and view them directly. This eliminates the need of paper reports and retrieval is also easy.

#### **6. Reports:**

Reports are generated from the HMS for senior management to have a clear understanding on the hospital's revenue, expenses, bed occupancy, and other details.

#### **8. StaffManagement:**

It stores the names and timings of the nurses and ward boys on duty with their respective ward numbers.

#### **9. Instructions for patients:**

All the instructions given by the doctors for the nurse to follow for each patient are entered in the system. While conducting patient care the nurse just looks up the system to understand which medicine or what line of treatment, they need to give the patients.

#### **10. Insurance**

In case of patients that have insurance, all the insurance details are to be stored in the system for claim processing.

#### **11. Management would like the following reports:**

- 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

### **System Requirement:**

1. Database: MySQL Database to be used since it is open source and free.
2. Operating System: Shall be Windows 2016
3. Web-Based: The system shall be a web-based application
4. Response Time: The system shall give responses in 1 second
5. Capacity: The System must support 500 people using it at a time
6. Errors: The system shall keep a log of all the errors
7. Availability: The system shall be available all the time
8. Usability: The screens should be self-explanatory and very user friendly. Management would not want employees not ordering from the system as they cannot understand the screens and data fields on screen. The users should not find the system cumbersome.

## **Project Task:**

1. Identifying stakeholders – Create a list of stakeholders (as taught in Business Analysis Planning and Monitoring Knowledge Area)
2. Describe the proposed system's workflow
3. Write the in-scope and out-of-scope items for this software
4. As a Business Analyst working on this project, find out the scope of the hospital management system. To find the scope you can use Use Case diagram (UML) or Context diagram
5. Write down the main features that need to be developed
6. Draw an ER diagram of the system
7. Draw a data flow diagram for HMS
8. Write out the Functional and Nonfunctional Requirements for this software
9. Draw a flowchart for the patients' admission process (using flowcharts).
10. Draw wireframes or mock screens for any 2 of the features namely home page and patient registration screen