

- I. Our Cardiac Hospital Management System is a full-web-based solution designed to improve cardiac hospital management and organization. Our system aims to reduce the time and effort required of hospital staff and reduce death rates while increasing capacity and patient management. The web-based approach, compared to traditional file-based systems, ensures data security and reduces the risk of physical damage, loss, or error. Patients can book appointments with their chosen doctors more easily by enabling appointments online through the hospital's website. Furthermore, doctors can use the system to efficiently manage their patient lists, allowing for more effective patient care and services. Furthermore, the system assists administrators in allocating beds to patients on a priority basis, with doctor approval. The system is used by administrators to keep track of available beds. Our system includes:
  - Non-functional requirements can be used to improve the functioning of the computer system, but not the management of the hospital.
  - Functional requirements, on the other hand, are requirements directly related to hospital management. The primary areas of concern are performance, security and user interface.

**Purpose:** Our software will help the hospitals to be more efficient in registration of their patients and manage appointments, profiles and medical records of patients and decrease death rate by using QR code bracelets. It enables doctors, admin and patients to view, and patients and admin can modify appointments schedules if required. Patients can ask doctors any time using the forum. The purpose of this project is to computerize all details regarding patient details and hospital details. Our goal is to make a client satisfied system by fulfilling the client requirements and improving the current manual system with client needs.

## II. User Stories and Acceptance Criteria:

### 1. Patient User Stories

- **User Story #1:**
  - **Description:** *"As a patient, I want to book an appointment online with a doctor so that I can avoid long waiting times and ensure I get medical attention when needed."*
  - **Acceptance Criteria:**
    1. The system allows patients to view available doctors and their specialties.
    2. The appointment calendar displays available slots for each doctor.
    3. Patients can select and confirm an appointment slot.
    4. The system sends an email or SMS confirmation to the patient upon successful booking.
- **User Story #2:**
  - **Description:** *"As a patient, I want to view my medical records so that I can stay informed about my treatment history and progress."*
  - **Acceptance Criteria:**
    1. Patients can securely log into their accounts.
    2. Patients can view previous and current treatment records, including prescribed medications and visit history.
    3. Patients have the option to download their records as PDF files.
- **User Story #3:**
  - **Description:** *"As a patient, I want to communicate with my doctor through the forum so that I can ask follow-up questions after my visit."*
  - **Acceptance Criteria:**
    1. Patients can access a messaging interface with their assigned doctor(s).
    2. Messages are stored and viewable in a conversation history.
    3. Patients receive notifications when doctors respond to their queries.

## 2. Doctor User Stories

- **User Story #1:**
  - **Description:** *"As a doctor, I want to view my patient list and their records so that I can prepare for upcoming appointments and review treatment history."*
  - **Acceptance Criteria:**
    1. Doctors can securely log into their accounts.
    2. Doctors can access a list of patients scheduled for each day.
    3. Doctors can view detailed patient records, including medical history, previous diagnoses, and treatments.
- **User Story #2:**
  - **Description:** *"As a doctor, I want to update patient records after each visit so that their information is always current and accurate."*
  - **Acceptance Criteria:**
    1. Doctors can input new diagnoses, prescriptions, and recommendations after each patient visit.
    2. Updates to patient records are saved and timestamped.
    3. The system sends a notification to the patient that their record has been updated.

## 3. Administrator User Stories

- **User Story #1:**
  - **Description:** *"As an administrator, I want to manage bed availability and assign beds based on priority so that critical patients are accommodated first."*
  - **Acceptance Criteria:**
    1. Admins can view a list of available beds.
    2. Admins can see a list of patients awaiting beds and their priority status.
    3. Bed assignments are tracked, and alerts are generated when capacity is reached.

- **User Story #2:**

- **Description:** *"As an administrator, I want to monitor doctor schedules to ensure they are not overbooked or double-booked."*
- **Acceptance Criteria:**
  1. Admins can view each doctor's schedule in a calendar format.
  2. Alerts are generated if a double booking is attempted.
  3. Admins can manually adjust schedules if necessary.

#### 4. System Admin User Stories

- **User Story #1:**

- **Description:** *"As a system admin, I want to manage user permissions to ensure that only authorized users can access certain features."*
- **Acceptance Criteria:**
  1. System admins can assign and modify user roles (e.g., patient, doctor, admin).
  2. User permissions are linked to roles and restrict access to sensitive data.
  3. A log of permission changes is maintained for auditing.

- **User Story #2:**

- **Description:** *"As a system admin, I want to monitor system performance and security logs to ensure the system is running efficiently and securely."*
- **Acceptance Criteria:**
  1. System admins can view performance metrics and security logs.
  2. Alerts are generated for unauthorized access attempts.
  3. Reports on system uptime and performance are generated weekly.

### III. Use cases: Event Decomposition Technique:

1. Enable Registration for new patients.
2. Enable Login for Patients and Doctors.
3. Enable patients, doctors, admins to view medical records.
4. Enable patients and admins to update/delete medical records.
5. Enable patients to make appointments with the chosen doctor.
6. Doctor may select appointment details
7. Generate appointment date and timing confirmation by admin.
8. Modification in schedule by patient and admin.
9. Anyone accesses a patient's record by QR code.
10. The QR code has all patient profiles. 11. Every patient has a QR code bracelet.
12. Enable Doctors to search for their patients and vice versa, and the admin can search both doctor and patient.
13. Patients have a forum to ask their questions and any doctor in the same field can respond.
14. Allocating beds to patients on a priority basis by confirmation from the doctor and Admins will use the system to keep track of available beds.

Event Type	User	Event/Action	Use Case
External	Patient	Register, book an appointment, view medical records	Patient Registration and Booking
External	Doctor	View and update patient records	Patient Record Management
External	Patient, Doctor	Send/receive messages in the	Doctor-Patient Communication
State	Administrator	View and assign beds based on priority	Bed Allocation Management
Temporal	Administrator	Manage doctor schedules and monitor appointments	Appointment and Schedule Management
State	System Admin	Assign roles and manage user permissions	User Role Management
Temporal	System Admin	Monitor system logs and security	System Monitoring

Use Case Name	Brief Description	Primary Actor
Patient Registration and Booking	Allow patients to register, book appointments, and view medical records online.	Patient
Patient Record Management	Doctors can view and update patient records, such as diagnoses and treatments.	Doctor
Doctor-Patient Communication	Enables patients to communicate with doctors for follow-up questions or information.	Patient, Doctor
Bed Allocation Management	Admins can view available beds and assign them to patients based on priority with doctor approval.	Administrator
Appointment and Schedule Management	Admins can manage doctors' schedules and avoid double bookings.	Administrator
User Role Management	System admins can assign roles to users and define access permissions for security.	System Admin
System Monitoring	System admins can view system performance, track logs, and monitor security alerts to ensure secure and efficient operations.	System Admin

