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| Project name | Healthcare Management System |

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| Project author | | |
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| 1. Short project description (Business needs and system features) |
| ***The Healthcare Management System (HMS)*** is designed to offer a comprehensive platform for healthcare professionals, patients, and hospitals. The system will be developed using ***Golang, gorilla/mux, gorilla/websocket, gorm, MySQL DB and MongoDB***.It will implement a web-based front-end client using Golang’s ***html/template*** package and ***jQuery*** OR ***React.js/Vue.js/Angular*** JavaScript/TypeScript libraries for asynchronous page data updates. Each page will have a distinct URL, and the routing between pages will be done server side using ***SpringMVC/ WebFlux***. The backend will be implemented as a ***REST/JSON API*** using JSON data serialization. There will also be a real-time event streaming from the server to the web client using ***Server Sent Events (SSE)/WebSocket*** (***gorilla/websocket)*** in order to provide immediate updates on critical healthcare events. The main user roles (actors in UML) are:  • *Patient* – Individuals seeking medical care. Can register, schedule appointments, access medical records, pay bills and use emergency alerts.  • *Doctors* – Medical professionals responsible for patient care. They can manage appointments, prescribe treatments, access patient records, monitor patient health and review billing information.  • *Nurse* – Healthcare professionals supporting patient care. They assist with appointments, update patient records, and monitor health. They can participate in emergency responses and billing.  • *Administrator* – Can manage system, user accounts, roles, and permissions. Oversee hospital information and data maintenance.  • *Hospital staff -* Individuals responsible for managing hospital operations. They can access information about their respective hospitals, including contact details and services offered. Participate in emergency alert responses and can review and manage billing and payment information for hospital services. |

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| 1. Main Use Cases / Scenarios | | |
| **Use case name** | **Brief Descriptions** | **Actors Involved** |
| * 1. Patient Registration | Patients can register in the system by providing personal information and medical history. | Patients, Administrators |
| * 1. Doctor Registration | Doctors can register by providing their professional details and credentials. | Doctors, Administrators |
| * 1. Nurse Registration | Nurses can register by providing their professional details and credentials. | Nurses, Administrators |
| * 1. Administrator Registration | Administrators can create new accounts for other roles and manage user data. | Administrators |
| * 1. Manage Patients | Doctors and Nurses can view and update patient records, medical history, and treatment plans. | Doctors, Nurses |
| * 1. Manage Appointments | Patients can schedule appointments with doctors. Doctors can view and manage their appointments. | Patients, Doctors |
| * 1. Prescribe Medication | Doctors can prescribe medications and treatment plans for patients. | Doctors |
| * 1. Hospital Management | Administrators can manage hospital information, staff, and resources. | Administrators |
| * 1. View Medical Records | Patients can access their medical records. | Patients |
| * 1. View Schedule | Doctors and Nurses can view their schedules and appointments. | Doctors, Nurses |
| * 1. Monitor Health Metrics | Patients can log health metrics (e.g., blood pressure, weight) and doctors can review them. | Patients, Doctors |
| * 1. Emergency Alert | Patients can trigger emergency alerts, and hospital staff can respond. | Patients, Hospital Staff |
| * 1. Billing and Payment | Patients can view and pay bills, and hospitals can manage billing. | Patients, Hospital Staff |
| * 1. View Hospital Information | Patients and Hospital Staff can access hospital information. | Patients, Hospital Staff |

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| 1. Main Views (Frontend) | | |
| **View name** | **Brief Descriptions** | **URI** |
| * 1. **Home** | Presents an overview of the healthcare system and provides options for login and registration. | / |
| * 1. **Appointments** | Enables patients, doctors, and nurses to manage their appointments, including scheduling, updating, and canceling. | */appointments* |
| * 1. **Medical Records** | Offers patients, doctors, and nurses the ability to view and edit their medical records. | */medical-records* |
| * 1. **Doctor Schedule** | Shows the schedule for doctors, including appointments and availability. | */doctor-schedule* |
| * 1. **Emergency Alert** | Provides a platform for users to trigger and respond to emergency alerts in critical medical situations. | */emergency-alert* |
| * 1. **Billing and Payments** | Allows users to manage billing information and payments for healthcare services. | */billing* |
| * 1. **Hospital Information** | Page for managing hospital information, accessible by hospital staff and administrators. | */hospital-information* |
| * 1. **Registration** | Allows new users to register for an account by providing necessary personal information. | */register* |
| * 1. **Login** | Provides a secure login page for users to access the HMS. | */login* |
| * 1. **Administrator Dashboard** | Offers administrators a dashboard for managing user roles and permissions in the system. | */admin-dashboard* |
| * 1. **Patient Dashboard** | Dashboard for patients to access and manage their healthcare information, appointments, and records. | */patient-dashboard* |
| * 1. **Prescriptions** | Provides a view for doctors to create and manage drug prescriptions for patients. | /prescriptions |

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| 1. API Resources (Backend) | | |
| **View name** | **Brief Descriptions** | **URI** |
| * 1. Patients | GET and POST patient data, including personal information and medical history. | /api/patients |
| * 1. Patient | GET, PUT, and DELETE specific patient data, allowing individual patient data management. | /api/patients/{patientId} |
| * 1. Doctors | GET and POST doctor data, encompassing professional details and credentials. | /api/doctors |
| * 1. Doctor | GET, PUT, and DELETE specific doctor data, facilitating individual doctor data management. | /api/doctors/{doctorId} |
| * 1. Nurses | GET and POST nurse data, involving professional details and credentials. | /api/nurses |
| * 1. Nurse | GET, PUT, and DELETE specific nurse data, for individual nurse data management. | /api/nurses/{nurseId} |
| * 1. Appointments | GET and POST appointment data, for managing patient appointments. | /api/appointments |
| * 1. Appointment | GET, PUT, and DELETE specific appointment data, allowing individual appointment data management. | /api/appointments/{appointmentId} |
| * 1. Medical Records | GET and POST medical record data, enabling access to patient records, treatment history, and health metrics. | /api/medical-records |
| * 1. Medical Record | GET, PUT, and DELETE specific medical record data, for individual medical record management. | /api/medical-records/{patientId} |
| * 1. Billing | GET and POST billing data, for tracking billing and payments related to healthcare services. | /api/billing |
| * 1. Hospitals | GET and POST hospital data, for managing hospital information and services. | /api/hospitals |
| * 1. Hospital | GET, PUT, and DELETE specific hospital data, allowing individual hospital data management. | /api/hospitals/{hospitalId} |
| * 1. Emergency Alerts | SSE event streaming for emergency alerts and responses, facilitating real-time emergency alert handling. | /api/emergency-alerts |
| * 1. Ratings | GET and POST patient ratings and feedback. | /api/ratings |
| * 1. Prescriptions | GET and POST drug prescriptions created by doctors for patients. | /api/prescriptions |