\*\*eClinician: Hospital/Medical Services Management System\*\*

\*\*Problem Statement\*\*

The healthcare industry is a complex ecosystem involving multiple stakeholders, intricate processes, and massive data. Current hospital and medical services management systems often struggle to provide a seamless, secure, and efficient service to its users - be they doctors, patients, pharmacists, or hospital staff. They face numerous challenges such as inefficient appointment scheduling, poor patient data management, inadequate communication channels, and insufficient security measures protecting sensitive patient information.

The existing issues in such systems include:

1. \*\*Inefficient Appointment Management\*\*: Scheduling and tracking appointments are often cumbersome, leading to time inefficiencies and potential overbooking.

2. \*\*Limited Patient Data Management\*\*: Existing systems may not efficiently manage or securely store patient data, which can cause difficulties in accessing medical histories, tracking treatment plans, and providing personalized care.

3. \*\*Insufficient Security Measures\*\*: Due to the sensitive nature of healthcare data, robust security measures are a necessity. However, many systems do not provide adequate data protection, leaving them vulnerable to breaches.

eClinician seeks to solve these problems) by developing a comprehensive, secure, and user-friendly hospital/medical services management system using Spring Boot, Spring Security, Spring Data JPA, and a microservices architecture. The system aims to streamline appointment scheduling, enhance patient data management, improve communication between stakeholders, efficiently manage prescriptions and pharmacy interactions, and provide robust data protection.

\*\*Functionalities to Implement\*\*

Here are the functionalities that the eClinician system could potentially implement:

1. \*\***User Registration and Authentication**\*\*: Allow users (doctors, patients, pharmacists, hospital staff) to register, log in, and manage their profiles.

2. \*\***Role-Based Access Control (RBAC)**\*\*: Assign different roles and access levels to users based on their positions (doctor, patient, pharmacist, etc.)

3. \*\***Appointment Scheduling and Management**\*\*: Allow doctors and patients to schedule, view, update, and cancel appointments.

4. \*\***Patient Management**\*\*: Create and manage patient profiles, including personal information, medical history, and treatment plans.

5. \*\***Doctor Management**\*\*: Manage doctor profiles, including their specialties, schedules, and patient lists.

6. \*\***Prescription Management**\*\*: Allow doctors to create, update, and track prescriptions. Patients should be able to view their active and past prescriptions.

7. \*\***Medical Records Management**\*\*: Securely store and manage patient medical records. Ensure easy access for authorized users while maintaining robust data protection.

8. \*\***Billing** and Payment Processing\*\*: Manage the billing process for patients, **including generating bills**, handling insurance claims, and processing payments.

The UI of eclincian are expected to implement the following 3 features and use-cases:

1. Display a homepage which presents a menu (or hyperlink) of options for selection (see sample screenshot below).
2. Display list of all Appointments in the system (Allows the user to view a list of all the Appointments booked in the system). The company requires this list to be displayed sorted in ascending order of the Appointment Date and Time (see sample screenshot below).
3. Implement a RESTful Web API which returns the list of Appointments data for a given Patient by their Patient Number, in JSON format, when invoked at a URL endpoint such as: [http://localhost:8080/uds-ams/api/appointment/get/patient/P108](http://localhost:8080/hcmcpatientmgmt/api/patient/list)