Project Idea:

Healthcare Appointment Management System

About:

The Healthcare Appointment Management System (HAMS) is developed to simplify and automate the process of managing appointments within healthcare facilities. This system assists medical staff in efficiently managing patient bookings, appointment scheduling, and records. Patients benefit from an easy way to book, reschedule, or cancel their appointments online, improving their overall experience and reducing wait times. The system is designed to help healthcare providers reduce administrative tasks, ensure efficient scheduling, and facilitate patient communication. Its overall goal is to enhance patient satisfaction and streamline the workflow for both staff and patients.

Features:

1. **Register:** Patients, doctors, and staff can register for an account on the system, ensuring that access and permissions are managed according to role.
2. **Login:** Secure login feature for users to access their respective accounts and functionalities.
3. **Logout**: Allows users to safely log out of the system to secure personal information.
4. **Book Appointment:** Patients can view available slots for doctors and book an appointment based on their preferences and doctor availability.
5. **Cancel or Reschedule Appointment:** Patients have the flexibility to cancel or reschedule their appointments as needed, within a set timeframe to prevent last-minute changes.
6. **View Appointment History:** Patients and doctors can access a history of past appointments, allowing easy reference to previous consultations.
7. **Patient Profile Management:** Patients can update their contact details and medical history, ensuring doctors have the latest information during appointments.
8. **Doctor Scheduling:** Doctors can set their available hours, breaks, and emergency slots, allowing patients to book based on real-time availability.
9. **Appointment Reminders:** The system sends automated reminders via SMS or email to patients for upcoming appointments, reducing no-shows.
10. **Billing & Invoicing:** The system automatically generates bills based on services provided, tracks payments, and stores invoice records for easy access.
11. **Reports & Analytics:** Generates reports on appointment statistics, patient demographics, and peak hours to aid in scheduling and resource management.
12. **Emergency Slots:** Allows staff to designate specific time slots for emergency appointments, ensuring urgent cases can be handled promptly.
13. **Feedback & Rating:** Patients can provide feedback or rate their experience, enabling healthcare providers to improve service quality.

14. **Admin Dashboard:** Admins have an interface to monitor all appointments, manage users, and oversee the overall system operations for smooth functioning.

Ways of Income:

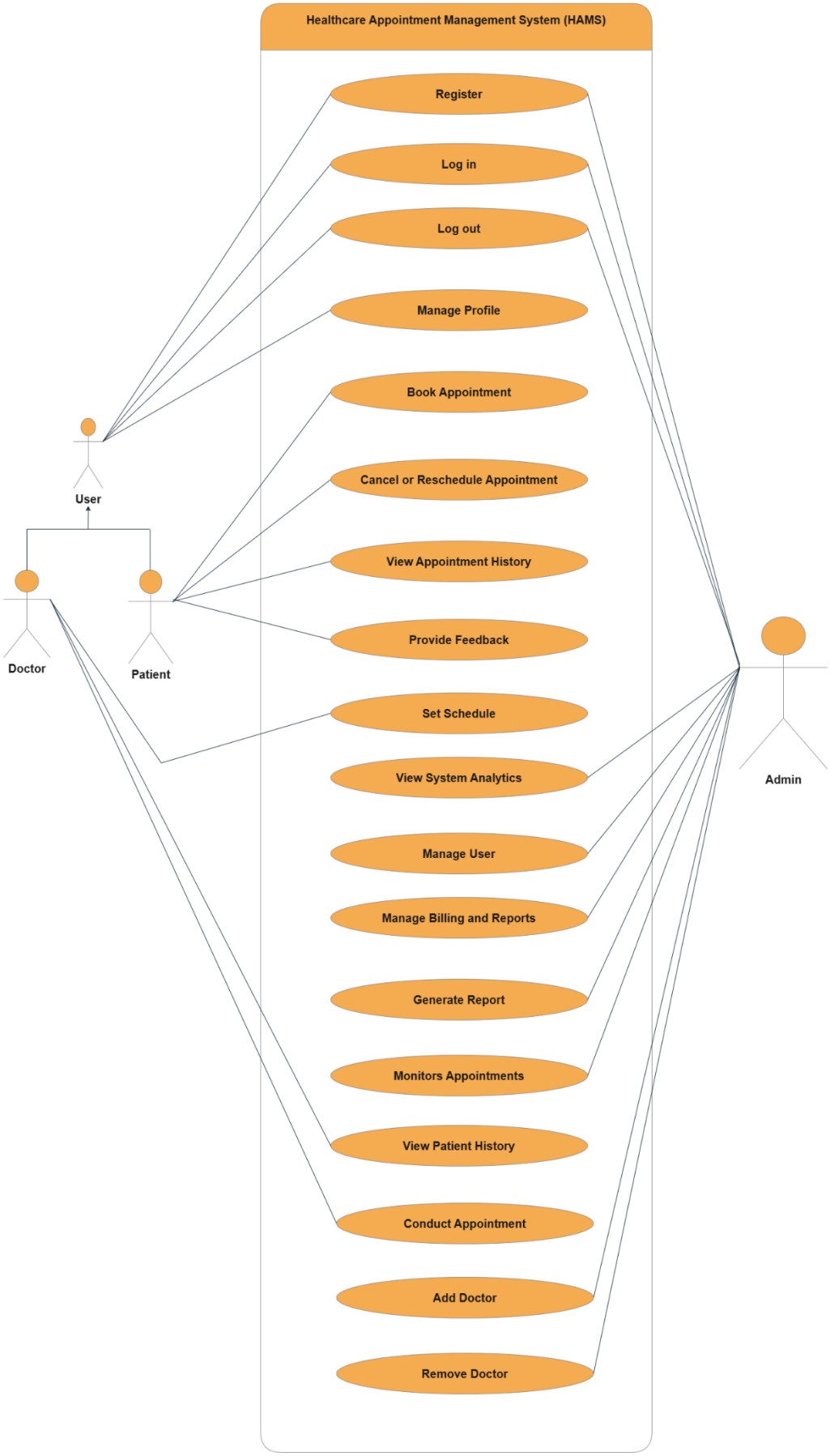
The system contributes to the revenue stream through various channels:

1. **Appointment Fees:** Patients are billed for consultations, with billing automatically linked to appointment booking and doctor consultation duration.
2. **Late Cancellation Fees:** Patients are charged a small fee for cancelling or rescheduling within a specific time limit to reduce sudden changes.
3. **Advertisements:** Relevant medical ads, such as from pharmaceutical companies, can be displayed within the system interface, providing additional revenue.
4. **Reports & Analytics Subscription:** Healthcare facilities can subscribe to advanced analytics for data-driven decision-making, available as an add-on feature.

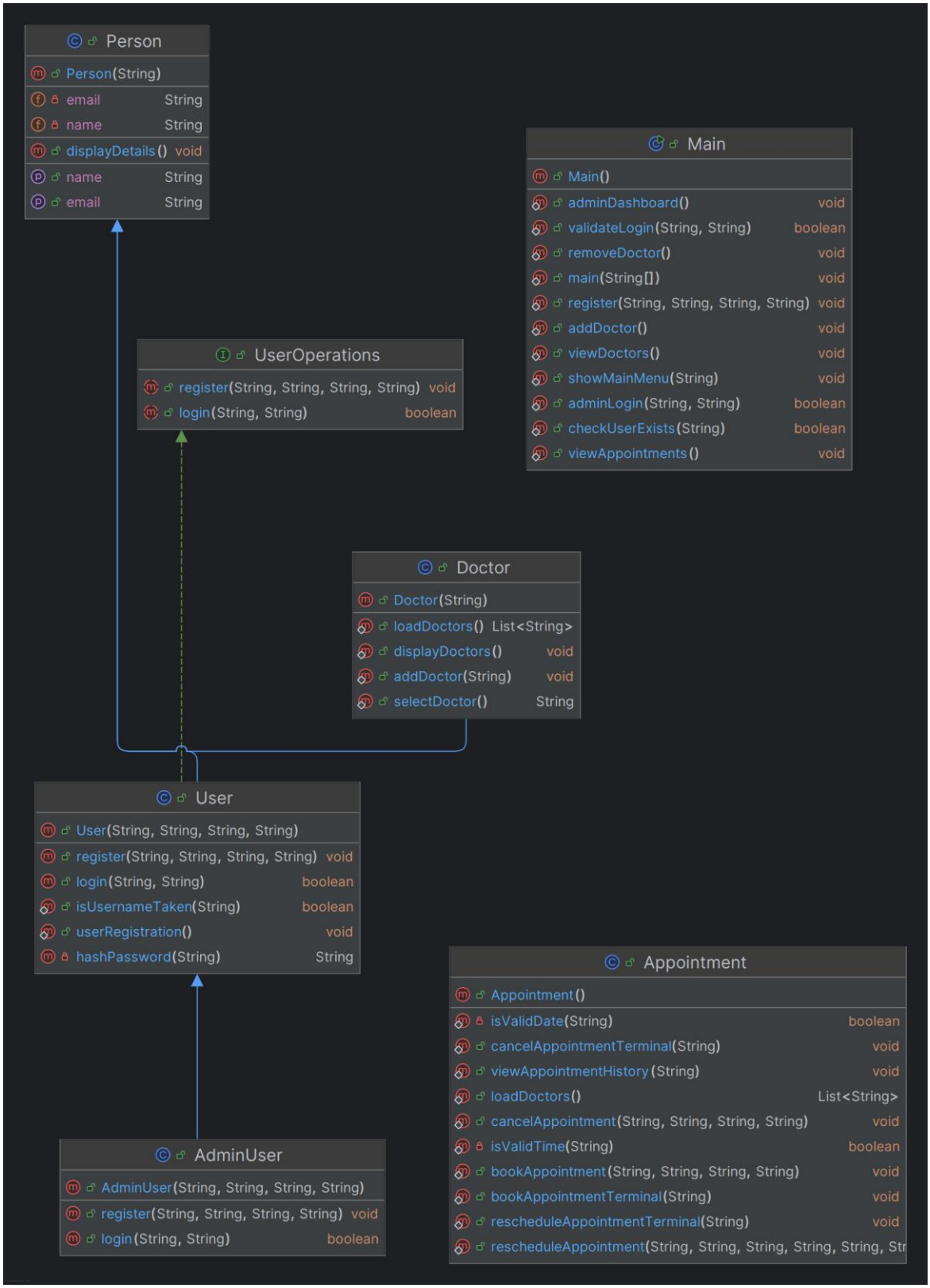
Stakeholders:

1. **Patients:** The primary users who will book appointments, view medical history, and receive reminders.
2. **Doctors:** Healthcare providers who manage their schedules, view patient profiles, and conduct consultations.
3. **Medical Staff:** Responsible for coordinating appointments, updating patient records, and assisting with administrative tasks.
4. **Admin:** Has complete access to monitor all user activities, manage permissions, and maintain system functionality.
5. **IT Support:** Ensures system security, data backup, and troubleshooting for seamless operation.
6. **Accountants/Billing Department:** Manages payment processing, invoicing, and keeps records of all financial transactions.
7. **Healthcare Facility Management:** Uses reports and analytics for resource management, operational improvement, and revenue generation.

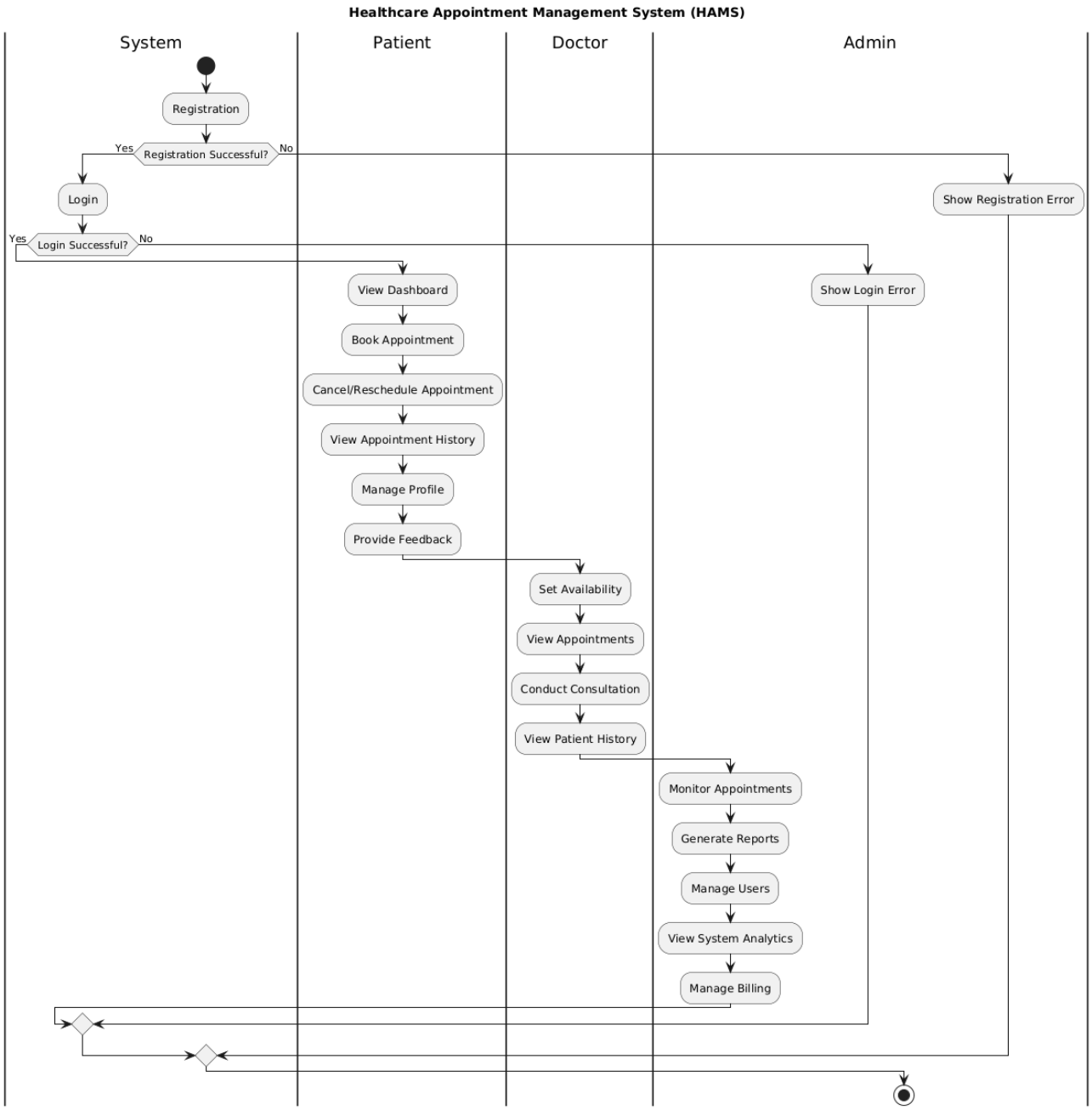
Use Case Diagram:



UML Diagram:


Person
Person(String)
email String
name String
displayDetails() void
name String
email String
Main
Main()
adminDashboard() void
validateLogin(String, String) boolean
removeDoctor() void
main(String[]) void
register(String, String, String, String) void
addDoctor() void
viewDoctors() void
showMainMenu(String) void
adminLogin(String, String) boolean
checkUserExists(String) boolean
viewAppointments() void
UserOperations
register(String, String, String, String) void
login(String, String) boolean
Doctor
Doctor(String)
loadDoctors() List<String>
displayDoctors() void
addDoctor(String) void
selectDoctor() String
User
User(String, String, String, String)
register(String, String, String, String) void
login(String, String) boolean
isUsernameTaken(String) boolean
userRegistration() void
hashPassword(String) String
Appointment
Appointment()
isValidDate(String) boolean
cancelAppointmentTerminal(String) void
viewAppointmentHistory(String) void
loadDoctors() List<String>
cancelAppointment(String, String, String, String) void
isValidTime(String) boolean
bookAppointment(String, String, String, String) void
bookAppointmentTerminal(String) void
rescheduleAppointmentTerminal(String) void
rescheduleAppointment(String, String, String, String, String, Str
AdminUser
AdminUser(String, String, String, String)
register(String, String, String, String) void
login(String, String) boolean

Activity Diagram:



Github Link:

https://github.com/mahbub-alam40/Health-Care-Appointment-Management-System