SECJ 2154 – Object Oriented Programming

SECTION: 04

Title: Hospital Registration System

PROJECT REPORT

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1.0 Introduction

The purpose of this report is to provide an overview of the Java mini project and its key outcomes. This project aimed to provide a computerized and systematic platform to improve data management efficiency and accuracy, facilitating healthcare facilities to provide an easy-to-use procedure that benefits patients ,hospital staff and admin. The Hospital Registration System is a Java-based software solution developed to help hospitals automate the patient registration process. By entering a date and time, patients can schedule an appointment without having to visit the hospital. Admin, on the other hand, will assign the patient to any available hospital and doctor based on the date and time specified. This system will act as a central appointment registration process for every hospital.

This system comprises Java object-oriented principles such as ArrayList and class relationships which are inheritance, aggregation, composition and polymorphism.

1.1 Problem Statement

The existing patient registration process in hospitals often suffers from inefficiencies and errors, causing patients inconvenience and putting an extra burden on hospital staff. Waiting periods and potential data inaccuracies are all increased by manual paperwork, a lack of centralized handling of information, and disjointed communication channels.. In scheduling patient appointments, the current registration process frequently lacks flexibility. This results in inefficient use of healthcare resources, longer patient wait times, and difficulty allowing urgent cases or rescheduling appointments.This obsolete approach undermines the overall efficacy of healthcare services and patient satisfaction.

1.2 Objectives

1. **Management of Patient Data**: The system aims to centralise patient data, resulting in an accurate and quickly obtainable database. This organised database will allow authorised healthcare professionals to quickly access accurate patient information such as appointment details, assigned doctor and room number allowing for better-informed decision-making and coordinated care.

2. **Optimise Appointment Scheduling**: The Hospital Registration System seeks to reduce patient wait times by enhancing appointment scheduling. The system aims to improve the speed of healthcare services by providing real-time updates on available slots for the appointment booking process.

3. **Scalability** : The system is designed to be scalable and adaptable to the needs of hospitals of varying sizes.

2.0 UML Description

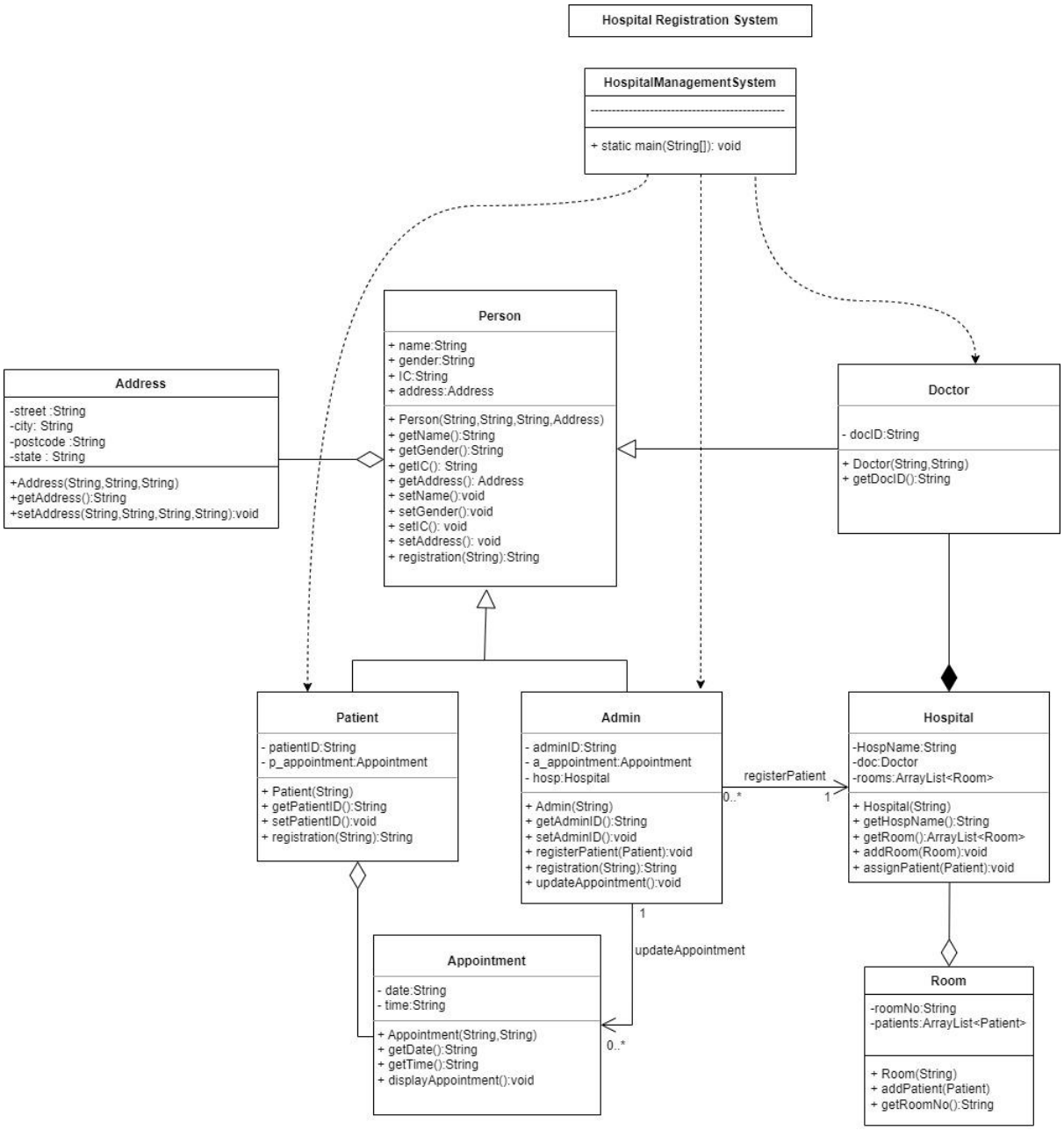


Figure 1: UML diagram for Hospital Registration System

Entity	Attributes	Description
HospitalManagementSystem	static main(String[])	Main function of system
Person	name	Name of patient
	gender	Gender of patient
	IC	Identification number of patient
	address	Address of patient
Address	street	Street name
	city	City of living
	postcode	Postcode of address
	state	State of living
Doctor	docId	Unique identifier of each doctor
Patient	patientId	Unique identifier of each patient
Admin	adminID	Unique identifier of each admin
	a_Appointment	
	hosp Hospital	
Appointment	date	Date for appointment

	time	Time for appoinment
Hospital	HospName	Name of hospital
Room	roomNo	Room number

Table 1: Data description for Hospital Registration System

3.0 Implementation

3.1 Technologies Used

1. JAVA Version : JAVA 19 VSCODE
2. IDE : Visual Studio

3.2 Development Environment

1. Java Development Kit (JDK): The latest version of the Java Development Kit (JDK), JDK 17. The JDK includes the Java compiler, runtime environment, and necessary libraries for Java application development.

2. Integrated Development Environment (IDE): The development environment is Visual Code, a popular Java IDE. Visual Code includes an extensive list of features, such as intelligent code completion, debugging tools, refactoring capabilities, and seamless integration with a variety of frameworks.

3. Version Control System: Git is a version control system that is used to track changes in source code, communicate with team members, and keep track of project history.

4. Collaboration Tools: To facilitate efficient team collaboration, track project progress, and document project requirements and specifications, collaboration tools such as Replit and LiveShare VSCODE, communication tools ,Webex and documentation tools ,GDOCS is used.

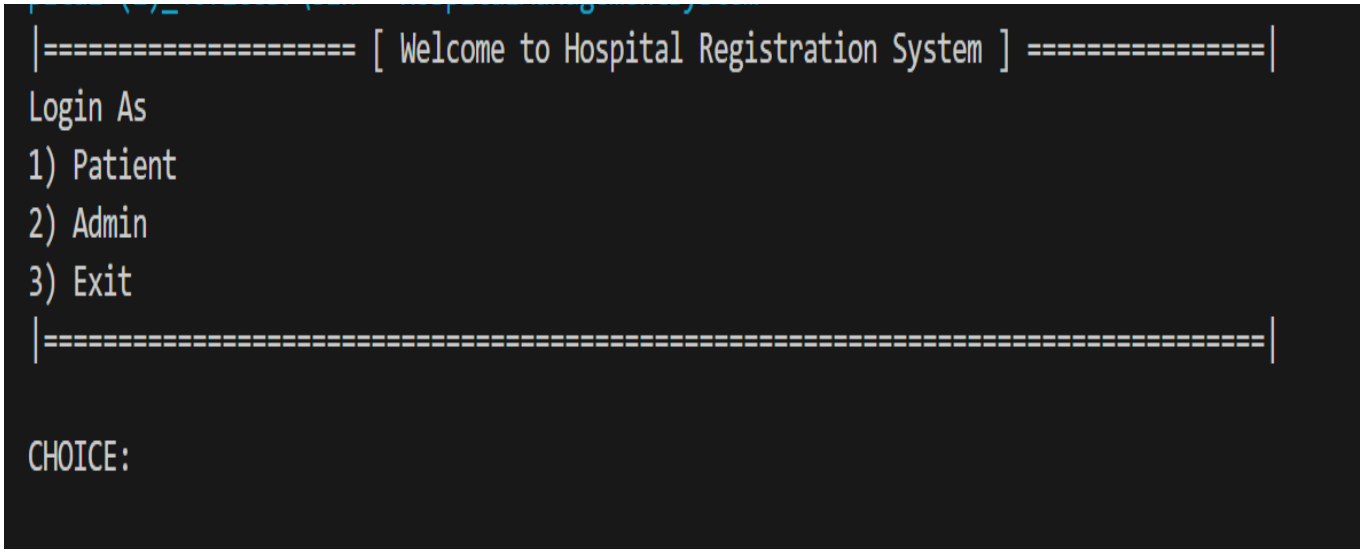
3.3 Features Implemented

Key Features	Description
OOP Principles	The system was developed with core OOP principles such as polymorphism,aggregation,composition,inheritance and abstraction. ArrayList and Vector was added to add more functionality for an seamless system.
User Authentication	Users can log in as either an administrator or a patient. This ensures that the system is only accessible to authorised users.
Patient Appointment Booking	Patients can schedule appointments by entering their name, appointment date, and time. The function allows patients to plan their hospital visits.
Admin Appointment View	The appointment information provided by the patients can be viewed by the admin. This function allows the administrator to view the scheduled requests before moving forward with the registration procedure.
Patient Registration	Patients can be registered at the hospital by assigning them to an available doctor and room. This function enables the hospital system to manage patient information more efficiently.
Room Assignment	The hospital system allows patients to be assigned to a specific ward. This function ensures proper room allocation and allows for organised patient management.
Flexibility	The system was built to be flexible, with the ability to add new hospitals, doctors, and rooms as needed. This feature ensures that the system can accommodate the healthcare organization's growing and changing needs.

Exception Handling	The system was built to handle error efficiently to avoid invalid input entered by user

4.0 User Interface

1.0 Main Interface



Screenshot 1.0 : Main interface of hospital registration system

Once we enter the main interface, system will show to log in as a patient or admin or exit the system.

2. Patient Interface

2.0 Patient Menu

```
CHOICE: 1


|====================== [ Welcome to Patient Menu ] ======================|
1) Register New Account
2) Login Existing Account
3) Exit
Enter your choice:
```

Screenshot 2.0 : Patient menu of hospital registration system

Once user choose to enter as a patient by entering option 1 in the main interface, a patient menu will appear to register new account or login an existing account.

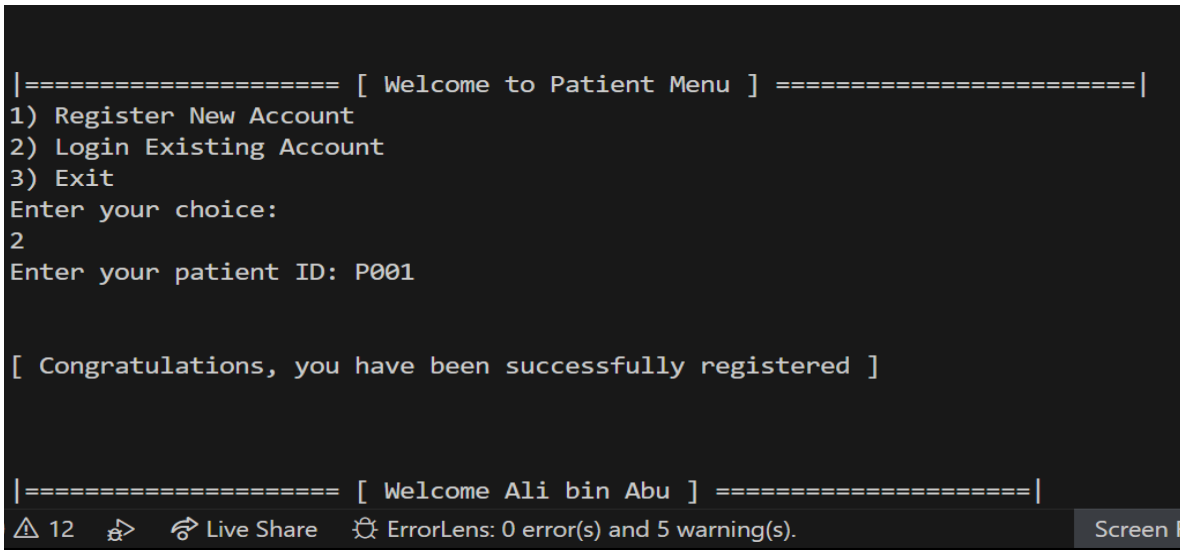
2.1 Patient register new account

```
|====================== [ Welcome to Patient Menu ] ======================|
1) Register New Account
2) Login Existing Account
3) Exit
Enter your choice:
1
Name: Ali bin Abu
Gender: Male
IC No: 911024090359

Address
Street: 22
City: JB
Postcode: 81300
State: Johor


[ Congratulations, you have been successfully registered ]
```

Screenshot 2.1 : Register new account interface

By choosing option 1, patient can register for a new account by input their name,gender,IC number and their address. The system then will prompt a message saying the registration is successful.

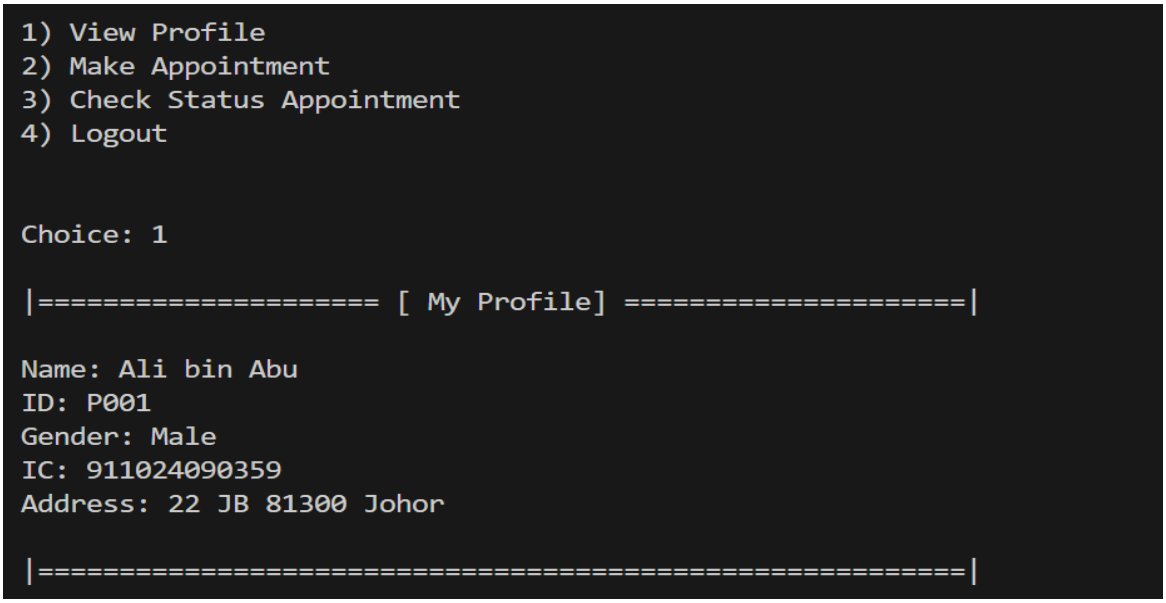
2.2 Patient log in existing account



Screenshot 2.2 : Existing account interface

If a patient is already registered, they can log in into an existing account interface by choosing option 2 and entering their patient ID.

2.3 Patient View Profile



Screenshot 2.3 : View profile interface

Patient can view their profile where their registered details can be viewed by choosing option 1 in the patient menu interface.

2.4 Patient make appointment

```
|=========================================================|


1) View Profile
2) Make Appointment
3) Check Status Appointment
4) Logout


Choice: 2

|====================== [ Appoinment Page] ======================|

<<<<<<< [ Your Details ] >>>>>>>>>>>
Name: Ali bin Abu
ID: P001
Gender: Male
IC: 911024090359
Address: 22 JB 81300 Johor
<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>

[ Enter your preferred date and time ]
Date: 24/2/2023
Time: 9 am
24/2/2023
|=================================================================|
```

Screenshot 2.4 : Make appointment interface

Patient can make new appointment by choosing option 2 and enter their preferred date and time for an appointment

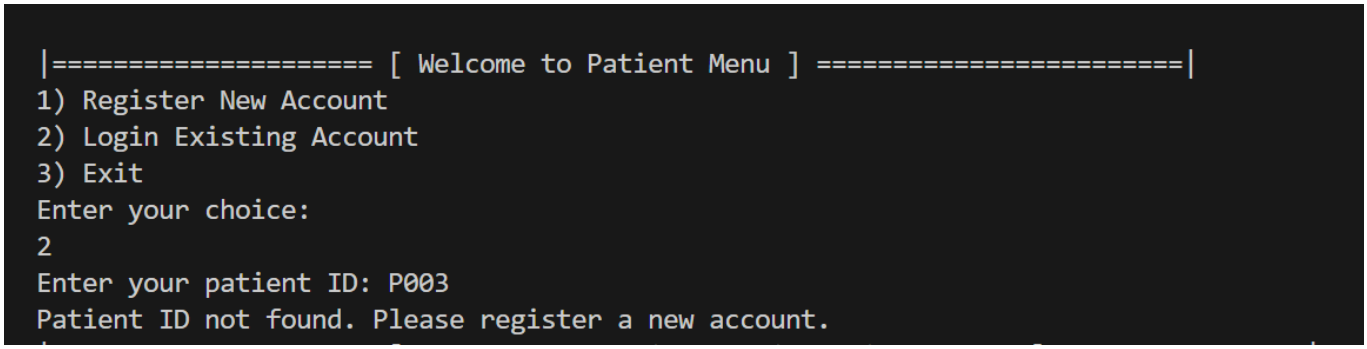
2.5 Patient view updated appointment

```
|====================== [ Welcome Ali bin Abu ] ======================|
|========================== [ P001 ] ==========================|

1) View Profile
2) Make Appointment
3) Check Status Appointment
4) Logout


Choice: 3

|====================== [ Your Appointment ] ======================|

|============== [ Details ] ===============|
Name: Ali bin Abu
ID: P001
Gender: Male
IC: 911022080359
Address: 22 JB 81300 Johor Bahru
Date and Time: 24/2/2023 At 9 am
Hospital: Hospital Tun Aminah
Doctor: Room 102
Room: Doctor Jefri

|=========================================================|
```

Screenshot 2.5 : View updated appointment interface

Patient can view their appointment status by choosing option 3 once an admin updated their appointment details.

2.6 Invalid patient ID

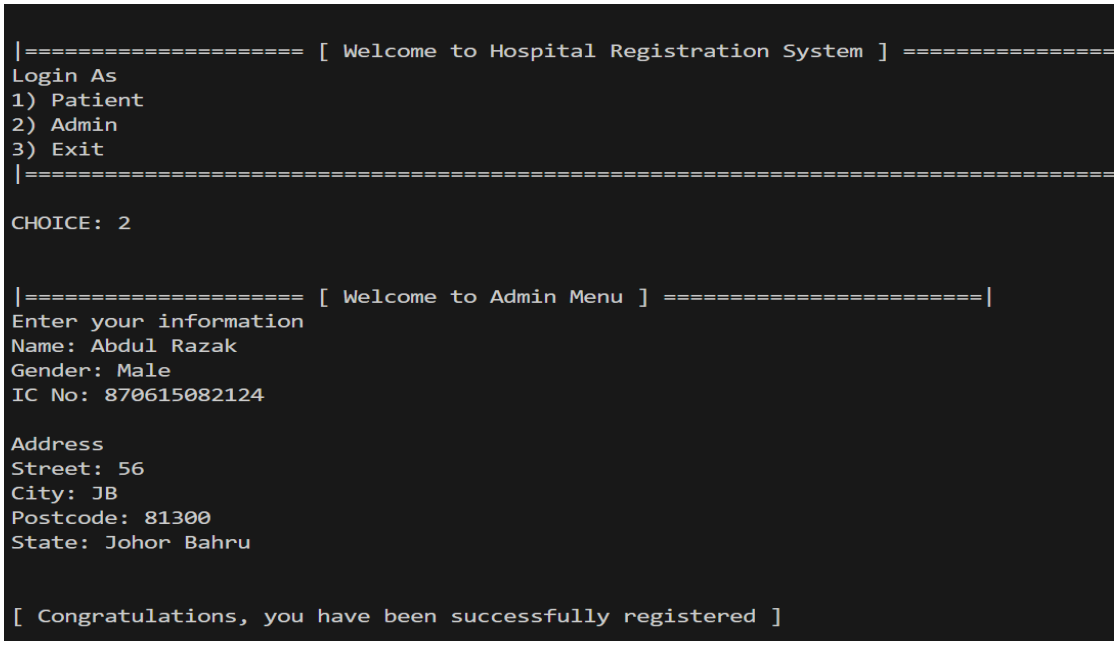


Screenshot 2.6 : Invalid patient ID

A patient cannot log in into existing account interface without registering first. The system will prompt to register an account first.

3. Admin Interface

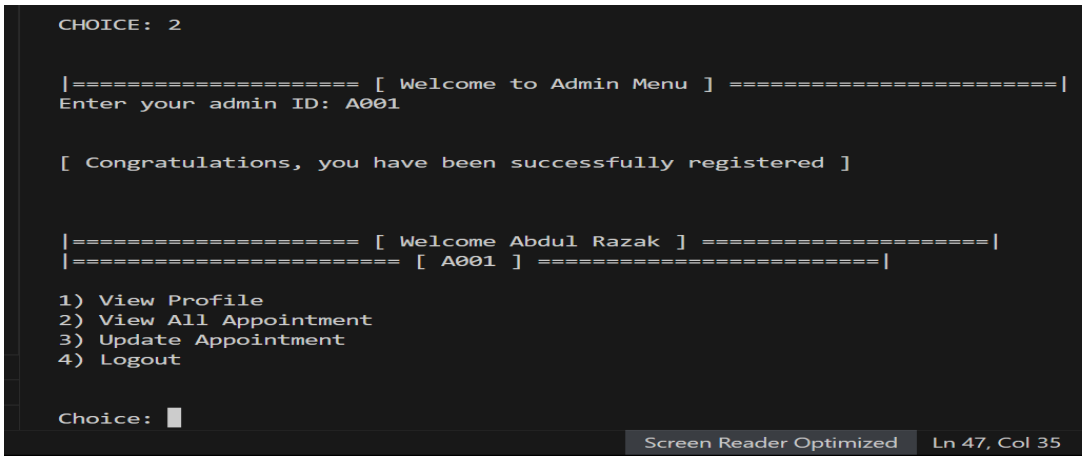
3.0 Admin register new account



Screenshot 3.0 : Admin register new account interface

By choosing option 1 in the admin menu, admin can register for a new account by input their name,gender,IC number and their address. The system then will prompt a message saying the registration is successful.

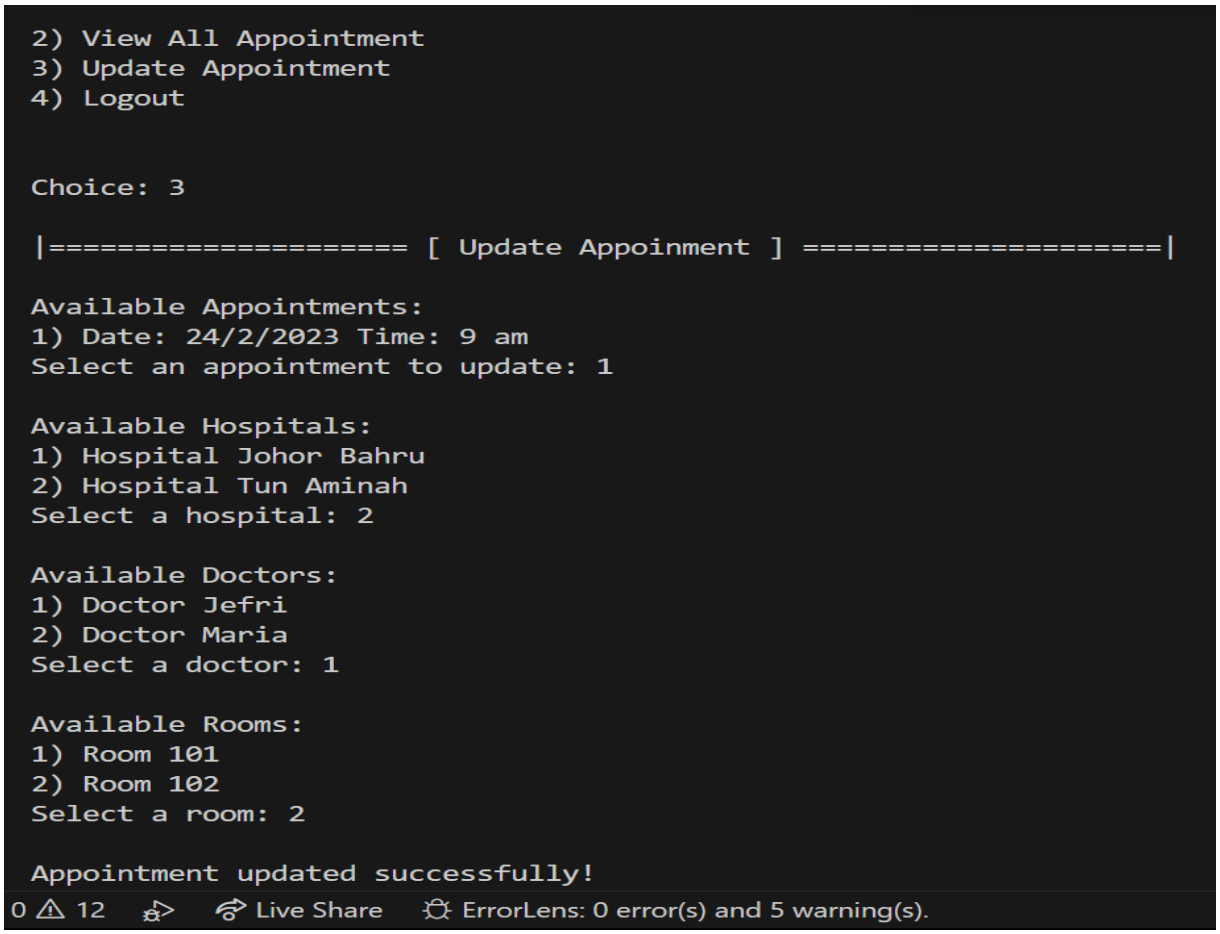
3.1 Admin log in existing account



Screenshot 3.1 : Admin log in existing account interface

If a admin is already registered, they can log in into an existing account interface by choosing option 2 and entering their admin ID.

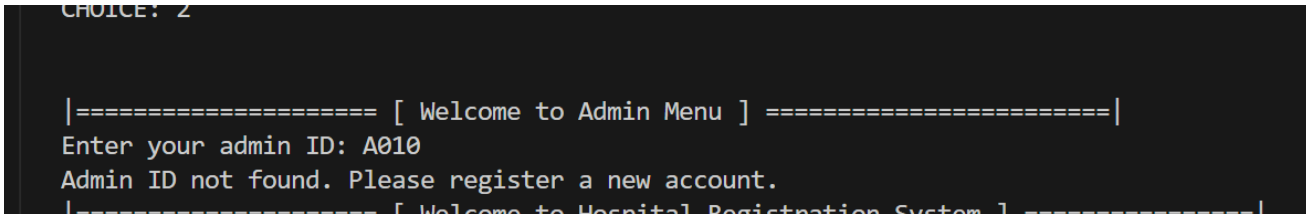
3.2 Admin update appointment



Screenshot 3.2 : Admin view and update appointment interface

Admin can view registered appointment details and update it by assigning which hospital, the doctor's name and room number to that patient. A succesful message is prompted upon the operation.

3.3 Invalid admin ID

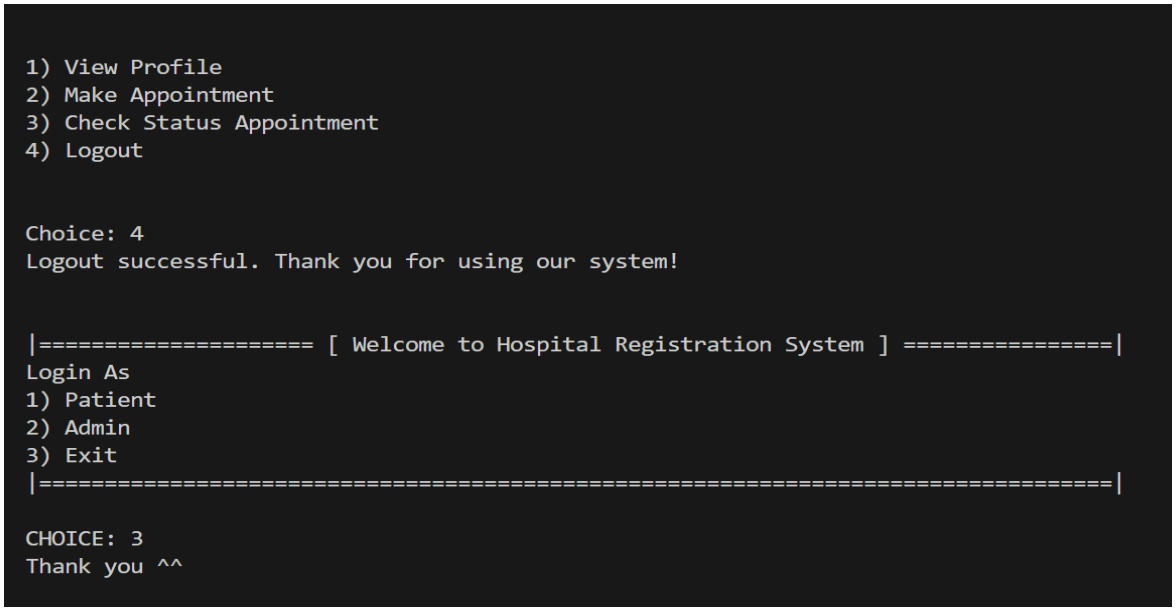


Screenshot 3.3 :Invalid adminID

An admin cannot log in into an existing account interface without registering first. The system will prompt to register an account first.

4. Exit Interface

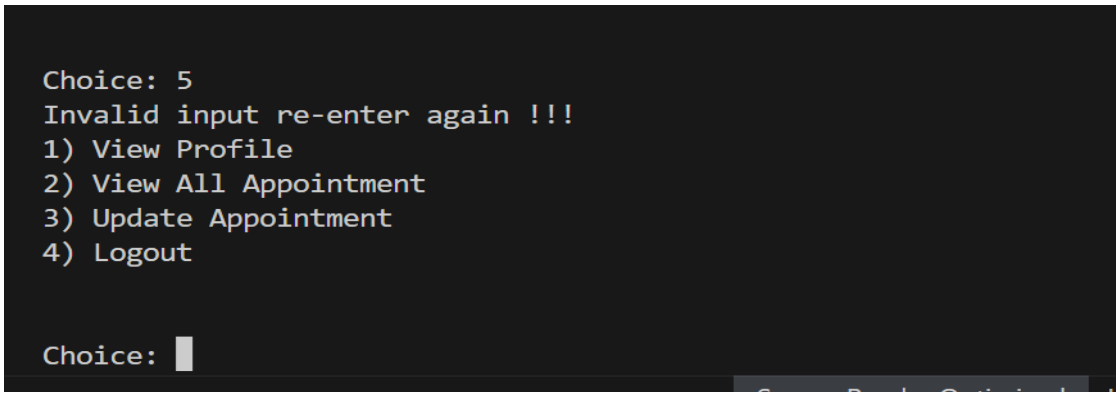
4.0 Exit system



Screenshot 4.0 : Exit system interface

User can exit the system first log out of their account and choose option 3 in main interface. The system will prompt a thank you message.

5. Input mismatch



Screenshot 5.0 : Input mismatch

An error message will show if the user entered a wrong input and the system will prompt the user to enter a valid input again.

5.0 Conclusion

In conclusion, the overall project involved the implementation of JAVA programming which emphasizes the use of object-oriented principles. The development of a Hospital Registration System in Java addresses the issue of inefficient patient registration process. The system aims to improve the efficiency of healthcare services, improve the satisfaction of patients, and promote greater integration among doctors and hospitals by optimizing the registration process, centralizing patient data and optimizing booking appointments.Finally, the Java-based Hospital Registration System provides an efficient and dependable solution to transform the patient registration process, optimize processes, and improve medical services for patients as well as medical professionals.