Software Requirements Specification

for

NITT Hospital Appointment Booking System

Version 1.0

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1. Introduction

1.1 Purpose

This document presents a detailed description of the NITT Hospital Appointment Booking System, outlining its functional and non-functional requirements. The system aims to facilitate appointment scheduling, provide information about doctors, display important announcements through a notice-board feature, and list available medical equipment.

1.2 Document Conventions

This document follows the IEEE format standard (IEEE Std. 830 – 1998).

1.3 Intended Audience and Reading Suggestions

The intended audiences of this document include stakeholders involved in the development of the hospital appointment booking system, software engineers, and anyone interested in understanding the requirements of the system.

1.4 Project Scope

The NITT Hospital Appointment Booking System is a web-based application designed to assist patients in scheduling appointments with doctors, accessing information about doctors' availability and specialties, receiving important announcements through a notice-board feature, and browsing available medical equipment. The system will be developed using the Agile Software Development Life Cycle (SDLC) model.

1.5 References

Pressman, Roger S. Software Engineering: A Practitioner’s Approach. New York, NY: McGraw-Hill, 2005.

Lecture slides

2. Overall Description

2.1 Product Perspective

The NITT Hospital Appointment Booking System represents a standalone application that provides users with functionalities for appointment scheduling, doctor information, notice-board updates, and medical equipment listings.

2.2 Product Features

2.2.1 Home Interface

The home interface serves as the main entry point for users, offering access to features such as appointment booking, doctor information, notice-board updates, and medical equipment listings.

2.2.2 Registration

Users are required to register for an account to access personalized features. During registration, users must provide their full name, email address, and password.

2.2.3 Login

Registered users can log in to the system using their email address and password.

2.2.4 Book Appointment

Registered users can schedule appointments by providing necessary details, including their personal information, appointment date and time, doctor's specialty, etc.

2.2.5 Doctors Information

Users can access information about doctors, including their availability and specialties.

2.2.6 Notice-board

The notice-board feature displays important announcements and event reminders for users.

2.2.7 Medical Equipment

Users can view details of the medical equipment available at NITT Hospital.

3. System Features

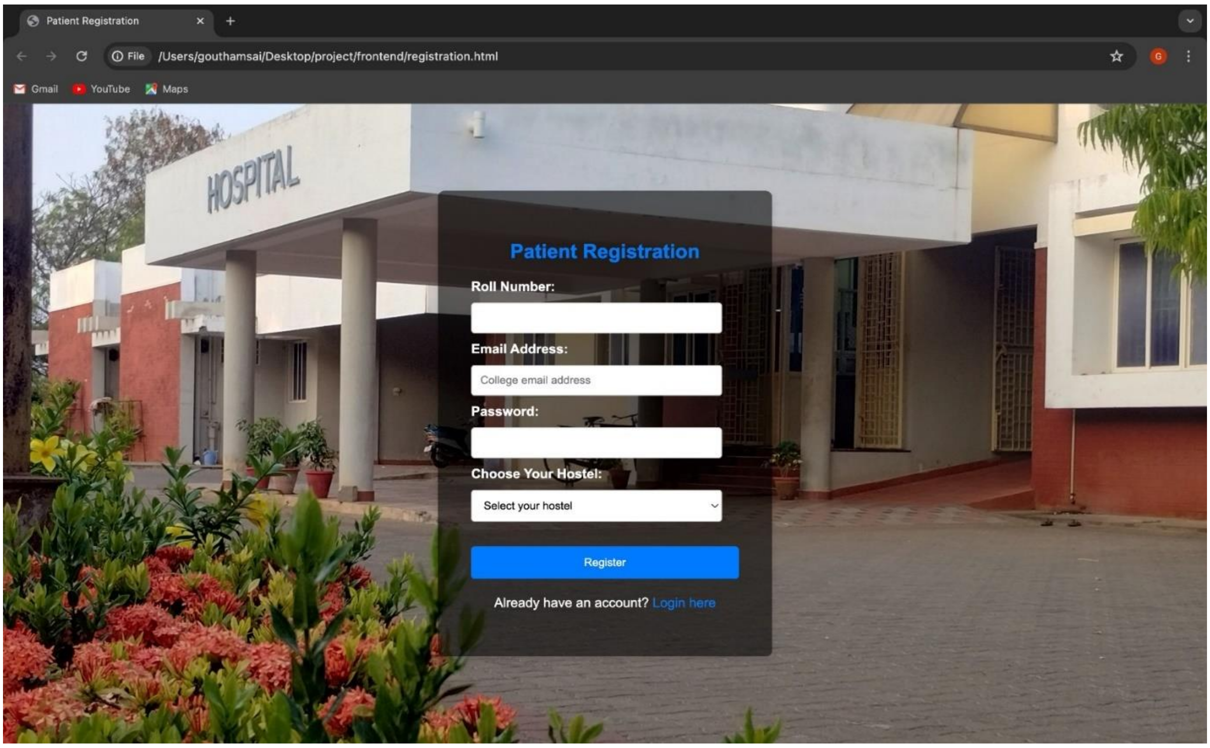
3.1 General Requirements

3.1.1 Home Interface

The home interface shall provide links to all main features of the system.

The interface design shall be user-friendly and accessible across different devices.

3.1.2 Registration


Patient Registration
File
/Users/gouthamsai/Desktop/project/frontend/registration.html
Gmail
YouTube
Maps
HOSPITAL

Patient Registration

Roll Number:

Email Address:

College email address

Password:

Choose Your Hostel:

Select your hostel

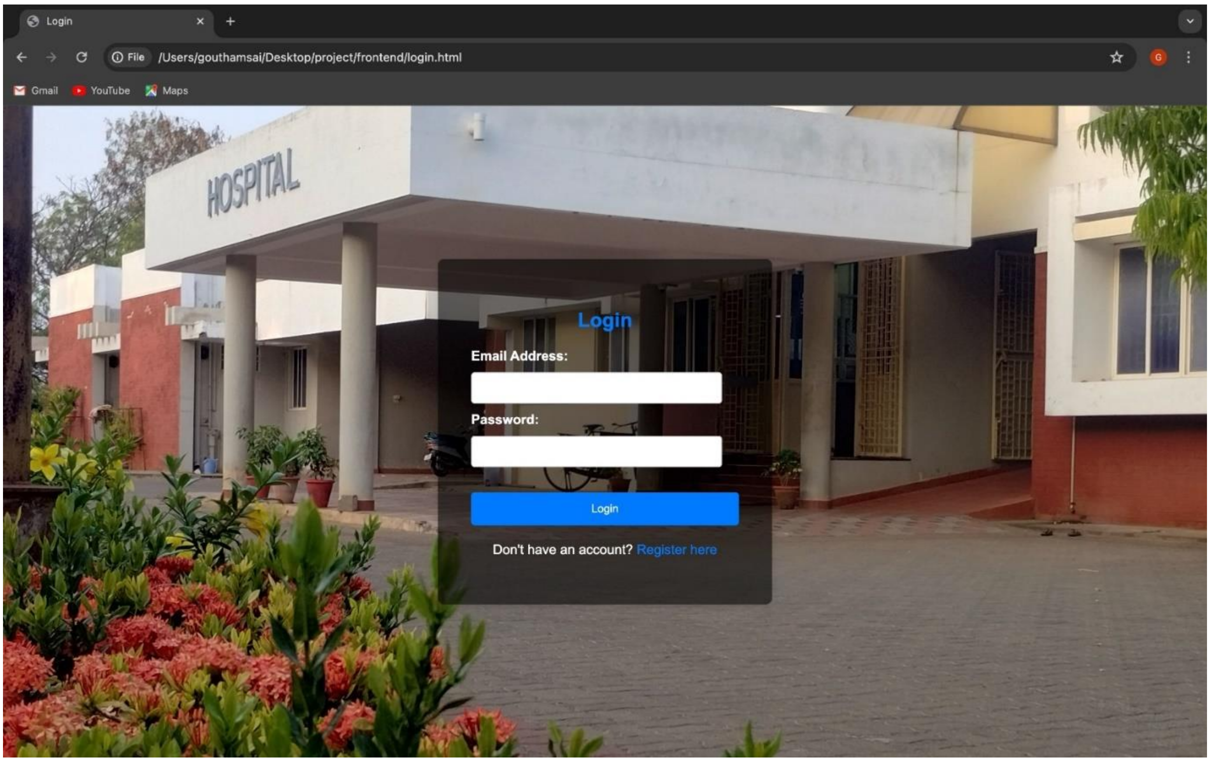
Register

Already have an account? Login here

The registration process shall require users to provide mandatory information, including full name, email address, and password.

Optional information, such as phone number and roll number, may also be provided during registration.

3.1.3 Login



Login

/Users/gouthamsai/Desktop/project/frontend/login.html

Login

Email Address:

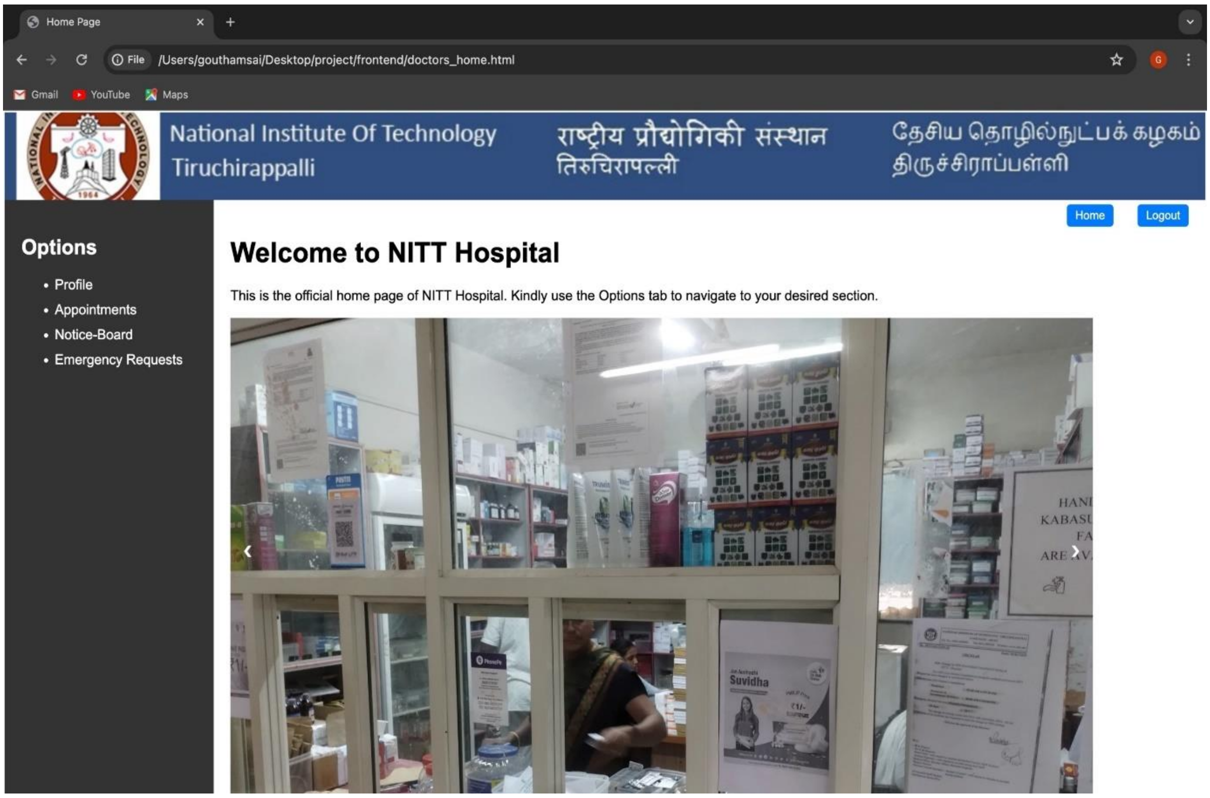
Password:

Login

Don't have an account? Register here

Registered users shall be able to log in using their email address and password.

The system shall authenticate users' credentials before granting access to personalized features.



/Users/gouthamsai/Desktop/project/frontend/doctors_home.html

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திருச்சிராப்பள்ளி

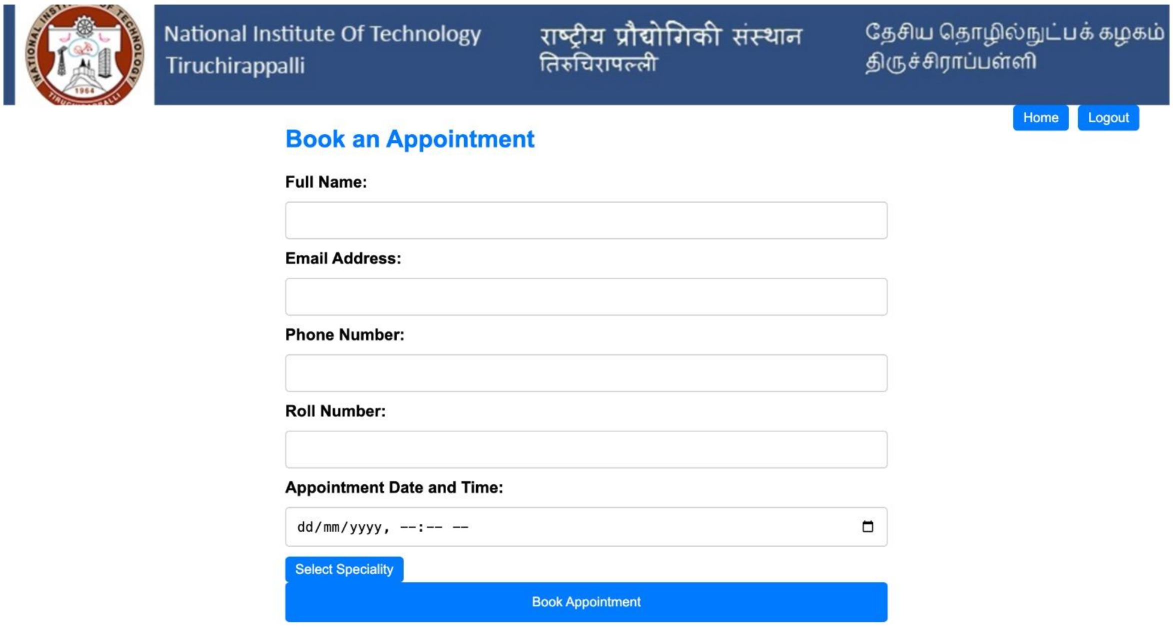
Options

- Profile
- Appointments
- Notice-Board
- Emergency Requests

Welcome to NITT Hospital

This is the official home page of NITT Hospital. Kindly use the Options tab to navigate to your desired section.

3.1.4 Book Appointment



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Book an Appointment

Full Name:

Email Address:

Phone Number:

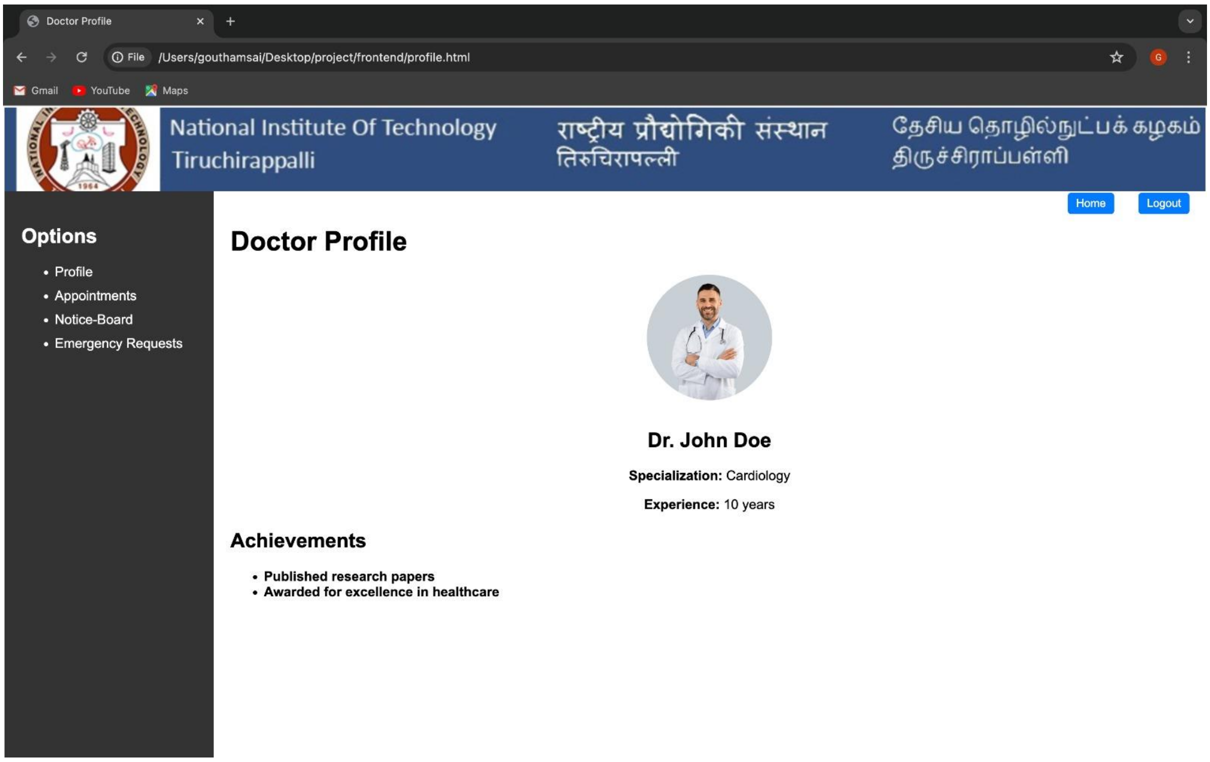
Roll Number:

Appointment Date and Time:

dd/mm/yyyy, --:-- --

Users shall be able to schedule appointments by providing necessary details, including their personal information, appointment date and time, doctor's specialty, etc.

3.1.5 Doctors Information



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Options

- Profile
- Appointments
- Notice-Board
- Emergency Requests

Doctor Profile

Dr. John Doe

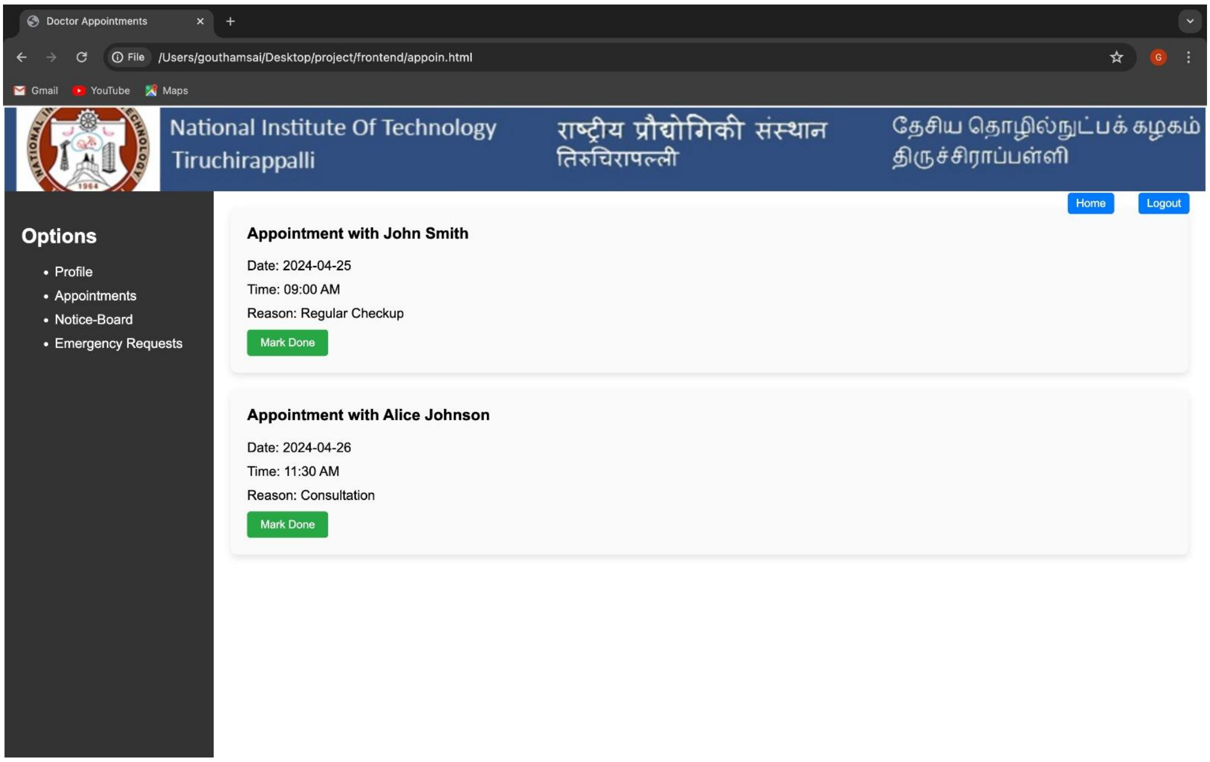
Specialization: Cardiology

Experience: 10 years

Achievements

- **Published research papers**
- **Awarded for excellence in healthcare**

The system shall display comprehensive information about doctors, including their availability and specialties.



Appointment with John Smith

Date: 2024-04-25

Time: 09:00 AM

Reason: Regular Checkup

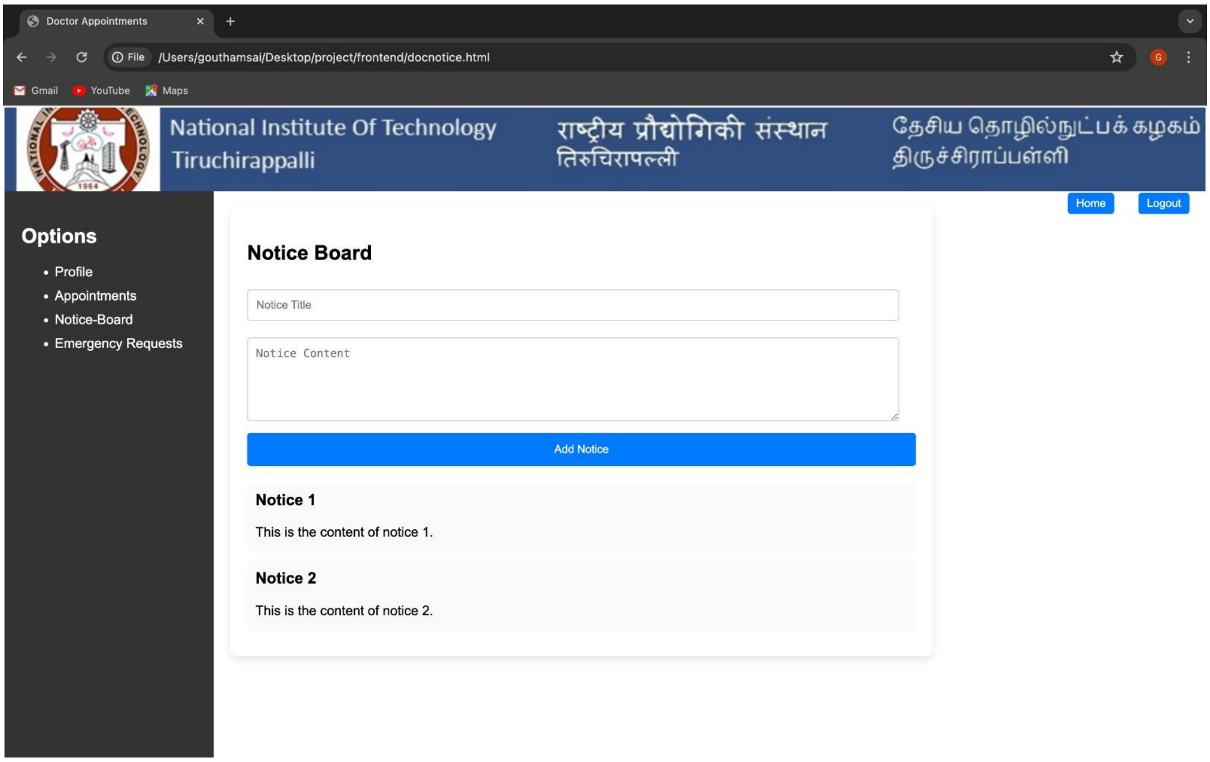
Appointment with Alice Johnson

Date: 2024-04-26

Time: 11:30 AM

Reason: Consultation

3.1.6 Notice-board



Notice Board

Notice 1

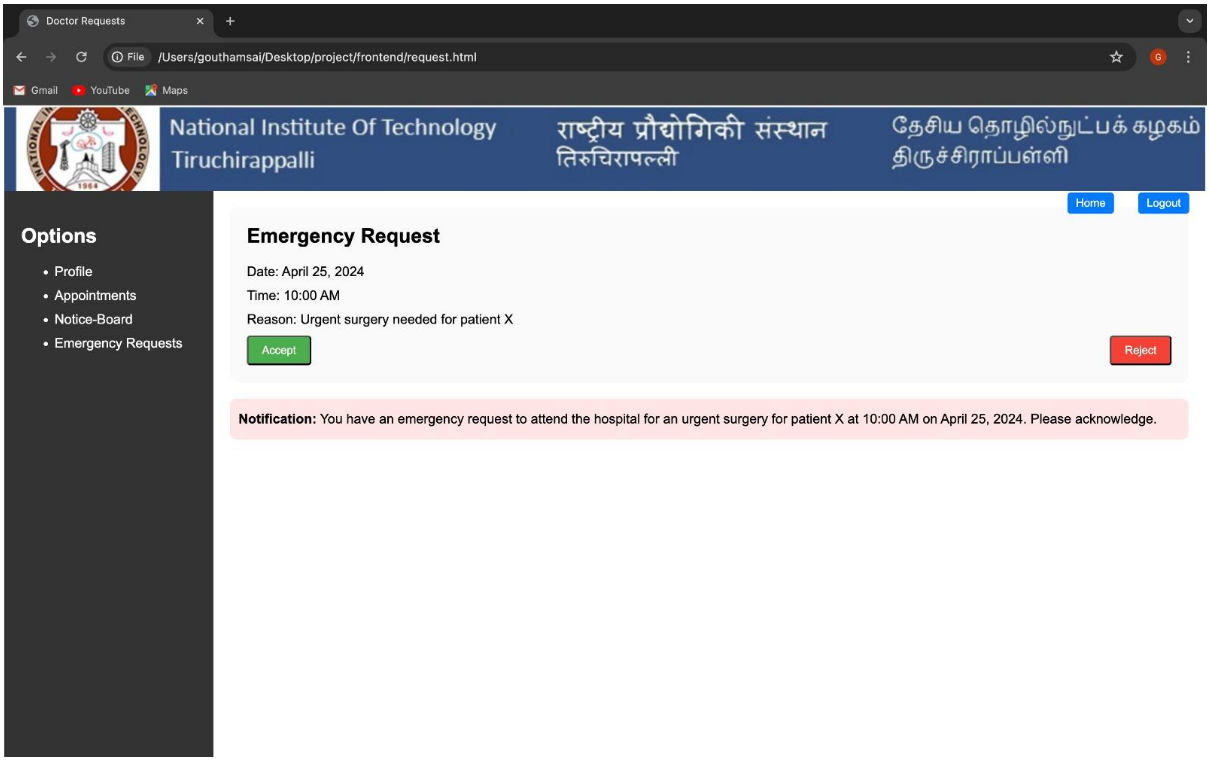
This is the content of notice 1.

Notice 2

This is the content of notice 2.

The notice-board shall feature important announcements and event reminders for users.

EMERGENCY REQUEST



Emergency Request

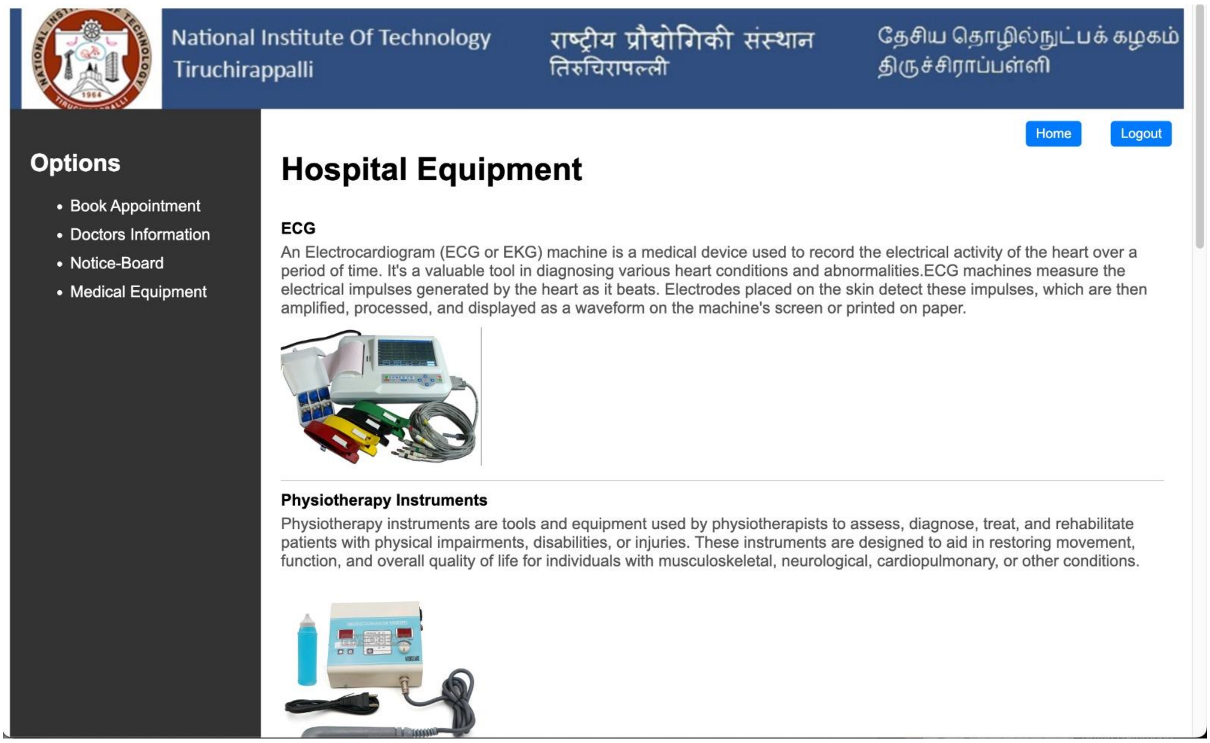
Date: April 25, 2024

Time: 10:00 AM

Reason: Urgent surgery needed for patient X

Notification: You have an emergency request to attend the hospital for an urgent surgery for patient X at 10:00 AM on April 25, 2024. Please acknowledge.

3.1.7 Medical Equipment



Hospital Equipment

ECG

An Electrocardiogram (ECG or EKG) machine is a medical device used to record the electrical activity of the heart over a period of time. It's a valuable tool in diagnosing various heart conditions and abnormalities.ECG machines measure the electrical impulses generated by the heart as it beats. Electrodes placed on the skin detect these impulses, which are then amplified, processed, and displayed as a waveform on the machine's screen or printed on paper.

Physiotherapy Instruments

Physiotherapy instruments are tools and equipment used by physiotherapists to assess, diagnose, treat, and rehabilitate patients with physical impairments, disabilities, or injuries. These instruments are designed to aid in restoring movement, function, and overall quality of life for individuals with musculoskeletal, neurological, cardiopulmonary, or other conditions.

Users shall be able to browse available medical equipment and view detailed descriptions.

4. External Interface Requirements

4.1 User Interfaces

The user interface shall be intuitive and responsive, providing seamless navigation for users.

The interface design shall adhere to accessibility standards for users with disabilities.

4.2 Communications Interfaces

The system shall utilize secure communication protocols to ensure the confidentiality and integrity of user data during transmission.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The system shall be capable of handling multiple concurrent user sessions without significant performance degradation.

Response times for user interactions shall be kept minimal to enhance user experience.

5.2 Security Requirements

User authentication and authorization mechanisms shall be implemented to ensure the security of user accounts and data.

The system shall encrypt sensitive user information, such as passwords, during storage and transmission.

5.3 Software Quality Attributes

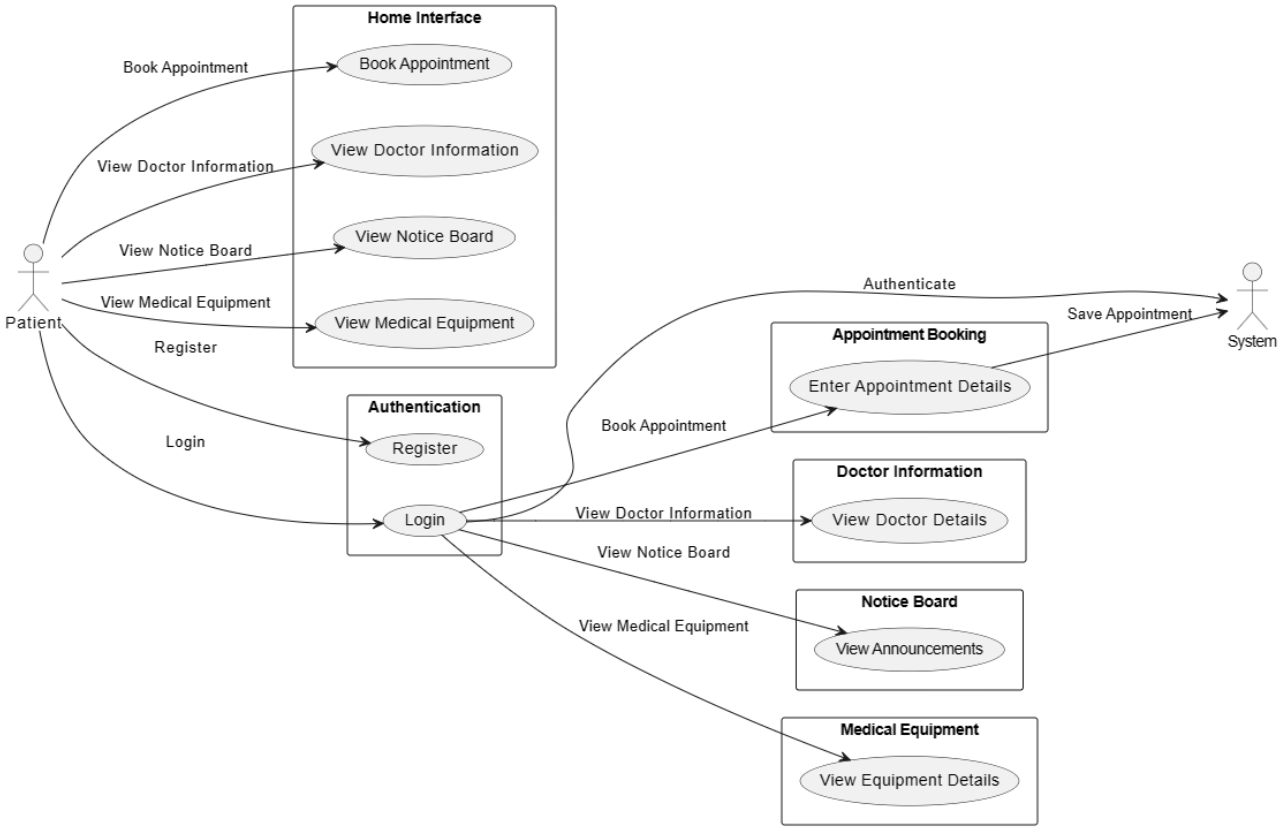
5.3.1 Usability

The system shall prioritize ease of use and intuitive design to accommodate users with varying levels of technical proficiency.

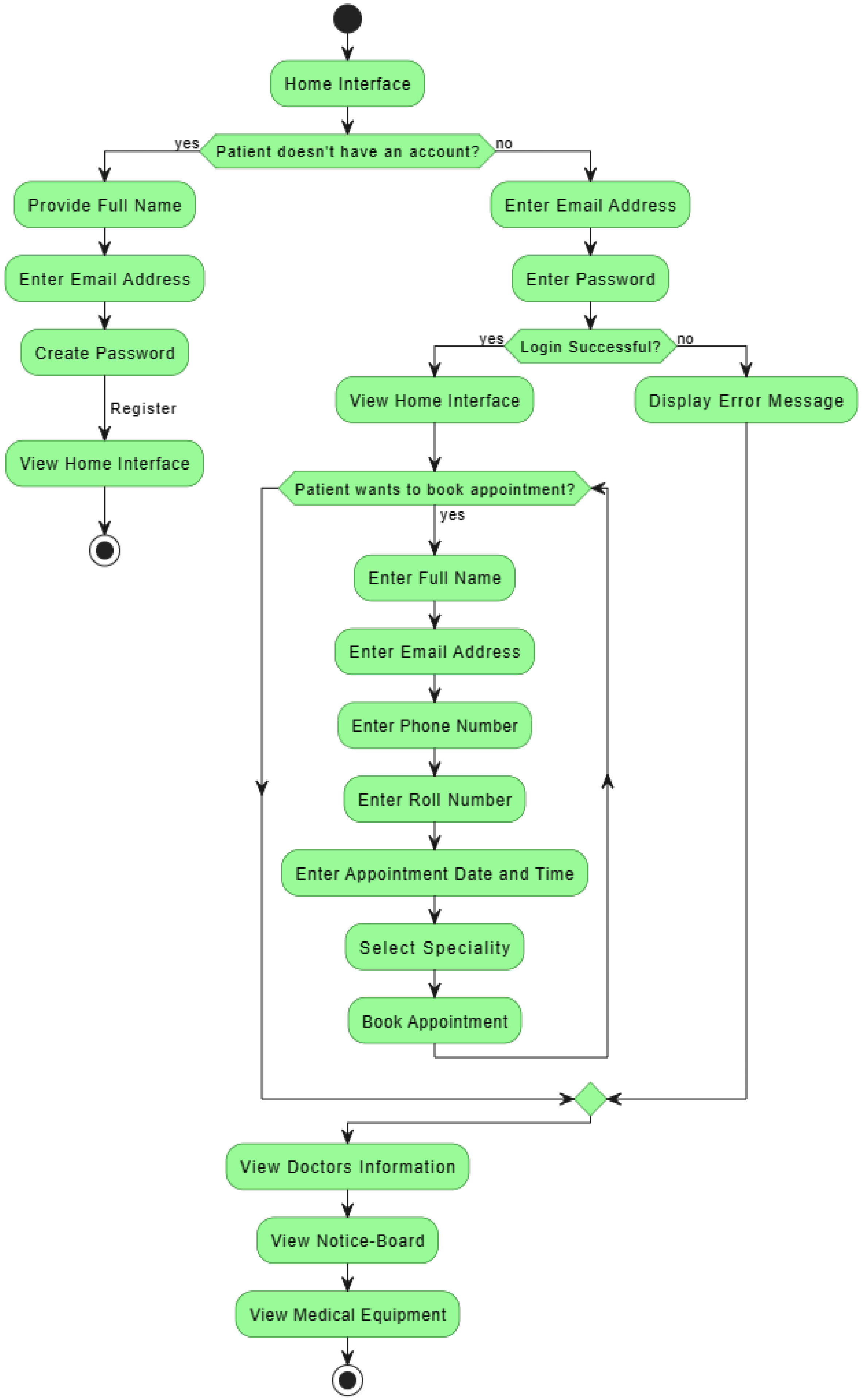
5.3.2 Robustness

The system shall be robust against potential failures or errors, ensuring continuity of service for users.

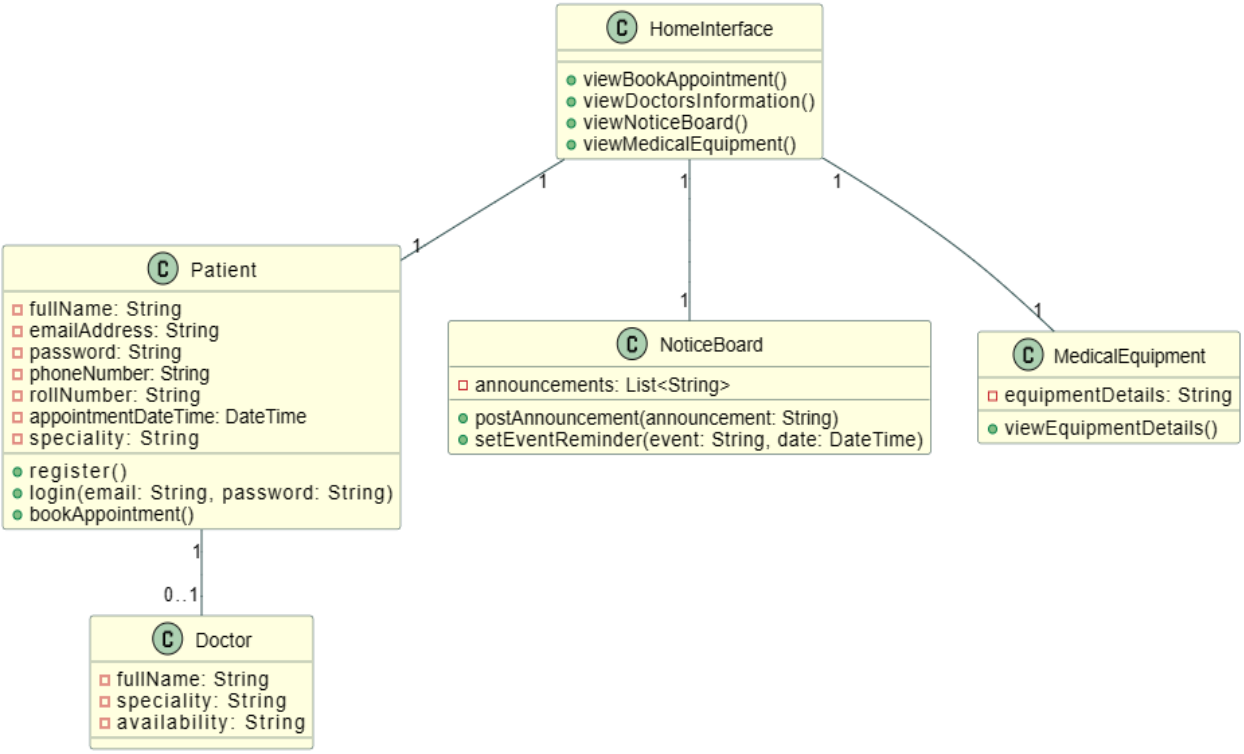
USECASE DIAGRAM:



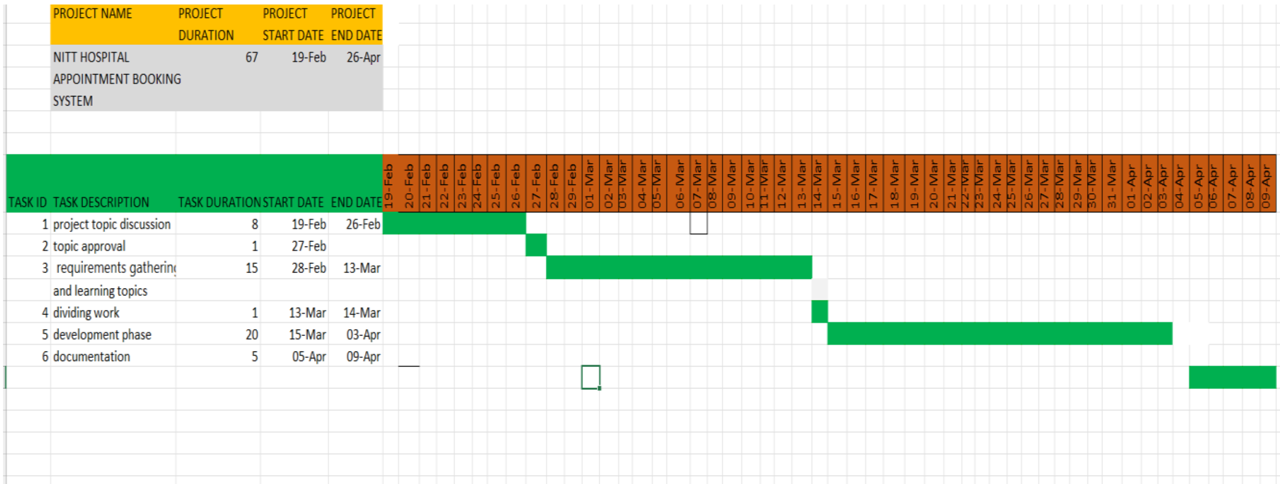
ACTIVITY DIAGRAM:



CLASS DIAGRAM:



TIME LINE CHART:



PROJECT NAME	PROJECT DURATION	PROJECT START DATE	PROJECT END DATE
NITT HOSPITAL APPOINTMENT BOOKING SYSTEM	67	19-Feb	26-Apr

TASK ID	TASK DESCRIPTION	TASK DURATION	START DATE	END DATE
1	project topic discussion	8	19-Feb	26-Feb
2	topic approval	1	27-Feb	
3	requirements gathering and learning topics	15	28-Feb	13-Mar
4	dividing work	1	13-Mar	14-Mar
5	development phase	20	15-Mar	03-Apr
6	documentation	5	05-Apr	09-Apr

Cohesion and Coupling:

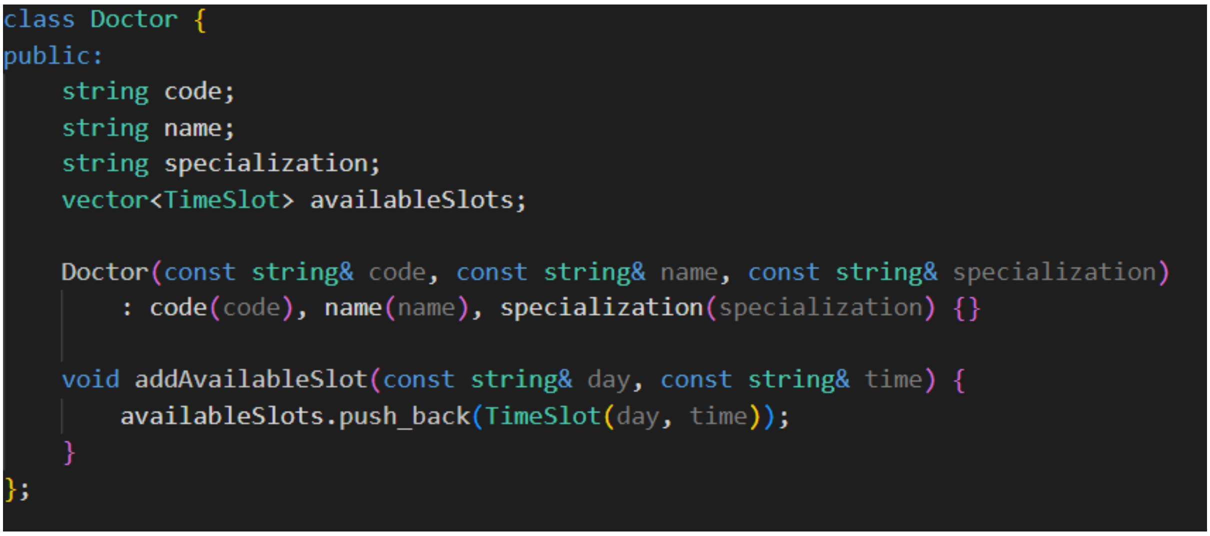
Cohesion refers to the degree of relatedness of the code within a module or a class. High cohesion means that the code within a module or a class is strongly related, whereas low cohesion means that the code is weakly related. Coupling refers to the degree of interdependence between two modules or classes. Low coupling means that the modules or classes are independent, whereas high coupling means that the modules or classes are highly interdependent.

High Cohesion:

•Class: Doctor:

•Cohesive Part: The Doctor class encapsulates attributes and methods related to doctors, such as code, name, specialization, and available Slots. Methods like addAvailableSlot () are directly related to the purpose of managing available time slots for a doctor.

CODE:

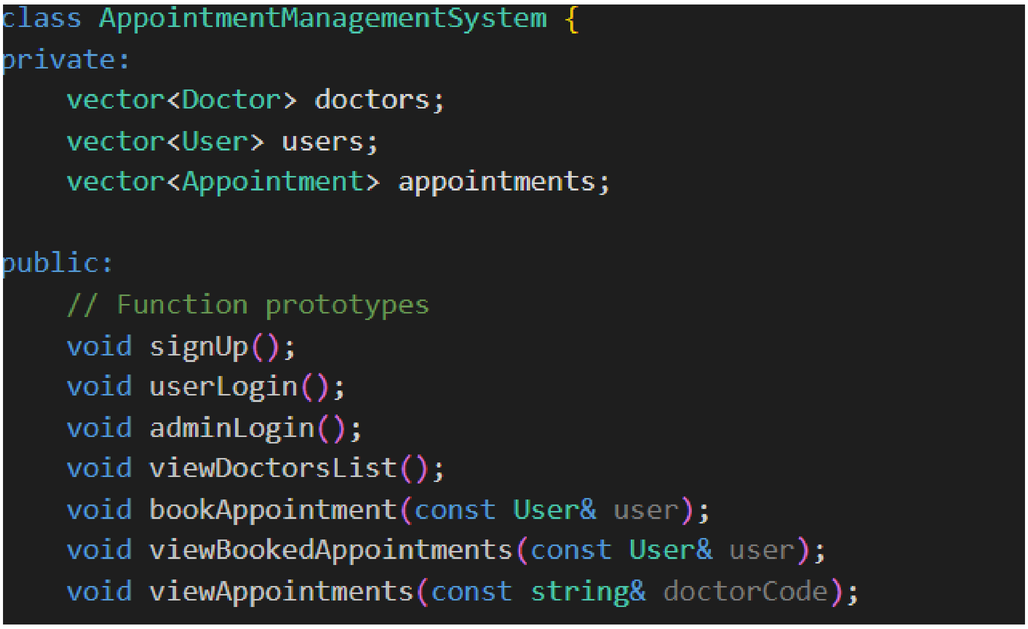


```
class Doctor {
public:
    string code;
    string name;
    string specialization;
    vector<TimeSlot> availableSlots;

    Doctor(const string& code, const string& name, const string& specialization)
        : code(code), name(name), specialization(specialization) {}

    void addAvailableSlot(const string& day, const string& time) {
        availableSlots.push_back(TimeSlot(day, time));
    }
};
```

Class: AppointmentManagementSystem:

Cohesive Part: The AppointmentManagementSystem class encapsulates functionality related to managing appointments, including signing up users, handling user and admin logins, booking appointments, and viewing appointments.

CODE:

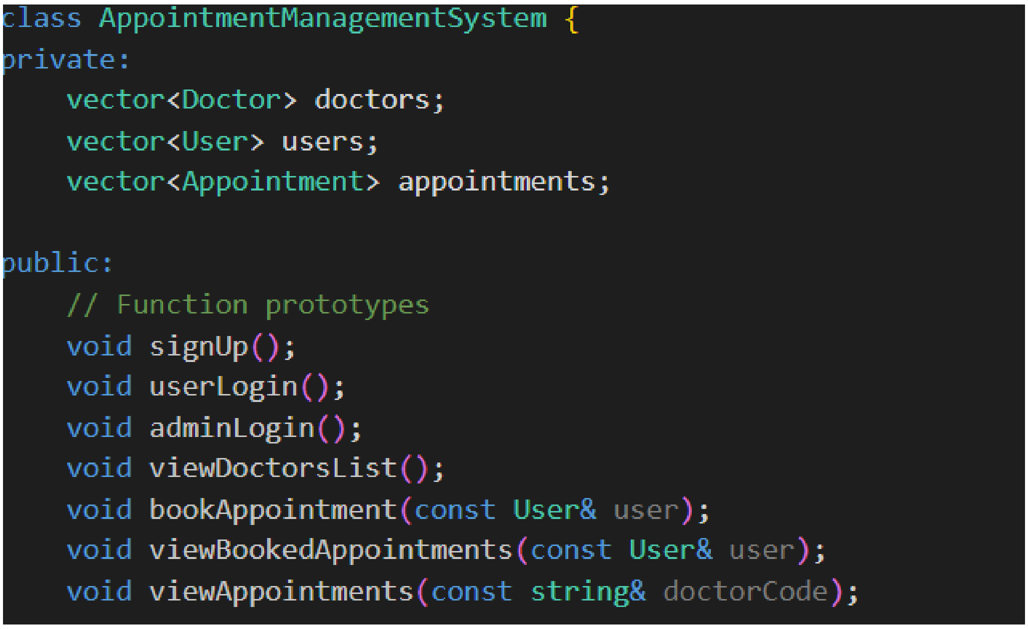


```
class AppointmentManagementSystem {
private:
    vector<Doctor> doctors;
    vector<User> users;
    vector<Appointment> appointments;

public:
    // Function prototypes
    void signUp();
    void userLogin();
    void adminLogin();
    void viewDoctorsList();
    void bookAppointment(const User& user);
    void viewBookedAppointments(const User& user);
    void viewAppointments(const string& doctorCode);
```

Low Coupling:

Class: AppointmentManagementSystem:

Coupled Part: The AppointmentManagementSystem class interacts with other classes (Doctor, User, Appointment) through well-defined interfaces (method calls and data structures) rather than directly accessing their internal implementations. This loose coupling enhances the maintainability of the codebase.



```
class AppointmentManagementSystem {
private:
    vector<Doctor> doctors;
    vector<User> users;
    vector<Appointment> appointments;

public:
    // Function prototypes
    void signUp();
    void userLogin();
    void adminLogin();
    void viewDoctorsList();
    void bookAppointment(const User& user);
    void viewBookedAppointments(const User& user);
    void viewAppointments(const string& doctorCode);
```

These above codes illustrate how the Doctor class exhibits high cohesion by encapsulating related attributes and methods, while the AppointmentManagementSystem class demonstrates low coupling by interacting with other classes through well-defined interfaces.

6. Appendix A: Glossary

This section provides a glossary of terms used throughout the document.

This document serves as a comprehensive guide for the development of the NITT Hospital Appointment Booking System, outlining its functional and non-functional requirements. By adhering to these specifications, the development team can ensure the successful implementation of the system, meeting the needs of both healthcare providers and patients at NITT Hospital within the Agile Software Development Life Cycle (SDLC) model