Engineering Fundamentals

Edison Lascano PhD

NRC: 28434

05 Tasks

Team Members

Santórum Sandoval Thais Yetsalem

Toapanta Orejuela Adrian Michael

Vargas Pérez César Alexander

Tasks

The Clinic Management System is an object-oriented programming project designed to manage the daily operations of a clinic efficiently. The system will handle essential tasks such as registering patients, managing doctors' schedules, booking and tracking appointments, and generating bills. Using OOP principles like classes, objects, inheritance, and encapsulation, the project will be organized into classes such as *Patient*, *Doctor*, *Appointment*, *Billing* and *Clinic*. Each class will represent real-world entities and their behaviors, allowing the system to be modular, reusable, and easy to maintain. The main goal is to create a simple yet functional application that demonstrates the practical use of OOP concepts in solving real-life problems in a healthcare setting.

The programming process will follow these steps:

Class Design:

1. Identify the main entities of the system.
2. Define each class with its attributes (variables) and methods (functions).
3. Establish relationships between classes.

Class Implementation:

1. Create the *Patient*, *Doctor*, *Appointment*, and *Invoice* classes in code.
2. Implement constructors, getters, and setters to manage data safely (encapsulation).
3. Use methods for actions like *createAppointment()*, *cancelAppointment()*, or *generateBilling()*.

System Logic, the Main Program:

1. Develop a *Clinic* class that stores lists of patients, doctors, and appointments.
2. Add options for the user to register a new patient or doctor, book an appointment, and generate reports.
3. Ensure data validation for example, preventing double bookings.

Testing and Validation:

1. Test each class separately to confirm that all methods work correctly.
2. Test interactions between classes.
3. Verify that the system runs smoothly and handles user input correctly.

Output and Results:

1. The final system will allow the user to manage a small clinic from the console or a simple graphical interface.
2. It will demonstrate how OOP design helps to create clean, organized, and extendable code.

Also, we will use some tools and technologies.
Language: Java.
IDE: Netbeans.
Version Control: Git