Student Info:

Student Name : Nargis Sultana Reshma

Student ID : 24070173

Registration No : 1224.

Department Name : B.Sc in CSE

Course Name : Object-Oriented   Programming (Java)

Batch & Section: 43 (B)

Semester: 2nd.

Submitted to : Debabarata Mallick,Lecturer Of.   CSE dept.

Project Proposal: Security & Logging System

1. Project Title

Security & Logging System

2. Purpose and Problem Statement

The purpose of this project is to develop a secure and efficient Security & Logging System using Java that helps track user access and activity within a specific environment (e.g., office, parking area). This system aims to address the issue of unauthorized access and lack of entry/exit tracking by providing authentication, logging, and report generation.Using Object-Oriented Programming (OOP) concepts such as encapsulation, inheritance, polymorphism, and abstraction makes the project scalable, modular, and easier to maintain.

3. Main Goals and Key Functionalities

- User Authentication & Access Control

- Logging Entry & Exit Times

- Admin Dashboard

- User Parking History

- Security & Notifications

- Report Generation

4. Tools and Technologies

• Programming Language: Java

• Frameworks/Libraries: Swing (for GUI), Java IO, File Handling

• Database: Text File (or optionally SQLite for persistence)

5. Use of OOP Concepts

- Encapsulation: All sensitive data will be hidden and accessed via getters and setters.

- Inheritance: Different roles such as Admin and User will inherit from a common base class.

- Polymorphism: Method overloading and overriding for flexible logging and reporting.

- Abstraction: Abstract classes/interfaces to define core features like authentication and logging.

6. Project Phases & Timelines

- Phase 1: Requirements Analysis & Design (2 days)

- Phase 2: Core Feature Implementation - Authentication & Logging (4 days)

- Phase 3: GUI & Admin Panel Development (3 days)

- Phase 4: Testing & Debugging (2 days)

- Phase 5: Documentation & Submission (1 day)

7. Final Product Outcome

The final product will be a fully functioning Security & Logging System that provides efficient access control and monitoring. It will benefit users by increasing security and generating useful data for analysis.

8. Summary and Impact

This project demonstrates the practical application of Java and OOP principles in building a real-world system. It enhances learning and provides a meaningful solution to a common security concern.

9. References

- https://www.w3schools.com/java/- Java Documentation: https://docs.oracle.com/javase/8/docs/

10. Development So Far

• Completed:- Basic class structure

- User Authentication (with dummy data)

- Entry Logging feature (text file-based)

• Screenshots: (attached)

• To Do:- GUI implementation- Admin Dashboard- Parking history tracking- Notifications and report generation

• Challenges/Problem Faced So Far:

-User Role Control:

Initially, both Admin and User could access each other's features due to poor role separation.

-Login Looping & Exit:

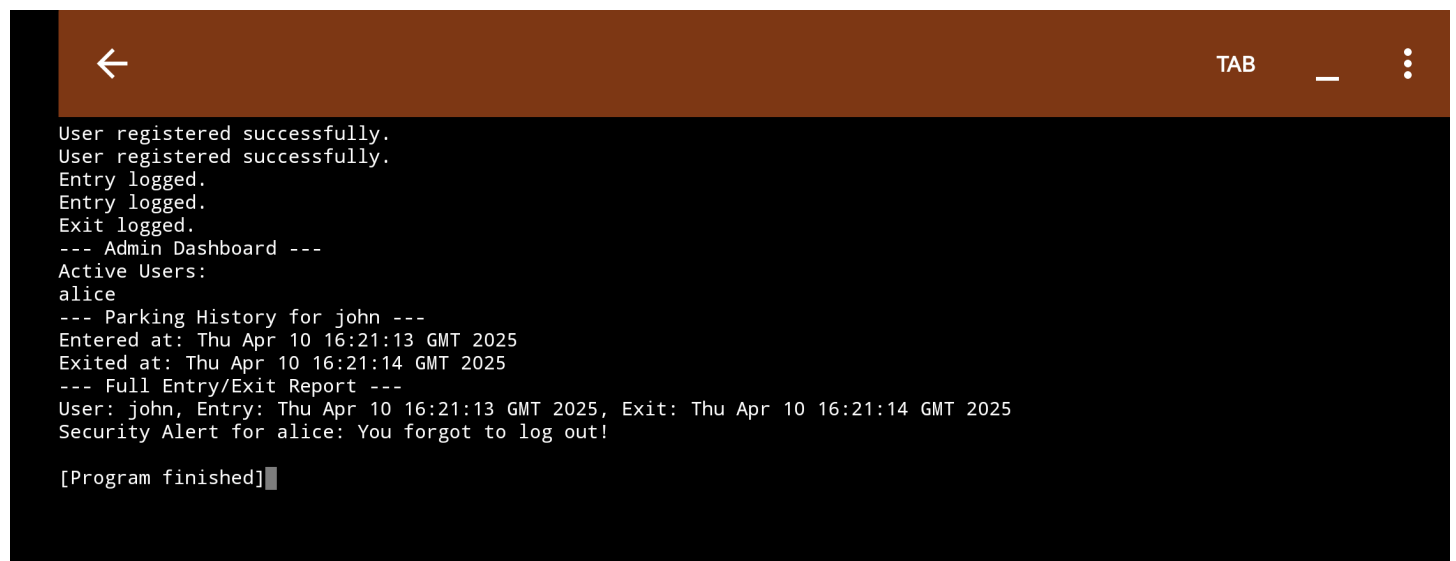Managing login sessions and properly exiting users without crashing the program took several attempts.

-Data Persistence:

Implementing file saving or database for storing logs was challenging in a short timeframe, so it's currently in-memory only.

List of New Learnings:

-Implementing LocalDateTime for real-time data logging.

-Using Java classes and objects in a modular way.

-Managing collections (ArrayList) to store session histories.

-Understanding basic OOP design patterns (e.g., separation of Admin and User classes).

Output of the Code :

```
User registered successfully.
User registered successfully.
Entry logged.
Entry logged.
Exit logged.
--- Admin Dashboard ---
Active Users:
alice
--- Parking History for john ---
Entered at: Thu Apr 10 16:21:13 GMT 2025
Exited at: Thu Apr 10 16:21:14 GMT 2025
--- Full Entry/Exit Report ---
User: john, Entry: Thu Apr 10 16:21:13 GMT 2025, Exit: Thu Apr 10 16:21:14 GMT 2025
Security Alert for alice: You forgot to log out!

[Program finished]
```