Informations:

Course Name : **Object-Oriented Programming (Java)**

Course Code: **OOP CSE-123.**

Assignment: **Project Proposal & Development So Far.**

Submitted To :

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Batch & Section: 43 (B)

Semester: 2nd

Submission Date: 10 / 04/ 2025

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

Java Standard Edition, Java Collections (HashMap, ArrayList), Java Time API (LocalDateTime), OOP Principles

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).

How to Run:

1. Open the project in any Java IDE or compiler.

2. Compile and run the `Main.java` file.

3. Enter the username and password to access dashboards.

Default User Credentials :

Admin: admin / admin123

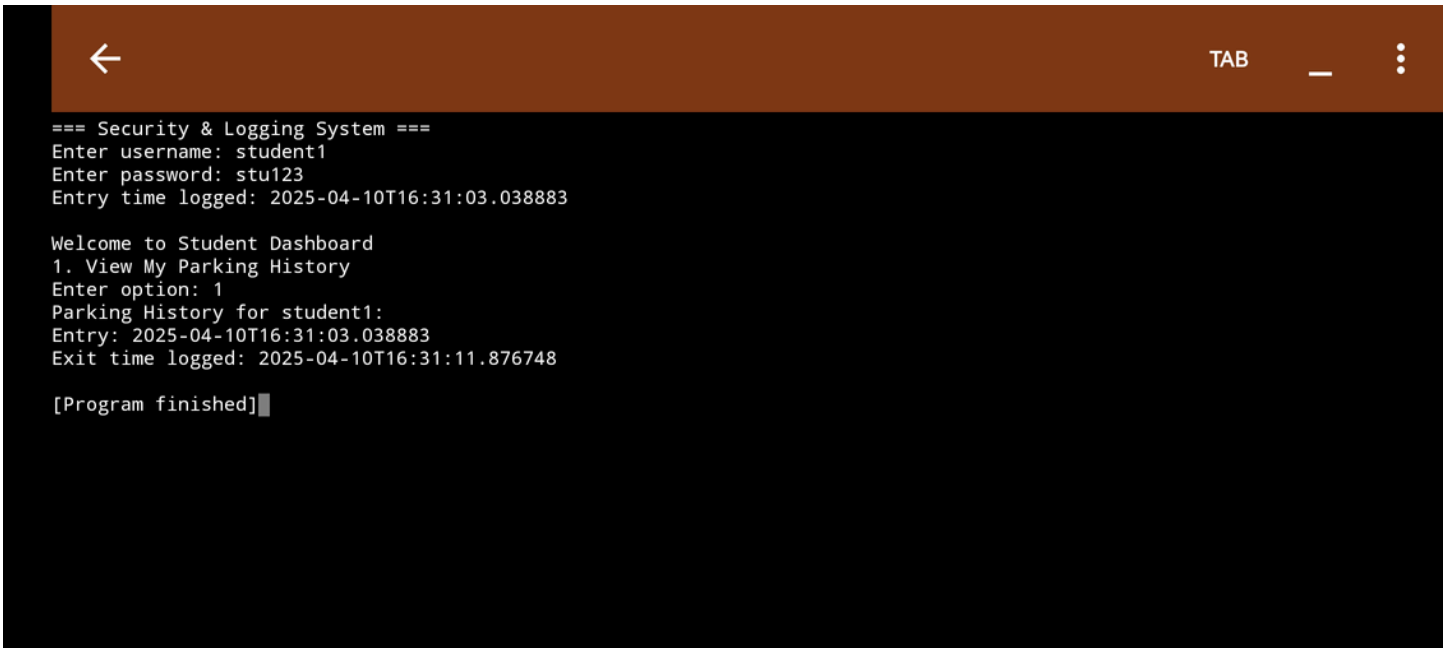
Faculty: faculty1 / pass1

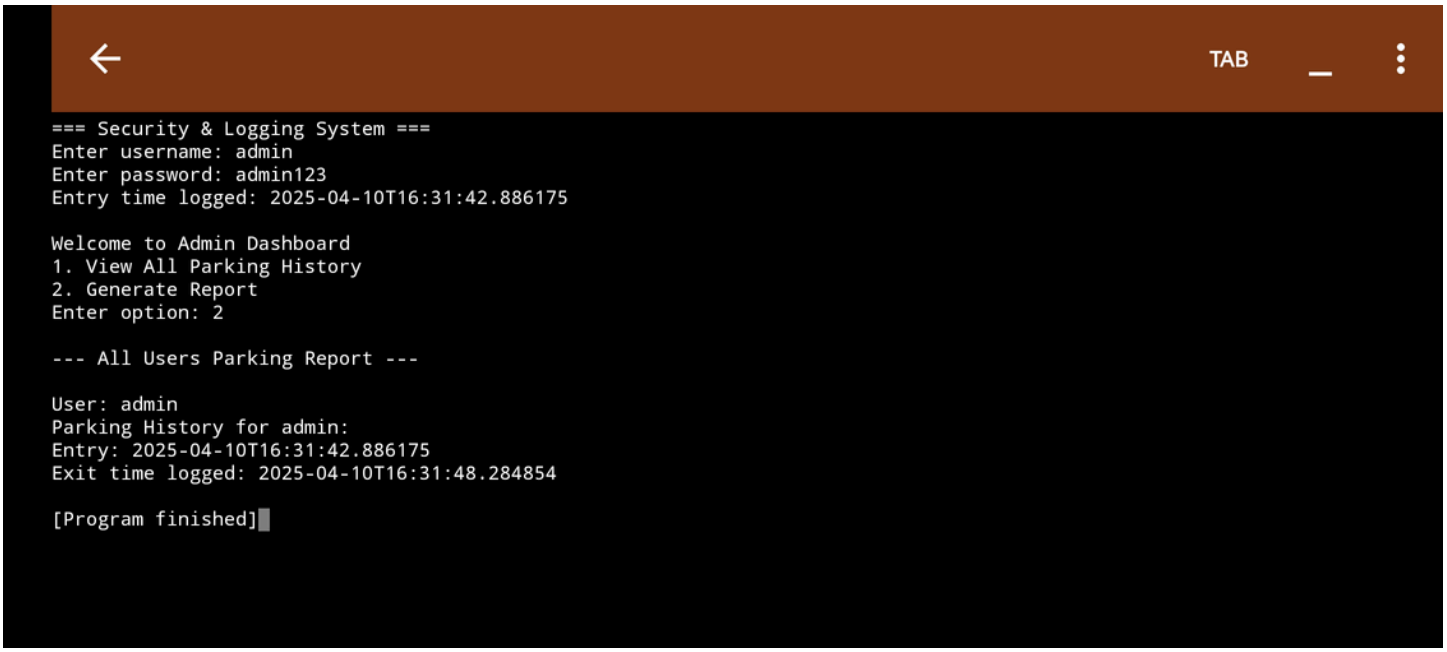
Student: student1 / pass2

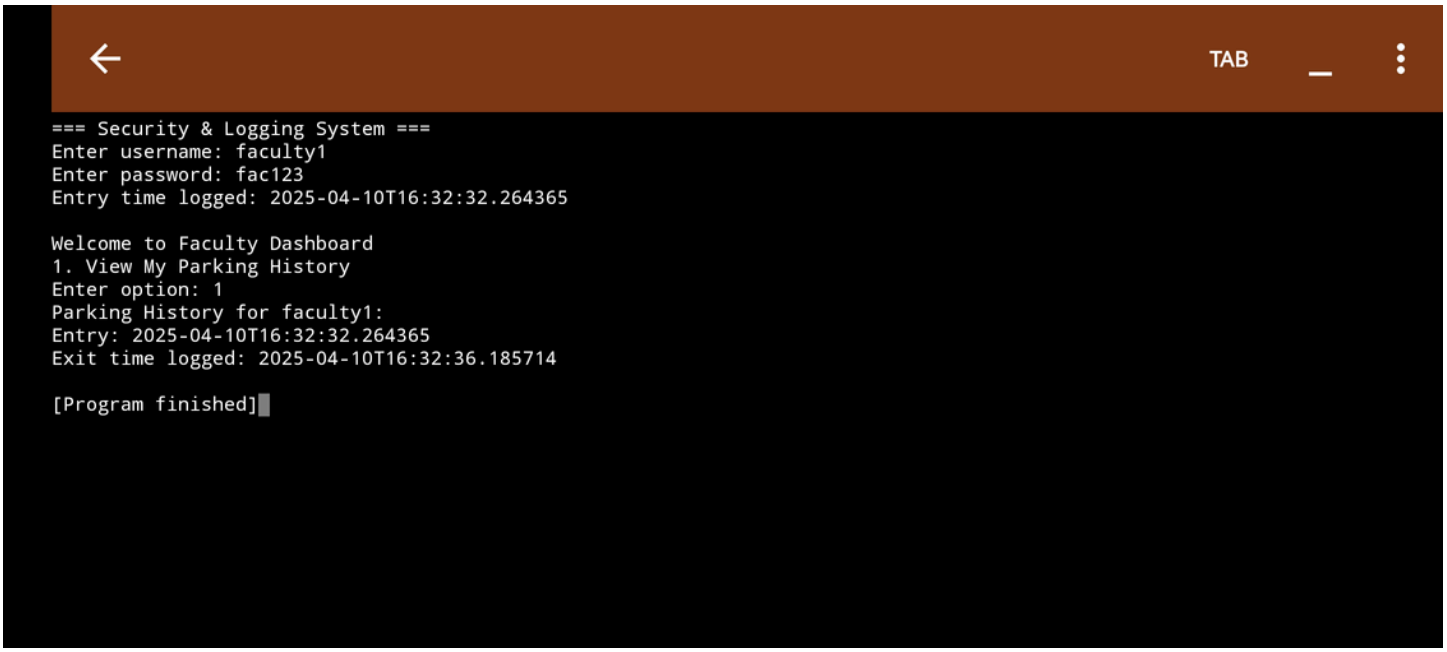
Conclusion:

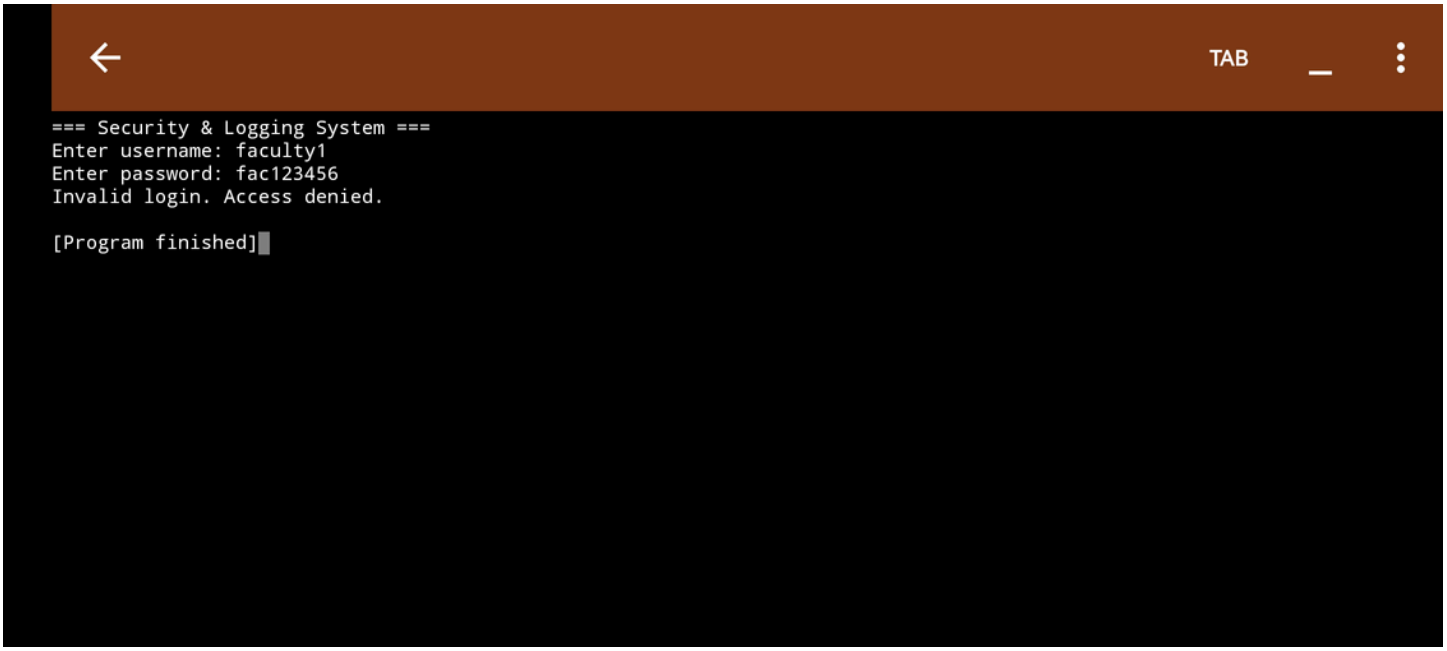
This system simulates a secure and efficient logging system for a university, emphasizing the practical application of Java OOP and basic access control mechanisms.

Outputs of the Code :


TAB
=== Security & Logging System ===
Enter username: student1
Enter password: stu123
Entry time logged: 2025-04-10T16:31:03.038883
Welcome to Student Dashboard
1. View My Parking History
Enter option: 1
Parking History for student1:
Entry: 2025-04-10T16:31:03.038883
Exit time logged: 2025-04-10T16:31:11.876748
[Program finished]


TAB
=== Security & Logging System ===
Enter username: admin
Enter password: admin123
Entry time logged: 2025-04-10T16:31:42.886175
Welcome to Admin Dashboard
1. View All Parking History
2. Generate Report
Enter option: 2
--- All Users Parking Report ---
User: admin
Parking History for admin:
Entry: 2025-04-10T16:31:42.886175
Exit time logged: 2025-04-10T16:31:48.284854
[Program finished]


TAB
=== Security & Logging System ===
Enter username: faculty1
Enter password: fac123
Entry time logged: 2025-04-10T16:32:32.264365
Welcome to Faculty Dashboard
1. View My Parking History
Enter option: 1
Parking History for faculty1:
Entry: 2025-04-10T16:32:32.264365
Exit time logged: 2025-04-10T16:32:36.185714
[Program finished]


TAB
=== Security & Logging System ===
Enter username: faculty1
Enter password: fac123456
Invalid login. Access denied.
[Program finished]