Smart Office Facility (Console Application):

Overview

This project is a console-based Java application that simulates a smart office facility.

It allows configuration of meeting rooms, booking/cancellation, occupancy detection, and automatic control of devices like AC and Lights.

The project was built to "demonstrate clean coding practices and design patterns (Singleton, Observer, Command)" while handling "real-world scenarios" like authentication, notifications, and usage statistics.

Key Features

-Room Management: Configure number of rooms and their capacity.

- Booking System: Book and cancel conference room reservations.

- Occupancy Detection: Detects if at least 2 people are in a room to mark it occupied.

-Auto-Release Bookings: Bookings released if room stays empty (manual check via `room status`).

-Smart Devices: AC and Lights automatically turn on/off based on occupancy.

- Usage Statistics: Track how many times a room was booked and total occupied time.

- Authentication: Secure access — only logged-in users can configure or book.

- Notifications: Simulated alerts when bookings are released.

Design Patterns Implemented

1. Singleton → `Office.java`

- One central office configuration across the entire app.

2. Observer → `Room` notifies `AC` and `Lights`

- Devices respond automatically to occupancy changes.

3. Command → `BookRoomCommand`, `CancelRoomCommand`, etc.

- Encapsulates user actions for flexibility and maintainability.

OUTPUT SCREENSHOTS:



