Smart Home Automation System

1. Project Definition

The Smart Home Automation System (ST) is designed to provide homeowners with centralized control of appliances, lighting, climate, and security systems using a mobile or web interface. This system aims to increase convenience, energy efficiency, and home security by automating daily routines and enabling remote control and monitoring.

2. Vision Statement

For homeowners and residents seeking convenience, safety, and energy efficiency, **who** need a centralized and remote way to control and monitor their home environment, **the** Smart Home Automation System **is** a comprehensive home automation platform **that** allows seamless control of lighting, appliances, climate, and security through mobile and web applications. **Unlike** traditional manual systems or standalone smart devices that lack integration, **our** product offers a unified, user-friendly interface with automation features, real-time alerts, and voice assistant compatibility—delivering a truly connected and intelligent living experience.

3. Functional Requirements

User Authentication

The system shall allow users to register and log in securely.

Device Management

The system shall enable users to add and manage smart devices.

Remote Control

The system shall allow users to remotely control lights, fans, AC, and other appliances.

Device Scheduling

The system shall support scheduling for devices to turn on/off automatically.

Real-time Status Updates

The system shall provide real-time status updates of connected devices.

Security Notifications

The system shall notify users of unusual activity such as motion detection.

Custom Automation

The system shall allow users to customize automation rules.

User Preferences
The system shall store user preferences and past activity history.

Voice Assistant Integration
The system shall integrate with voice assistants like Google Assistant or Alexa.

Account Management
The system shall support logout and account deletion features.

4. Non-Functional Requirements

System Responsiveness
The system shall respond to user actions within 2 seconds.

Availability
The system shall be available 99.5% of the time monthly.

Data Security
The system shall use encryption to secure user data in transit and at rest.

Scalability
The system shall support at least 100 concurrent users without performance degradation.

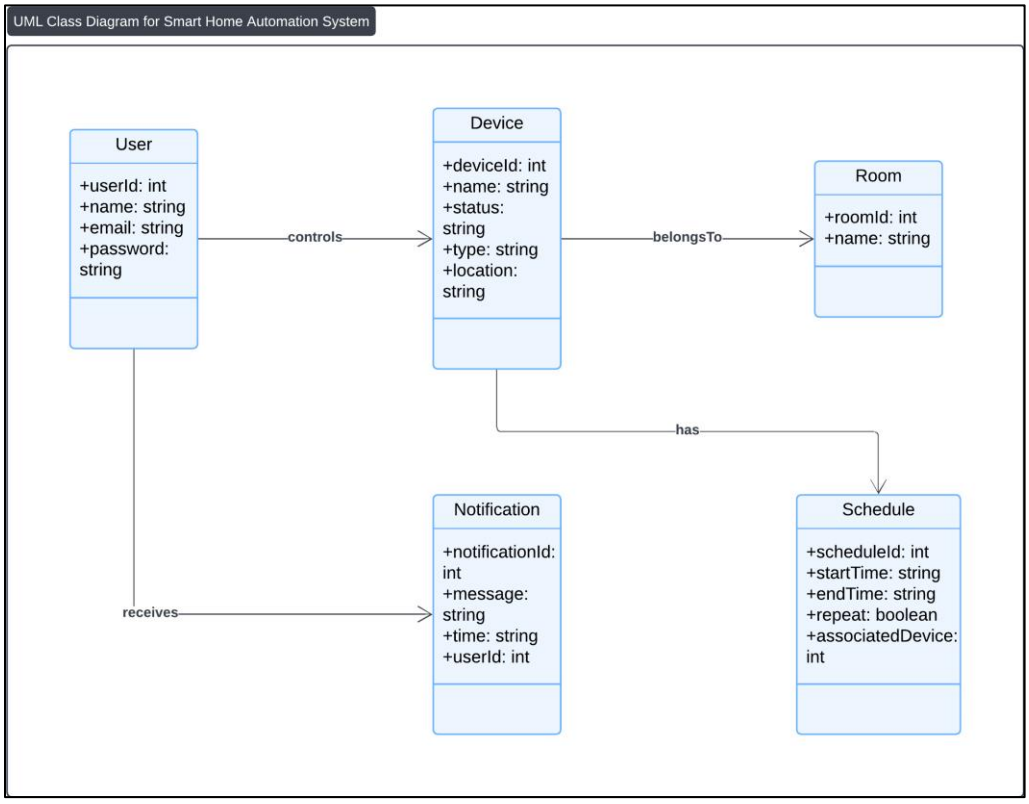
Cross-Platform Compatibility
The system shall be compatible with Android, iOS, and modern web browsers.

User Interface
The system shall provide an intuitive and accessible UI/UX for all users.

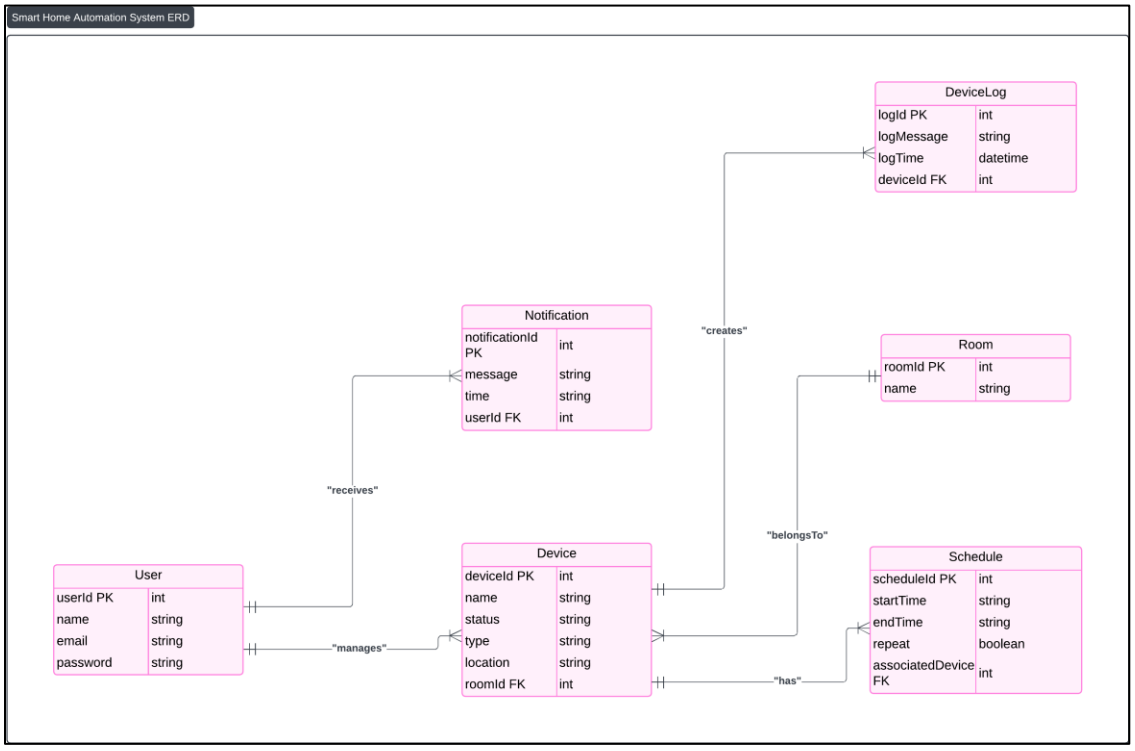
Device Integration
The system shall allow integration with at least 5 types of smart devices.

Firmware Support
The system shall support firmware updates for connected smart devices.

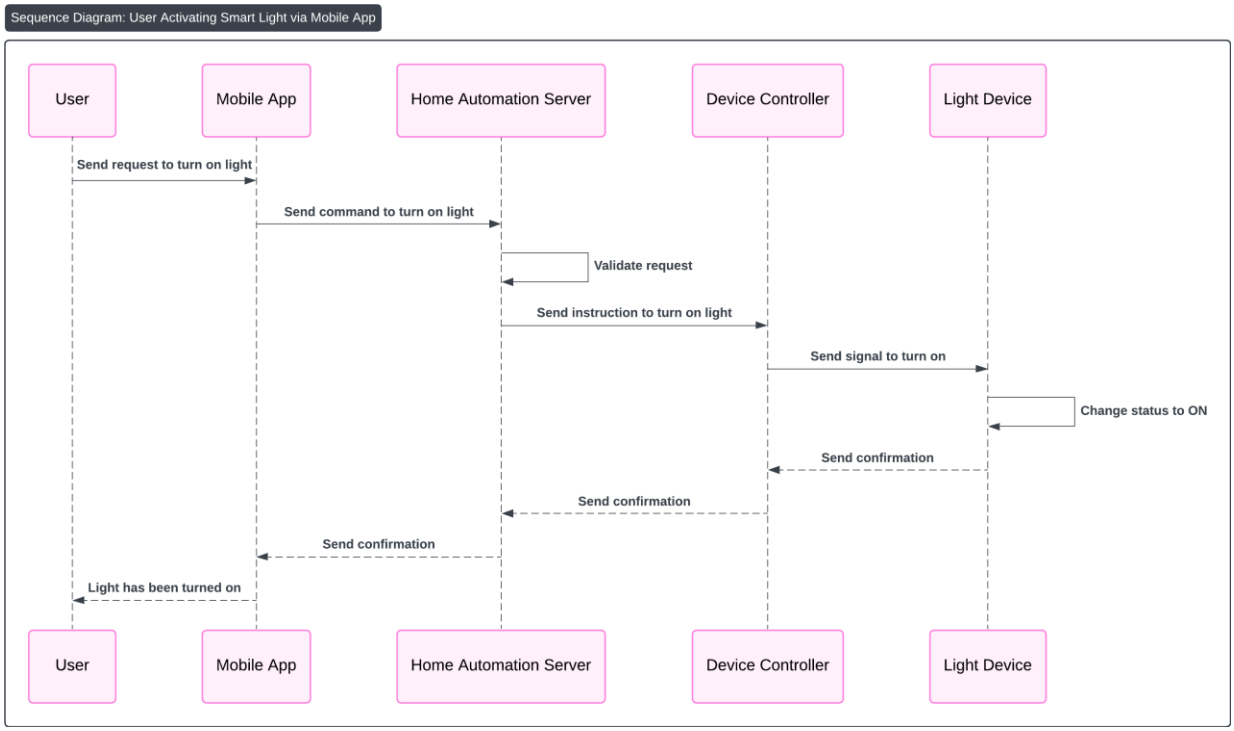
Class Diagram:



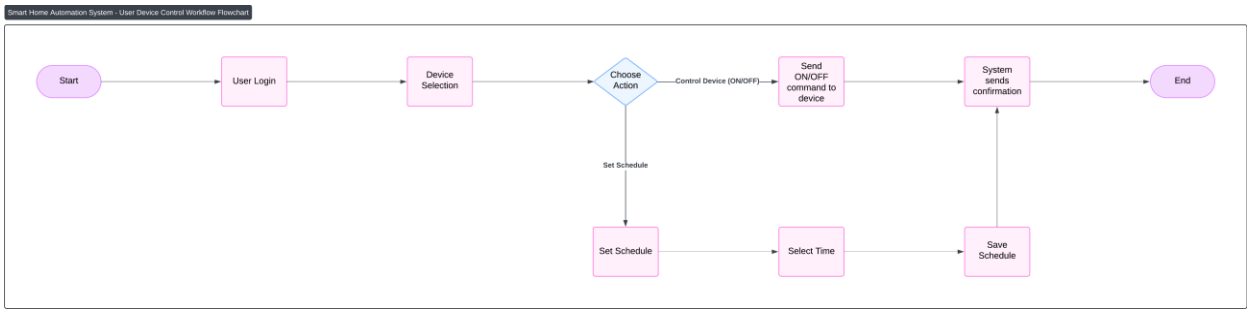
ERD Diagram:



Sequence Diagram:



Workflow Diagram:



Figma Prototypes Link:

https://www.figma.com/design/nSxGbJxZZQ9HVd8OMg0Bxf/ST?node-id=0-1