Auto Lock: Door Lock Iot Application

Final Project Report

SOFE 4610U: Internet of Things

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Faraaz Mohsin	100659110
Muhmamad Hamza Zahid	100711463
Janajan Jeyabalan	100698148

Group 5

Architectural Design

Product Description

Autolock is an IoT based digital locking system designed to automate and digitize the action of locking a door. The product consists of both hardware and software components. The hardware components include an ESP32 module, jumper cables, and a servo motor. The software components include an app built in the arduino IDE and deployed locally on the ESP32, and a backend and frontend deployed across the Blynk IoT framework.

Use Cases

UC-1

The client should be able remotely lock a door using the client frontend.

UC-2

The client should be able to access the state of the lock using the logs function

UC-3

The client should be able to disconnect the application remotely.

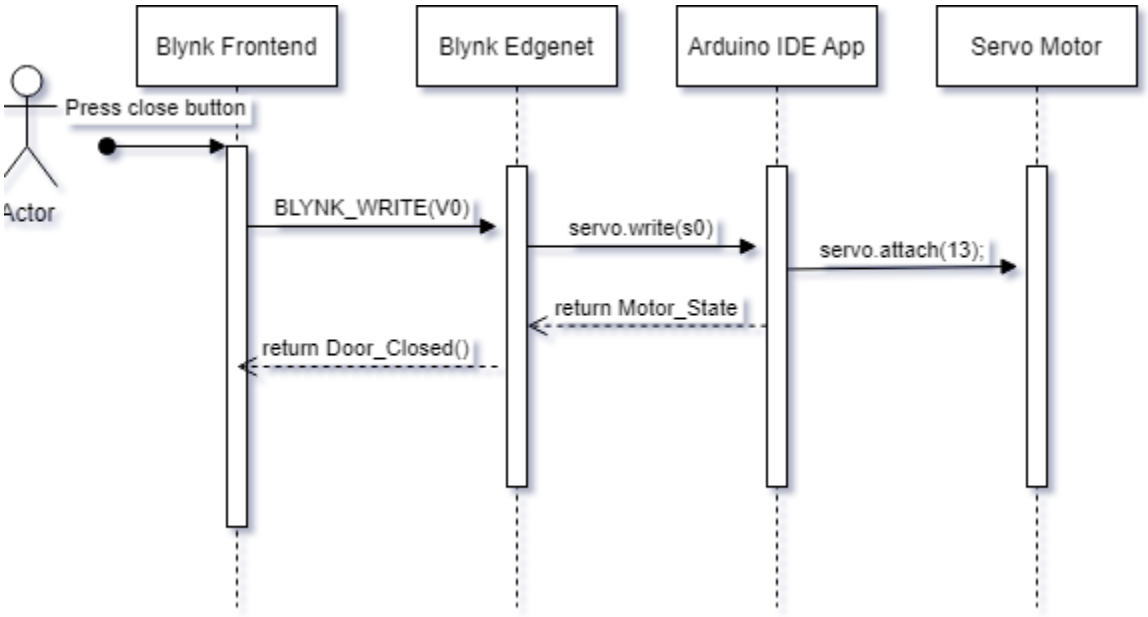

Fig 1: Sequence Diagram : Button function

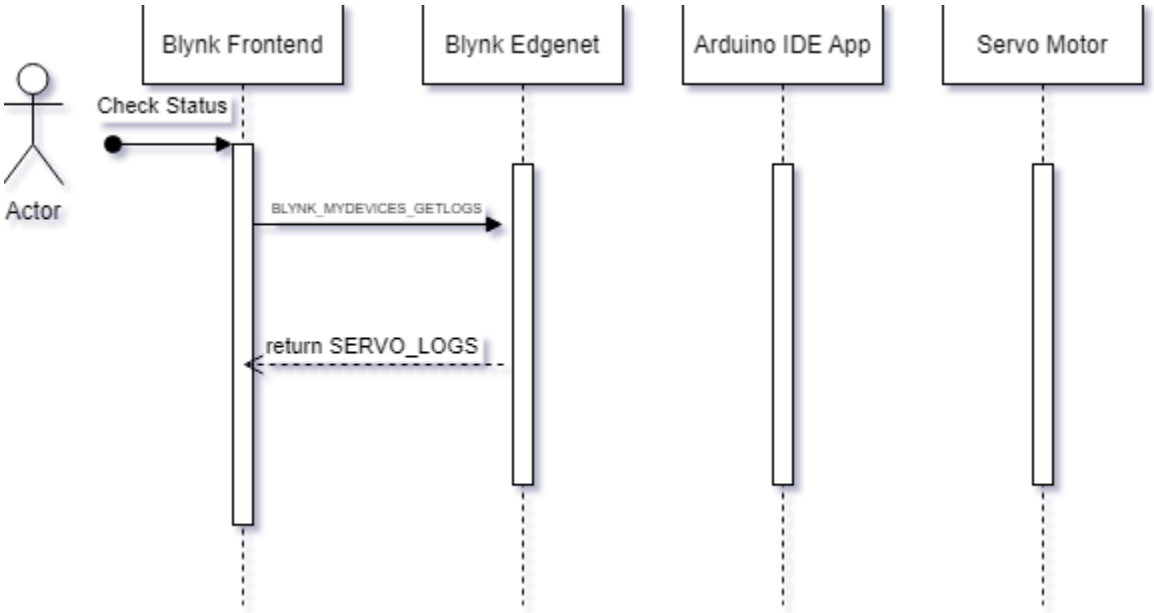

Fig 2: Sequence Diagram : Status

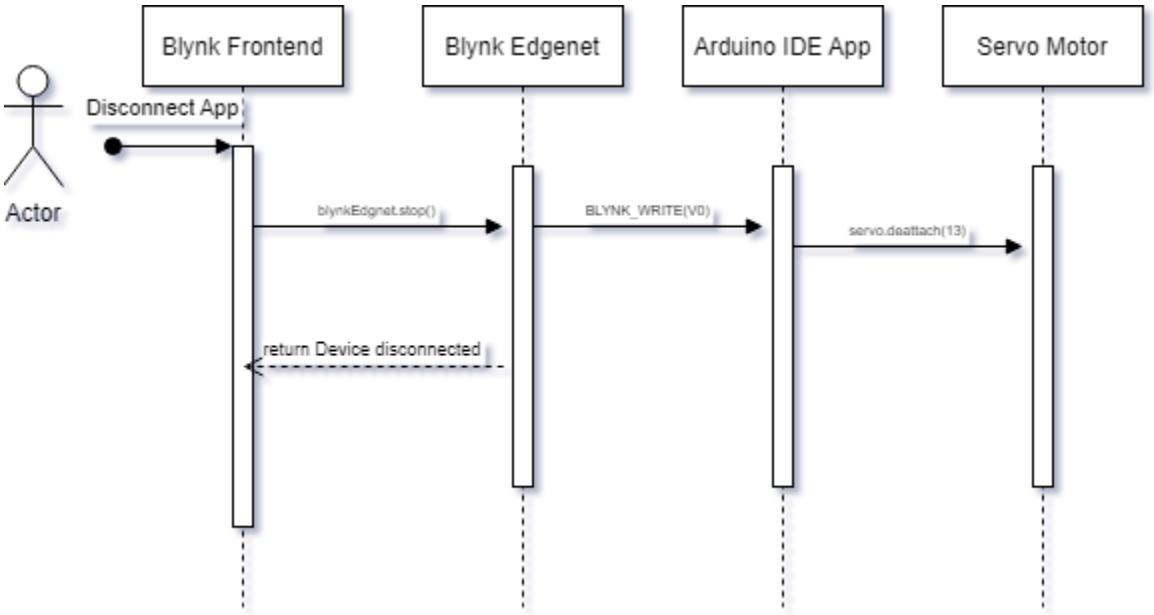

Fig 3: Sequence Diagram : App Disconnect

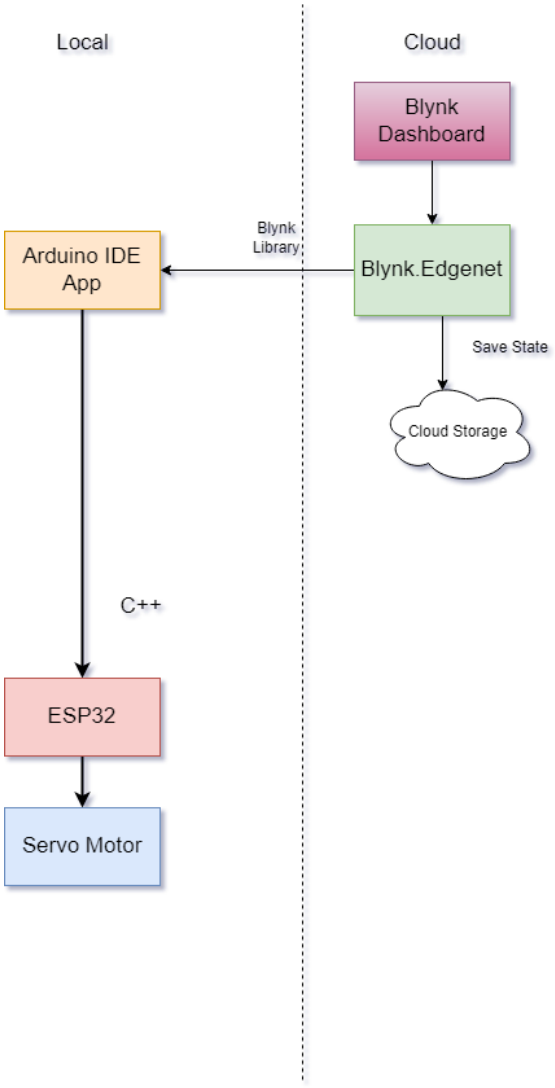

Fig 4: IoT Level Specification Architecture Diagram

Description of Components

- **Arduino IDE App:** Application written in C++ that holds the main logic of the program. It is responsible for communicating with Blynk (through the blynk edgenet library) as well as controlling the servo motor
- **ESP32:** A wifi module where the Arduino IDE App is deployed and run.
- **Servo motor:** A motor which generates the force to lock and unlock a door.
- **Blynk.Edgenet:** Library responsible for facilitating communication between the IoT framework and the app deployed on the ESP32
- **Blynk Dashboard:** Client front end where the UI to manipulate the servo motor exists, as well as the backend where the state of the motor is saved.

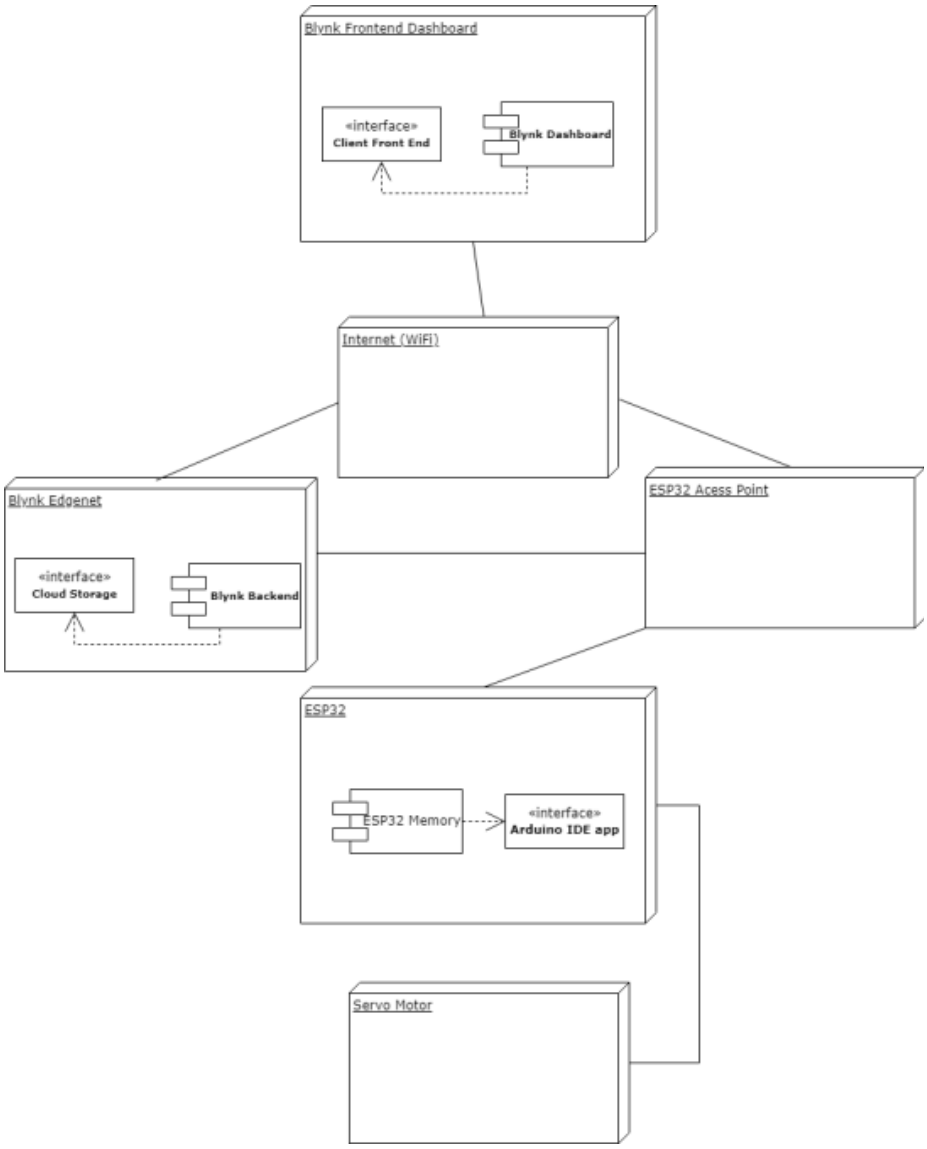

Fig 5: Deployment Diagram

Acceptance Tests

1. **Motor is working**

In terms of the acceptance tests, the motor was functional and the acceptance test passed.

2. **Blynk app is connecting to our ESP32**

In terms of the acceptance tests, the Blynk app was functional and was effectively connecting to our ESP32 and so the acceptance test has passed.

3. **The UI is working on the dashboard**

In terms of the acceptance tests, the User Interface is working on the dashboard and essentially, the acceptance test has passed.

Code

Code Repository:

https://github.com/faraazmohsin/AutoLockIoTDoorLockProject