Test Strategy Document

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[Making H-105 A Smart Classroom]
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Scope

The client and the development team will be able to review the document.
Client will approve the document.

Test Approach

The testing methodology used is mostly manual testing for hardware level Testing.The testing responsibilites are split horizontally among the team members i.e. the hardware modules will be tested by the respective developer. The AC and Projector modules are tested by Akash, the CO2 Sensor and temperature and humidity sensor are tested by Vishal, the Lights controlling logic (relays ,circuit and esp32 code) and its backend by me. Only performance Testing can be done as only Hardware is developed. For primitive API testing we are using Postman.
Test Environment

1. Hardware Testing required:
    a. ESP32 and classroom
    b. Lights ,switches and Relays
    c. AC and Projector(Remote and appliance)
    d. Evaporator and Hi-power motor relays
2. Software testing of API required Nodejs runtime Environment
3. Android App Testing required
    a. Android Studio
    b. Real device
    c. Virtual device (such as the emulator in Android Studio)

Testing Tools

1. PostMan : The API testing is done by Postman.
2. For Hardware based testing following environments are used
    a. Arduino IDE with ESP32 for light control module
    b. AC and projector control B1 eazy mobile app
    c. Arduino IDE and sensors for Physical quantity measurement like CO2 ,Temperature and humidity

Use Cases

1. Turn Light Off and On
2. Dim Lights
3. Measure CO2 level inside classroom
4. Control AC
5. Control Projector
6. Auto Control AC, Light, Projector

Test Cases

Sno	Test Case	Related Use case
1	1.Repeatitive Sending of Same Control Signal	Turn Overhead Lights On and Off
2	Compare the Output of Temperature sensor with Thermometer Reading	Measure Humidity and Temperature
3	Gradually Change the CO2 concentration inside the container and record output of CO2 sensor	Measure CO2 level
4	1.Repeatitive Sending of Same Control Signal	Control AC
5	1.Repeatitive Sending of Same Control Signal	Control Evaporator
6	1.Repeatitive Sending of Same Control Signal	Control Projector
7	1.Use Postman to Check all the conditions necessary and specified in API. 2.Check if valid status codes are returned as programmed . 3. Check if the API calls are altering the configuration of lights	API for Lights Control
8	1.Use Postman to Check all the conditions necessary and specified in API. 2.Check if valid status codes are returned as programmed . 3. Check if the API calls are altering the state of AC and Projector	API for AC And Projector Control

Sno	Test Case	Related Use case
9	Using postman to send incorrect JSONS	Backend Server
10	sending multiple requests to update the Database	Backend Server
11	Sending JSONS with correct fields but not following constraints	Backend Server
12	User interface and flow of app acceptance by client	Android App
13	Rapidly chaning the layout of the screen	Android App
14	Trying to change the values of temp and occupancy to 0	Android App
15	Rapid pressing of same button (toggling inputs rapidly)	Android App