SERVERLESS IOT DATA PROCESSING

- **INTRODUCTION:**

- Our project main objective to save the electricity by using sensor.In this project, we aim to convert an ordinary home into a smart living space by combining IoT devices and serverless computing. The project includes integrating various smart devices, real-time data processing, automation for energy efficiency and security, and storing and analyzing data in the cloud. This fusion of technology promises a more convenient and secure living environment, providing valuable insights into the smart home's operations.

- The "Serverless IoT Data Processing" project is a groundbreaking endeavor aimed at transforming your home into a smart living space using the power of serverless computing and the Internet of Things. We combine the simplicity of serverless architecture with the sophistication of IoT device integration to create a seamless, automated, and data-driven home environment.

COMPONENTS USED:

- ESP32(development)
- Relay(5V)
- Switches
- Ac to Dc(5V)
- Terminal
- Pcb board
- DHT22

SOFTWARE USED:

- Firebase
- Arduino software
- Neccesary libraries

Smart Home Transformation: Transform an ordinary home into a smart living space, leveraging IoT and serverless computing technologies.

Data Integration: Identify and integrate various smart devices, such as thermostats, motion sensors, cameras, and other sensors, into the smart home ecosystem.

Data Collection: Set up data collection from IoT devices using relevant protocols, ensuring the capture and transmission of data in real-time.

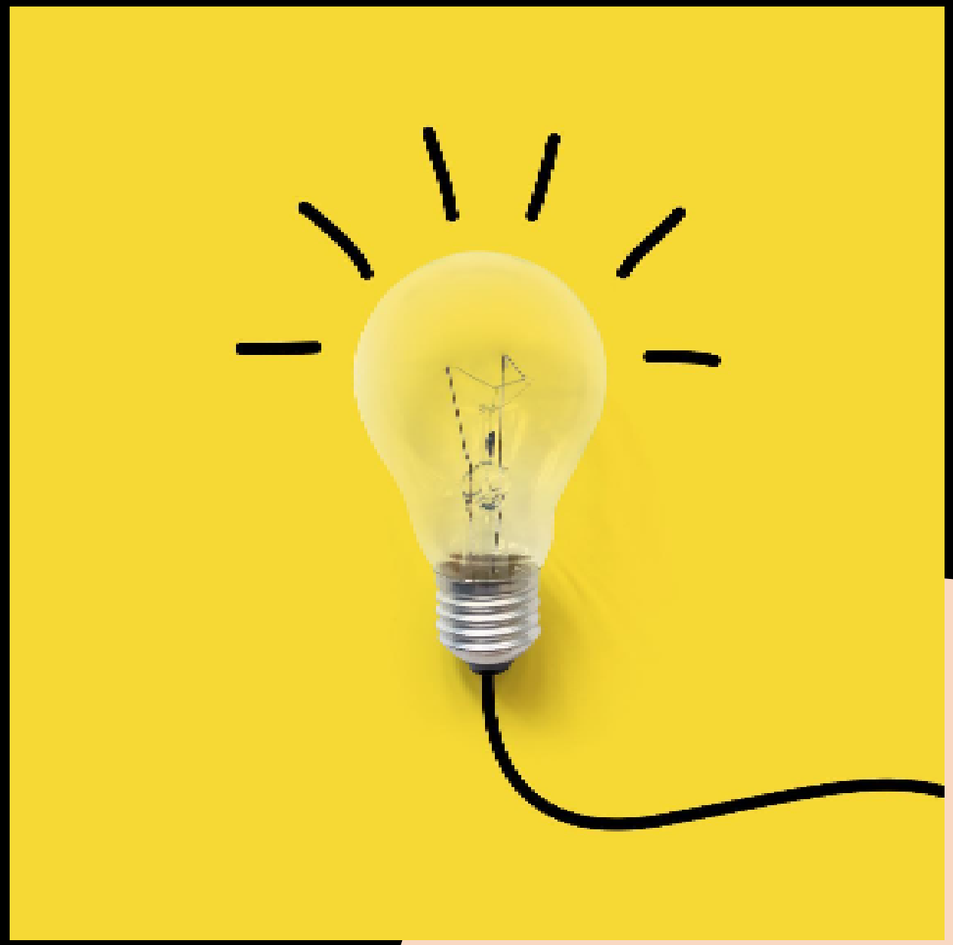
Real-time Processing: Implement real-time data processing using a serverless computing platform, ensuring that data is acted upon instantly, facilitating automation and instant responses to environmental changes.

Automation for Efficiency: Develop and implement automated routines that optimize energy efficiency and enhance home security. For example, adjust thermostat settings based on environmental data and send alerts upon motion detection.

Data Storage and Analysis: Store processed data securely in cloud storage (e.g., Amazon S3 or IBM Cloud Object Storage) to facilitate further analysis. Use data analysis to gain insights into energy consumption, security events, and usage patterns within the smart home

ENERGY SAVING

- Energy savings through IoT (Internet of Things) involve using smart devices and sensors to optimize energy usage. Key strategies include smart thermostats, lighting control, energy-efficient appliances, industrial automation, and building management systems. IoT also enables renewable energy integration, demand response, data analytics, and behavior change. Energy savings are achieved by making processes more efficient and responsive to real-time conditions.



FUNCTIONALITY:

- we can physically on/off the switches which toggles the state of the switch
- We can also on/off by digitally using mobile or other smart gadgets which also toggle the state of the switch
- In digital we have all on and all off state by using this we can easily turn off/on all relays/switches by single click

CONNECTIVITY

- A hardware device(development board - ESP32) connected with wifi(Wirelerss ferdility) to access internet to cloud storage
- All input and output device are connected with ESP32 to electronically control switches and gaining information from sensors.

ALGORITHM:

The status of switches are stored in cloud

If the switch change the state then the development board changes in the cloud storage also

If the data change occurs in cloud storage the development board will switches on/off respectively

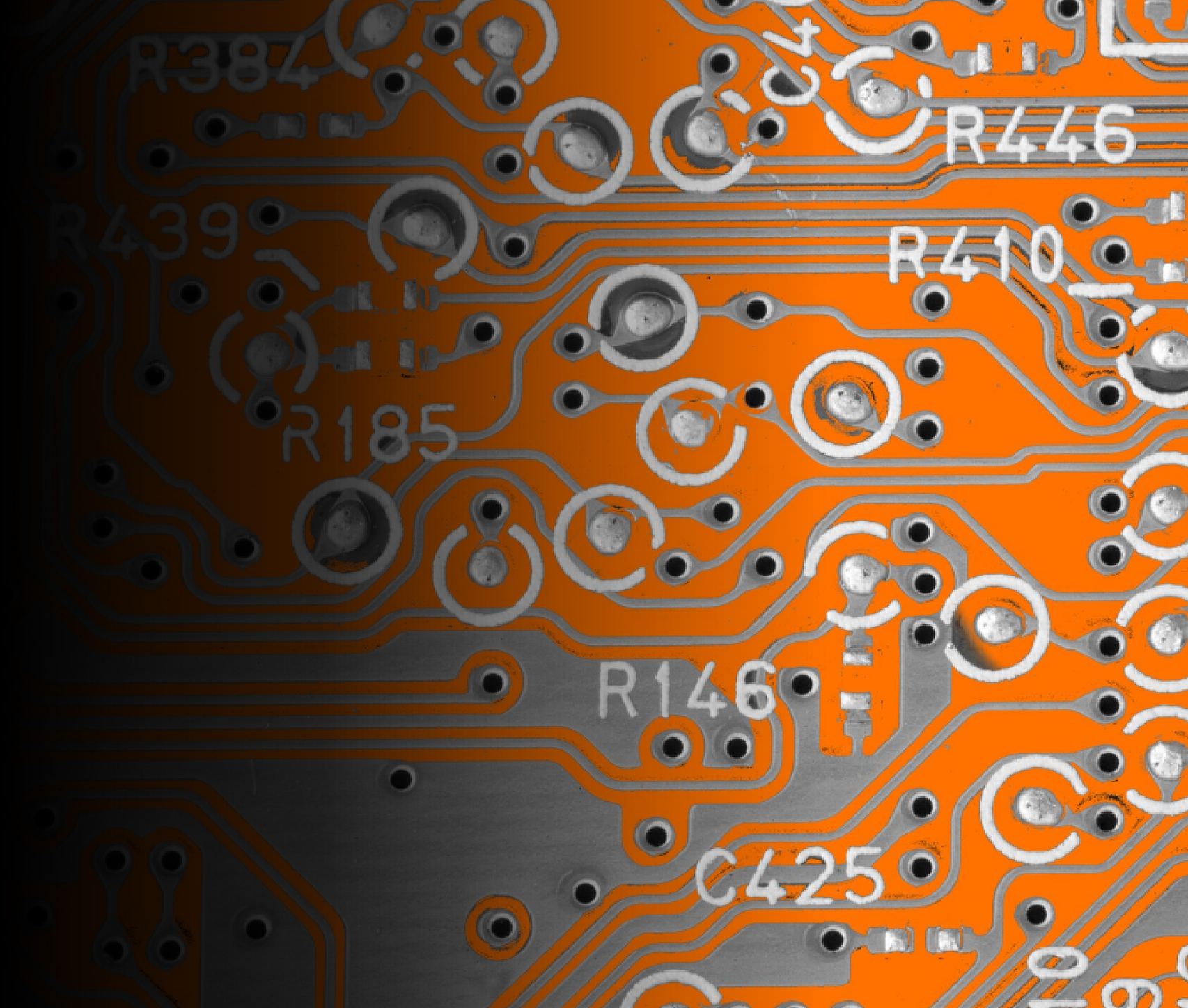
We can control the cloud data of switches by mobile to ensure easablity

MOBILE USER INTERFACE

- Having separate icon for light and fans to easiiy identify
- Showing all switches in home screen to acess easily
- Colors specifys the state
- Footbar represent multiple section in home

PROJECT SOURCE DETAIL:

- SOURCE FOR DEVELOPMENT BOARD(ESP32)



Team Member

- Sumesh .M(3118212050099)
- Sri bolaji.S (3118212050057)
- Yuvaraj.K (3118212050306)
- Vishal.K.H (3118212050305)