SMART HOME PROJECT Presentation

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01. About the project

What's the project?

A smart home system represents a straightforward yet remarkable living space equipped with advanced features. These features include the ability to identify flames in the event of a house fire, detect gas leaks, and sense water to prevent flooding. The system is designed to seamlessly integrate into your home and can be controlled through a dedicated application. This introduction lays the foundation for further discussions regarding the project.

ABOUT THE PROJECT

This project is built under the main points

1. The sensors and modules to run the program
2. The mechanism of the project
3. Used Platforms to set up Both home and mobile
4. How the program and phone will be up to date with any changes?
5. What's the type of the used app to be up with Home?
6. Finally Results

02.
Frameworks Platforms

Arduino!

Arduino IDE is software for programming microcontrollers. It has a code editor, compiler, and uploader. You write code to control components like sensors and use the IDE to upload it to the board. It helps with debugging and communication with the board. For your smart home project, you'd use the Arduino IDE to program the microcontrollers for flame, gas, and water sensors.

Platform IO

1. A lightweight but powerful cross-platform source code editor

2. Smart code completions based on variable types, function definitions, and library dependencies

3. Multi-projects workflow with easy navigation around project codebase, multiple panes, and themes support

Flutter

1. Flutter is an open-source framework by Google for building beautiful, natively compiled, multi-platform applications from a single codebase.

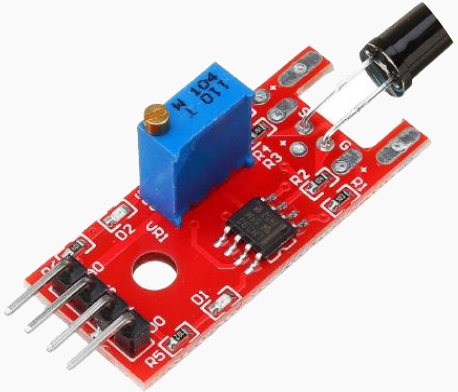
2. It is easy programming language to set up phone applications and built-in functions make life easier for new developers to be up with new technologies

VS CODE IDE

VS Code is a powerful code editor. It's great for writing, debugging, and managing code. Its versatility and extensions make it a popular choice among developers.

It was the good choice to use combine between Flutter work, and Platform IO

03.
Used Componotes



Flame Sensor

A flame sensor is a specialized electronic component designed to detect the presence of flames or fires. It works by responding to specific wavelengths of light emitted by flames. When a flame is present, the sensor generates an electrical signal that can be used to trigger various actions, such as activating alarms, shutting off gas supplies, or alerting a control system.

Gas Sensor

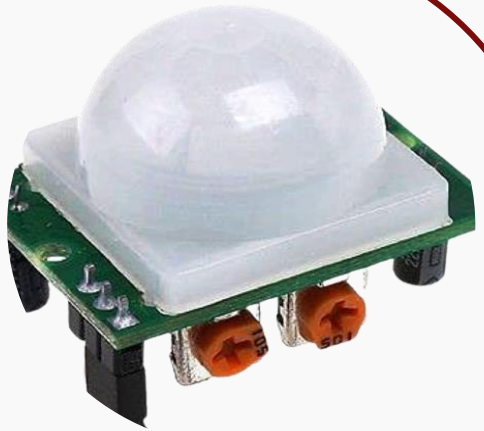
A gas sensor is a device that detects the presence of specific gases in the surrounding environment. It works by measuring the concentration of the target gas and generating an electrical signal that corresponds to its presence. Gas sensors are crucial for monitoring air quality, detecting leaks, and ensuring safety in various settings.

Water Sensor

A water sensor is a device designed to detect the presence of water or moisture in its surroundings. It works by sensing changes in conductivity or resistance caused by the presence of water. When water encounters the sensor, it triggers an electrical signal that can be used to activate alarms, notifications, or control systems.

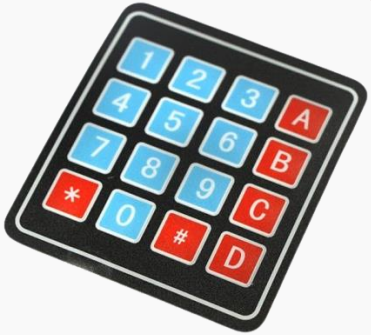
PIR Motion

PIR motion sensor, or Passive Infrared motion sensor, is a device that detects the presence of moving objects, including humans and animals, by sensing changes in infrared radiation in its field of view. It works by detecting the heat emitted by these objects, which changes as they move across the sensor's detection area



Keypad 4x4

A keypad is a set of buttons arranged in a grid, like a telephone's numeric keypad. It's used for inputting numbers, letters, or other characters into electronic devices or systems. Keypads are often seen in security systems, access control, and devices that require user interaction, So we use it to make the user send the needed password to start running home as a key for opening the door.



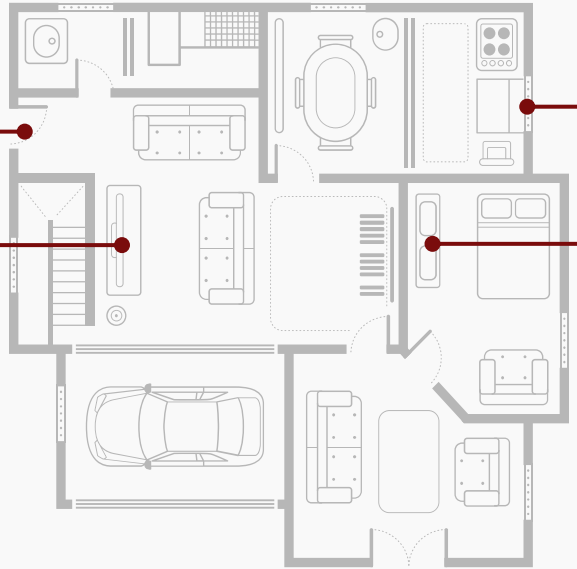
Buzzer Act.

A buzzer is a simple sound-making device that produces a distinct tone or sound when it's activated. It's commonly used to provide audible alerts or notifications in various applications, and we used it to make sound when detecting threshold for all sensors in home

Locations at home for sensors

Flame Sensor

Water Sensor



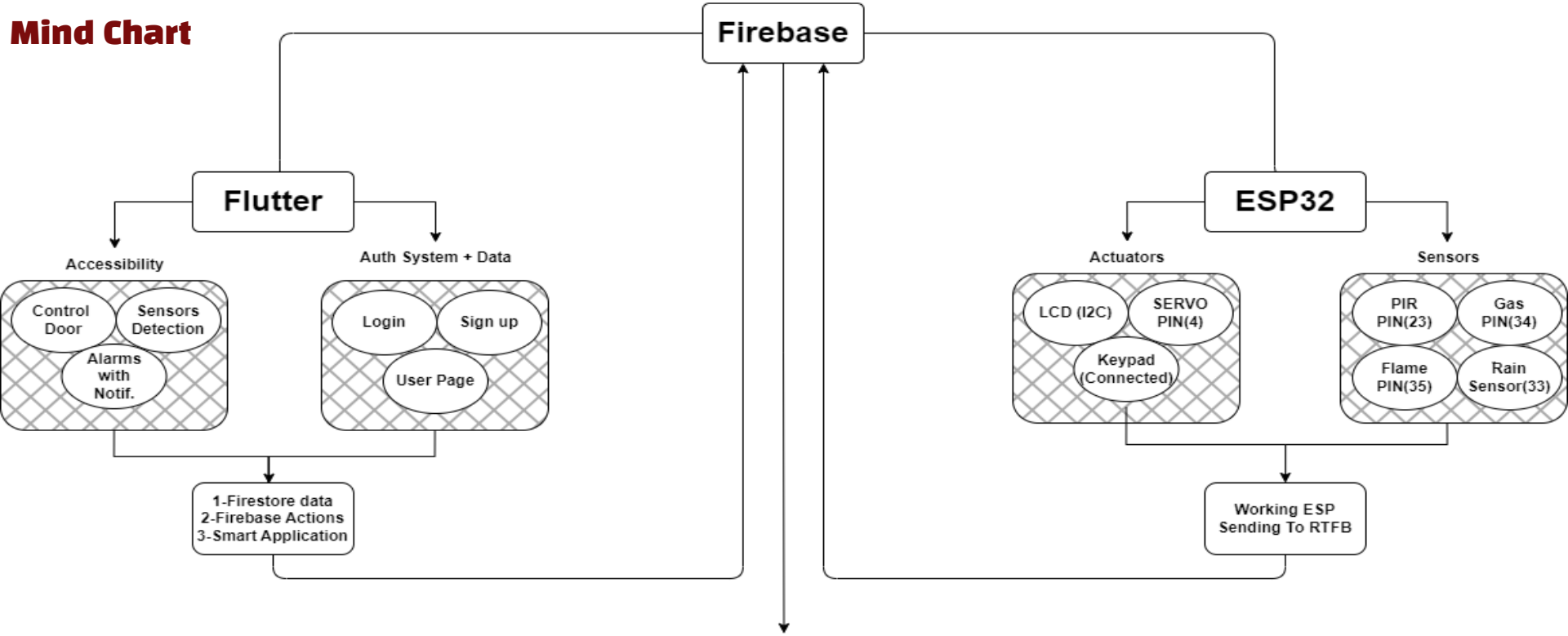
Gas Sensor

Motion

04.
Mind Chart

How will the program work?

Mind Chart



Real-time Connectivity

Establish a direct connection between ESP32 and Firebase.

Enable live transmission of sensor data to Firebase's database.

User-Friendly App

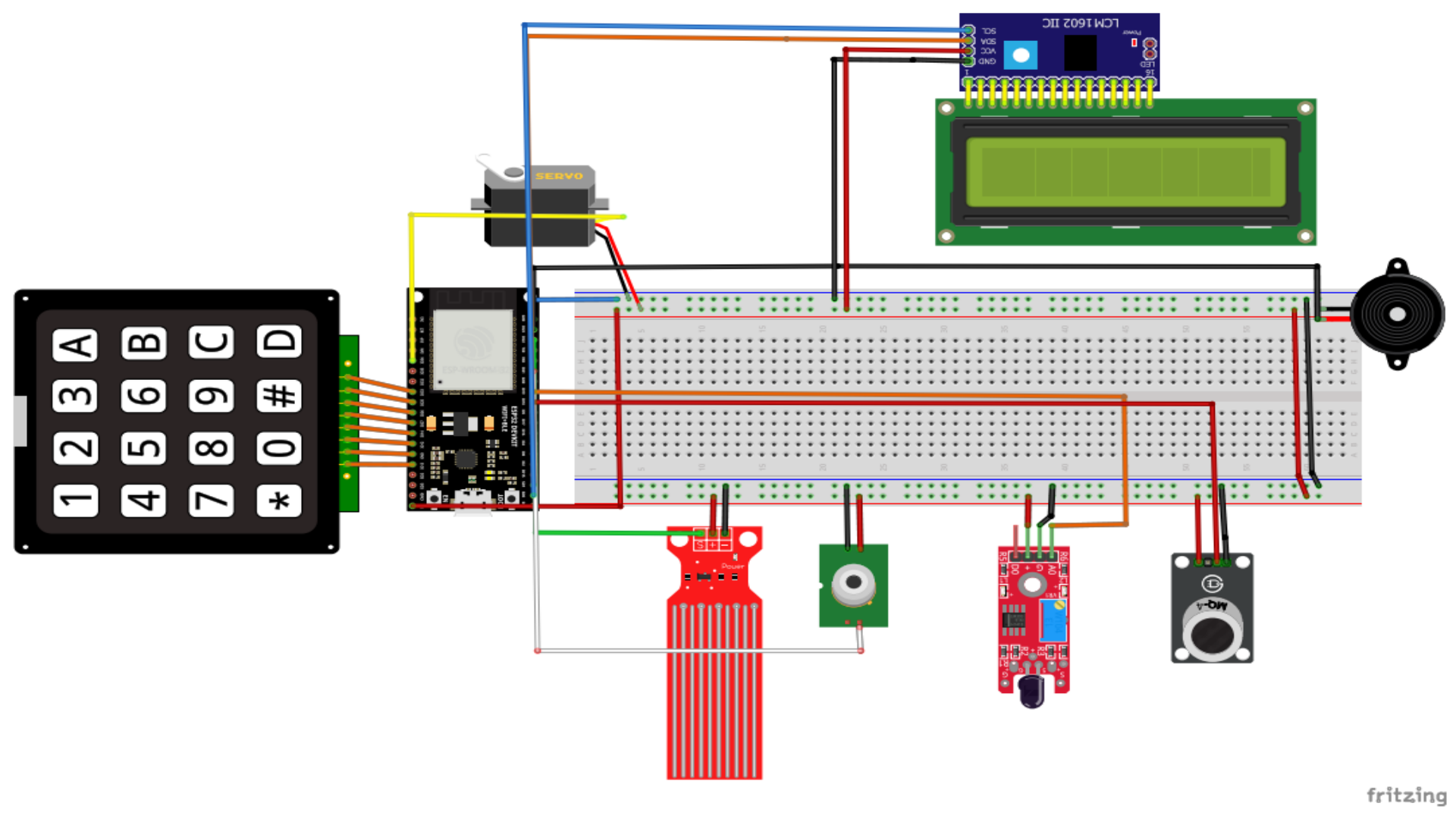
Develop an intuitive Flutter app interface.

Display sensor data using attractive lively work

Provide push notifications for detected issues to make user aware of any actions

05. Schematic

How all of them connected together?


LCM1602 IIC
GND
VCC
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SCL
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1 2 3 A
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MQ-4
fritzing

Did you know that?
While we all know that MQTT is used for Data transmission, Firebase Doesn’t use MQTT PROTOCOL!!

Fast information

Firebase primarily uses its own real-time database and Firestore as its real-time database solutions, and these don't use the MQTT (Message Queuing Telemetry Transport) protocol by default.
Firebase Realtime Database uses a WebSocket-based protocol to maintain real-time synchronization between clients and the database, while Firestore uses a combination of WebSockets and HTTP/2.

06.

Smart Home Application

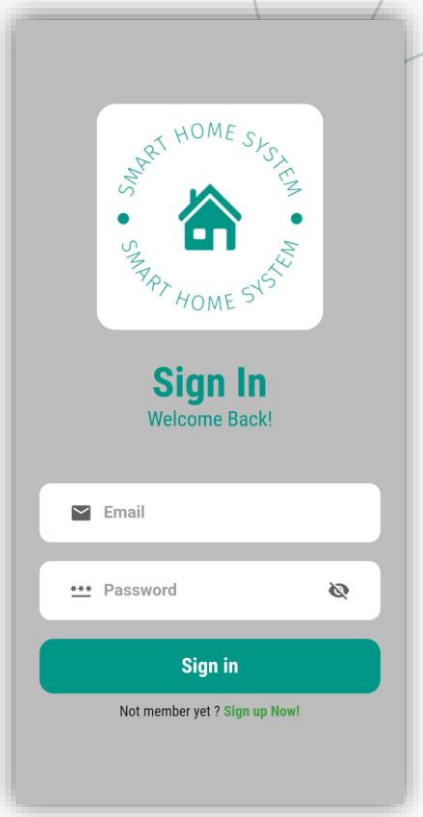
Your Own Key app!

Our Application

The app features 7 screens, with each slide focusing on a single screen. The app's primary purpose is to establish a secure connection between the user and their home, ensuring they're informed about home activities whether they're inside or away.

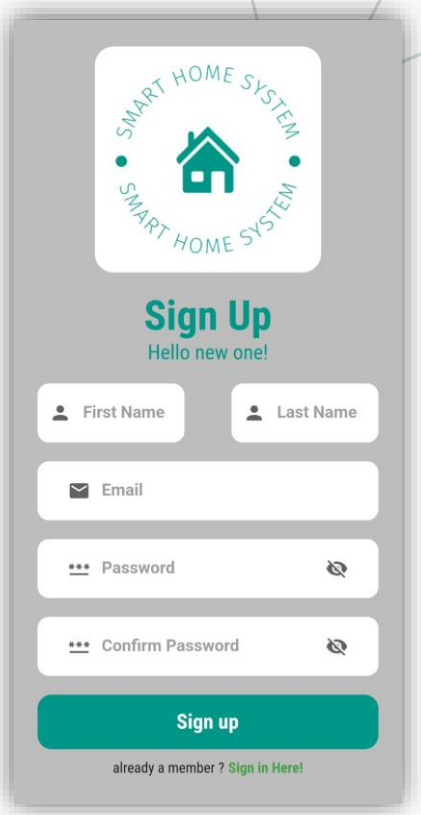
Sign in Screen

The "Sign In" screen is the entry point for users. Here, they provide their credentials to access the app, ensuring only authorized individuals can control and monitor their home remotely.



Sign up Screen

The "Sign Up" screen allows new users to create accounts. By providing the necessary information, users can register and gain access to the app's features, fostering a personalized connection to their home's safety and updates.



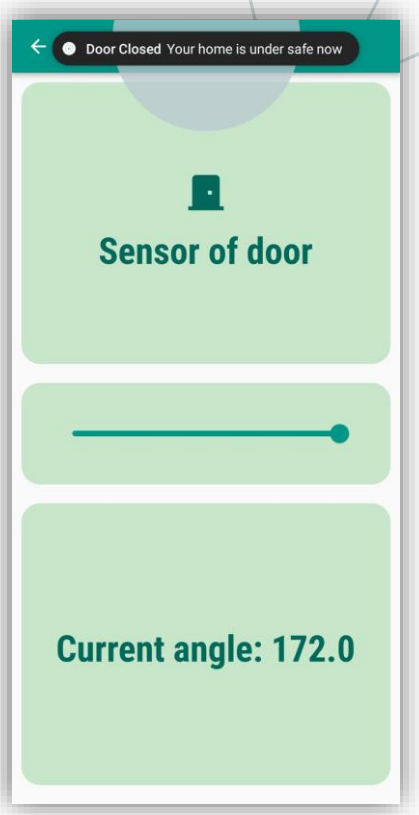
Home Screen

The "Home" screen serves as the central hub of the application. It encompasses several key functionalities:

1. **Door Control System**: This feature lets users remotely control their home's doors. They can lock or unlock doors as needed, enhancing security and convenience.
2. **Home Sensors**: The app displays real-time data from various home sensors. This includes information from flame, gas, and water sensors, offering a comprehensive view of potential risks.
3. **User Information**: Users can access and manage their personal information from this screen. It provides a way to update contact details and preferences, ensuring accurate notifications.
4. **Developer Information**: This lets the user know who developed that application and home and project at all

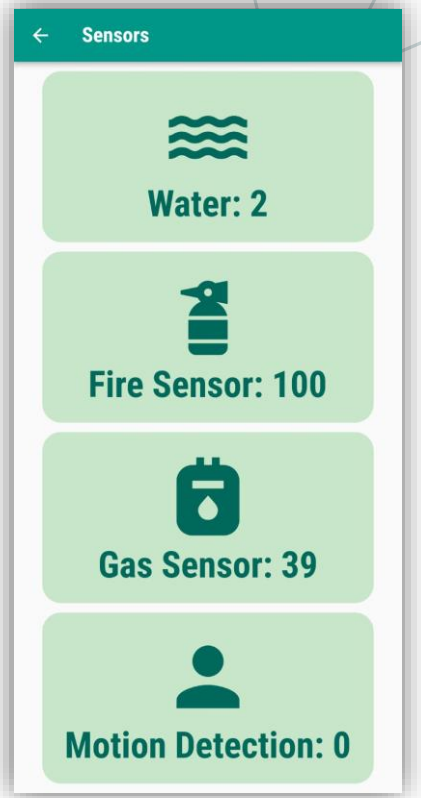
Door Control

The "Door Control" screen lets users remotely manage access by verifying chosen values to indicate whether the door is closed or open. This empowers convenient control over home security.



Sensor Page

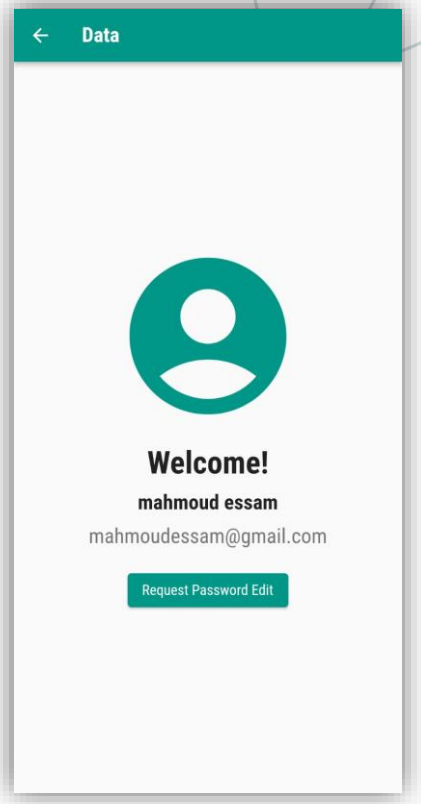
The "Sensor Page" delivers real-time readings from a range of sensors, including those for water, flame, gas, and motion. This comprehensive display equips users with vital information about their home's safety and conditions.



Information

The "Information Page" presents users with essential details about their profile and preferences, ensuring accurate communication and personalized experiences within the app.

And ability to change password if user forgot it sure.



OUR TEAM

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Thanks for listening!!