Home Automation

Prepared by Hassan Malik
on Feb 21, 2024

PROJECT DESCRIPTION

- Establish an MQTT broker on a Raspberry Pi for efficient device communication.
- Develop hardware devices (sensors, actuators) as MQTT clients.
- Create a mobile app that connects to the MQTT broker, allowing users to monitor and control devices.
- Implement real-time updates on the mobile app based on MQTT messages.

TOOLS

- MQTT Broker: Mosquitto on Raspberry Pi.
- Hardware: Custom devices acting as MQTT clients.
- Mobile App: Developed using Flutter/React for cross-platform compatibility.

FEATURES

- Implemented MQTT connection logic in the **Flutter/React Native app**.
- Configured connection settings with the Raspberry Pi MQTT broker.
- Developed an intuitive user interface for **real-time monitoring** and control using Flutter/React Native.
- Enabled the app to subscribe to relevant MQTT topics for sensor data and control commands.
- Allowed users to **control devices through the app**, sending commands via MQTT.
- Provided a consistent and user-friendly experience

SECURITY MEASURES

- Implemented username/password authentication for MQTT broker.
- Ensured secure MQTT connections between the Flutter/React Native app and the broker.
- Encrypted sensitive data exchanged between devices and the app.

FUTURE ENHANSMENT

- Implementation of machine learning algorithms for predictive automation.
- Expansion of device compatibility and support.