VIETNAM NATIONAL UNIVERSITY, HO CHI MINH CITY
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FACULTY OF COMPUTER SCIENCE AND ENGINEERING

IOT APP DEVELOPMENT - LABORATORY

SMART HOME MOBILE APP: ENVIRONMENTAL CONDITION COLLECTORS AND HOUSEHOLD DEVICES MONITOR

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1 Architecture Overview

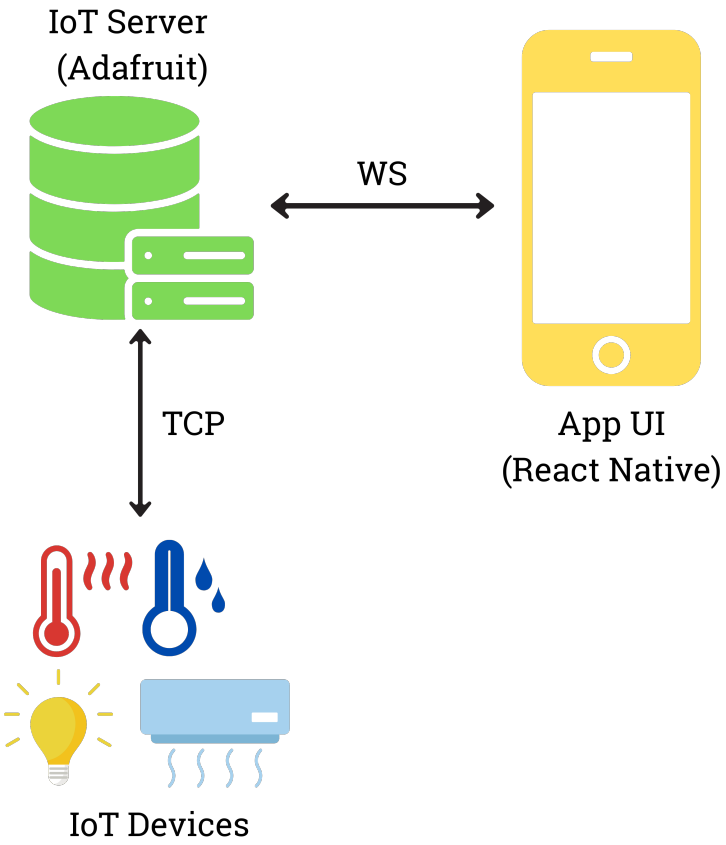

Figure 1: *The Mobile App Architecture*

In our mini mobile app, there are simply two types of forward-backward dataflows. The sensor-server flows follow TCP protocol, while the UI-server flow follows WS protocol.

2 Implementation Details

Source code is uploaded to `https://github.com/mintcd/iot-mobile-app`.

2.1 Server Hosts

The TCP host is `tcp://io.adafruit.com:1883` and the WS host is `ws://io.adafruit.com:443`.

2.2 Dataflows

The IoT devices include

- Two sensors of temperature and humidity. They publish environmental data to the Adafruit server's corresponding feeds. By default, the frequency is set to 5 seconds.
- Two household devices, a bulb and an air-conditioner. They publish state data frequently to the corresponding feeds similarly to the sensors. Also, the bulb subscribes to `bulb-controller`, and the air-conditioner subscribes to `air-conditioner-controller` and `temperature`.

The UI client subscribes to the `temperature`, `humidity`, `bulb` and `air-conditioner` feeds.

2.3 Logic

UI's received data from the subscribed feeds are rendered. Bulb and Air-conditioner fetch data from `bulb-controller` (0 or 1) and `air-conditioner-controller` (temperature value) published from UI to change their value. Air-conditioner also fetches data from `temperature` to turn on at 20 °C and turn off automatically.

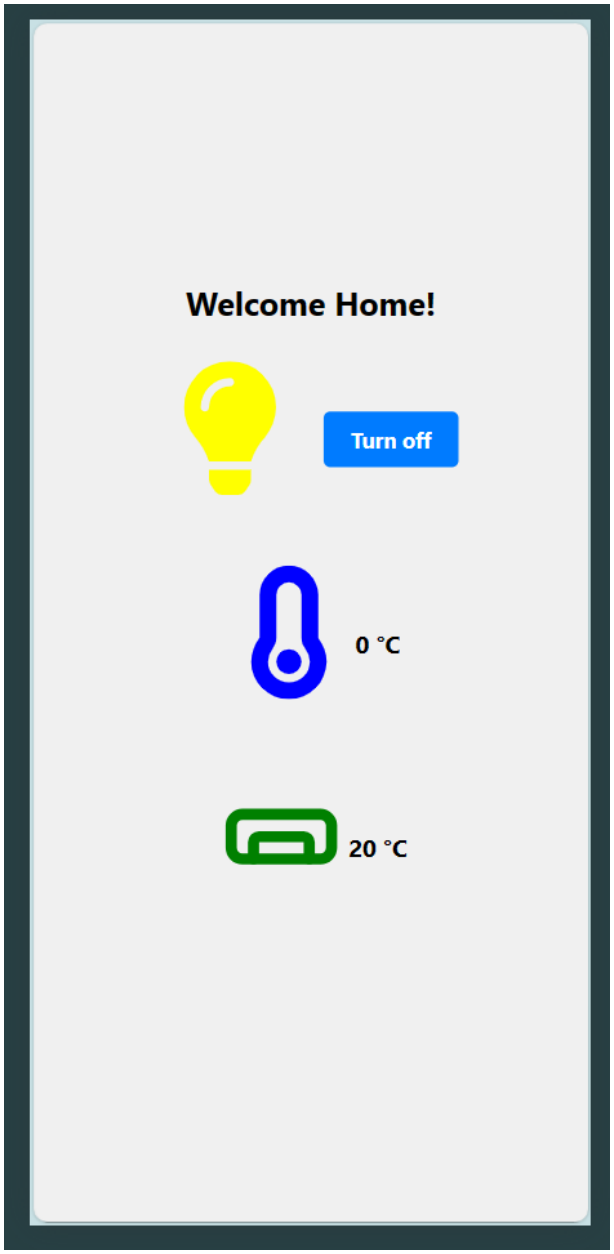

Figure 1: *The App UI*