

IoT course

Final Project

Phase #4

This phase represents the conclusion of the process. On the demonstration day, students should integrate phases 2, 3, and 4 into a unified system that functions as a whole.

In this phase, each group works on the IoT dashboard structure and data presentation.

The requirements of this phase are:

- Raspberry Pi
- RC522 RFID Module
- Wires
- Breadboard
- RFID tags

Task #1

Data Capture:

In this phase, each group should create a user profile. Each user needs the RFID tag number, temperature threshold, and light intensity threshold. (A database table)

Each RFID tag has a serial number. First, assign a tag to a user.

When a tag is read and if it is valid, upload the thresholds on the dashboard, set the user's profile, and change the values.

Data communication:

Transfer RFID tag information over to the MQTT broker.

When a tag is read, the system should send an email to mention " User X entered at this time"

Data Presentation:

Create a box to show the user profile information.

Task #2 (optional)

The objective of this task is to count the number of Bluetooth-enabled devices nearby.

Data Capture:

The members of each group should find the Bluetooth address of all Bluetooth-enabled devices around their Raspberry-Pi and read the RSSI of each device.

Data communication:

This task is implemented on the RPi with the built-in Bluetooth card. Therefore, the data should be read from the RPi.

Any programming languages are acceptable (e.g., JavaScript, Python) to read the BL packets.

Data Presentation:

The number of devices should be presented on the dashboard.

Also, the students could keep running the code forever and update the number or add a button to activate the BL module for a specific amount of time (For example, 3 Sec.)

The dashboard receives the RSSI and only counts the devices with RSSI greater than the threshold.

Bluetooth devices nearby:

12

RSSI Threshold (dBm)

-50



Recommendations:

Having the following items could improve the quality of the project:

- Database for your profiles
- User profile picture
- Notification for different events, such as sending email
- Theme of the dashboard