Final Project overview

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ATTENTION

This file is only a big picture of the project.

For more information, please read the following documents in your Omnivox account.

- Final Project Evaluation
- Documentation Guideline

You will receive the instruction for each phase in detail.

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Project Description

By utilizing sensors, actuators, motors, Single-board computers, and micro-controllers, students design and simulate a smart home. They capture environmental information and make a decision based on received data. They also develop access control and occupancy systems and transfer all data to the cloud or a local server. Finally, they design and develop a web-based IoT dashboard to control and monitor the system.

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Technology and devices

In order to implement this project, the following technologies and devices are used:

- Temperature and Humidity sensor
- DC motor
- RFID NFC
- Photoresistor
- Wi-Fi
- Bluetooth
- MQTT message broker
- Raspberry-Pi Board
- Arduino Board

Dashboard

1

Username
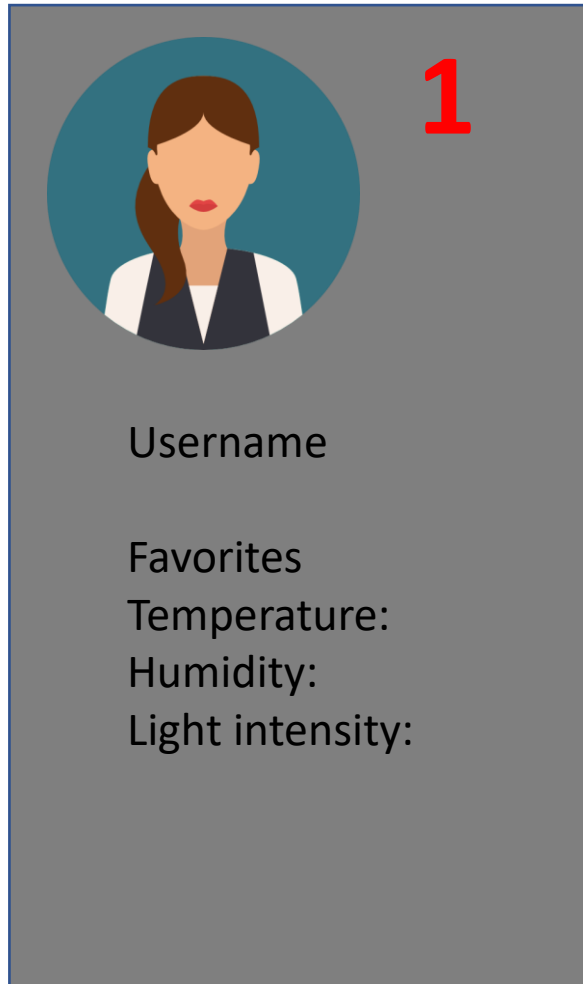
Favorites
Temperature:
Humidity:
Light intensity:

2

3

4

User Profile

1

Username

Favorites
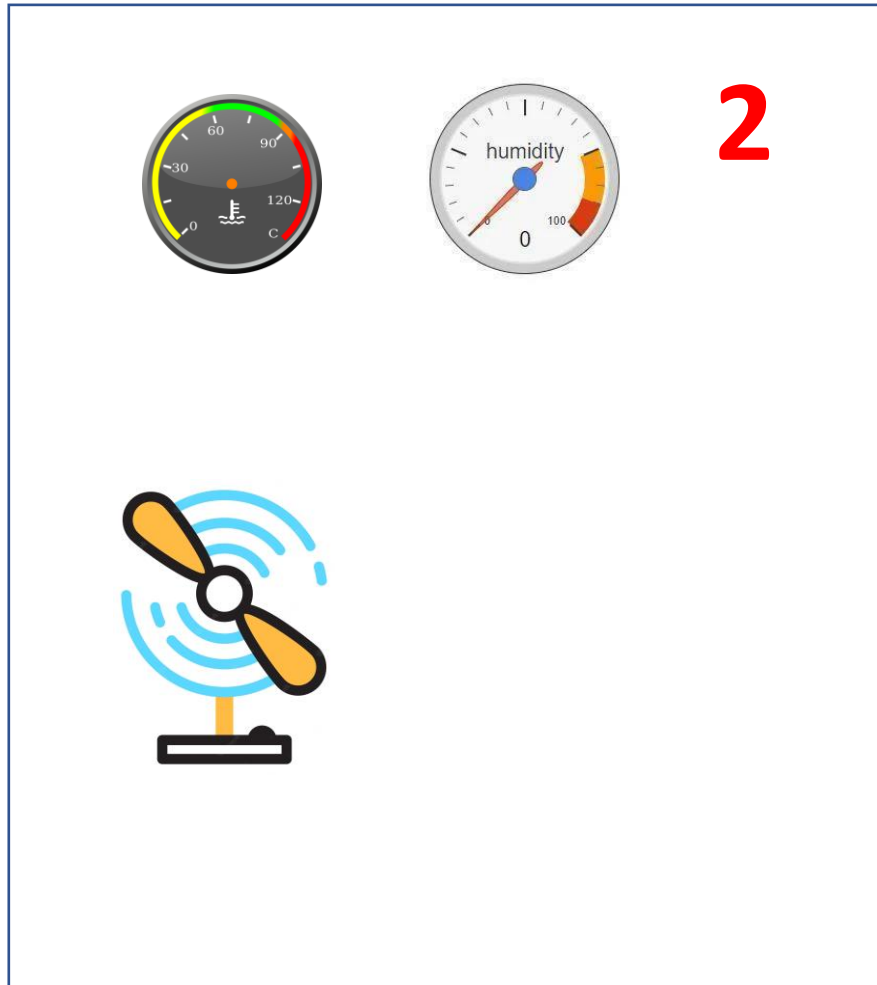Temperature:
Humidity:
Light intensity:

By an NFC reader, the ID card information is read.

The system loads the user profile in this box

A database is required to keep the user profile information.

Favorite information is used as a threshold to change the system status.

In addition, the system sends an email to inform the system administrator. For example " User-1 is here at "hh: mm".

Also, the system admin should be able to create a user and set or change thresholds.

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Smart thermometer system

2

The current temperature and humidity are captured and presented on the dashboard.

If the current value is greater than the user's threshold, the system is an email message like " Current temperature 27 and more than your setting. Would you like to turn on the fan?

If the user replies YES, then the system turns on the fan (i.e. DC motor)

The fan icon should present the status of the fan ON or OFF.

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Smart Lightening system

3
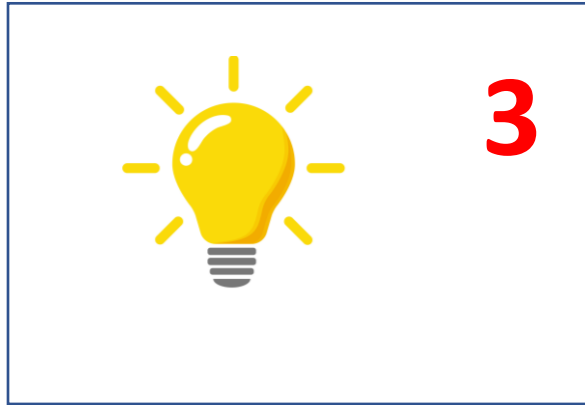
The system reads the current light intensity value and presents it on the dashboard.

Then if the current amount is less than the user threshold, the system turns the light (LED) ON automatically and sends an email message to the user as a notification.

For example " Light is ON, Time hh:mm "

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Smart occupancy system

4

By wireless technologies (Wi-Fi or Bluetooth), the system counts the number of existing devices in the area and presents the number on the dashboard.

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Dashboard

1

Username

Favorites
Temperature:
Humidity:
Light intensity:

2

humidity

0

3

4

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