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Vellore Institute of Technology
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School of Computer Science and Engineering

J Component report

Programme: B. Tech CSE with Specialization in Cyber Physical Systems

Course Title: Distributed Real Time Systems

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Title: Distributed Real Time Mess System

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REAL AND DISTRIBUTED MESS SYSTEM

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ABSTRACT

We are making a real time distributed mess system.

The server will be controlled by admin where the user will have to give the registration number , name and veg type(veg, non-veg) and will be scanning their respective ID card with RFID sensor which will be updated on the database. The RFID will generate a unique hexadecimal number to identify the card and update it on MongoDB.

Now, by using Rfid sensor all the students reaching on mess will have their respective card scanned through Rfid sensor which will be verifying with the database in real time.

If the database matches then the door of the respective mess will open otherwise warning alarm will play .

Here we are using RFID sensor, raspberry pie and arduino for hardware components. Our codes are done in python and for backend to save our database we are using MongoDB.

OUR IDEA

So, we are making a distributed real time mess system.

Here we are using Arduino, RFID sensor, raspberry pie, etc.

The card will be firstly registered on the server using a form and read by RFID sensor.

The data stored on system will be verifying the user while entering the mess

DESIGN REQUIREMENTS

1) RFID SENSOR

To scan the card on the admin side and verify on the client side and give the signal to arduino

2) ARDUINO

After sensing the signal it will give the response to the respective client(i.e motor in the case of veg and buzzere in the case of non-veg).

3) RASPBERRY PIE

It will be used in the case of non-veg mess that will work on wireless.

4) SERVO MOTOR AND BUZZER

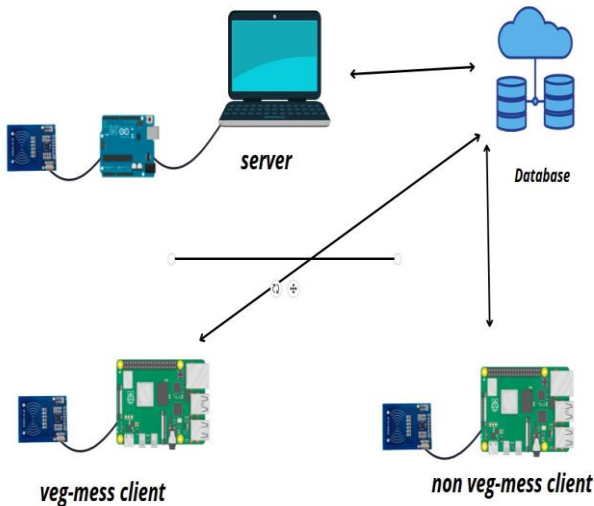
Servo motor and buzzer will act as the mess door and alarm system. We have used them separately in our project but can be used together as a mess door with alarm.

WORKING

SERVER: Here a user will have to register themselves by filling the form containing name, reg no. Mess type following that he/she will be scanning their cards on rfid sensor which will stored in our database

Client: Once the user is registered on our database. They will have to verify their cards with RFID each time they visit the mess. It will verify the card details with the one available on the database.

If matches then the arduino will send the signal and motor will start following with the respective mess door will open otherwise it will give error message



HARDWARE EXPLANATION

ADMIN NODE(WIRED):

EXPLANATION:

In the code we are using flask to connect the website to the database. By using post request we are extracting the details like rfid, name, reg no. and mess type.

Here admin has the only access to enter the data.

Cooresponding the client the admin will enter the details i.e. users name, reg no. , mess type type either veg or non-veg.

Then the admin will click the submit button, it will wait wait for the admin to scan the id card through RFID sensor to get the rfid code to complete the registration

Client node(wired:veg)

The client side of veg will be a wired node connected through rfid sensor , a buzzer and pc.

It will be scanning the card through rfid and givinng the output such as verified or not through pc .

On the failing to verify it will give a message as” the user is not verified”.

Client Node(wireless:non-veg)

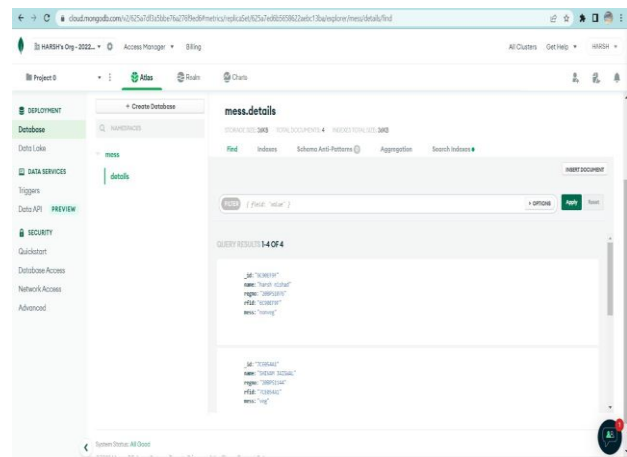
The client side will be a wireless node connected through raspberry pie used by the user to scan their cards on the rfid sensor which will be veryfying the details with that on the database

And if the details matches the buzzer will be beeping twice otherwise will beep just once.

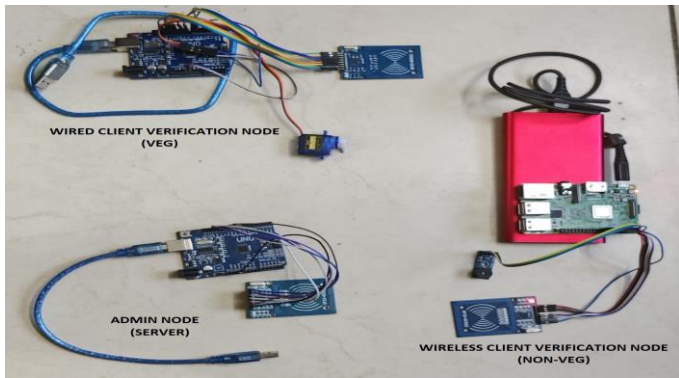
WEBSITE

The screenshot shows a web browser displaying a 'Registration Form'. The form has three input fields: 'Registration Number' (with a placeholder '123456789'), 'Full Name' (with a placeholder 'User Name'), and 'Choose Mess' (a dropdown menu with 'veg' selected). A blue 'Submit' button is at the bottom of the form.

MONGODB(DATABASE-HOLD BY ADMIN)



DEMONSTRATION



<https://www.arduino.cc/>

<https://www.deviceplus.com/raspberry-pi/integrate-rfid-module-raspberry-pi/#:~:text=a.&text=The%20first%20step%20is%20to,the%20SPI%20Interface%2C%20select%20yes>

TIME DELAY:

Every real time system has some time delay.

In our project also there is a time delay of about 1 second when arduino sends the signal to the dc motor.

And if the number of users will increase then it will take some time for the database to verify the details which will again increase the time delay accordingly.

CONCLUSION:

Our project helps the digital improvement in this digital world.

The human effort will be less for verifying the cards which will be done through rfid.

It will also help to prevent the students to enter the mess they donot belong to.

The motor will be opening the door only if the rfid hexadecimal code is matches otherwise will notify the admin that wrong user tried to enter.

REFERENCE:

GITHUB

https://github.com/0aaryan/mess_sys

https://github.com/Harsh-Nishad/real_time_mess_system

FLASK

<https://flask.palletsprojects.com/en/2.1.x/>

DATABASE

<https://pypi.org/project/pymongo/>
<https://www.mongodb.com/>