Graduation Project 2

Hybrid Smart Home

Presented for bachelor’s degree
in computer engineering

Meet our teem

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Contents

What we will talk about in this presentation !

Introduction

There is a lot going on in their minds about what are the advantages of a smart home, and how is it designed and equipped at home ?

A smart home is where anywhere can be digitally controlled. Opening the door, your home security, heating and water... Everything can be controlled Even the process of turning on your home lights you can monitor and control remotely through technology.

The importance

Here are some reasons why this hybrid approach is important:

01 Scalability and Expandability

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02 Enhanced Security

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03 Integration of Legacy Devices

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04 Cost Efficiency

The features that the system provide:

- RFID DOOR LOCK SYSTEM.
- LIGHTING ,HEATING AND COOLING SYSYTEM
- UMBRELLA TO PROTECT FROM RAIN,
- RFID DOOR CONTROLLING SYSTEM
- KEYPAD TO SECURE THE HOUSE FROM THIEVES
- WARNING SYSTEM WITH DIFFERENT SOUNDS
- MOISTURE SENSOR AND IRRIGATION SYSTEM

Our smart home technology can be categorized into two main types:

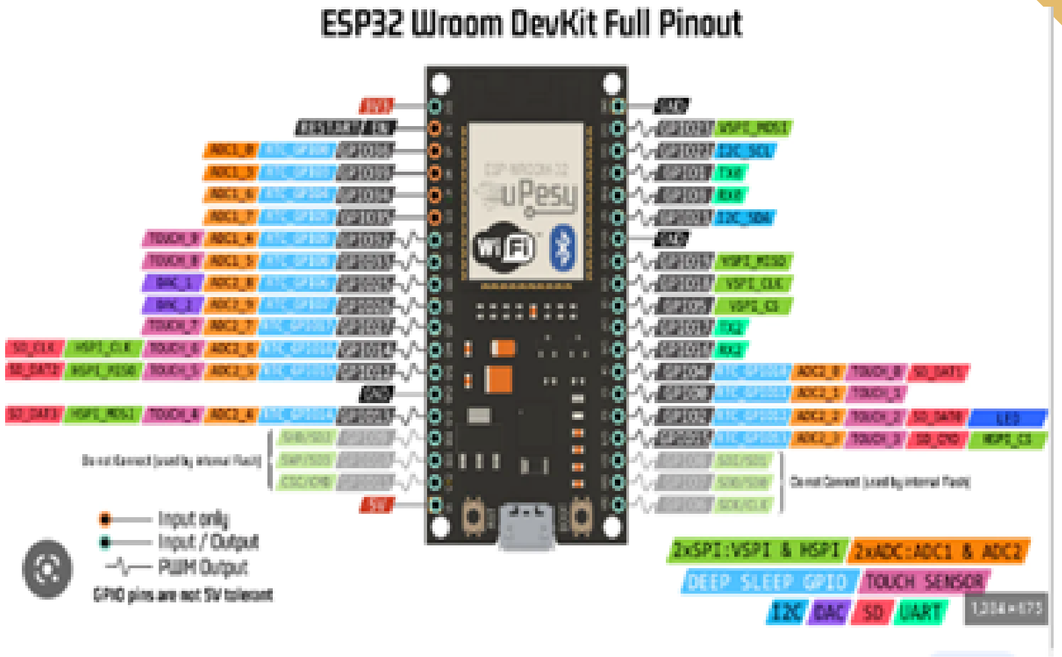
- WIRED SYSTEM
- WIRELESS SYSTEM

Features and design

Wireless Part

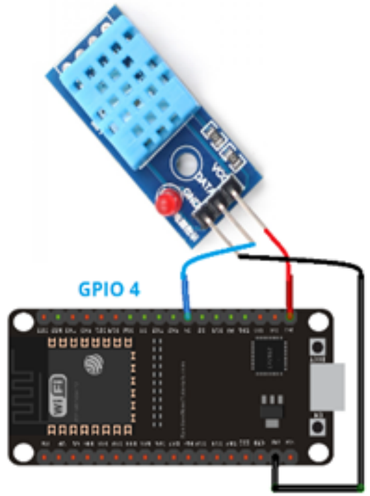
ESP32

Centralized ESP32 Module :
It aggregates the data from 3 other ESPs and sends it to Arduino via serial3.



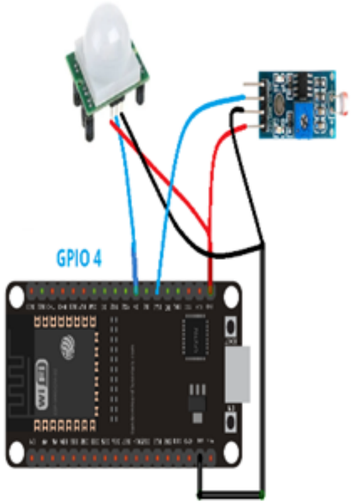
Wireless Part

Multiple ESP32 Modules: Each individual ESP32 module is programmed to perform specific task



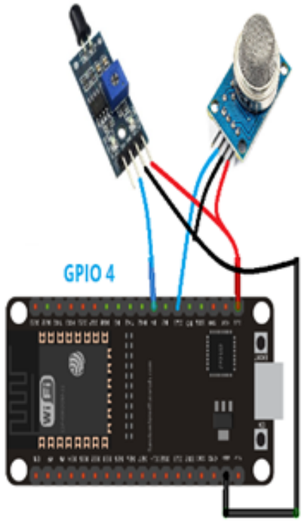
SENDER 1

handle temperature and humidity.



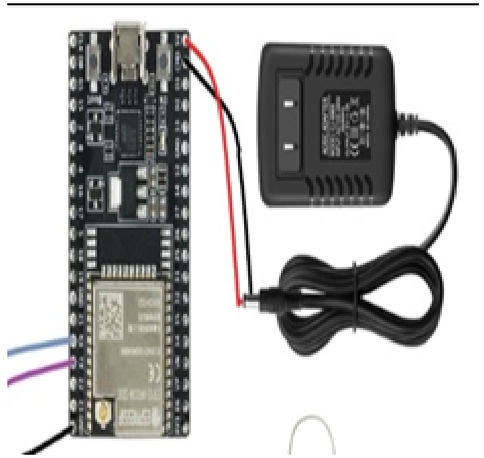
SENDER 2

control the lighting and movement system.



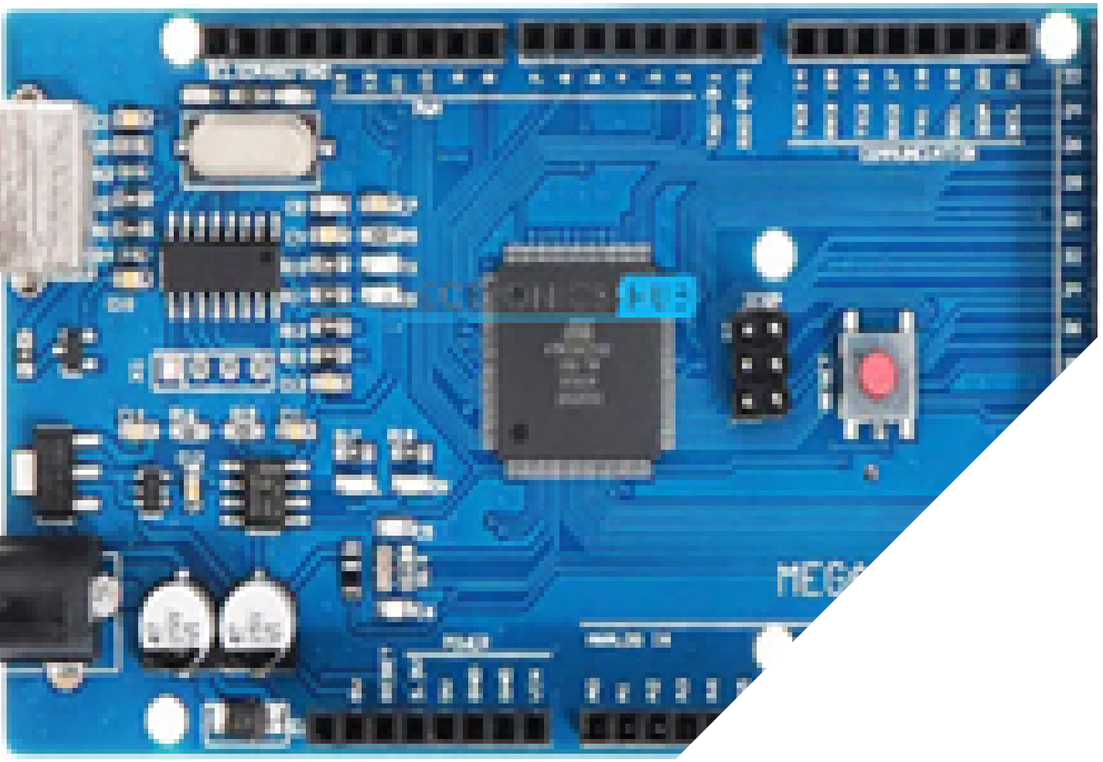
SENDER 3

The last one control the flame and gaz.



RECEIVER

wired with Arduino on pins 14,15[serial3].



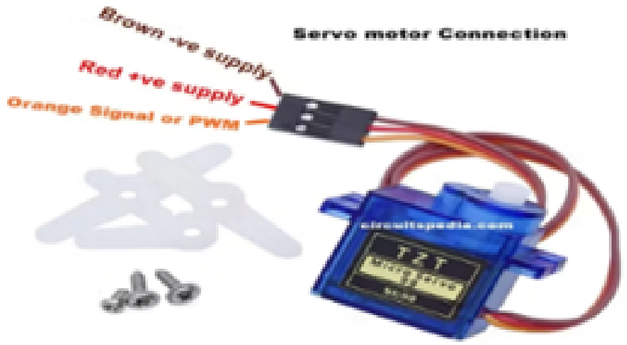
Arduino Mega 2560

we chose to deal with Arduino Mega for several reasons :

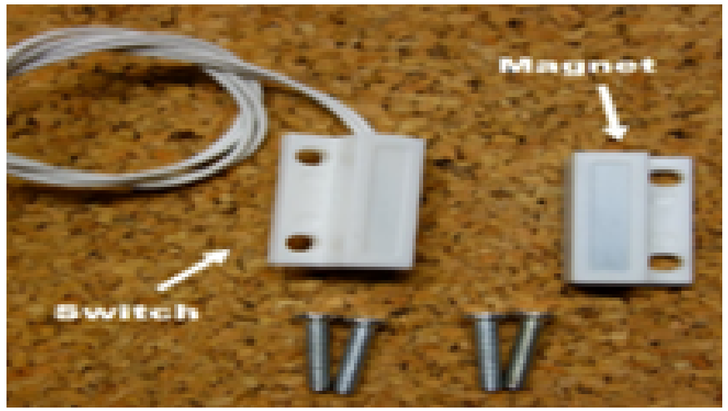
- Experience exceptional flexibility in handling an extensive range of sensors.

- offers an array of innovative communication interfaces

Other parts:

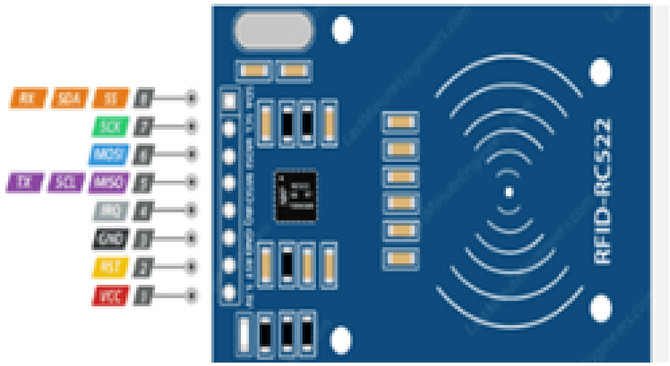


Servo motor



Servo motor

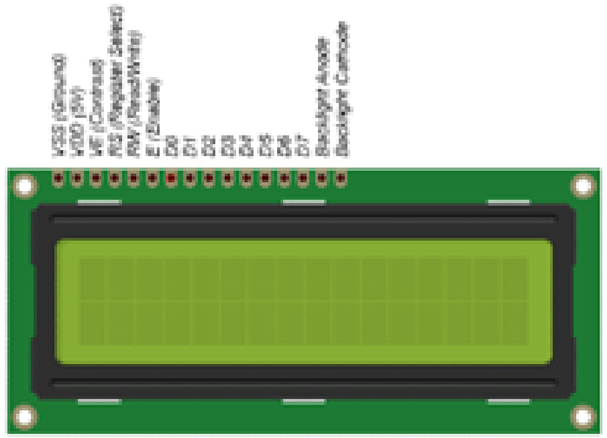
DC pump 6v



Rfid 522

Other parts:

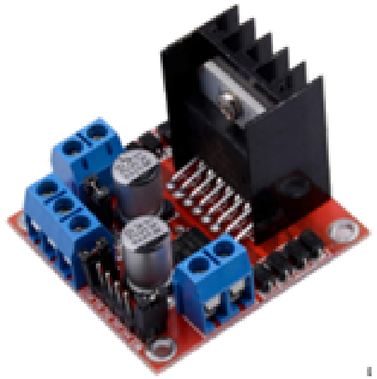
Variable resistor



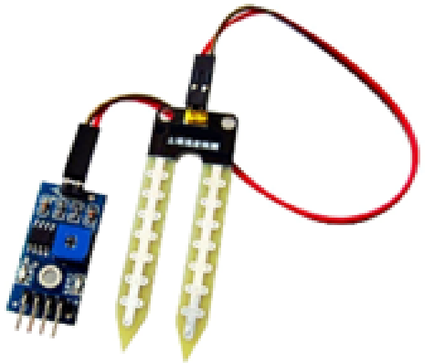
LCD 16*2

HC-05 Bluetooth module

Buzzer

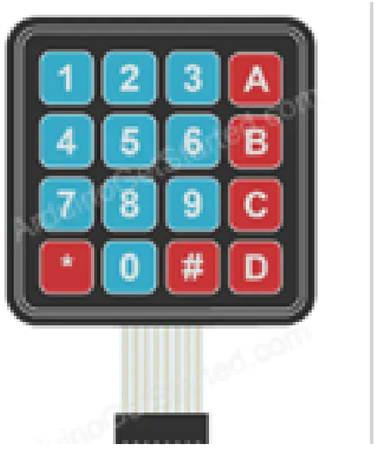


H-bridge



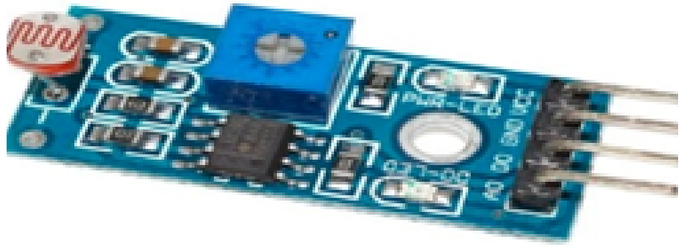
Soil humidity sensor

Rain sensor

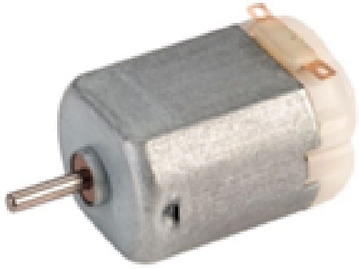


Keypad 8*8

GSM SIM800L



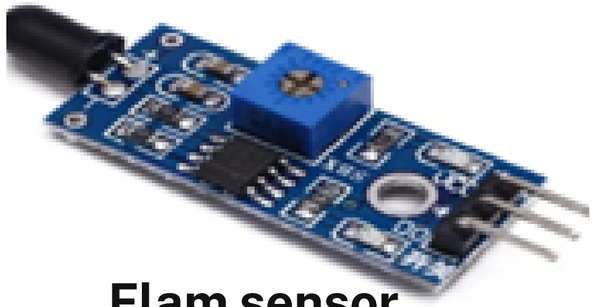
LDR sensor



DC motor

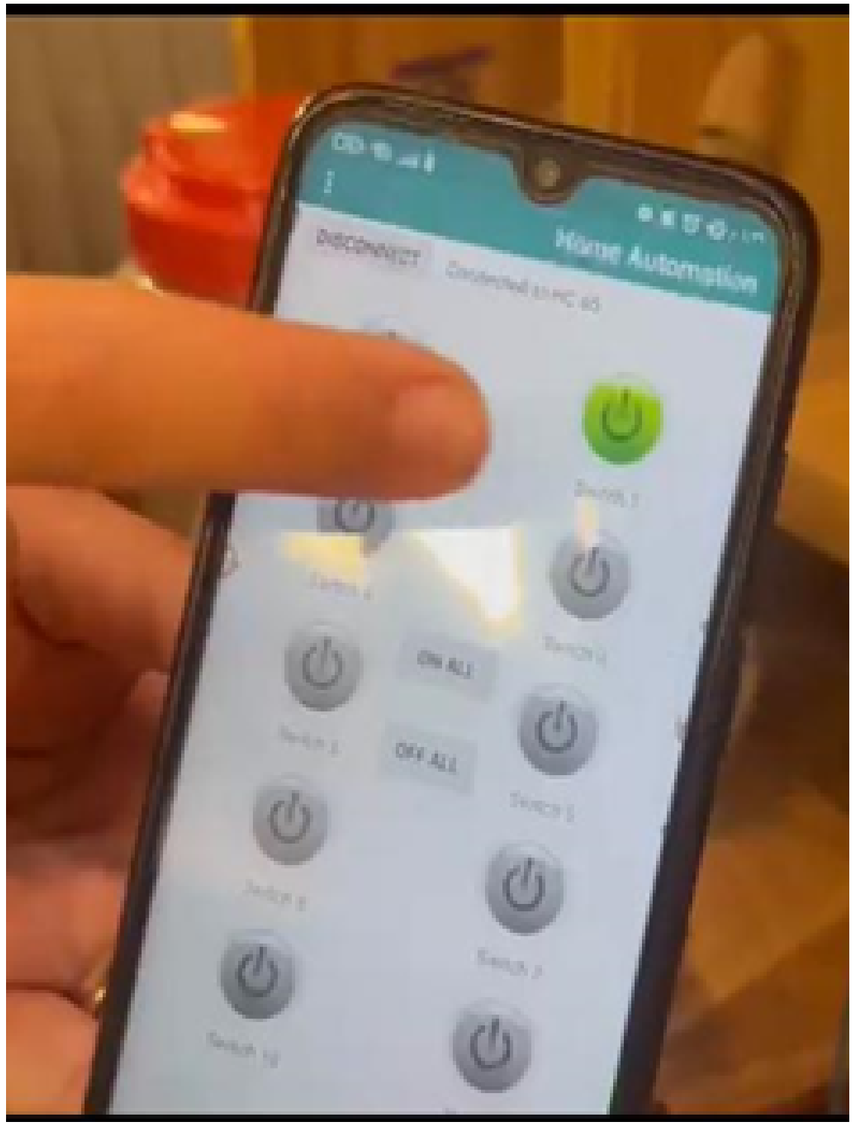
MQ05 sensor

PIR sensor



Flam sensor

DHT11 sensor



Bluetooth Hc05

a ready-made Android application from the store was used to control the lighting, cooling and heating system, the umbrella to protect against Rain, open and close the gate and irrigation system.

Constraints and limitations

- **Inexperience**
- **Lack of funds**
- **Lack of Time**

Summery

We have completed the construction of a working hybrid smart home that can easily respond to variables in a short time, may require some improvements, which we could not implement due to lack of time, resources or even knowledge.

Future Work

Future work will involve the use of image processing in order to find out the person coming to the house and, accordingly, perform certain tasks.

Thank you for your listening !