جامعة برج العرب التكنولوجية
BORG AL ARAB TECHNOLOGICAL UNIVERSITY

Faculty of Industrial and Energy Technology

Information Technology Program

(Digital Smart Home)

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(Digital Smart Home)

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ABSTRACT

Our smart home project aims to revolutionize the modern technology era by providing comfort and safety through integrated systems and safety sensors that detect any danger in the house. This project includes the Internet of Things (IoT), Artificial Intelligence (AI), cloud computing, energy-saving sources, and remote control. The project encompasses various components, such as renewable energy, including solar panels to provide energy and reduce reliance on non-renewable energy. It also includes safety sensors that detect any danger and alert the user, such as gas and heat sensors. Additionally, there is a smart garage that opens automatically when it senses a car and does not open if it is full, displaying the available spaces on an LCD screen. The most important part is the remote-control system, which allows the user to control every part of the house from anywhere, such as opening and closing doors and curtains, and controlling the lights. All these features ensure the homeowner experiences an unprecedented level of comfort.

ACKNOWLEDGEMENT

We would like to express our deepest gratitude to all those who have contributed to the success of our Smart home Project. First and foremost, we extend our heartfelt thanks to DR. Muhammad Al-Gohary, whose leadership and vision at the college have provided us with an environment conducive to innovation and learning.

We are profoundly grateful to the head of our department, Assoc. Prof. Osama El-Nahas, for his unwavering support and guidance throughout the create of this project. His insightful feedback and encouragement have been invaluable.

A special thanks to Eng. Zeyad Ibrahim, whose dedication and expertise as the project supervisor have been instrumental in navigating us through the complexities of this endeavor. His mentorship has been a cornerstone of our progress and success.

To all of you, we extend our sincerest appreciation for your belief in our vision and your commitment to our project's success. Your contributions have been integral to our achievements, and we are truly grateful for your support.

LIST OF CONTENTS

LIST OF ABBREVIATIONS

IoT	Internet of Things
ML	Machine Learning
ADC	Analog-to-Digital Converter
DAC	Digital-to-Analog Converter
GPIO	General Purpose Input/Output
API	Application Programming Interface
GUI	Graphical User Interface
SSL/TLS	Secure Sockets Layer/Transport Layer Security
IR	Infrared Sensor
PIR	Passive Infrared Sensor
RGB	Red, Green & Blue LED
MCU	Microcontroller Unit
BLE	Bluetooth Low Energy
DC	Direct Current
LDR	Light Dependent Resistor
MQ-5	Gas Sensor
LCD	Liquid Crystal Display
GND	Ground
AC	Alternating Current

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LIST OF FIGURES

Chapter 1
LITERATURE OF REVIEW

PROJECT OVERVIEW

In the past, homes were very basic without using technology, and everything depended entirely on human effort. So, we couldn't control anything remotely. If you wanted to control any part of the house, you had to do it yourself. Over time, with the advancement of technology, things became much easier. Where Technology provided users with comfort and safety. For example, you can now control the doors of the house, the lights, open and close the curtains, and use safety sensors to alert you of any danger. For instance, a heat sensor detects a fire and sounds an alarm, and a gas sensor detects a gas leak and warns the user, all of this is one of the safety features that the house provides.

What is our project idea?

Our project idea is to create a smart home that provides users with comfort, safety, and remote control of things. This will be achieved by controlling the lights, opening and closing doors and curtains, and having safety sensors that detect any danger to alert the user, such as gas and heat sensors.

System Map

Chapter 2
SYSTEMS HARDWARE

The Basic Components Used in Each Systems:

Arduino Mega 2560 R3

The main brain of the smart home.

Figure 1 (Arduino Mega 2560 R3)

Bread board

Its function is to provide Space to connect pins and components.
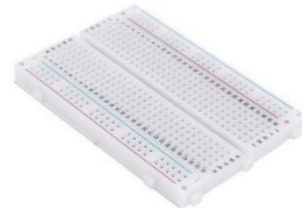
Figure 2 (Bread board)

Wires

The main object of it is to connect components with breadboard and Arduino Mega 2560.

Figure 3 (Wires)

Power Supply

The main objective of it is to generate the system with a specific voltage.

Figure 4 (Power supply)

Energy system:

Components:

Solar panels

convert sunlight into electricity through photovoltaic cells.

Figure 5 (Solar Panel)

LDR

The main object of it is to detect light levels, their resistance Increases as the light intensity decreases and resistance decreases as the light intensity Increases.

Figure 6 (LDR)

Servo Motor

The main object of it that allows for precise control of angular or linear position, velocity, and acceleration in a mechanical system.

Figure 7 (Servo Motor)

Lithium Batteries

The batteries have the function of supplying electrical energy to the system at the moment when the photovoltaic panels do not generate the necessary electricity.

Figure 8 (Lithium Battery)

What is this system?

A solar panel is a device that converts sunlight into electricity by using photovoltaic (PV) cells.

How does the system work?

for certainly, the main controller in this system is Arduino Mega 2560 R3, it can be said that the concept of the system is based on a light dependent resistor. Why? Because when light falls on the two light dependent resistors, it produces low resistance and moves according to the direction of sunlight. How? Its operation principle is based on Photovoltaic effect; It works by allowing photons, or particles of light, to knock electrons free from atoms, generating a flow of electricity. Solar panels comprise many smaller units called photovoltaic cells, which convert sunlight into electricity. The free electrons move in a single direction through the junction of the panel, creating an electrical current that is then sent to an inverter to be harnessed by your home.

Connection:
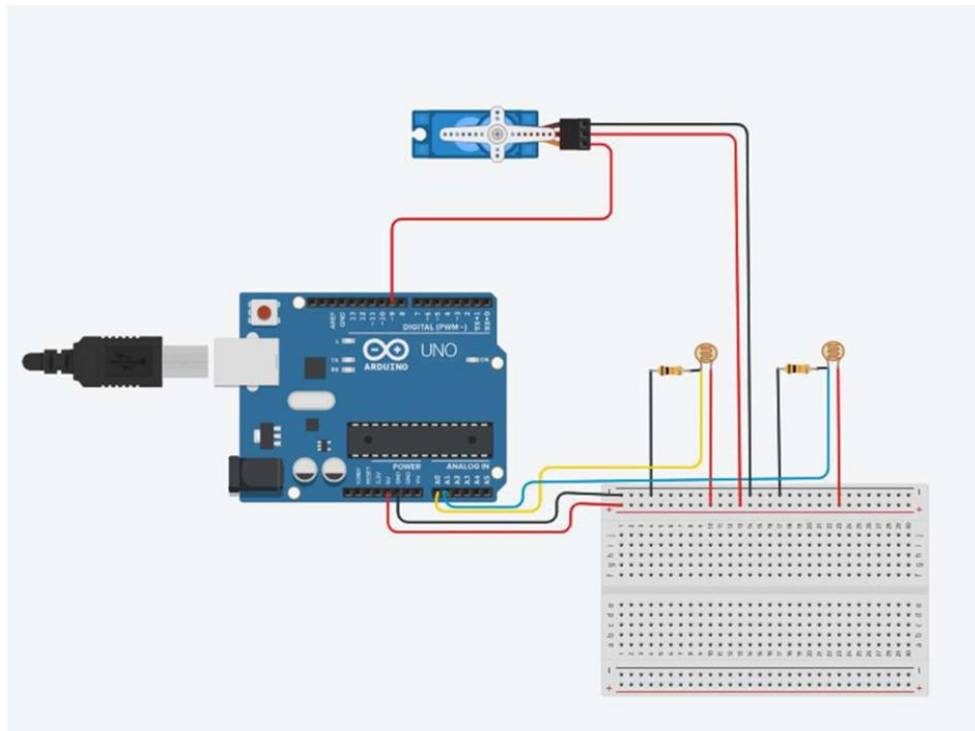
Figure 9 (connecting servo)

Safety systems:

Components:

Gas Sensor (MQ-4)

It is a device which detects the presence or concentration of gases in the air.

Figure 10 (Gas Sensor)

Temperature Sensor

It is a device which measures a temperature rise in the home, detects if there is any fire.

Figure 11 (Temperature Sensor)

Buzzer

The gas & temperature sensor with buzzer are a versatile device that combines the functionality of a gas & temperature sensor and a buzzer to provide an effective alert system.

Figure 12 (Buzzer)

Red LED

It's a light when the gas or temperature sensor detects any danger, turn on the red light which stands for a risk to alert the user.

Figure 13 (Red LED)

What is this system?

This system is a safety system that includes a gas sensor and a temperature sensor used to protect the user and alert him of any danger.

How does the system work?

The system is divided into two:

1- Gas Sensor

Gas sensor detects the presence or concentration of gases in the air, So let's assume that there is a leaking gas, and the gas sensor senses the leaking gas and then triggers an alarm by the buzzer device with the red light turned on to alert the user of the presence of a danger.

2- Temperature Sensor

The temperature sensor detects if there is any fire in the house caused by gas leakage or other through contact with it and high temperature, when temperature exceeds a certain threshold, the buzzer device triggers an alarm with the red light turned on to alert the user of the presence of a danger.

Connection:
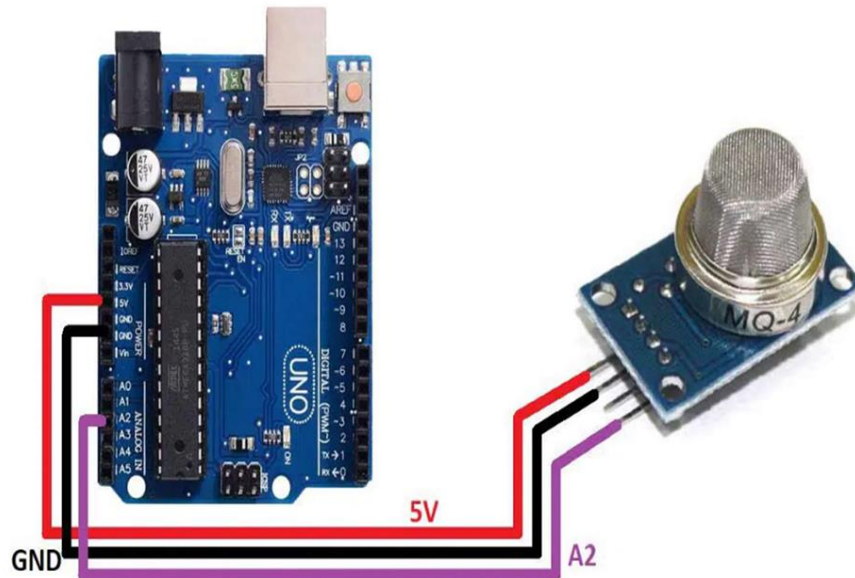
Figure 14 (connecting gas sensor)
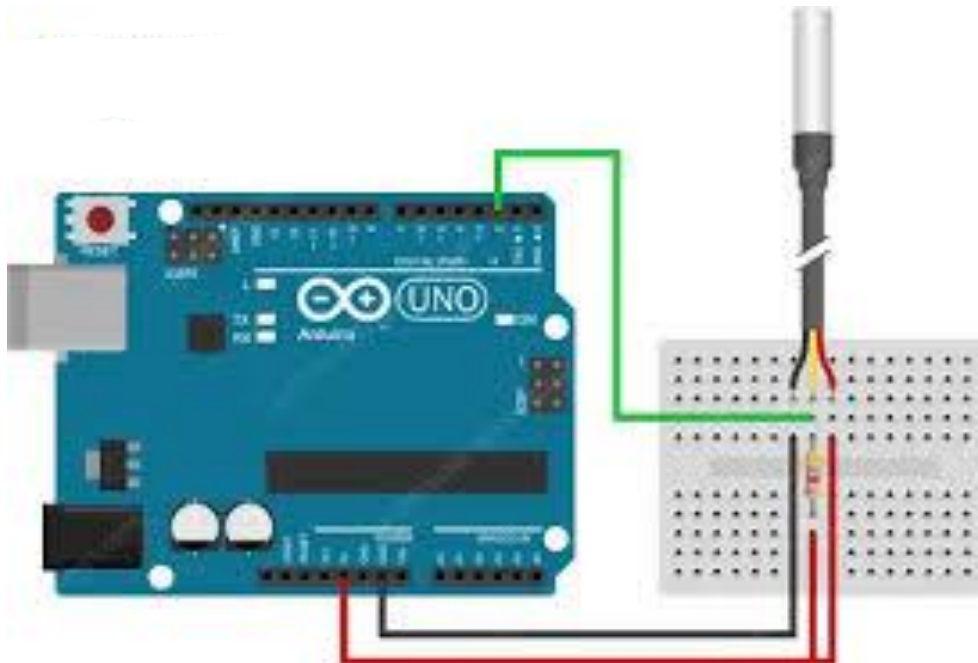
Figure 15 (connecting temperature sensor)

Lightening systems:

Components (PIR):

PIR Motion Sensor

PIR sensors detect whether a human or warm object has moved within their range.

Figure 16 (PIR Motion Sensor)

White LED

it's a light that turned on when a person walks into the detection area of PIR motion sensor.

Figure 17 (White LED)

What is this system?

PIR motion sensor is a sensor that senses motion of human or object, then it turns the lights on.

How does the system work?

A PIR is a passive infrared sensor connect with white LED used to detect motion, So when a person walks into the detection area of a sensor, it detects his motion and turns the light on.

Connection:
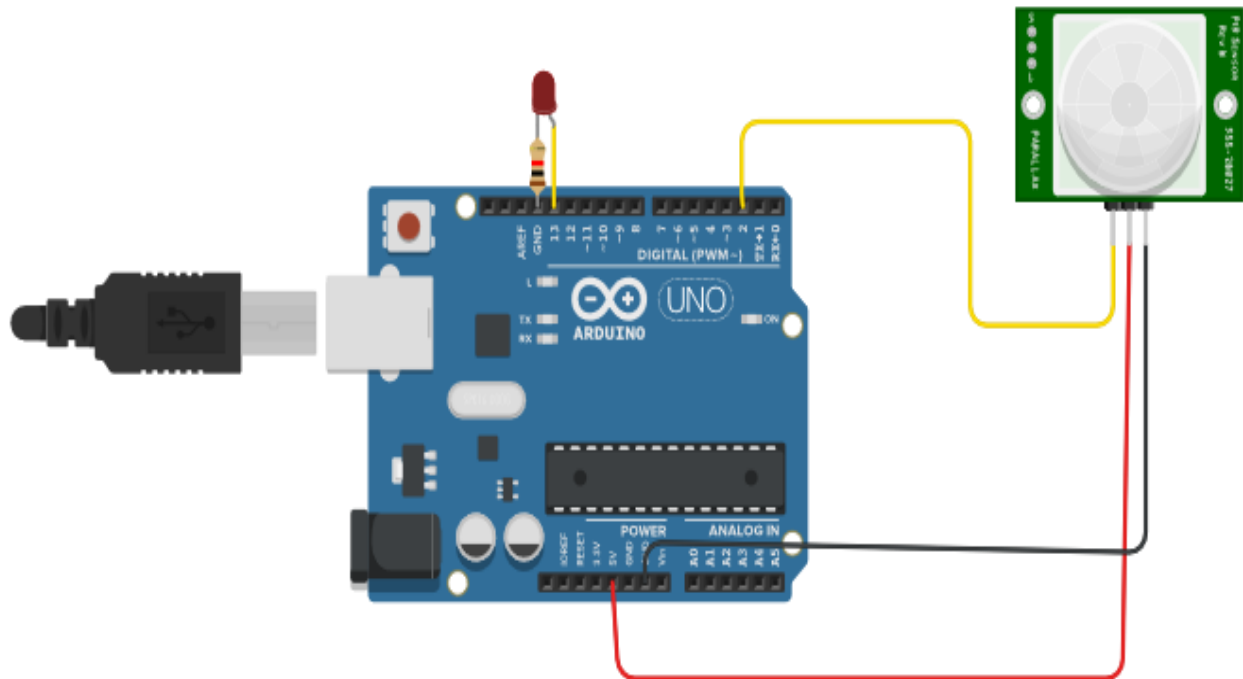
Figure 18 (connecting PIR)

Components (APP):

RGB LED

The mixing 3 different colors like Blue, Green, and Red a white light is generated this kind of LED is called RGB LED.

Figure 19 (RGB LED)

Bluetooth module HC 05

use this module to communicate between two microcontrollers like Arduino or communicate with any device with Bluetooth functionality like a Phone or Laptop.

Figure 20 (Bluetooth module HC 05)

White LED

It's a group of lights divided in various rooms that turned on by the mobile application connected by Bluetooth module.

Figure 21 (White LED)

What is this system?

1- RGB system for illuminate the house from the outside while giving a beautiful appearance that occurs by color-changing bulbs.

2- White LED system to illuminate the various rooms inside the house.

How does the system work?

The system divides into two:

1- RGB system

It works by the mobile application by clicking "On" to turn on the lights, choosing the color you want, so the house lights up from the outside while giving a beautiful look.

2- White LED system

It works by the mobile application by clicking "On" to turn on the lights, "off" to turn off the lights, also it is a white light to illuminate the rooms inside the house.

Connection:
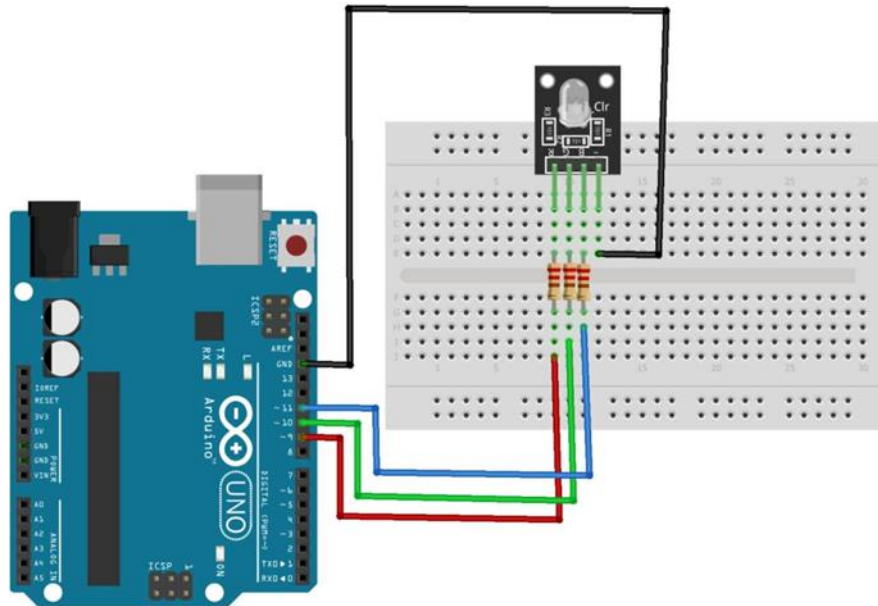
Figure 22 (connecting RGB)
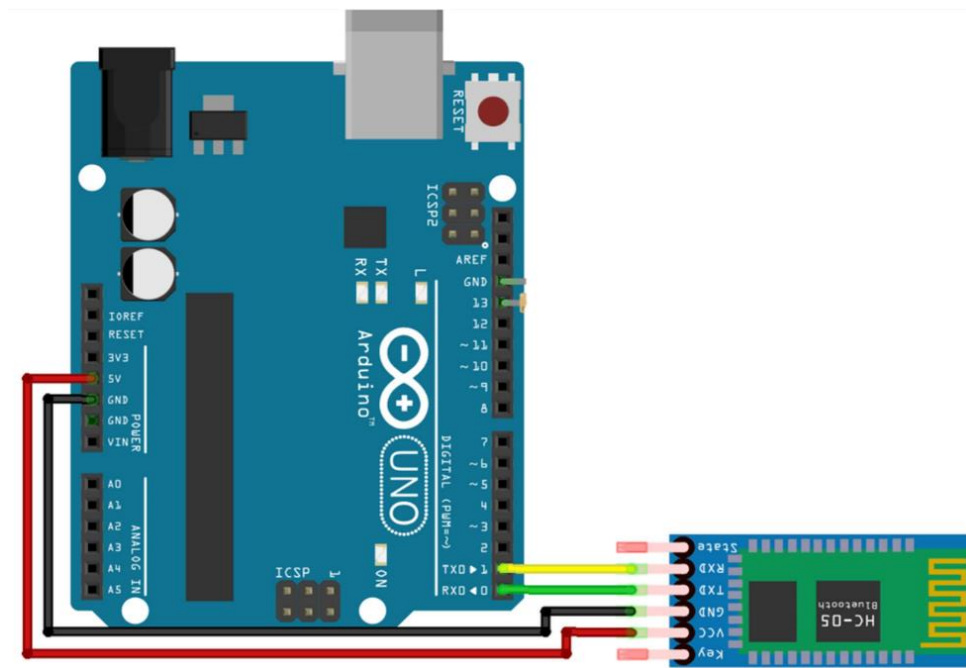
Figure 23 (connecting Bluetooth)

Curtains System:

Components:

DC Geared motor

The motor in the curtain drives the movement of the curtain by converting electrical energy into mechanical energy. When the motor is running, it drives gears and pulleys that move the curtain along a track mounted on the inside of the window.

Figure 24 (Dc Motor)

L298N

It supports advanced motors, such as changing speed and reducing the electrical current used.

Figure 25 (L298N)

Motorized Curtains

It is a piece of cloth to cover the windows.

Figure 26 (Curtains)

What is this system?

Motorized curtains, also known as electric curtains or automated curtains, are a convenient and efficient way to control the privacy in a room. They use an electric motor to open and close the curtains, making it easy to adjust the privacy in a room with just the touch of a button.

How does the system work?

It is a smart curtain system that can be controlled through an application and utilize DC geared motor to open or close the curtains, Offering comfort and enhanced control over natural sunlight, privacy and ambiance of the room.

Connection:
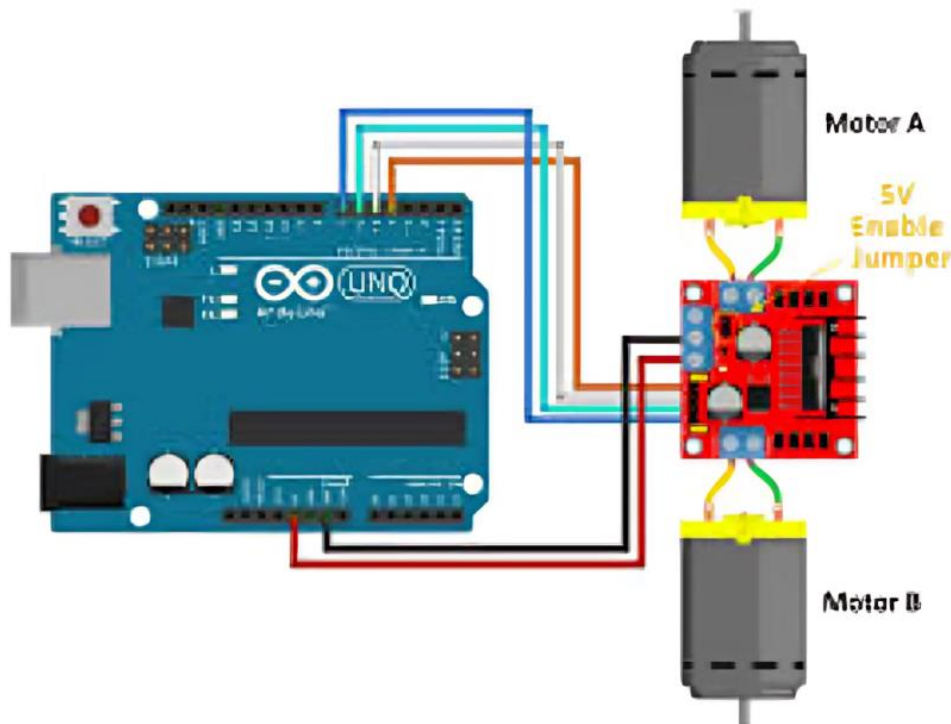
Figure 27 (connecting DC motor)

Security system:

Components:

Solenoid Lock

It's a main device used to open and close the door.

Figure 28 (Solenoid lock 12V)

Relay

the relay is responsible for sending power to the door lock actuators so that they can lock and unlock the door home.
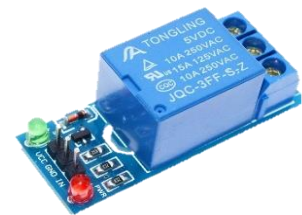
Figure 29 (Solenoid lock 5V)

Bluetooth module HC 05

use this module to communicate between two microcontrollers like Arduino or communicate with any device with Bluetooth functionality like a Phone or Laptop.

Figure 30 (Bluetooth module HC 05)

Servo Motor

it's the main controlling open and close the door from the application.

Figure 31 (Servo Motor)

Power Supply 12V

The main objective of it is to generate the system with a specific voltage.

Figure 32 (Power supply 12v)

Mobile Application

It used for opening and closing the door lock.

Figure 33 (Mobile Application)

What is this system?

It is a security system that provides the user with the advantage of controlling the opening and closing of the door from anywhere remotely, and this provides him with an easier and safer life.

How does the system work?

The door lock system work by an application connected by Bluetooth module so you can open and close the door from anywhere & any time.

The solenoid is the main object for opening and closing the lock, the relay is responsible for sending power to the door lock actuators, then servo motor is used for moving the door and open it**.**

Connection:
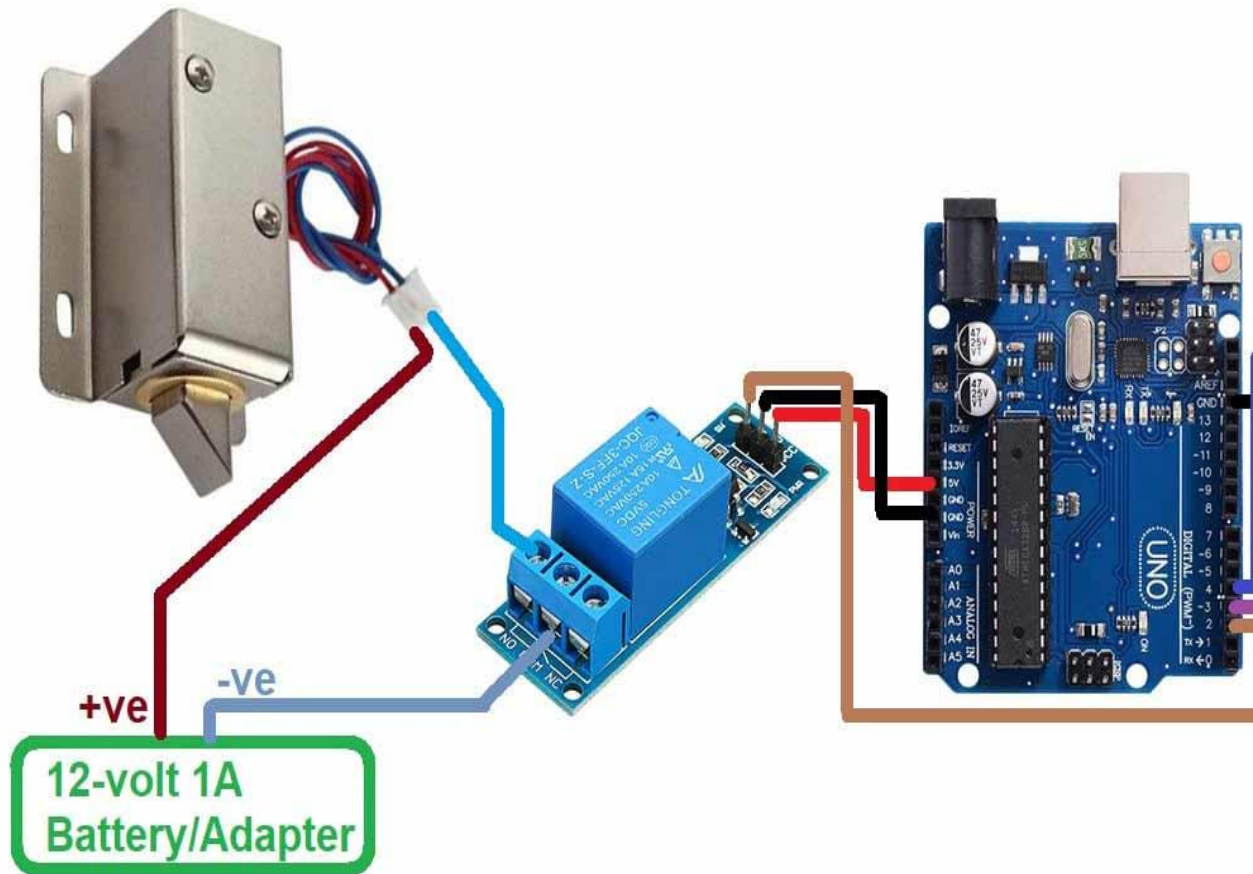
Figure 34 (connecting lock)

Parking system:

Components:

IR Sensor

The IR sensor is used to detect the absence or presence of a car when it enters the parking slot.

Figure 35 (Infrared Sensor)

LCD

An LCD screen is used to display the number of places available in the garage and the number of cars inside the garage for the driver.

Figure 36 (LCD Screen 2*16)

IC L293D

L293d IC is known as a motor driver, it is a low voltage operating device like other ICs, L293d provides the continuous bidirectional Direct Current to the Motor.

Figure 37 (IC L293D)

Servo Motor

It's the main object used to control the lifting and lowering of the stick so that the cars entering and exiting pass.

Figure 38 (Servo Motor)

What is this system?

It is a parking garage system that works by IR sensors that are used to detect the absence or presence of a car when entering the parking slot, as well as an LCD screen to display the number of places available in the garage and the number of cars inside the garage and finally a servo motor that works automatically to raise the stick when sensing a car entering or exiting.

How does the system work?

The parking garage system works by the IR sensors that sense the presence of a car in its direction to the parking slot and when the sensor reads the presence of the car, comes the turn of the servo motor, which works automatically to raise and download the stick, also an LCD screen to display if there are places available inside the garage and display the number of cars inside the garage, if the number 2 will be displayed on the screen car1, car2 if the number 3 which is the maximum, full parking appears.

Connection:
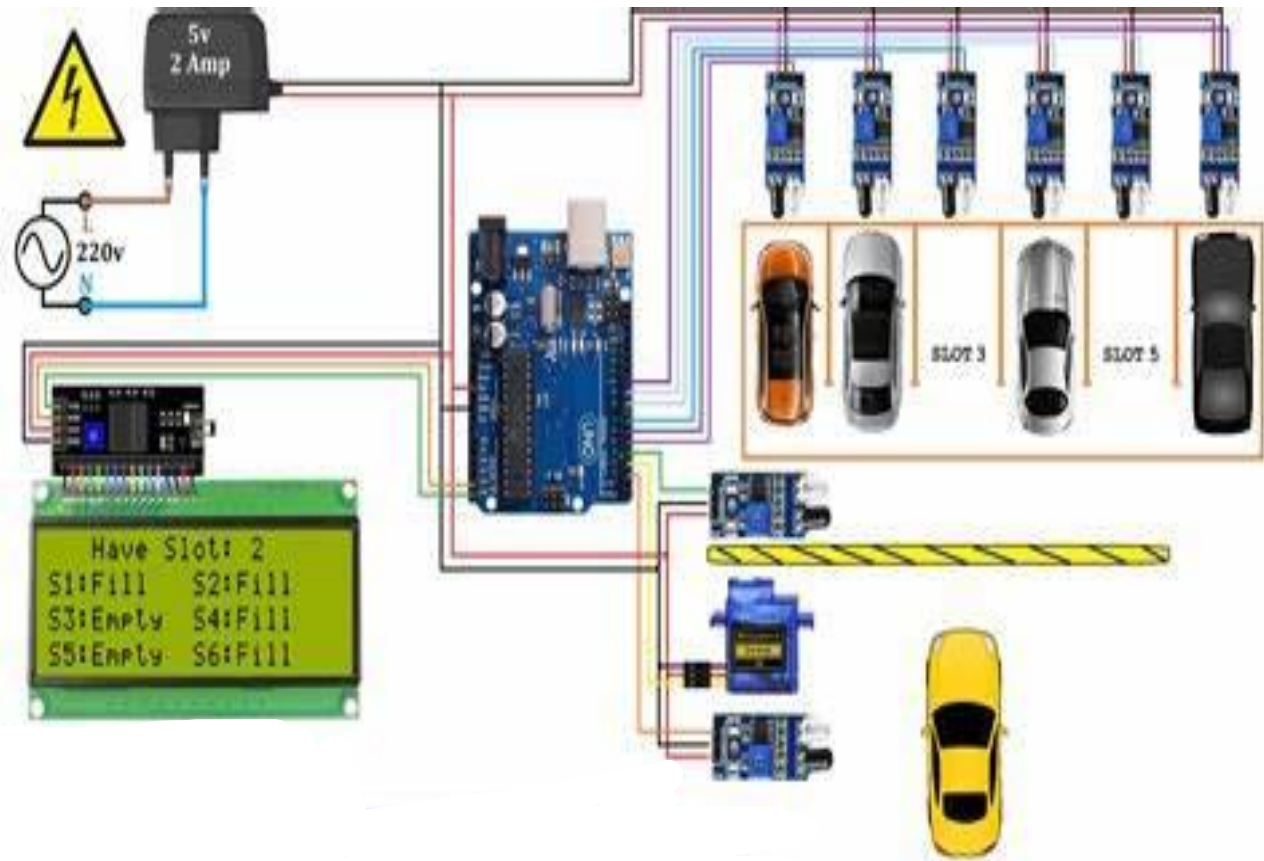
Figure 39 (connecting components)
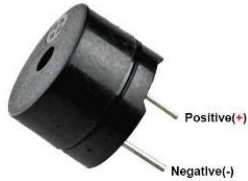
Chapter 3
COMPONENTS SPECIFICATIONS DETAILS

All Components pins:

No.	COMPONENTS PINS	PICTURES
1	**Gas Sensor:** **VCC: 5V.** **GND: Ground.** **DO: Digital output.** **AO: Analog output.**	
2	**Relay 1 channel 5v** **(HIGH / LOW):** **DC (+): Connect the positive pole of the power supply.** **DC (-): Connected the negative pole of the power supply.** **IN: Signal trigger input.** **NO: The normally open interface.** **NC: The normally closed interface.** **COM: The common interface for both normally open and normally closed**	

3	**Temperature Sensor:** **VCC: 3.3V-5V.** **GND: Ground.** **DQ: Data Query.**	
4	**PIR Motion Sensor:** **VCC: 5V.** **GND: Ground.** **DO: Digital.**	
5	**DC Geared motor:** **Positive (+)** **Negative (-)**	
6	**LED LIGHT:** **Positive (+)** **Negative (-)**	
7	**Buzzer:** **Negative (-)** **Positive (+)**	
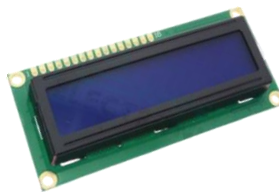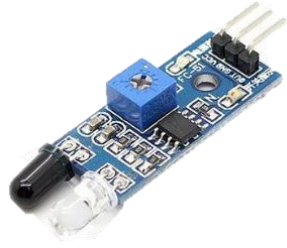
8	**Bluetooth module HC 05:** **VCC: 3V to 5V** **GND: Ground** **TXD: Transmitted Data** **RXD: Received Data**	
9	**Solenoid lock 12V:** **GND: Ground.** **VCC: 12V.**	
10	**LCD 16*2 With I2C Module For LCD:** **GND: Ground.** **VCC: 5V.** **SDA: Analoge4.** **SCL: Analoge5.**	
11	**Servo Motor:** **GND: Ground.** **DO: Digital.** **VCC: Red (5V).**	
12	**Infrared Sensor:** **VCC: 5v.** **GND: Ground.** **DO: Digital output.**	
13	**Solar panel:** **GND: Ground.** **VCC: 5V.**	

Table 1 (Hardware specifications)
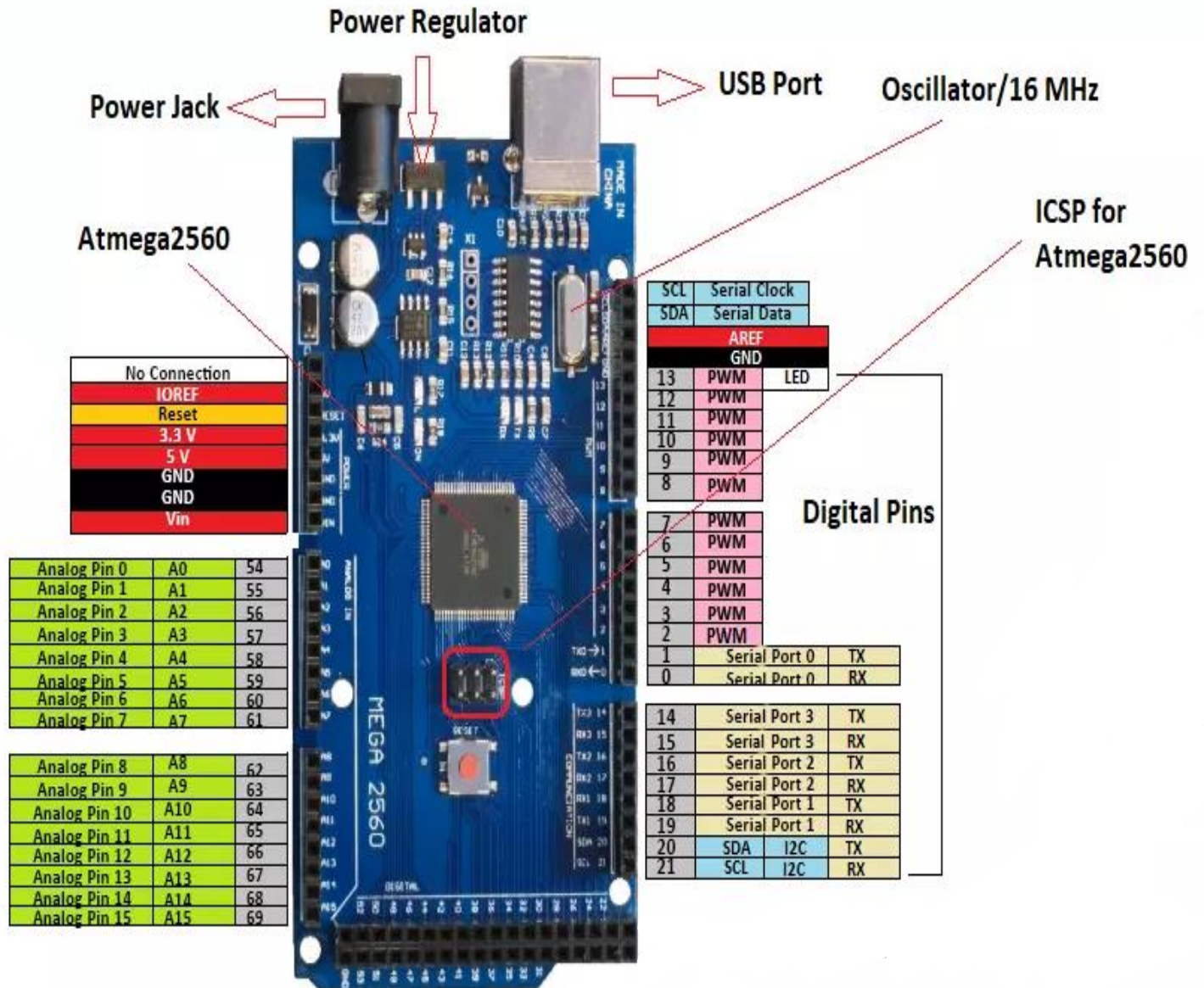
Figure 40 (The Arduino Mega 2560 R3 details)

CHAPTER 4
FLOW CHARTS OF SYSTEMS

GAS System flow chart

```
                    ┌─────────┐
                    │  start  │
                    └─────────┘
                         │
                    ┌──────────────┐
                    │   collect    │
                    │ information  │
                    │  from Gas    │
                    │   sensor     │
                    └──────────────┘
                         │
      Yes ◄──────┐       │
                 │  ◄──┐ ▼
                 │   ╱─────────╲
                 │  ╱  is Gas >  ╲
                 │  ╲    300?    ╱
  ┌────────────┐ │   ╲─────────╱
  │  Send the  │ │       │
  │function to │ │      NO
  │ the Arduino│ │       │
  └────────────┘ │       │
        │        │       │
  ┌────────────┐ │       │
  │Turn Buzzer │         │
  └────────────┘         │
        │                │
  ┌────────────┐         │
  │ Turn on the│         │
  │  Red LED   │         │
  └────────────┘         │
        │                │
        └────────┐  ┌────┘
                 ▼  ▼
              ┌─────────┐
              │   End   │
              └─────────┘
```
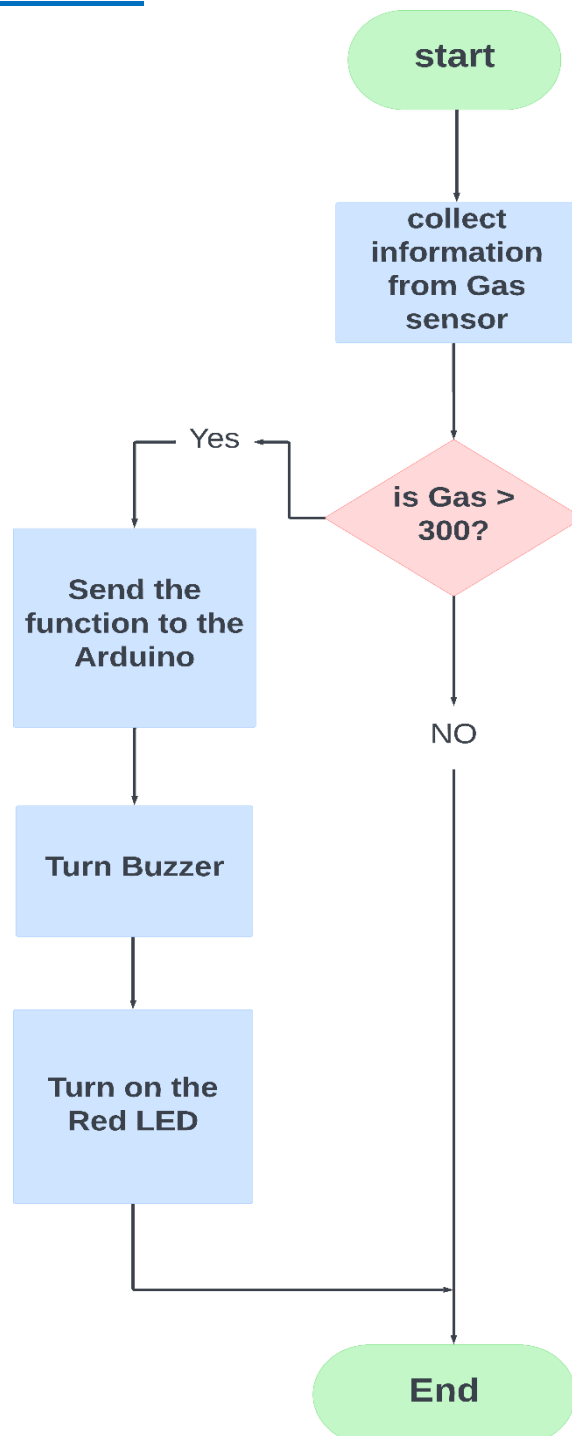
Temperature system flow chart

```
                    ┌─────────┐
                    │  start  │
                    └─────────┘
                         │
                    ┌──────────────┐
                    │   collect    │
                    │ information  │
                    │    from      │
                    │ temperature  │
                    │   sensor     │
                    └──────────────┘
                         │
       Yes ◄─────┐   ◄── ◇ is
                 │      temperature
         ┌───────┴──┐    > 65?
         │ Send the │      │
         │ function │      │ NO
         │  to the  │      │
         │ Arduino  │      │
         └──────────┘      │
              │            │
         ┌──────────┐      │
         │   Turn   │      │
         │  Buzzer  │      │
         └──────────┘      │
              │            │
         ┌──────────┐      │
         │ Turn on  │      │
         │ the Red  │      │
         │   LED    │      │
         └──────────┘      │
              │            │
              └──────►─────┤
                           │
                       ┌───────┐
                       │  End  │
                       └───────┘
```
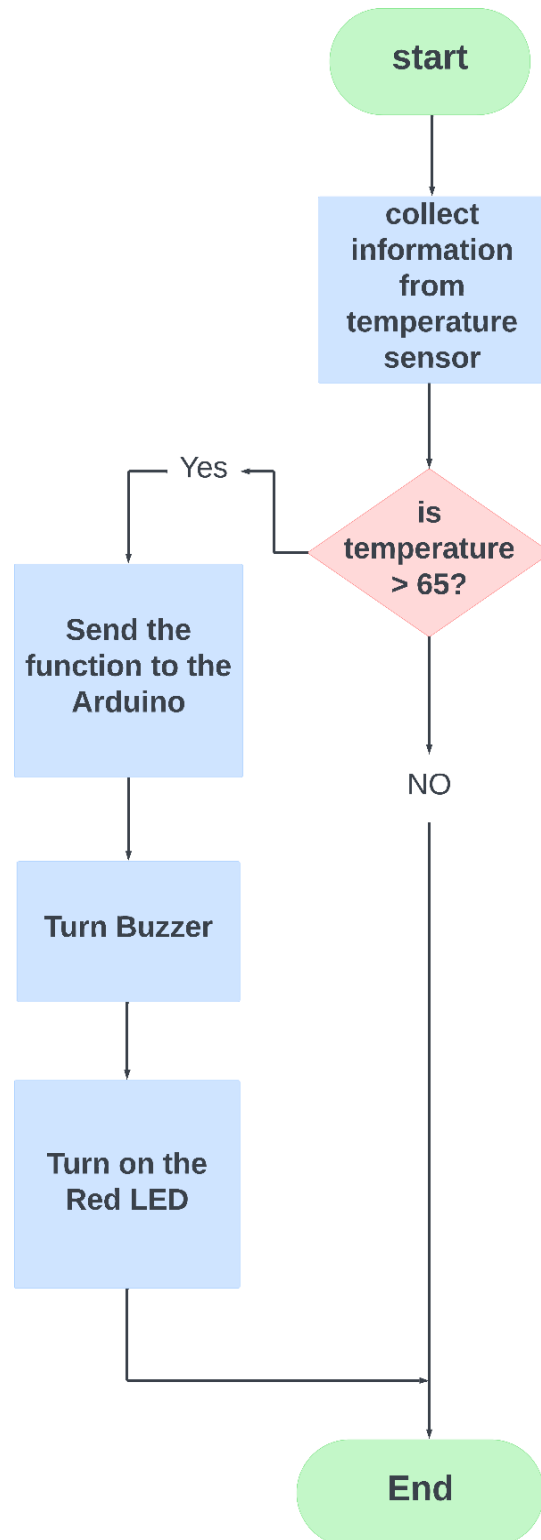
PIR Motion system flow chart

IR system flow chart

```
                    ┌─────────────┐
                    │    start    │
                    └──────┬──────┘
                           │
                  ┌────────▼────────┐
                  │  Driver go to   │
                  │     garage      │
                  └────────┬────────┘
                           │
                      ╱────▼────╲
                     ╱  is sensor ╲    NO    ┌──────────────────────┐
                    ◄  value < 300  ►───────►│ do not raise the stick│
                     ╲             ╱         └──────────────────────┘
                      ╲────┬────╱
                           │ Yes
                  ┌────────▼────────┐
                  │ Raise the stick │
                  │    by servo     │
                  └────────┬────────┘
                           │
                      ╱────▼────╲
                     ╱   Car     ╲    NO     ┌──────────────────────┐
                    ◄   already    ►────────►│   display on LCD      │
                     ╲  parked?   ╱          │     space = 0         │
                      ╲────┬────╱            └──────────────────────┘
                           │ Yes
                  ┌────────▼────────┐
                  │ display on LCD  │
                  │    space = 1    │
                  └────────┬────────┘
                           │
                    ┌──────▼──────┐
                    │     End     │
                    └─────────────┘
```
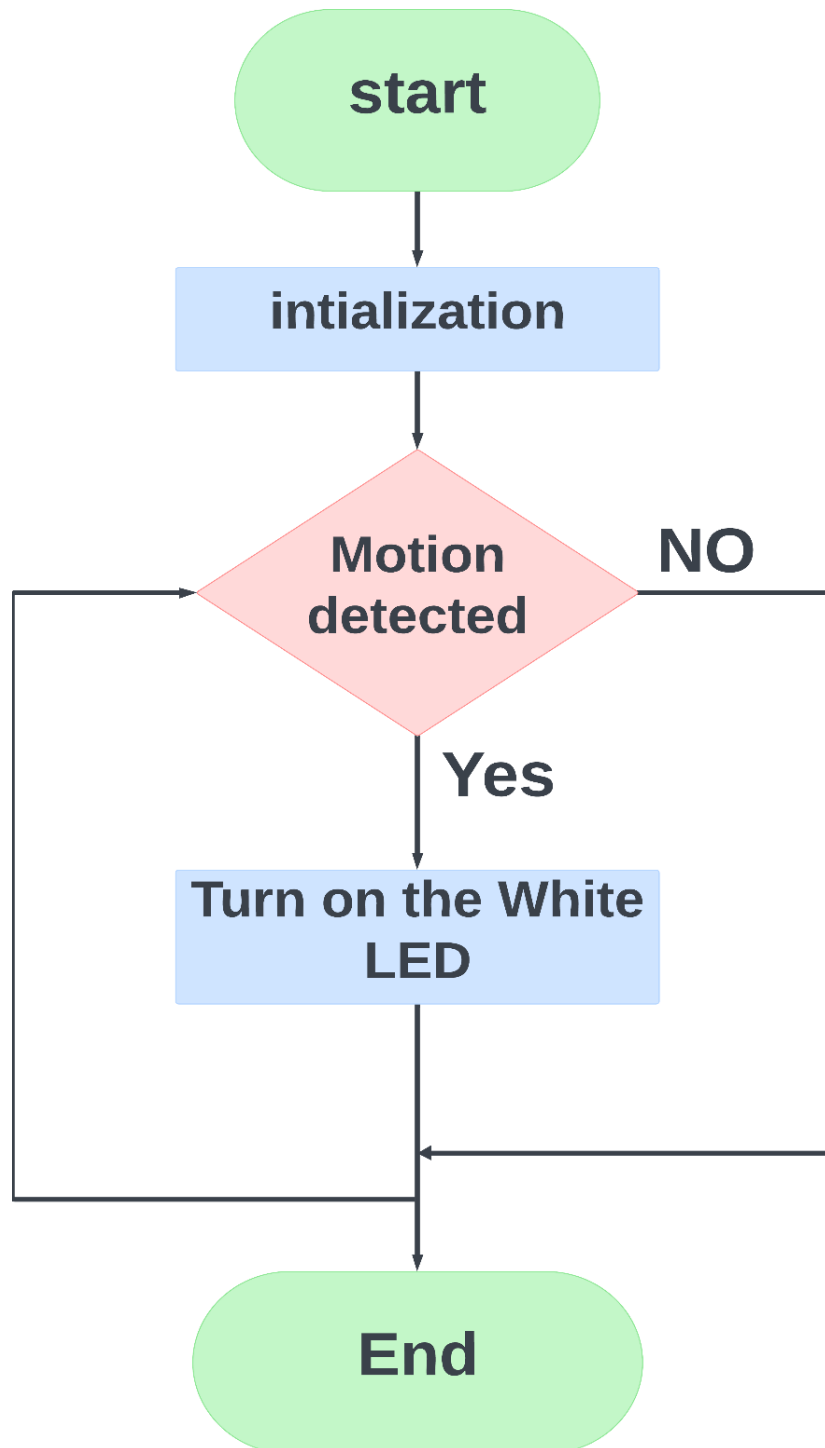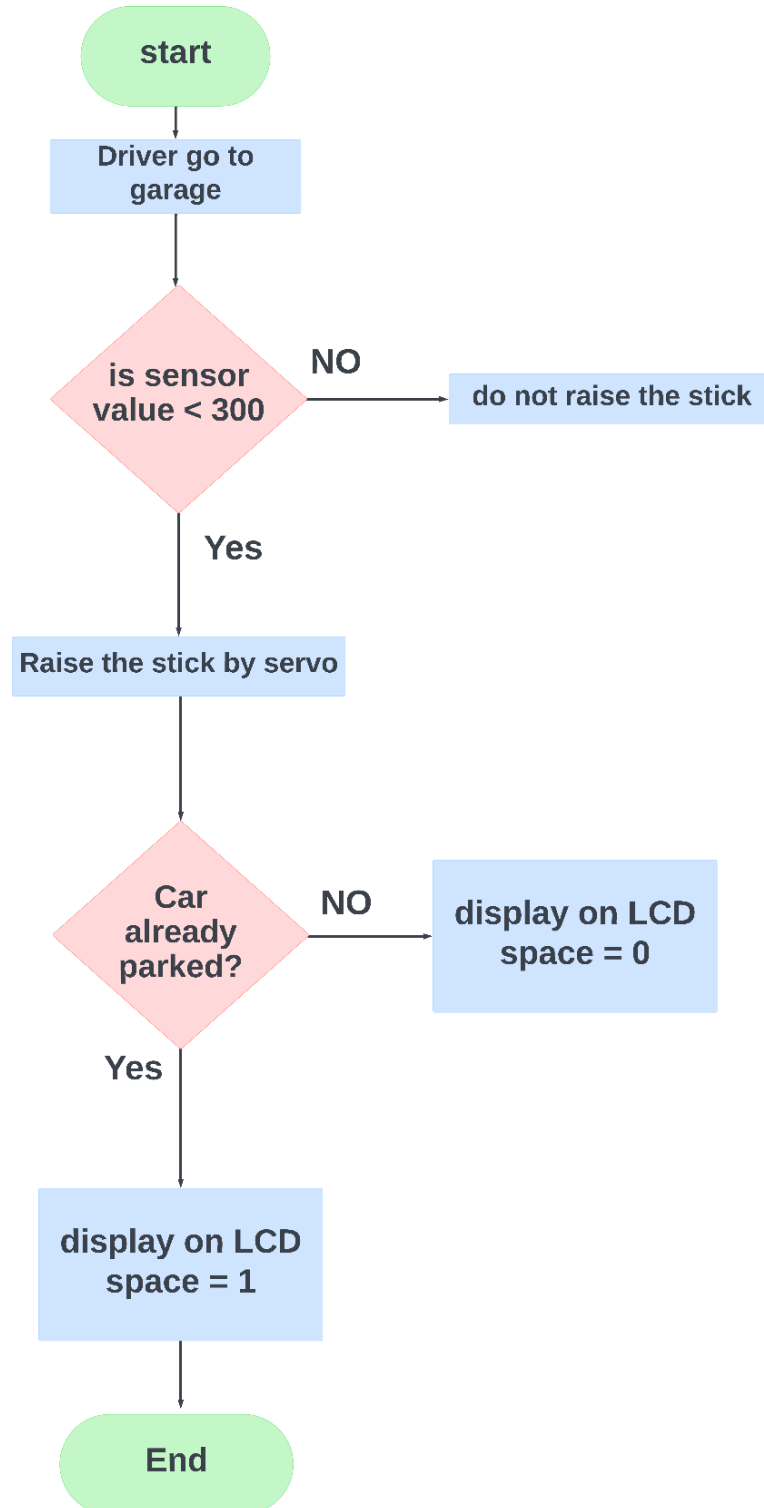
Chapter 5
COST ESTIMATION

component	count	Price L.E.
Arduino Mega 2560 R3	1	1500
Arduino UNO R3	1	465
Breadboard 400 pointers	4	120
Premium USB AB Blue	1	20
Buzzer 5V	1	10
Relay 5V	1	44
18650 Battery 3.7 Charger	1	65
18650 Battery Case Holder 1 Cell	1	17
18650 Battery Case Holder 2 Cells	1	20
3 Way 18650 Battery Holder	1	27
DC Jack Male Connector	1	3
DC-DC Step-Up Power Converter	1	145
Data Cable JST 2 Pin	4	16
CN3065 18650 L-ion Mini Solar	1	115
Solar Banal	1	200
CGR 18650 E MH12210 Li-ion Battery	5	325
12C Arduino Serial Module for LCD 16*2	1	75
Character LCD Blue 2*16	1	90
LED RGB Cathode	10	25
White LED	30	15
Photo Resistor Sensor-LDR	6	18
PIR Sensor SR501	1	55
DS18B20 Temperature Sensor	1	70
Infrared IR Sensor	5	150
MQ-5 Gas Sensor	1	90
Bluetooth Module HC-05	2	500
Micro Servo	4	380
DC Motor	1	35
BC547 Transistor	2	2
L293D IC	1	20
Resistor 220Ω	80	12
Resistor 10KΩ	10	1.5
Resistor 1KΩ	10	1,5
Solenoid Lock 12V	1	225
Wires	1	260
USB Cable	1	20
قصدير	1	150
مواصلات	6	359
رسم تصميم	1	2040
تنفيذ تصميم	1	4400
فطار التيم	1	100

لزق الصاروخ	5	790
رش جولد	1	60
غراء خشب	1	25
سنفرة	1	20
دهان	1	440
قاعده المنزل	1	900
روله دهان	1	55
شمع مسدس	1	35
لوح فوم مضغوط	1	125
مسامير	1	5
فرشه دهان	1	10
اسلاك كهرباء	2	720
توصيل مشروع للجامعه	1	90
قطر للقص	1	30
لوح خشب	1	180
بونط شنيور	2	60
لزق كهربا	4	100
كمال سعد(لزق صاروخ+ورق حائط)	1	265
تصميم بوابه+سور	1	170
ليد ابيض	1	10
Adapter 6v	1	75
Adapter 12v	1	75
buzzer	2	20
Led G, R	1	10
مواصلات	1	100
شمع+مفصله	1	15
L298 Motor driver	1	90
Micro Servo	2	220
RGB	1	20
Infrared IR Sensor	1	30
Wires	1	85
IC 7805	3	21
مواصلات	1	50
2 سلاح قطر+شمع+لزق كهربا	1	50
Wires	3	100
Servo motor	2	220
مواصلات	1	23
ورق حائط	2	150
Decore	1	125
شمع+ولاعه	1	20
Poster	1	300
		Total
		18080

Table 2 (Cost)

Chapter 6
CONCLUSION & FUTURE WORK

FUTURE WORK:

Systems that can be added in the future:

Smart outlet

It is possible to add a smart outlet system to the house. We also know that it allows charging your devices while controlling the port from anywhere in your home. If you are away from home and cannot charge or turn off your devices, you can use these ports to control these devices remotely. One of the biggest benefits of using a smart port is that it can save you time and effort.

System device to detect air pollution

Air quality monitors are devices that measure pollution levels in the air. They are often electronic devices with sensors that collect data about the levels of different pollutants in the air. You can use air quality monitors to determine how much pollution is in your immediate surroundings.

Surveillance cameras

to increase safety at home and the possibility of referring to them in the event of any danger such as a theft or other.

Conclusion:

In light of our advanced smart home project, which includes an effective smart system, a powerful protection system, smart energy saving, smart curtains, smart lighting system, and smart garage system, we are witnessing a fundamental transformation with the development of technology and smart systems.

It represents a sustainable and efficient form of smart homes. The integration of these smart technologies aims not only to enhance productivity and reduce costs, but also to increase the environmental impact of technology and provide an ideal environment that is safe, comfortable, and easy to manage. The results achieved by the project attest to the importance of innovation in the smart system sector. Significant improvements have been noted in the efficiency of the protection and energy systems, as well as various types of lighting and the smart garage system. Moving towards smart homes is not just a step towards sustainability, but also opens up prospects for producing a flexible and evolving smart system. Able to face temporal environmental changes and future challenges. In conclusion, this project is an inspiring practical model that demonstrates how technology can play a crucial role in revolutionizing the smart systems sector, not only in terms of increasing productivity but also in supporting environmental sustainability. Thank you for the journey through a successful project, hoping for more smart innovations in the future.

REFERENCES:

Arduino Mega 2560 Rev3 – Definition

Mega 2560 Rev3 | Arduino Documentation

Door lock - Security system

Solenoid Lock Interfacing with Arduino | Arduino Tutorial (techatronic.com)

DS18B20 Temperature Sensor - Safety systems

Guide for DS18B20 Temperature Sensor with Arduino | Random Nerd Tutorials

Gas Sensor - Safety systems

Understanding Gas Sensors: Types, Working Principles, and Applications (components101.com)

IR Sensor - Parking system

Smart Parking System Project using Arduino and IR Sensor » ElectroDuino

PIR Motion Sensor - Lightening system

PIR Sensors Explained (rs-online.com)

RGB LED - Lightening system

How RGB LEDs work and how to control color | CircuitBread

Solar panels – Energy System

Solar panels: a comprehensive guide - Energy Saving Trust

White LED Rooms - Lightening system

Arduino - LED - Blink | Arduino Tutorial (arduinogetstarted.com)

الملخص العربي

المنزل الذكي

يعد مشروع المنزل الذكي نظاماً ذكياً متكاملاً يستخدم التقنيات التكنولوجية الحديثة والانظمة المدمجة والذكاء الاصطناعي لتوفير الراحة والامان للمستخدم.

نظام الطاقة:

هو نظام يستخدم في توفير الطاقة حيث تقوم الخلايا الكهروضوئية بتحويل الضوء الساقط إلى كهرباء لشحن البطاريات ، وأيضاً يوجد حساس ضوء علي كل جهة من اللوحة الشمسية يكون مرتبط بالسيرفو لتحريك اللوحة علي حسب اتجاه الضوء ، حتي تستغل اكبر جزء من الضوء الساقط.

نظام الحماية:

هو نظام قوي وفعال يتضمن حساس الغاز الذي يستشعر حدوث تسرب ف الغاز ويطلق انذارا مع انارة الضوء الاحمر لتنبيه المستخدم بوجود خطر و يوجد ايضا حساس الحرارة الذي يستشعر ارتفاع درجة الحرارة في المنزل وقد يكون هذا بسبب حدوث حريق او شئ اخر من هذا النوع ، فيطلق انذاراً مع انارة الضوء الاحمر لتنبيه الشخص بوجود حريق.

نظام الاضاءة:

هو نظام متكامل مدمج ب تطبيق علي الهاتف للتحكم في اضاءه كل غرفة و ايضا يوجد نظام اضاءة متغيرة الالوان حيث يمكن التحكم في لون الاضاءة الذي تريده و اخيرا نظام اضاءة يعتمد علي حساس الحركة فهو يستشعر وجود حركه شخص ما فيضيئ المصابيح تلقائياً.

نظام الستائر:

هو نظام ذكي حيث يمكن التحكم في فتح و غلق الستائر عن طريق تطبيق علي الهاتف مما يوفر الراحة والتحكم المعزز في ضوء الشمس الطبيعي والخصوصية وأجواء الغرفة.

نظام الامان:

هو نظام أمن وفعال ، يوفر للمستخدم ميزة التحكم في فتح وغلق الباب الخراجي للمنزل من أي مكان عن بعد عن طريق تطبيق علي الهاتف ، وهذا يوفر للمستخدم حياة أسهل وأكثر أمان.

نظام الجراج:

هو نظام ذكي يعمل عن طريق حساسات الأشعة تحت الحمراء التي تستشعر دخول سيارة و فتح الحاجز تلقائيا عندما يكون هناك مكان خالي داخل الجراج ، حيث يتواجد حساس اشعة تحت حمراء امام كل سيارة بداخله و يكون هذا الحساس مرتبط بشاشة اعلي الجراج لعرض الاماكن الخالية بداخله و هذا يسهل علي المستخدم معرفة المكان الخالي عند دخول الجراج.

هذه الانظمة تعمل معا لضمان راحه للشخص وتوفير له حياة أمنة و سهلة فالهدف من هذا المشروع هو التحكم الكامل في نظام المنزل الذكي فبالتالي خلق حياة متطورة مثالية متكاملة تضمن راحة و امان الاشخاص ويترتب علي ذلك تجنب حدوث اي خطر يضر بحياة المستخدم و توفير الوقت و الجهد.