Reporting
Electronics
Project

Smart Home

Project Team

Supervised By

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Project Team Members

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Components

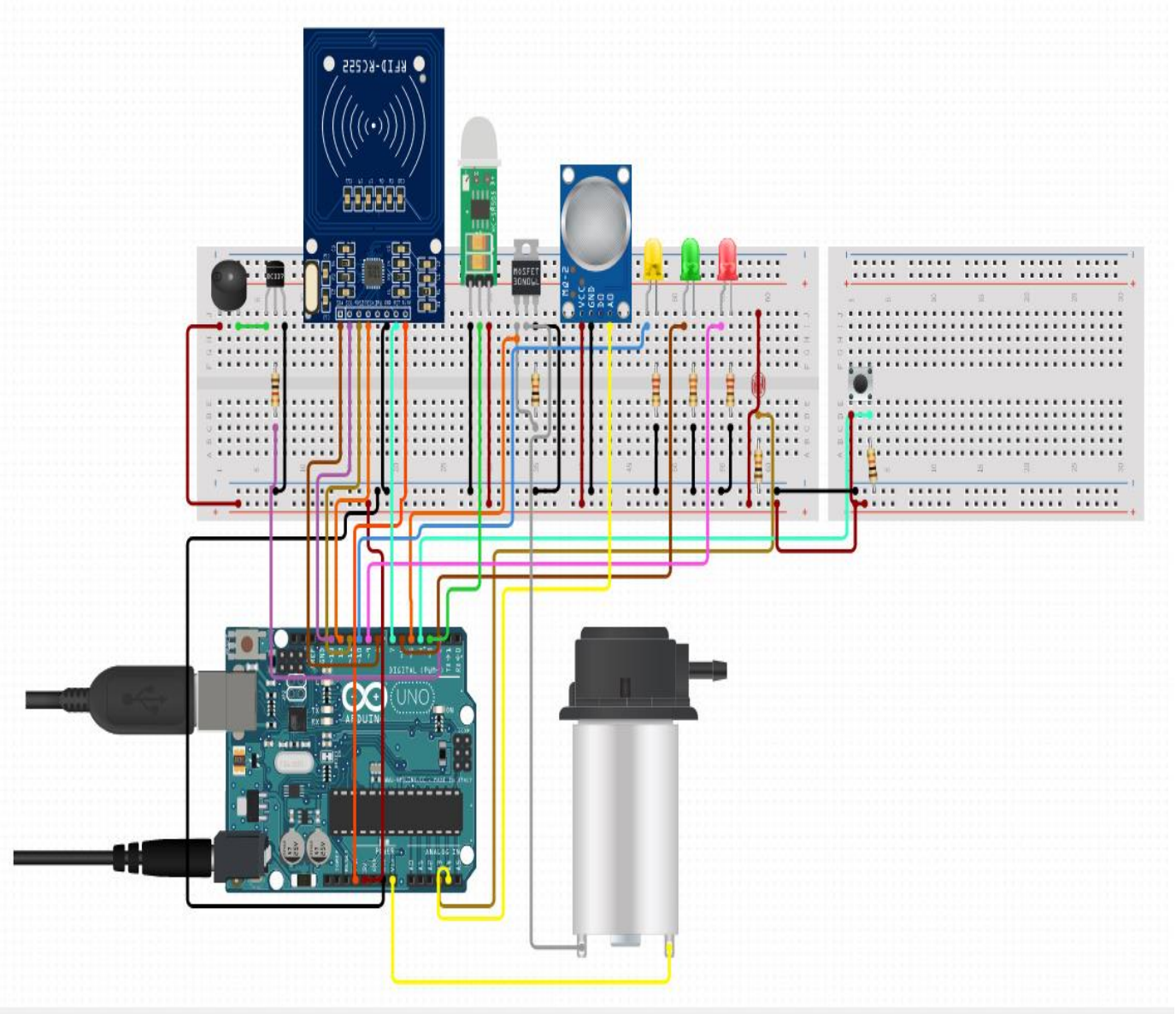
Components used in the project:

- RFID-RC522
- Arduino UNO
- Module relay
- Mostion sensor
- MQ-2
- Liquid pump
- Leds
- Pazer
- Push paton

Project Index

explain the project

Schematic:



Smart Home

The Smart Home Overview:

A smart home refers to a convenient home setup where appliances and devices can be automatically controlled remotely from anywhere with an internet connection using a mobile or other networked device. Devices in a smart home are interconnected through the internet, allowing the user to control functions such as security access to the home, temperature, lighting, and a home theater remotely.

How Smart Homes Work:

A smart home's devices are connected with each other and can be accessed through one central point—a smartphone, tablet, laptop, or game console. Door locks, televisions, thermostats, home monitors, cameras, lights, and even appliances such as the refrigerator can be controlled through one home automation system. The system is installed on a mobile or other networked device, and the user can create time schedules for certain changes to take effect.

Advantages and Disadvantages of Smart Homes:

Pros

Installing a smart home technology system provides convenience to homeowners. Instead of controlling appliances, thermostats, lighting, and other features with different devices, homeowners can control them all with one device - usually a smartphone or tablet.

Cons

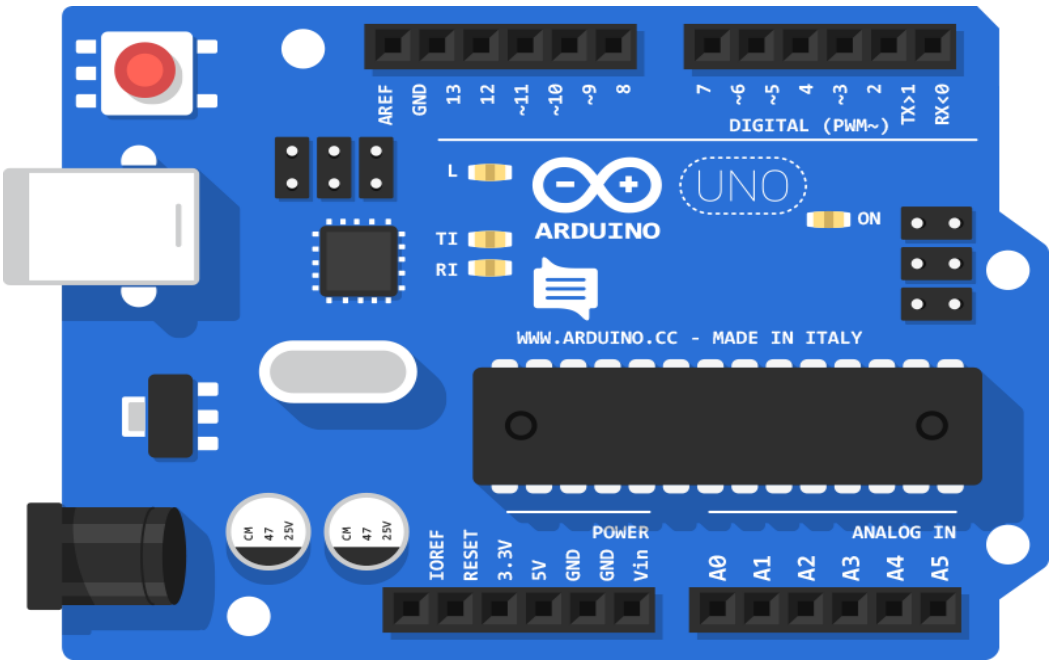
While the smart home offers convenience and cost savings, there are still challenges. Security risks and bugs continue to plague makers and users of the technology.

INTRODUCTION:

In this project, we will explain the RFID-based security system using Arduino. Here we have used the RFID reader which is attached with Arduino. This project provides knowledge on radio frequency identification (RFID) technology, where RFID reads the unique code of RFID tags and transmits it to the Arduino. Then after with the use of that code Arduino will send the command to DC motor. If the code is valid then the DC motor is turned 'ON' and at the same time it opens the door lock

RFID: RFID means Radio Frequency Identification. RFID is the electromagnetic field to transfer the data for short distance. RFID is a form of wireless communication that uses electromagnetic fields to automatically identify and track tags attached to objects. The use for RFID technology include of healthcare, inventory management, shipping, mall, hotel, library and home use.

ARDUINO UNO: Arduino is a microcontroller board based on 8-bit microcontroller. Figure 2 shows different components of Arduino Controller. The Arduino uno provides 14 digital input/output pins (of which 6 pins can be used as Pulse Width Modulation outputs), 6 pins are used as analog input pins,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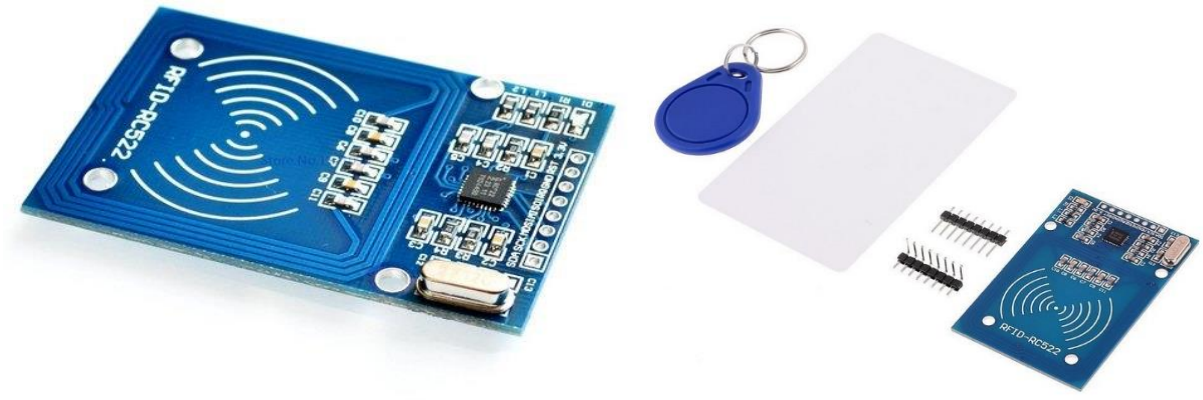
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX>1
RX<0
DIGITAL (PWM~)
L
TI
RI
ARDUINO
UNO
ON
WWW.ARDUINO.CC - MADE IN ITALY
POWER
ANALOG IN
IOREF
RESET
3.3V
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5


RFID-RC522

How Smart Home project Work:

1- The door opening system is a system that consists of an RFID module that reads by radio rays (radio frequency), which is by approaching a unique RFID card, and it gives a signal to the Arduino, and then the Arduino gives a signal to the motor in order to open the door.

2 - The protection system works after 12 o'clock at night, its function when any breach in the windows or doors is triggered, an alarm is triggered and this process occurs by means of a push switch, and if it is pressed, the switch becomes in the off state and when the doors or windows are opened, a time is put in The code for the security alarm to be triggered

3- The fire system is a gas sensor that when it smells the smell of fire, a process is carried out through it, which is to give a signal to the Arduino, which is responsible for operating the water pumps, so the water is directly downloaded.

4- The motion sensor is responsible for turning on the lighting automatically when it senses a movement in the room by making moduel

POWER SUPPLY: This device in which a mechanical energy is converted to electrical energy by chemical reactions is known as battery. A battery is made by electrochemical cells. The positive terminal is known as cathode and negative terminal is known as anode. It provides power to the heart of the model Arduino. This power is supplied through the USB power port.

Reference:https:https://www.researchgate.net/publication/346657978_RFID_BASED_SECURITY_SYSTEM_USING_ARDUINO

Project Goal:

We aim to make a smart home circuit that work when penetration of any kind to the house in terms of protection, opening doors, sensing movement in the house, or when fires occur, and how to deal with it.

Reference:https:https://www.researchgate.net/publication/346657978_RFID_BASED_SECURITY_SYSTEM_USING_ARDUINO

Thank You ☺