BATCH: B5-5M1E

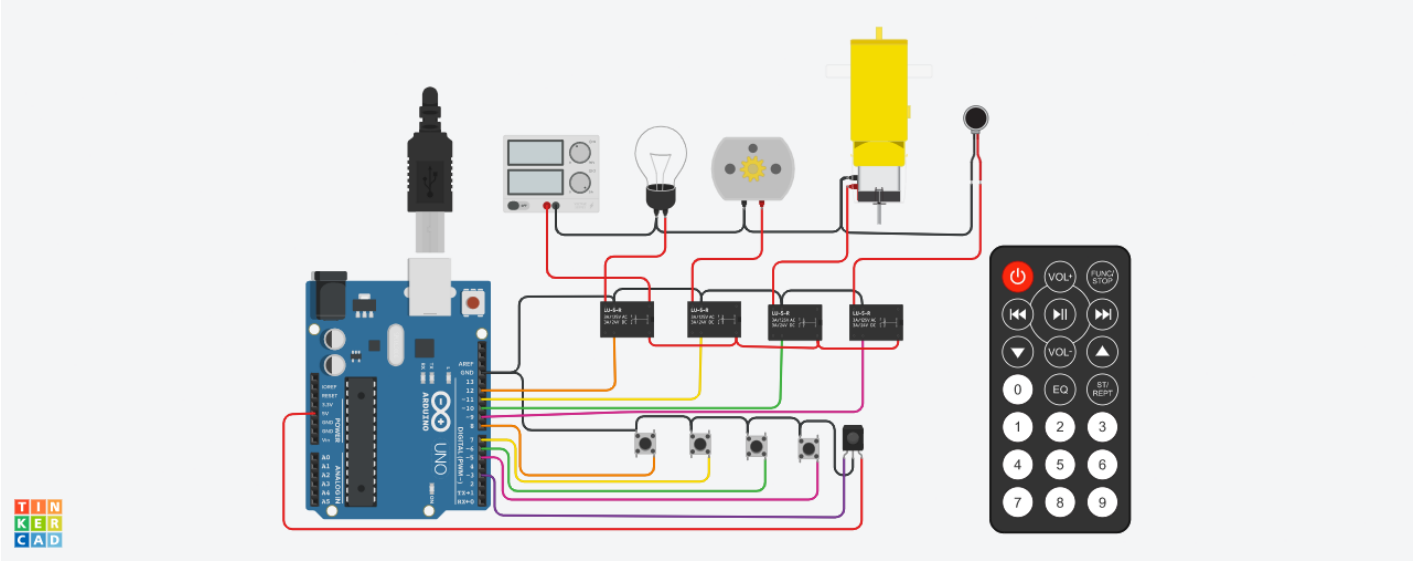
ASSIGNMENT-1

TOPIC: ARDUINO-BASED HOME AUTOMATION SYSTEM

DESCRIPTION

The system is assisted by an Arduino UNO to operate many appliances or gadgets, resulting in a rudimentary home automation system. Remote controllers are a popular gadget present in practically all households. They assist us in operating appliances such as televisions and air conditioners. The significant advantage of remote control is that it is device-specific. For example, a TV remote control unit can only be used with the associated TV. However, in this project, we created an Arduino-based Home Automation Using IR Remote, where a single remote controls four separate devices. We may also control the various devices via manual switches, as seen in the video (possible to control more devices).

SCHEMATIC DIAGRAM:



CODE:

```
#include <SPI.h>
#include <Wire.h>
#include <IRremote.h>

const int relay_1 = 12;
const int relay_2 = 11;
const int relay_3 = 10;
const int relay_4 = 9;

const int mswitch_1 = 8;
const int mswitch_2 = 7;
const int mswitch_3 = 6;
const int mswitch_4 = 5;

int RECV_PIN = 3;

IRrecv irrecv(RECV_PIN);
decode_results results;


int toggleState_1 = 0;
int toggleState_2 = 0;
int toggleState_3 = 0;
int toggleState_4 = 0;

void setup() {

  Serial.begin(9600);
  irrecv.enableIRIn();

  pinMode(relay_1, OUTPUT);
  pinMode(relay_2, OUTPUT);
  pinMode(relay_3, OUTPUT);
  pinMode(relay_4, OUTPUT);

  pinMode(mswitch_1, INPUT_PULLUP);
  pinMode(mswitch_2, INPUT_PULLUP);
```

```
  pinMode(mswitch_3, INPUT_PULLUP);
  pinMode(mswitch_4, INPUT_PULLUP);
}

void relayOnOff(int relay){

    switch(relay){
      case 1:
            if(toggleState_1 == 0){
             digitalWrite(relay_1, HIGH); // turn on relay 1
             toggleState_1 = 1;
             }
            else{
             digitalWrite(relay_1, LOW); // turn off relay 1
             toggleState_1 = 0;
             }
            delay(100);
      break;
      case 2:
            if(toggleState_2 == 0){
             digitalWrite(relay_2, HIGH); // turn on relay 2
             toggleState_2 = 1;
             }
            else{
             digitalWrite(relay_2, LOW); // turn off relay 2
             toggleState_2 = 0;
             }
            delay(100);
      break;
      case 3:
            if(toggleState_3 == 0){
             digitalWrite(relay_3, HIGH); // turn on relay 3
             toggleState_3 = 1;
             }else{
             digitalWrite(relay_3, LOW); // turn off relay 3
             toggleState_3 = 0;
             }
            delay(100);
      break;
      case 4:
            if(toggleState_4 == 0){
```

```
            digitalWrite(relay_4, HIGH); // turn on relay 4
            toggleState_4 = 1;
            }
           else{
            digitalWrite(relay_4, LOW); // turn off relay 4
            toggleState_4 = 0;
            }
           delay(100);
     break;

     default: break;
     }

}

void loop() {

   if (digitalRead(mswitch_1) == LOW){
     delay(200);
     relayOnOff(1);
   }
   else if (digitalRead(mswitch_2) == LOW){
     delay(200);
     relayOnOff(2);
   }
   else if (digitalRead(mswitch_3) == LOW){
     delay(200);
     relayOnOff(3);
   }
   else if (digitalRead(mswitch_4) == LOW){
     delay(200);
     relayOnOff(4);
   }

     if (irrecv.decode(&results)) {
       switch(results.value){
         case 0xFD08F7:
                 relayOnOff(1);
         break;
         case 0xFD8877:
                 relayOnOff(2);
```

```
        break;
        case 0xFD48B7:
                relayOnOff(3);
        break;
        case 0xFD28D7:
                relayOnOff(4);
        break;
        default : break;
        }
  irrecv.resume();
  }
}
```

TINKER CAD SIMULATION LINK:
https://www.tinkercad.com/things/jBoRWwHqj15-funky-kup/editel?tenant=circuits