UNIVERSITY VISVESVARAYA COLLEGE OF ENGINNERING

IEEE-PES

VOLTORB- JULY

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Problem Statement:

To design a system consisting of a Fan and 5 Light bulbs controlled by an IR remote where the speed of fan increase or decrease in accordance to the number of lights. When any number is pressed on the remote, those many light bulbs turn on.

The following project has been built and simulated on TinkerCad.(www.tinkercad.com)

Components Used:

1. Arduino UNO (Microcontroller)
2. L293D Motor Driver IC
3. IR Sensor
4. IR Remote
5. DC Motor
6. LEDs X5
7. Breadboard X2
8. 9V Battery

THEORY:

The InfraRed Sensor takes the input from the IR remote. Before putting it into use, the Hex Codes of the IR remote for buttons 1,2,3,4 and 5 are recorded using IR Decode Program. Five LEDs are connected to digital pins 12,11,10,9 and 8 on the arduino board respecively.

CIRCUIT DIAGRAM:
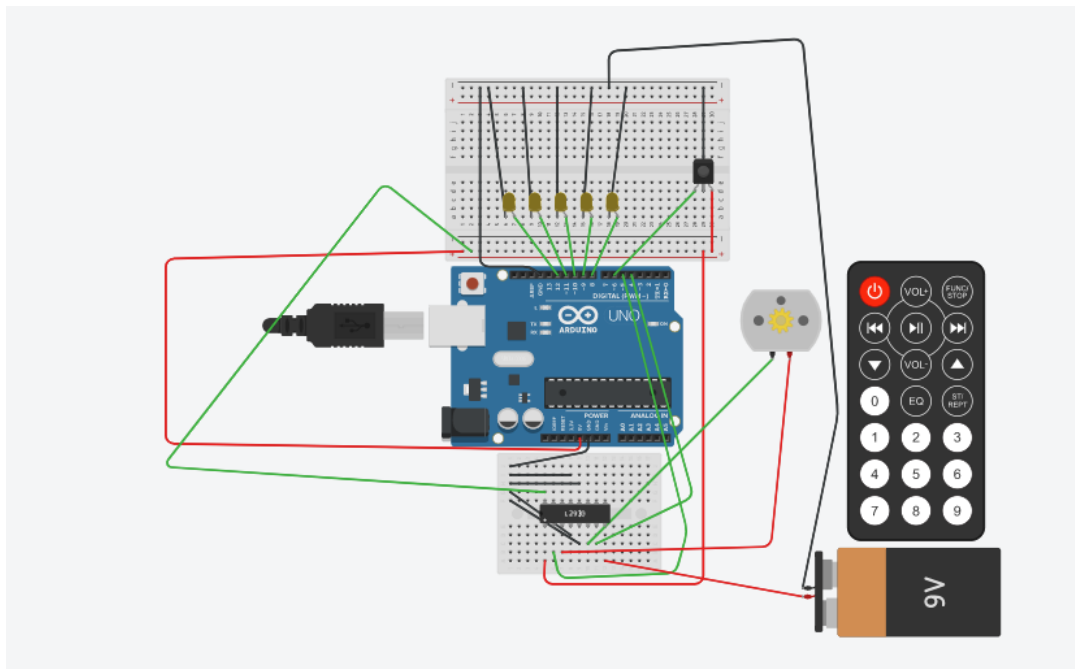
CONNECTIONS:

IR SENSOR	ARDUINO UNO
VCC	5V
GND	GND
OUTPUT	DIGITAL PIN 6

L293D MOTOR DRIVER IC	ARDUINO UNO
ENABLE 1	5V
VCC	5V
GND	GND
INPUT 1	DIGITAL PIN 5 (PWM)
INPUT 2	DIGITAL PIN 4

The output 1 and 2 of L293D are connected to both pins of the dc motor.

Why to use L293D?

The current supplied by Arduino Uno isn't sufficient to drive a DC Motor. So by using H-Bridge Motor Driver L293D we can provide sufficient current by connecting it to an external voltage supply.

Working:

- When Button 1 is pressed on the remote, One LED turns on and the motor rotates at 3000 rpm.
- When Button 2 is pressed , two LEDs turn on and motor rotates at 6000rpm.
- More number of LEDs turned on, more the speed of the motor and vice versa.

CODE:

```
#include <IRremote.h>

int light1 = 12;
int light2 = 11;
int light3 = 10;
int light4 = 9;
int light5 = 8;
int fan = 5;

IRrecv irrecv(6);
decode_results results;

void setup()
{
 pinMode(12,OUTPUT);
 pinMode(11,OUTPUT);
 pinMode(10,OUTPUT);
 pinMode(9,OUTPUT);
```

```
  pinMode(8,OUTPUT);
  pinMode(5,OUTPUT);
  pinMode(4,OUTPUT);


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


void loop()
{
if (irrecv.decode(&results)) {
    Serial.println(results.value, HEX);
    irrecv.resume();


  if(results.value==0xFD08F7)
  {
    digitalWrite(light1, HIGH);
    digitalWrite(light2,LOW);
    digitalWrite(light3,LOW);
    digitalWrite(light4,LOW);
 digitalWrite(light5,LOW);
    analogWrite(fan,50);
    digitalWrite(4,LOW);


  }


  if(results.value==0xFD8877)
  {
    digitalWrite(light1,HIGH);
    digitalWrite(light2,HIGH);
    digitalWrite(light3,LOW);
    digitalWrite(light4,LOW);
```

```cpp
  digitalWrite(light5,LOW);
    digitalWrite(4,LOW);


    analogWrite(fan,100);
 }

 if(results.value==0xFD48B7)
 {

   digitalWrite(light1,HIGH);
   digitalWrite(light2,HIGH);
   digitalWrite(light3,HIGH);
   digitalWrite(light4,LOW);
digitalWrite(light5,LOW);
   digitalWrite(4,LOW);
analogWrite(fan,150);
 }

 if(results.value==0xFD28D7)
 {
   digitalWrite(light1,HIGH);
   digitalWrite(light2,HIGH);
   digitalWrite(light3,HIGH);
   digitalWrite(light4,HIGH);
   digitalWrite(light5,LOW);
   digitalWrite(4,LOW);
analogWrite(fan,200);
 }

 if(results.value==0xFDA857)
 {
```

```
    digitalWrite(light1,HIGH);
  digitalWrite(light2,HIGH);
  digitalWrite(light3,HIGH);
  digitalWrite(light4,HIGH);
 digitalWrite(light5,HIGH);
  digitalWrite(4,LOW);
  analogWrite(fan,250);
  }
}
}
```

Links:

Project File(.brd):

https://drive.google.com/file/d/12QV-tGuQqy1EnySSTsMFePR-Y7E0HxZi/view?usp=sharing

Code:

https://drive.google.com/file/d/1aL1BCAQZpdqe1kkPt3oF2smareyA3AN6/view?usp=sharing

Working Simulation:

https://drive.google.com/file/d/1H6jMenEMm6pvZGairqp9J9HKUO0p61Fz/view?usp=sharing

Circuit Diagram:

https://drive.google.com/file/d/15OI96n3qzmYDvo0tGN7Y-_xxoYX2O_RL/view?usp=sharing

Mr.Mad-Eye is Happy.

Thank you