Experiment -8

Using IR Sensor Remote and IR Sensor control Electronic Devices.

AIM : To design and develop the a circuit to control electronic Devices using IR Remote and IR Sensor.

Components Required :

1. Arduino Uno Board
2. IR Remote
3. IR Sensor
4. LED
5. Resister
6. Connecting Wires

Description:

1. **IR Remote :** (Infra Red remote control) A handheld, wireless device used to operate audio, video and other electronic equipment within a room using light signals in the infrared (IR) range. Infrared light requires line of sight to its destination. Low-end remotes use only one transmitter at the end of the unit and have to be aimed directly at the equipment. High-quality remotes have three or four powerful IR transmitters set at different angles to shower the room with signals. Using very low data rates, typically no more than 1,000 bits/sec, infrared remotes send a different code for each function on the TV, DVD, A/V receiver, etc. There are hundreds of remote control codes for A/V devices manufactured over the years.

 A programmable remote may be customized by selecting built-in code sets, by downloading code sets from the Internet or by training the remote to accept signals from another handheld remote.In home theater applications, IR receivers are commonly used to control components in a cabinet with closed doors that obstruct the line of sight required by infrared. An IR sensor is located near the TV and wired to the receiver, which can be many feet away in the equipment rack. The receiver has an amplifier and an "IR blaster" that showers IR signals to all components by reflecting off the closed cabinet doors. The receiver also has sockets for several IR emitters (IR flashers) that are wired to, and pasted directly over, the IR sensors for precise aiming

2. **An infrared proximity sensor or IR Sensor** is an electronic device that emits infrared lights to sense some aspect of the surroundings and can be employed to detect the motion of an object.

3. **An infrared receiver, or IR receiver**, is hardware that sends information from an infrared remote control to another device by receiving and decoding signals. In general, the receiver outputs a code to uniquely identify the infrared signal that it receives. IR Transmitter and IR Receiver are commonly used to control electronic devices wirelessly, mainly through a remote. TV remotes and AC remotes are the best example of IR transmitters

Circuit Diagram :
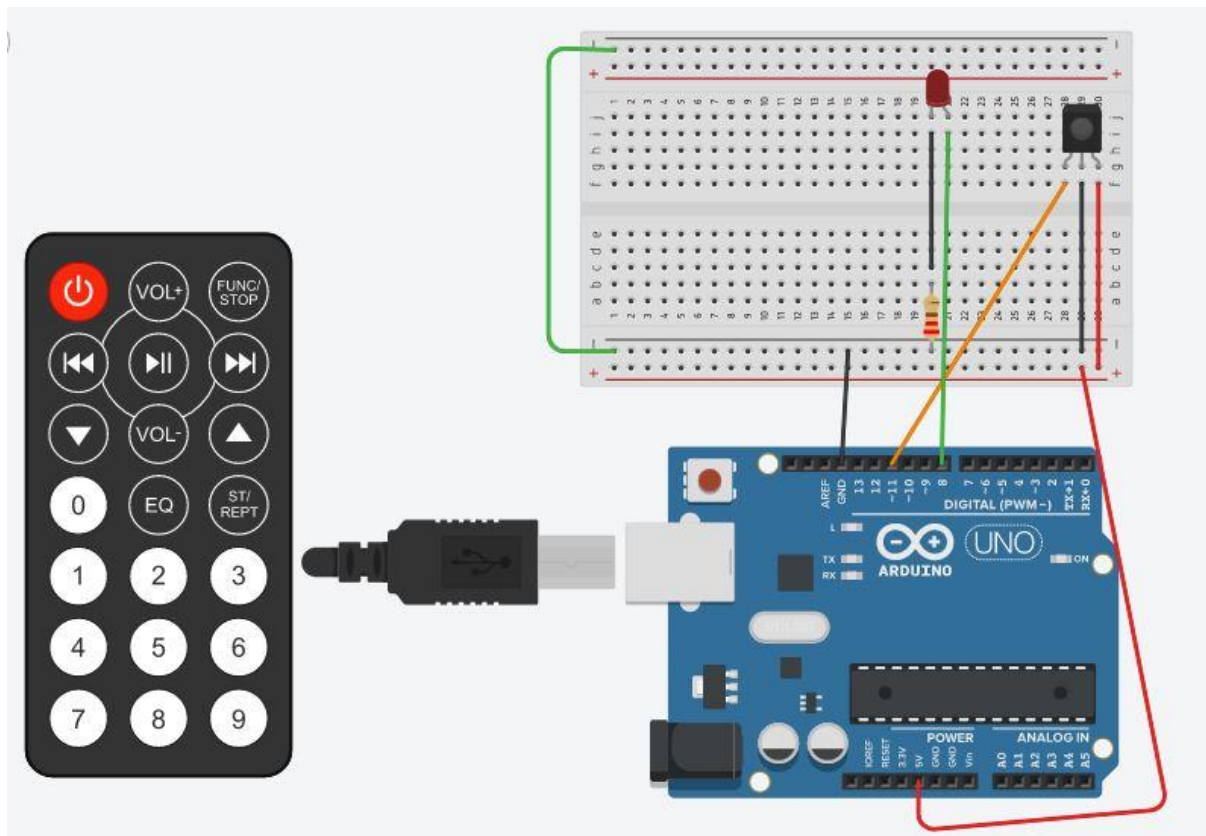
Design Code

```
#include <IRremote.h>
int RECV_PIN = 11;
const int led_Red=8;
int potpin = 0;
int val=0;
IRrecv irrecv(RECV_PIN);
decode_results results;
void setup()
{
  pinMode(led_Red, OUTPUT);
 Serial.begin(9600);
  Serial.println("Enabling IRin");
  irrecv.enableIRIn();
  Serial.println("Enabled IRin");
}
void loop() {
```
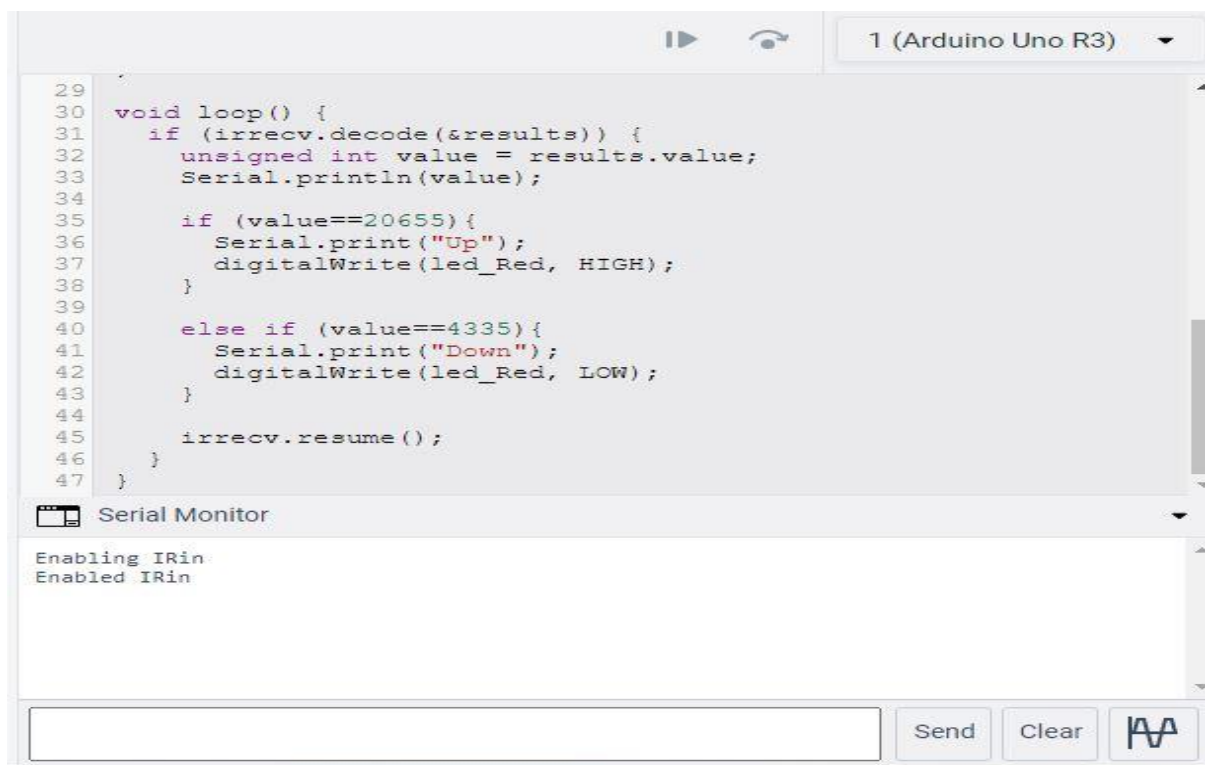
```
if (irrecv.decode(&results))
  {
  unsigned int value = results.value;
  Serial.println(value);


  if (value==20655)
{
    Serial.print("Up");
    digitalWrite(led_Red, HIGH);
  }
    else if (value==4335){
    Serial.print("Down");
    digitalWrite(led_Red, LOW);
  }
    irrecv.resume();
 }
}
```
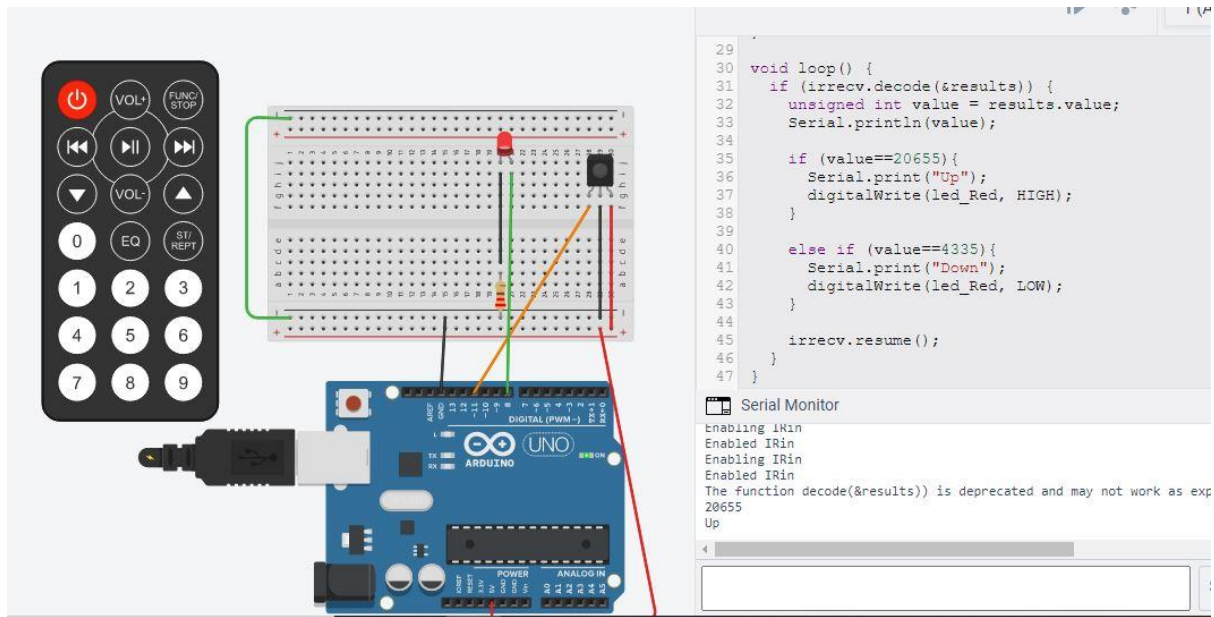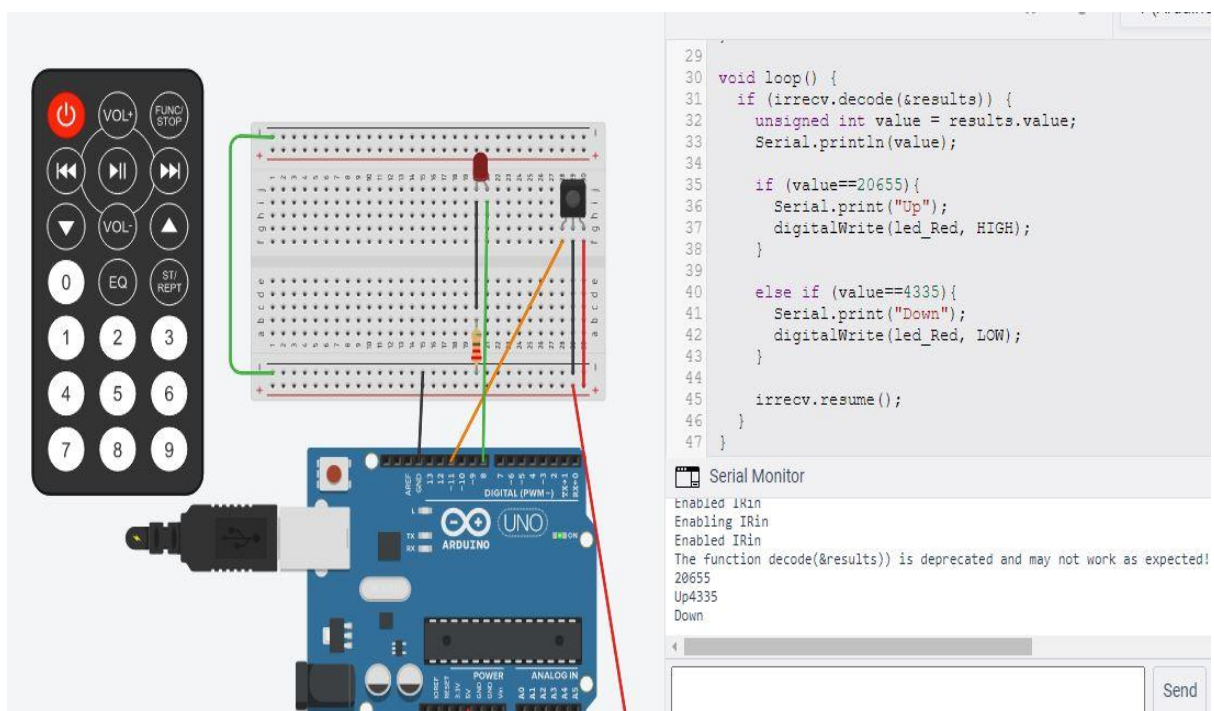
OUTPUT : After Click Start simulation ., Now its read to accept the IR Signal from IR Remote (UP ARROW -→ used to ON LED ., DOWN Arrow -→ used to OFF LED)

OUTPUT – 1 (Click UP ARROW Button – LED Has to ON- Serial Monitor TURN – UP.

OUTPUT – 2. (Click UP DOWN Button – LED Has to OFF- Serial Monitor TURN – Down.

Result : Finally the design and develop the a circuit to control electronic Devices using IR Remote and IR Sensor has been Successfully Executed and Output verified.