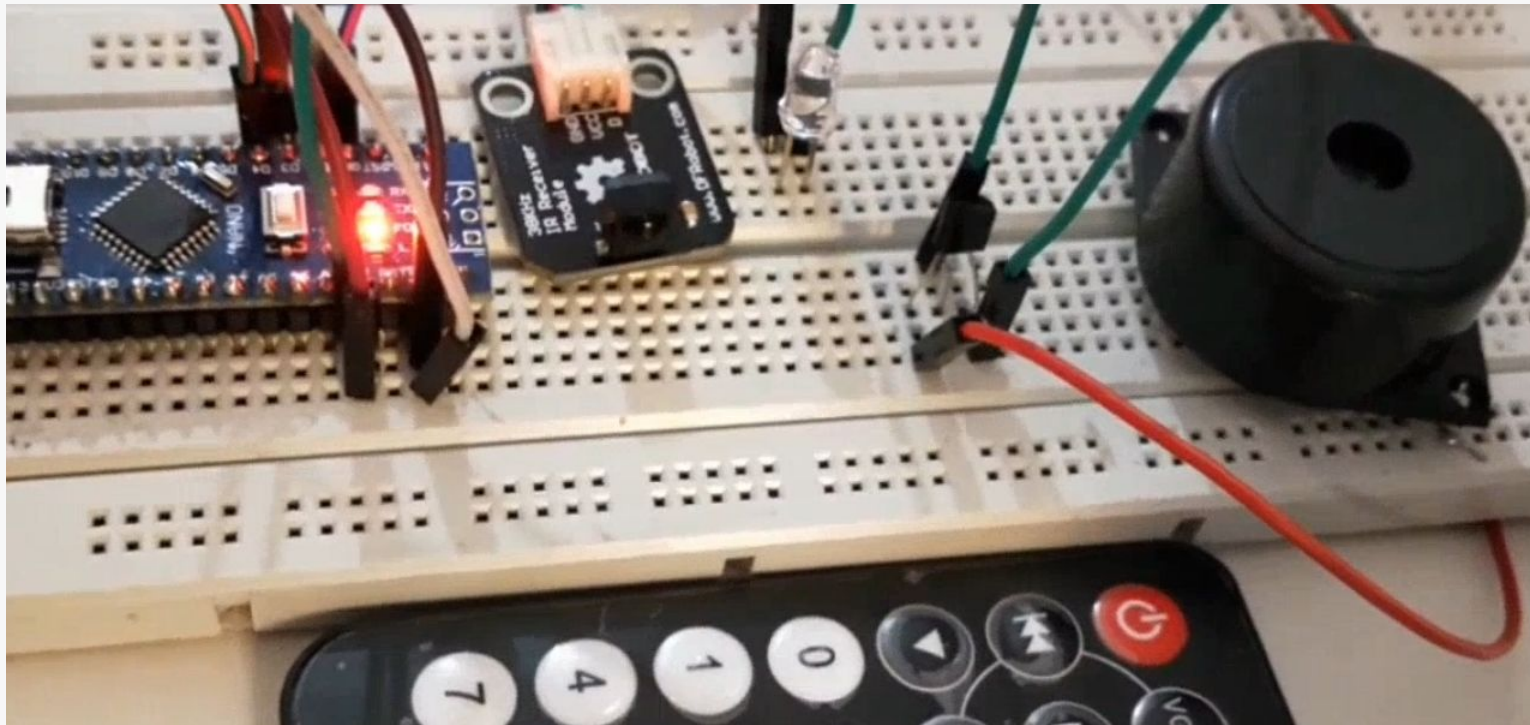
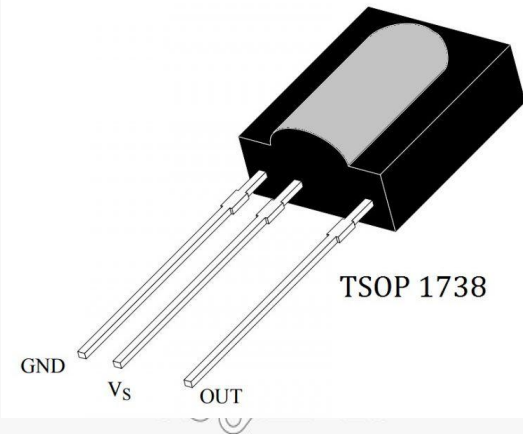


Security System in Examination Hall



TSOP1738

- **TSOP1738** is a infrared receiver tuned to receive IR of frequency 38 kHz only. It is perfect for making obstacle sensors and to read signals from most IR remotes (TV, AC, Home Theatre Remotes, etc).
- It is used as a receiver in distance sensors, also provides better performance as it allows better reception and protection from ambient light compared to other IR receivers. It can be used to read signals of most IR Remotes.

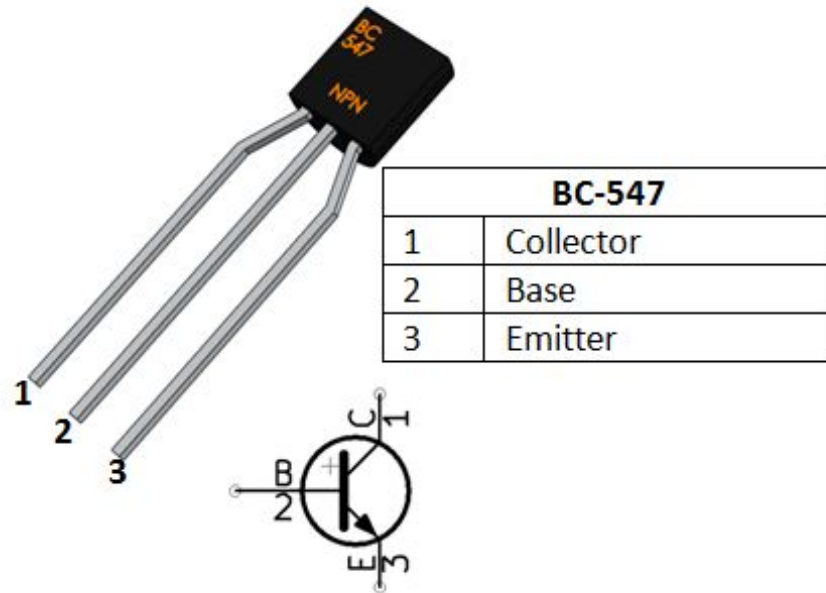


Working of TSOP IR Sensor

- When an IR LED is transmitting data onto the TSOP, every time the IR led goes high, the TSOP will go LOW and vice versa. Remote control signals are often bytes of data that is encoded and transmitted by pulsing (switching ON & OFF the IR LED at a specific frequency).
- Most TV remote controls work at 32-40 Khz frequency and most receivers can receive this range.

BC547

BC547 is a NPN transistor hence the collector and emitter will be left open (Reverse biased) when the base pin is held at ground and will be closed (Forward biased) when a signal is provided to base pin.



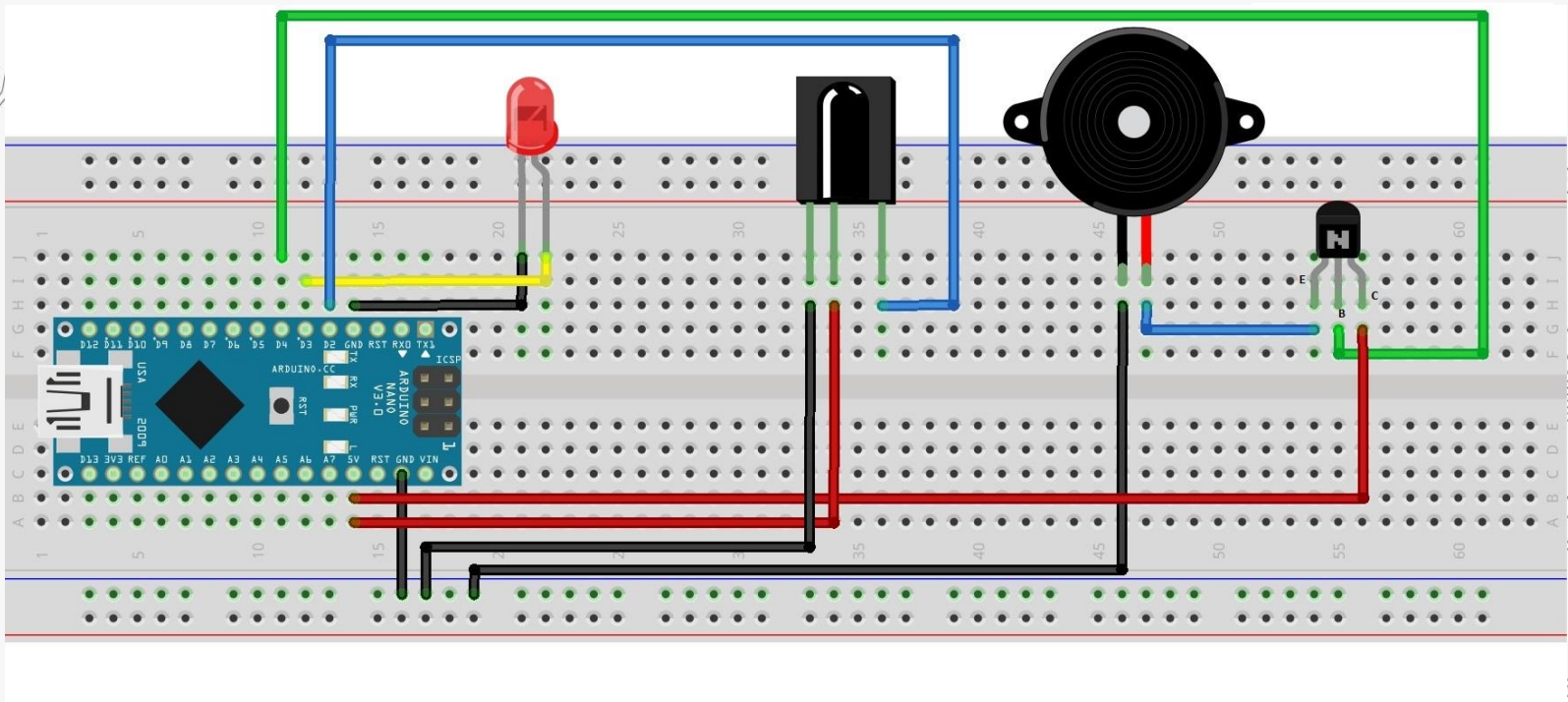
Working of project

- Whenever a student or candidate in examination hall uses IR LED existing devices, buzzer will beep, giving an alert alarm for invigilators in hall.
- So, when an IR LED is transmitting data onto the TSOP IR sensor, buzzer will beep or vice versa.

Components Required

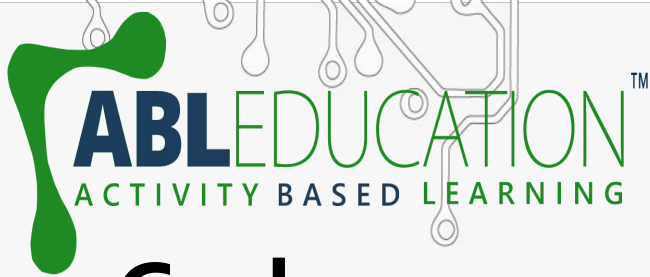
- Arduino Nano
- TSOP1738
- IR LED or Remote
- LED
- Buzzer
- Breadboard
- Jumper Wires

Connection Diagram



Connections

1. Connect 1st pin(GND) of TSOP1738 with GND pin of Arduino Nano.
2. Connect 2nd pin(Vcc) of TSOP1738 with 5V pin of Arduino Nano.
3. Connect 3rd (OUT) pin of TSOP1738 with D2 pin of Arduino Nano.
4. Connect negative pin of LED with GND pin of Arduino Nano.
5. Connect positive pin of LED with D3 pin of Arduino Nano.
6. Connect emitter of BC547 with positive terminal of buzzer.
7. Connect base of BC547 with D4 pin of Arduino Nano.
8. Connect collector of BC547 with 5V pin of Arduino Nano.
9. Connect negative pin of buzzer with GND pin of Arduino Nano.



Code

Security_system_in_examination_hall | Arduino 1.8.19

File Edit Sketch Tools Help



Security_system_in_examination_hall \$

```
const int buttonPin = 2;    // the number of the pushbutton pin
const int ledPin = 3;      // the number of the LED pin
const int buzzer =4;
// variables will change:
int buttonState = 0;       // variable for reading the pushbutton status
void setup() {
  // initialize the LED pin as an output:
  pinMode(ledPin, OUTPUT);
  // initialize the pushbutton pin as an input:
  pinMode(buttonPin, INPUT);

  // initialize serial communications at 9600 bps:
  Serial.begin(9600);
  Serial.println("TSOP IR Sensor Testing" );
}
void loop(){
  // read the state of the pushbutton value:
  buttonState = digitalRead(buttonPin);
  // check if the pushbutton is pressed.
  // if it is, the buttonState is HIGH:
```



Security_system_in_examination_hall | Arduino 1.8.19

File Edit Sketch Tools Help



Security_system_in_examination_hall \$

```
Serial.println("TSOP IR Sensor Testing" );
}
void loop(){
  // read the state of the pushbutton value:
  buttonState = digitalRead(buttonPin);
  // check if the pushbutton is pressed.
  // if it is, the buttonState is HIGH:
  if (buttonState == HIGH) {
    // turn LED off:
    digitalWrite(ledPin, LOW);
digitalWrite(buzzer, LOW);
  }
  else {
    // turn LED on:
    digitalWrite(ledPin, HIGH);
    digitalWrite(buzzer, HIGH);
    Serial.println(" sensor Active " );
    delay(200);
  }
}
```

Project Link: <https://youtu.be/QR3Vjm66rqQ>