PERSOVIA AGENCY

IR Obstacle Detection Alarm System

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Introduction

The IR Obstacle Detection Alarm System is an Arduino-based project designed to detect nearby objects using an infrared (IR) sensor and generate an alert through a buzzer. It is a simple and effective security system that demonstrates the basic concept of object detection using embedded systems.

When an object comes within the detection range of the IR sensor, the Arduino receives the sensor output and activates the buzzer. This project is suitable for beginners to understand sensor interfacing, digital input/output operations, and basic automation using Arduino.

Principle

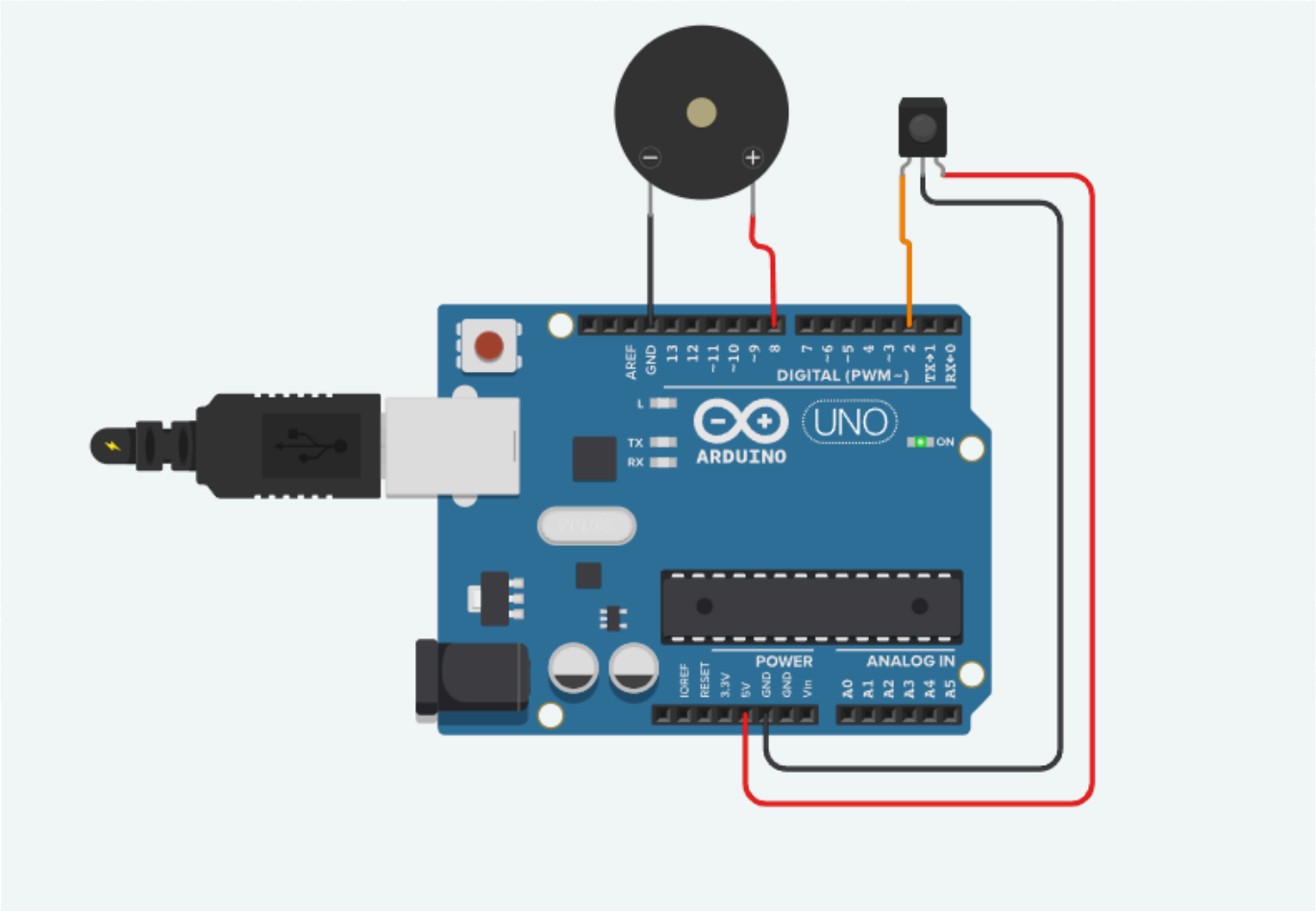
The project works on the principle of infrared reflection. The IR sensor continuously emits infrared light and detects the reflected signal from nearby objects. When an object is detected, the sensor sends a digital signal to the Arduino UNO.

The Arduino processes this signal and activates the buzzer to indicate the presence of an obstacle. When no object is detected, the buzzer remains OFF. This process continues continuously to provide real-time obstacle detection.

Components Required

1) Arduino UNO
2) IR Sensor
3) Buzzer
4) Jumper Wires
5) Arduino UNO Port (For uploading code)

Circuit Diagram



Code

```
const int irSensor = 2;
const int buzzer = 8;

void setup()
{
 pinMode(irSensor, INPUT);
 pinMode(buzzer, OUTPUT);
}

void loop()
{
 int sensorValue = digitalRead(irSensor);

 if (sensorValue == LOW)
 {
  digitalWrite(buzzer, HIGH);
 }
 else
 {
  digitalWrite(buzzer, LOW);
 }
}
```

Code Explanation

The program configures the IR sensor as an input device and the buzzer as an output device. The Arduino continuously reads the digital output from the IR sensor to determine whether an obstacle is present.

When the IR sensor detects an object, it sends a LOW signal to the Arduino, which activates the buzzer. If no object is detected, the sensor outputs a HIGH signal and the buzzer remains OFF. This process repeats continuously to provide real-time obstacle detection.

Applications of this Project

- Intruder Detection Systems
- Security Alarm Systems
- Automatic Door Monitoring
- Object Detection Applications
- Industrial Safety Systems

Conclusion

The IR Obstacle Detection Alarm System was successfully designed and implemented using Arduino UNO, an IR sensor, and a buzzer. The project demonstrates a simple and reliable method of detecting nearby objects and generating an audible alert. It serves as an excellent beginner project for learning sensor interfacing, digital signal processing, and basic embedded system applications.

Thank You.....!