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Innovation Learning Platform

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PROJECT: SAFE GUARD MONITOR (SGM)

- SGM 0.1 - Introduction
- SGM 0.2 - Hardware/Circuit making
- SGM 0.3 - Coding
- SGM 0.4 - Project Review

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SGM 0.1 - Introduction

What We'll Make?

- Safe Guard Monitor

What We'll Learn?

- Variables
- Data Type
- #define function
- Commands
  - 'delayMicroseconds()'
- Control Structure
  -'if..else'

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How to make Safe guard monitor?

Components Required:

- Arduino Uno-1
- USB Cable -1
- HC-SR04 Module-1
- Buzzer -1
- LED-1
- Resistor(330 ohm)-1
- Resistor(100 ohm)-1
- Breadboard -1
- Jumper cables (MM)-12

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Working

- Distance alarm system made with buzzer , LED & Ultrasonic sensor
- When someone enters the sensor range, the buzzer beeps.
- The LED indicator lights up.

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SGM 0.2 - Hardware/Circuit Making

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Steps Involved

STEP 1: Take components from kit

STEP 2: Connect the components as per circuit diagram

STEP 3: Connect the Ultrasonic Sensor Trigger pin to pin 13 & Echo pin to pin 12 of Arduino

STEP 4: Connect Buzzer (output) with pin 7 of Arduino via resistor

STEP 5: Connect LED (output) with pin 8 of Arduino via resistor

STEP 6: Upload Code

STEP 7: Check for errors

STEP 8: Check Output

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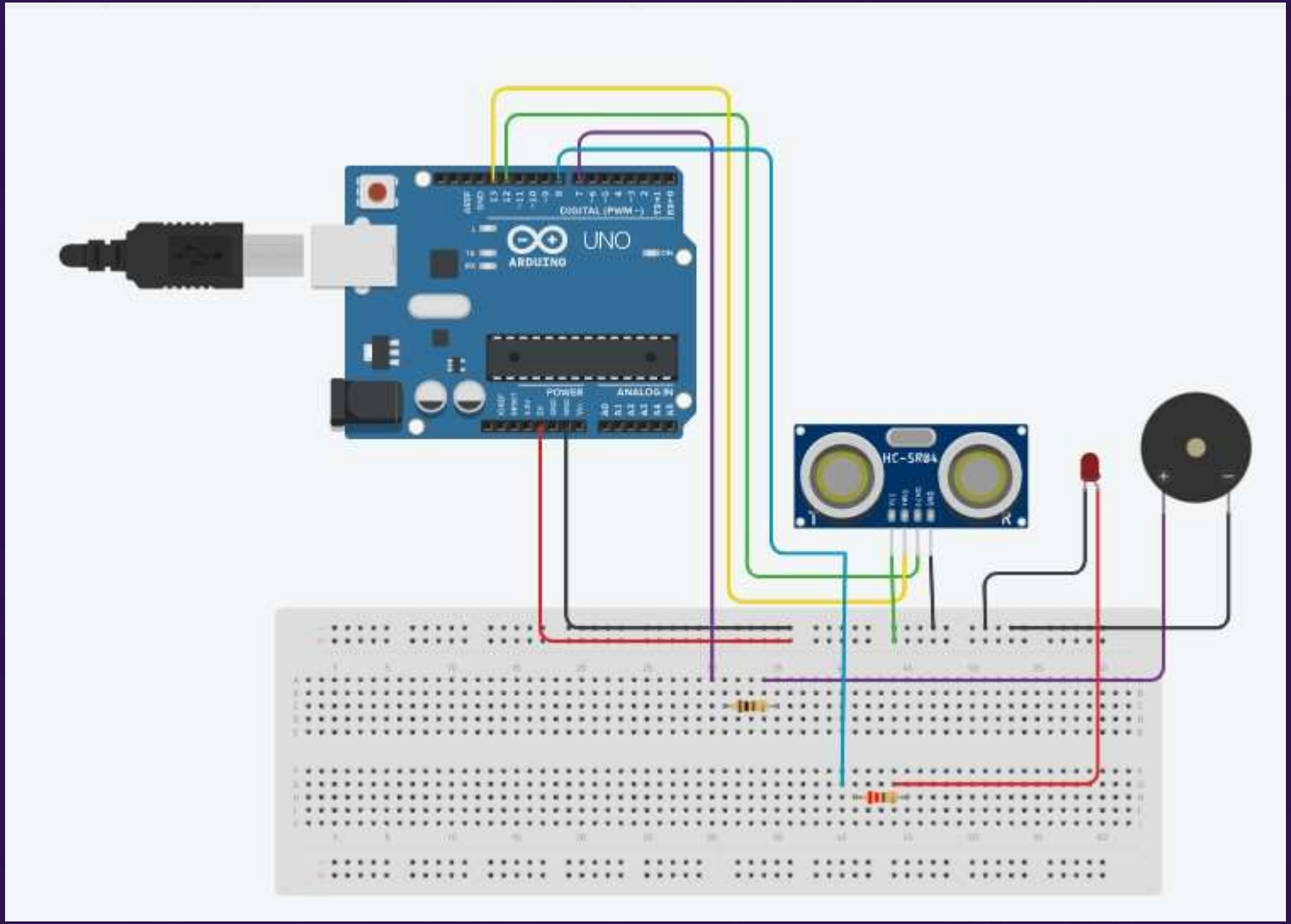
Circuit Diagram



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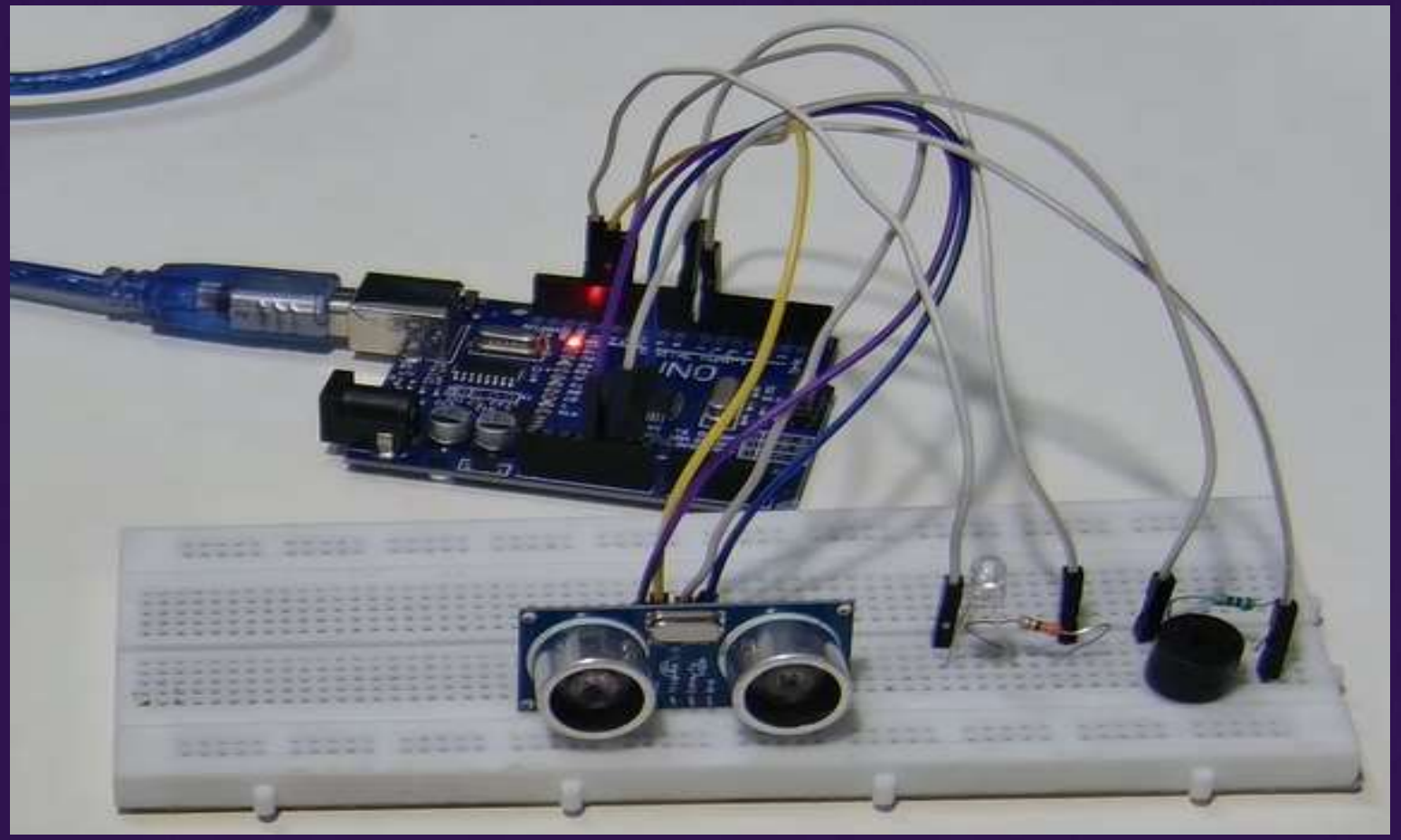
Connection Diagram



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SGM 0.3 - Coding

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Code

```
/* This simple project describes how to make an ultrasonic alarm system using LED,
Ultasonic Sensor(HC-SR04) and a buzzer.*/

//Firstly the connections of ultrasonic Sensor.Connect +5v and GND normally &
 trigger pin to 12 & echo pin to 13.

#define trigPin 13
#define echoPin 12
int Buzzer = 7; // Connect buzzer pin to 7
int ledPin= 8;  //Connect LED pin to 8
int duration, distance; //to measure the distance and time taken void
setup() {
        //Define the output and input objects(devices)
        pinMode(trigPin, OUTPUT);
        pinMode(echoPin, INPUT);
        pinMode(Buzzer, OUTPUT);
        pinMode(ledPin, OUTPUT);
}
```

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```
void loop() { digitalWrite(trigPin,
    HIGH);
    delayMicroseconds(10);
    digitalWrite(trigPin, LOW);
    duration = pulseIn(echoPin, HIGH);
    distance = (duration/2) / 29.1;
    //when distance is greater than or equal to 10 OR less than or equal to 0,the buzzer and LED
are off
  if (distance >= 10 || distance <= 0)
        {
        digitalWrite(Buzzer,LOW);
        digitalWrite(ledPin,LOW);
        }
  else {
        digitalWrite(ledPin,HIGH);
       digitalWrite(Buzzer,HIGH);
  }
}
```

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Applications

- Smart Dustbin
- Touchless Door Opener
- Social distance Alarm

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SGM 0.4- Project Review

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What We Learnt ?

- ✓ Variables
- ✓ Data Type
- ✓ #define function
- ✓ Commands
  - ‘delayMicroseconds()’
- ✓ Control Structure
  - -if..else
- ✓ Applications

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Task

- Make Safe Guard Monitor using 2 LED and Buzzer…

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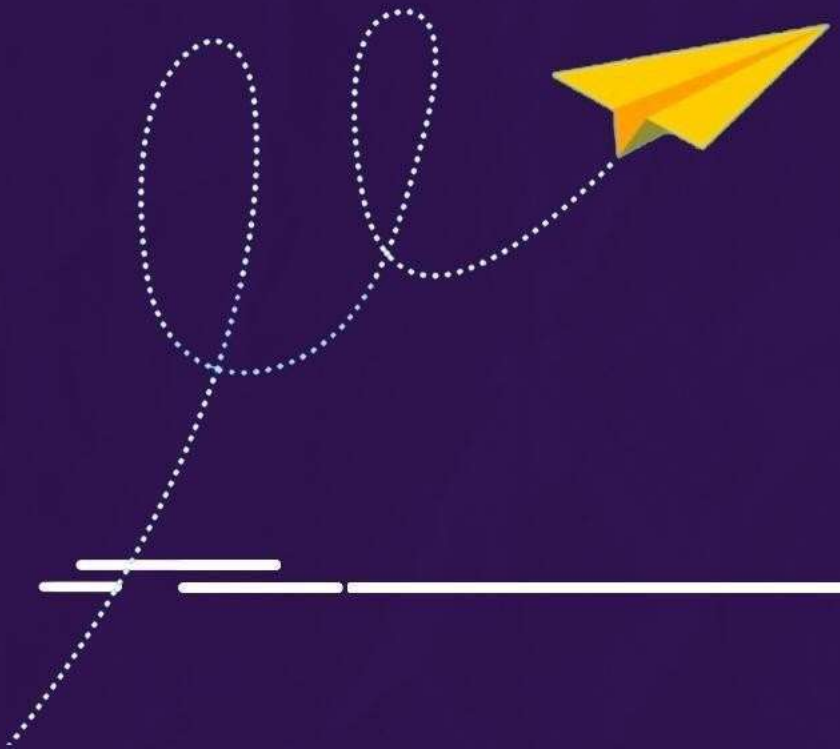
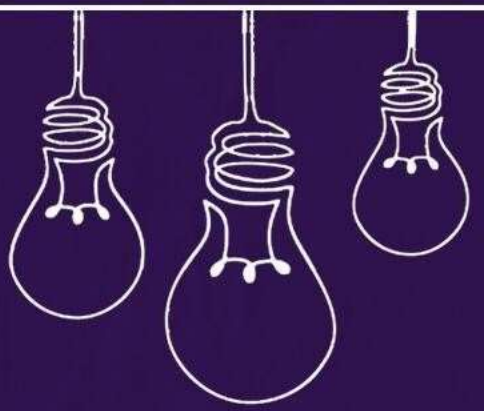
THANK YOU!





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