ANTI SLEEP ALARM

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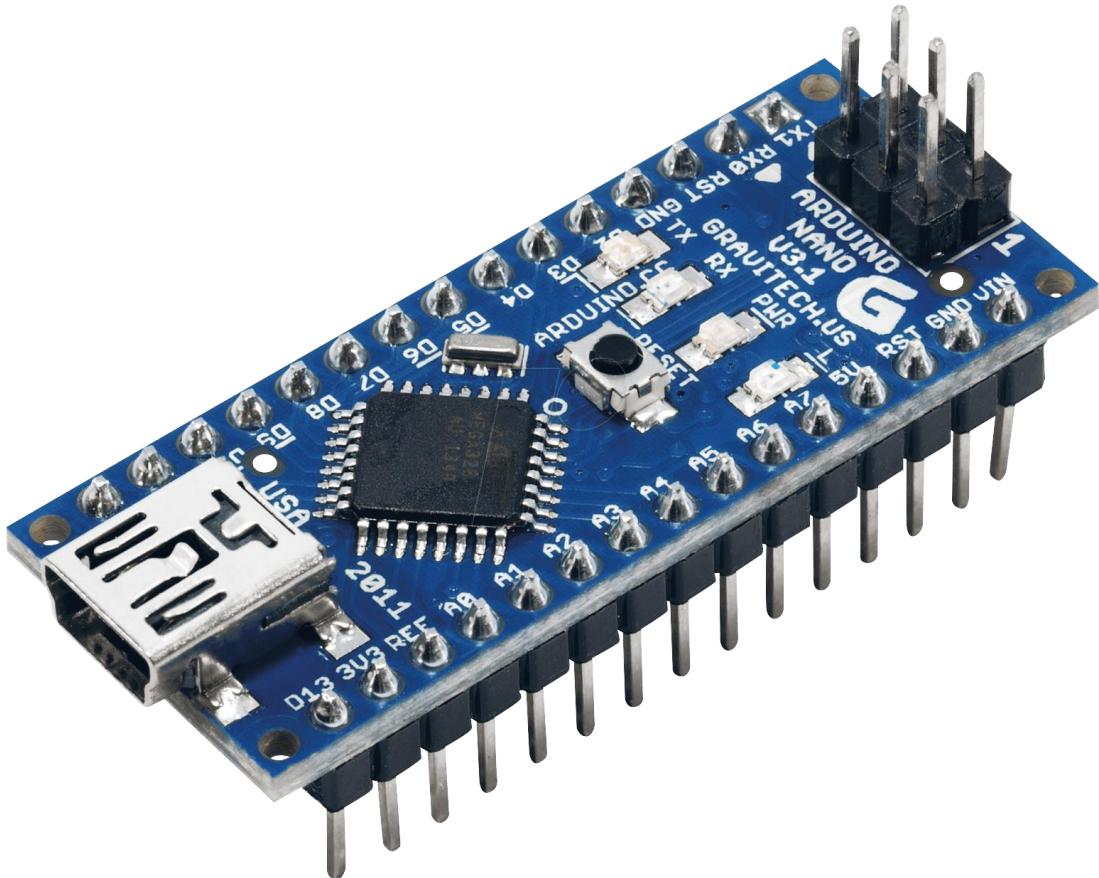
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INTRODUCTION

Because of the tremendous increase in traffic day by day road accidents are increasing at a huge scale. Accidents due to driver drowsiness can be prevented using eye blink sensors. There are two main components here in this project. First is Arduino Nano which is the heart of the project , and second is the eye blink sensor. The driver has to wear the eye blink sensor frame throughout the course of driving and the eye blink has to be for some particular amount of seconds to detect drowsiness or sleep.
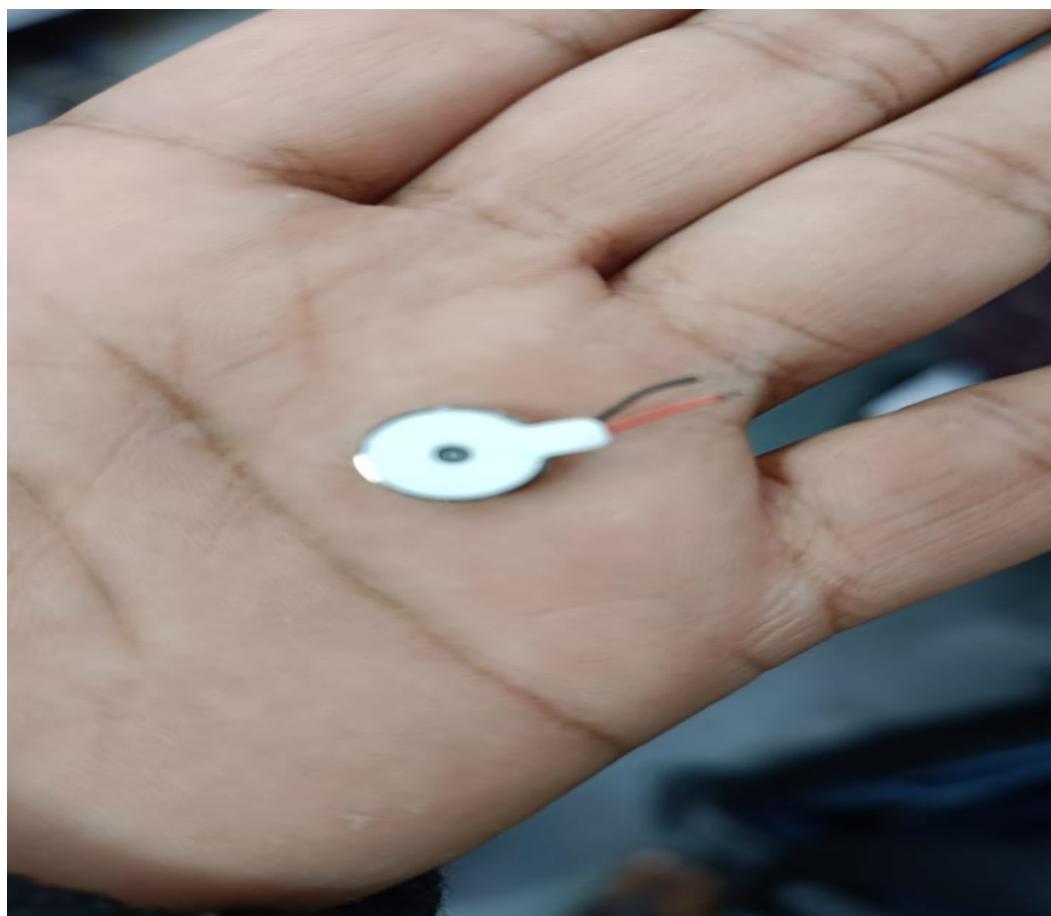
REQUIRED COMPONENTS

1.ARDUINO NANO:

The Arduino Nano is a compact microcontroller board based on the ATmega328P chip. It's similar to the Arduino Uno but smaller in size, making it suitable for projects with space constraints. The Nano is equipped with digital and analog pins, USB connectivity for programming, and is compatible with the Arduino IDE. It's commonly used in various DIY electronics projects due to its size and versatility.

2.Vibration Sensor:

A vibration sensor is a device that detects vibrations or movements in its surroundings. It converts physical motion into an electrical signal, which can then be interpreted by electronic systems. These sensors are used in various applications, such as security systems, industrial machinery monitoring, and even in consumer electronics like smartphones for haptic feedback.

3.Buzzer:

A buzzer is an electronic component that produces sound when an electric current is applied. It typically consists of a coil of wire and a diaphragm, and the sound is generated by the vibration of the diaphragm. In a circuit, a buzzer is often connected to a power source, and when the circuit is closed, the buzzer activates, producing an audible tone.

Buzzer applications range from simple alert systems to more complex uses in electronic devices and alarms. They are commonly used in various electronic projects, such as timers, doorbells, and security systems.

4.Eye Blink Sensor with Goggles:

An eye blink sensor with goggles typically involves a device that can detect and measure eye blinks through the use of sensors embedded in the goggles. Goggles may have sensors placed strategically near the eyes to detect movements or changes associated with blinking. The signals from the sensors are processed to identify patterns associated with eye blinks.

5.SPST Switch:

SPST switches are simple and commonly used in various electronic circuits for basic on/off control. They come in

different forms, such as toggle switches, rocker switches, or push-button switches. Applications range from simple household devices to more complex electronic systems.

6. 9V Battery:

A 9-volt (9V) battery is a common type of battery that provides a nominal voltage of 9 volts. It is often used in various electronic devices due to its compact size and relatively high voltage compared to other common batteries. Here are some key points about 9V batteries. A standard 9V battery is rectangular in shape with two terminal connectors. It is commonly used in devices like smoke detectors, remote controls, and small electronic gadgets.

7.Mini USB Cable:

A USB (Universal Serial Bus) cable is a standardized cable that is widely used for connecting and transferring data between electronic devices. Here are some key points about USB cables. USB has gone through several versions, each offering improvements in speed and capabilities. Common versions include USB 1.0, USB 2.0, USB 3.0, USB 3.1, and USB 3.2. USB cables are commonly used to transfer data between devices such as computers, smartphones, cameras, printers, and more. The data transfer speed depends on the USB version.

8.Jumper Wires:

Wire connectors could be male or female.

A male connector stays commonly referred to as a plug and has a solid pin for a center conductor.

A female connector is commonly referred to as a jack and has a center conductor with a hole in it to accept the male pin.

Jumper wires typically come in three versions: male-to-male, male-to-female and female-to-female. The difference between each is in the end point of the wire. Male ends have a pin protruding and can plug into things, while female ends do not and are used to plug things into. Male-to-male jumper wires are the most common and what you likely will use most often. When connecting two ports on a breadboard, a male-to-male wire is what you'll need.

ANTI SLEEP ALARM

This Arduino code is designed to control an LED based on input from an infrared (IR) sensor connected to analog pin A0. Here's a breakdown of the code. The code defines a constant named SENSE with a value of A0, representing the analog pin to which the IR sensor is connected. pinMode(SENSE, INPUT);: Configures pin A0 as an input for reading from the IR sensor. It checks the digital state of the IR sensor using digitalRead(SENSE).
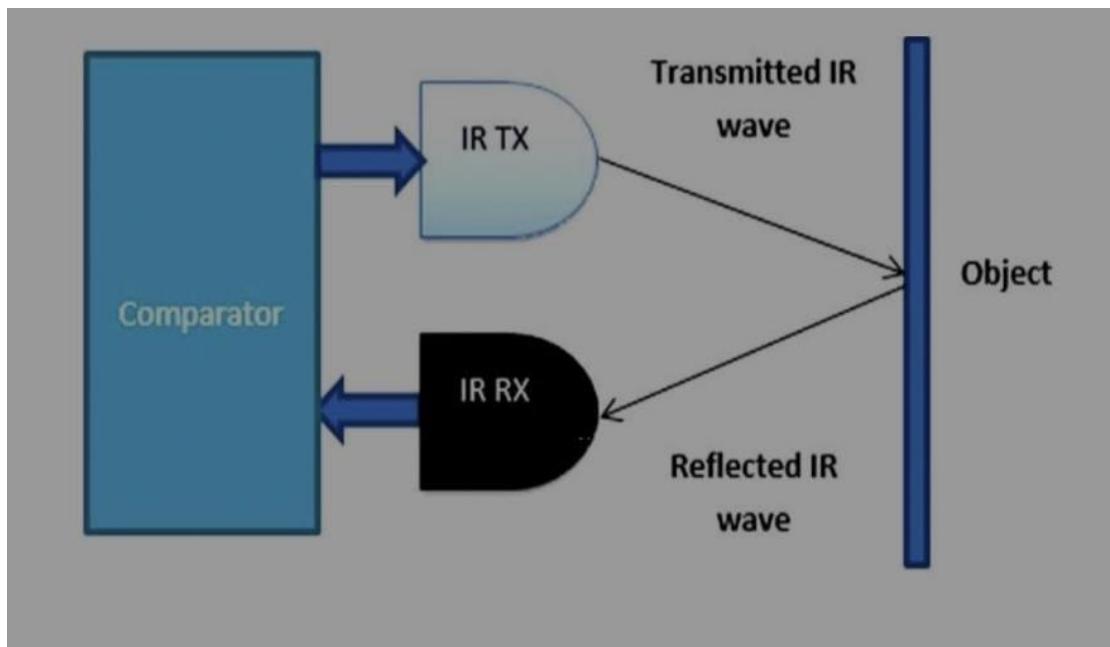
If the sensor is HIGH (active), it turns off the built-in LED and sets pin 2 to LOW.

If the sensor is LOW (inactive), it introduces a delay of 2000 milliseconds and checks the sensor again.
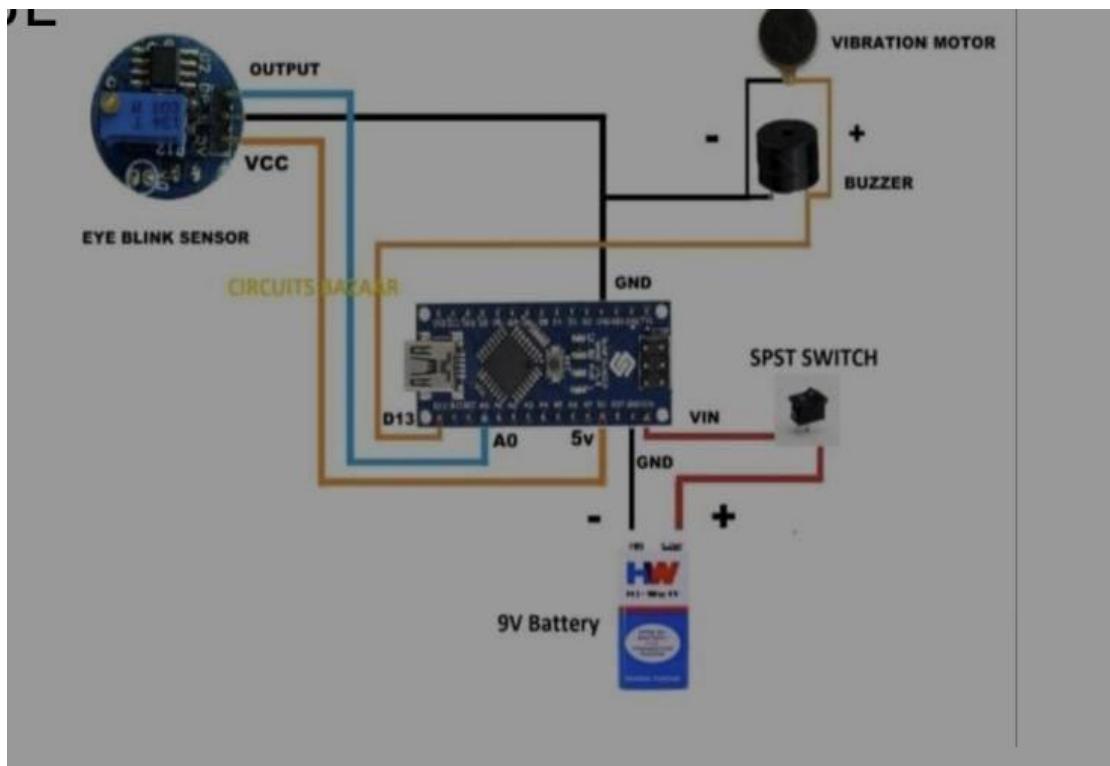
If the sensor is still inactive after the delay, it turns on the built-in LED and sets pin 2 to HIGH.

Note: The repeated actions for the same conditions (sensor readings) in both branches of the if-else statements may result in redundant code. It could be simplified to improve readability and maintainability.

WORKING PRINCIPLE OF EYE BLINK SENSOR:

CIRCUIT DIAGRAM:

WORKING OF ANTI SLEEP ALARM:

An anti-sleep alarm typically uses sensors, such as accelerometers or infrared sensors, to monitor a person's movements and detect signs of drowsiness or fatigue. When the system identifies potential signs of sleepiness, it triggers an alarm, such as a sound or vibration, to alert the individual and prevent them from falling asleep while engaged in activities like driving. These devices aim to enhance safety by prompting users to take necessary breaks or address their fatigue before it becomes a serious risk.

SOURCE CODE

```
void setup()
{
pinMode(SENSE, INPUT);
pinMode(2, OUTPUT);


pinMode(LED_BUILTIN, OUTPUT); // 13+
}
void loop()
```

```
{
if(digitalRead(SENSE))
{
 digitalWrite(LED_BUILTIN, LOW);
 pinMode(2, LOW);
}
else
{
  delay (2000);
  if(digitalRead(SENSE))
  {
 digitalWrite(LED_BUILTIN, LOW);
 pinMode(2, LOW);
}
  else
  digitalWrite(LED_BUILTIN, HIGH);
   pinMode(2, HIGH);
  }
}
```