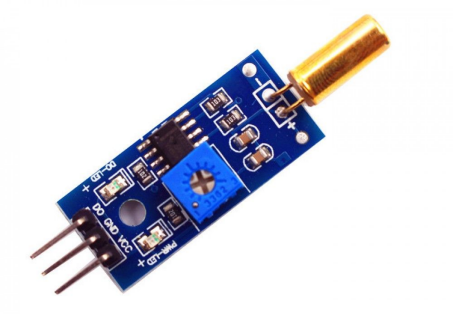
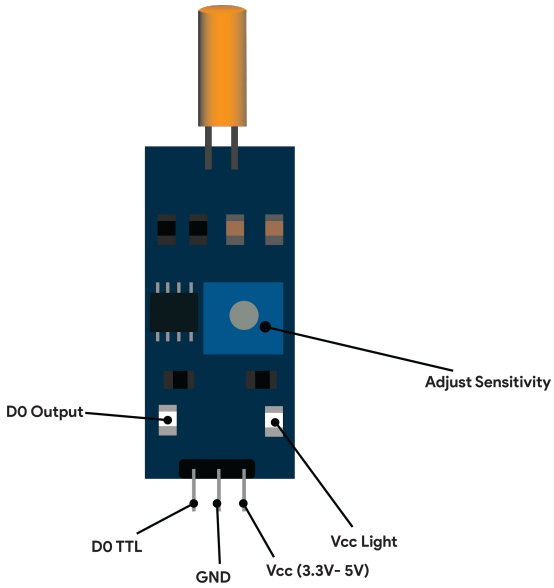
Tilt Sensor
(Technical Note)

What is Tilt Sensor?



A tilt sensor is a device that responds to the change in the angular movement of the body. The angular movement can be tilted, elevated, sloped, or depressed. Tilt sensors are also called inclinometer. A tilt switch is basically a replica of a push button working in a different physical mechanism.



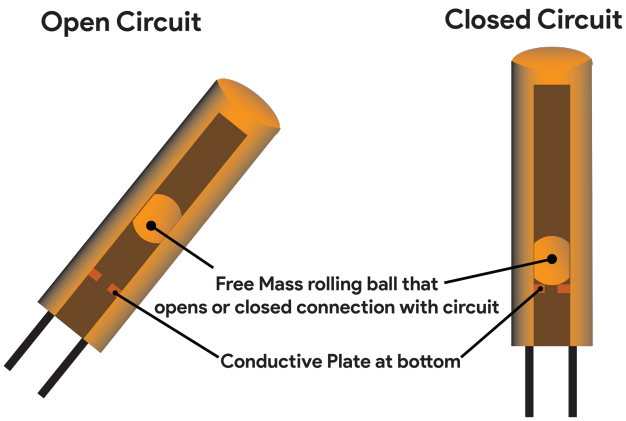
Scientific Fact and Applications

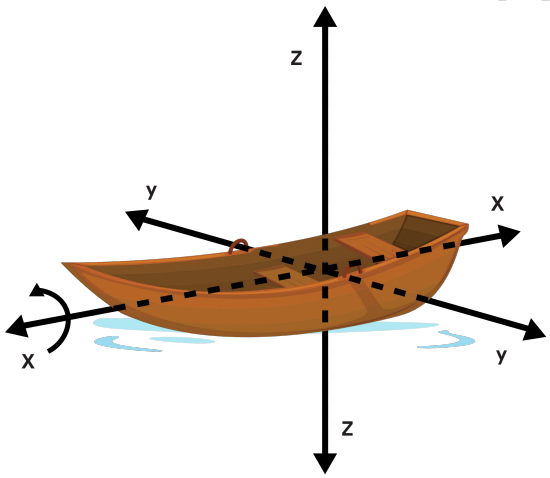
A tilt sensor consists of two conducting plates and a metallic ball. When there is tilt in the sensor to a certain extent, the ball does not reach the conducting plate and the current path is not formed. In case of no tilting, the ball falls on the plate and current flows across the two terminals of the sensor.

Applications:

Boats:
Due to its ability to function under the water at a wide range of depths, the tilt sensor is often used in boats and other water vehicles. It plays a very important role in maintaining the balance of the boat and prevents it from tilting to angles that can be dangerous.

Industries:
Industrial machines like those used in construction, mining, and other similar fields also use tilt sensors for safety measures. An illustrative example is to prevent heavy equipment from going off-track and tipping over. Accidents while operating these machines can take place at any point, which is why tilt sensors play a vital role in preventing these mishaps.





Tilt Sensor
(Application Note)

Project

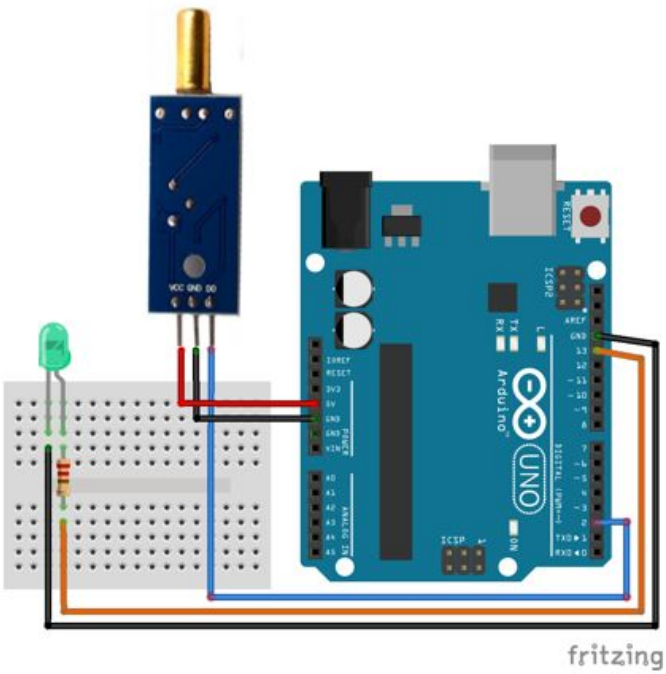
To glow the LED on tilt using the tilt sensor with Arduino

Procedure

Tilt Sensor:

- Connect **Vcc** pin of sensor to **5V** of Arduino
- Wire **GND** pin of the sensor to **GND** of the Arduino
- Connect **DO** pin to **2** pin of Arduino
- Adjust the sensor sensitivity through the potentiometer on the sensor.

Schematic



Components Required

Component	Part No.	Qty
Arduino UNO	EMX-00001-A	1
Tilt Sensor	EMS-00021-A	1

Code

```
const int LED = 13;/*LED is connected
to pn 13 of Arduino*/
const int Tilt = 2;/* Tilt sensor is
connected to pin 2 of Arduino*/
int val = 0;/*declaring a variable
"val" and giving it value = 0*/
void setup()
{
   pinMode (LED,OUTPUT);/*Making 13th
pin as the OUTPUT pin*/
   pinMode (Tilt,INPUT);/*Making Tilt
pin as the INPUT pin*/
}
void loop()
{
   val = digitalRead(Tilt);/*reading
digital value of the tilt sensor*/
   if (val == HIGH)/*checking if the
value attained from the sensor is
HIGH*/
   {
      digitalWrite(LED,HIGH);/*if the
value is HIGH, making the LED glow*/
   }
   else
   {

digitalWrite(LED,LOW);/*Otherwise,
making the LED switch off*/
   }
}
```

Challenge Yourself

1. Design a tilt game using multiple tilt sensors
2. Make a model, if the bike gets tilted to a certain angle, buzzer should beep