**AUTOMATIC LIGHT INDICATION SYSTEM**

**Project Concept:**

This project aims to automate the process of turning off the indicators on a scooter after completing a turn. The system uses two MPU6050 sensors mounted on the left and right handles of the scooter to detect the handle's tilt. When the rider initiates a turn, they will press the corresponding button (left or right) to activate the indicator. The system then monitors the handle's tilt using the MPU6050 sensor. Once the turn is completed and the handle returns to its neutral position (or tilts by 60% in the opposite direction), the system automatically turns off the indicator, ensuring the indicators are not left on accidentally.

**Items Required:**

1. **Arduino Uno** - 1
2. **MPU6050 Sensors** - 2
3. **5V Relays** - 2 (to control the left and right indicators)
4. **Push Buttons** - 2 (for manually activating the indicators)

**Pin Connections:**

1. **MPU6050 Sensors:**
   * **Left Handle MPU6050**:
     + VCC to Arduino 5V
     + GND to Arduino GND
     + SCL to Arduino A5
     + SDA to Arduino A4
     + AD0 to Arduino GND (I2C Address: 0x68)
   * **Right Handle MPU6050**:
     + VCC to Arduino 5V
     + GND to Arduino GND
     + SCL to Arduino A5
     + SDA to Arduino A4
     + AD0 to Arduino 3.3V (I2C Address: 0x69)
2. **Relays:**
   * **Left Indicator Relay**:
     + IN pin to Arduino pin 7
     + VCC to Arduino 5V
     + GND to Arduino GND
     + COM (Common) to the positive lead of the left indicator
     + NO (Normally Open) to the battery or power source
   * **Right Indicator Relay**:
     + IN pin to Arduino pin 8
     + VCC to Arduino 5V
     + GND to Arduino GND
     + COM (Common) to the positive lead of the right indicator
     + NO (Normally Open) to the battery or power source
3. **Push Buttons:**
   * **Left Indicator Button**:
     + One terminal to Arduino pin 2
     + Other terminal to GND
     + A 10kΩ pull-up resistor between Arduino pin 2 and 5V
   * **Right Indicator Button**:
     + One terminal to Arduino pin 3
     + Other terminal to GND
     + A 10kΩ pull-up resistor between Arduino pin 3 and 5V

**How It Works:**

* **System Initialization**: At the start, the system initializes the MPU6050 sensors and captures the initial X-axis tilt values for both handles. These values are used as reference points to determine the normal straight position of the handles.
* **Indicator Activation**: When the rider presses the left or right button, the system activates the corresponding relay, turning on the left or right indicator light.
* **Automatic Turn-Off**: The system continuously monitors the X-axis tilt of the handles. Once the turn is completed and the handle returns to a near-straight position (detected by a 60% or greater change in the X-axis tilt), the relay is deactivated, turning off the indicator light automatically. This helps prevent the indicator from staying on longer than necessary, improving safety and convenience.