**📌 Project Title:**

**Smart Step Counter with OLED Display using MPU6050 and Arduino Uno**

**🧾 Project Description**

This project is a smart **step counter (pedometer)** designed using an **MPU6050 accelerometer and gyroscope sensor or ADXL345 accelerometer**, an **Arduino Uno**, and an **OLED screen** to display the number of steps. The project also includes a **push button** for resetting the step count and a **slide switch** to control the power.

The MPU6050 or ADXL345 detects the motion of a person by sensing acceleration values on three axes (X, Y, Z). Using basic motion analysis (magnitude of acceleration), the Arduino can count each detected step. When a step is recognized based on a threshold, it increases the count and displays the value on the OLED screen.

The OLED provides a real-time display of steps taken, making it useful for fitness tracking. The reset button allows the user to restart the step count from zero, and the slide switch ensures that the device can be manually turned off when not in use to save power.

**🛠️ Functions and Applications**

**✅ Functions of the Project:**

* Detects motion and steps using the MPU6050 or ADXL345 sensor.
* Displays real-time step count on a 0.96-inch OLED display.
* Allows users to reset the step count using a push button.
* Allows power control through a slide switch.
* Provides serial monitoring for debugging or data logging.

**🌍 Applications (Real-world Uses & Benefits):**

* Personal fitness tracking and health monitoring.
* Educational use for learning about sensors and microcontrollers.
* A base for developing advanced wearable health devices.
* Data logging for physical activity in health studies.
* Can be extended into a full fitness band or smart shoe tracker.

**🔩 List of Components and Their Functions**

| **Component** | **Quantity** | **Function** |
| --- | --- | --- |
| **Arduino Uno** | 1 | Acts as the brain of the project. It processes data from the sensor and controls the display. |
| **MPU6050 or ADXL345 Sensor** | 1 | 3-axis accelerometer and gyroscope used to detect movement and calculate step magnitude. |
| **0.96-inch OLED Display (I2C)** | 1 | Displays the number of steps in real-time. Connects to Arduino via I2C. |
| **Push Button** | 1 | Used to reset the step count to zero. |
| **Slide Switch** | 1 | Turns the device ON or OFF manually. |
| **Breadboard and Jumper Wires** | As needed | Used for making temporary connections between components. |
| **USB Cable** | 1 | Used to upload code and power the Arduino Uno. |
| **Power Source (e.g., USB or 9V Battery)** | 1 | Supplies power to the Arduino and components. |