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| **Iotronics Techlab Pvt Ltd.** | |
| **Aim:** | Create a manual for using an accelerometer with an I2C display, outlining its functionality and operation. |
| **Requirements:** | Iotronics Kit L-3, Accelerometer seso, I2C display |
| **IDE:** | Arduino IDE |
| **Connection Diagram:** |  |
| **Working** | The accelerometer measures the acceleration forces acting on the device in three dimensions (X, Y, Z). These measurements can be accessed via an Arduino microcontroller using the I2C communication protocol. The I2C display provides a user-friendly interface for viewing the accelerometer data in real-time. |
| **Procedure:** | 1. Setup: Connect accelerometer and I2C display to Arduino.  2. Installation: Install required Arduino libraries.  3. Initialization: Initialize accelerometer and display in the sketch.  4. Data Acquisition: Read accelerometer data continuously.  5. Display: Update I2C display with real-time accelerometer data.  6. User Interaction: Implement controls for display and settings.  7. Testing: Verify functionality and responsiveness.  8. Documentation: Create user manual with usage instructions.  9. Deployment: Deploy system with manual for user access. |
| **CODE:** | #include <Wire.h>#include <LiquidCrystal\_I2C.h>LiquidCrystal\_I2C lcd(0x27, 16, 2);  // Address 0x27, 16 columns, 2 rowsint Xread;int Xrest;int Yread;int Yrest;int Zread;int Zrest;double Gx;double Gy;double Gz;int xpin = A0;  // Using A0, A1, A2 as analog pinsint ypin = A1;int zpin = A2;int t1;void setup() {  Serial.begin(9600);  lcd.init();  // Initialize the LCD  lcd.backlight();  // Turn on backlight  digitalWrite(13, HIGH);  delay(1000);  Xrest = analogRead(xpin);  Serial.print(Xrest);  Yrest = analogRead(ypin);  Serial.print(Yrest);  Zrest = analogRead(zpin);  Serial.print(Zrest);  digitalWrite(13, LOW);}void loop() {  Serial.print("Time ");  t1 = millis();  Serial.println(t1 \* 0.001);  Xread = analogRead(xpin) - Xrest;  Yread = analogRead(ypin) - Yrest;  Zread = analogRead(zpin) - Zrest;  Gx = Xread / 67.584;  Gy = Yread / 67.584;  Gz = Zread / 67.584;  Serial.print("Acceleration X :");  Serial.print(Gx);  Serial.print("Acceleration Y :");  Serial.print(Gy);  Serial.print("Acceleration Z :");  Serial.print(Gz);  Serial.print("\n");  lcd.setCursor(0, 0);  lcd.print("gx:");  lcd.print(Gx);  lcd.setCursor(8, 0);  lcd.print("gy:");  lcd.print(Gy);  lcd.setCursor(0, 1);  lcd.print("gz:");  lcd.print(Gz);  delay(1000);  lcd.clear();} |
| **Result/Output** |  |