Practical No.:05

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ROLL NO.01

COURSE: AI&DS

CLASS: BE

SUB:Computer Laboratory-I (Machine Learning)"

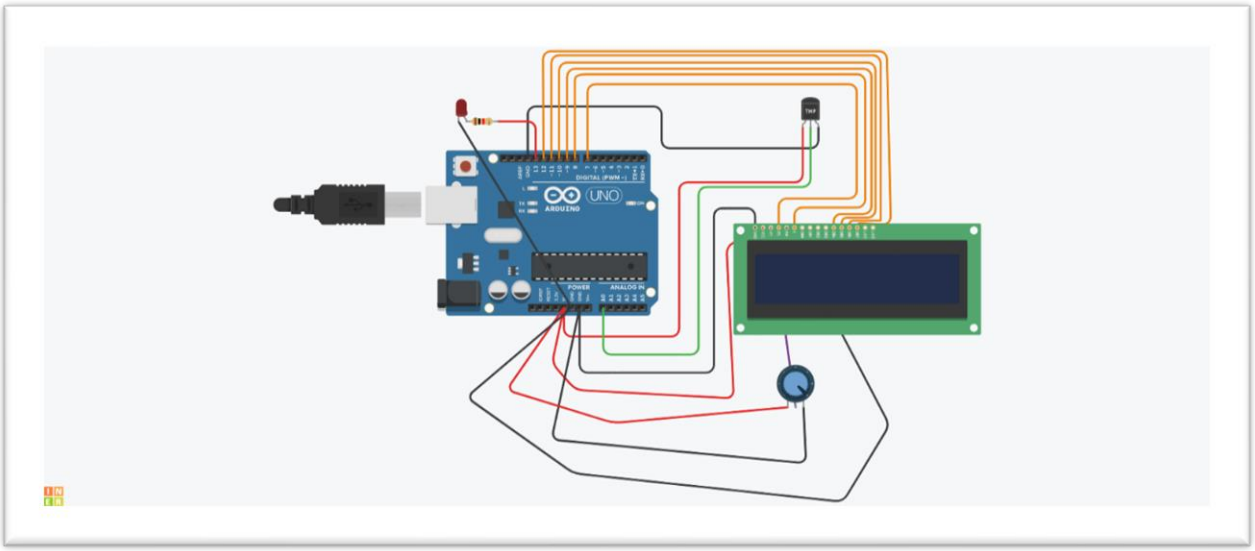
Title: Write a program for performing industrial data analysis using relevant tools and techniques.

#Code:

```
#include <LiquidCrystal.h>


// TMP36 sensor pin

const int tempSensorPin = A0;


// LCD pin setup: RS, E, D4, D5, D6, D7

LiquidCrystal lcd(7, 8, 9, 10, 11, 12);


// LED pin

const int ledPin = 13;


// Temperature threshold for alert (in Celsius)

const float tempThreshold = 30.0;


void setup() {

  Serial.begin(9600);         // Initialize serial communication

  lcd.begin(16, 2);           // Initialize LCD with 16 columns and 2 rows

  pinMode(ledPin, OUTPUT);    // Set LED pin as output


  // Initial message

  lcd.print("Initializing...");

  delay(2000);                // Wait 2 seconds
```

```
  lcd.clear();
}

void loop() {
  // Read temperature from TMP36
  int sensorValue = analogRead(tempSensorPin);
  float voltage = sensorValue * (5.0 / 1023.0); // Convert ADC reading to voltage
  float temperature = (voltage - 0.5) * 100.0;  // Convert voltage to Celsius

  // Display temperature on LCD
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Temp: ");
  lcd.print(temperature);
  lcd.print(" C");

  // Print to Serial Monitor for debugging
  Serial.print("Temperature: ");
  Serial.print(temperature);
  Serial.println(" C");

  // Check if temperature exceeds threshold
  if (temperature > tempThreshold) {
    digitalWrite(ledPin, HIGH); // Turn on LED alert
    lcd.setCursor(0, 1);
    lcd.print("Alert: High Temp!");
  } else {
    digitalWrite(ledPin, LOW);  // Turn off LED
    lcd.setCursor(0, 1);
    lcd.print("Temp is Normal");
  }

  delay(2000); // Wait before reading again
}
```

#Circuit Diagram:



#Output:

Temperature: 24.78 C

Temperature: 24.78 C

Temperature: 24.78 C

Temperature: 24.78 C

Temperature: 24.78 C

Temperature: 24.78 C

Temperature: 24.78 C

Temperature: 24.78 C

Temperature: 55.08 C

Temperature: 55.08 C

Temperature: 55.08 C

Temperature: 55.08 C

Temperature: 46.77 C

Temperature: 46.77 C

Temperature: 46.77 C

Temperature: 46.77 C

Temperature: 3.76 C

Temperature: 3.76 C

Temperature: 3.76 C

Temperature: 3.76 C