NOISE POLLUTION MONITORING USING IOT

PHASE 4: DEVELOPMENT PART -2:

MICROPROCESSOR PROGRAM:

```
#include <avr/io.h>
#include <avr/interrupt.h>

#define F_CPU 16000000UL  // CPU clock frequency (16 MHz)
#define BAUD 9600       // Baud rate for serial communication

void USART_Init(unsigned int ubrr) {
   // Set baud rate
   UBRR0H = (unsigned char)(ubrr >> 8);
   UBRR0L = (unsigned char)ubrr;

   // Enable receiver and transmitter
   UCSR0B = (1 << RXEN0) | (1 << TXEN0);

   // Set frame format: 8 data, 1 stop bit
   UCSR0C = (1 << UCSZ00) | (1 << UCSZ01);
}

void USART_Transmit(unsigned char data) {
   // Wait for empty transmit buffer
   while (!(UCSR0A & (1 << UDRE0)));
```

```
    // Put data into buffer and send
    UDR0 = data;
}

int main(void) {
    // Initialize USART communication
    USART_Init(F_CPU / 16 / BAUD - 1);

    // Initialize ADC
    ADMUX = (1 << REFS0);  // Reference voltage to AVCC
    ADCSRA = (1 << ADEN) | (1 << ADSC) | (1 << ADATE) | (1 << ADIE) | (1 << ADPS2) | (1 << ADPS1);
// Enable ADC, start conversion, enable ADC interrupt, and set prescaler

    sei();  // Enable global interrupts

    while (1) {
        // Main loop
    }

    return 0;
}

ISR(ADC_vect) {
    // ADC conversion complete interrupt

    uint8_t lowByte = ADCL;
    uint8_t highByte = ADCH;
    uint16_t adcValue = (highByte << 8) | lowByte;
```

```
  // You can perform noise analysis here and set thresholds for pollution monitoring


  // Print the ADC value to the serial communication
  USART_Transmit(lowByte);
  USART_Transmit(highByte);
  USART_Transmit('\n');


  // Start the next ADC conversion
  ADCSRA |= (1 << ADSC);
}
```

HTML PROGRAM:

```
<!DOCTYPE html>
<html>
<head>
  <title>AQI Data from Firebase</title>
  <script src="https://www.gstatic.com/firebasejs/8.10.0/firebase-app.js"></script>
  <script src="https://www.gstatic.com/firebasejs/8.10.0/firebase-database.js"></script>
</head>
<body>
  <h1>Air Quality Index (AQI) Data</h1>
  <div id="aqi-data">
    <!-- AQI data will be displayed here -->
  </div>

  <script>
    // Initialize Firebase with your project's configuration
    var firebaseConfig = {
      apiKey: "YOUR_API_KEY",
      authDomain: "YOUR_AUTH_DOMAIN",
      databaseURL: "YOUR_DATABASE_URL",
      projectId: "YOUR_PROJECT_ID",
      storageBucket: "YOUR_STORAGE_BUCKET",
      messagingSenderId: "YOUR_MESSAGING_SENDER_ID",
```

```
      appId: "YOUR_APP_ID"
    };

    firebase.initializeApp(firebaseConfig);

    // Reference to your AQI data in Firebase
    var aqiRef = firebase.database().ref("aqi");

    // Listen for changes in the AQI data
    aqiRef.on("value", function(snapshot) {
      var aqiData = snapshot.val();

      // Update the HTML to display the AQI data
      if (aqiData) {
        document.getElementById("aqi-data").innerHTML = "AQI: " + aqiData;
      } else {
        document.getElementById("aqi-data").innerHTML = "No data available";
      }
    });
  </script>
</body>
</html>
```

INTERFACING :