- **Noise pollution monitoring**

Phase 4:

Introduction:

Noise monitoring refers to the systematic process of measuring, recording, and assessing sound levels in various environments to understand the extent of noise pollution and its potential impact on human health and the surrounding ecosystem.

Overview:

Noise Monitoring Network

Noise monitoring networks mainly suffer from the lack of spatial resolution. They can primarily be used for sources with known spatial uniformity. Typical examples are airport noise, where the runway determines takeoff and landing and thus representative points for monitoring highway noise, where the constant intensity and mixture of vehicles along the highway guarantee that a measurement is representative for at least a longer stretch of the highway; railway noise, where the stretch with uniform traffic may be even longer. Classical monitoring fails quite quickly in urban area where traffic on several smaller streets determines the noise climate and buildings screen some of these sources.

Currently, larger cities operate a limited number of full-blown measurements stations that give little coverage. Recent advances in computer networks, cheap microphone, and powerful signal processing may lead to a different situation in near future.

- ### *Various tools used for this project:*
  Noise is Monitored Using a Sound Level Meter (SLM)

  This is to measure changes in air pressure, recorded in decibels (dB). Noise is typically measured by adjusting how a human ear responds to sound (A or C weighted responses).

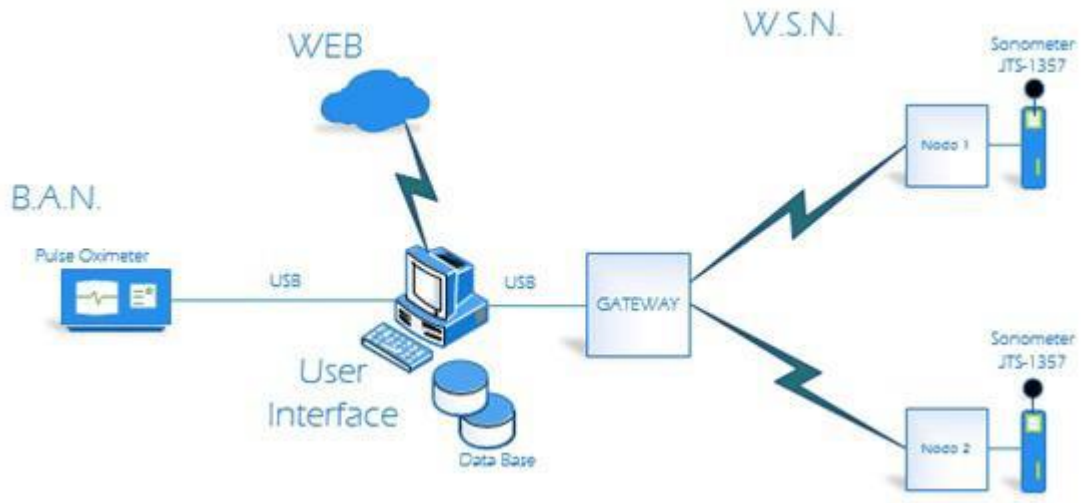
IOT device:

System uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data to microcontroller.

Communication network:

- ***Noise Pollution Measurement System which integrates a Wireless Sensor Network (WSN) and a Body Access Network (BAN) capable of measuring noise pollution levels as well as monitoring its health effects on humans. The WSN and BAN network developed in this paper can be implemented by government entities on a large scale to identify the risks of uncontrolled noise levels and its effects on the health of humans. All the data collected by the sensors can be processed, stored and analyzed at a centralized government data center, where authorities can have access to real-time***

information and statistical data, allowing them to make smart decisions and corrective actions in a short amount of time.

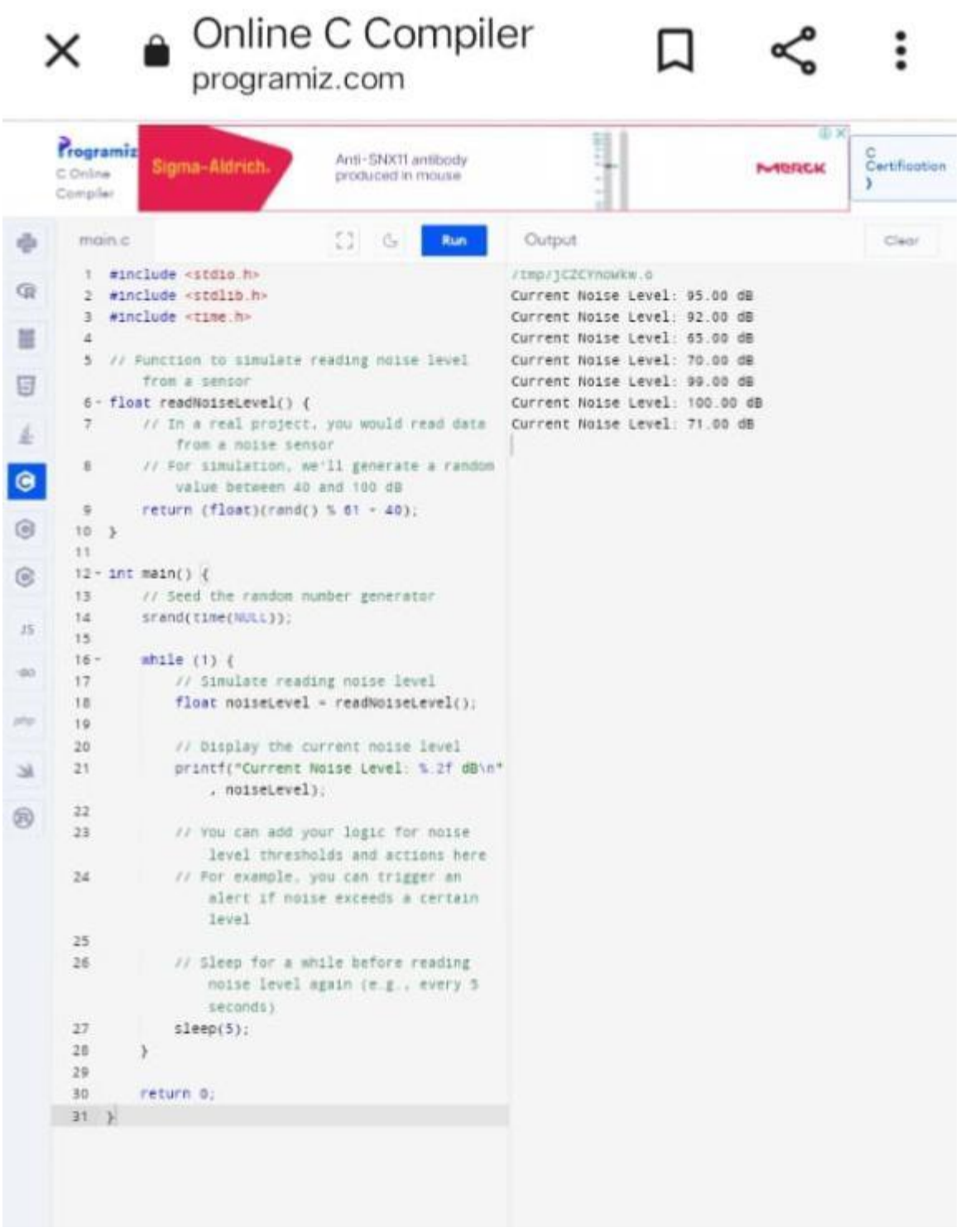


Python program:

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

// Function to simulate reading noise level from a sensor
Float readNoiseLevel() {
   // In a real project, you would read data from a noise sensor
   // For simulation, we'll generate a random value between 40 and 100 dB
   Return (float)(rand() % 61 + 40);
}
```

```
Int main() {
   // Seed the random number generator
   Srand(time(NULL));

   While (1) {
      // Simulate reading noise level
      Float noiseLevel = readNoiseLevel();

      // Display the current noise level
      Printf("Current Noise Level: %.2f dB\n", noiseLevel);

      // You can add your logic for noise level thresholds and actions here
      // For example, you can trigger an alert if noise exceeds a certain level

      // Sleep for a while before reading noise level again (e.g., every 5 seconds)
      Sleep(5);
   }

   Return 0;
}
```

Output:


Online C Compiler
programiz.com
Programiz
C Online Compiler
Sigma-Aldrich.
Anti-SNX11 antibody produced in mouse
MERCK
C Certification
main.c
Run
Output
Clear
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
// Function to simulate reading noise level from a sensor
float readNoiseLevel() {
// In a real project, you would read data from a noise sensor
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int main() {
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// Display the current noise level
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// You can add your logic for noise level thresholds and actions here
// For example, you can trigger an alert if noise exceeds a certain level
// Sleep for a while before reading noise level again (e.g., every 5 seconds)
sleep(5);
}
return 0;
}
/tmp/jCZCYnowkw.o
Current Noise Level: 95.00 dB
Current Noise Level: 92.00 dB
Current Noise Level: 65.00 dB
Current Noise Level: 70.00 dB
Current Noise Level: 99.00 dB
Current Noise Level: 100.00 dB
Current Noise Level: 71.00 dB

Conclusion:

- ***Noise pollution can primarily start affecting the hearing ability of the person, causing permanent hearing impairment.*** ***Furthermore, it can cause an increase in blood pressure, hypertension, and other stress-related health issues.***