NOISE POLLUTION MONITORING

Building an IoT-enabled Noise Pollution Monitoring system requires several components. Here's a high-level plan to get you started:

1.Select IoT Sensors: Choose noise sensors compatible with IoT protocols like MQTT or CoAP, ensuring they can accurately measure noise levels in the target areas.

2.Set Up the IoT Platform: Establish a secure and reliable IoT platform that can receive and process data from the sensors. You can consider using platforms like AWS IoT, Azure IoT, or Google Cloud IoT.

3.Write Python Script for Data Transmission: Develop a Python script on the sensors using libraries such as paho-mqtt or CoAPthon to send real-time noise level data to the IoT platform. Ensure the script includes error handling and data validation mechanisms.

4.Data Visualization and Analysis: Implement a data visualization and analysis tool to interpret and present the data in a user-friendly format. You can use libraries like Matplotlib or Seaborn for visualization and Pandas for data analysis.

5.Security and Privacy Considerations: Ensure that your system has robust security measures in place to protect data integrity and user privacy. Implement authentication and encryption protocols to secure data transmission.

PYTHON SCRIPT:

```
import paho.mqtt.client as mqtt
import random
import time
# MQTT broker details
broker_address = "YOUR_BROKER_ADDRESS"
broker_port = 1883
client = mqtt.Client("NoiseSensor")
# Connect to the broker
client.connect(broker_address, broker_port)
# Simulating noise level data
def get_noise_level():
return random.uniform(40, 100) # Modify this based on your sensor data
try:
while True:
noise_level = get_noise_level()
print(f"Sending noise level data: {noise_level}")
# Publishing noise level data to the topic "noise_data"
client.publish("noise_data", noise_level)
time.sleep(5) # Adjust the time interval as per your requirement
except KeyboardInterrupt:
print("Script interrupted.")
client.disconnect()
```

Remember, the success of the system depends on careful planning, effective implementation, and continuous monitoring of the collected data.