Welcome | shm_nm2.py

shm_nm2.py > ...

```python
import time
import random

# Simulated IoT sensor interface
class IoTSensor:
    def __init__(self, name):
        self.name = name

    def read(self):
        # Simulate different sensor types
        if self.name == "heart_rate":
            return random.randint(60, 100)
        elif self.name == "temperature":
            return round(random.uniform(36.0, 37.5), 2)
        elif self.name == "oxygen_level":
            return random.randint(95, 100)
        return None

# Optimized integration function
def get_sensor_data(sensors):
    data = {}
    start_time = time.time()
    for sensor in sensors:
        value = sensor.read()
        data[sensor.name] = value
    elapsed_time = round((time.time() - start_time) * 1000, 2)  # in milliseconds
    return data, elapsed_time

# Main monitoring loop
def monitor_system():
    sensors = [IoTSensor("heart_rate"), IoTSensor("temperature"), IoTSensor("oxygen_level")]
    print("🩺 Real-Time Health Monitoring Started...\n")

    for i in range(20):  # simulate 20 sensor readings
        sensor_data, latency = get_sensor_data(sensors)
        print(f"Reading {i+1:02}: {sensor_data} | ⏱ Latency: {latency} ms")

        # Simple performance threshold check
        if latency > 100:
            print("⚠️ Warning: Sensor integration latency too high!\n")

        # Delay to simulate real-time
        time.sleep(1)

if __name__ == "__main__":
    monitor_system()
```

OUTPUT

```
PS C:\Users\Vishveswar\vsc> & C:/Users/Vishveswar/AppData/Local/Programs/Python/Python313/python.exe c:/Users/Vishveswar/vsc/shm_nm2.py
🩺 Real-Time Health Monitoring Started...

Reading 01: {'heart_rate': 62, 'temperature': 37.18, 'oxygen_level': 99} | ⏱ Latency: 0.05 ms
Reading 02: {'heart_rate': 64, 'temperature': 36.05, 'oxygen_level': 97} | ⏱ Latency: 0.04 ms
Reading 03: {'heart_rate': 72, 'temperature': 37.27, 'oxygen_level': 98} | ⏱ Latency: 0.05 ms
Reading 04: {'heart_rate': 73, 'temperature': 36.35, 'oxygen_level': 96} | ⏱ Latency: 0.04 ms
Reading 05: {'heart_rate': 73, 'temperature': 37.11, 'oxygen_level': 96} | ⏱ Latency: 0.04 ms
Reading 06: {'heart_rate': 88, 'temperature': 36.6, 'oxygen_level': 96} | ⏱ Latency: 0.04 ms
Reading 07: {'heart_rate': 77, 'temperature': 36.98, 'oxygen_level': 98} | ⏱ Latency: 0.05 ms
Reading 08: {'heart_rate': 90, 'temperature': 36.28, 'oxygen_level': 99} | ⏱ Latency: 0.04 ms
Reading 09: {'heart_rate': 81, 'temperature': 36.7, 'oxygen_level': 97} | ⏱ Latency: 0.04 ms
Reading 10: {'heart_rate': 60, 'temperature': 36.29, 'oxygen_level': 100} | ⏱ Latency: 0.06 ms
Reading 11: {'heart_rate': 100, 'temperature': 36.56, 'oxygen_level': 96} | ⏱ Latency: 0.04 ms
Reading 12: {'heart_rate': 80, 'temperature': 36.88, 'oxygen_level': 98} | ⏱ Latency: 1.95 ms
Reading 13: {'heart_rate': 83, 'temperature': 36.89, 'oxygen_level': 95} | ⏱ Latency: 0.05 ms
Reading 14: {'heart_rate': 73, 'temperature': 37.28, 'oxygen_level': 99} | ⏱ Latency: 0.04 ms
Reading 15: {'heart_rate': 76, 'temperature': 37.43, 'oxygen_level': 100} | ⏱ Latency: 0.04 ms
Reading 16: {'heart_rate': 93, 'temperature': 36.99, 'oxygen_level': 98} | ⏱ Latency: 0.04 ms
Reading 17: {'heart_rate': 97, 'temperature': 37.17, 'oxygen_level': 96} | ⏱ Latency: 0.14 ms
Reading 18: {'heart_rate': 98, 'temperature': 37.39, 'oxygen_level': 96} | ⏱ Latency: 0.04 ms
Reading 19: {'heart_rate': 84, 'temperature': 36.38, 'oxygen_level': 100} | ⏱ Latency: 0.04 ms
Reading 20: {'heart_rate': 93, 'temperature': 36.07, 'oxygen_level': 99} | ⏱ Latency: 0.04 ms
```