#include <iostream>

#include <vector>

using namespace std;

// Temperature Sensor Class

class TemperatureSensor {

public:

float readTemperature() {

// Simulating a temperature reading

return 20.0f + static\_cast<float>(rand() % 100) / 10; // Random temperature between 20.0 and 29.9

}

};

// Logger Class

class Logger {

private:

vector<float> temperatureData; // Store temperature readings

public:

void logTemperature(float temperature) {

temperatureData.push\_back(temperature); // Log the temperature reading

}

void displayLog() const {

cout << "Temperature Log:\n";

for (size\_t i = 0; i < temperatureData.size(); ++i) {

cout << "Reading " << (i + 1) << ": " << temperatureData[i] << "°C\n";

}

}

};

// Alert System Class

class AlertSystem {

private:

float thresholdHigh;

float thresholdLow;

public:

AlertSystem(float low, float high) : thresholdLow(low), thresholdHigh(high) {}

void checkTemperature(float temperature) const {

if (temperature > thresholdHigh) {

cout << "Alert: Temperature too high! (" << temperature << "°C)\n";

} else if (temperature < thresholdLow) {

cout << "Alert: Temperature too low! (" << temperature << "°C)\n";

}

}

};

// Monitoring System Class

class MonitoringSystem {

private:

TemperatureSensor sensor;

Logger logger;

AlertSystem alert;

public:

MonitoringSystem(float low, float high) : alert(low, high) {}

void monitor() {

for (int i = 0; i < 10; ++i) { // Simulate 10 readings

float temperature = sensor.readTemperature();

logger.logTemperature(temperature);

alert.checkTemperature(temperature);

cout << "Current Temperature: " << temperature << "°C\n";

}

logger.displayLog();

}

};

int main() {

MonitoringSystem system(18.0f, 25.0f); // Set thresholds for alerts

system.monitor();

return 0;

}