#include <iostream>

#include <fstream>

#include <string>

using namespace std;

const int MAXSAMPLES = 1000;

const string DATAFILE = "datafile.txt"; // Replace with your file path

struct ReadingRow {

int sensorNumber;

string timestamp;

int sensorReading;

};

ReadingRow sensorReadings[MAXSAMPLES];

int numberOfReadings = 0;

double averageTemperature = 0.0;

void readDataFromFile() {

ifstream dfile;

int sNumber = 0;

string currentTS = "";

int sReading = 0;

int readingCount = 0;

int sumOfTemps = 0;

dfile.open(DATAFILE);

if (dfile.is\_open()) {

while (dfile >> sNumber >> currentTS >> sReading) {

readingCount++;

sensorReadings[readingCount].sensorNumber = sNumber;

sensorReadings[readingCount].timestamp = currentTS;

sensorReadings[readingCount].sensorReading = sReading;

sumOfTemps += sReading;

}

numberOfReadings = readingCount;

averageTemperature = static\_cast<double>(sumOfTemps) / numberOfReadings;

dfile.close();

} else {

cerr << "Error: Unable to open data file" << endl;

exit(1);

}

}

void displayDataForSensor(unsigned int sensorID) {

cout << "Sensor number: " << sensorReadings[sensorID].sensorNumber << endl;

cout << "Timestamp : " << sensorReadings[sensorID].timestamp << endl;

cout << "Temperature : " << sensorReadings[sensorID].sensorReading << endl;

}

int main() {

readDataFromFile();

cout << "Overall average temperature: " << averageTemperature << endl;

int selectedSensor;

cout << "Enter sensor number to display reading: ";

cin >> selectedSensor;

for (int i = 1; i <= numberOfReadings; ++i) {

if (sensorReadings[i].sensorNumber == selectedSensor) {

displayDataForSensor(i);

break;

}

}

return 0;

}

A computer screen shot of a computer code

Description automatically generated