

```

/*--- student.h ---*/
#include <iostream>
#include <string>
#include <fstream>

using namespace std;

struct Student
{
    string first, last;
    double avg;
    int* hw;
    int hwNum;
};

Student* readfile(int& n);
void sort(Student*, int);
void print(Student*, int);
void average(Student*, int);
bool before(double, double);

/*--- student.cpp ---*/
#include "student.h"

Student* readfile(int& n)
{
    string filename, garb;
    cout << "File name: ";
    cin >> filename;
    ifstream fin(filename.c_str());
    int nh;
    fin >> n >> garb >> nh >> garb;
    Student* stu = new Student[n];

    for(int i = 0; i < n; i++)
    {
        fin >> stu[i].first >> stu[i].last;
        stu[i].hwNum = nh;
        stu[i].hw = new int[nh];
        for(int j = 0; j < nh; j++)
        {
            fin >> stu[i].hw[j];
        }
    }

    average(stu, n);

    return stu;
}

void average(Student* stu, int n)
{
    for(int i = 0; i < n; i++)
    {
        double sum = 0;
        for(int j = 0; j < stu[i].hwNum; j++)
        {
            sum += stu[i].hw[j];
        }
        stu[i].avg = sum/stu[i].hwNum;
    }
}

void sort(Student* A, int N)
{
    for(int length = N; length > 1; length--)

```

```

{
    // Find imax, the index of the largest
    int imax = 0, i;
    for(i = 1; i < length; i++)
        if (before(A[imax].avg, A[i].avg))
            imax = i;

    // Swap A[imax] and the last element
    Student temp = A[imax];
    A[imax] = A[length - 1];
    A[length - 1] = temp;
}

bool before(double a, double b)
{
    return a < b;
}

void print(Student* stu, int n)
{
    for(int i = 0; i < n; i++)
    {
        cout << stu[i].first << " " << stu[i].last << " " << "avg="
        << stu[i].avg << " ";
        for(int j = 0; j < stu[i].hwNum; j++)
            cout << stu[i].hw[j] << " ";
        cout << endl;
    }
}

```