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#include <iostream>
#include <ctime>
#include <cstdlib>
#include <math.h>

using namespace std;

struct Students
{
    string name;
    int score;
} student[10];

string Maxstudentscore(Students student[10])
{
    string maxname = student[0].name;
    int maxscore = student[0].score;
    for (int i = 1; i < 10; i++)
    {
        if (student[i].score > maxscore)
        {
            maxscore = student[i].score;
            maxname = student[i].name;
        }
    }
    return maxname;
}

string Minstudentscore(Students student[10])
{
    string minname = student[0].name;
    int minscore = student[0].score;
    for (int i = 1; i < 10; i++)
    {
        if (student[i].score < minscore)
        {
            minscore = student[i].score;
            minname = student[i].name;
        }
    }
    return minname;
}

double Average(Students student[10])
{
    double sum = 0;
```

```
    for (int i = 0; i < 10; i++)
    {
        sum += student[i].score;
    }
    return sum / 10;
}

int Modescore(Students student[10])
{
    int mode = 0;
    int count = 0;
    int maxcount = 0;
    for (int i = 0; i < 10; i++)
    {
        count = 0;
        for (int j = 0; j < 10; j++)
        {
            if (student[i].score == student[j].score)
            {
                count++;
            }
        }
        if (count > maxcount)
        {
            maxcount = count;
            mode = student[i].score;
        }
    }
    return mode;
}

double MedianScore(Students student[10])
    {
        double median = 0;
        int count = 0;
        for (int i = 0; i < 10; i++)
        {
            count++;
        }
        if (count % 2 == 0)
        {
            median = (student[count / 2].score + student[count / 2 -
1].score) / 2;
        }
        else
        {
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            median = student[count / 2].score;
        }
        return median;
    }

double SDscore(Students student[10])
    {
        double sum = 0;
        double mean = Average(student);
        for (int i = 0; i < 10; i++)
        {
            sum += pow(student[i].score - mean, 2);
        }
        return sqrt(sum / 10);
    }

void ShowgradeAllstudents(Students student[10], double avg, double sd)
    {
        for (int i = 0; i < 10; i++)
        {
            if (student[i].score > avg + (2 * sd))
            {
                cout << student[i].name << ": A" << endl;
            }
            else if (student[i].score > avg + sd)
            {
                cout << student[i].name << ": B" << endl;
            }
            else if (student[i].score > avg)
            {
                cout << student[i].name << ": C" << endl;
            }
            else if (student[i].score > avg - sd)
            {
                cout << student[i].name << ": D" << endl;
            }
            else
            {
                cout << student[i].name << ": F" << endl;
            }
        }
    }

int main()
    {
```

```
        string name[10] = {"John", "Mary", "Peter", "Tenten", "Rew",
"Jenny", "Tom", "Jerry", "Jack", "Lily"};
        int score[10] = {80, 99, 58, 66, 66, 55, 42, 31, 72, 51};

        for (int i = 0; i < 10; i++)
        {
            student[i].name = name[i];
            student[i].score = score[i];
        }

        double avg = Average(student);
        double sd = SDscore(student);
        cout << "The highest score is " << Maxstudentscore(student) <<
endl;
        cout << "The lowest score is " << Minstudentscore(student) <<
endl;
        cout << "The average score is " << avg << endl;
        cout << "The mode score is " << Modescore(student) << endl;
        cout << "The median score is " << MedianScore(student) <<
endl;
        cout << "The standard deviation score is " << sd << endl;
        ShowgradeAllstudents(student, avg, sd);
    }
```

```
❯ ./bonus2
The highest score is Mary
The lowest score is Jerry
The average score is 62
The mode score is 66
The median score is 60
The standard deviation score is 18.363
John: C
Mary: A
Peter: D
Tenten: C
Rew: C
Jenny: D
Tom: F
Jerry: F
Jack: C
Lily: D
```