PROG20799: Data Structures and Algorithm Dev in C

Evaluation: 10 points

Please implement a student list program in C.
Students have 3 subject grades as in the following structure. Each subject grade of each student must be entered into your program, and your program should be able to store them into a dynamically allocated memory and then calculate and print them with basic statistics (min, max and avg).

Main requirements (must be met):
1. The skeleton structure **student** must be declared as:

```
typedef struct {
    char name[60];
    double cSharp, math, systems;
    double total;
}Student;
```

The structure **student** keeps the information of one student, including student name, three subject grades, and total points.

2. Since you can have many students, you have to declare a **dynamic array of pointers to a student structure** at the beginning of main function to keep the information about each student. The size of the array will be entered by the user first.

3. Your program must have three utility functions following the modularization concept with the following prototypes:

void inputStudents(Student * students[ ], int size); // to input student(s) info
void statsStudents(Student * students[ ], int size, double stats[ ]); // to calculate class statistics
void printStudents(Student * students[ ], int size, const double stats[ ]); // to print students & the stats

DEMO:

```
Enter how many students: 3
Enter Student 1's name: Ali
CSharp: 55
Math: 62
Systems: 92
Enter Student 2's name: Sara
CSharp: 62
Math: 77
Systems: 50
Enter Student 3's name: Dan
CSharp: 51
Math: 80
Systems: 90

================================================

No      CSharp          Math            Systems         Total           Name
1       55.00           62.00           92.00           209.00          Ali
2       62.00           77.00           50.00           189.00          Sara
3       51.00           80.00           90.00           221.00          Dan


Statistics of class:
min = 189.00, max = 221.00, avg = 206.00

--------------------------------
Process exited after 45.95 seconds with return value 0
Press any key to continue . . .
```

Checklist:

Your program must:

1. Satisfy main requirements
2. Be reasonable optimized: please minimize stack memory footprint, use proper data types, avoid repetitive code, etc.
3. The program should not accept a number of students less than two.
4. The memory must be assigned dynamically based on the number of the students entered by the user.

Submission:

- Please make sure your program compiles and runs without errors.
- Save each program as text file with extension **.txt**
- You must upload it to Dropbox.

Evaluation:

Your assignment will be marked based on:

1. Properly running program (without errors (logic and syntax)).
2. Formatting, proper style, indentation and conventions.
3. Appropriately named variables.
4. Efficiency.

Good Luck!

Prof.
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