CS 42 C++ Programming Essentials:

Homework 11:

In the homework Chapter 3 of C Programming Essential Course, we have done the step 1 and 2 as the following homework instructions. If you don't have that done, please finish it first for C++ language.

If you have done it, start from step 3.

1. Please design a student registration system for **Adam Smith** High School.

   Create a struct named **Student** in C language (or C++ language)

   The input page is like the following (Input from Terminal (console keyboard)):

```
Welcome to Dolphin High School's Student Registration System
Enter a student's name: Adam Smith
Enter a student's address: 1 A Street, Los Angeles, CA 90007
Enter his/her Math score: 98
Enter his/her English score: 67
Enter his/her Chemistry score: 85
Enter his/her US History score: 42
Enter his/her Physical Education score: 90
```

   Calculate the total score for the semester and the average score.

   Then, you should have print out like this (On the screen):

```
Student Record
Name: Adam Smith            Address: 1 A Street, Los Angeles, CA 90007
M: 98.00, E 67.00:, C: 85.00, U: 42.00, P:  90.00Total:     382.00   Average:  76.40
```

   (Part 2 on the next page. Read information from file and output to a file.)

2. Now, Create a struct named StudentFile (StudentFile.c) read from student.txt and write to studentout.txt
   First, you need to include the following modules:

```
#include <stdio.h>
#include <stdlib.h>
#include <sys/file.h>
#include "Student.h"
```

Then, read in the studentin.txt file with the following data:

Adam Smith
1 A Street, CA 90007
98 67 85 42 90

Note: In this program, you read data from file, so there is no need to print any prompt message to ask user for input.

Then, output the result to the studentout.txt file like below

```
Student Record
Name: Adam Smith

Address: 1 A Street, Los Angeles, CA 90006

M: 98.00, E 67.00:, C: 85.00, U: 42.00, P:  90.00Total:    382.00  Average:  76.40
```

3. Step 3 (Homework 11 starts here)
   Copy the student.txt over to this new project directory. Add 4 more students.

The new student file should have the following

Adam Smith
1 A Street, CA 90007
98 67 85 42 90
Brian Taylor
2 B Street, CA 90007
45 86 95 73 58
Carol Winston
3 C Street, CA 90007
62 35 99 78 98
Diana Young
4 D Street, CA 90007
94 88 88 93 92
Ellen Zambrano
5 E Street, CA 90007
78 89 66 93 84

Now, make an array of 5 Student structs. Please use global struct variable first (Then, you may try dynamic memory allocation)
Read all the data from the student.txt file and print out the student record like before and calculate their individual GPA.
90+ - A for 4
80+ - B for 3
70+ - C for 2
60+ - D for 1
59- - F for 0

After that, calculate the average score for all student for all subjects.