CSCI 112

**Program #1**

**Due January 29, 2018**

A data file contains the enrollment information for the spring semester in the math department of a small high school named City High School. In this program, we will work with an array of structures, **C**. The structure will hold the following data fields: **crn** (an integer), **course** (a string), **crhrs** (an integer), **numstu**( an integer), **stucrhrs** (an integer) and **prof** (a string) . Create an array of up to 30 such structures (a constant), with **numc** being the current number in the array.

Perform the following steps:

A) Call a function to initialize **C** and **numc**.

B) Call a function to read the contents of the data file into the array. Let the program determine **numc** (the number of courses).

C) Call a function to determine **stucrhrs**, the total number of student credit hours for the course.

D) Call a function to print the data in tabular form using appropriate formatting. Be sure to calculate and print totals under the appropriate columns.

E) Call a function to sort the array by **stucrhrs**, and call the (**SAME**) print function to print the data again.

F) Call a function to determine the department’s average number of students per section and print that with an appropriate message.

G) Call a function to get the total number of students who are studying each subject. Print that table with an appropriate message.

Use the following data for your data file:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Crn |  | Course | Credit Hours | Number of Students |  | Professor |
| 12836 |  | Algebra | 4 | 40 |  | Boole |
| 21780 |  | Trigonometry | 3 | 33 |  | Euler |
| 52266 |  | Algebra | 4 | 44 |  | Hughes |
| 35628 |  | Precalculus | 5 | 27 |  | Jones |
| 41805 |  | Geometry | 5 | 35 |  | Pyth |
| 11434 |  | Algebra | 4 | 27 |  | Boole |
| 66886 |  | Trigonometry | 3 | 18 |  | Patton |
| 78799 |  | Calculus | 5 | 24 |  | Newton |
| 22531 |  | Geometry | 3 | 11 |  | DesCartes |
| 61443 |  | Algebra | 4 | 35 |  | Pascal |

89984 Calculus 5 10 Leibniz

Turn in:

The final copy of your source code

A copy of your data file

A copy of your output file

Staple the pages in the upper left hand corner

Note: Follow the rules for good programming:

* The main program contains only the data declarations and a series of function calls
* Use meaningful identifier names
* Follow the rules for good indentation
* Comment sparingly where needed
* All constants and data types should be at the top; no exits, continues or breaks
* Pass all parameters via the parameter list. **No global variables allowed!!**
* The data file should be typed in exactly as it is above sans titles.