IT 210

Fall 2013

Exam 2 – Take home

Due Wednesday, November 27 at 5:00 p.m.

Write a correct, well-structured, well-documented Python program which will read data for several students from a text file and create a list of lists to store that data. The data must be read from a text file named “Ex2.txt”. Each line in the text file contains the first name, last name, techid, number of credits earned, and number of quality points earned for a single student. The individual items of data on a line are separated by one or more spaces. That is, the file organization is the same as it was for your last lab.

For each line that you read in, you are to split it apart and create a list of the individual items. You should also convert the number of credits and number of quality points to integers within this list. These individual lists are then to be concatenated into a list of lists. For example, the composition of your final data structure should be similar to what is shown below.

[[‘Max’,’Medium’,’12345678’,58,152],[‘Jane’,’Johnson’,’87654321’,78,201],…[‘Sam’,’Spade’,’24681357’,16,30]]

Once your master list is created, you should print it to demonstrate that it was created correctly. Then your program must iterate through the list and ask the user for end-of-the-semester updates. This will entail asking the number of credits completed and the number of quality points earned in this semester for each of your students. These numbers are then to be added to the values stored in the list and the updated values are to be stored back in the list.

Once all of the updates are complete, print the master list again to demonstrate that you did the updates correctly.

Finally, “disassemble” your master list into lines of text of the same format as those you read in and write them, line by line, to a text file called “out.txt” in the default directory.

You can use the sample data file from Lab 9 to test your program. Just be sure to rename it to Ex2.txt

Your program must also meet the following design specifications.

* You are allowed to use any string functions or methods that you wish.
* You must put the code for your main program in a function named **main.**
* You program must read its initial data from the file named **Ex2.txt** in the default directory
* You must have a function which has a single parameter, representing a line of text from the file. This function must return the list of the information for that student.
* Once the above function returns the list for a single student, you must then incorporate this list into your master list.
* The update information must be entered from the keyboard and must be only the numbers for the current semester. (Do not ask the user for the total number of credits or quality points.) These input values must be added to the previously stored numbers and the totals must be stored back in the appropriate entries of your data structure. You should also display enough information about the student so the user knows which person is being asked about.
* The final output file must be called **out.txt** in the default directory and must be formatted in the same manner as the original input file.

Upload your program to the D2L dropbox called “Ex2” by 5:00 p.m. on November 27.