
EE 289 – Homework Chapter 8

- 1 Write a script that performs the following operations:
- Set the values of variables a, b, c1, c2, c3, and x. The values don't matter, except you should set c2 to 42.
 - Save the values of all the variables except x to mydata.mat using the save operation.
 - Set the value of c2 to -99.
 - Load myData.mat and check that c2 is now 42.
 - Clear all variables.
 - Load myData.mat again and note that the variable x is not present.
- 2 One requirement for all freshmen classes is an issue of a 'Standing' during the middle of the term. The results are either Satisfactory (S) or Unsatisfactory (U). Since you are the office employee in charge of issuing the grades, you decide to write a function called midtermGrades to help yourself. You discover that the grades are on a spreadsheet organized like this:
- Each student is represented by one row on the spreadsheet.
 - Unfortunately, since these sheets are created by different instructors, they are not necessarily consistent in their layout.
 - The first row will contain the following six strings in any order: 'name', 'math', 'science', 'english', 'history', and 'cs'.
 - Under the name column will be a string with the student's name.
 - Grades in the other columns can be 'A', 'B', 'C', 'D', 'F', or 'W'.
 - A student's grade is 'S' if there are more A's, B's, and C's than not

Your function should print out grades ready to be entered consisting of a table with headings 'Name' and 'S/U'

- 3 Write a function called genStats that will compute statistics for a set of class grades. The grades will be stored in a spreadsheet, and your function will compute statistics and then write the grades along with the statistics to another spreadsheet.

You may assume that the initial spreadsheet will have a format similar too:

Student Name	Exam1	Exam2	Exam3 ...
Student 1	100	76	45 ...
Student 2	34	83	89 ...

The first row is the header row, and the first column is the list of student names. There may be any number of exam grades, and there may be any number of students. Although, you may assume that there will be at least one student and that there will be at least one exam.

Also, every student will have a grade for every exam.

Your function should only have one input (a string containing the file name of the grades file) and no outputs. You must write your function to perform the following steps:

- a. Calculate the average grade of each student (across the rows) and store it in a new column called 'Average' (to the right of the last exam grade).
- b. Calculate the deviation of each student's overall average (calculated in step a) from the maximum student average and store it in a new column called 'Deviation' (to the right of the 'Average' column). Note that deviation is just the difference between the maximum student average and a student's overall average.
- c. Calculate the average of each column's data (each exam, the averages calculated in step a, and the deviations calculated in step b, then store these averages below the last row of the original data and name that row 'Total Average'.
- d. Write the original data along with all of the new data to a file named 'Stats_<name_of_original_file>' (so if the inputted file name was 'Student_Grades.csv', the new data would be written to the file named 'Stats_Student_Grades.csv').
- e. Construct a spreadsheet with suitable test data and use it to test your function.

4 Write a function called `replaceStr`. Your function should take in the following order:

filename: A string that corresponds to the name of a file

wordA: A string that is a word (contains no spaces)

wordB: Another string that is also a word (contains no spaces)

Your function should do the following:

- a. Read the file a line at a time.
- b. On each line, replace every occurrence of wordA with wordB.
- c. Write the modified text file with the same name as the original file, but prepended with 'new_'. For instance, if the input filename was 'data.txt', the output filename would be 'new_data.txt'.
- d. Prepare a test file by downloading a text file from the Internet. For example, the complete work of Shakespeare are accessible at <http://www.william-shakespeare.info>
- e. Examine the file for repeated words, and test your function by writing a script that replaces frequently repeated words.