

Carnegie Mellon University in Qatar

Principles of Computing

15-110 - Fall 2018

Homework Assignment 5

Out: November 08, 2018

Due: November 17, 2018

8pts

1. An acronym is a word formed by taking the first letters of the words in a phrase and making a word from them. For instance, RAM is an acronym for "random access memory". Write a Python program that allows the user to type in 5 phrases and then generates the acronyms for those phrases. In addition, your program should calculate the average word length in each phrase. For example, the average word length in the "random access memory" phrase is 6.0. Place the acronym and the average word length of each phrase in a tuple then store the tuple (as a value) and the phrase (as a key) in a dictionary. *Note:* the acronym should be all uppercase, even if the words in the phrase are not capitalized. Submit your program in a Python module named `Phrases.py`.

12pts

2. Write a Python program to plot a horizontal bar of stars for student exam scores. Your program should get input from a file. The first line of the file contains the count of the number of students in the file, and each subsequent line contains a student's last name followed by a score in the range 0 to 20. Your program should display a horizontal bar of stars for each student where the number of stars represents the student's score. Students should also be displayed in an ascending order as exemplified below.

```
Alaa *****
Eman *****
Khaled *****
Sara *****
```

Submit your program in a Python module named `Scores-As-Stars.py`.

30pts

3. This question has two parts: **a.** and **b.** below:
 - a. Write a Python program that allows asking 15 users to rate on a scale of 1 to 5 the "The Hobbit: The Battle of the Five Armies" and "Wonder" movies, with 1 being "awful" and 5 being "excellent." Each user should be asked to rate the two movies and only input values between 1 and 5 (inclusive) should be accepted. Place all the responses of all users in a dictionary and determine the frequency of each movie's rating. Afterwards, display the results of each movie in a table-like format as follows:
Movie: "The Hobbit: The Battle of the Five Armies"

Rating	Frequency
1	1
2	2
3	4
4	6
5	2

The above is an example of how the results for the "The Hobbit: The Battle of the Five Armies" movie might look like. Use the same format for other movie, namely, "Wonder". Submit your program in a Python module named `Movie-Ratings1.py`. *Hint:* You can use the movie name as a key and a list that contains the ratings of all users as a value in your dictionary.

- b. Suppose we wish to process rating results that are stored in a file. To this end, modify your [Movie-Ratings1.py](#) program to write the responses of all users in a file as shown below (only potential results for users 0 and 1 are shown as an example). Note that users are listed as integers and the first rate per each user refers to their rating of "The Hobbit: The Battle of the Five Armies" and the second one refers to their rating of "Wonder".

User	Rate
0	1
0	5
1	4
1	2

Your program should then read the responses from your file, determine the frequencies of each movie's ratings, and display the results of each movie in a table-like format as illustrated in part (a). Submit your program in a Python module named [Movie-Ratings2.py](#).