

CS 121 – Homework #6 – User Login Accounting – Due Monday, March 25, 2019

One of the many tasks that an operating system needs to perform is to maintain information about user logins – who is logged in and for how long. For this assignment, you will write a Python program that reads a text file containing data on these login sessions. Your program will need to keep track of the total amount of time each person has been logged in. Finally, the user will query your program to find out how long certain individuals have been logged in.

Your program should first ask the user for the name of the input file. You do not need to perform error checking on the input file. You may assume the input file exists. Each line of input identifies an individual login session. Here is what one line typically looks like:

```
bmentel ftp fu-138-71.furman Wed Apr 24 17:07 - 17:23 (00:14)
```

The first 8 characters of the line will contain a person's username on the system. At the end of the line is an amount of login time shown in parentheses. This amount of time is either of the form hh:mm for hours and minutes, or dd+hh:mm for days, hours and minutes if the login session lasted over 24 hours. The other information contained on the line, those characters after the 8th and before the '(', are not relevant for this assignment.

If a username is shorter than 8 characters, then you will need to delete the spaces at the end of the username. In the above example, the username is 7 characters long: "bmentel", not "bmentel ".

The login information may also include lines concerning users who are currently logged in. Your program needs to ignore these lines. For the purpose of this program, all you need to do is skip any input line that contains the phrase "still logged in" or any line that does not have parentheses in it.

Your program should use a dictionary to maintain user login data. The key should be the username, and the value stored at the key is the total number of minutes accumulated by this user. A user might log in only once, or many times. Your program needs to keep track of the total number of minutes of login time by each user.

After reading the input file, it is time to ask the user to enter a desired username. If that user does not exist in the data, then you should print a helpful error message. Otherwise, your program should print the user's name with the total number of minutes of login time. This interactive input should be in a loop, because the user might want to see the data on several users. The loop should terminate once the user enters an empty string (hitting return without typing any characters).

When printing a person's total number of minutes, you may use the plural form "minutes" throughout. You don't need to check for the unlikely case that the total number of minutes is 1. When counting minutes, your program should ignore the effects of daylight saving time. Assume that every day has 24 hours.

Your output format must match the output format shown in the example below. For instance, you need to print a period or question mark at the end of each sentence, as appropriate. For clarity, input is shown here in boldface.

The following example input file is called example2.txt.

```
bmentel ftp fu-140-147.furma Thu May 9 11:18 - 11:18 (00:00)
bdavis console :0 Thu May 2 18:06 - 18:27 (00:21)
jfincher pts/2 fu-138-71.furman Thu May 2 17:15 - 18:17 (01:02)
whawkins ftp 31-88.resnet.fur Mon Apr 22 16:16 - 16:18 (00:01)
bhowell ftp fu-138-74.furman Thu Apr 18 17:48 - 18:05 (00:16)
jfincher ftp fu-138-86.furman Tue Mar 19 20:12 - 20:56 (00:44)
jfincher pts/5 fu-138-86.furman Tue Mar 19 20:10 - 21:16 (01:05)
jhowarth console :0 Tue Mar 19 15:54 - 20:52 (04:57)
jhowarth console :0 Tue Mar 19 09:44 - 12:09 (02:24)
whawkins pts/4 renu.resnet.furm Fri Mar 8 17:41 - 17:58 (00:17)
jhowarth console :0 Thu Mar 7 12:33 - 12:48 (00:15)
pgabbert pts/2 fu-130-145.furma Thu Mar 7 11:36 - 18:16 (1+06:40)
cjohnson console :0 Tue Feb 19 15:05 - 16:05 (00:59)
bdavis console :0 Fri Feb 8 13:06 - 17:12 (10+04:06)
mturner pts/4 20-227.resnet.fu Fri Feb 8 11:02 - 11:06 (00:03)
cjohnson console :0 Thu Feb 7 15:22 - 15:58 (00:36)
reboot system boot Thu Feb 7 15:20
pkerley ftp resnet22-79.furm Fri Dec 7 10:24 - 10:26 (00:01)
ebrinley ftp fu-131-132.furma Tue Dec 4 20:03 - 20:05 (00:02)
mwagner pts/5 resnet36-69.furm Tue Dec 4 19:03 - 20:48 (01:44)
mwagner pts/4 resnet36-69.furm Tue Dec 4 18:24 - 20:48 (02:24)
jokeeffe ftp resnet16-33.furm Wed Nov 28 18:15 - 18:18 (00:03)
kyoung console :0 Thu Nov 8 11:51 - 14:29 (02:37)
bhowell pts/3 resnet20-35.furm Wed Nov 7 19:01 - 20:36 (01:34)
pgabbert pts/2 fu-130-145.furma Wed Nov 7 13:49 - 15:17 (1+01:28)
jestep console :0 Thu Oct 4 13:58 - 15:15 (01:17)
```

Example I/O:

Which file has the login data? **example2.txt**

Which users would you like to look up? Enter names one at a time.
Simply hit enter to quit.

Enter a username: **mwagner**
mwagner has 248 minutes of login time.

Enter a username: **aemerson**
Sorry, I have no data on aemerson.

Enter a username: **bdavis**
bdavis has 14667 minutes of login time.

Enter a username:
Good bye!