Scripting and Computer Environments - CSE 505

IIIT Hyderabad - Monsoon 2015
ASSIGNMENT WORK

Assignment No. 2

Assignment Date: 31/Aug/15

Submission Date/Time: 05/Sep/15 11:55 PM

Assignment Guidelines (read before attempting)

1. Create a folder 2015xxxxx_Assignment<Assignment_no>. All your work should be stored in this folder ONLY.
2. Zip the folder to 2015xxxxx_Assignment<Assignment_no>.tar.gz and upload it.
3. A text file containing answers should be present with name 2015xxxxx_Assignment<Assignment_no>.txt
4. Clearly separate each "section" using double dashed line "===========".
5. Clearly mention the <question_no> before the answer in each section. eg Q7. Q1.a. Q2.1.a.
6. If you do not attempt/answer a question, write the <question_no> and leave it blank.
7. A script file should be present with name 2015xxxxx_Assignment<Assignment_no>.script

Eg. 201505555_Assignment2.txt etc

Questions
Section A: grep/egrep

1. Read the info/man page of grep/egrep/fgrep/rgrep commands. Write unique features of all. (not more than 5 lines :)

2. For the following questions, use the /usr/share/dict/words dictionary file.
(a) Find all words that have the string "India" or "Africa " in them.
(b) Find all words that begin with a vowel. How many are there?
(c) Now, find the words that begin with a vowel and end with a vowel
(d) Find all words that have two or more consecutive 'a' in them.
(e) Find all words that have any punctuation marks (such as apostrophe) in them.
(f) Find words that contain an uppercase letter.
        i) at the beginning ii) at the end iii) anywhere
(g) Find all words that are twenty characters or more in length.
(h) Find all five-character or ten-character words that do not contain any uppercase letter.
(i) Find all words that begin and end with the same letter.(not necessarily the same vowel).

3. Using grep perform following
   a. Print count of directories present in current folder.
   b. Write Regular expression to match
        1. xxx.xxx.xxx.xxx where x will be numerals
        2. same as above but xxx should be less than 256
        3. valid IP address

    c. Write Regular expression to validate mac address for following formats

        i. Six groups of two hexadecimal digits separated by hyphens (-), like 01-23-45-67-89-ab

        ii. Six groups of two hexadecimal digits separated by colons (:), like 01:23:45:67:89:ab

   (i & ii must be validated in a single regular expression)

        iii. Verify your regex by extracting mac address of your system using ifconfig cmd.

Section B: SED

1. Redo the above questions under (2) using sed only.

2. You are given the following address book details (in CSV format) in the order:
given name, surname, address, city, DoB, e-mail
Alice, George, 83 First St, Howard, 12/05/1980, awatson@example.com
Bob, Charlie, 40 West Ave, Anycity, 02/11/1995, bcharlie@example.com
Steve, Park, 1981 Songdo, Smartcity, 24/1/1971, spark@exmaple.com
Mary, Sam, 40 West Ave, Anycity, 30/01/1990, msam@example.com
Kumar, Anil, Gachibowli 500032, Hyd, 11/12/1989, kanil@example.com

Write sed commands for the following:
1. Who lives in a city named Anycity? Store their details in output.txt.
2. Remove all lines that begin with a vowel.
3. How many people are born in the 80s? Their names?
4. Replace all numeric values by '?' and all punctuation marks by '*'.
5. Replace all months in DoB (may be prefixed by 0) by their string equivalents. (e.g. 12/05/1980 or 12/5/1980 → 12/May/1980)
6. Reverse the order of the Given name and Surname. (e.g. "Mary, Sam" → "Sam, Mary").
7. Swap the first and last characters of a line. (e.g. "Alice ... example.com" → "mlice...example.coA").

3. Mr. Gru, as a child was very poor in tetris. Once, he knew that he performed very badly in a PC tetris game and was afraid of losing to his friend Dr Nefario. Somehow he learnt sed command and he got a super idea as he had a super villain inside him ;) The idea he got was to change his scores from a file to a decent score and get good score.
Now your task is to write a sed command to replace Mr. Gru's score to 70 if it lies anywhere between 0 to 50. Also his player number is 20.

4. Little minions are taught how to write C++ programs. Now they are very happy and have started writing programs. Mr. Gru checked the program but couldn't understand anything since the minions had not put any indentation in their program which looked something like this.
#include <iostream>
#include <vector>
#include <string>
#include <map>

using namespace std;

```
int func()
{
int a = 1,b=2;
int c = a+b;
return c;
}
int main()
{
int x,y;
return 0;
}
```

Now, your task is to help Mr. Gru to indent this program to some extent. Mr. Gru wants every line to be started with 4 spaces except the header files lines and the lines beginning with { or }. Can you write a sed command to achieve this?

Section C: awk
1. You are given the marks of students taking a course named ABC.

Name	Gender	Mid1 (25%)	Mid2 (25%)	Endsem (50%)
AA	M	20	15	35
BB	F	22	17	44
CC	F	19	14	25
DD	M	15	20	42
EE	F	18	22	30
FF	M	0	20	45

Now, write an awk command to achieve the following:

1. Display just the names, genders and endsem marks of:
(a) all students (b) the first 3 students only (c) the last student
2. Store the male students in males.txt and the females in females.txt.
3. Compute the total mark for each student and display it along with heir names.
4. Who is the topper? Which students scored above the class average?
5. Generate a grade report for each student based on the following marking scheme.

A = [95-100], A- = [90-95), B = [85-90), B- = [80-85)
C = [75-80), C- = [70-75), D = [60-70), F < 60

Your report must contain a header and a footer/end sections as well. The header be entitled, "*** Grade Report for the ABC course ***". At the end of the report, display the total number of students, the highest, lowest & average marks as well as the message, "*** End of Grade Report ***" .

2. Little minion Bob has joined our IIIT-H and he is very new to the grading system present here. He has finished his first semester and has got some grades. But he doesn't know how to compute the GPA. Below is a list of subjects which chandler has taken, grade he obtained and the subject credits. Can you help him to compute his GPA using awk script?

SUBJECT	GRADE	CREDITS
SCE	A	4
OS	A-	4
APS	A-	6
DMA	B	6

Section D:
Lab2 Questions 1,2,7,9,11

For Q11: *(Bonus If you do everything in one command)*