Assignment-1

PHY473/473A-Computational Physics

11th Jan, 2023

All the answers and outcome including the command you are using needed to be put in the final pdf. You can use latex verbatim to include your script in the final answer script.

Question 1. Make a folder in your home directory called PHY473_home_work using mkdir command. Write down the absolute and relative paths of the directory. Create 10 subdirectories of your choice inside 'PHY473_home_work' folder with a file (of any name) inside them using bash script.

Question 2. Create a text file using **echo**, **cat** and **redirection** as discussed in the class. Save it as example1.txt. A sample of text file is given below:
First, Last, Occupation, Age, sex
Albert, Einstein, Scientist, 60, M
Tom, Hanks, Actor, 55, M
Elvis, Presley, Musician,43, M
Natalie, Portman, Actress, 42, F
Marie, Curie, Scientist, 50, F

Make a working directory "Bash-problems" and move the text file there. Now perform the following task
(a) Copy the text file to another text file call example2.txt
(b) Display the contents of example1.txt without the header (first) line. (c) Display the contents of example1.txt sorted by first name (do not display the first row).
(d) Display the contents of examples1.txt sorted by age in descending order (do not display the first row)
(e) Display only lines that contain "Elvis"
(f) Display only lines that contain 5-letter words starting with E.
(g) Save only the first three columns of data sorted by last name to a new file **names.txt** in the "Bash-problems" folder (do not display the first row)).
(h) Display the contents of echo.txt but changing all occurrences of **Scientist** to **Physicist**.
(i) Save only the rows corresponding to females to a new file **female.txt** in the **Bash-problems** folder. (do not display the first row)).
(j) Using a for loop, save lines 2-3 of each file in the **Bash-problems** folder as a new file with a name that looks like $< originaalname > -copy.txt$ in the folder with a name like $< originaalname > .txt$

Question 3. Write a function in bash to calculate factorial of any number n. Calculate the value of factorial for number 11 and 37.

Question 4. Write a bash script to find number of words in a file using bash script. Make sure it takes a filename as an argument and counts the number of words in the file. You can do it by creating a function called word-count that takes the filename as a parameter and prints the total number of words in the file. Please be careful to handle cases where the file is empty or doesn't exist. (hints: use

'wc' command of bash)

In other words make sure the following features for your bash scripts–
a. First check if the file exists and is not empty before counting the words.
b. Print an error message if the file doesn't exist or is empty.
c. Use a function word-count or your choice to perform the word count.
d. Finally display the total number of words in the file example1.txt of question-2.