CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF
DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COSC 224: UNIX OS AND PROGRAMMING

STREAMS: **Y2S2**

                                              TIME: 2 HOURS

DAY/DATE: TUESDAY 6 /07/ 2021   **2.30 PM – 4.30 PM**

INSTRUCTIONS:
- Answer Question One and any other two questions.

Question One (Compulsory) (30 marks)

(a) Explain what the commands shown below will do when executed.
    (i)   cat /etc/passwd | sort   (2 marks)
    (ii)   sudo adduser   fred   (2 marks)

(b) Write Unix commands for doing the following: (4 marks)

      Capture at least five names of cities in Kenya from the keyboard. This list should be combined with the list present in a file "cities.txt". From the combined list sort the city names in ascending order and store the sorted list in the file "sortedcities.txt".

(c) Write a shell script to rename all file names in the current working directory that end with .txt to end with .c   (4 marks)

(d) Write a **perl** script to search all usernames in the home directory that begin with letter c sort them and write them in a file "cusernames.txt".   (4 marks)

(e) Explain the two modes of the Vi editor in Unix. Show how a user is able to switch from one mode to another.   (4 marks)

(f) State the role of the following commands in UNIX. Use an example to illustrate the commands usage. (4 marks)

   (i)   cd
   (ii) sudo passwd fred
   (iii) ls
   (iv) adduser

(g) Explain the three types of file permissions in UNIX.   Give at least one example of file permission display on how they are arranged in UNIX. (6 marks)

Question Two (20 marks)

(a) Write a Unix **perl** script to find all the C program files in the directory "/usr/fred/programfiles"and move them to the directory "/usr/fred/cstuff". (6 marks)

(b) Write a **shell** script for searching files in a given directory to find which files contain the string "unix revised server IPs". (6 marks)

(c) Assuming that a file's current permissions are r-xr-xr--, using both relative and absolute permissions, specify the chmod expression required to change them to:
(8 marks)
   (i)   rw-r--r-x
   (ii) rwxrw-r--
   (iii) ---r--r--
   (iv) --x----w-

Question Three (20 marks)

(a) Explain the difference between the commands cd *backup and cd ~/backup. Is it possible for both commands to work? (4 marks)

(b) Write a **perl** program that populates an array named *weekday* from the string SunMonTueWedThuFriSat, and then prints each day in uppercase. (8 marks)

(c) Write a **shell** script that prompts for a string and then lists all the files with that string value from the directory /home/users/config (8 marks)

Question Four [20 marks]

(a) What does the command " $who | sort –logfile > newfile" do?   (4 marks)

(b) Write a **perl** script for creating a backup for every file in the current working directory. Every backup file shall be named filename_backup where "filename" is the file name that you are backing up.   (8 marks)

(c) Write a **perl** program that prompts a user to repeatedly enter an integer number. When the user enters 0, the program should print the average and the total.   The program should capture all the numbers entered and their total in a file "numbers.txt".
                    (8 marks)

Question Five (20 marks)

(a) Identify any FOUR syntactical errors in the shell program shown below: (4 marks)

1. #!/bin/sh
2. prunning=yes
3. echo "Enter value of index [value 1, 2, or 3]:"
4. read index
5. while $prunning = yes ; do
6. $index + 1
7. sleep $index
8. if [$index => 20] ; then
9. break
10. done # endwhile
11. eched "Job done"

(b) Explain what happens when a user is added to a Unix system in terms of files/directories that have to be created or modified. Give examples and explanations of the commands that are used to make these changes (e.g. chown, chgrp, chmod).
                    (8 marks)

(c) Explain the purpose of each of the following commands, and how to use them, giving examples: (8 marks)
   (i)   find
   (ii)   grep
   (iii)   file
   (iv)   cp
   (v)   chmod
   (vi)   who
   (vii)   ftp
   (viii)   mkdir

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