

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE  
OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE (Y2S2)

COSC 224: UNIX OS AND PROGRAMMING

STREAMS: BSC (COMP. SCI) Y2S2

TIME: 2 HOURS

DAY/DATE: TUESDAY 09/4/2019

8.30 A.M. – 10.30 A.M.

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` (3 marks)
  - (ii) `sudo userdel -r xyz` (3 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) 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. (4 marks)
- (d) Write a shell script to rename all file names in the current working directory that end with .txt to end with .c (4 marks)
- (e) 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)
- (f) 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)

- (g) State the role of the following commands in UNIX. Use an example to illustrate the command's usage. (4 marks)

(i) cd  
(ii) Passwd  
(iii) ls  
(iv) adduser

**Question Two (20 marks)**

- (a) Write a shell script for searching files in a given directory to find which files contain the string "it was then noted". (8 marks)

- (b) Assuming that a file's current permissions are `r-xr-xr--`, specify the `chmod` expression required to change them to (*use both relative and absolute permissions*): (12 marks)

(i) rw-r--r-x  
(ii) rwxrw-r--  
(iii) ---r--r--  
(iv) --x----w-

**Question Three (20 marks)**

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

- (b) Write two versions of a file comparison utility `fcompare`. One version should be implemented in **Shell** and the other in **Perl**. It operates as follows; (12 marks)

```
% fcompare file1 file2
files are identical
```

The program should perform basic file checking (file exists) and display appropriate error messages in the event of file errors e.g.

```
% fcompare old new
fcompare: File <old> does not exist
%
```

**Question Four [20 marks]**

- (a) Write a **shell** program script logic that allows only fred and cate to execute a program, and only from the terminals `tty08` and `tty09`. (8 marks)

- (b) 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". (12 marks)

**Question Five (20 marks)**

**(a)** You have downloaded a file named `latest.tex`. Explain how you would get this document formatted and printed. What commands would be used to create and print PDF and PS versions of the document. (10 marks)

**(b)** Explain the purpose of each of the following commands, and how to use them, giving examples: (10 marks)

- (i) `find`
- (ii) `grep`
- (iii) `file`
- (iv) `gunzip`
- (v) `ssh`
- (vi) `ps`
- (vii) `kill`
- (viii) `who`
- (ix) `ftp`
- (x) `dvips`

