

## CHUKA UNIVERSITY

### FORTH YEAR SECOND SEMESTER EXAMINATIONS FOR BACHELOR OF APPLIED COMPUTER SCIENCE

#### ACSC 429: UNIX SYSTEMS ADMINISTRATION AND PROGRAMMING (LINUX)

##### CANDIDATE INSTRUCTIONS

1. Answer **all questions** in section A and any other **two questions** from section B.
2. No Reference Material is allowed in the exam Room.
3. All Mobile phones should be switched off in the exam room.

##### SECTION A (COMPULSORY)

##### QUESTION 1 (COMPULSORY) [30 MARKS]

- a) Explain what the following VI command editing modes does (6marks)
- i) :wq
  - ii) :q!
  - iii) X
  - iv) dd
- b) With the help of a diagram, explain Unix architecture (5marks)
- c) A student opened some directory called *people* and found out that it had the following permissions srwxr-xr-x.
- i) Explain the type and access level of the file (3marks)
  - ii) Use change mode command with absolute permission such that everyone has all the access levels (2marks)
- d) Write a shell script that prompts a user to make directory, only if that directory do not exist, after a user has entered a directory name (5marks)
- e) Using an example, explain the use of command *uniq* (3marks)
- f) Explain what the following UNIX pipelines does (6marks)
- i) ls -lt | tail
  - ii) du | sort -nr
  - iii) find . -type f -print | wc -l

##### SECTION B (Answer two question from this section)

##### QUESTION 2 [20 MARKS]

- a) Explain what a process is; hence outline a command that list all the processes that are going on in a UNIX system. (3marks)
- b) Name FIVE commonly used shells in Linux, stating an advantage of each shell. (5marks)

- c) Write a shell script that will prompt a user to key in a filename, then it deletes the file if that file is available (6marks)
- d) With regards to Daemon Processes explain: -
  - i) The meaning of Daemon Processes (2marks)
  - ii) TWO benefits of Daemon Processes (4marks)

**QUESTION 3 [20 MARKS]**

- a) Using a case statement programming tool, write a shell script that prompts a user to enter a number between 1 and 5 inclusively. If the user enters 1 it returns excellent, 2 it returns good, 3 it returns average, 4 it returns below average, and 5 it returns fail. (6marks)
- b) Explain FIVE process states in Linux system (5marks)
- c) Using an example explain the usage of rev command (4marks)
- d) Explain FIVE options used with the printing command (5marks)

**QUESTION 4 [20 MARKS]**

- a) Write a shell script that will test if a document referenced is either a file or a directory, empty or not empty, or read only file. (6marks)
- b) Write the commands of performing the following in VI mode: - (5marks)
  - i) Moves backward one full screen
  - ii) Moves the screen up 1/2 page
  - iii) Overwrites multiple characters beginning with the character currently under the cursor.
  - iv) Restores the current line to the state it was in before the cursor entered the line.
  - v) Displays lines with line numbers on the left side
- c) Explain SIX important features of Linux operating system (6marks)
- d) Outline THREE commands that can be used to check the memory status of Linux system (3marks)

**QUESTION 5 [20 MARKS]**

- a) Explain FOUR decision making tools in Linux shell programming (4marks)
- b) Using if...fi, write a script that will prompt a user to enter a number. It should then return the number of digits of that number (*let the number be of at most 4 digits*) (5marks)

- c) Write a shell script that will prompt a user to enter a number, it then prints all the numbers divisible by that number from 20 to 1000. (6marks)
- d) Explain file test operators that begin with **-b**, **-c**, **-d**, **-f**, **-k**, then file (5marks)