

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

RESITS/SPECIAL

FORTH YEAR SECOND SEMESTER EXAMINATIONS FOR BACHELOR OF APPLIED COMPUTER SCIENCE

ACSC 429: UNIX SYSTEMS ADMINISTRATION AND PROGRAMMING (LINUX)

STREAMS: BSC (APPLIED. COMP SCI)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 03/02/2021

2.30 P.M. – 4.30 P.M.

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. Write legibly on Both sides of question paper.
4. All Mobile phones should be switched off in the exam room.

SECTION A (COMPULSORY)

QUESTION 1(COMPULSORY) [30 MARKS]

- a) While using vi command for editing text, you can use either h, j, k, and l keys to move the cursor. Outline how each of the keys affects the cursor movement (4marks)
- b) Write Linux commands that one would use to perform the following operations: -
 - i) Remove all the files beginning with letter **h** and ending with letter **c**
 - ii) Display print queue status of a printer called **admin4** (4marks)
- c) Explain what each of the following control characters perform in Unix, CTRL-U, CTRL-S, CTRL-Q, and CTRL-D (4marks)
- d) Using an example showing an output, explain what the following environment variables does
 - i) HOME (2marks)
 - ii) UID (2marks)
 - iii) PATH (2marks)

- e) Using 4lines output example, explain what the following pipe does: -
`ls -l | grep "Aug" | sort +4n` (6marks)
- f) Write a shell script called *leaptest* that prompts a user to enter the year in 4 digits and test if the year is leap or not (*a leap year is divisible by 4*) (6marks)

SECTION B (ANSWER TWO QUESTION FROM THIS SECTION)

QUESTION 2 [20 MARKS]

- a) Explain the THREE modes that are associated with the vi command, hence indicate how you can move out of each mode. (6marks)
- b) Command *grep* usually comes with a number of options. Explain FIVE options that are associated with *grep*. (5marks)
- c) Using pipes, display all lines of files list1 and list2 that contains letter 'p', and sort the results (3marks)
- d) Using an example, explain the function of the following commands: -
- i) `cd~` (2marks)
 - ii) `less` (2marks)
 - iii) `tail` (2marks)

QUESTION 3 [20 MARKS]

- a) Write a shell script using array. The array should have the strings {Debian, Red hat, Suse, Red planet, Ubuntu, and fedora}. It should then print all the names in the array that begin with the word Red. (5marks)
- b) Explain FIVE escape sequence used with PS1 (5marks)
- c) With reference to shell scripting: -
- i) Write a shell script that prompts a user to enter two integers, then it returns their sum and product, only if the second integer is greater than the first integer. If the second integer is lesser than the first integer, it prompts the user to enter a first integer which is greater than the second, and the system exits. (7marks)
 - ii) Outline how to set permissions of the above script such that the user has all the privileges, while group and others have only read and execute privileges. (3 marks)

QUESTION 4 [20 MARKS]

- a) Using nested if...else, write a script that prints **1. Bash, 2. scripting, 3. Tutorial** each on its own line. It then prompts a user to enter a value between 1 to 3 inclusively. If the user enters 1 it returns *bash*, if he enters 2 it returns *scripting* etc. else if he enters a value outside the range, it prompts him/her to enter a value between 1-3. (7marks)

- b) Explain the meaning of the following string comparisons
- i) `-n s1` (2marks)
 - ii) `-z s1` (2marks)
- c) Write a script that prompts a user to enter an integer, then it returns the sum of entered integer digits. (6marks)
- d) Using an example and the output it provides, explain what is a redirection (3marks)

QUESTION 5 [20 MARKS]

- a) Write a shell script that prompts a user to enter four numbers. It then finds the sum, the average and the product of the four integers entered. (7 marks)
- b) Explain the usage of the following Linux commands in TCP/IP management
- i) `route -n` (2marks)
 - ii) `netstart -t` (2marks)
 - iii) `ifconfig -a` (2marks)
- c) Write a shell script that will prompt a user to enter a number, then it returns the factorial of the number. (7marks)
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