



*(Knowledge for Development)*

**KIBABII UNIVERSITY**

**UNIVERSITY EXAMINATIONS  
2020/2021 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS  
YEAR FOUR SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE OF BACHELOR OF SCIENCE  
COMPUTER SCIENCE**

**COURSE CODE : CSC 413**

**COURSE TITLE : UNIX PROGRAMMING**

**DATE: 11 /01/2022**

**TIME: 02:00 P.M – 04:00 P.M**

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**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

**QUESTION ONE (COMPULSORY) [30 MARKS]**

- a) Describe architecture of Unix OS with neat diagram **[4 Marks]**
- b) Determine if the following statements are true/false
- I. Shell scripts need to be saved with an extension .sh.
  - II. The first line in any shell script begins with a \$
  - III. read command is shell's internal tool.
  - IV. To run the script, we should make it executable first by using chmod +x
  - V. To spawn a child of our own choice for running the script, we can use PS command.
  - VI. Which command is used for making the scripts interactive? **[6Marks]**
- c) How can you say that Unix operating system provides more security than other operating systems? **[4 Marks]**
- d) Multiple Choice Questions (Choose One Answer)
- i. To search for short descriptions and manual names for the Unix command containing the keyword "*chat*", you issue the Unix command:
    - a. man chat
    - b. man -k chat
    - c. man -s chat
    - d. man -f chat
  - ii. Which of the following are features of the Unix OS?
    - a. Allow more that one person to communication with the computer.
    - b. Allow users to share or restrict access to their files.
    - c. Allow a routine series of Unix commands to be run automatically as shell scripts.
    - d. All of the above are features of the Unix OS.
  - iii. Assuming that the user is currently in their home directory, which of the following Unix commands will copy the entire contents of the user's home directory (including subdirectory contents) to a directory called *~/backup*?
    - a. copy ~ ~/backup
    - b. cp -r ~ ~/backup
    - c. cp . ~backup
    - d. Both a and b
  - iv. Which of the following Unix commands will change permissions for all files contained in the directory pathname *~/unx122/samples* to allow full permissions for the user, read and execute permissions for group and others?

- a. `chmod 711 ~/unx122/samples`
- b. `chmod 755 ~/unx122/samples`
- c. `chmod 755 ~/unx122/samples/*`
- d. `chmod 766 ~/unx122/samples`

v. What will happen if the following Unix command is issued:

```
sort yourfile | tail -25 > abc
```

- a. The last 25 lines (sorted in alphabetical order) will be stored in file *abc* overwriting the previous file content.
- b. The last 25 lines (sorted in alphabetical order) will be appended to file *abc*.
- c. Lines 25 to the bottom of the file will be stored in file *abc*.
- d. Lines 25 to the bottom of the file will be stored in file *abc*, overwriting the old file content

vi. Which of the following Unix commands will display lines 3 to 7 of a 10 line file called *fun* that is contained in your current directory?

- a. `head -7 fun | tail -5`
- b. `tail -8 fun | head -5`
- c. both a and b
- d. `cat fun | head -5`

[6 Marks]

e) What would be the effect of the following commands:

- i. `grep "[A - Z]" file1` [2 Marks]
- ii. `egrep "UNIX|Unix|unix" file1` [2 Marks]
- iii. `grep "UNIX$" file1` [2 Marks]
- iv. `grep "UNIX. UNIX" file1` [2 Marks]
- v. `grep ".*" file1 > file2` [2 Marks]

### QUESTION TWO [20 MARKS]

a) Write a single Unix pipeline command to store a sorted list of lines that do contain name Jones (any case) in a file called `phone_numbers.txt` at the back of the file "PHONES"

[4 Marks]

b) Compare and contrast the `cmp` command with the `comm` Command

[4 Marks]

c) Explain how the following are handled

- i. Environmental variables
- ii. on-off variable

[6 Marks]

d) What will happen when the following command is typed inside the vi Editor? Give example.

(I) I (II) A (III) ~ (IV) p (V) J

[6 Marks]



### QUESTION THREE [20 MARKS]

- a) Differentiate between Unix and Windows Operating System [4 Marks]
- b) How quotes are used in Unix, explain with example. [6 Marks]
- c) Answer the following Questions:
  - i. Distinguish between a script file and an input file. [2 Marks]
  - ii. What does the following options work with modify command? i, a,c,D [2 Marks]
  - iii. Distinguish between the three standard streams. [2 Marks]
  - iv. List the relational patterns supported by Korn shell. [2 Marks]
  - v. What is meant by child shell execution? [2 Marks]

### QUESTION FOUR [20 MARKS]

- a) Explain Variables with its characteristics and options. [6 Marks]
- b) Explain catenate command with its options. [4 Marks]
- c) Explain the importance of the following commands used in Unix
  - I. ftp
  - II. who
  - III. sudo su
  - IV. chmod [4 Marks]
- d) Explain redirection in detail. Give appropriate Examples [6 Marks]

## QUESTION FIVE [20 MARKS]

Use the information displayed below to answer questions i to iv:

```
$ cat cars
```

```
chevy novass 79 60
ford  mustang 65 45
volvo gl      78 102
ford  ltd     83 15
chevy nova   80 50
honda accord 81 30
ford  thundbd 84 10
chevy impala 62 85
ford  bronco  87 25
```

- i. `tail +6 cars` [4 Marks]
- ii. `grep "^[^ ]* *[^ ]* *[6-8][14]" cars` [6 Marks]
- iii. `grep chevy cars | sort -n -k4` [4 Marks]
- iv. `sort -nk3 cars | grep "[^0]$"` [6 Marks]