CS/MCA/SEM-3/MCA-302/2010-11

2010-11

UNIX AND SHELL PROGRAMMING

Time Allotted : 3 Hours   Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words
as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

                                                                10 × 1 = 10

    i)   Which of the following tasks is not a task of Unix
         Kernel ?

         a) Process management   b) Signal management

         c) Memory management   d) Filter management.

    ii) What is the function of a PID ?

         a) To identify the process

         b) To justify the process flow

         c) To relate the job with the process

         d) none of these.

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iii) Zombie is a state when

    a) the process is alive

    b) the process died

    c) process died but process tab keeps the pid of the death process

    d) none of these.

iv) The unix touch command can

    a) create a blank file

    b) change the modification date and time

    c) change the access date and time

    d) all of these.

v) Umask 021 can create a file

    a) with permission rwx-w---x

    b) with permission ----w---x

    c) with permission rwxr--rw-

    d) with permission rw-rw--r-x.

vi) "$ kill 0" command will terminate

    a) the last job in the shell

    b) login process except the login shell

    c) login process along with the shell

    d) shell and kernel.

vii) The *i*-node list does not contain

    a)   type of the file

    b)   size of the file

    c)   permission of the file

    d)   name of the file.

viii) The default nice priority for any command under execution can be

    a)   10   b)   19

    c)   1   d)   none of these.

ix) The grep command with –v option

    a)   displays only the count of those lines which match the pattern specified

    b)   displays only the count of those lines which match the pattern specified along with the line number at the beginning

    c)   displays only the count of those lines which do not match the pattern specified.

x) Regarding storage allocation pipe uses

    a)   direct and indirect block

    b)   only direct block

    c)   *i*-node block

    d)   super block.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.   3 × 5 = 15

2. a) Write a single command in unix to do the following :

To save the output of the 'who' command in a file as well as display it on screen.   2

    b) What should be the output of the following shell script ?

```
a = *
echo $a
echo "$a"
```
2

    c) What should be the output of the following echo statement ?

```
echo $$
```
1

3. a) Write command in unix to do the following :

To take input from the file IN and to write its sorted output to the file OUT.   2

    b) What shold be the output of the following shell script ?   3

```
a="*"
b=a
echo $b
```

4. a) What do you mean by command substitution ? Provide example.   2

    b) What should be the output of the following script ?   3

```
IFS=+
set economists+are+seldom+right
echo $3 $4 $#
```

5. a) In which respect does crontab command excel over at command ? 2

b) What should be the output of the following script ? 3

a=b

b=c=d=c

echo $$b

echo $$$d

6. a) What is the difference between a wild card and regular expression ? 2

b) What does grep "^*" do ? Is the \really necessary ? 3

GROUP – C
(Long Answer Type Questions)
Answer any *three* of the following. 3 × 15 = 45

7. a) What is the difference between the following vi commands ?

:w :q! :wq ZZ

b) What information does a super block contain ? Why there is a memory copy and a disk copy of *i*-node block and super block ?

c) Outline the steps performed by kernel whenever we attempt to access a file.

d) A unix file system has 1024 bytes block size with 32 bit address. The *i*-node has 12 direct, one indirect, one double indirect and one triple indirect addresses. What is the maximum file size it can access ?

4 + (2 + 2) + 3 + 4

8. a) What do the following UNIX system variables signify ?

   i) HOME

   ii) PSl

   iii) PATH

   iv) TERM

   v) MAILCHECK.

   b) Write shell script to find out whether a user whose login name passed as the parameter is currently logged in or not. If the user is logged in sent the file "MCA" which is available in the current directory to his terminal. If not then wait for user to login and then send him file "MCA" and message "Wait time to deliver the file is XX minute". (5 × 2) + 5

9. a) What are the various file-types supported by UNIX ?

   b) Write the syntax for the following and explain with an example :

   i) Making directories

   ii) Removing directory

   iii) Copying files

   iv) Deleting files.

   c) Indicate the difference between multitasking and multiprogramming. 3 + (4 × 2) + (1 + 3)

10. a) What is a system call ? Explain any four file related system calls.

   b) What is the significance of PID and PPID ?

   c) Explain piped process.

   d) Write a shell script display only username who have login and those users that have log out.

   (3 + 2) + 3 + 4 + 3

11. a) Write a bash script, lower.sh to "lowercase" a directory of files. If a lowercase file of the same name already exists in that directory, the program should warn the user and NOT overwrite the existing file.

     e.g.

       $ ls dir/

          One-File TWO-File Three-FILE one-file

       $ ./lower.sh dir/

          Warning: Not overwriting one-file

       $ ls dir

          One-File one-file three-file two-file

b) What are the differences between TCP and UDP ?

c) What is a Unix Process ? Mention the names of system calls that create and manipulate the process. Predict and explain the output of the following program code :

```
int main()     {

    fork();

    fork();

    printf("Hello World!");

}
```

                        3 + 3 + (2 + 3 + 4)