Subject Code: IT-315

Subject Name: Linux and Win32 Programming — Minor Examination: IT 5th Semester

Question 1. Choose correct option/s [10 marks]

Note: More than one option may be correct

1.A). In a Unix system, if 5 people are currently using the vi editor, then the no. of corresponding processes will be:
(a) 0 (b) 1 (c) 5 (d) 6

1.B). The UNIX system identifies a file by its:
(a) name (b) absolute path
(c) file owner (d) inode number

1.C). In which of the following directories does ***init*** reside:
(a) root (b) bin (c) etc (d) usr

1.D). Which of the following statements best explains a process? It is a program
a) It is a program in execution
b) It is an instance of program in execution
c) It is a program that uses system calls

1.E). Which of the following remarks about system call, library function and UNIX commands are true?
a) System call is a part of kernel, while other two are not part of kernel
b) Unlike library functions, system call and Unix commands are stand-alone programs
c) Library functions and Unix commands use system calls
d) Unlike system call, library functions and Unix commands are stand-alone programs

1.F). The main reasons for the success of pipes are:
a) The availability of many filter programs
b) UNIX treats devices as files
c) It provides a 2-way communication channel
d) All of the above

1.G). Which of the following are not filter programs?
a) date
b) sort
c) cat
d) grep

1.H). The command `cd./../.`
a) serves no purpose
b) is invalid
c) is equivalent to cd ..
d) is equivalent to cd ~

1.I). When a process makes a system call, its mode changes from:
a) user to kernel
b) kernel to user
c) restricted to unrestricted
d) unrestricted to restricted

1.J). Setting the execute bit on has no meaning if the file is a
a) directory
b) shell script
c) C source code
d) symbol table

Question 2. Compare the two fundamental IPC mechanisms i.e. Shared Memory and Message Passing with five points and diagrams. [5 marks]

Question 3. Describe UNIX system architecture with diagram. [5 marks]

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Minor Exam

Linux Administration & Programming

Paper code: IT-315

Q.1 How can a process be created in Linux. Discuss the various means available to delay or stop a process. 5

Q.2 Discuss various terminologies used in Linux OS- 5

a) Windows OS and Linux OS

b) Difference between C-shell and Bash shell.

Q.3 Write short notes on the following(any 3) 5
a) Keyboard X-Windows Events
b) grep
c) xclipboard
d) chmod

Q.4 Write a shell script to find factorial of a number. 5

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LINUX IT-315

Q-4

```
echo "Enter Number"
read num
fact = 1
while [ $num -gt 1 ]
do
   fact = $((fact * num))
   num= $((num-1))
done

echo $fact
```

Q-3

(b) grep - It is an acronym for Global Regular Expression Print. Grep is a linux/Unix command line tool used to search for a string of characters in a specified file. The text search pattern is called a regular expression. When it finds a match, it prints the line with the result. The grep command is handy when searching through large log files. It consists of three parts in it's basic form. Starts with grep, followed by the pattern that you are searching for. After that the grep searches through the string that comes in the file name.

$ grep SpiderXNAP kamal

generalized syntax:- $ grep [options] pattern [files]

options descriptions used (-c, -h, -i, -l, -v, -E, -W etc).

(c) Xclipboard - The xclipboard program is used to collect and display text selections that are sent to the CLIPBOARD by other clients. It is typically used to save CLIPBOARD selection as a seperated strung, each of which can be selected. Each time CLIPBOARD is asserted by another application, xclipbaard transfers the contents of that selection to a new buffer. xclipboard window has the following buttons across the top.
quit (xclipboard exits), delete (current buffer deleted & next is displayed), new (new buffer) save (save current buffer to the file specified) next (next buffer) previous (displays previous buffer).

(d) chmod - the chmod command sets the permissions of files or directories. It stands for "change mode" & it restricts the way a file can be accessed. It has a comprehensive description of how to define & specify file permissions. for ex:- The file named chandler is to be set permissions so that users can read, write & execute, members can read & execute and others can only read it.

$ chmod u=rwx, g=rx, o=r Chandler

OR $ chmode 754 chandler

here u stands for read, 2 for write, 1 for execute and 0 for no permission

Q-2

(a) Windows OS and linux OS

Windows

- windows is not open source and is not free to use.
- window file system is case insensitive
- windows is less efficient in operations
- window provide less security as compared to linux.
- windows uses different types of drives to store files

linux

- linux is open source and is free to use.
- linux file system is case sensitive.
- linux is more efficient in operations.
- linux is highly secure as compared to window
- linux uses a tree like structure to store files

(b)

C - shell	Bash shell
- not a default shell	- default shell of linux
- It is similar to c - language to some extend.	- It incorporates features of all shells.
- command path is /bin/csh	command path is /bin/bash
- is an interactive terminal	- considered non interactive.

Q1 Process are not just programs they are program instructions plus other components needed. A new process can be created by the fork() system call. The new process consists of a copy of the address space of the original process. fork() creates a new process from existing process. Existing process is called the parent process & the newly created process is called a child process. Both the parent & the child processes continue execution at the instruction after the fork(), the return code for the fork() is zero for the new process, whereas the process identifier is returned to the parent.

How to stop a process?

kill → Sends a specific signal to specified process. This process is specified by process ID

killall → kills a process by name

exit → exit terminates the calling process

How to delay a process?

wait | waitpid — It suspends execution of the process until one of it's children terminates

Pid can be :-

- wait pid (-1, Null, 0) → wait for any child process
- waitpid (pid_child, Null, 0) → wait for a child process with PID pid-child.

Sleep command is used to delay for a fixed amount of time. A dummy job helps in delaying the execution, sleep command is used to create a dummy job. It takes time in seconds by default but a small suffix (s,m,h,d) can be added at the end to convert to any other format.

sleep NUMBER [suffix]..

IT

Minor Exam
Linux Administration & Programming IT-315

Q1. A. Discuss about the distributions of LINUX. (3)

B. What do you mean by files in Linux. Explain its type with suitable examples. (3)

Q2. A. Explain the working of the following commands: (4)

a. rmdir
b. man
c. cat
d. chmod -R

B. Difference between C-shell and Bash shell. (3)

Q3. A. Explain the modes of Vi editor.. (3)

B. How we manage permissions in the group. Discuss in detail with the suitable command. (4)