NAME: Mareena Fernandes   ROLL NO: 8669   CLASS: SE IT

OS ASSIGNMENT NO: 1

Q 1] What are the different blocks that constitute Unix file system?

Ans: Blocks in Unix file systems are:

(1) A boot block located in first few sectors of file system. Contain boot initial bootstrap program used to level OS.

(2) A super block describe state of file system, total size of partition, block size, pointers to list of free blocks

(3) A linear array of inodes (index nodes). There is one to one mapping of files to inodes and vice versa.

(4) Data block contains actual content of files

BOOT BLOCK	SUPER BLOCK	INODES	DATA BLOCKS

Q.2] Explain the procedure of mounting and unmounting a file system in Unix

Ans: (1) **MOUNTING**: The mount command is used to mount file system in linux.

mount [-lhv]

mount [-frsvw] [-t vfstype] [-0 options] device / directory.

(2) **UNMOUNTING**: The unmount command is used to unmount a file system in linux.

unmount [-hv]

unmount [-dflnrv] { directory / device }

Q.3] Explain the role of the default device files and directories in Unix OS.

Ans: Directories and default files with their roles, as follows:

- /: Root filesystem tree

- /bin: stands for "binaries" contain fundamental utilities like ls or cp

- /boot: contain all files required for boot process.

- /dev: contain information of devices and psuedo-devices.

- /etc: contain system wide configuration files and system databases

- /home: contain all home directory for users

- /lib: contain system libraries and critical files like kernel modules.

- /media: Default mount point for removable devices.

- /mnt: contains file system mount points.

- /proc: procfs virtual filesystem showing information of processes or files.

-/root : home directory for superuser root i.e system admin
-/tmp : A place for temporary files opened on startup
-/usr : holds executables, libraries and shared resources
which are not system critical.

Q4] Explain the difference between:
⟹ Hard and symbolic links

HARD LINKS	SYMBOLIC / SOFT LINKS
(1) Hard link is the exact replica of the original file it is pointing to	Soft link is an alias to the original file similar to the shortcut feature in the Windows OS
(2) It contains the actual contents of the file	It contains the location of the original file but not the contents
(3) Hard links share the same Inode value pointing to the same file location	Soft links have different Inode values pointing to the original value
(4) Links cannot be established outside the filesystem	Links can be established across filesystem
(5) Changes in the hard linked file reflect in the other files	The link become inaccessible when the original file is removed
(6) Hard links can only link to a file, not directory.	Soft link can link both to a file or a directory.

⇒ Who and finger commands

	WHO COMMANDS	FINGER COMMANDS
(1)	Who tells basic information of logged in user.	Finger gives detailed information of user
(2)	Who can't used on network.	Finger can be used over network.
(3)	Eg: who	Eg. finger mareena

Q.5] What is the use to be command? Explain a few functions that are associated with it

Ans: bc:
- bc is a language that supports arbitory-precision numbers.
- It delivers accurate results irrespective of size of number.
- It has syntax similar to 'c'.
- bc [-hlwsqv] [long-opt] [file (with code)]

Functions in bc:
(1) read() - read() function will read number from standard input
(2) scale (expression) - Returns number of digits after decimal point in expression
(3) sqrt (expression) - Calculates square root of expression.
(4) return (expression) - Returns value of expression from function
(5) print () - prints entered values on terminal.

Q6] Explain the term globbing with example

Ans: Globbing

- The patterns containing strings like '?', '*' are wild card pattern.

- File globbing is operation that recognizes these patterns and does job of file path expansion.

Example of use of wildcard characters:

(1) astrick (*): It is used to match any number of characters.

(2) question mark (?): It is used to match exactly one character.

(3) square brackets: It is used to match characters inside []

(4) exclamation mark (!): It is used to exclude character from list that is specified in [].

Q.7] Command to find square root of number 17 (result should be displayed up to 5 places of decimals)

Ans: command to display square root of 17

sqrt 17.

Q8] In the long listing commands ls - li, if you find two or more files with same inode number, what does that mean?

Ans While in command ls - li, if we found 2 files have same inode number, if implies that both files exist of different partitions

Q.9] Command to display the node name, i.e the name of your machine

Ans Command to display node name :

uname -- nodename

Q10] Is there a way to copy contents of the files a.txt and b.txt to file c.txt without deleting the earlier contents of file c.txt ? if yes, mention the command

Ans To append data from a.txt and b.txt to c.txt

cat   a.txt >> c.txt
cat   b.txt >> c.txt

Q11] What is the command, to display the hardware platform and name of OS on the machine

Ans To display system configuration in linux, the command would be. lshw

Q.12] Explain the following commands

(1) Sort - It prints lines of its input or concatenation of all files listed in its argument in sorted order.

(2) Wc - Reads files and counts newline, word and bytes

(3) Head - It is used to display beginning of a text file or piped data

(4) Tail - It is used to display tail end of the text file or piped data

(5) Diff - It compares contents of 2 files and prints the differences in 2 files

(6) Uniq - Uniq outputs text with identical lines merged together

(7) Split - It is used to file in short files

(8) Cmp - It compares 2 files and writes result in stdout

(9) Comm - It is used to compare 2 files for common and distinct lines

Q.13] Find the command, to assign read, write and execute permission to the owner; read and write to group and read only for others.

Ans: chmod - 764 to assign given permission to file

Q.14] Find the command, to set permissions for directories to be created in future as read, write and execute for owner, read and write for groups and read only for others

Ans: chmod g = foldername - 764

Q.15] Find the command, to change the ownership of the file file1.txt to Charles

Ans: chown Charles file1.txt

Q.16] Find the command, to sort file a.txt in reverse order and store it in b.txt

Ans: cat tail -r a.txt >> b.txt

Q.17] Find the command, to create a group by name seit

Ans: groupadd seit

Q.18] Find the command, to display all duplicate lines in file abc.txt

Ans: uniq abc.txt

Q.19] Can you sort the file a.txt on the second and third field skipping the first field, if yes then give example.

Ans: Yes.

Q20] Is there a way to split a file a.txt into pieces that are 10 KB each, if yes, give example

Ans: Yes. split -b 10K a.txt

Q21] Explain the commands

(1) Zip - This command is used to compress files and to reduce file size

(2) Unzip - "This command list, text and extract compressed files from Zip archive

(3) Compress - Compress reduces file size using Lempel Ziv algorithm

(4) Uncompress - uncompress expands compressed data

(5) Pack - Compresses file with huffman coding

(6) Unpack - Unpack expands file compressed by pack

(7) Set - Used to define and determine values of system environment variables

Q22] What is the difference between file /etc/hosts allow and /etc/host deny?

Ans: /etc/hosts deny file will deny all clients to access all daemons on server

/etc/hosts allow allows linux machine to communicate with all daemons on subnet

Q.23] How is the shell variable created and how can a local shell variable be made a global variable?

Ans: <u>CREATING VARIABLE:</u>

Shell variable created as:

  var-name = var-value

  Always starting with '_' or letter.

  All letters in name should be uppercase

  Special characters like '+', '-', '*' are not allowed.

<u>CREATING GLOBAL VARIABLE:</u>

  $ export var-name

   is used to convert local variable to global so that it can be used through any other shell on machine.

Q.24] In long listing ls-li, if you find a file with mode field set to 1, what does that mean?

Ans: File with mode field 1 implies it is executable only. No read or write permissions are allowed.

Q.25] How will you know whether a particular file in /dev directory represents a character device or block device

Ans: grep character file.

Q.26] Find output,

  $ export project-name

  $ PS1 = "Unix prompt"

  $ which cat

  $ echo $ HOME

Ans: $ Hash -f main.sh

/usr/bin/cat   /home/cg/root/9284322