060010403 : LINUX & Shell Programming

Unit 1: Introduction to LINUX Operating System, Architecture, Command Usage and File System

Practical practice questions:

1. Find errors (if any) otherwise write output or interpretation of following commands. (Here $ is bash shell.)
   a) cal
   b) cat 1944
   c) cal jan
   d) date –U
   e) date %D
   f) echo –n "Hello \n World"
   g) echo –e "Hello \n World"
   h) echo man
   i) man whoami
   j) cal 0
   k) password
   l) echo "-u hello"
   m) cal 08 1200
   n) date "+%m %M"
   o) date "+%m +%M"
   p) echo date
   q) echo `date`
   r) echo $$
   s) cp file1
   t) cp file1 /f
   u) cp f1 f2 f3
   v) rm *
   w) pwd ~
   x) mkdir –p A A/B
   y) mkdir A/B A
   z) mv file1 /f
   aa) mv f1 f2 f3 f4
   bb) ls –a
   cc) ls –x
   dd) ls –r
   ee) cd ~

2. Write "ls" command with wildcards for following search file patterns:
   a) file1, file2, …, file9
   b) file1, file2, …., file25
   c) file20, file21, …., file29
   d) All files which start with digits.
   e) All files whose extension is ".cpp"
   f) All files which start with lower case.
   g) All files which having length only one character.
   h) All files which not starting with any special symbols.
   i) All files which are not having any digits.
   j) All files in parent directory.
   k) All files which is having two characters and its two digits.

Short questions:

1. Write format of command in UNIX.

2. How can you find your terminal name?
3. Mention command name that you use for performing arithmetic operations with UNIX.
4. Which command used to change password?
5. Write output of "pwd" command.
6. Write a command to print the calendar for the month September '49.
7. Write command to display current date in mm/dd/yyyy format.
8. What is use of "spell" command? Give with example.
9. List at least five shell names with their executable file name.
10. Explain difference between utilities and applications.
11. Explain difference between multiuser and multitasking features of operating system.
12. Which command is used for clear screen in UNIX?
13. What is purpose of shell?
14. What is name of kernel file in system?
15. List columns of "who –H" command's output.
16. What are three levels of security in UNIX?
17. Which symbol used for single character wildcard? Give example.
18. What is meaning of "*" (asterisk) wildcard in UNIX?
19. List type of files with their denoted character.
20. Which is the token to define the root directory?
21. Which path name starts from the root?
22. Which symbol is used for home directory?
23. What is inode?
24. Define boot block.
25. List fields available in super block.
26. Describe directory entry in data block.
27. Name five operations we can uniquely with directory.
28. What is difference between copying a file and moving a file?
29. What is difference between copying a file and linking a file?
30. Write command list contents of directory.
31. What is command for renaming a directory?
32. Write command for removing directory although it is not empty.
33. What are (.) an (..) files?
34. How can you detect files which name having "m" or "M" at anywhere?
35. What is purpose of "–e" option in "echo" command?

Long questions:

1. Mention features of UNIX/LINUX. Write short brief about each.
2. What is use of following commands? Also describe their possible options.
   date, who, cal, passwd, echo, man, bc, cat, cp, mv, rm, mkdir, rmdir, echo
3. What do you mean by wildcards characters? List an explain wildcards in detail.
4. What is file? Explain all file types in UNIX.
5. Explain following terms with respect to directory. Also differentiate absolute pathname and relative pathname.
   Current directory, Home directory, Parent directory, Working directory, Root directory.
6. What are logical structures of file system? Explain all in detail.
7. What do you mean by hard link and soft link? Explain with difference of both.
8. What is the meaning of special file? Also explain all types of file in UNIX.
9. Define terms: working directory, home directory, parent directory and root directory.
10. Write short note on "/etc" directory.

Multiple Choice Questions:

1. UNIX was developed by
   A. Bell Labs
   B. Berkley Software Group
   C. California University
   D. American Defense Academy
2. Which is the incorrect statement from following?
   A. Shell is a command interpreter.

B. Shell is the interface between user and kernel.
C. System can't work without a shell.
D. Shell is a program.

3. Which of the following statements best explains a process?
   A. It is a program.
   B. It is a program in execution.
   C. It is an instance of a program in execution.
   D. It is a program that uses system calls.
4. For security access, administrator needs _____.
   A. open source software
   B. support utilities
   C. password
   D. encryption
5. Kernel is
   A. Hardware
   B. Program
   C. Operating System
   D. Software
6. In UNIX internal command means
   A. The process which will execute.
   B. It is not creating any separate process.
   C. Store in separate directory than external command.
   D. Must have option.
7. Which is not shell file from following?
   A. Zee Shell
   B. Fish Shell
   C. bash Shell
   D. pdksh Shell
8. Which is not true from following for kernel?
   A. Kernel handles I/O operations.
   B. Kernel file name is /UNIX.
   C. Kernel is command interpreter.
   D. Only one kernel is available in single UNIX operating system.
9. Which is wrong statement for security feature of UNIX operating system?
   A. UNIX provides kernel level security.
   B. UNIX provides file level security.
   C. UNIX provides file encryption format security.
   D. UNIX provides user level security.
10. BSD UNIX originate from
   A. AT & T Bell
   B. Microsoft
   C. University of California
   E. Berkley Software Group
11. Which is not true statement of following?
   A. Shell is knows as command interpreter.
   B. Kernel is heart of UNIX.
   C. UNIX has portability.
   D. All commands in UNIX are called application program.
12. The purpose of /bin directory in UNIX is
   A. Contains the compiled, executable or binary version of utilities.
   B. Contains actual code of UNIX kernel.
   C. Contains c subroutine library.
   D. Contains commands related to system administrator.
13. Which permission required in order to do change content of file?
   A. Write permission on directory in which file exist.

B. Read permission on directory in which file exist.
C. Write permission on file.
D. Read and write permission on file.

14. Which permission is required to delete a file?
    A. Write permission on file.
    B. All permission on file.
    C. Write permission on directory in which file exist.
    D. Write and Execute permission on directory in which file exist.
15. What information stored in 6th column of /etc/passwd file?
    A. Name of users
    B. Default shell of users
    C. Default directory/home directory of users
    D. id of Users
16. Which of the following information is not contained in inode structure?
    A. The file size.
    B. The name of the owner of the file.
    C. The date of modification of file.
    D. The number of symbolic links for this file.
17. Which directory under the root contains the information on devices
    A. /bin
    B. /dev
    C. /adm
    D. /etc
18. An "Inode" represents
    A. Buffer
    B. Data
    C. Files & Directories
    D. None of the above
19. The system identifies a file by its
    A. name
    B. absolute path
    C. file owner
    D. inode number
20. Which of the following information is not present in an i-node?
    A. Contents of the file
    B. Size of the file
    C. Name of the file
    D. Permission setting of the file
21. Which command used to create a new directory file?
    A. tee
    B. cat <
    C. copy cone
    D. mkdir
22. If cd command is fail, which of the following reason?
    A. Directory doesn't having read permission.
    B. Directory doesn't having write permission.
    C. Directory doesn't having execute permission.
    D. User doesn't have execute permission for cd command.
23. The –x option with ls is used for
    A. Listing all files with their Inode number.
    B. Listing all files in five columns.
    C. Give error.
    D. Display only executable files.
24. Which of the following is used to count the number of files in current directories?
    A. ls –l | wc –l

B. ls –l | wc –c
C. ls | wc –w
D. ls | wc –l

25. Which of the following match exact three characters file name?
    A. ***
    B. ABC
    C. ???
    D. [???]
26. Which of the following exact match with file name contain p character?
    A. p**
    B. *p
    C. p?p
    D. *p*
27. What will output of echo "*" command?
    A. Display * as regular character.
    B. Display all files/directory lists from current directory.
    C. Display all file which name having *character.
    D. Display "*" as regular string.
28. Which of the following command used to list all files including hidden files?
    A. ls –h
    B. ls – H
    C. ls –a
    D. ls –hidden
29. Which of the following command used to rename file?
    A. ren
    B. mv
    C. rename
    D. rm
30. What is significant of first character in the output of "ls –l" command?
    A. File Permission
    B. File Mode
    C. File Type
    D. File Size
31. Which command is used to display file type?
    A. file
    B. ls
    C. tee
    D. cat
32. If 7 terminals are currently logged on, then the command
    $date ; who | wc –l , display
    A. date followed by 7
    B. date followed by 8
    C. date followed by 1
    D. an error message.
33. Which of the following file names cannot be displayed if ls * is run?
    A. –Xy
    B. ?X
    C. .X
    D. hidden

True/FALSE:

1. UNIX operating system is multitasking.
2. UNIX is not case sensitive.
3. Kernel is hardware in system.
4. Kernel stored in file name 'sh'.

5. A single operating system can't have more than one shell.
6. Korn shell developed by Denish Ritchie.
7. UNIX is not a portable operating system.
8. UNIX shell is command interpreter.
9. User can run multiple foreground process in UNIX.
10. In UNIX everything is treated as a file.
11. One responsibility of UNIX shell is contoll I/O operation.
12. In UNIX interrupt is handled by kernel.
13. In Linux name of kernel file is "/vmlinuz".
14. Kernel is responsible to display prompt of UNIX.
15. "%" symbol used for korn shell.
16. Bourn shell has aliasing facility.
17. Korn shell developed at University of California, Berkley.
18. All text editors in UNIX are called as Application Program.
19. UNIX provide password in encrypted format.
20. <ctrl + x> used for terminate session.
21. In UNIX all file system has bootstrapping program in boot block.
22. "/ " symbol denoted for root file in UNIX.
23. The Super block contains the size of file in UNIX.
24. The Super block maintains data of boot block.
25. The Super block stored mode (permission) of file.
26. The inode number is unique for every file in a single file system.
27. For a directory, each data block contains 16 bytes entries.
28. Binary file is called ordinary file in UNIX.
29. "b" denotes binary type file in UNIX.
30. The Root directory does not have parent directory.
31. "~" symbol used for current directory.
32. In UNIX hidden file should be ended with "." (Dot) symbol.
33. All device file stored in "/etc" directory.
34. "L" is symbol of symbolic link file.
35. ".." (Double dot) used for child directory in UNIX.
36. "/bin" stored all executable file of utility of UNIX.
37. There is no size of device file.
38. The major number represents the type of device.
39. The minor number distinguishes between possible instances of the same device.
40. In UNIX all devices are implemented as files.
41. The "–L" option used with "ls" command to see inode number of each file in current directory.
42. "–R" option with "ls" command is used to display all files and directory in reverse order.
43. "%D" format used with date command for display date with full month name.
44. "ls –t" command will display types of file.
45. "ls –a" will display only all hidden files.
46. "$echo 5+4" command will display value 9.
47. Meta-character "*" matches single character from given set.
48. "$ls [!0-9]*" will display all files which name start with alphabet.
49. '' (Single quota) is used to override meaning of meta-character.
50. The directory must have write and execute permission in order to change file name.
51. Only file owner can rename file.
52. To run cat command successfully file must have read permission.

Fill in the blanks:

1. _____ option of ls command display all files inode number.
2. Third column in output of "ls –l" command is _____.
3. ____ command is used to change directory.
4. _____ command is used for terminate session of Unix.
5. The boot block contains the partition table and a small _____ program.
6. The number of free data blocks available and a partial list of immediately allocable free

data blocks contains _____ block.
7. The numeric UID of the owner stored in _____ table.
8. For a directory, each data block contains _____ bytes entries.
9. The abbreviation of a user's home directory is _____.
10. The abbreviation for the working directory is _____.
11. The abbreviation for the parent directory is _____.
12. _____ files are found in "*/dev*" UNIX directory.
13. In UNIX, _____ character denoted as symbolic link file.
14. In UNIX, _____ character denoted as FIFO file.
15. The _____ directory in UNIX contains utilities' executable files.
16. _____ number represents the type of device in UNIX.
17. The lists of all the registered users information of the system stored in _____ file.
18. "s" is character which denotes _____ type of file in UNIX.
19. The command used by all users is located in _____ and _____ files.
20. _____ contains configuration files of the system.
21. _____ command is used to view file permission.
22. ____ is heart of UNIX.
23. Shell program stored in ___ file.
24. The _____ is command interpreter in UNIX.
25. _____ is heart of UNIX operating system.
26. _____ is command interpreter.
27. Prompt of bash shell is _____.
28. Bourn shell doesn't have _____ and _____ facilities.
29. Korn shell developed by _____.
30. C shell developed at _____.
31. Korn shell program stored in_____ file.
32. Shell doesn't need to create process for _____ command.
33. In UNIX multitasking done by _____ & _____ process.
34. _____ handles input-output operations in operating system.
35. _____ symbol is used for input redirection.
36. _____ is allocated CPU scheduling to running programs.
37. Shell does not created for _____ commands.
38. "%" is symbol of _____ shell.
39. Meta-character facility is provided by _____.

Unit 2: Security, File permissions and Job control

Command practice:

1. Write command to display files with their inode numbers.
2. Write command to display total number of hidden files from current directory.
3. Translate following permission to octal code:
   i. rwxr-xr-x
   ii. r-xr-xr-x
   iii. - - xrw- - -x
4. Write command to change permission like, user has only read and write for file f1.
5. Write command to kill shell process forcefully.

Short questions:

1. Write all types of files with their denoted character.
2. Write symbol to present user home directory.
3. Differentiate absolute path and relative path in UNIX.
4. Explain Special or devices files with their type.
5. Explain major and minor number.
6. What are use of "/lost+found" file?
7. Write command to display permission of file.
8. What is permission of the file sample for the "$chmod 444" sample command?

9. Which command used for change default permission setting?
10. If user issues the command "$umask 111" then, what are the default permission associated with the files as well as the directories created after this command?
11. How do you stamp new things to an existing file?
12. What does the following crontab line expected to do?
    0 17 * * 6 find /tmp –atime +15 –exec rm –f { }\;
13. What do you mean by job?
14. How you make a currently running foreground process, a background process?
15. List commands which do not create process.

Long questions:

1. Define file level permission and its meaning.
2. Discuss the details of the command that is used to permanently terminate a currently running process.
3. What happens if you logout when there are certain processes still running in the background? Is it possible to avoid such situations? If yes, discuss how you can handle such situation.
4. Explain at, batch an cron facilities of UNIX.
5. How can you measure the time taken by the system to run a command? Discuss.
6. Discuss and explain with example how one can get his/her jobs executed at the convenience of the system.

Multiple Choice Questions:

1. Which of the following file names can be found in more than one directory?
   A. passwd
   B. bin
   C. date
   D. lib
2. The purpose of /bin directory in UNIX is
   A. Contains the compiled, executable or binary version of utilities.
   B. Contains actual code of UNIX kernel.
   C. Contains c subroutine library.
   D. Contains commands related to system administrator.
3. Which permission required in order to do change content of file?
   A. write permission on directory in which file exist.
   B. read permission on directory in which file exist.
   C. write permission on file.
   D. read and write permission on file.
4. Which permission is required to delete a file?
   A. write permission on file.
   B. All permission on file.
   C. Write permission on directory in which file exist.
   D. Write and Execute permission on directory in which file exist.
5. What information stored in 6th column of /etc/passwd file?
   A. Name of users
   B. Default shell of users
   C. Default directory/home directory of users
   D. id of Users
6. Which directory under the root contains the information on devices
   A. /bin
   B. /dev
   C. /adm
   D. /etc
7. /bin/passwd has the user execution permission set to 's' because
   A. It is not executable
   B. It should allow users who don't have permission to/etc/passwd to write to it.
   C. /etc/passwd is write protected
   D. This facility assigns to the user, permission of the program owner, temporarily.

True/False:

1. In unix, special file has size zero.
2. ".." (double dot) indicate child directory.
3. UNIX provide password in encrypted format.
4. <ctrl + x> used for terminate session.
5. "/ " symbol denoted for root file in UNIX.
6. Binary file is called ordinary file in UNIX.
7. In UNIX all devices are implemented as files.

Fill in the blanks:

1. In unix, _____ character denoted for block special file.
2. In unix, _____ character denoted for symbolic link file.
3. In unix, _____ character display in absent of permission.
4. _____ command is used to view file permission.
5. _____ contains configuration files of the system.

Unit-3: Introduction to Shell

Command practice:

1. Write a command to display list of files in size wise sorted order.
2. Find error (if any), otherwise write output and explain their interpretation:
   a) tr -s "AB" "?" < f1
   b) tr 'a' 'b' f1
   c) tr –cs 'a-z' '*' < f1
   d) tr –csd '*' 'a' < f1
   e) cat f1 f2 > f3 | wc –l
   f) cat f1 - f2
   g) wc f1 f2 f3
   h) uniq –d name.lst
   i) uniq –c name.lst
   j) sort –u old > new
   k) wc < f1 f2 f3
3. Write command to display file permission with their size and name.
4. Write command to join two file lines vertically.
5. Write command to count total number of users in system.
6. Write following ate format without using format code of date command: 23/07/2013
7. Write command which display users who currently logging and stored in file usr.lst.

Short questions:

1. Differentiate following two commands.
   wc file1
   wc < file1
2. Write a command to count the total number of login users.
3. How can shell provide command substitution?
4. Signify IFS environment variable.
5. Explain output append redirection operator (>>).
6. What does command "$ls|wc -l > f1" do?
7. What is difference between ""(double quota) and ' (single quota) characters in LINUX?
8. What is purpose of "more" command? How it will differentiate with "cat" command?
9. What do you mean by error redirection?
10. What do you mean by environment variable?
11. List out at least five shell system variable name.
12. What do you mean by here document?
13. What is use of "export" command?
14. What happen with execution of command "set –o noclobber"?
15. Which symbol do not lost their meaning when enclosed within double quote? Explain with example.
16. Explain conditional command execution with example.

17. What will displayed as output of "$echo $0" command?
18. Which operator is used for command substitution in bash shell?
19. What are use of IFS and PS1 environment variables?
20. Which command use to display all variables with their value?
21. Describe importance of "/null" and "/tty" file in korn shell.

Long questions:

1. Write short note on the shell treatment of the command line. OR
   Explain all steps of the shell treatment of the command line. OR
   Discuss the steps interpreted by shell. OR
2. Write short note on Command Execution Process.
3. Write short note on redirection.
4. Explain quota and backslash substitution. Also differentiate all with appropriate example.
5. Explain all types of command execution.
6. Explain "eval" command in detail.
7. Explain five environment variables in detail.
8. What do you mean by variable? Explain how to store contents of file and file name in a variable with example.
9. Explain command substitution.
10. Explain startup files which use by the Korn shell in detail.
11. Explain commands set and history in detail.

Multiple Choice Questions:

1. Which command is used to create a new regular file?
   A. tee B. cat < C. copy cone D. mkdir
2. What happen with command cat f1 > f2?
   A. Copied content of file f1 to file f2.
   B. If file exist then overwrite old content with f1 file content or file does not exit then create new file f2 and copied all content of file f1.
   C. Replaced content of file f1 to file f2.
   D. Provide error message.
3. Which of the following is used to count the number of files in current directories?
   A. ls –l | wc –l
   B. ls –l | wc –c
   C. ls | wc –w
   D. ls | wc –l
4. What is purpose of PATH environment variable?
   A. It is used to search user's home directory.
   B. It is used to search user's default shell.
   C. It is used to search default setting for cd command.
   D. It is used to search command to be execute.
5. Which of following command display login shell?
   A. $SHELL B. $0 C. echo $SHELL D. echo $0
6. Which of following the descriptor for standard output?
   A. 1 B. 0 C. 2 D. None of above
7. Redirection in pipes can be achieved by using
   A. > B. >> C. tee D. lpr
8. If one exports a variable
   A. Variable placed in the environment by a child process are not inherited by the parent process.
   B. It is passed to all its descendant processes.
   C. It dies when the shell that created it dies.
   D. Only the first two choices are correct.
9. If 5 terminals are currently logged on, then the command
   date ; who –H | wc –l will display
   A. date followed by 5
   B. date followed by 6

C. date followed by 1
D. an error message.

10. The shell command "$cat X Y > X"
    A. doesn't work.
    B. replaces the contents of file X, by the contents of the file Y.
    C. does nothing, other than displaying an error message.
    D. create files with names "X" and "Y"
11. Which of the following is true to store output of "ls" command twice in file f1?
    A. ls > f1 ; ls > f1
    B. (ls;ls) > f1
    C. ls >> f1 ; ls >>f1
    D. ls > f1
12. Which of the following is valid variable name in shell?
    A. ls
    B. SHELL
    C. name
    D. a$
13. _____ operator is used to evaluate value of variable.
    A. > B. $ C. # D. %
14. What will happen after executing following commands?
    $ Str="f*"
    $ echo $Str
    A. Display all files which name start with character "f".
    B. Display only "f*".
    C. Display only content of file "f*".
    D. Display content of all files which name start with character "f".
15. Which of following is not environment variable?
    A. HOME B. SHELL C. MINUTES D. SECONDS
16. /dev/null
    A. is a file
    B. has write permission for all
    C. is the UNIX built-in dustbin
    D. is a directory.
17. Which of the following option is use as a delimiter in sort command?
    A. /
    B. –t
    C. –d
    D. –l
18. Which of following option is use as a delimiter in cut command?
    A. /
    B. –t
    C. –d
    D. –l

TRUE/FALSE:

1. <<< is used as input redirection.
2. "set" command is used to see only environment variable.
3. ` ` (single quota) is used for command substitution.
4. $ is used to give value of variable.
5. The command $echo "$a" will display value of variable a.
6. Default data type of a variable in LINUX is integer.
7. "set" command will not display readonly variable.
8. "$echo 5+4" command will display value 9.
9. '' (Single quota) is used to override meaning of metacharacter.
10. "expr" command is used only for numeric expression evaluation.
11. The command "eval" is used for evaluating expression.
12. Pipe (|) is a command.

13. "tee" command create new file although it is exist.
14. "const" command is used to make variable read only in shell.
15. The backslash character changes meaning of only one character which followed by backslash.
16. Following is valid declaration of variable Rate.
    $ Rate=
17. We cannot change primary prompt of shell.
18. "/" (slash) operator used to separate a path in variable PATH.

Fill in the blanks:

1. The _____ command is used to evaluate arithmetic expression.
2. _____ environment variable stored all bin directories' path.
3. _____ command count and display total number of line from given files.
4. _____ standard descriptor number used for error redirection.
5. _____ operator of conditional command execution follow that if first command is unsuccessful then second command will executed.
6. _____ command is used to remove variable from memory.
7. _____ is used as command substitution operator in Korn shell.
8. The _____ command is used when the Korn shell needs to evaluate a command twice before executing it.
9. The _____ environment variable store pathname of the history file.
10. The _____ environment variable store search path for commands.
11. The _____ environment variable store absolute pathname of current directory.
12. The _____ operator used to separate path in CDPATH variable.
13. The _____ file is special file that is used for deleting data.
14. The _____ file represents the terminal assigned to each user.
15. The _____ command is used to input content word by word in different variable.

Unit-4: Filters and communication utilities

Short questions:

1. What is done by the following command?
   $date | cat file1 > file2
2. Write single "head" command to copy lines 1 to 20 from file f1 to f2.
   (Do not use "cp" command)
3. Write a command to display lines from 20 to 30 from file f1.
4. Write a command to display second last line from file f1.
5. Write a command to display total number of characters in 25th line of file.
6. Write difference between commands , "uniq file" and "sort –u file".
7. What is the use of "pr" command?
8. What does the following command do?
   $tr "AB" "*?" < file1| tr "*?" "BA"
9. How can you create a file using tail command?
10. Write command to display file name with their permission only.
11. What is mail utility's prompt in the send mode?
12. What is mail utility's prompt in the read mode?
13. Describe "mesg" command.
14. How do you convert contents of file f1 to uppercase?
15. Write five options of sort command with their meaning.
16. Which command is used by the system administrator to inform users about every day's events?

Long questions:

1. Explain following commands with examples.
   sort, tr, head, tail, cut
2. Explain at least three communication commands in detail.
3. Differentiate following commands:
   A. head and cut

B. cmp and comm.
C. cmp and diff
D. comm and diff

Multiple Choice Questions:

1. Which of following command copies contents from file1 to file2?
   A. head -1 file1 > file2
   B. tail -1 file1> file2
   C. head +1 file1 > file2
   D. tail +1 file1 > file2

2. Which of the following command displays last to 2nd line from file f1?
   A. head +2 f1
   B. tail -2 f1 | head -1
   C. tail -2 f1
   D. head +2 f1| tail +2

3. The –c option of sort command is used to:
   A. Count lines
   B. Start characters sorts
   C. Check sort sequence
   D. None of above

4. Which of the following is not true for "tr" command?
   A. tr is filter utility.
   B. tr takes input from file.
   C. tr can be used at both side of the pipe.
   D. tr can be used to translate characters.

5. Which of the following command is used to display duplicate lines from file1?
   A. uniq –d file1
   B. sort –d file1
   C. sort file1 | uniq –d
   D. dup file1

6. Which of the following option is used to specify the delimiter character in sort utility?
   A. –t B. –d C. –f D. –dd

7. Which of the following command is used to send message to all login users?
   A. write B. sed C. wall D. msgn

8. "mesg" command accept argument as
   A. 1 or 0 B. Yes or No C. y or n D. any file

9. Which of the following command creates a file named file1?
   A. cat file1
   B. cat > file1
   C. cat >> file1
   D. cat < file1

10. If file1 has 100 lines, how many lines will file3 have after execution of following command?
    $ tail -20 file1 | head -40 > file3
    A. 10 B. 20 C. 30 D. 40

11. Which of the following command is correct?
   A. cmp file1 file2 | file3
   B. cat file1 | cmp file2
   C. cat file1 | cmp –
   D. None of above.

12. Which of the following option of "sort" command is used to ignore case in letter.
   A. –f B. –i C. –I D. –O

TRUE/FALSE:

1. "cat" command is use to display content of regular files only.
2. "cat" command can open director file.
3. In "sort" command, use "–D" option for set delimiter.
4. The "paste" command will create file.
5. The "cut" command is used to cut lines horizontally.

6. The command "$ sort +1 shortlist" do starts sorting after skipping the first field.
7. The "paste" command is used to join file lines vertically.

Fill in the blanks:

1. _____ command is use to display content of regular files only.
2. The _____ option of "tr" command is used to set delimiter.
3. The _____ option of "cut" command is used to cut data field wise.
4. The _____ option of "sort" command sorts numeric values of the file shortlist.
5. The _____ option of "sort" command ignores duplicate fields while sorting the shortlist file.
6. The _____ command is used to display contents of file page by page.
7. The _____ command is used to print contents of file.

Unit-5: The Bash/Korn Shell Programming

Short questions:

1. What is the positional parameter?
2. What is the content of variable $0?
3. What is the content of variable $$?
4. What is purpose of shift command?
5. What is difference between shell parameters $* and $@ ?
6. $set Ready for Print Page
   How can you print last argument of positional parameter from above line?
7. Write syntax of "case statement" in UNIX.
8. What will be the output of command $expr length "'"?

Long questions:

1. Explain positional parameter with example.
2. Explain shift command with example.
3. Explain all shell parameter in detail.
4. Explain following commands in detail.
   expr, test, shift
5. Explain "for..in" in detail.
6. Explain "expr" command as string manipulation command.

Multiple Choice Questions:

1. Which of the following shell commands is used to display the contents of each of the command line arguments, one by one?
   A. cat $* B. cat '$*' C. cat "$@" D. cat "$*"
2. Which of the following displays the exit status of the last executed command?
   A. echo $# B. echo $$ C. echo $? D. echo $!
3. set a b c d e f ghj k i j l m n o p q
   i. What will output of echo $12?
      A. a2 B. m C. j D. None
   ii. What will output of echo $12 after execution of "shift" command?
      A. b2 B. n C. g D. None
   iii. What will become value of $1 after executing "shift 5" command?
      A. f B. a C. l D. None

TRUE/FALSE:

1. You cannot evaluate any expression on shell directly.
2. You must put ;; symbol after end of each "case" statement of shell.
3. The "test" command is also used to verify file type.
4. The "test" command do not use symbol > (greater than).
5. The "–gt" operator is used for checking greater than and equal to.
6. The operator "–ge" do not use with test command.

Fill in the blanks:

1. The _____ command is used to evaluate expression.
2. _____ is output of $ expr "My Name" : ".*" command.
3. The _____ function used in "expr" command to extract sub string from given string.

4. The _____ positional parameter store name of script.
5. The _____ symbol used to signify default choice in "case" statement.

Unit-6: Regular Expression, grep, sed and awk

Short questions:

1. Define Regular Expression.
2. What is exit status of "grep" command when it does not find a pattern?
3. Write appropriate command which display those lines between 10 and 20 having "SHARMA" in a file Employee.
4. What is significant of the NF and NR built in variable of "awk" utility?
5. What is the purpose of "^" symbol in regular expression?
6. Define a filter. Name any two filtering utility?
7. Explain "egrep" command. Give all special characters which are not used by "egrep".
8. Remove all extra blanks/tabs from the file using "sed" utility.
9. Display only first word from each line using "sed" utility.
10. What are the difference between "1.$cmd" and "cmd" instruction in "sed" utility?
11. Display all odd lines twice in an output using "sed" utility.
12. Extract all consonant from a file to other file using "sed" utility.
13. Write command to simulate command "head -15 file1|tall +5" using "sed" utility.
14. Write "grep" command which display all lines which having any three consecutive character from file. (like aaa, ***, ppp etc.)
15. Explain any two communication commands.
16. Differentiate "grep" and "egrep".
17. Explain matching operators of "awk" utility with an example.
18. What is purpose of BEGIN and END section of "awk" utility? Explain with example.
19. Write appropriate command which display those lines from file emp.dat which having third field contain either "Director" or "Professor".
20. Write a command to display all users with their shell name that uses Korn shell or C shell.
21. Write a command to count lines from file which ends with digits.
22. Write "sed" command which add two spaces to the begging of each line and two dashes to the end of each line.
23. Differentiate between system variable NR and FNR of "awk" utility.
24. Write a "grep" command which print all lines except the comment line of shell script.
25. Interpret following command:
    $grep "^[^^]" file1.
26. Write a command to display all users from "/etc/passwd" in alphabetically sorted order.

Long questions:

1. Explain significance of system variable used with "awk" utility.
2. Explain concept of array in "awk" utility.
3. Explain any five built in variable of "awk" utility.
4. Locate all lines where 1st and 3rd characters of employee id are same using grep, sed and awk utilities.
5. Explain substitution feature of "sed" command in detail.
6. Explain any three string functions of "awk" in detail.
7. Explain any three mathematical functions of "awk" in detail.
8. Explain TRE and BRE.

Multiple Choice Questions:

1. The regular expression a\{0,1\} can be rewritten as:
   A. a+ B. a? C. a* D. a;
2. Which of the following regular expression select lines which having at least three characters?
   A. "...." B. "..." C. "???" D. "^...$"
3. Which of the following is a single line address?
   A. 4 B. 3,5 C. /MY/ D. /$/
4. If no address is followed by an exclamation mark (!) , the command is applied to
   A. each line

B. no line
C. every line that matches the address
D. Every line that does not match the address

5. What is the effect of following sed command?
   sed 's/[A-Z]/?/' file1
   A. Deletes all A to Z
   B. Replaces A to Z to ? only once in line
   C. Replaces all A to Z to ?
   D. No change
6. What will be the output of the command "grep '^\(.\).*\1$' file1"?
   A. *Select all lines from file1.
   B. Select all lines from file1 which start and end with same character.
   C. Select all lines from file1 which start and end with .(dot) character.
   D. None of above.
7. Which of the following supports alternation operator?
   A. grep B. fgrep C. egrep D. awk
8. The "y" command is used for
   A. Delete First Characters
   B. Outputs a user-defined string of text continuously until killed.
   C. Put Spaces
   D. Delete First from pattern space
9. Which of the following utility is able to store multiple lines within its pattern space?
   A. grep B. sed C. awk D. fgrep
10. What will be the output of command "awk '{print NF}' file1"?
    A. It prints number of records.
    B. It prints total number of fields.
    C. It prints total fields in each record.
    D. It last fields of each line from file.

TRUE/FALSE:

1. In regular expression ^ used for end of line.
2. In regular expression [] class match two characters from given set.
3. "grep" utility cannot add, delete and change a line.
4. "grep" utility takes only files as input data.
5. "fgrep" utility supports $ operator.
6. "egrep" utility is not supported \(..\) saved operator.
7. "grep" utility implement on set of lines from file.
8. In regular expression . (dot) used to match any single character.
9. The option "–c" of "grep" utility counts total number of lines that matches with regular expression.
10. A regular expression consists of atoms and operators.
11. A dot matches any single character except the new line (\n).
12. "grep" is an editor.
13. The group operator (…) is supported by "egrep" but not by "grep".
14. The output of command "grep –v '….' File1" is display all lines that having only 4 characters.
15. "grep" can print part of line from file.
16. The "–e" option defines that the script is in file with "sed" command.
17. The "insert (i)" command cannot used with range address.
18. The "g" flag used to change all occurrence of pattern replaced with new string.
19. An "awk" script is made of three sections: preprocessing, body and post processing.
20. The record buffer is designated as $0.
21. If pattern is missing then action applies on all lines of files.

Fill in the blanks:

1. _____ section of "awk" utility is executed after the last line is read.
2. The _____ option of "awk" utility is used to define field separator.
3. The ____ system variable of "awk" utility used for knowing total number of records in a file.

4. The four variables that totally controlled by "awk" utility are , _____ , ____, ____ and _____.
5. The _____ operator is used to match regular expression in "awk" utility.
6. The full form of BRE is _____.
7. The _____ function in "awk" utility does not need parentheses.
8. The _____ command translates a set of characters into another set in "sed" utility.
9. The _____ symbol denoted of line number in "sed" utility.
10. The ____ character used to delete first line from pattern space in "sed".
11. _____ is used to select the set of lines from files.
12. The _____ command is used to substitute a pattern with a replacement string in "sed".
13. _____ supports only alternation in regular expression.
14. ____ operator is used for zero or more occurrence of previous character in regular expression.
15. _____ command do not use input file as argument in command line.
16. The ____ option is used to set delimiter in "sort" command.
17. The _____ command extracts data column wise from file.
18. The ____ extracts number of lines from beginning of file to end of file.