1. **What is ubuntu?**

Ubuntu Linux is a full fledged Linux system trailed for the desktop. Ubuntu builds a unique user interface and offers the users a solid choice of tools.

1. **How do I see the version of the ubuntu I am using?**

Cmd :- uname -a

14.04.1LTS (Long Term Support)

1. **What is UNIX?**

It is a portable operating system that is designed for both efficient multi-tasking and multi-user functions. Its portability allows it to run on different hardware platforms. It was written is C and lets user do processing and control under a shell.

1. **What is Shell?**

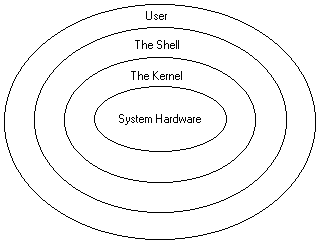
A shell acts as an interface between the user and the system. As a command interpreter, the shell takes commands and sets them up for execution.

1. **How do I see that which shell I am using?**

echo $shell

1. **Architecture of UNIX:**

Visual representation of the UNIX operating system environment:



1. **Name some common shells and what are their indicators?**

In UNIX there are two major types of shells:

1. The Bourne shell. If you are using a Bourne-type shell, the default prompt is the $ character.

subcategories for Bourne Shell which are listed as follows:

* Bourne shell ( sh)
* Korn shell ( ksh)
* Bourne Again shell ( bash)
* POSIX shell ( sh)

1. The C shell. If you are using a C-type shell, the default prompt is the % character
2. **Briefly describe the Shell’s responsibilities**

– program execution  
– variable and file name substitution  
– I/O redirection  
– pipeline hookup  
– environment control  
– interpreted programming language

1. **What is Kernel?**

Kernel is the UNIX operating system. It is the master program that controls the computer’s resources, allotting them to different users and to different tasks. However, the kernel doesn’t deal directly with a user. Instead, it starts up a separate, interactive program, called a shell, for each user when he/she logs on.

1. **What is filter command? List out the filter commands.**

A **filter** takes input from one **command**, does some processing, and gives output.

**List of Unix filter programs**

* [cat](https://en.wikipedia.org/wiki/Cat_(Unix)),[comm](https://en.wikipedia.org/wiki/Comm_(Unix)),[cut](https://en.wikipedia.org/wiki/Cut_(Unix)),[grep](https://en.wikipedia.org/wiki/Grep),head,[paste](https://en.wikipedia.org/wiki/Paste_(Unix)),[sed](https://en.wikipedia.org/wiki/Sed),[sort](https://en.wikipedia.org/wiki/Sort_(Unix)),[tail](https://en.wikipedia.org/wiki/Tail_(Unix)),[tac](https://en.wikipedia.org/wiki/Tac_(Unix)),[uniq](https://en.wikipedia.org/wiki/Uniq),[wc](https://en.wikipedia.org/wiki/Wc_(Unix))

1. **Differentiate multiuser from multitask.**

Multiuser means that more than one person can use the computer at the same time. Multitask means that even a single user can have the computer work on more than one task or program at the same time.

1. **What is a directory?**

Every file is assigned to a directory. A directory is a specialized form of file that maintains a list of all files in it.

1. **Describe file systems in UNIX**

Understanding file systems in UNIX has to do with knowing how files and inodes are stored on a system. What happens is that a disk or portion of a disk is set aside to store files and the inode entries. The entire functional unit is referred to as a file system.

1. **Differentiate relative path from absolute path.**

Relative path refers to the path relative to the current path. Absolute path, on the other hand, refers tdo the exact path as referenced from the root directory.

1. **What are shell variables?**

Shell variables are a combination of a name ( identifier), and an assigned value, which exist within the shell. These variables may have default values, or whose values can be manually set using the appropriate assignment command. Examples of shell variable are PATH, TERM and HOME.

1. **What are the differences among a system call, a library function, and a UNIX command?**

A system call is part of the programming for the kernel. A library function is a program that is not part of the kernel but which is available to users of the system. UNIX commands, however, are stand-alone programs; they may incorporate both system calls and library functions in their programming.

1. **What is Bash Shell?**

It is a free shell designed to work on the UNIX system. Being the default shell for most UNIX-based systems, it combines features that are available both in the C and Korn Shell.

1. **Differentiate cmp command from diff command.**

The cmp command is used mainly to compare two files byte by byte, after which the first encountered mismatch is shown. On the other hand, the diff command is used to indicate the changes that is to be made in order to make the two files identical to each other.

**(19) What is the use of -l when listing a directory?**

-l, which is normally used in listing command like ls, is used to show files in a long format, one file per line. Long format refers to additional information that is associated with the file, such as ownership, permissions, data and filesize.

**20) What is piping?**

Piping, represented by the pipe character “|”, is used to combine two or more commands together. The output of the first command serves as input the next command, and so on.

**21) What is a superuser?**

A superuser is a special type user who has open access to all files and commands on a system. Note that the superuser’s login is usually root, and is protected by a so-called root password.

**22) How do you determine and set the path in UNIX?**

Each time you enter a command, a variable named PATH or path will define in which directory the shell will search for that command. In cases wherein an error message was returned, the reason maybe that the command was not in your path, or that the command itself does not exist. You can also manually set the path using the “set path = [directory path]” command.

**23) Is it possible to see information about a process while it is being executed?**

Every process is uniquely identified by a process identifier. It is possible to view details and status regarding a process by using the ps command.

**24) Differentiate cat command from more command.**

When using the cat command to display file contents, large data that does not fit on the screen would scroll off without pausing, therefore making it difficult to view. On the other hand, using the more command is more appropriate in such cases because it will display file contents one screen page at a time.

**25) What is pid?**

Pid is short for Process ID. It is used primarily to identify every process that runs on the UNIX system, whether it runs on the foreground or runs at the background. Every pid is considered unique.

**26) How does the system know where one command ends and another begins?**

Normally, the newline character, which is generated by the ENTER or RETURN key, acts as the signpost. However, the semicolon and the ampersand characters can also serve as command terminators.

**27) What is wild-card interpretation?**

When a command line contains wild-card characters such as ‘\*’ or ‘?’, these are replaced by the shell with a sorted list of files whose pattern matches the input command. Wild-card characters are used to setup a list of files for processing, instead of having it specified one at a time.

**28) Write a command that will find all text files in a directory such that it does not contain the word “amazing” in any form (that is, it must include the words Amazing, AMAZING, or aMAZINg)**

Answer:



|  |  |
| --- | --- |
|  | grep –vi amazing \*.txt |

**29) Write a command that will output the sorted contents of a file named IN.TXT and place the output in another file named OUT.TXT, while at the same time excluding duplicate entries.**

Answer:



|  |  |
| --- | --- |
|  | sort IN.TXT | uniq > OUT.TXT |

**30) Write a command that will allow a UNIX system to shut down in 15 minutes, after which it will perform a reboot.**

Answer:



|  |  |
| --- | --- |
|  | /sbin/shutdown –r +15 |

 31**) What does this command do? cat food 1 > kitty**

Answer: it redirects the output of cat food into the file kitty; the command is the same as:  
cat food > kitty

**32) What is wrong with this interactive shell script?**

echo What month is this?  
read $month  
echo $month is as good a month as any.

Answer: Initially, the question mark should be escaped (\?) so that it is not interpreted as a shell metacharacter. Second, it should be read month, not read $month.

33**) Write a shell script that requests the user’s age and then echoes it, along with some suitable comment.**

Answer:

|  |  |
| --- | --- |
|  | echo Hello! What\’s your age\?  read age  echo $age! I\’ll be obsolete by that age! |

**34) Write a script that prints out date information in this order: time, day of week, day number, month, year  
(sample output: 17:34:51 PDT Sun 12 Feb 2012)**

Answer:



|  |  |
| --- | --- |
|  | set ‘date’  echo $4 $5 $1 $3 $2 $6 |

**35) What needs to be done before you can run a shell script from the command line prompt?**  
You need to make the shell script executable using the UNIX chmod command.  
  
**Details:**   
This chmod command makes the shell script file "example1" executable for the user (owner) only:

$ chmod u+x example1

OR

$ chmod 755 example1

**36) How do you terminate a shell script if statement?**  
With fi, which is "if" spelled backwards.  
  
if [ -f $myfile ]  
then  
echo "$myfile exists"  
fi  
exit 0

**37) What UNIX operating system command would you use to display the shell's environment variables?**  
Running the "env" command will display the shell environment variables.  
  
**Details:**   
Sample env command output:

$ env  
HISTFILE=/home/lfl/.history  
PATH=/usr/local/bin:/bin:/usr/bin:/usr/X11R6/bin  
SHELL=/bin/ksh  
HOSTNAME=livefirelabs.com  
USER=lfl  
MAIL=/var/spool/mail/lfl  
HOME=/home/lfl  
HISTSIZE=1000

It would also be good to understand the purpose of the common shell environment variables that are listed in the env command output.

**38) What code would you use in a shell script to determine if a directory exists?**  
The UNIX test command with the -d option can be used to determine if a directory exists.  
  
**Details:**   
The following test command expression would be used to verify the existence of a specified directory, which is stored in the variable $mydir:

if [ -d $mydir ]   
then  
command(s)  
fi

If the value stored in the variable mydir exists and is a directory file, the command(s) located between then and fi will be executed.  
  
You can consult the test command's man page ("$ man test") to see what test command options are available for use.

**39) How do you access command line arguments from within a shell script?**  
Arguments passed from the command line to a shell script can be accessed within the shell script by using a $ (dollar sign) immediately followed with the argument's numeric position on the command line.  
  
**Details:**   
For example, $1 would be used within a script to access the first argument passed from the command line, $2 the second, $3 the third and so on upto nine.

**Bonus:** $0 contains the name of the script itself.

**40) How do I check the current date in unix?**

$date

**41) How to display the current date in the format of 23-03-2018?**

$date “+%d-%m-%Y”

**42) How to list all the files and folders of the current directory along with their details?**

Ls –l

**43) How to list all the hidden files and folders?**

Ls –a

**44) How to find the last modified file of the current directory?**

Ls –lt

**45) How to list a folder with its files and sub-folders?**

Ls –R

**46) What does the permission set –rwxrw-r-x represents?**

The owner of the file has full permissions on the file. The group to which the owner belongs, has read and write permissions on the file and the rest of the users has read and execute permissions.

**47) How can I check with which user I have logged in?**

Who

**48) How can we count the no. of words of a file?**

wc –w

**49) What is the purpose of wc command?**

The wc command is used to count the number of lines, words and characters. There are three options with this command:

* -l: to count number of lines
* -w: to count number of words
* -c: to count number of characters

**50) Can we check how many and which processes are running on the system? If yes, how?**

Yes, we can check how many and which processes are running on the system. For this, ps command is used. This command will list all the processes that are currently running in the sytem.

**51) What is PPID?**

PPID stands for Parent Process ID. It represents the PID of the parent process of the current process.

**52) Can we change the permissions of a file or a folder? If yes, how?**

Yes, we can. For this, chmod command is used. We can provide the permissions which we want to apply, to this command and it will set them up.

**53) How many modes does the chmod command has? List them out.**

It has two modes: 1. Relative mode 2. Absolute mode

Relative Mode:

In this, we use the symbols to represent the types of users and the permissions.

Types of Users are u (Owner), g (Group) and o (Others). Permissions are r (Read), w (Write) and x (Execute).

Absolute Mode:

In this, we use the numbers to represent the permissions. Read=4, Write=2, Execute=1.

**54) If I want to change the permissions of the file test.txt to the following then what should I do?**

**Owner = Read+Write+Execute**

**Group = Read+Execute**

**Other = Read+Execute**

chmode u=rwx,g=rx,o=rx test.txt OR chmod 755 test.txt

**55) How to display the first seven lines of a file?**

head –n 7 file

**56) How to display the last seven lines of a file?**

Tail –n 7 file

**57) If I want to display the usernames of all the users on the system then how can we do that?**

cut –d “|” –f 1 \etc\passwd

**58) How can we compare two files to see whether they are identical or not?**

We can use the diff command for this. The syntax is:

diff file1 file2

This command will compare the first file to the second file and will suggest the changes which we can apply on the first file to make it identical to the second one.

**59) We have two files:**

**file1.txt:**

**I need to buy apples.**

**I need to run the laundry.**

**I need to wash the dog.**

**I need to get the car detailed.**

**file2.txt:**

**I need to buy apples.**

**I need to do the laundry.**

**I need to wash the car.**

**I need to get the dog detailed.**

**If we run “diff file1.txt file2.txt” command the it produces the following output. Explain it:**

*Output:*

*2,4c2,4*

< I need to run the laundry.

< I need to wash the dog.

< I need to get the car detailed.

---

> I need to do the laundry.

> I need to wash the car.

> I need to get the dog detailed.

Answer:

In our output above, "**2,4c2,4**" means: "Lines **2** through **4** in the first file need to be **c**hanged to match lines **2** through **4** in the second file."

**60) What is a filter command? Name some filter commands.**

A filter command is used to filter the files based on a given criteria. Following are some filter commands:

1. Grep
2. Find
3. Sed

**61) What is the purpose of the grep command?**

This command is used to search a given word or regular expression in the content of a file and display the lines which match with it.

**62) What will be the output of the following command?**

**grep –c “unix” test.txt**

It will print the number of lines from test.txt which contains the word “unix”.

**63) Which option of grep command will be used if we want to display the lines which do not contain the given word or pattern?**

The –v option will be used for this.

**64) If we want to perform a search which will match the word “unix” in any case with the content of the given file, which option should we use?**

grep –i “unix” test.txt

**65) What should we do if we want to sort a set of words in the dictionary order?**

Sort –d test.txt

**66) Which option is used to do the sorting descending order?**

sort –r filename

**67) What is the full form of sed?**

Stream Editor.

**68) What is the purpose of sed command?**

It is basically a search and replace utility. We’ll have to provide it with a word to search and a word replace with the found word.

**69) How many methods are there to provide an address range in the sed command?**

There are two methods:

1. Range of lines. For example: 3,5 (Lines 3 to 5)
2. Search pattern. For example: /One/ (This will look for the lines which contain this word)

**70) What should I write if I want to replace the word “One” with “None” in the file test.txt?**

sed ‘s/One/None/g’ test.txt

**71) How to delete all the lines from a file which contain the word “None”?**

sed ‘/None/ d’ test.txt

**72) Write the command to search the file xyz.txt in the /home directory.**

find . –name xyz.txt

**73) Write the command to search the files whose size is between 5MB to 10 MB.**

find . –size +5M –size -10M