**16) Write in brief the ping command.**

**Ans:-** Ping is a command-line utility, available on virtually any operating system with network connectivity, that acts as a test to see if a networked device is reachable. The ping command sends a request over the **network** to a specific device.

**17) Explain UNIX?**

**Ans:-** UNIX is an operating system which was first developed in the 1960s, and has been under constant development ever since. By operating system, we mean the suite of programs which make the computer work. It is a stable, multi-user, multi-tasking system for servers, desktops and laptops,UNIX systems also have a graphical user interface (GUI) similar to Microsoft Windows which provides an easy to use environment. However, knowledge of UNIX is required for operations which aren't covered by a graphical program, or for when there is no windows interface available, for example, in a telnet session.

**Type of Unix System:-** There are many different versions of UNIX, although they share common similarities. The most popular varieties of UNIX are Sun Solaris, GNU/Linux, and MacOS X.

The UNIX operating system is made up of three parts; the kernel, the shell and the programs.

**The kernel**

If we think of the UNIX operating system in terms of layers, the kernel is the lowest layer. It interfaces directly with the computer hardware and is responsible for allocating and managing the resources available to programs. It allocates processor time and memory to each program and determines when each program will run. The kernel also provides an interface to programs whereby they may access files, the network, and devices.

**The shell**

The shell acts as an interface between the user and the kernel. When a user logs in, the login program checks the username and password, and then starts another program called the shell. The shell is a command line interpreter (CLI). It interprets the commands the user types in and executes them. The commands are themselves programs. Once programs terminate, control is returned to the shell and the user receives another prompt ($ on our systems), indicating that another command may be entered.

### The programs

One of the main features of UNIX is that it includes a variety of small programs to meet various needs. Typically, each of these programs does one thing and does it well. This modular design allows the functionality of small programs to be mixed and matched. As you become more familiar with UNIX, you will find that this design provides you great flexibility and power to accomplish almost any task. Typically these programs operate on top of the shell, but they may also interface directly with the kernel.

**18) Explain grep?**

**ANS-** In the simplest terms, grep (**g**lobal **r**egular **e**xpression **p**rint) is a small family of commands that search input files for a search string, and print the lines that match it. Although this may not seem like a terribly useful command at first, grep is considered one of the most useful commands in any Unix system. Grep is made up of three separate, yet connected commands, grep, egrep, and fgrep, a sort of holy trinity of Unix commands. All three of the grep commands work the same way. Beginning at the first line in the file, grep copies a line into a buffer, compares it against the search string, and if the comparison passes, prints the line to the screen. Grep will repeat this process until the file runs out of lines. Notice that nowhere in this process does grep store lines, change lines, or search only a part of a line.

**19) Explain pipe?**

Ans- In computer programming, especially in [UNIX](https://searchdatacenter.techtarget.com/definition/Unix) operating systems, a pipe is a technique for passing information from one program [process](https://whatis.techtarget.com/definition/process) to another. Unlike other forms of interprocess communication (IPC), a pipe is one-way communication only. Basically, a pipe passes a parameter such as the output of one process to another process which accepts it as input. The system temporarily holds the piped information until it is read by the receiving process.\

Using a UNIX [shell](https://searchdatacenter.techtarget.com/definition/shell) (the UNIX interactive command interface), a pipe is specified in a command line as a simple vertical bar (|) between two command sequences. The output or result of the first command sequence is used as the input to the second command sequence. The *pipe* system call is used in a similar way within a program.

For two-way communication between processes, two pipes can be set up, one for each direction. A limitation of pipes for interprocess communication is that the processes using pipes must have a common parent process (that is, share a common open or initiation process and exist as the result of a *fork* system call from a parent process).

A pipe is fixed in size and is usually at least 4,096 bytes.