What is UNIX?

- UNIX is an *Operating System* (OS).
- An operating system is a group of control programs that helps the user communicate with the computer hardware.
- The most popular operating systems: Windows95/98/NT/2000, DOS
- UNIX was developed by AT&T Bell Labs in the US (95% written in “C” programming language).

Most Important Features of UNIX

- Most important feature of UNIX: **Stability**
  - more than 30 years to get the bugs out
  - Important in shared environments and critical applications
- Shared Environments :
  - Windows98/NT crashes more as compare to UNIX servers
- Critical Applications
  - Hospital
  - Airport
  - Real -Time Applications

Unix – Basics

- UNIX is a multi user and multi tasking system.
  - Multi User means many users can use the same system at the same time.
  - Multi Tasking means you work on more than one job at the same time.
- In UNIX, you can create your own commands and run them.
- UNIX takes commands from standard input and interfaces with the hardware to execute those commands.
- UNIX is case sensitive.

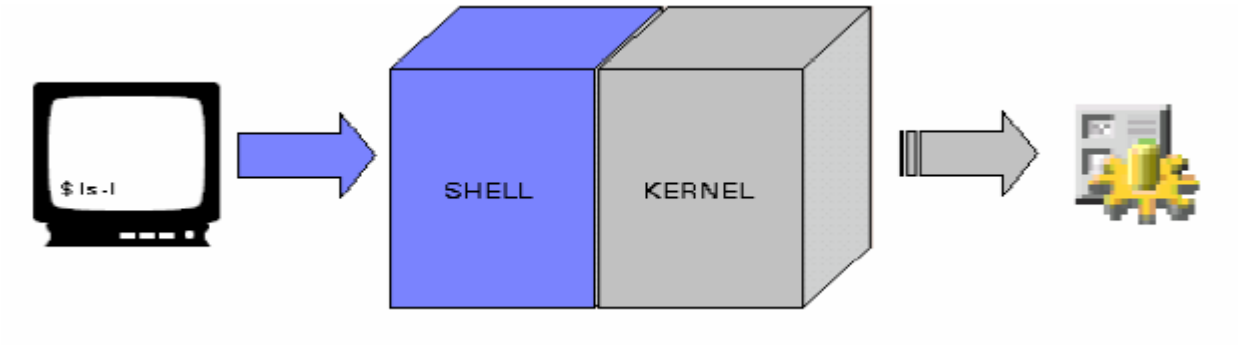
Unix – Basics

- UNIX does not allow spaces in file names or commands.
- UNIX is actually a group of programs that work together to perform various tasks.
- In UNIX everything is a file. E.g. Printers are files, Directories are files etc.
- UNIX has a hierarchical, universal file system.

Introduction - O/S

The UNIX OS has two components:

- The Shell which interfaces with the OS user.
- The Kernel which manages and deals with the hardware.



Introduction - O/S

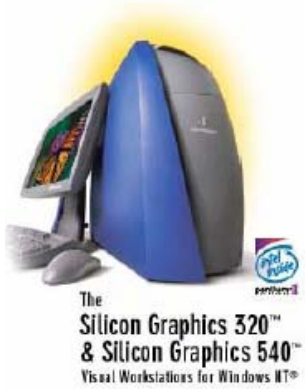
The Shell interprets commands entered by users and passes them over to the Kernel. The Kernel executes shell commands on behalf of the Shell.

Shell Programming

- It is writing programs using a sequence of (combined) UNIX commands
- The shell interprets the "script" and tells the operating system what to do
- It also known as "scripting" language

Who Uses UNIX?

- Computer manufacturers such as Sun, SGI, IBM, and HP
- Computer chip manufacturers like Motorola & Intel
- Software companies
- Banks
- Governments
- Hospital Authority
- Universities
- Internet Service Providers (ISP)
- Web Companies
- Web servers of many organization and for personal use



Advantages of UNIX

- A rich set of small commands and utilities that do specific tasks well
- Ability to use commands and utilities together in unlimited ways to accomplish more complicated tasks
- Available on a wide variety of machines the most truly "portable" operating system.
- Optimized for program development
- A powerful unified file system.

Disadvantages of UNIX

- “User hostile” - designed for the programmer, not the casual user.
- Commands often have cryptic names and give very little response to tell the user what they are doing.
- Richness of utilities (over 400 "standard" ones) often overwhelms novices.

Unix Standards

A. **ANSI C**

- a language standard
- includes standard C library

B. **IEEE POSIX**

- a set of standards for a Portable Operating System Interface(POSIX)
- defines an interface not an operating system
- most likely to be universally accepted is POSIX

C. **Open Software Foundation (OSF)**

- consists of IBM, DEC, HP, and others to develop a UNIX that meets all IEEE standards

D. **X/Open XPG/3 and XPG/4**

- international vendor consortium
- a superset of POSIX.1

E. **The Open Group**

- merging of OSF and X/Open

F. **FIPS 151-2**

- Federal Information Processing Standard superset of POSIX

Unix System Structure

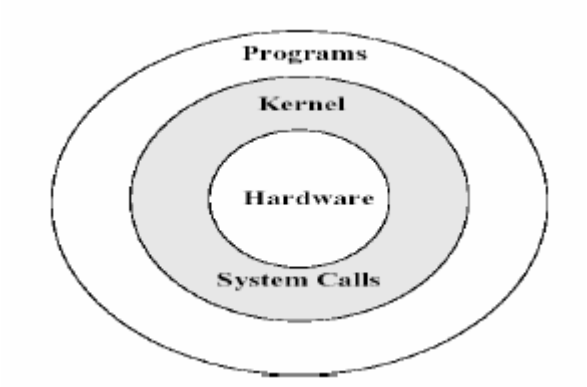
Different layers in Unix System are:

•Hardware

•Kernel

•Programs

•User interface



There are different types of shell like:

/bin/sh	Bourne Shell ($)
/bin/ksh	Korn Shell
/bin/csh	C Shell (%)
/bin/tcsh	TC Shell
/bin/rsh	Restricted Shell
/bin/bash	Bourne Again Shell(Linux)

Commands

The basic form of any Unix command is:

command_name *option(s)* *argument(s)*

Most descriptions for commands such as those given in the ***On-line Manual*** **(man)** use a much more precise syntax. For example:

rm [-efirR] *filename*

Some useful UNIX commands:

cd	changes directory
cp	copies files or directories
ls	lists files and directories
ls -a	lists all files, including hidden files
mkdir	creates or "makes" directories
more	displays a text file screen by screen
mv	renames (move) a file
passwd	change password
rm	deletes (removes) files from a directory
tail	views the end or bottom text of a long text file

Standard Files on a UNIX System:

/bin - (binary files) contains executable programs, UNIX commands (/sbin)

/dev - special files that represent the physical devices

/etc - system administrator (passwd)

/lib - libraries of programs used by programmers

/sys - system source files (system managers)

/tmp - temporary files