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ASSIGNMENT 2

Aim: To study Unix general purpose commands.

Theory:

① echo

echo command in linux is used to display line of text / string that are passed as an argument. This is a built in command that is mostly used in shell scripts and batch files to output status text to the screen or a file.
\b : it removes all the spaces in between the text.
\n : this option creates new line from where it is used.
echo* : this command will print all files / folders, similar to ls command.

② clear

clear command is used to clear the terminal screen. It looks in the environment for the terminal type and then in the terminfo database to figure out how to clear the screen. It ignores any command-line parameters that may be present.

③ exit

exit command in linux is used to exit the shell where it is currently running. It takes one more parameter as [N] and exit the shell with a return of status N. If n is not provided, then it simply returns the status of last command that is executed.

(4) date

date command is used to display the system date and time. It is also used to set date and time of the system. It displays the date in the time zone on which unix operating system is operating. You must be the super-user (root) to change the date and time.

(5) time

time command prints a summary of real-time, user CPU time and system CPU time spent by executing a command when it terminates.

(6) uptime

It is used to find out how long the system is active (running). This command returns set of values that involve, the current time and the amount of time system is in running state, number of users currently logged into, and the load time for the past 1, 5 and 15 minutes respectively.

(7) cal

cal command is a calendar command in Linux which is used to see the calendar of a specific month or a whole year.

(8) cat

cat (concatenate) command reads data from

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the file and gives their content as output. It helps us to create, view, concatenate files.

(9) tty

The tty command of terminal prints the file name of the terminal connected to standard input. tty is short of teletype and allows you to interact with the system by passing on the data to the system and displaying the output produced by the system.

(10) man

man command is used to display the user manual of any command that we can run on the terminal. It provides a detailed view of the command.

(11) which

which command is used to locate the executable file associated with the given command by searching it in the path environment variable.

which -a : This option print all matching pathnames of each argument.

info which : It displays help information.

(12) history

history command is used to view the previously executed command.

(13) id
id command is used to find out user and group names and numeric ID's (UID or group ID) of the current user or any other user in the server.

(14) pwd (Print Working Directory)
It prints the path of the working directory. starting from the root. pwd is shell built-in command (pw) or an actual binary (/bin/pwd).

(15) whoami
It is basically the concatenation of the strings "who", "am", "i" as whoami. It displays the username of the current user when this command is invoked. It is similar as running the id command with the options -un.

(16) ping (Packet Internet Groper)
It is used to check the network connectivity between host and server/host. It takes as input the IP address or the URL and sends an ICMP echo message to the specified host and if that host is available it sends ICMP reply message.

(17) ifconfig
It is used to configure the kernel-resident network interfaces. It is used at boot time to set up interfaces as necessary. It is usually needed

to query and manage network parameters.

(18) pr

It is used to prepare a file for printing by adding suitable footers, headers, and the formatted text. It adds 5 lines of margin both at the top and bottom of the page.

(19) lp

It arranges for the files specified by the files parameter and their associated information to be printed by a line printer. If you do not specify a value for the files parameter, the lp command accepts standard input.

(20) lpr

It submits files for printing. Files named on the command line are sent to the named printer.

(21) lpstat

lpstat displays status information about the current classes, jobs and printers. When run with no arguments, lpstat will list jobs queued by the current user.

(22) lpq

It shows the current print queue status on the named printer.

of a string.

- They are surrounded by either singl

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(23) cancel
It cancels existing print jobs. The -a option will remove all jobs from the specified destination.

(24) mail
It is a command-line utility that allows us to send emails from the command line. The mail command can be installed by various packages such as gnu mailutils, heirloon-mailx and bsd-mailx.

(25) ~~Conclusion~~: lprm- cancels print jobs that have been queued for printing.
~~Hence, learnt how to used Unix general purpose commands and programming in Unix editor environment.~~

Lab Outcome:

LO2: To learn Unix general purpose commands and programming in ~~Unix editor environment~~.

Aim :

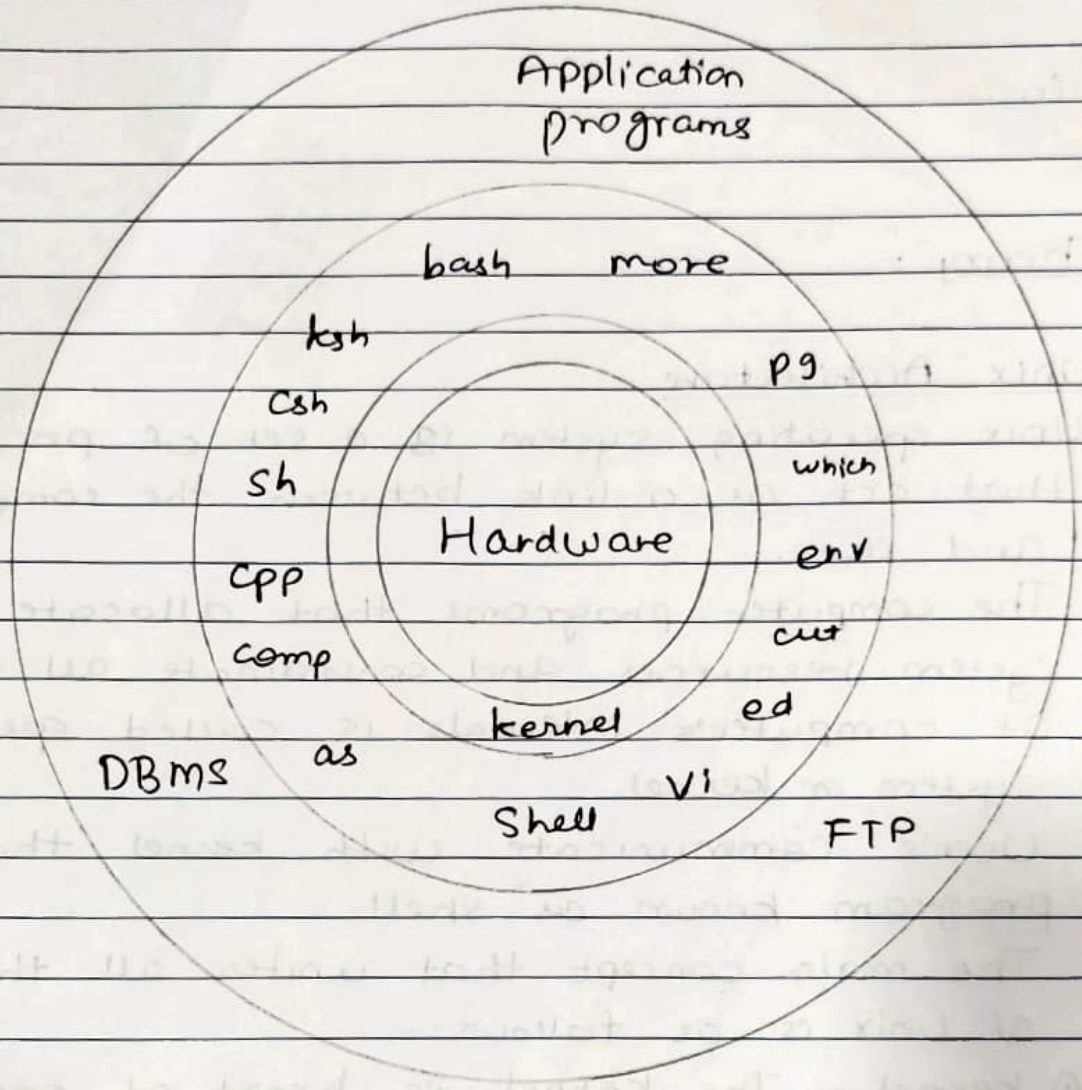
Theory :

Unix Architecture -

- Unix operating system is a set of programs that act as a link between the computer and user.
- The computer programs that allocate the system resources and co-ordinate all the details of computer's internals is called operating system or kernel.
- User's communicate with kernel through a program known as shell.
- The main concept that unites all the versions of unix is as follows:-

① kernel - The kernel is heart of operating system. It interacts with hardware and most of tasks like memory management, task scheduling and file management is handled by kernel.

② shell - The shell is utility that process your requests. When you type in command at your terminal, the shell interprets the command and calls the program that you want.



<u>Commands and Utilities</u> - There are various commands and utilities which you can make use of in your day activities, cpp, mv, wt and grep, etc. are few examples of commands and utilities. All commands come along with various operations.

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ASSIGNMENT 1

Aim: Explain with diagram the different OS architectures, highlighting ~~OS~~ Unix OS architecture.

Theory:

* Simple OS Architecture

It is the simplest OS structure and is not well defined. It can only be used for small and limited systems. The interfaces and levels of functanality are well seperated; hence programs can access I/O routines which can cause unauthorized access to I/O routines. The layers of simple OS architecture are:-

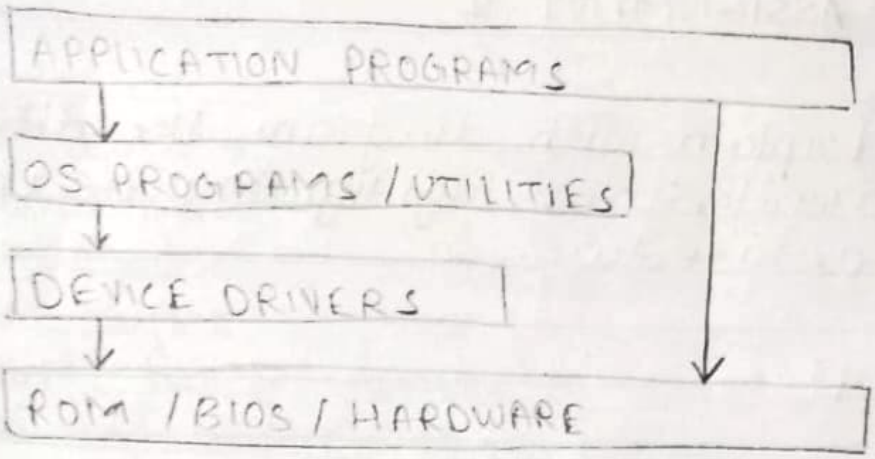
- Application Programs
- OS Programs / Utilities
- Device Drivers
- ROM / BIOS / Hardware.

All the levels can be defined seperately and can interact with each other when needed. Limited systems with less complexity can be constructed as it is easy to maintain, design and update.

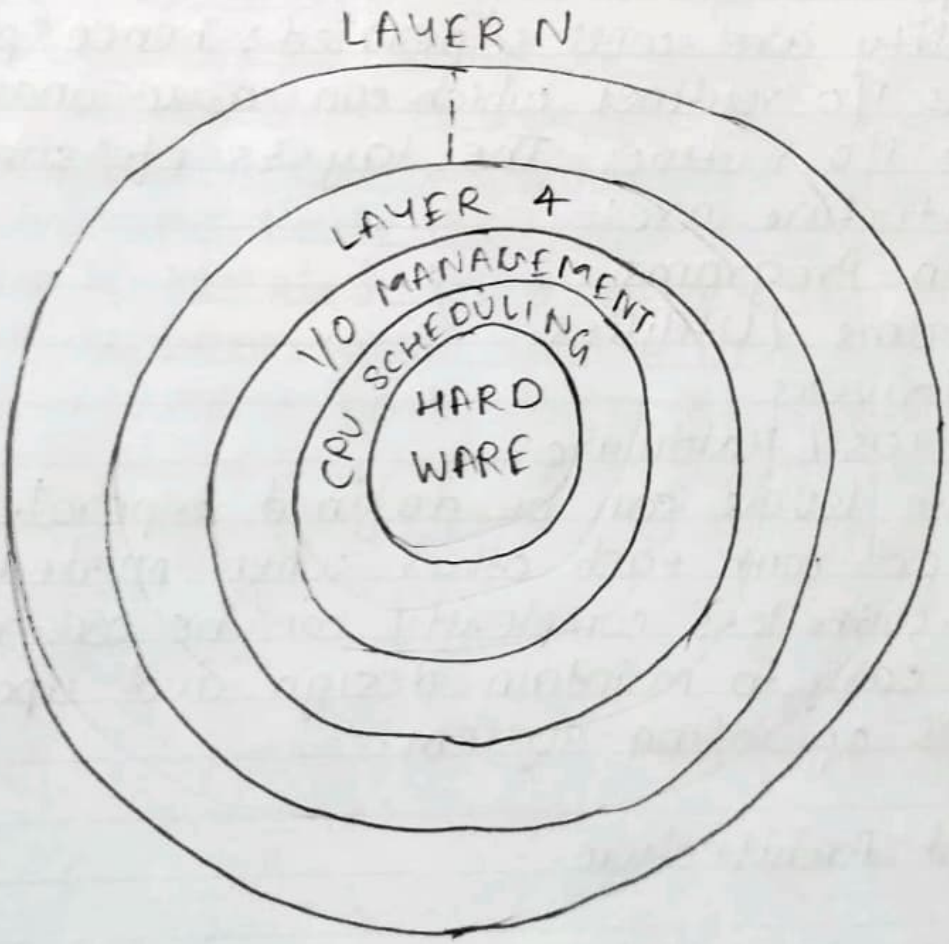
eg: MS-DOS operating system.

* Layered Architecture

OS is divided into layers or levels. The hardware



Simple OS Architecture



LAYERED ARCHITECTURE

is on the bottom layer (layer 0) while the user interface is on the top layer (layer N). The layers are arranged in a heirarchical way in which the top level layers use the functionalities of their lower level levels. functionalities of each layer are isolated and abstraction is available. In this structure debugging is easier.

eg: Windows NT Operating System.

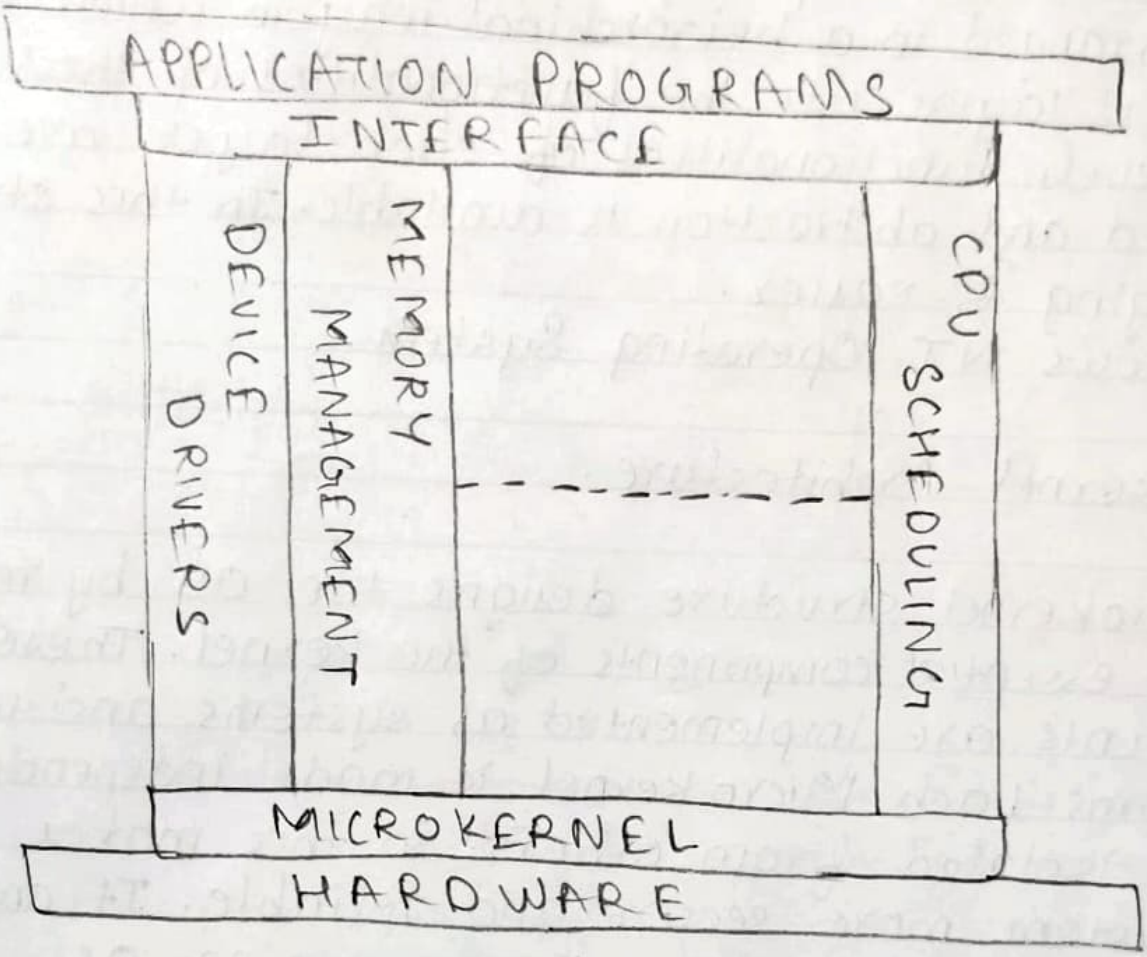
* Microkernel Architecture.

Microkernel structure designs the OS by removing all non essential components of the kernel. These components are implemented as systems and user programs. Each Micro kernel is made independantly and is isolated from others. So this makes the system more secure and reliable. If any Micro-kernel fails, then the remaining OS remains untouched and works fine.

eg: QNX, Symbian, L4 Linux, Mac OS X, etc.

Lab Outcome:

LO1: To understand architecture of Unix Operating System.



MICROKERNER ARCHITECTURE

Assignment 3

Aim :- Use vi editor to create your student data file containing full name, roll no, batch, class, branch, year, clg registration no. State & Explain vi commands used

Theory :-

vi Editor in UNIX

The default editor that comes with the UNIX operating system is called vi (visual editor) Using vi editor, we can edit an existing file or create a new file from scratch. We can also use this editor to just read a text file

Modes of Operation in vi editor

① Command mode - When vi starts up, it is in Command mode. This mode is where vi interprets any characters we type as commands & thus does not display them in the window. To enter into Command mode from any other mode, it requires pressing ESC key.

② Insert mode - This mode enables you to insert text into the file. To come in insert mode you simply type i. To get out of insert mode, press the Esc key

③ Last Line Mode (Escape Mode) : Line Mode is invoked by typing a colon [:], while vi is in Command mode. The cursor will jump to the last line of the screen & vi will wait for a command

Commands and their Description

① vi filename : Creates a newf file if it already does not exist, otherwise opens existing file

② vi -R filename : Opens an existing file in read only mode

Moving within a File (Navigation):

(i) k : Moves the cursor up one line.

(ii) j : Moves the cursor down one line

(iii) h : Moves the cursor to the left one character position

(iv) l : Moves the cursor to the right one character position

Editing and inserting in Files

(i) i : Inserts text before current cursor location

(ii) I : Inserts text at beginning of current line

(iii) a : Inserts text after current cursor location

(iv) A : Inserts text at end of current line

(v) o : Creates a new line for text entry below cursor location

(vi) O : Creates a new line for text entry above cursor location

Deleting Characters:

(i) Dw : Deletes from the current cursor location to the next word.
(ii) D : Deletes from the cursor position to the end of the current line
(iii) dd : Deletes the line the cursor is on

Copy and Past Commands:

- Yy : Copies the current line
- p : Puts the copied text
- P : Puts the yanked text befor the cursor

Save and Exit Commands

- Need to press Esc key followed by the colon : before typing the following commands

(i) q: Quit
(ii) q! Quit without saving changes ie discard changes
(iii) wq : Write & quit (save and exit)

Lab Ojectives

LO 2 : To learn programming in Unix editor environment