UNIX

Lesson 01 : Introduction to UNIX Operating System and Basic UNIX Commands

Lesson Objectives

- **In this lesson, you will learn:**
  - Operating System
    - Functions of Operating System
    - History of UNIX
    - Features of UNIX
    - UNIX System Architecture
  - Basic UNIX Commands

Overview

- **An Operating System (OS) is the software that manages the sharing of the resources of a computer and provides programmers with an interface that is used to access those resources.**

Functions of an Operating System

- **Following are some of the important functions of an OS:**
  - Process Management
  - Main-Memory Management
  - Secondary-Storage Management
  - I/O System Management
  - File Management
  - Protection System
  - Networking
  - Command-Interpreter System

History

- **UNIX evolved at AT&T Bell Labs in the late sixties.**
- **The writers of Unix are Ken Thomson, Rudd Canaday, Doug McIlroy, Joe Ossanna, and Dennis Ritchie.**
- **It was originally written as OS for PDP-7 and later for PDP-11.**
- **Liberal licensing: Various versions.**
- **System V in 1983 - Unification of all variants.**

Features

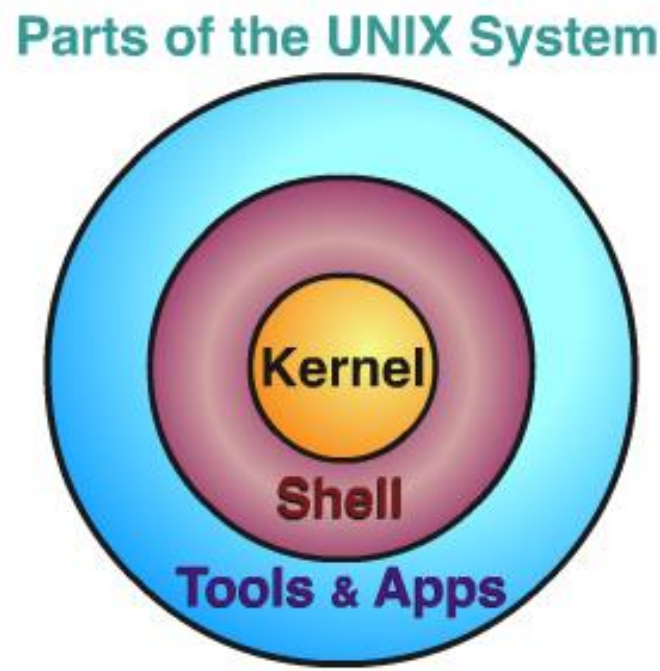
- **UNIX OS exhibits the following features:**
  - It is a simple User Interface.
  - It is Multi-User and Multiprocessing System.
  - It is a Time Sharing Operating System.
  - It is written in "C" (HLL).
  - It has a consistent file format - the Byte Stream.
  - It is a hierarchical file system.
  - It supports Languages such as FORTRAN, BASIC, PASCAL, Ada, COBOL, LISP, PROLOG, C, C++, and so on.

Services

- **Services Provided by UNIX:**
  - Process Management:
    - It involves Creation, Termination, Suspension, and Communication between processes.
  - File Management:
    - It involves aspects related to files like creation and deletion, file security, and so on.

UNIX System Architecture

- **Following is a pictorial representation of the UNIX system:**



Logging In and Out Commands

- **Logging In and Out:**
  - Logon name and password are required.
  - Successful logon places user in home directory.

man Command

- **man command:**
  - The on line help provided by the **man** command includes brief description, options, and examples.
  - Example:

```
$man <command>
```

cal Command

- **cal command:**
  - The **cal** command is used to display calendar from the year 1 to 9999.
  - Example:

```
$cal 9 2001
```

  - The above syntax can be used to print the calendar for the 9th month of the year 2001.

date Command

- **date command:**
  - The **date** command is used to see current date and time.
  - Date can be displayed in different formats
  - Example:

```
$ date
```

- **Output:** Fri Apr 6 11:14:46 IST 2001

```
$ date “+%T”            -- %t is used to display only time
```

- **Output:** 11:15:20

```
$ date "+ %d %h“        -- To display date and month name
```

- **Output:** 6 Apr

lp Command

- **lp command:**
  - The **lp** command is used for printing files.
    - Example:

```
$lp myfile.txt
```

```
$lp –n 10 myfile.txt
```

```
$lpq
```

```
$lprm  -Pps99  11042
```

nl Command

- **nl command:**
  - The **nl** command is used to print file contents along with line numbers.
  - Options:
    - -w : width of the number
    - -v : Indicate first line number
    - -i : increment line number by
  - Example:

```
$ nl myfile.txt
1  line one
2  line two
```

tty Command

- **tty Command:**
  - Unix treats a terminal also as a file. In order to display the device name of a terminal, the **tty** (teletype) command is used.
  - print the file name of the terminal connected to standard input
  - Example: Using tty command

```
$ tty
 /dev/ttyp3
```

who Command

- **who Command:**
  - To list all users who are currently logged in
  - Example:

```
$who
```

- **Output:**

```
ssdesh   ttyp0      Mar 29 09:00
root     tty01      Mar 29 10:32
root     tty03      Mar 29 10:37
```

- **$who am I Command:**
  - To see the current user

Review Questions

- Question 1: **___ controls system hardware.**
- Question 2: **The kernel interacts with the machine hardware, and the shell interacts with the User.**
  - True / False
- Question 3: **___ command displays details of all users currently logged in.**