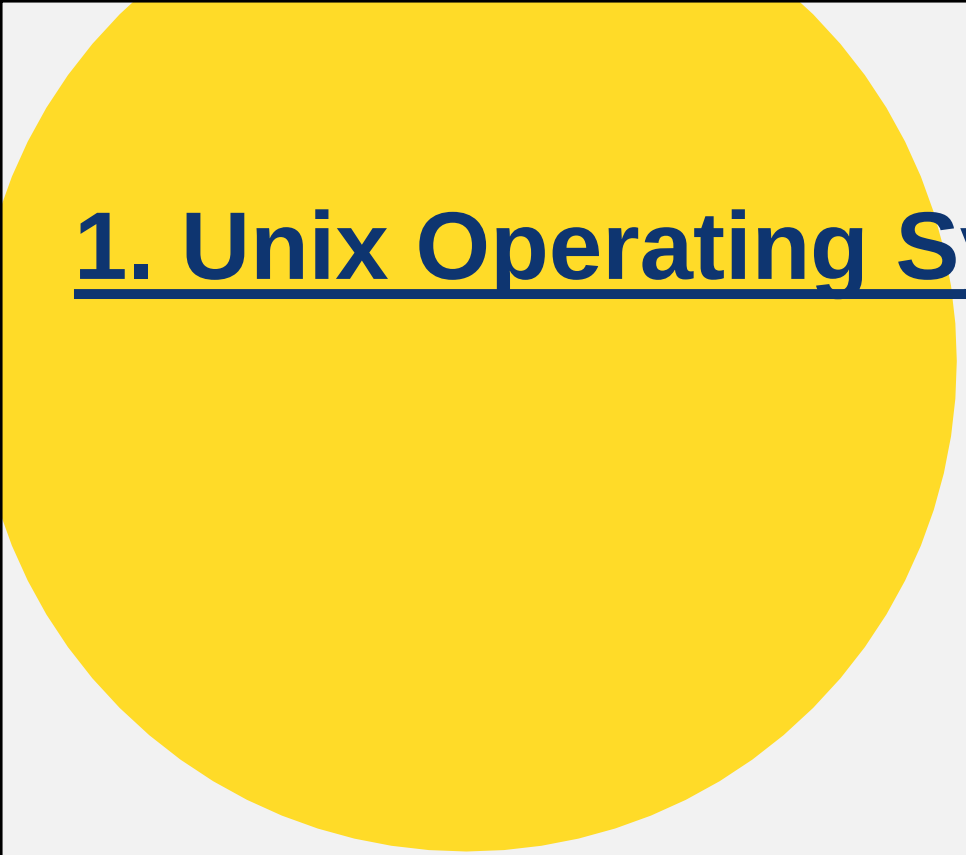
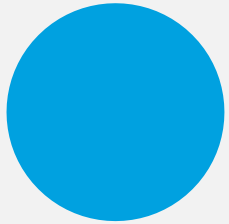
# 1. Unix Operating System





# Objectives

At the end of this module, you will be able to:

- Explain Evaluation of Unix Operating System
- Describe Features of Unix OS
- Explain Architecture of Unix OS
- Explain Functionalities of Kernel and Shell
- Describe File system of Unix OS

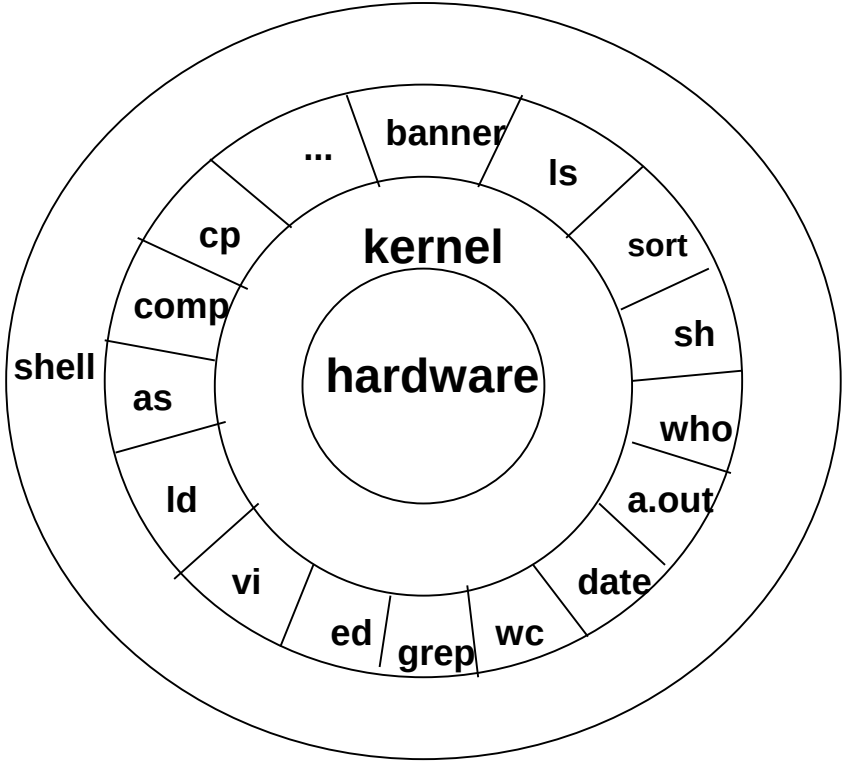
# Evolution

- Ken Thompson of AT&T Bell Laboratories designed UNIX in late 1960s
- Two versions of UNIX that emerged are AT&T Unix and BSD Unix
- In 1989, AT&T and Sun Microsystems joined together and developed system V release 4 (SVR4)
- Two of the main standards mainly in use are **POSIX** (Portable Operating System Interface) and **X/open** standard. In 1988, MIT formed Xconsortium developed vendor-neutral **Xwindow** System

# Features of Unix

- Multi-user, multitasking, timesharing
- Portability
- Modularity
- File structure
- Security
- Strong networking support & advanced graphics

# Layered Architecture



# Architecture (Contd.).

- Unix system follows a layered approach. It has four layers
- The innermost layer is the hardware layer
- In the second layer, the kernel is placed
- The utilities and other application programs form the third layer
- Fourth layer is the one with which the user actually interacts.

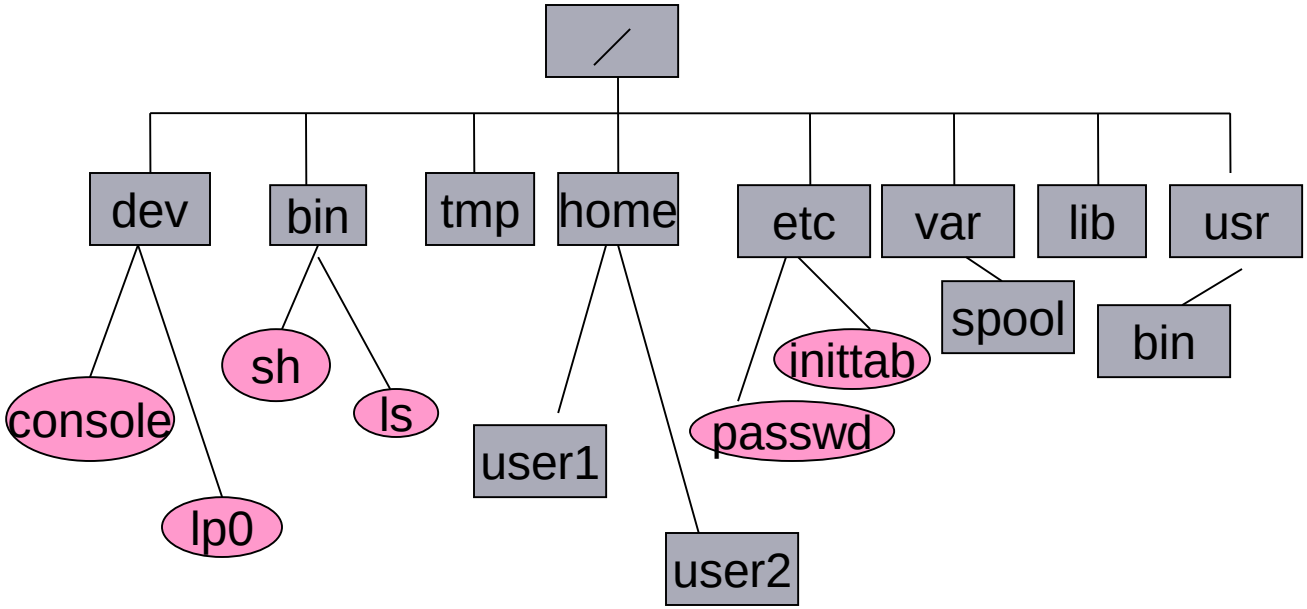
# Kernel & The Shell

- **Kernel is that part of the OS which directly makes interface with the hardware system.**
- **Actions:**
  - Provides mechanism for creating and deleting processes
  - Provides processor scheduling, memory, and I/O management
  - Provides inter-process communication.

**Features of Shell are:**

- Interactive Processing  Background Processing
- I/O Redirection  Pipes
- Shell Scripts  Shell Variables
- Programming Constructs

# File System


/
dev
bin
tmp
home
etc
var
lib
usr
console
lp0
sh
ls
user1
user2
passwd
inittab
spool
bin

# File System (Contd.).

- File system is the structure in which files are stored on disk
- File in UNIX is sequence of bytes organized in the form of blocks
- The size of each block is 512 bytes (depends on architecture)
- Block size can be decided while creating the file system structure
- All files in unix are identified by their inode(index node) no.s

# Common Unix Flavors

- **BSD: Berkeley, BSD**
- **Solaris: Sun Microsystems, Sys 5/BSD**
- **Ultrix: Digital Equipment Corporation, BSD**
- **OSF 1: Digital Equipment Corporation, BSD/sys 5**
- **HPUX: Hewlett-Packard, Sys 5**
- **AIX: IBM, Sys 5 / BSD**
- **IRIX: Silicon Graphics, Sys 5**
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- **GNU/Linux: GNU, BSD/Posix**

# Summary

In this module, we discussed:

- Evaluation of Unix Operating System
- Features of Unix OS
- Architecture of Unix OS
- Functionalities of Kernel and Shell
- File system of Unix OS


# Thank You