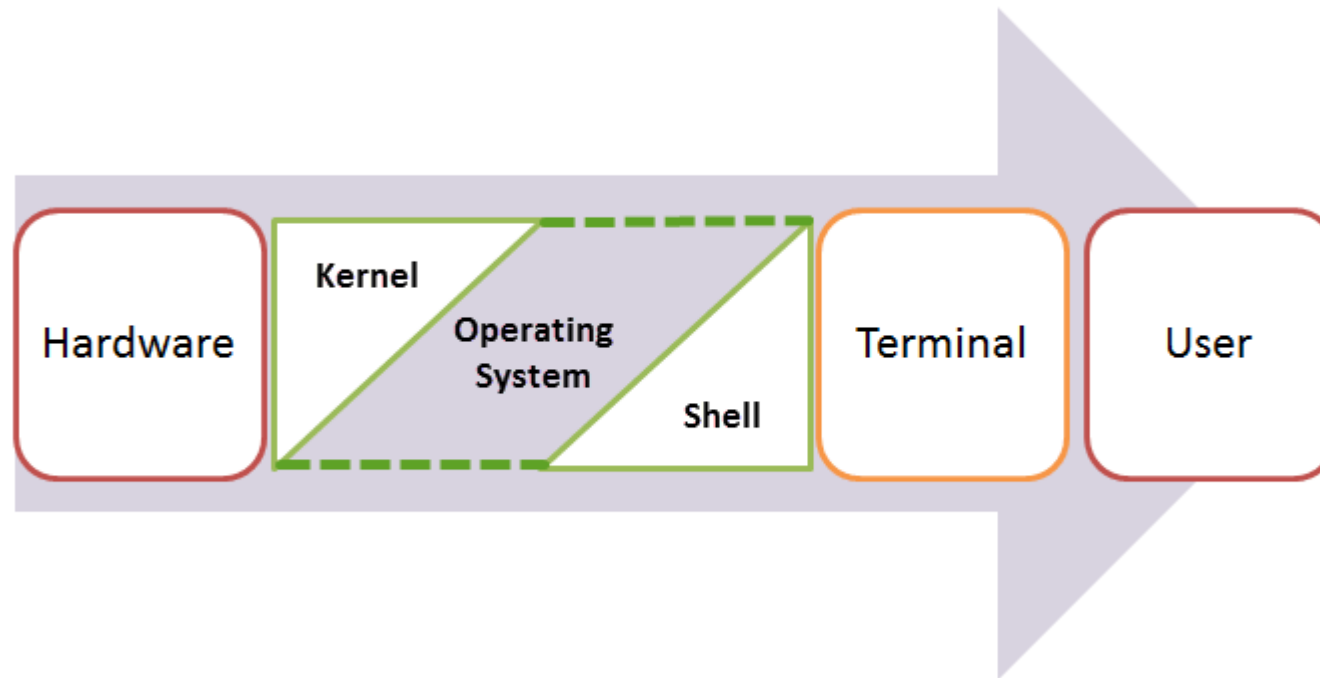


# Linux shell script

- An Operating is made of many components, but its two prime components are -
- Kernel
- Shell



# Linux shell script

A Kernel is at the nucleus of a computer. It makes the communication between the hardware and software possible. While the Kernel is the innermost part of an operating system, a shell is the outermost one.

A shell in a Linux operating system takes input from you in the form of commands, processes it, and then gives an output. It is the interface through which a user works on the programs, commands, and scripts. A shell is accessed by a terminal which runs it.

# shell

A Shell provides you with an interface to the Unix system. It gathers input from you and executes programs based on that input. When a program finishes executing, it displays that program's output.

Shell is an environment in which we can run our commands, programs, and shell scripts. There are different flavors of a shell, just as there are different flavors of operating systems. Each flavor of shell has its own set of recognized commands and functions.

# Shell prompt

- The prompt, \$, which is called the command prompt, is issued by the shell. While the prompt is displayed, you can type a command.
- Shell reads your input after you press Enter. It determines the command you want executed by looking at the first word of your input. A word is an unbroken set of characters. Spaces and tabs separate words.

# Shell types

- In Unix, there are two major types of shells –
- **Bourne shell** – If you are using a Bourne-type shell, the \$ character is the default prompt.
- **C shell** – If you are using a C-type shell, the % character is the default prompt.

The Bourne Shell has the following subcategories –

- Bourne shell (sh)
- Korn shell (ksh)
- Bourne Again shell (bash)
- POSIX shell (sh)

The different C-type shells follow –

- C shell (csh)
- TENEX/TOPS C shell (tcsh)

# Shell types

- The original Unix shell was written in the mid-1970s by Stephen R. Bourne while he was at the AT&T Bell Labs in New Jersey.
- Bourne shell was the first shell to appear on Unix systems, thus it is referred to as "the shell".
- Bourne shell is usually installed as `/bin/sh` on most versions of Unix

# Shell types

- **Bourn Shell (sh):**
- the original Bourne shell is named after its developer at Bell Labs, Steve Bourne.
- It was the first shell used for the Unix operating system, and it has been largely surpassed in functionality by many of the more recent shells.
- However, all Unix and many Linux versions allow users to switch to the original Bourne Shell, known simply as "sh," if they choose to forgo features such as file name completion and command histories that later shells have added.

# Shell types

- **C Shell (csh):**
- The C shell, as its name might imply, was designed to allow users to write shell script programs using a syntax very similar to that of the C programming language. It is known as "csh."
- **TC Shell (tcsh):**
- TC shell is an expansion upon the C shell. It has all the same features, but adds the ability to use keystrokes from the Emacs word processor program to edit text on the command line. For example, users can press Esc-D to delete the rest of the highlighted word. It is also known as "tcsh."



# Shell types

- **korn Shell (ksh):**
- Korn Shell was also written by a developer at Bell Labs, David Korn. It attempts to merge the features of the C shell, TC shell and Bourne shell under one package. It also includes the ability for developers to create new shell commands as the need arises.
- It is known as "ksh."

# Shell types

- **Bourne Again Shell (bash):**
- The Bourne-Again shell is an updated version of the original Bourne shell that was created by the Free Software Foundation for its open source GNU project. For this reason, it is a widely used shell in the open source community.
- Its syntax is similar to that used by the Bourne shell, however it incorporates some of the more advanced features found in the C, TC and Korn shells.
- Among the added features that Bourne lacked are the ability to complete file names by pressing the TAB key, the ability to remember a history of recent commands and the ability to run multiple programs in the background at once.

# Shell scripts

- The basic concept of a shell script is a list of commands, which are listed in the order of execution. A good shell script will have comments, preceded by # sign, describing the steps.
- There are conditional tests, such as value A is greater than value B, loops allowing us to go through massive amounts of data, files to read and store data, and variables to read and store data, and the script may include functions.

# Shell scripts

- all the scripts would have the .sh extension.
- Before you add anything else to your script, you need to alert the system that a shell script is being started. This is done using the shebang construct
- Example:

**`#!/bin/sh`**

This tells the system that the commands that follow are to be executed by the Bourne shell. *It's called a shebang because the # symbol is called a hash, and the ! symbol is called a bang.*

# Shell scripts

- **Save the content and make the script executable:**

```
$chmod +x test.sh
```

- **To execute:**

```
$/test.sh
```

# Linux commands

Date command:

%D: Display date as mm/dd/yy.

%d: Display the day of the month (01 to 31).

%a: Displays the abbreviated name for weekdays (Sun to Sat).

%A: Displays full weekdays (Sunday to Saturday).

%h: Displays abbreviated month name (Jan to Dec).

%b: Displays abbreviated month name (Jan to Dec).

%B: Displays full month name(January to December).

# Linux commands

%m: Displays the month of year (01 to 12).

%y: Displays last two digits of the year(00 to 99).

%Y: Display four-digit year.

%T: Display the time in 24 hour format as HH:MM:SS.

%H: Display the hour.

%M: Display the minute.

%S: Display the seconds.

**Example: \$date “+%d”**

# Linux commands

%m: Displays the month of year (01 to 12).

%y: Displays last two digits of the year(00 to 99).

%Y: Display four-digit year.

%T: Display the time in 24 hour format as HH:MM:SS.

%H: Display the hour.

%M: Display the minute.

%S: Display the seconds.

**Example: \$date “+%d”**



# Linux commands

Who:

who command shows information about users who are currently logged in like this.

\$who

Ls:

It is used to list contents of a directory.

# Linux commands

<u><a href="#">ls -a</a></u>	list all files including hidden file starting with '.'
<code>ls --color</code>	colored list [=always/never/auto]
<code>ls -d</code>	list directories - with '*'
<code>ls -F</code>	add one char of */=>@  to enteries
<code>ls -i</code>	list file's inode index number
<u><a href="#">ls -l</a></u>	list with long format - show permissions
<u><a href="#">ls -la</a></u>	list long format including hidden files
<u><a href="#">ls -lh</a></u>	list long format with readable file size
<u><a href="#">ls -ls</a></u>	list with long format with file size
<u><a href="#">ls -r</a></u>	list in reverse order
<u><a href="#">ls -R</a></u>	list recursively directory tree
<u><a href="#">ls -s</a></u>	list file size
<u><a href="#">ls -S</a></u>	sort by file size
<u><a href="#">ls -t</a></u>	sort by time & date