

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

Protected by PDF Anti-Copy Free

(Upgrade to Pro Version to Remove the Watermark)



COMPUTER SCIENCE AND ENGINEERING

CS403PC

COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

CS403PC

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

Scheme of Operating System

Protected by PDF Anti-Copy Free
(Upgrade to Pro Version to Remove the Watermark)



S. No.	Course Code	Course Title	L	T	P	Credits
3	CS403PC	Operating Systems	3	0	0	3
6	CS406PC	Operating Systems Lab	0	0	3	1.5

What Is Linux?

Protected by PDF Anti-Copy Free
(Upgrade to Pro Version to Remove the Watermark)



- Linux is an open-source operating system like other operating systems such as Microsoft **Windows**.
- , Apple Mac OS, iOS, Google android, etc. An operating system is a software that enables the communication between computer hardware and software. It conveys input to get processed by the processor and brings output to the hardware to display it. This is the basic function of an operating system. Although it performs many other important tasks, let's not talk about that.
- Linux is around us since the mid-90s. It can be used from wristwatches to supercomputers. It is everywhere in our phones, laptops, PCs, cars and even in refrigerators. It is very much famous among developers and normal computer users.

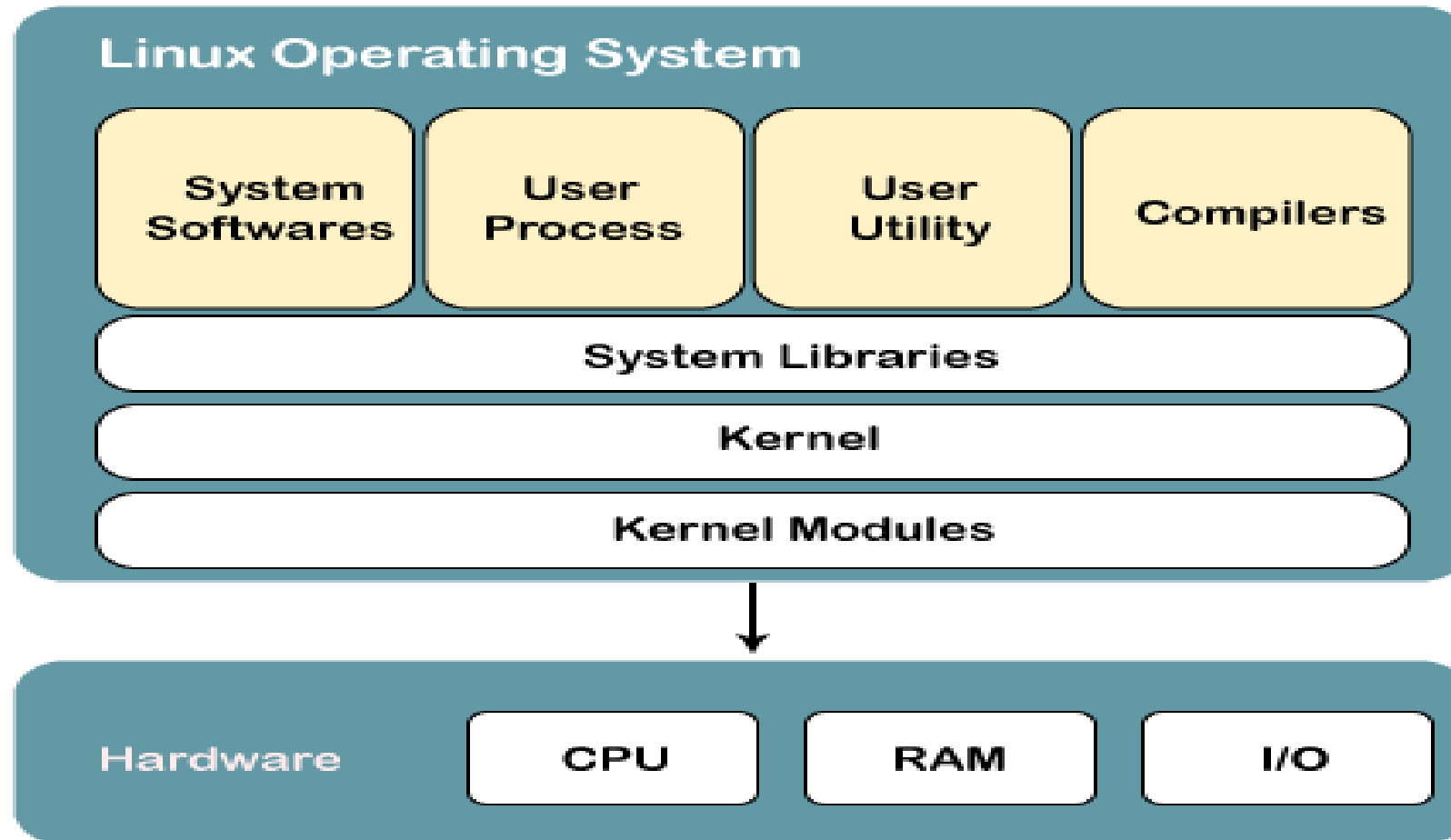
Evolution of Linux OS

Protected by PDF Anti-Copy Free
(Upgrade to Pro Version to Remove the Watermark)



- The **Linux OS** was developed by **Linus Torvalds** in **1991**, which sprouted as an idea to improve the UNIX OS. He suggested improvements but was rejected by UNIX designers. Therefore, he thought of launching an OS, designed in a way that could be modified by its users.
- Nowadays, Linux is the fastest-growing OS. It is used from phones to supercomputers by almost all major hardware devices.

Structure Of Linux Operating System



1) Kernel

Protected by PDF Anti-Copy Free
(Upgrade to Pro Version to Remove the Watermark)



- Linux kernel is the core part of the operating system. It establishes communication between devices and software. Moreover, it manages system resources. It has four responsibilities:
 1. **device management:**
 2. **Memory management:**
 3. **Process management:**
 4. **Handling system calls**

2) System Libraries



- System libraries are special programs that help in accessing the kernel's features. A kernel has to be triggered to perform a task, and this triggering is done by the applications. But applications must know how to place a system call because each kernel has a different set of system calls. Programmers have developed a standard library of procedures to communicate with the kernel. Each operating system supports these standards, and then these are transferred to system calls for that operating system.
- The most well-known system library for Linux is Glibc (GNU C library).

3) System Tools

Protected by PDF Anti-Copy Free
(Upgrade to Pro Version to Remove the Watermark)



- Linux OS has a set of utility tools, which are usually simple commands. It is a software which GNU project has written and publish under their open source license so that software is freely available to everyone.
- With the help of commands, you can access your files, edit and manipulate data in your directories or files, change the location of files, or anything.

4) Development Tools



- With the above three components, your OS is running and working. But to update your system, you have additional tools and libraries. These additional tools and libraries are written by the programmers and are called toolchain. A toolchain is a vital development tool used by the developers to produce a working application.

5) End User Tools

Protected by PDF Anti-Copy Free
(Upgrade to Pro Version to Remove the Watermark)



- These end tools make a system unique for a user. End tools are not required for the operating system but are necessary for a user.
- Some examples of end tools are graphic design tools, office suites, browsers, multimedia players, etc.

Linux Directory Commands - pwd



- **1. pwd (print working directory) Command**

- The [pwd](#) command is used to display the location of the current working directory.

- **Syntax:**

pwd

- **Output:**

- \$ pwd
-

Linux Directory Commands - mkdir



- **2. mkdir Command**

- The [mkdir](#) command is used to create a new directory under any directory.

- **Syntax:**

mkdir <directory name>

- **Output:**

- \$ mkdir myDir_CSED

Linux Directory Commands - ls



- **4. ls Command**

- The ls command is used to display a list of content of a directory.

- **Syntax:**

- ls

- **Output**

- \$ ls

Linux Directory Commands - cd



- **5. cd Command**

- The [cd](#) command is used to change the current directory.

- **Syntax:**

cd **<directory name>**

- **Output:**

```
$ cd myDir_CSED
```

Linux File commands - touch



- **6. touch Command**

- The [touch](#) command is used to create empty files. We can create multiple empty files by executing it once.

- **Syntax:**

1. touch **<file name>**
2. touch **<file1> <file2>**

- **Output:**

- **\$ touch myFile1**

- **Now Check by command ls**

Linux File commands - cat



- **7. cat Command**

- The [cat](#) command is a multi-purpose utility in the Linux system. It can be used to create a file, display content of the file, copy the content of one file to another file, and more.

- **Syntax:**

cat [OPTION]... [FILE]..

- To create a file, execute it as follows:

1. cat > <file name>
2. // Enter file content

- Press "**CTRL+ D**" keys to save the file. To display the content of the file, execute it as follows:

cat <file name>

- **Output:**

- \$ cat > demo.txt
- This is a text file
- \$ cat demo.txt
- This is a text file

Linux File commands - rm



- **8. rm Command**
 - The [rm](#) command is used to remove a file.
- **Syntax:**
 - rm <file name>
- **Output:**
 - rm demo.txt

Linux File commands - cp



- **9. cp Command**

- The [cp](#) command is used to copy a file or directory.

- **Syntax:**

- To copy in the same directory:

cp **<existing>** file name> **<new>** file name>

- **Output:**

- First create a file
- \$ cat myFile.txt
- This is my file.
- Now do copy
- \$ cp myFile.txt newFile.txt
- Now check
- \$ ls
- \$ cat newfile.txt

Linux File commands - mv



- **10. mv Command**

- The **mv** command is used to rename a file.

- **Syntax:**

mv **<existing>** file name> **<new>** file name>

- **Output:**

- \$ newFile.txt newFile_1.txt
 - Now check through ls