

**TRAINING
ON**



“UBUNTU”.

An Operating System.

**Before introducing Ubuntu,
let's learn about
'an Operating System.'**

What is an operating system ?

An **operating system** is the most important **software** that runs on a computer.

Software is *a set of programs that enables a user to operate and interact with a computer/hardware.*

- It manages the computer's memory and processes, as well as all of its software and hardware.

Why Operating System ?

We need an operating system for the following functions:

- For Booting
- To manage the input/output devices
- For Multitasking
- To run **application programs**

Which is the first operating system ?

The GM-NAA I/O (input/output) system is the first operating system produced in the year 1956 by ***General Motors and North American Aviation*** for the *IBM 704 computer*.

(IBM stands for International Business Machines)

The **IBM 704** is a large digital mainframe computer introduced by IBM in 1954. It was the first mass-produced computer with hardware for floating-point arithmetic.



Picture of IBM 704 Computer

Types of Operating System

i. Batch Operating Systems

Examples:- Payroll System, Bank Invoice System, Transactions Process, Daily Report, Research Segment, Billing System

ii. Time sharing Operating Systems

Examples:- Windows 2000 server, Windows NT server, Unix and Linux

iii. Distributed Operating Systems

Examples:- Solaris, OSF/1, Micros, DYNIX, Locus and Mach

iv. Network Operating Systems

Network Operating System is an Operating System that has special functions for connecting computers and devices into a local-area network or Inter-network. ***Some popular network operating systems are Windows NT/2000, Novell Netware, Linux, UNIX, Sun Solaris, and IBM OS/2.*** The network operating system which was first developed is Novell Netware, in 1983.

v. Real Time Operating Systems

Examples:- Airline traffic control systems, Command Control Systems, Airlines reservation system, Heart Pacemaker, Network Multimedia Systems, Robotics.

vi. Multiprogramming Operating Systems

Examples:- Apps like office, chrome, etc., Microcomputers like MP/M, XENIX, and ESQview, Windows O/S, UNIX O/S

vii. Multiprocessor Operating Systems

Multiprocessor operating system utilizes multiple processors, which are connected with physical memory, computer buses, clocks, and peripheral devices (touch-pad, joystick, etc). The main objective of using a multiprocessor OS is to consume high computing power and increase the execution speed of the system.

Viii. Desktop Operating Systems

Examples:- Windows, Linux, Unix, MAC OS, MS-DOS, Solaris, Ubuntu, Fedora, QNX

ix. Mobile Operating Systems

Examples:- Android, IOS, HarmonyOS, PalmOS

Operating System Works on two different interfaces:

Command Line Interface (CLI)

- CLI is a command line program that accepts text input to execute operating system functions.
- In the 1960s, using only computer terminals, this was the only way to interact with computers.
- In the 1970s and 1980s, command line input was commonly used by **Unix systems** and **PC systems like MS DOS and Apple DOS**.

Two types of processor of Operating System

i. 64-bit Processor

ii. 32-bit Processor

*A 64-bit processor is more capable than a 32-bit processor because it can handle more data at once.

*A 64-bit processor can store more computational values, including memory addresses, which means it can access over 4 billion times the physical memory of a 32-bit processor.

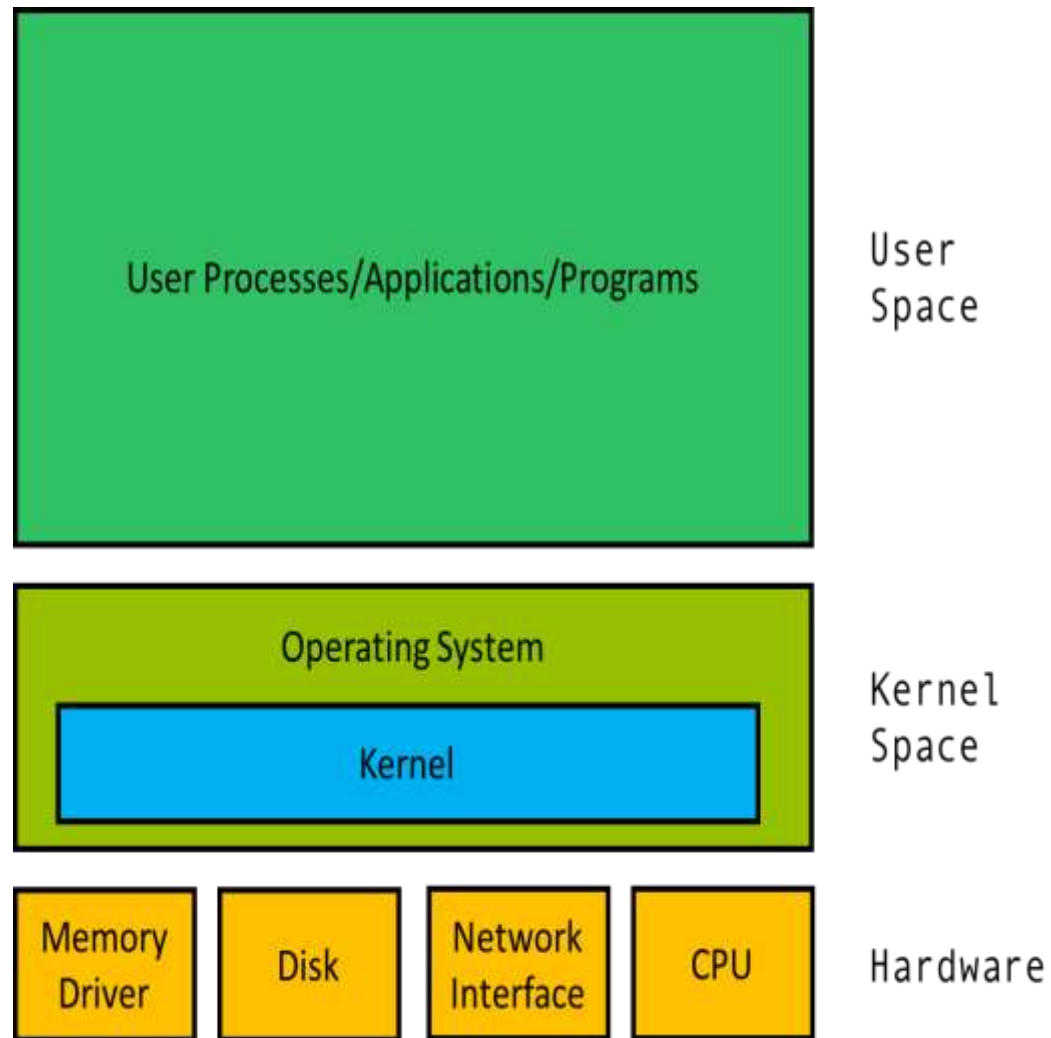
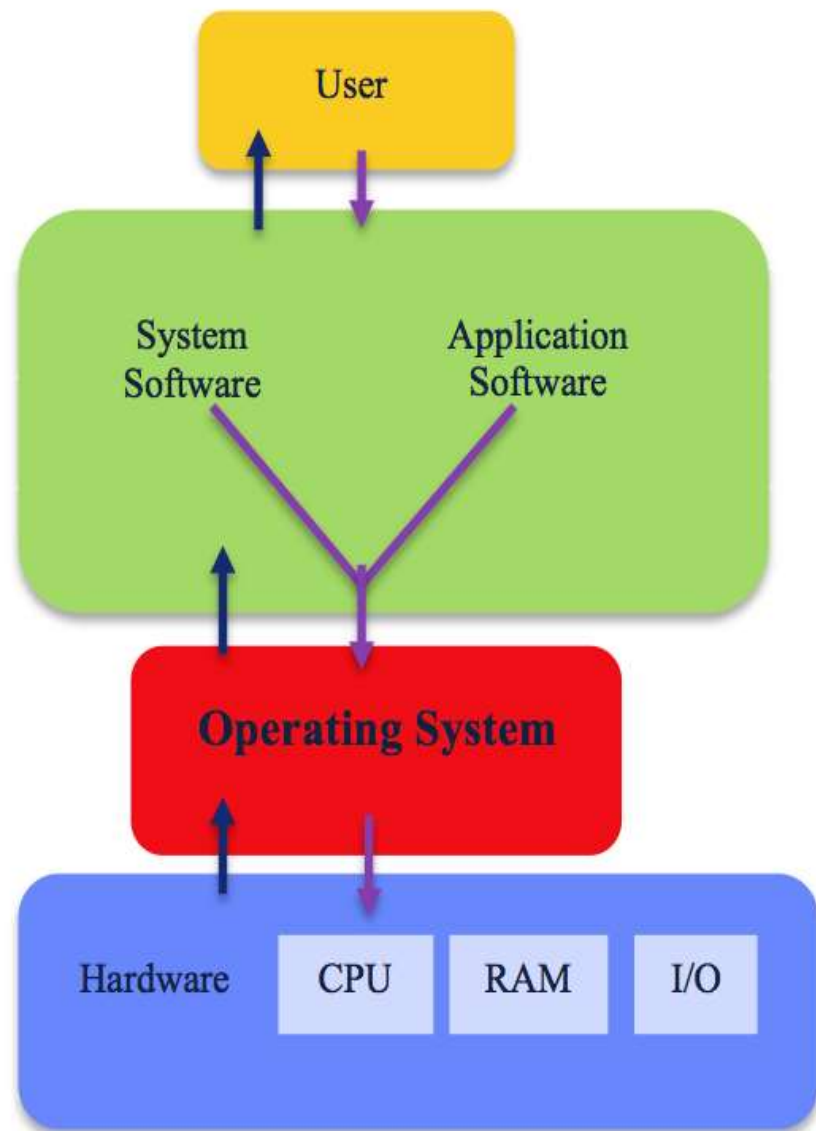
*A key difference is, 32-bit processors are perfectly capable of handling a limited amount of RAM (in Windows, 4GB or less), and 64-bit processors utilize relatively more.

****A major difference between 32-bit processors and 64-bit***

Kernel

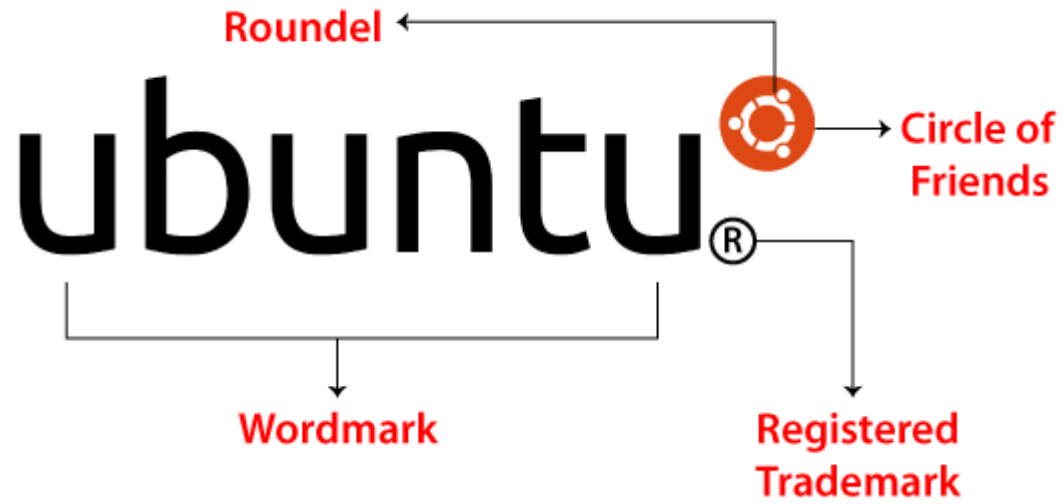
Kernel is the core component of the operating system and is responsible (facilitates interactions) to convert user commands to machine language.

Sr. No.	Key	Operating System	Kernel
1	Type	Operating system is a system software.	Kernel is a part of operating system.
2	Work	Operating system acts as an interface between user and hardware.	Kernel acts as an interface between applications and hardware.
3	Main tasks	Ease of doing system operations, security etc.	Memory management, space management, process management and task management.
4	Basis	A computer need Operating System to run.	An Operating System needs Kernel to run.
5	Boot	Operating System is the first program to load when computer boots up.	Kernel is the first program to load when operating system loads.



What is Ubuntu ?

Ubuntu is a linux based **operating system** and name is derived from **Nguni (Neuni) and Bantu languages of Africa**. In Zulu language of **South Africa** the word symbolizes being human (humanity).



Elements of Ubuntu Logo.



("Circle of Friends")

Origin of Ubuntu

Mark Richard Shuttleworth (born 18 September 1973) is a South African-British entrepreneur who is the *founder and CEO of Canonical*, the company behind the development of the Linux-based Ubuntu operating system.



Canonical (Canonical Ltd. is a UK-based privately held computer software company founded and funded by South African entrepreneur Mark Shuttleworth to market commercial support and related services for Ubuntu and related projects.)

Ubuntu distributions ?

Ubuntu is a Linux distribution (Linux Distro) based on Debian and composed mostly of free and open-source software. *(An operating system made from a software collection that includes the Linux kernel and, often, a package management system.)*

Ubuntu is officially released in three editions:

Desktop, Server, and Core for Internet of things devices and robots.

Why Ubuntu operating system over other operating system ?

1. It is **free (in terms of Price)** and an **open-source** operating system (FOSS-Free and Open Source Software)

It means *freely license can be used, copied, studied, and changed the software in any way, and the source code is openly shared so that people are encouraged to voluntarily improve the design of the software.* In other words anyone can customize the operating system.

2. Faster start-up and much faster shutdown speeds.

3. It is more secure (security).

a. Ubuntu is known to be more secure when compared to Windows. This is primarily because the number of users using Ubuntu is far lesser as compared to that of Windows. This ensures that the damage in terms of viruses or damaging software is less as the main motive of attackers is to affect maximum computers.

b. In order to make any changes to Ubuntu, a password is needed which thereby makes the execution of any virus nearly impossible. This is the same for most operating systems that are Linux-based where root privilege is required by the attackers for any damaging activity.

c. Safety tools like Antivirus are inbuilt in Ubuntu and timely updates and patches are released to bridge any security gaps.

4. It runs without installation of Ubuntu operating system on any computers. We can carry it in USB stick/DVD whatever the machine supports.

5. It is very active and dedicated Forum/Ubuntu Software Center for solving any kind of problem or for installation/update of software. No need to go search in Google which means software is preinstalled.

Disadvantages of Ubuntu OS

- Ubuntu is not capable of playing MP3 files by default.
- Problems About Software and Hardware Compatibility.
- It is not an operating system for gaming enthusiasts.

Practical Sessions

- **Installation of Ubuntu OS**
- **Update of Ubuntu OS (CLI and GUI)**
- **Update of Softwares (CLI and GUI)**
- **Installation of Printer, Scanner etc.**

LibreOffice Writer

1. Check recent files/documents
2. Convert LibreOffice Writer into pdf
3. Page Number, Header and Footer
4. Format: Paragraph, Bullets and Numbering, Table Property
5. Table: Insert/Delete table (rows/columns), Merge/Split Cells, Increase/Decrease width of the table.
6. Tools/Load/Save: Default File format and ODF settings,
7. Tools/Language Setting: default currency, default languages for documents (for auto-correction settings)
8. Tools/LibreOffice Writer: General, settings, Measurement unit
9. Print Preview
10. Undo and Redo
11. Find and Replace
12. Bold, Italic, Underline, Strikethrough
13. Superscript and Subscript

- **Use of Web browser (Firefox and Chrome)**
- **Use of Pendrive(Flash Drive)/External Hard Disk Drive**

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Thank You