Bharathidasan University

Centre for Differently Abled Persons

Tiruchirappalli - 620024.

Programme Name : Bachelor of Computer Applications

Course Code : Operating Systems

Course Title : 20UCA5CC5

Unit : Unit IV

Compiled by : Dr. M. Prabavathy

Associate Professor

Ms. G. Maya Prakash

Guest Faculty

OPERATING SYSTEM

UNIT-I

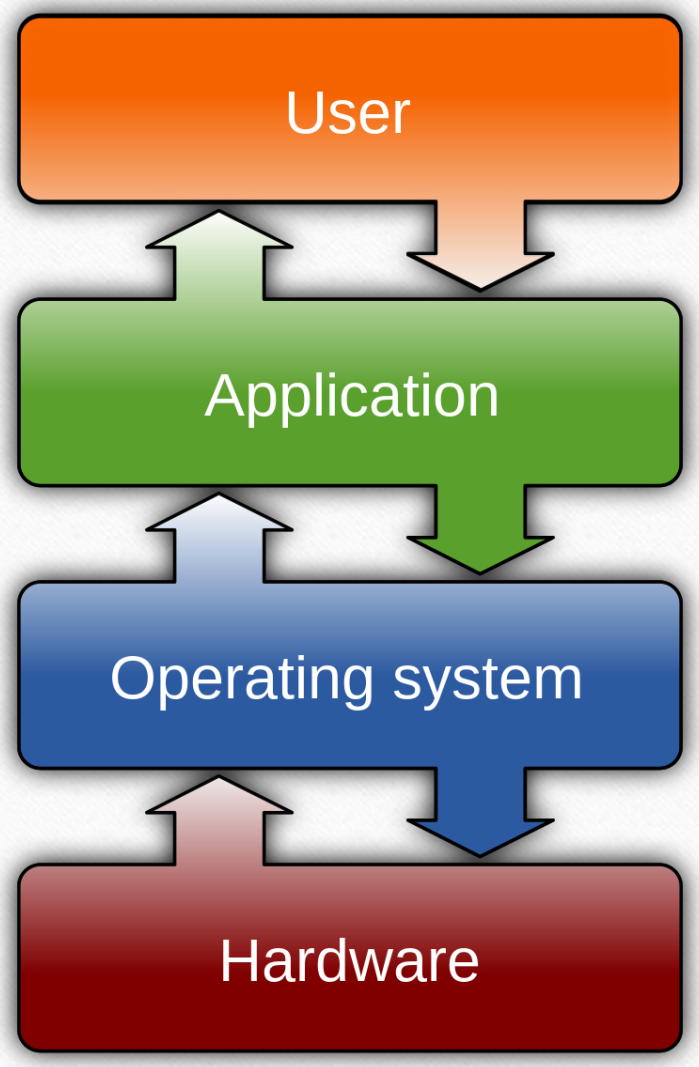
Introduction

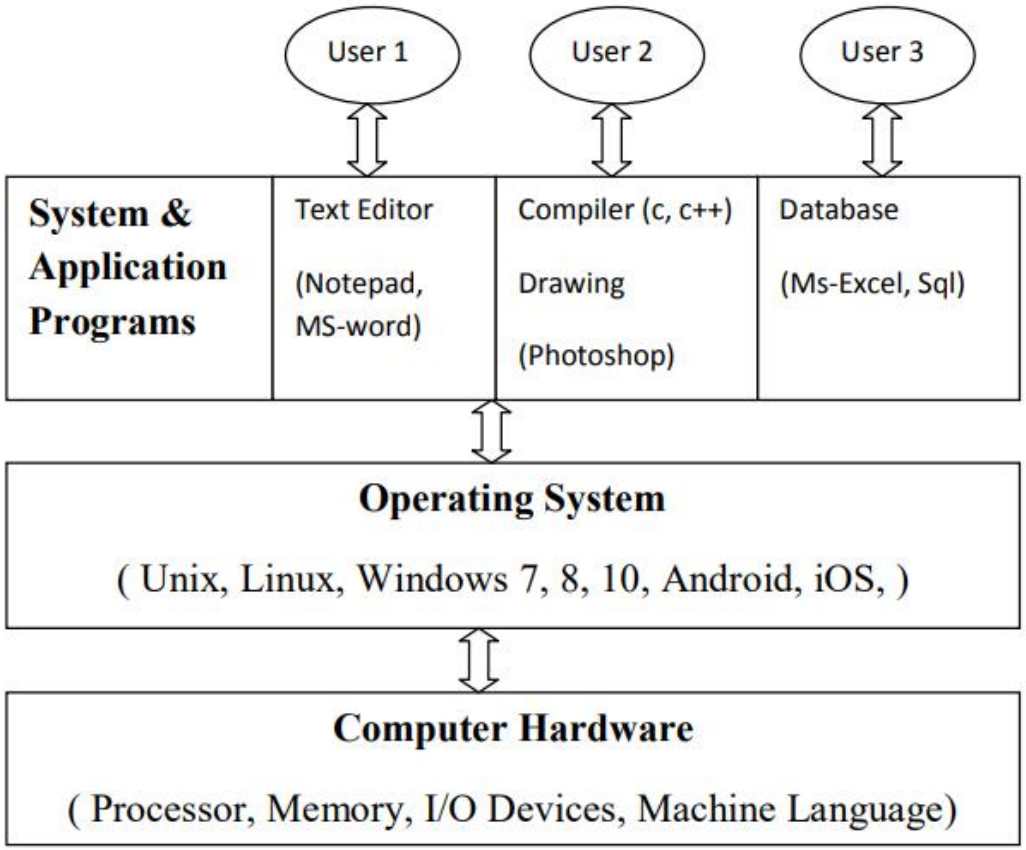
OS is a Software program and acts as an **interface** between **user** and **computer hardware.**

It is used to controls the **execution of application programs**.

It is used to allocate resources such as **memory**, **processors**, and **devices**


Microsoft
Apple
Mac OS
Windows Server
Linux
MS DOS
ubuntu

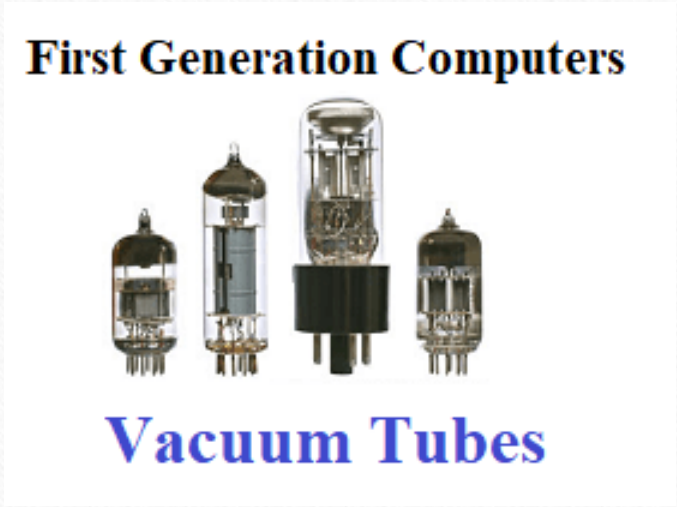

User
Application
Operating system
Hardware


User 1
User 2
User 3
System & Application Programs
Text Editor
(Notepad, MS-word)
Compiler (c, c++)
Drawing
(Photoshop)
Database
(Ms-Excel, Sql)
Operating System
(Unix, Linux, Windows 7, 8, 10, Android, iOS,)
Computer Hardware
(Processor, Memory, I/O Devices, Machine Language)

History of Operating System

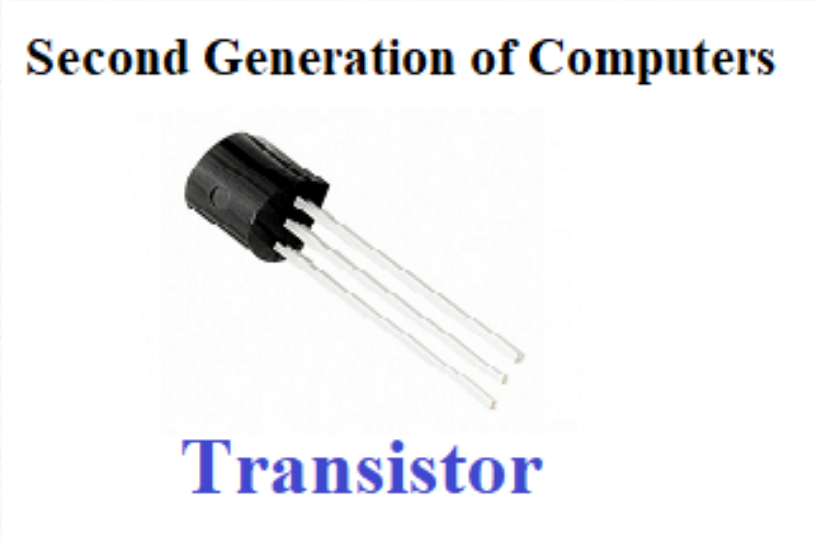
1. First Generation [1945-1955]

Electronic devices used – Vacuum Tubes



2. Second Generation [1955-1965]

Electronic devices used – Transistors



3. Third Generation [1965-1980]

Electronic devices used – Integrated Circuits(IC)

Third Generation of Computers

Integrated Circuit

4. Fourth Generation – Since 1980

Electronic devices used – Microprocessor.

Fourth Generation of Computers

Microprocessor

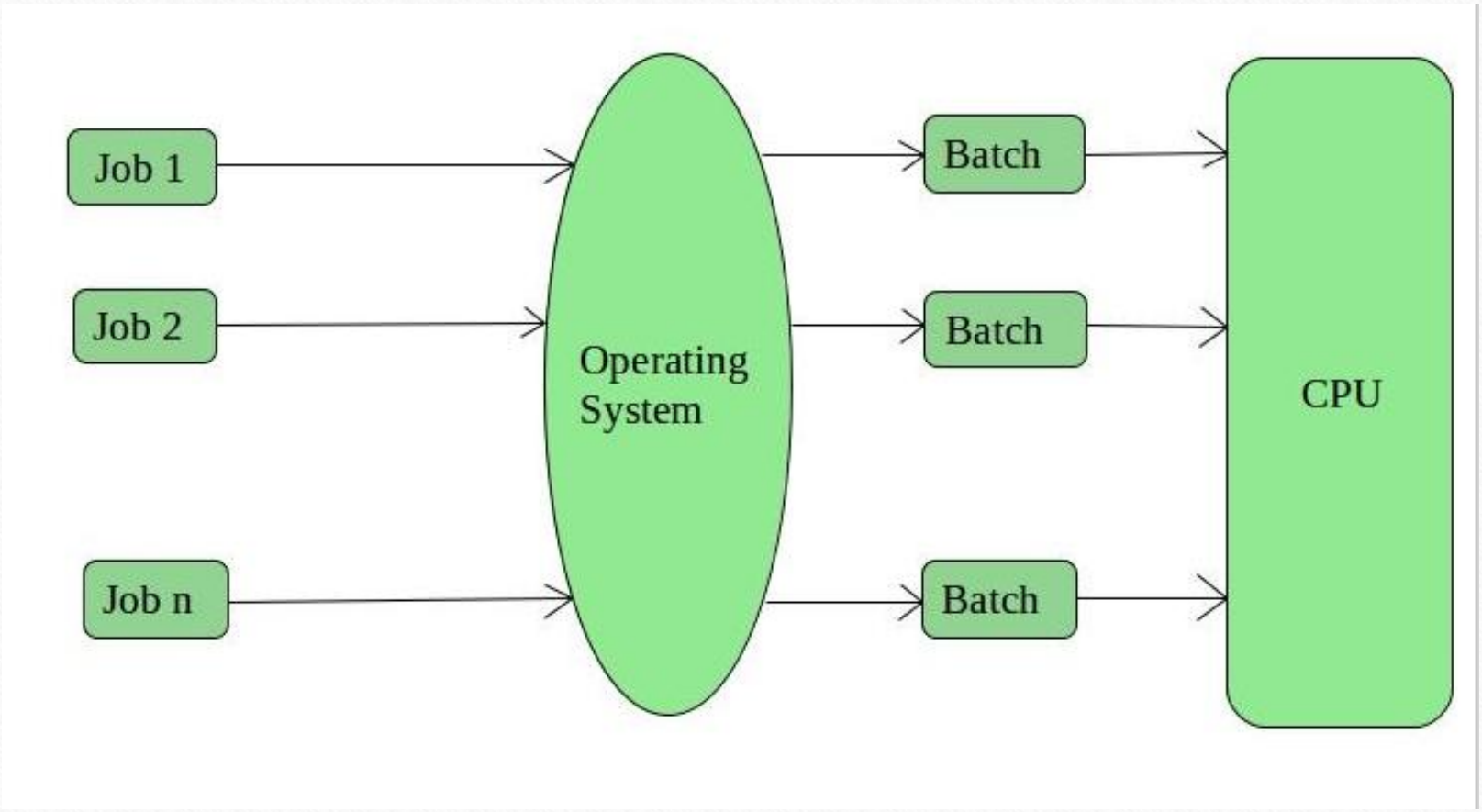
TYPES OF OPERATING SYSTEM

1. Batch Operating System

Sequence of jobs in a program on a computer without manual interventions.

It **does not interact** with the computer directly.

Duty of operator to sort the jobs with **similar needs** and **group** them into **batches**.


Job 1
Job 2
Job n
Operating System
Batch
Batch
Batch
CPU

Advantages:

- Multiple users can Access
- Idle time is very less
- Easy to manage large work repeatedly.

Disadvantages

- Hard to debug
- Costly
- The other jobs wait for an unknown time, if any job fails.

Examples

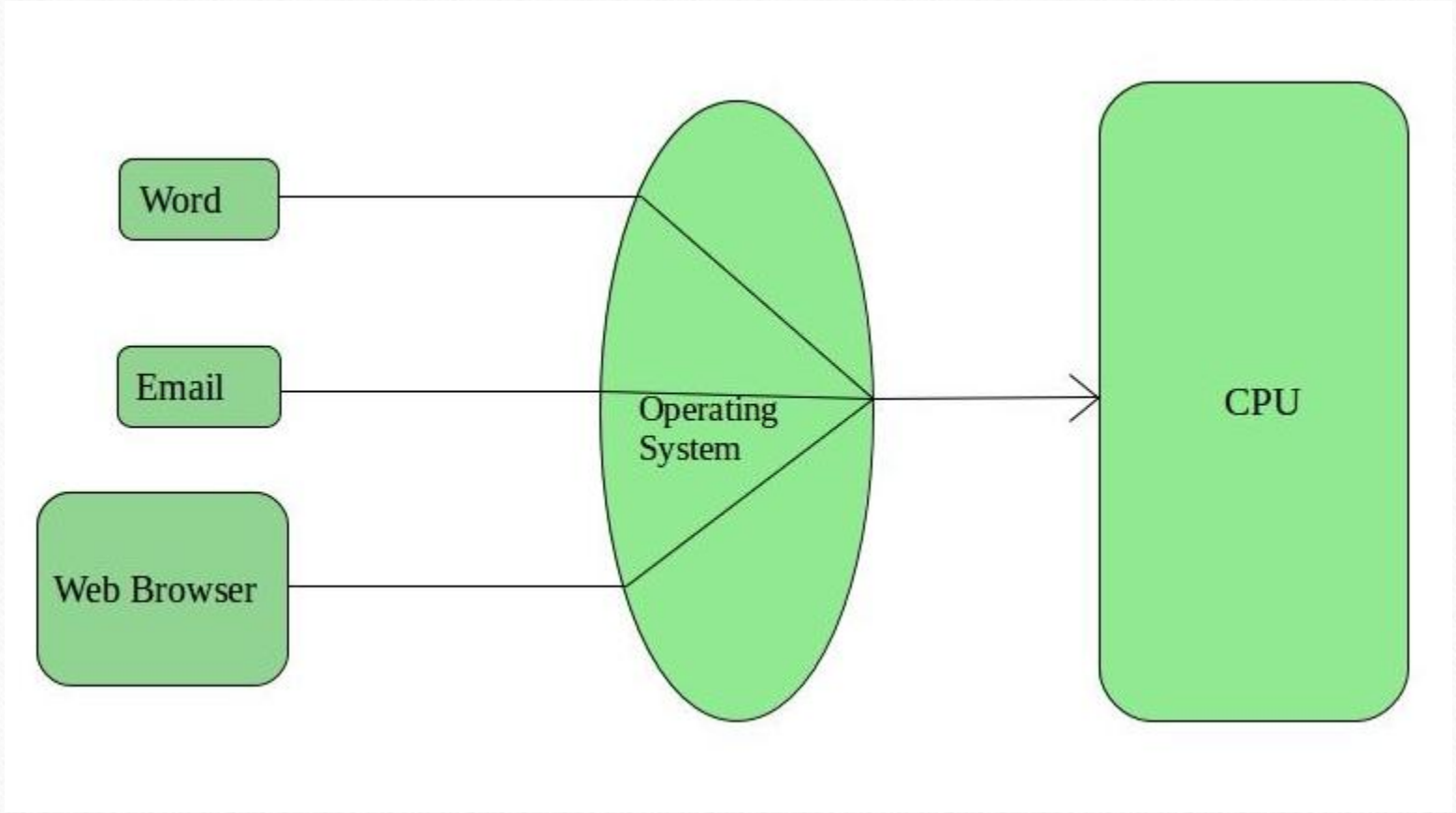
Payroll System, Bank Statements etc

2. Time Sharing Operating System

Allows single or many users to **share the computer resources.** (Max utilization of the resources).

Each task is given some time to execute. It is called **time quantum.**

After this time interval is over **OS switches over to next task.**


Word
Email
Web Browser
Operating System
CPU

(Job / Task / Process)	Time quantum
Job 1 (E-mail)	3 ms
Job 2 (Ms-word)	4 ms
Job 3	7 ms
Job 4	2 ms

OS switch

CPU / Processor

Ex,

(Intel Core i3)

Advantages:

Each task gets an equal opportunity.

CPU idle time is less.

Disadvantages

Reliability problem.

Security

Data communication problem.

Examples

Unix.

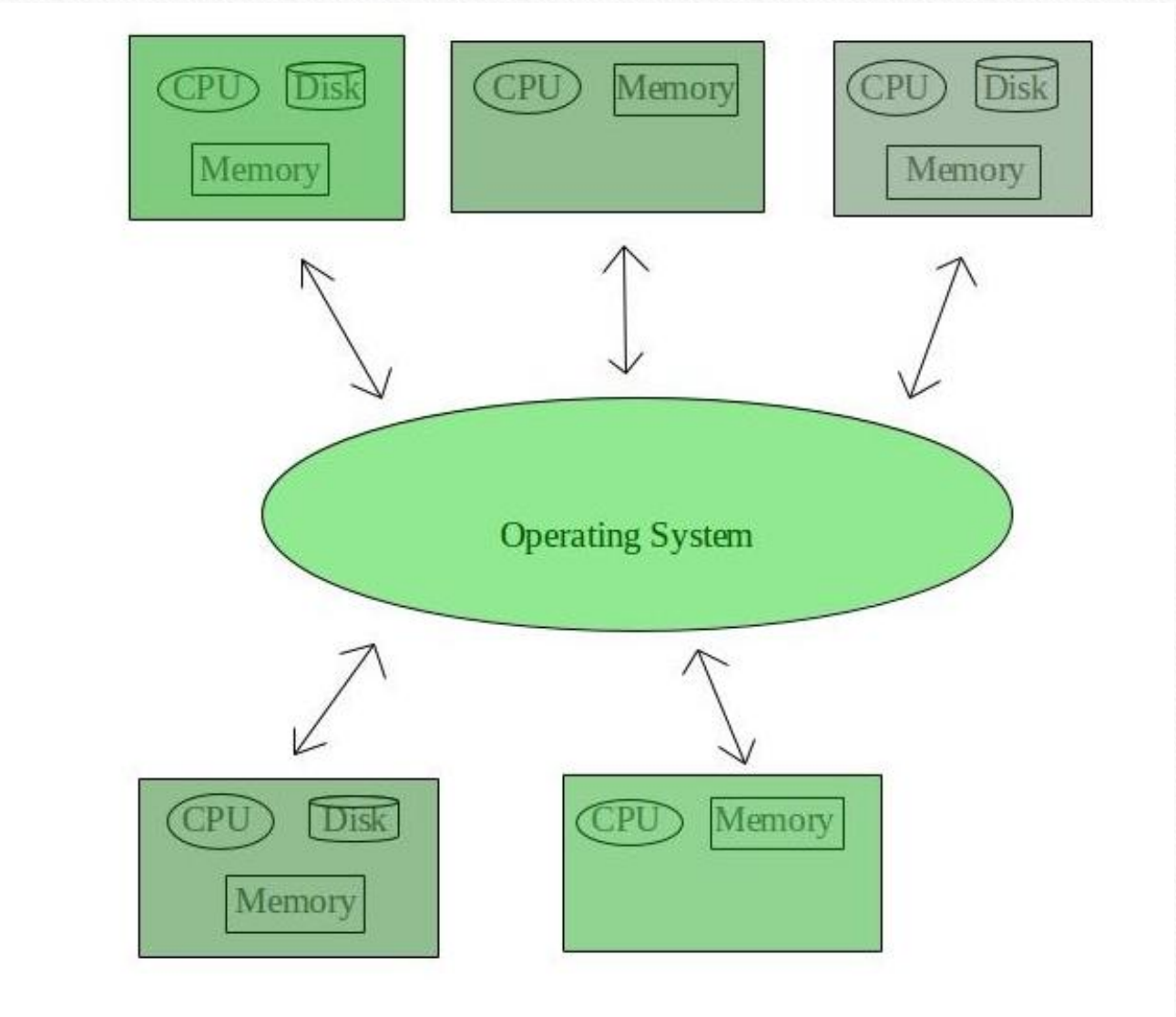
3. Distributed Operating System or loosely coupled systems

Manages a **group of different computers**

It makes appear to be a **single computer.**

These system's resources differ in **size** and **function**

Resources means **disk, memory, CPU**, etc…


CPU
Disk
Memory
CPU
Memory
CPU
Disk
Memory
Operating System
CPU
Disk
Memory
CPU
Memory

Advantages:

Fault tolerance - Failure of one will not affect the other network communication

computation is highly fast and durable

Delay in data processing reduces

Disadvantages:

Failure of the main network will stop the entire System

Very expensive.

Examples :

LOCUS etc.

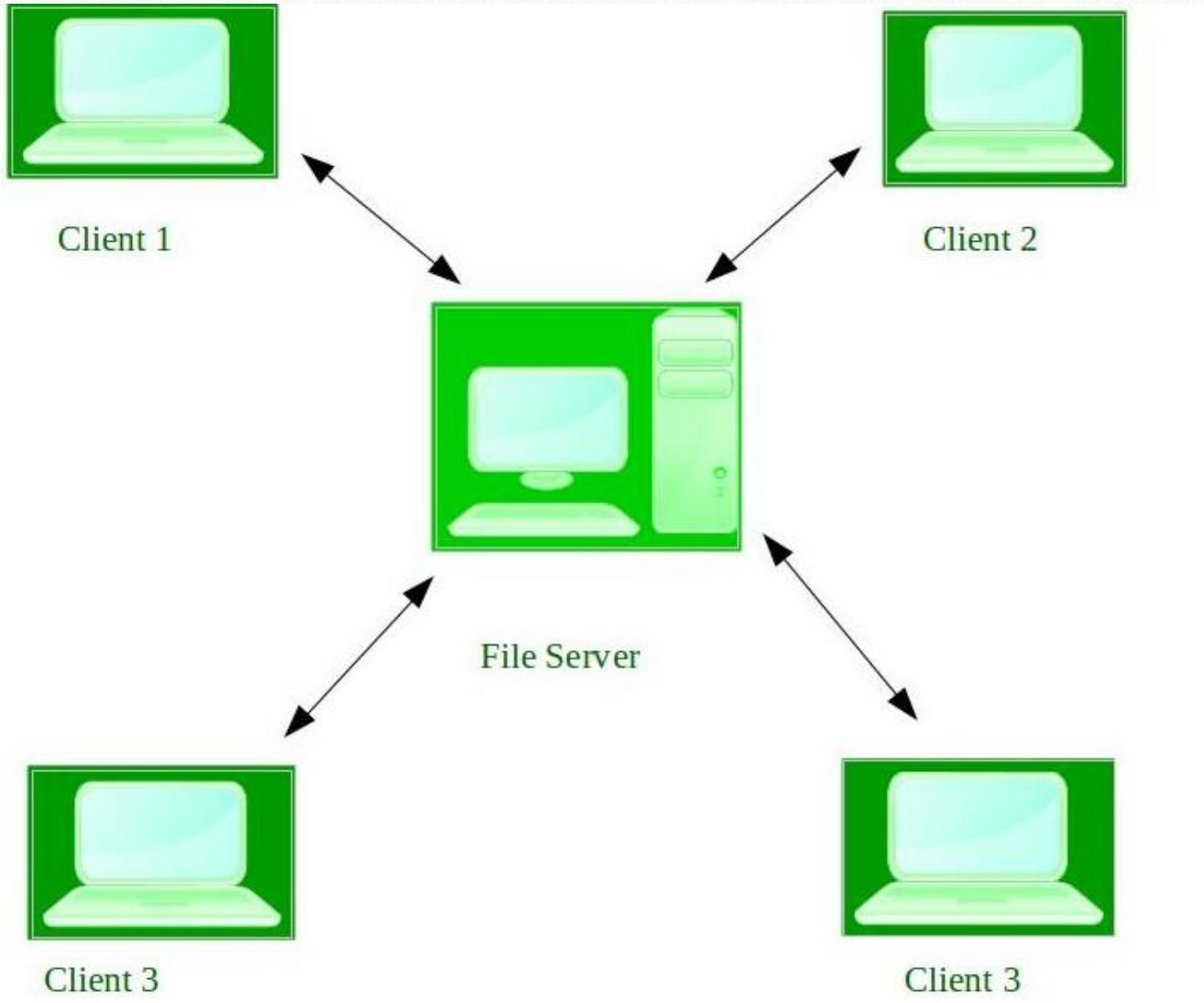
4. Network Operating System or Tightly Coupled Systems.

Computers running in **different operating system** can participate in common network.

These systems run on a **server**.

It manages data, users, groups, security, applications, etc.

It allows shared access of **files, printers, security, applications, over a small private network.**


Client 1
Client 2
File Server
Client 3
Client 3

Advantages:

centralized servers

Provide Security

Remote Access

Disadvantages:

Servers are costly

User has to depend on central location for most operations

Maintenance and updates are required regularly

Examples :

Microsoft Windows Server 2003,

Microsoft Windows Server 2008,

UNIX, Linux, Mac OS X, Novell NetWare, and BSD etc

4. Real-Time Operating System:

It serves the **real-time systems.**

The **time interval** required to process and respond to inputs is very small.

This time interval is called **response time.**

Meant applications to fix the deadlines.

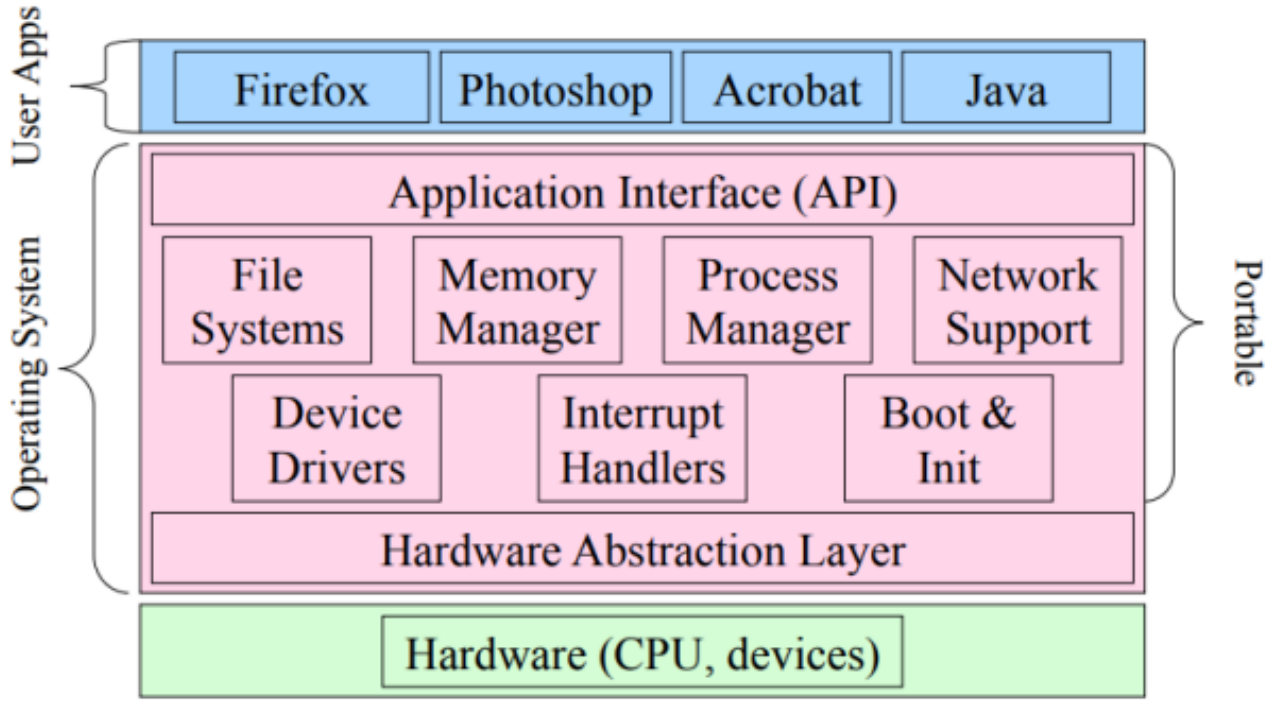
Examples:

Scientific experiments,
medical imaging systems,
weapon systems, robots,
air traffic control systems, etc.

OS Components

- Process Management
- Main Memory management
- Secondary-Storage Management
- File Management
- I/O Device Management
- Network Management
- Security Management

OS structure:



THANK YOU