Lecture-4

Topics:
- Introduction to Operating system.

- Functions of an Operating system.

What is Operating System?

➢ Operating system is a software ,which makes a computer to actually work

➢ A program that controls the execution of application programs

➢ An interface between applications and hardware

➢ The OS organizes and control the hardware

➢ Examples: Windows, Linux, Unix ,etc.

What is Operating System?

Operating system – part of the computing system that manages all of the hardware and all of the software

Controls every file, device, section of main memory & every nanosecond of processing time

Operating system consists of

- Memory manager
- Processor manager
- Device manager

What OS does

An operating system performs basic tasks such as

- ❑ Controlling and allocating memory

- ❑ Prioritizing system requests

- ❑ Controlling input and output devices

- ❑ Facilitating networking

- ❑ Managing file systems

Classification of OS

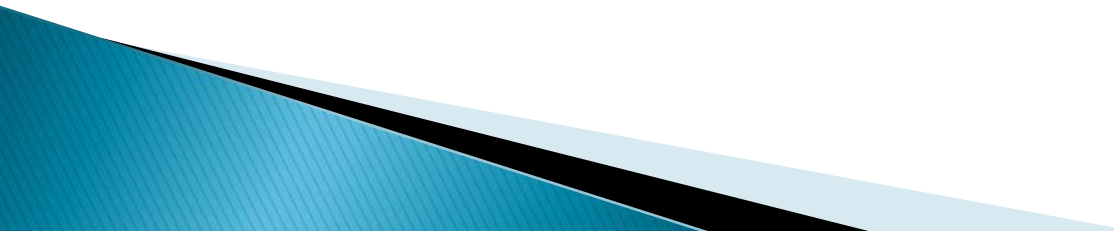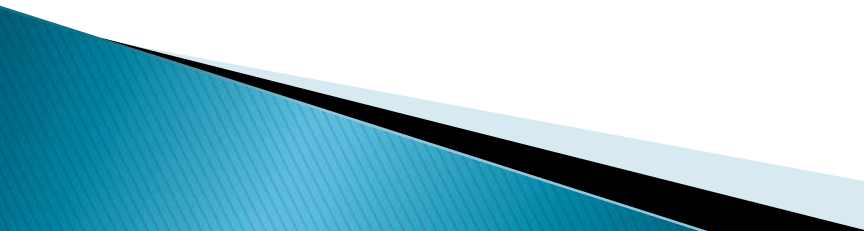Operating System can also be classified as,-
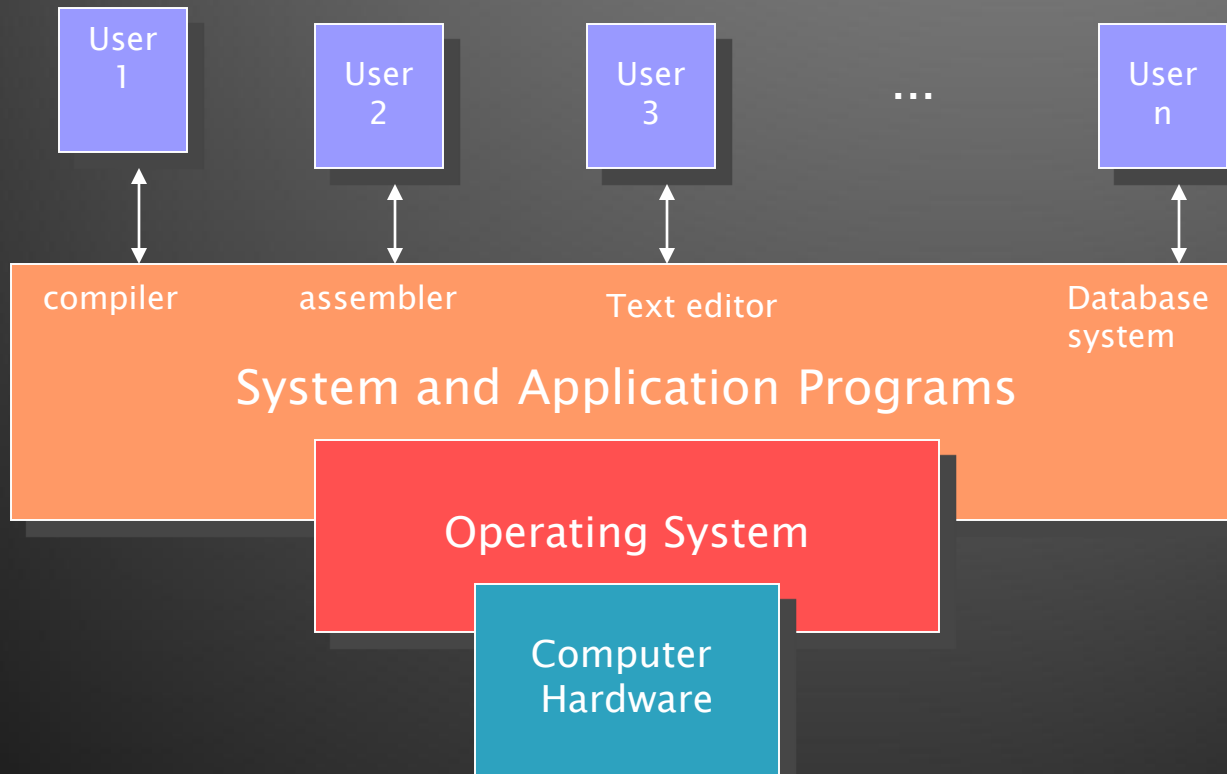
Single User Systems

Multi User Systems

Single User Systems:

❑ Provides a platform for only one user at a time.

❑ They are popularly associated with Desk Top operating system which run on standalone systems where no user accounts are required.

❑ Example: DOS

Multi-User Systems:

❑ Provides regulated access for a number of users by maintaining a database of known users.

❑ Refers to computer systems that support two or more simultaneous users.

❑ Another term for *multi-user* is *time sharing*.

❑ Ex: All mainframes and are multi-user systems.
❑ Example: Unix

Structure of OS

User 1	User 2	User 3	...	User n

compiler   assembler   Text editor   Database system

System and Application Programs

Operating System

Computer Hardware

Structure of OS

The structure of OS consists of 4 layers:

1. hardware

Hardware consists of CPU, Main memory, I/O devices, etc .

2. Software(Operating System)

Software includes process management, memory management, I/O control, file management.

3. System programs

This layer consists of compilers, assemblers, linkers etc.

4. Application programs

This is dependent on user need. Ex. Railway reservation system, Bank database management etc.

Operating system function

The main function of operating systems are:

1. Program creation
2. Program execution
3. Input/output operation
4. Error detection
5. Resource allocation
6. Accounting
7. Protection

Evolution of OS

Operating system timeline

First generation: 1945 – 1955

Vacuum tubes

Plug boards

Second generation: 1955 – 1965

Transistors

Batch systems

Third generation: 1965 – 1980

Integrated circuits

Multiprogramming

Fourth generation: 1980 – present

Large scale integration

Personal computers

Next generation: ???

Systems connected by high–speed networks?

Wide area resource management?