

## Introduction To OS

⇒ OS (operating system):

- \* It is an integrated set of comp progs that manages a comp hardware.
- \* It provides an environment within which the appli~ progs do useful work.
- \* From the point of the user, an os act as an intermediary b/w the comp user & Comp hardware to make use of hardware resources as easily & efficiently.

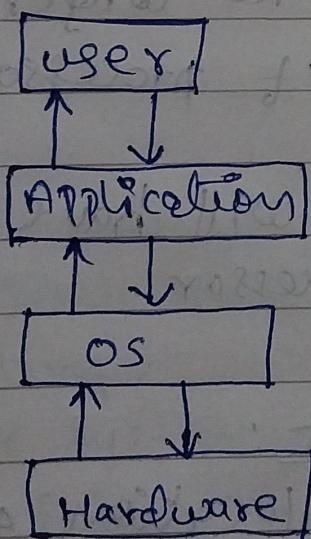


fig: user view of  
an os

### I objectives of OS:

- to hide the details of hardware resources from the users.
- to provide ~~the~~ users a convenient interface to use the comp system.
- to manage the resources of a comp system.

- to provide efficient & fair sharing of resources among users & programs.
- act as intermediary b/w hardware & its users.

### Functions of OS :

- Processor management:
  - deals with the allocation of processor to processes. It deallocates the processor when it is no longer required.
  - keep track of processors & status of its processes.
  - decide who will have a chance to use the processor.
- Memory management:
  - deals with keeping track of all the memory areas used by user programs & data.
  - allocates the memory whenever processes request it.
  - keep track of memory which part are in use & by whom? which parts are free?
- Device management:
  - deals with keeping track of all the devices.
  - Allocate I/O devices to initiate I/O op.
  - reclaim I/O devices.
- File management:
  - refers to a set of services used for storing, retrieving, removing info on various devices.
  - Allocate the info, e.g. open a file.
  - Derelease the info, e.g. close a file.
- Security :
  - OS prevents unauthorized access to system resources.
- Job accounting:
  - control over system performance.
  - Error detection & response.

### Evolution of OS :

- |  |       |             |
|--|-------|-------------|
| 1 <sup>st</sup> generation - 1945 - 55 | and " | - 1955 - 65 |
| 2 <sup>nd</sup> " - 1965 - 80          | "     |             |
| 3 <sup>rd</sup> " - 1980 - present day | "     |             |
| 4 <sup>th</sup> "                      | "     |             |

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obj or involved in program execution & in the mechanical aspects of program development.

### Distributed system.

- parallel system.
- time sharing
- multi programming

### Batch processing

#### serial processing

fig: evolution of os.

(1)

Job 1 → OS → Batch → Job 2 → OS → Batch

Job n → OS → Batch

3) Types of os:-

#### 1) Serial processing:

- \* perform instructions in a sequential manner.

- \* These comp were run from a console consisting of display lights, & toggle switches some form of a tip ex a printer.
- \* Have 2 prims → scheduling
- ↳ program completion time.

- \* e.g. → windows 95, windows 98.

#### Program

#### task 1

visit

#### Program

#### task 2

visit

#### Real time os:

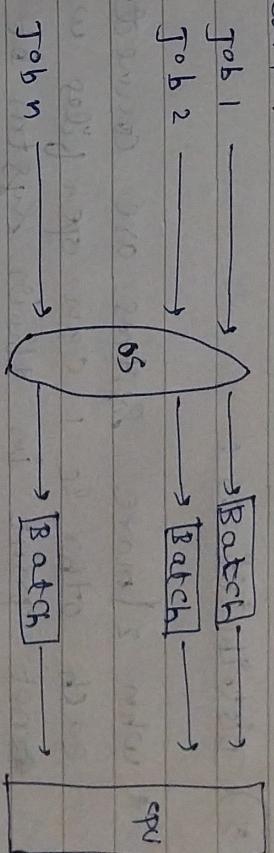
- \* Has a data processing system.
- \* processing time is very small b/c the user's command is the off.
- \* used in field where the response needs to be quick & rapid.
- \* helps to fulfill the worst-case response time requirements of an application.

#### Time sharing os:

- \* multiple people at various terminals can use a program at the same time.
- \* The main motive is to minimize the response time.

2) Batch processing os:

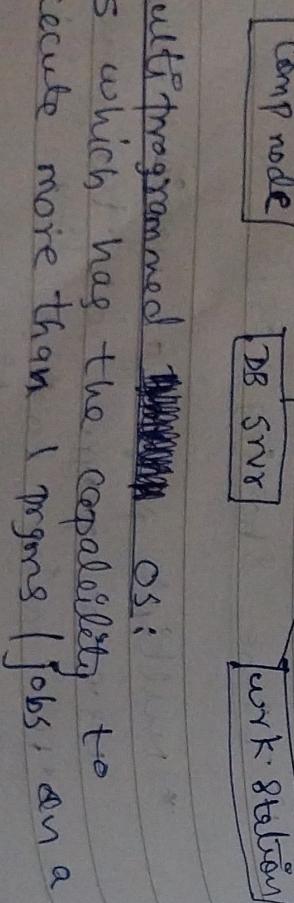
- \* no direct communication b/w comp & the os.
- \* multiple users can use it.
- \* can easily manage a large amount of work.



- \* It is a logical extension of multi programming.
- \* Allows many users to share the computer simultaneously.

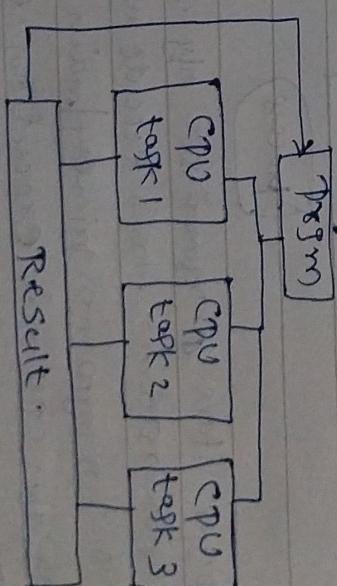
### 5) Distributed OS:

- \* When 2 or more systems are connected to each other so I can open files which are not present in their system but in other devices connected in the network.
- \* They use multiple central processors to serve real-time applications.
- \* Failure of 1 system does not affect the other systems connected in the network.



### 7) Parallel System OS:

- \* Here, all the tasks / programs are stored in the main memory of the system at the time of processing.
- \* It helps in maximizing CPU utilization & processing speed is faster.
- \* They are the interface between parallel computers and the applications that are executed on them.
- \* They translate the hardware's capabilities into concepts used by programming language.
- \* Are designed to speed up the execution of programs by dividing them into multiple segments.



- 6) Multi programmed OS:
- \* OS which has the capability to execute more than 1 program (jobs) on a