

# CARDAMOM PLANTERS' ASSOCIATION COLLEGE

Pankajam nagar, Bodinayakanur



DEPARTMENT OF COMPUTER SCIENCE

**Subject: Operating System**

**Concept: Operating System components & Goals**

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## Assignment-1

### 1. Operating System (OS) components & Goals:

\* OS is a system software. That control the hardware.

\* OS enable the application program to interact with computer hardware.

#### Components:

1. process scheduler.
2. Memory Manager.
3. I/O Manager.
4. IPC Manager.
5. File system Manager.

#### (i) process scheduler:

which determines when and for how long a process executes on a processor.

#### (ii) Memory Manager:

which determines when and how memory is allocated to process and what to do

when main memory becomes full.

(iii) I/O Manager:

which services input and output requests from and to hardware devices, respectively

(iv) IPC Manager: (Inter process communication)

which allows processes to communicate with one another.

(v) File system Manager:

which organizes named collections of data on storage devices and provides an interface for accessing data on those devices.

OS Goals:

1. Efficiency (high performance, throughput, low turnaround time, wait + process)
2. Robustness (fault tolerance)

3. Scalability ( addition system adobe to pc.)

4. Extensible ( adobe to new tech)

5. portability ( An os work on many

hardware configuration)

6. security

7. Interactivity

8. usability ( long term usable)

## 2) Operating System Architecture:

1. Monolithic architecture

2. Layered architecture

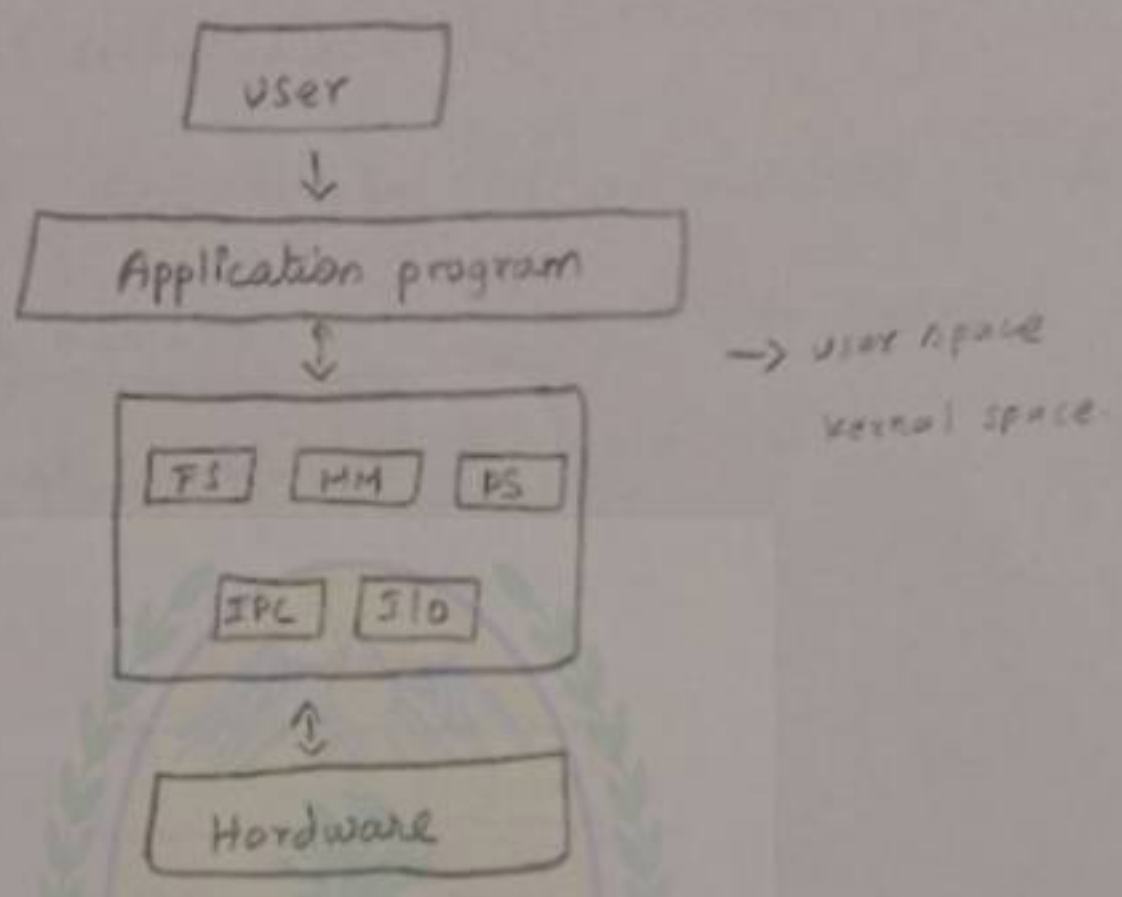
3. Micro-kernal architecture

4. Network and distributed os.

5. Hybrid architecture.

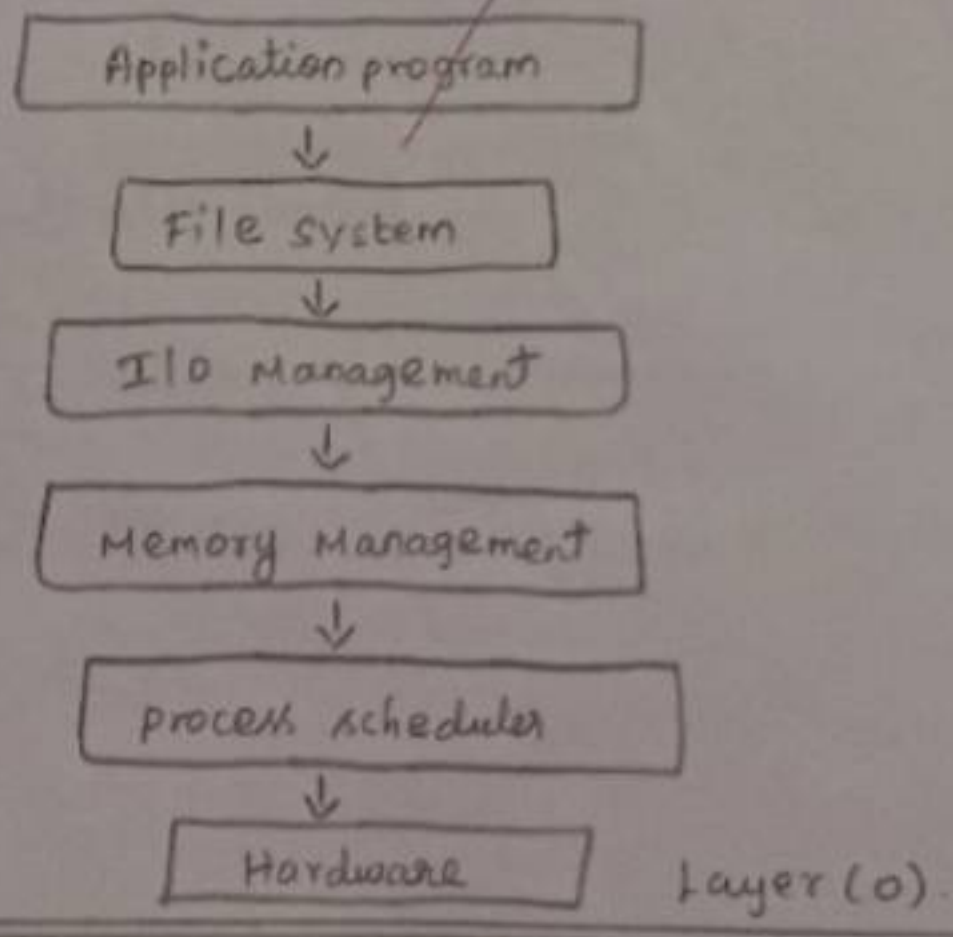
### (i) Monolithic Architecture:

The monolithic operating system is the earliest and most common operating system architecture



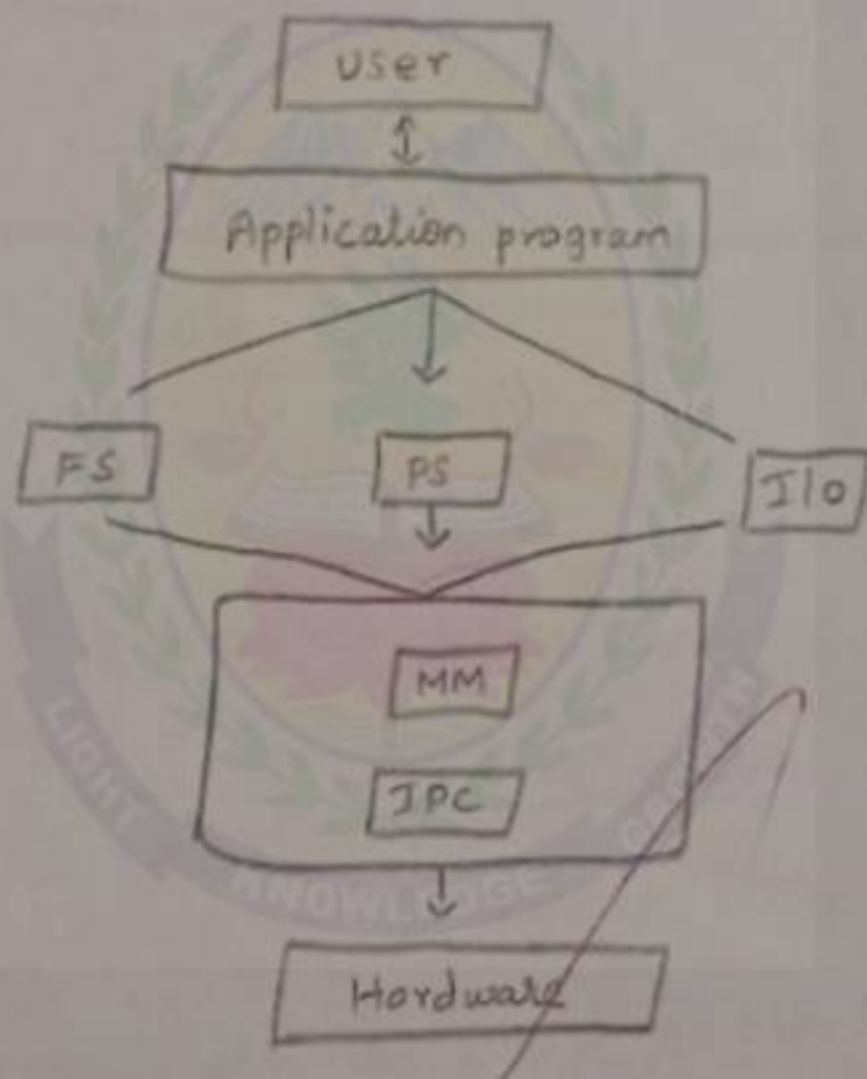
(ii) Layered Architecture:

The layered approach to operating system attempts to address the issue by grouping components that perform similar functions into layers.



(ii) Micro-kernal architecture:

A micro-kernal OS architecture provides only a small number of services in an attempt to keep the kernal small and scalable.



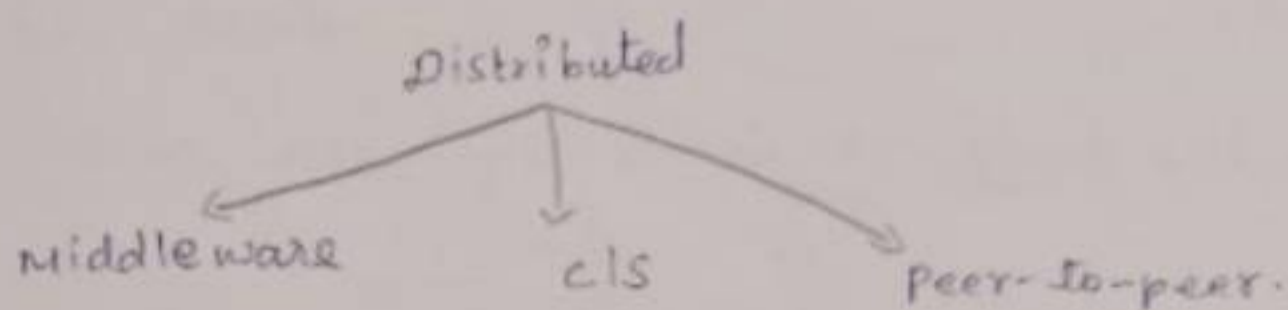
(iv) Network and distributed OS:

Collection of autonomous computers

inter connected together is know as a Network.

It's working OS is network OS.

All the devices are connected distributed mood.



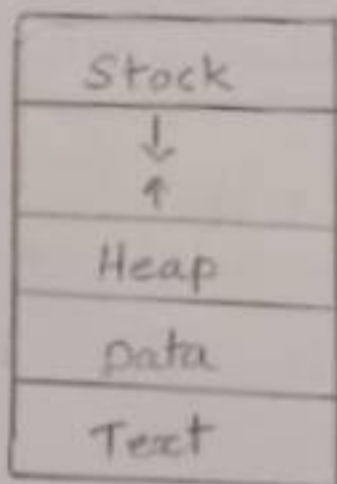
(v) Hybrid architecture:

Combination of the above architecture.

3) Process life cycle & PCB:

Process concept:

A process is a instance of a program in execution. process is an active entity in a program execution. program is an passive entity. when a active entity is create it, the following structure of a process,



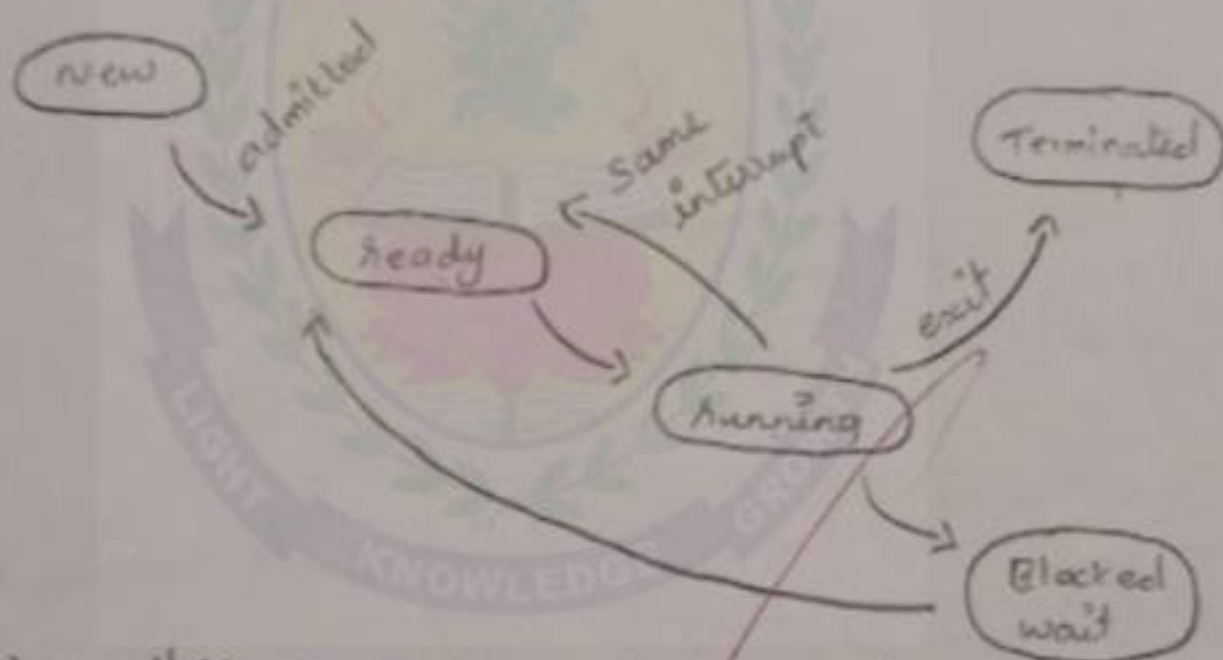
\* The stack region contain function parameters, return address.

\* The Heap region contain the memory allocation details.

\* The data region contain the global and static variable.

\* The text region actually having a code that is executed by a process.

Process life cycle states:



New - when a process is created.

Ready - ready for executing.

Running - when the task is complete is going to terminated state.



## Process Definition:

A process is defined as an entity which represent the basic unit of work to be implemented in the system.

A program under execution which competes for the CPU type and the resources.



## Process control block (PCB)

Some information include in this part:

1. PID
2. process state
3. program counter.
4. scheduling priority.
5. credentials