Process Scheduling IPC

Process : A process is program in execution

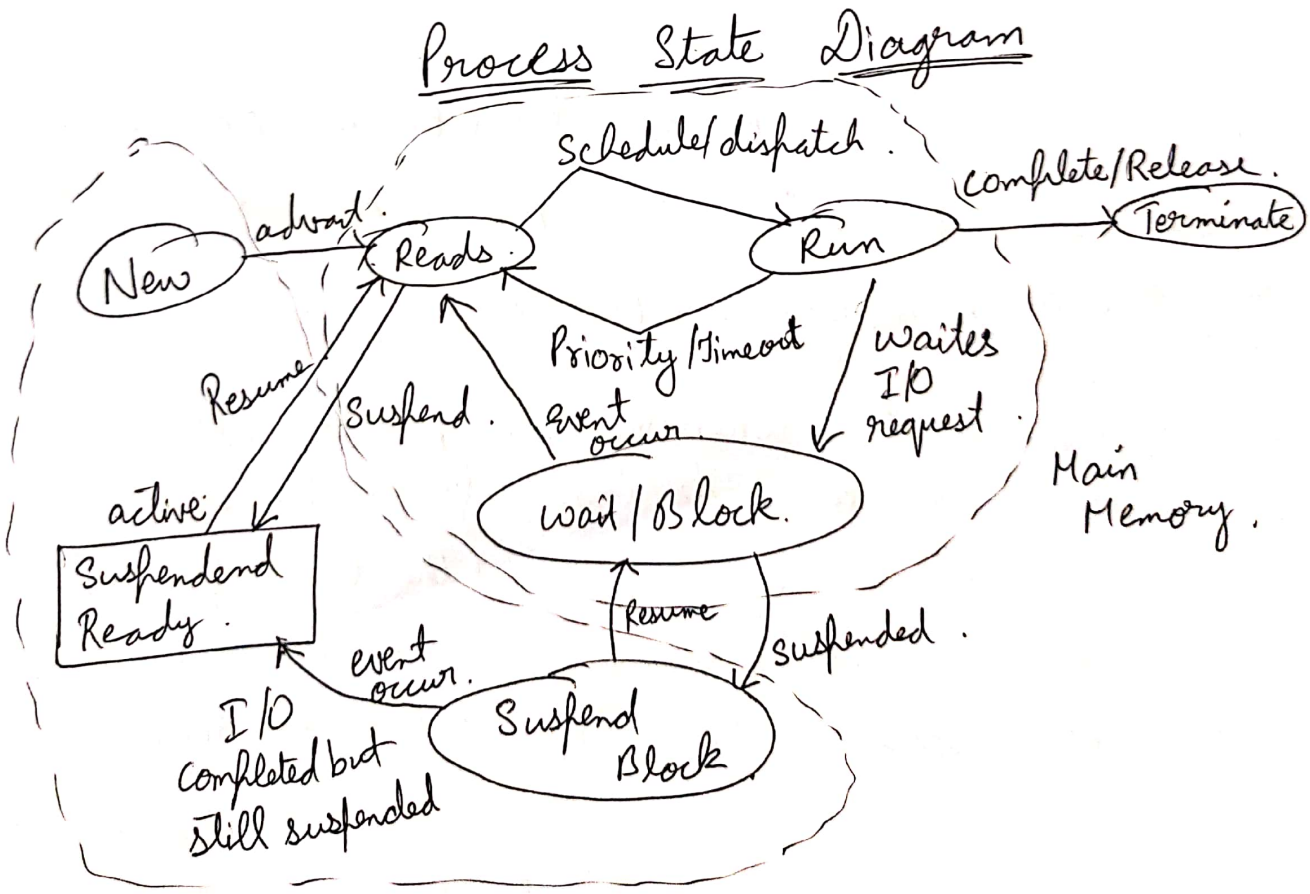
» when we write a C program the compiler creates binary code, the original program and binary code both are programmed. when we actually run the binary code it ~~boo~~ becomes a process.

⇒ A process is an active entity program is a passive entity.

Attributes or characteristics of a process.

(i) Process Id.
(ii) Process - state.
(iii) CPU registers
(iv) I/O status information
(v) CPU scheduling info. etc.

Process State Diagram



Process Status:

- New (Create) :- The process is about to created but not yet created, it is the ~~process~~ program which is present in secondary memory that will picked by O.S to create the process.

- Ready :- New → Ready.
  Ready to run : After the creation of process, the process enters the ready state i.e the process is loaded into the main memory.
  The process is ready to run and is waiting to get the CPU time for its execution.
  These process are waiting in a queue is called Ready Queue.

- Run :- The process is choosen by CPU for execution & the instructions within the process are executed by any one of the available CPU cores.

- Blocked or Wait :- Whenever the process requests access to i/o or reads input from the user or needs access to a critical region (the lock for which is already acquired) it enters the blocked or wait state. The process continues to wait in the main memory and does not require CPU.

Once, the i/o operation is completed the process goes to ready state

Terminated or Completed: Process execution completed, or process is killed as well as PCB is deleted.

- Suspend ready:- The process that was initially in the ready state but were swapped out of main memory, and placed on to secondary memory by scheduler are said to be in ~~sus~~ suspended ready state.

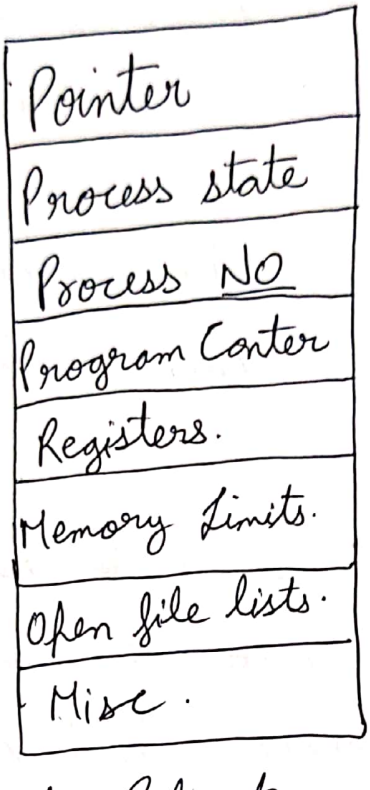
The process will transition back to ready state whenever the process again brought ~~out~~ onto the main memory.

- Suspended wait or suspend blocked: Similar to suspend ready but usee the process which was performing i/o operations & lack of main memory caved them to move to secondary memory. When work is finished they may go to suspend ready. CPU & I/O bound process.

If the process is intensive in terms of CPU operations. then it is called CPU Bound process.
If the process is intensive in terms of I/O operations then it is called I/O Bound process.
Process table & process control block.
A process control Block (PCB) contains info, about

the process i.e registers, time, quantum, priority etc.
The process table is an array of PCB's, that means logically contains a PCB for all of the current processes in the system.

→PT is used for context, switching & scheduling & other activities.



-Process control Block.

PCB is a data structure used by OS to store all info. related to process.
also known as process descriptor.
When a process is created the O.S creates process holding PCB.

fig: Process table & PCB