२. Process Management

- what is Process — defⁿ
- Process state. ①
- Process control Block (PCB) ②
- contex switch
- Operation on Process ③ imp Q 1, 2, 3.
  1) Process creation
  2) Process termination.

① Define the term Process.

Ans defⁿ :-
"The Program is in exicution is called Proces"
or
"Program is in running Position is called process."

② what is Process ? various Process states with the suitable diagram.

Ans defⁿ :-
"Process state is defined as the current activity of that Process is called Process states."

there are 5 states of Process that can be given below :-
(NRaWT).
① New
② Ready
③ Running
④ waiting

⑤ Terminated.

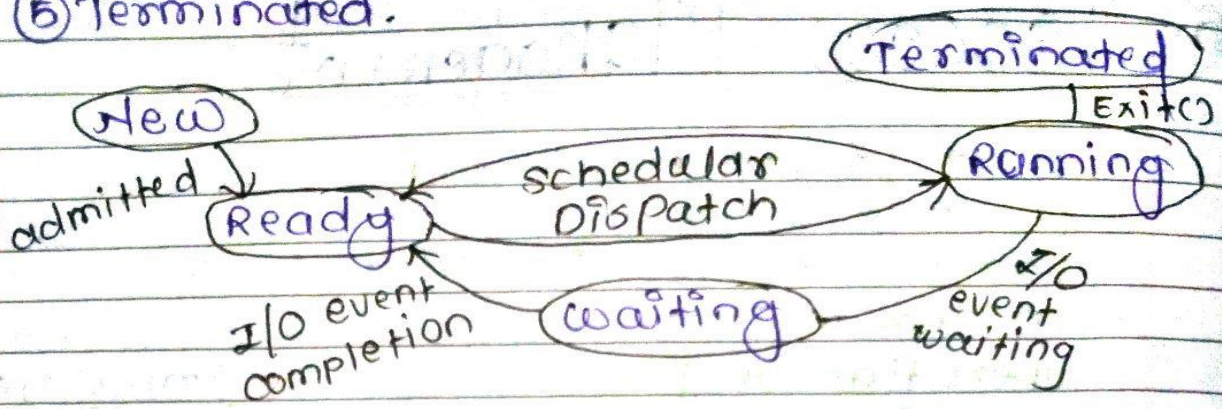


fig:- Process state.

① New-

1) this states value indicates has the process has just been created or process is being created.

② Ready.

this states value indicates that Process is waiting to assign to a processor that means the process is ready to run but CPU is not available.

③ Running-

this states value indicates that Process is running on the CPU or Process is in exicution.

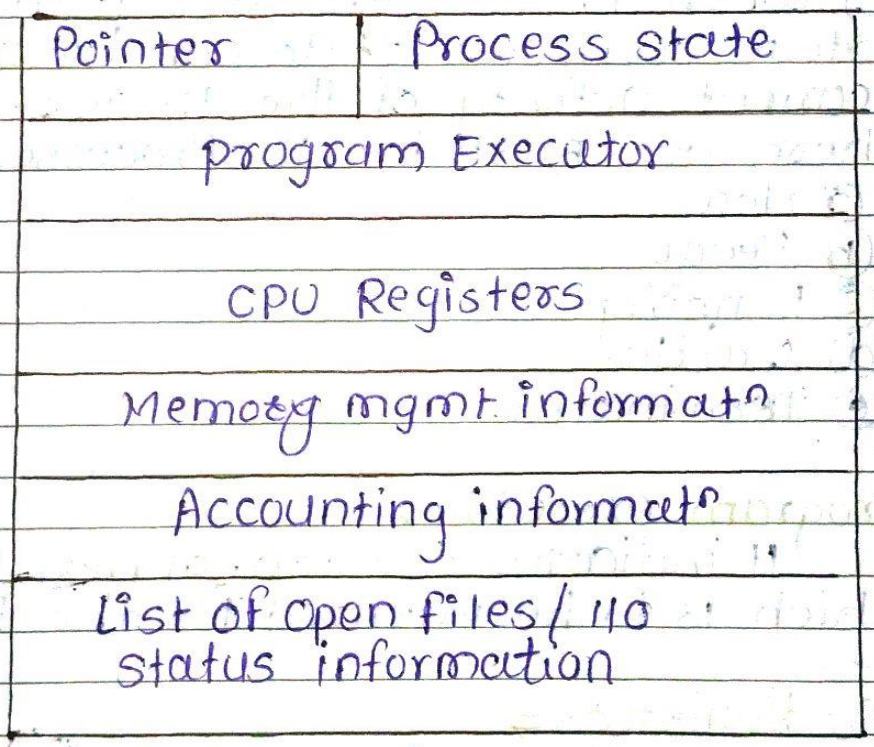
④ Waiting-

this states value indicates that the Process is currently waiting for some event occur in the system i.e is I/O event

completion.

⑤ Terminated-
this states value indicates that the Process has finished his exicution. either normally or abnormally.
the process can be terminated by using exist system call.

* Process Control Block (PCB):-



Q. what is PCB? explain Process control Block with suitable diagram.

⇒ Processes in O.S are represented by data structure is known as process control block

- PCB keeps information of various Processes in the O.S.

① Pointer-
i) Pointer Points to the another Processor is a PCB.
ii) Pointer is used for managing the Scheduling list.

② Process state-
i) when Process executes it changes it's state so, Process state can be defined as current activity of the process.
- there are 5) states of Processes
  (a) New
  (b) Ready
  (c) Running
  (d) waiting
  (e) Terminated.

③ Program executor⇒
It indicates the add. of next instruct° which is to be executed for the Process.

④ CPU Registers⇒
i) It indicates the general Purpose register stack Pointers, index, register & accumulator e
ii) no. of register & type of register totally depends on Computer archietecture.

⑤ memory mgmt info. -

(7) I/O status info-
This info includes list of I/O devices attached to the process & list of open files.

i) this info. include value of base & limit. it also includes the info. allocatn of memory & deallocation of memory.
ii) It uses Page table or segment table depending on the memory system used by O.S.

(6) Accounting info - this info includes amount of CPU & real time used time limits, Process no, acc no etc

* Operation on Process :-

there are two operation can have every perform a process :-
① Process creation
② Process termination.

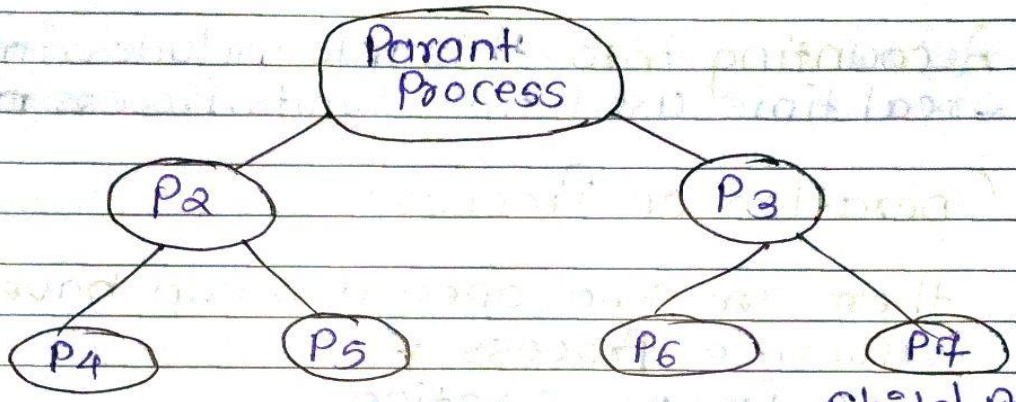
Q what is O.S & explain various operation perform on O.S.

⇒ there two basic operatn that can perform on the processess.
a) Process creation
b) Process termination.

a) Process Creation-
① a Process may create new Process by using create Process System call.

② if you want to create the new Process then we required the parent Process.

③ the sources process is called as Parent Process where as newly created Process is called as child process. and this child process in turn can create either process & forming a tree Processes.



④ In the Process creation is Parent-child relationship occures.

b) Process Termination ⇒
Process gets terminated when it finishes exicuting its final stmt. Process can be terminated by using the exit system call.

⇒ Reasons for Process Termination ⇒

① Time limit is expired :-
when the Process exicution does not complete within the time slot. then Process will gate terminated from running state.

(2) Memory unavailable :-
If the process needs more memory than available memory then process will be terminated from running states.

(3) Access violation ⇒
the process trise to access memory locatn i.e not allow to access.

(4) I/O failure :-
A Process needs an I/O Operation at the time of exicution but I/O device is not available at that time the Process is moved into the waiting state.

(5) invalid instruction :-
If the Process having illegal instruction & CPU is failed to execution those instruction, then process gets teerminated

(6) Parent Teermination ⇒
when paeent peocess is terminated the child process is also teerminated automatically i.e parant process has authority to teerminate its child Process.

* Contex Switching :-

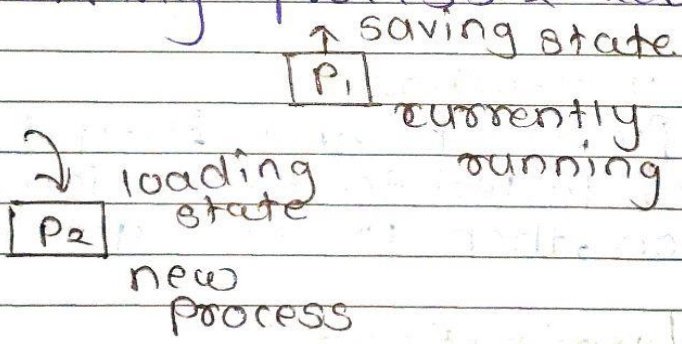
Q Define the term contex Switching & write a short note on contex switch 4m

i) defn:-
"Switching the CPU from one Process to another process is known as contex switching."

or

"when Process is switching from hold Proce ss to new process is called as contex switching."

ii) switching the CPU to another Process requires saving the state of currently running process & loading the Proces of new Process.



iii) contex of processes are represented in PCB

iv) Minimum Process required for C.S are two.

v) In C.S it will also takes some time. so, if the context of Process is more. the C.S time will also increase.

vi) the context of Process is represented in PCB it includes CPU register, Process State, memory mgmt information, accounting information etc.

vii) Context Switch time is Pure overhead. Because System doesnot do useful work while switching.