Name – Akshay Patwal

Father's Name – Mohan Singh Patwal

University Roll no. – 2015147

Subject – Operating System

Subject Code – TCS 502

Sem – 5th

Course – B.Tech (DS & AI)

Type – Regular

Akshay

1(b)

(*) Process → A process is a program in execution. A program by itself is not a process; a program is a passive entity, whereas a process is an active entity.

A process includes the following :-

~~i) TEXT SELECTION~~

i) TEXT-SECTION :- It contains the program code.

ii) CURRENT ACTIVITY :- It is represented by the value of program counter and the contents of the processor's registers.

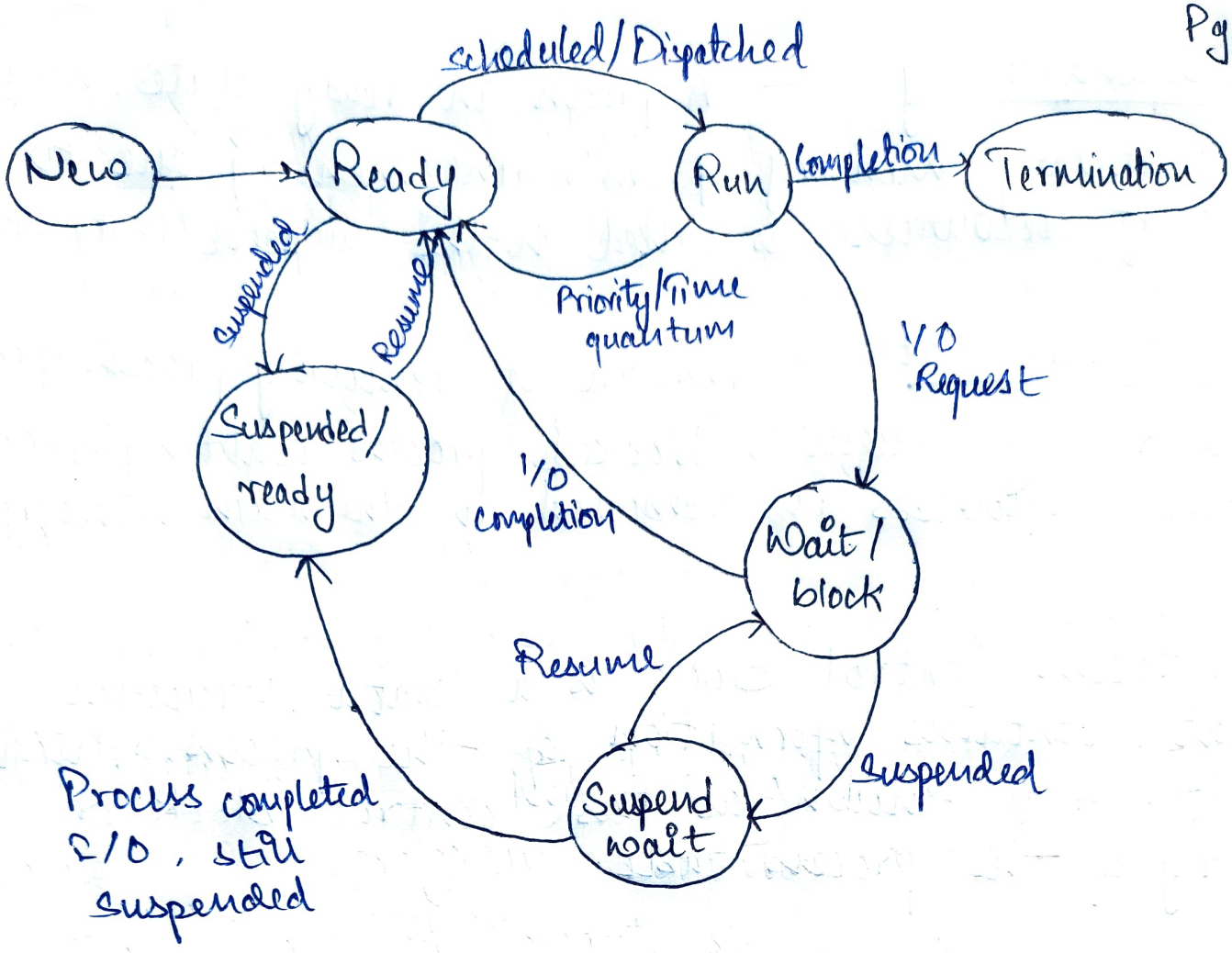
iii) STACK :- Contains temporary data such as function parameters, return addresses & local variables.

iv) DATA-SECTION :- Contains global variables.

v) HEAP :- Used for dynamic memory allocation during process runtime.

(*) The process, from its creation to completion, passes through various states as follows :-

Akshay



Process States Diagram

i) New :- The process is being created.

ii) Running :- Instructions are being executed.

iii) Ready :- The process is waiting to be assigned to a processor.

iv) Waiting:- The process is waiting for some event to occur such as I/O completion or reception of a signal.

v) Terminated :- The process has finished execution.

Akshay

vi) Suspend-ready :- A process in ready state, moved to secondary memory from main memory due to lack of resources, is called in the suspend ready state.

vii) Suspend-wait :- Instead of removing process from the ready queue, blocked process waiting for some resources is removed in the main memory.

(*) Process Control Block is a data structure that contains information of the process related to it. Also known as task control block or entry of the process table.

It is very important for process management as the data structuring for process is done in terms of the PCB. It also defines the current state of OS.

Structure of the Process Control Block :-

1. Process state → Executing / Terminated etc.
2. Program Counter → Next ins system wants to execute.
3. CPU Registers → Registers required by process.
4. CPU scheduling Info → Which scheduling algorithm required by process.

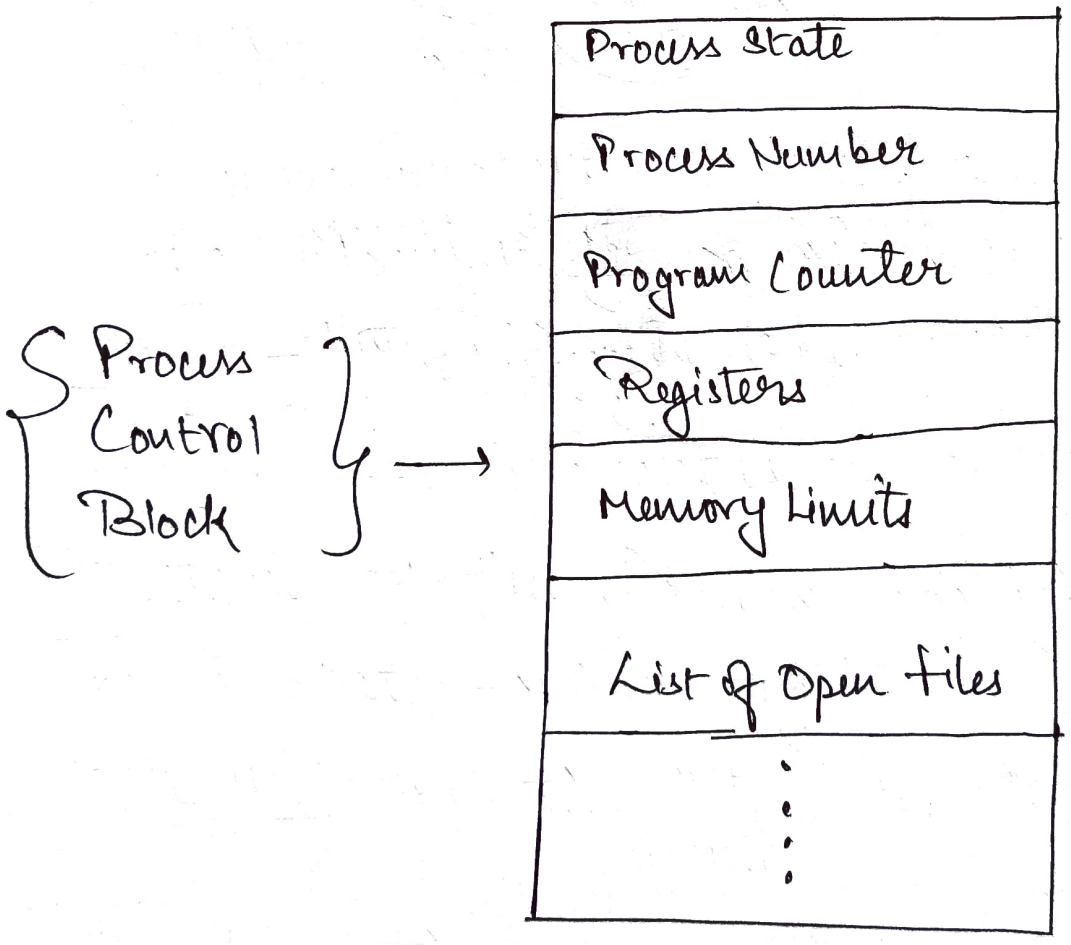
Akshay

5) M/M management Info → where files are stored, how to fetch them. (files required by process)

6) Accounting Info → Know how much amount of time is taken by process to execute, invested in I/P - O/P operations.

7) I/O status Info → Time invested in I/O operations.

PCB ⇒

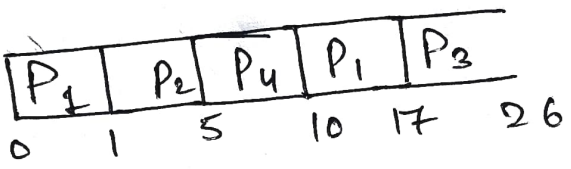


Akshay

2

b

Process	B-T	A-T	WT	TAT
P_1	8	0	9	17
P_2	4	1	0	4
P_3	9	2	15	24
P_4	5	3	2	7
			26	52



Avg. wt. = 26/4 = 6.5 units

Avg. tat = 52/4 = 13 units

Akshay