

D	D	M	M	Y	Y	Y	Y
1	2	0	1	2	0	2	4

with respect to, Periodical intervals of 8 days.

INTERNAL - I

81. A memory of 16 bits is used to store the data.

82. Periodic intervals of 8 days are used to store the data.

83. At the same time, MODULE - I is also stored.

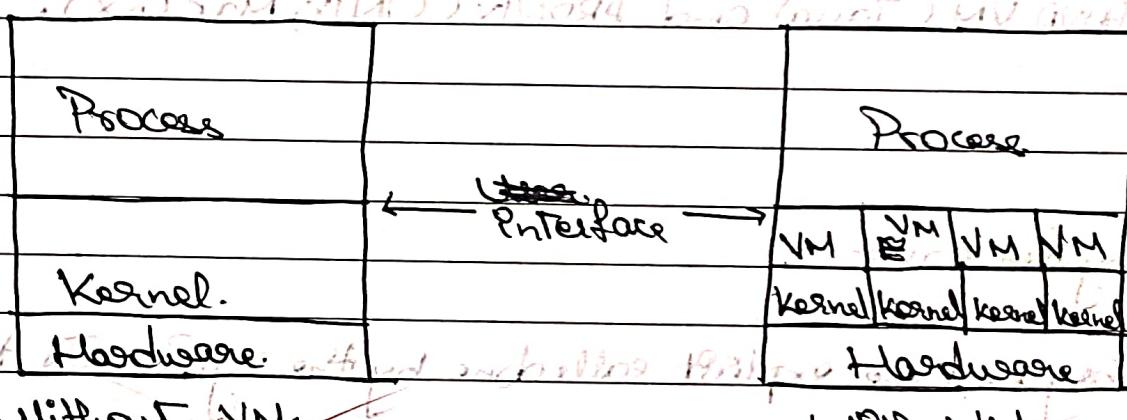
It can be stored at the same time.

27

a) Virtual Machines to store data, and soft disk.

Virtual machines are the imaginary distinction done by the processor to allocate different job to various environments.

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As shown in the above diagram, when the user of the computer provides an input for the process to process, the device without the VM has to process and solve the data, various inputs and thus takes a longer time.

Whereas the device with the virtual machine doesn't have that problem since, the VM bifurcates the data into various environments to be processed simultaneously and thus multiprocesses the

D	D	M	M	Y	Y	Y	Y

the system therefore reducing the processing time.

Virtual machines are made up bi-processors by the main processor so as to process the data quicker and with ease.

Even though it's not real, as VM has access to the other VM and no command over it.

Since the VM system consists of multithreading, they assign each sub-processor a specific task. To accomplish and thus, the execution is quicker.

The various VMs are Win32 (Windows), JAVA VM (Java) and PRONIX (UNIX, Mac OS X).

b)

System calls

They are the explicit collection by the system to the processes.

Types of System calls -

Process Control - create, delete - they can create or delete any process in a given process.

File and device management - insert, delete

Memory management - Process control is the system call that defines rules or rules to define the flow or control of the processes to be run.

D	D	M	M	Y	Y	Y	Y

→ Device Management - It is the system call by the computer to procure any of the data or information that is stored in the device.

- It can even be to check-up about the device's wellbeing and processing speed.
- ~~getdata, setdata.~~

→ File Management - ~~getfile, putfile, read, write, realloc~~
~~O P S1 S2 S3~~
- It is the system call that handles a file. It creates a new file for the processing of the process.

- ~~create, remove, delete.~~

→ Communication - This system call is responsible for the passing of the message and instructions to and from the processor.

- It even takes the role of displaying the message and output for the user.

→ Security - This system call takes care of protecting the system and process from the external malware that would come along with the message during the system call.

- They even provide privacy to every process from the other.

D	D	M	M	Y	Y	Y	Y
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2. Round robin, 20ms quantum with 12 + turnaround time = 16 ms
3. Shortest job, with 4 processes

MODULE - 2 IT

Process arrival time, burst time and burst wt

4) Round robin with 2 ms quantum

a) Shortest job first scheduling

FCFS: Arrival Time, Burst Time =

Process Arrival Time, Burst Time, and ~~Burst Wt~~ ~~Avg TAT~~

P1	Arrival 0	Burst 9	WT 0	TAT 0
----	-----------	---------	------	-------

P2	Arrival 1	Burst 14	WT 9	TAT 5
----	-----------	----------	------	-------

P3	Arrival 2	Burst 9	WT 13	TAT 4
----	-----------	---------	-------	-------

P4	Arrival 3	Burst 5	WT 22	TAT 17
----	-----------	---------	-------	--------

Batch size = 4

Avg WT = 4 Avg TAT =

P1	P2	P3	P4	C
----	----	----	----	---

6 9 13 22 27

FCFS: Avg WT = 11 and TAT =

Arrival time of P1 = 0 and burst time = 9

Process with burst time = 9 and arrival time = 1

~~SRTP: q=2 ms~~

~~Round robin with 2 ms quantum and turnaround time = 6~~

Process AT, BT, ~~WT~~, ~~Turnaround~~ TAT

P1	0	9	12	9	18
----	---	---	----	---	----

P2	1	14	5	2	6
----	---	----	---	---	---

P3	2	9	25	16	27
----	---	---	----	----	----

P4	3	5	8	6	11
----	---	---	---	---	----

D	D	M	M	Y	Y	Y	Y

P1	P2	P2	P4	P4	P4	P1	P1	P1	P1	P3
0	2	4	6	8	10	11	13	15	17	18

Round Robin: $T_w = 7.5$ ms, $q = 2 \text{ ms}$

Process AT_i BT_i CT_i TAT_i WT_i

P1	0	9	26	26	17
P2	2	4	12	17	15
P3	4	2	27	25	16
P4	6	3	23	20	15

$$\text{AvgTAT} = 20.5 \quad \text{AvgWT} = 13.75$$

P1	P2	P3	P1	P4	P2	P3	P1	P4	P3	P1	P3
0	2	4	6	8	10	12	14	16	18	20	22



SRTF: no burst & each job has same priority as its arrival time.

Process AT_i BT_i TAT_i WT_i

P1	0	9	9	0
P2	1	4	0	P2 P4 P1 P3
P3	2	9	18	0 4 5 18 27
P4	3	5	4	

$$\text{AvgTAT} = 7.75 \quad \text{AvgWT} = 3.75$$

DD MM YY YY

Priority

Process	AT	BT	Priority	TAT	WT	CT
P ₁	0	9 ^o	3 ✓	14	14	22
P ₂	1	4 ³	2	11	10	16
P ₃	2	9 ^o	1	11	29	11
P ₄	3	10 ⁵	10	4.9	23	27

P ₁	P ₂	P ₃	P ₂	P ₁	P ₄	
0	1	2	11	3	14	22

21 15 85 22 27

Aug TAT

14.75

Aug WT = 13.2

b) Differences b/w Process & threads

Process	Threads
Heavy weight process	Light weight process
→ Multiprocessing needs PC to run.	→ Multithreading doesn't need PC to run.
→ Every process are independent	→ One thread can modify, even delete another thread.

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

→ Every process has its own memory space



Q13

1. ~~A) Cache~~ A) Fork.
2. a) When process is scheduled to run after some execution.
3. ~~B) Communication b/w 2 records of same process~~
4. B) Program Counter.
5. B) 5