2C 30343

Date __/__/__
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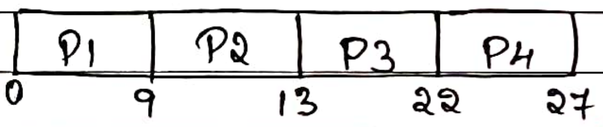
# Operating System

(4) FCFS

| Process | AT | BT | CT | TAT(CT-AT) | WT(TAT-BT |
|---|---|---|---|---|---|
| P1 | 0 | 9 | 9 | 9 | 0 |
| P2 | 1 | 4 | 13 | 12 | 8 |
| P3 | 2 | 9 | 22 | 20 | 11 |
| P4 | 3 | 5 | 27 | 24 | 19 |
| | | | | 16.25 | 9.5 |

Gantt Chart



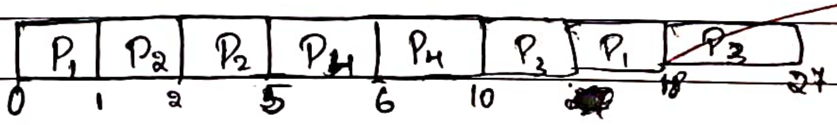
average waiting time = 9.5 ms

average Turn around time = 16.25 ms

SRTF

| Process | AT | BT | Priority | CT | TAT | WT |
|---|---|---|---|---|---|---|
| P1 | 0 | 9 | 3 | 18 | 18 | 9 |
| P2 | 1 | 4 | 2 | 5 | 4 | 0 |
| P3 | 2 | 9 | 1 | 27 | 25 | 16 |
| P4 | 3 | 5 | 4 | 10 | 7 | 2 |
| | | | | | 12.5 | 6.25 ms |

Gantt Chart



Average WT = 6.25 ms

Average TAT = 12.5 ms

Round Robin (q = 2ms)

| Process | AT | BT | Priority | CT | TAT | WT |
|---|---|---|---|---|---|---|
| P1 | 0 | $9_7$ | 3 | 25 | 25 | 16 |
| P2 | 1 | 4 | 2 | 12 | 11 | 9 |
| P3 | 2 | 9 | 1 | | 1 | |
| P4 | 3 | 5 | 4 | | | 8 |

ready Queue

| | | |
|---|---|---|
| ~~$P_1$~~ | $P_2$ | $P_3$ |

Gantt Chart

| | | |
|---|---|---|
| $P_1$ | $P_2$ | P |

0 2 4

Priority (preemptive)

| Process | AT | BT | Priority | CT | TAT | WT |
|---|---|---|---|---|---|---|
| P1 | 0 | 9 | 3 | | | |
| P2 | 1 | 4 | 2 | | | |
| P3 | 2 | 9 | 1 | | | |
| P4 | 3 | 5 | 4 | | | |

Gantt Chart

4(b)

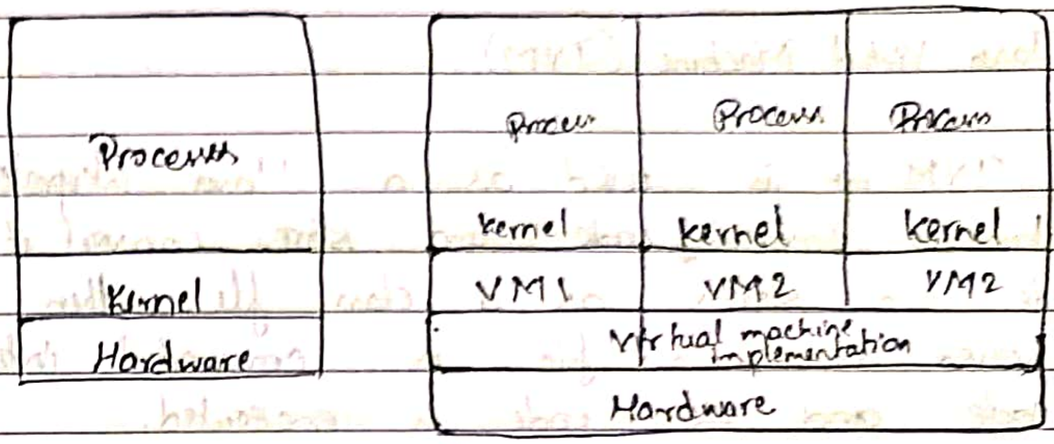
| | Process | Thread |
|---|---|---|
| (i) | Process is the execution of a program in a device | (i) Thread is a part ~~of~~ or a segment of the process. |
| (ii) | Process uses more resources | (ii) ~~Pr~~ Thread uses less resource as compared to Process |
| (iii) | Execution time of Process is more | (iii) Execution time of thread is less |
| (iv) | The abstract in any process will not affect the other process | (iv) The abstract in any thread will affect the other thread also |
| (v) | Process is a heavy weight | (v) ~~Pr~~ Thread is low weight. |

## Module - 1

2(a) Concept of virtual machines

Virtual machines are the like intermediator which helps to connect with different Operating systems. Virtual machines helps ~~us~~ to performs many table at a same time using many Operating system.

## Virtual machine diagram



without VM With VM

Benefits of VM.

(i) Virtual machines will help to connect with other and many Operating systems.

(ii) Virtual machines will help to do the multitasking ~~[illegible]~~ more easy using many Operating Systems

(iii) Virtual machines will allow the system to share the data among the different Operating systems.

(iv) Virtual machines will reduce the time consumption. and also resources. using less resources and time we can process

(v) Virtual machines are easy to implement. and use

~~(vi)~~

Example for the Virtual Machine is

Java Virtual Machine (JVM)

JVM ~~oo~~ is used as a Java interpreter. JVM will takes the Java ~~g~~ code and ~~store~~ convert it into byte Code and stores as a .class file. then, the byte code stored as .class file is converted into the binary code and the code is executed.

(2)

(b) System calls are the system ~~sto~~ instructions or interrupt given while execution, they are called to perform a particular task or function.

types of system call.

(i) Program Counter
(ii) file management
(iii) device management
(iv) information management
(v) Communication
(vi) Protection.

(i) Program Counter.

Program Counter perform many operations like create, exit, exec, wait(), etc

fork()/create() function is used to create a process and run.

the exec() function is used to execute the process and find if any error.

wait() wait() function is used to make the process to wait till the child process is completed.

exit() - exit() function will exit the process after the execution of parent process.

(ii) file management.

file management system call perform many functions like create(), write(), read(), get attributes, set attributes, delete, reposition.

we can create a file and we can make ~~as~~ it as read or write or both form. using create() , read() and write() functions

~~uses~~ the file attributes can be access and also be set according to user needs.

the file can be repositioned or can be changed its position using reposition () if need.

any file can be deleted.

these system calls are applicable for all directories and all ordinary files.

(iii) device management.

device management system call will look after the device and its maintaincer.
it ~~rats~~ provides the ~~vac~~ resources, ~~to the~~ to the devices and also ~~the~~ ~~fut~~ maintain the storage of the devices.

(iv) Information management.
by this system call we can get the date, time, day and also the Operating system and its type and the version of the operating system.

(v) Communication.

Communication is used to communicate with Operating system and the device.
there are two types.
(i) Shared memory
(ii) message passing.

Shared memory
- large amount of data is passed
- few system calls used
- less time needed
- there is free space to gather information.

- message passing
  - less data is stored
  - many system calls
  - more time

(v) Protection

The ? devices and the Operating system should be protected from the externals. so we use the protection system call to protect our OS.

Quiz

(1) (a) fork

(2) (a) when process is scheduled for run after some time

(3) (b) Communication b/w two program

(4) ~~(PC registers~~ (b) Program counter

(5) (d) 7