2CS03346

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Module 1

Q2 @ Virtual machine, the fundamental idea behind it is to abstract the hardware of a system (memory, hard disk, etc) into several different execution environments such that ~~each execution~~ it creates an illusion that each execution environment is running its own private computer.

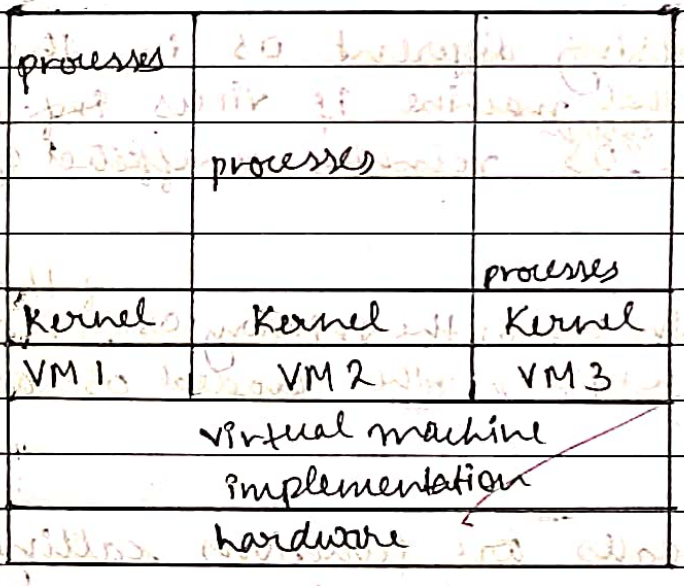

Diagram of a virtual Machine

Eg: JVM (java virtual machine) VMware.

- The benefit is that using only a single system hardware we can use several different operating system.

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- Program developers use virtual machine for checking the working of their program code in different execution environments (i.e. OS).
- Example of JVM (java virtual machine) are windows XP/2000/vista and linux.
- Example of VMware is solarius virtual machine, green ~~os~~systems.
- While using different OS in the same system by using virtual machine, if virus attacks one OS the other OS remains unaffected & will continue to work.
- The main OS or the primary OS of the system is called as the Host OS whereas, other loaded OS are called as guest OS.

2 (b) System calls are functions calling operations/process to be executed by the OS.

The different types of system calls are:-

1. Process control
2. File management
3. Device management
4. Information maintenance
5. Communications
6. Protection.

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(i) Process control :-

- Process control system calls include abort, end, start / terminate process, get / set process attributes, create process etc.
- First the process is launched, paused, resumed & then stopped eventually.

(ii) File management :-

- File management system calls include create file, delete file, open / close, get / set file attributes, read, write, reposition, append etc.
- File is first created, then opened & later data is read or written from the file.

(iii) Device management :-

- Device management system calls include attach / detach devices, add, remove device, get / set device attributes etc.
- This system call is mainly used for handling the devices in the OS either pairing / removing device or setting their operations

(iv) ~~Information maintenance~~ Information maintenance :- ~~Communication~~ :-

- System calls include create process, get / set process, share process, get / set attributes, info sharing etc.
- This system call uses message passing & ~~resource sharing~~ data transfer.
- message passing is best for low data resources & it is simple & efficient.

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whereas data transfer is recommended for large amounts of data but it is a little complex compared to message control * The system call gives info to the user like OS version, date, time etc.

(v). Communication:-

- This system call is mainly used for sharing resources & communication in OS like it gives the user info like OS version, date, time etc.
- OS ~~will communicate~~ gives us communicating features like maybe file sharing, sharing of resources & resp

(vi) Protection:-

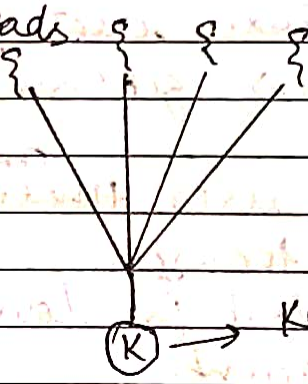
OS provides system calls for protecting the system from virus attack & will notify the user in case of any danger.

Module 2

3 (b) The different multithreading models are:-

(1) Many to one model:-

⇒ Here many user threads are mapped to a single Kernel threads.



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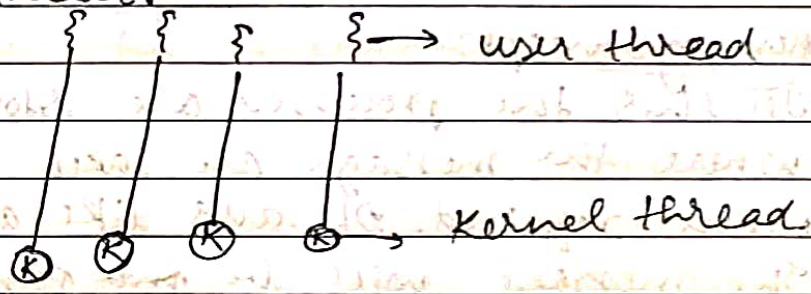
⇒ Thread management is done by the thread library therefore it is efficient.

- Multiple threads cannot be executed simultaneously it will works one after another.

Eg: solarius system, green threads.

(ii) One to one model:-

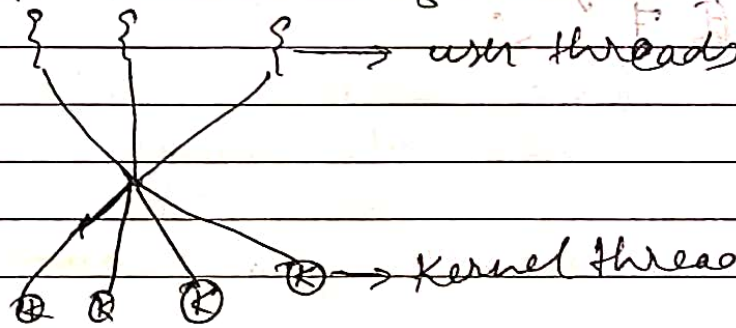
In this model one user thread is connected to one kernel thread.



- Multiple threads can be executed simultaneously in this model.
- Eg: windows XP / 2000, Linux.

(iii) Many to many model:-

Here in this model many different Kernel threads are connected to lesser no. of user threads.



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3@ Inter process communication is different processes communicating with each other in order to share resources.

Message passing:-
It is the process of sending message from one process to a different process. the messages are taken from the memory concept & will be passed while taking from the memory.

Memory concept:-
In this the processes are stored in memory where the message are taken & passed as when required. It acts like a data base.
The message will be ~~mis~~ passed taken from the memory & the resources shared will be stored.

QUIZ:-

1.] @ fork
2.] (a) when process is scheduled to run after some execution
3.] (b) communication b/w two process
4.] (b) Program counter
5.] (d) 7