2C30335

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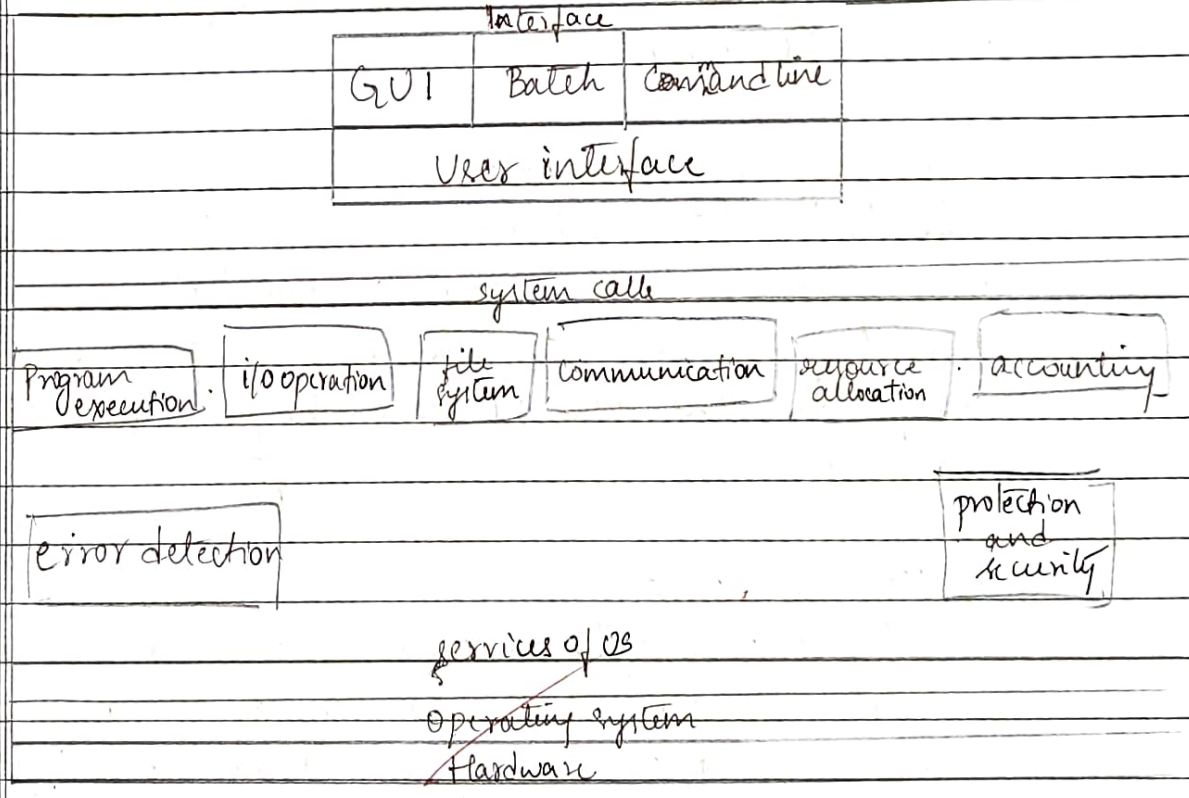
Test - 1

Module - 1

1. a] Operating system is a system software which acts as an interface between the user and hardware of a computer.

Services of operating system -




i] User Interface -

1) User interface includes Graphical user Interface [GUI]
2) command line Interface [CLI]
3) Batch - interface

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ii] Program execution -
The OS will make sure that the program is copied to the RAM which is main memory, then run the program and terminate the program.

iii] I/O Operation -
OS will give service to the enter the data to and from i/o devices such as printer, keyboard, etc. It will help to give the information to the Processor.

iv] File system manipulation -
OS helps to read or write the file by providing the service such as open & close the file, create or delete, list the contents of the file and also helps to the save it and helps in giving the access permission to access the file.

v] Communication -
It is the Inter Process Communication which happens either between same processor of the process or different processor of the process or different bw system. It can be implemented using message passing and shared memory.

vi] Resource allocation -
The resources of the computer or the system such as memory, CPU, disk drive should be allocated to multiple user or multiple job at the same time. while the processing

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is happening.

vii] Accounting -
OS will account the systems activity for further optimal increase in performance. Or it can be used in billing also for future requirement.

viii] Error detection -
Both in hardware and software the errors must be looked after and detected. Error may occur in i/o devices (like if there is lack of papers in printer), memory errors (error in memory space or location), etc.

ix] Security and Protection -
The user file may be used in network layer system which must be protected among the users. At that time protection is provided by the OS for the accuring of illegal sites by illegal user. It also provides service security by setting the password for application or so

∴ These are the services provided by OS.

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b)

| Multiprocessor system | Clustered system |
|---|---|
| i) It is two or more CPU which are in close communication which are not joined. | i) It is two or more individual system which are in communication which are joined |
| ii) Memory is shared using the bus between the peripheral devices, CPU, etc. | ii) Memory is shared by LAN [Local Area Network] btw the peripheral devices, CPU, etc. |
| iii) It has low-availability | iii) It has high-availability |
| iv) Cost is less. | iv) It is cost-effective. |
| v) It uses low quality storage | v) It uses Storage Area Network [SAN] to store. |

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| Multiprogramming | Multitasking |
| --- | --- |
| i) The process here does the execution using single processor | i) The tasks are executed using multiple CPU |
| ii) Output will be given in more time | ii) Output will be given in less time |
| iii) It does the process one after the other | iii) It does the multiple task simultaneously |
| iv) It is slower compared to multitasking | iv) It is faster |
| v) Parent defects will affect the child character | v) Parent defect doesn't affect the child trait. |

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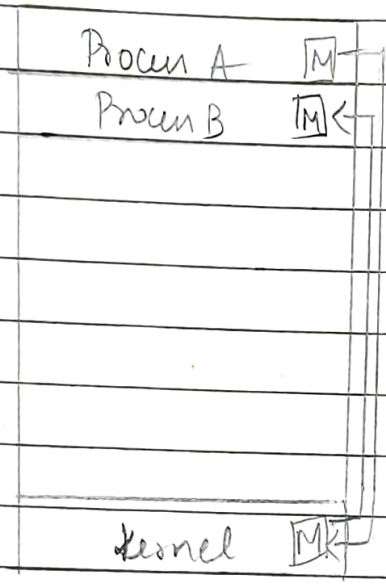
## Module - 2

3a) Inter-process communication is the communication which is happening inside the CPU or the processor for transferring the data among them.

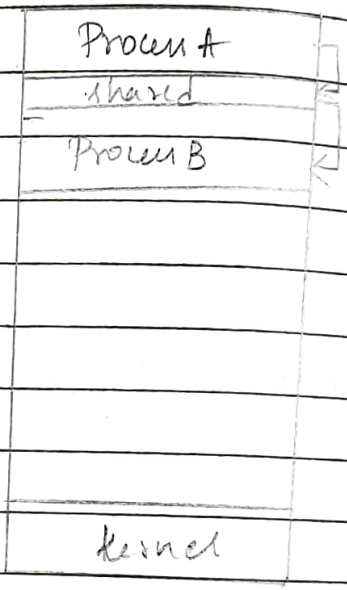
### Message passing




i) In Message passing the message is passed from process A to Kernel then Kernel to process B and again process B to kernel

ii) This is used when small amount of data needs to be transferred

### Shared memory




i) In shared memory the memory is shared from process A to shared block then from shared to process B then to kernel

ii) This is used when large amount of data needs to be transfered

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Message passing -
System call is used to read or write the contents
It is slower in transferring the message.
communication is difficult as it should travel
from Process to Kernel.
Shared memory -
~~Shared memory~~ System call is used only ~~when~~ in
creation of memory.
It is very fast as there is shared block ~~be~~
next to it. Communication is easy
Ex - Producer to consumer

~~For implementation of~~
Message passing we have methods such as -
i) Direct and indirect communication
ii) Synchronization and ~~Asynchronisation~~

3 b) Multithreading models -
This model consists of
i) the user level, user thread as that of
ii) the kernel level, kernel thread

User thread -
It does not have operating system support
~~without kernel, it~~ to be kernel.
Kernel thread -
It has operating system support where OS
helps kernel to process the different process
simultaneously.

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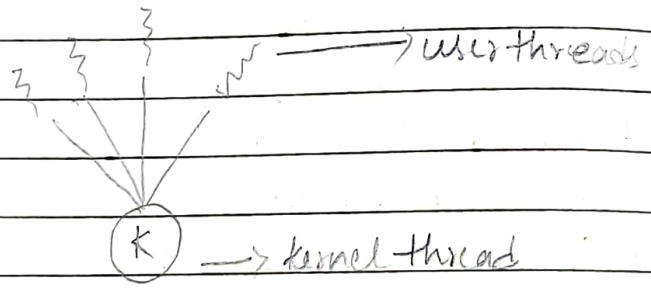
By connecting user thread and kernel thread Multithreading models are created.

Types of multi-threading models are -

a) One to many
b) One to One
c) Many to Many

a) One to many




- One to many has one kernel thread and many user threads. ~~Thread mgm~~
- Thread management is done using thread library in user space

Advantages -

i) Thread management is done

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Disadvantages -

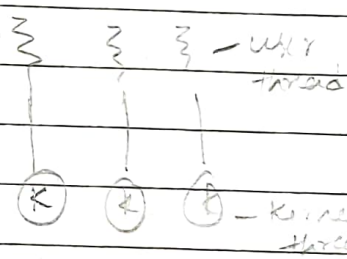
i] Communication doesn't happen in parallel

ii] If one user is blocked the whole system gets deleted. known as blocking - system.

Ex - Gread thread, GNU portal

iii] One to one

In One to one, one kernel thread is connected to one user thread



Advantages -

- It overcomes the barrier of of the one to many.
- If the user thread is blocked whole system not gets deleted.

Disadvantage

- ~~As only one user thre~~
- Has limited thread

Example - Windows, LINUX

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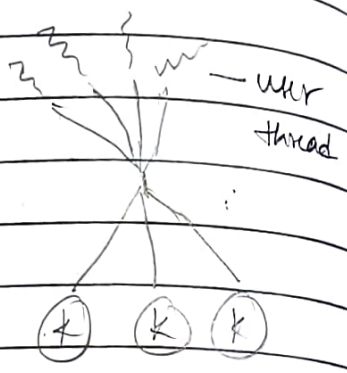
c) Many to many

Many to many consists of many kernel and many user threads.

But the kernel thread is equal to or less than User thread

No blocking system is the advantage.

It is also known as two-tier model.




EX - IRIX, UNIX, HP

Quiz

1. (b) ✗
2. (a)
3. (b)
4. (a) ✗
5. (b)