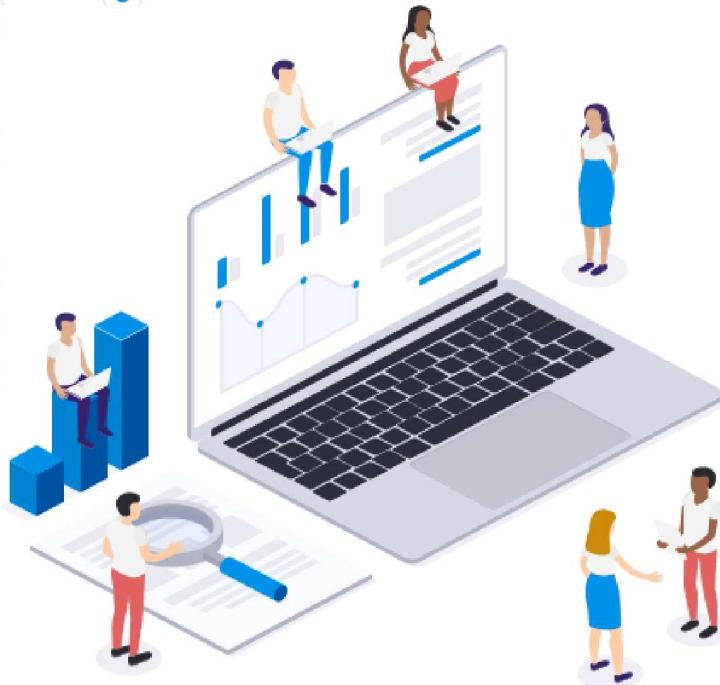


Operating System: Introduction



By: Vishvadeep Gothi

Contact For Queries:
8209820403

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AIR 19

in GATE 2010



**ME from IISc Bangalore
MTech BITS Pilani (Data Sc.)**



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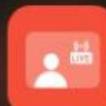
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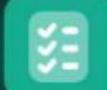
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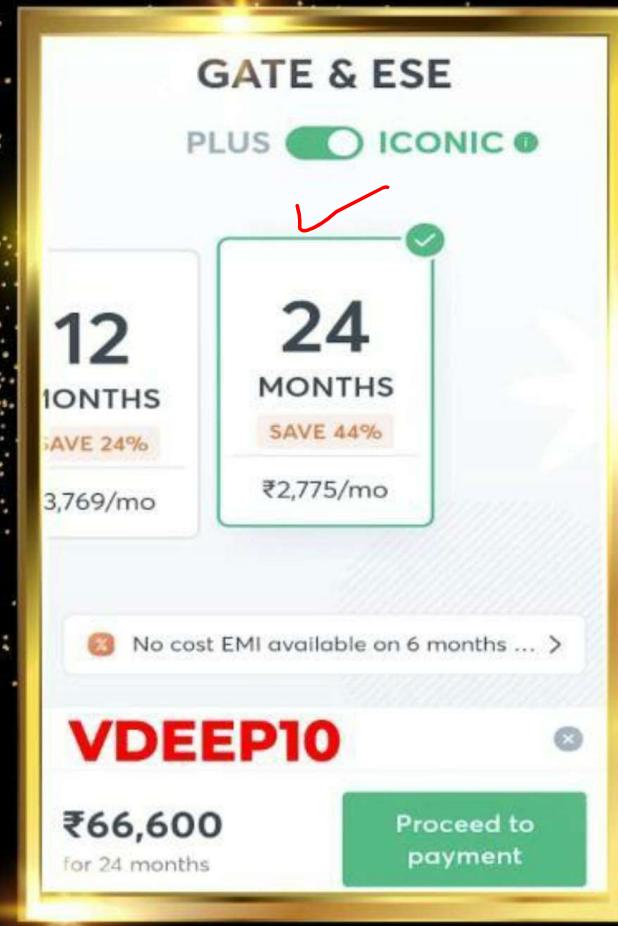
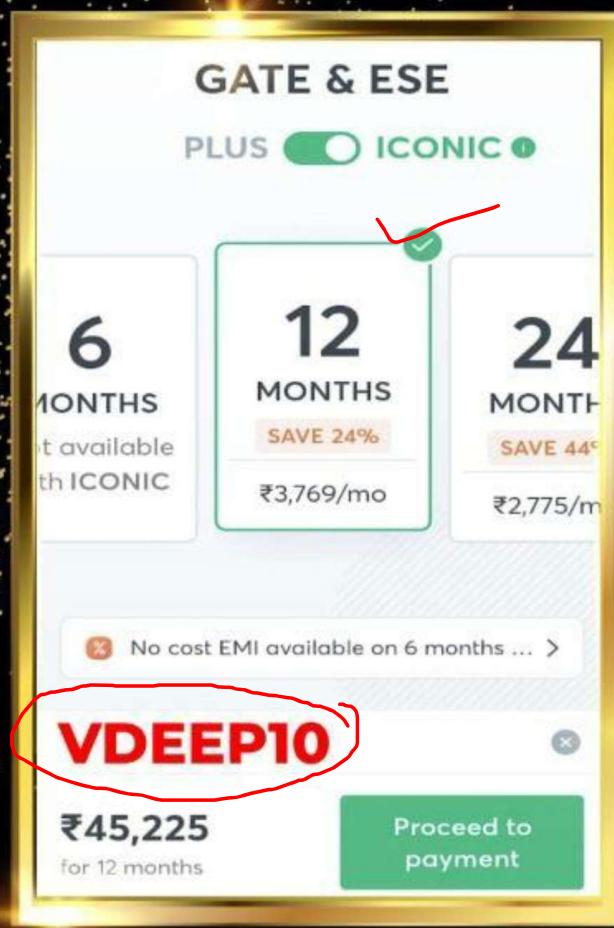
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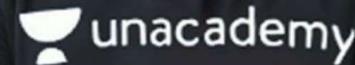
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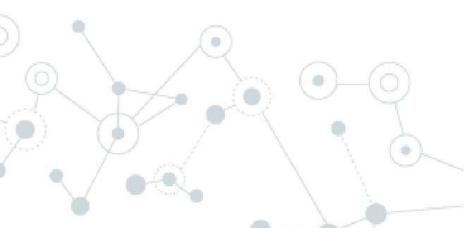
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Operating System



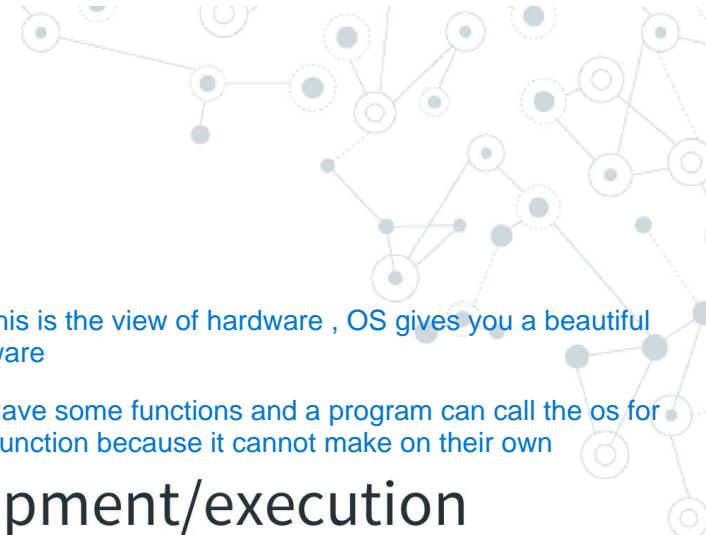
Operating System

- Software abstracting hardware
- Interface between user and hardware
- Set of utilities to simplify application development/execution
- Control program
- Acts like a government

like Drive C , Drive B this is the view of hardware , OS gives you a beautiful view of your ugly hardware

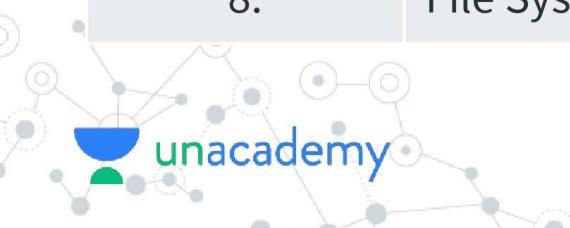
APIs which have some functions and a program can call the os for using those function because it cannot make on their own

CPU is like a husband it takes instructions and execute but how its works OS tells about that



Course Structure

Seq. Number	Chapter Name
1.	Introduction ✓
2.	Process Management ✓
3.	CPU Scheduling ✓
4.	Threads & Multithreading ✓
5.	Process Synchronization & Deadlock ✓
6.	Memory Management ✓
7.	Virtual Memory ✓
8.	File System ✓



Services of Operating Systems

- User Interface
- Program Execution ✖ this is the most essential functionality for an OS
- I/O Operation
- File-System Manipulation ✓ copy ,cut ,paste etc.
- Communication (Inter-process Communication)
- Error Detection ✓
- Resource Allocation ✓ a process should be in a RAM for execution .
- Accounting ✓ manages memory and other thing like data for better updates in future
- Protection & Security ✓



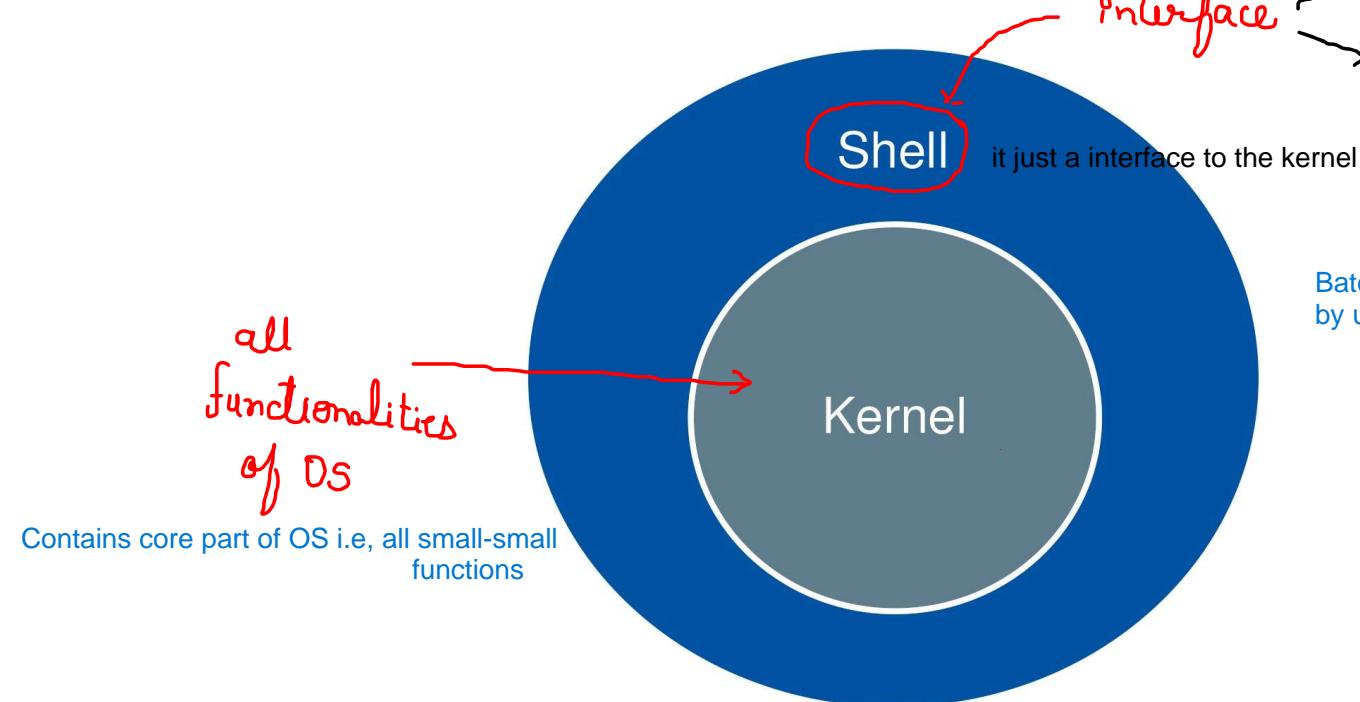
Goals of Operating Systems



- Convenience (User-friendly) ✓
- Efficiency ✓ Utilize each and every resource in best possible way
- Portability ✓ an OS which works on each and every hardware , like in APPLE very less portability only on their devices
- Reliability ✓
- Scalability ✓ we can add features through updates without uninstalling the previous one
- Robustness ✓ ERROR handling should be there in the OS



Parts of Operating Systems



C.L.I. (Command Line Interpreter)
have to write command for using OS

GUI (Graphical user Interface)
by using graphics at ease like in smartphones

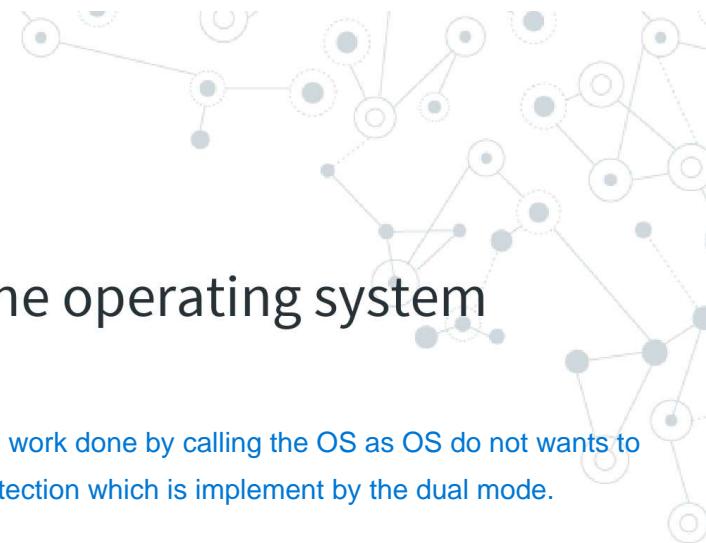
Batch interpreter
by using multiple commands at at time



System Call

A system call is a way for programs to interact with the operating system

A process acts like a small 4-5 years kid which do not have privilege for doing work but can get those work done by calling the OS as OS do not want to see that a process doing a work out of its capability. So OS acts like a parent & that is called the protection which is implemented by the dual mode.

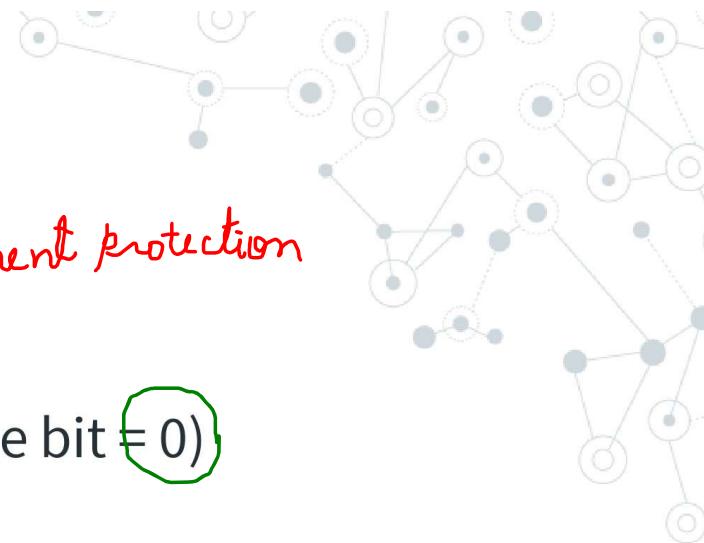


Dual Mode of Operation

↳ used to implement protection

2 modes:

- ✓ User Mode (mode bit = 1)
- ✓ Kernel/System/Supervisor/Privileged Mode (mode bit = 0)



Dual Mode of Operation

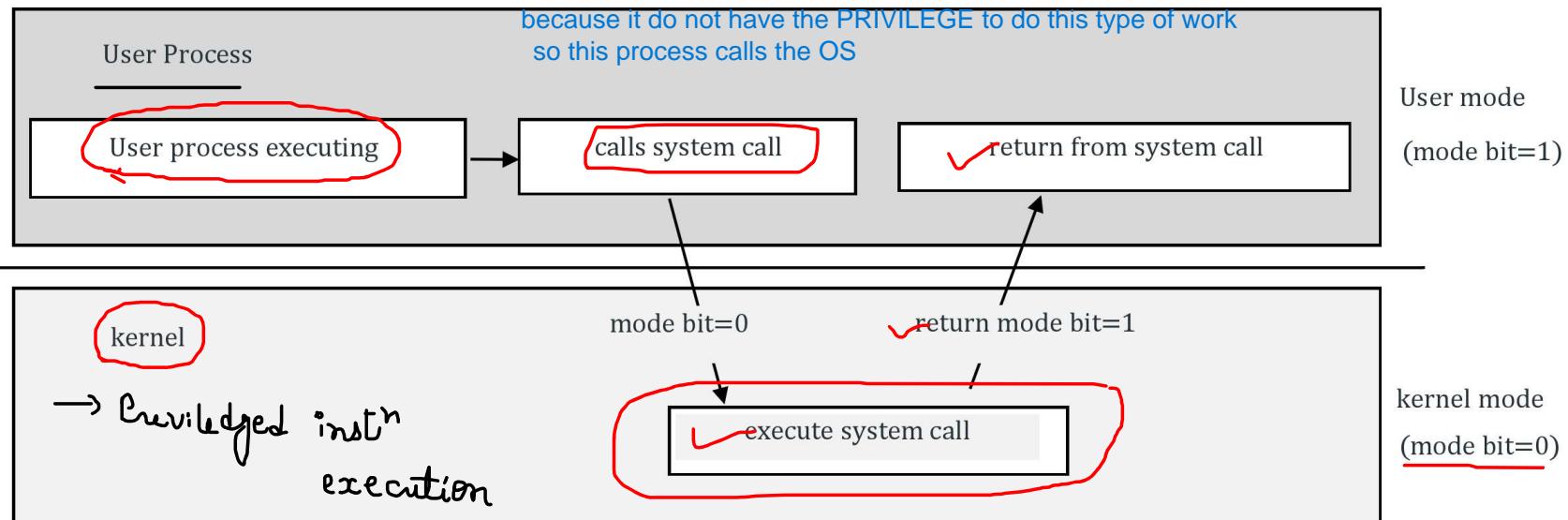
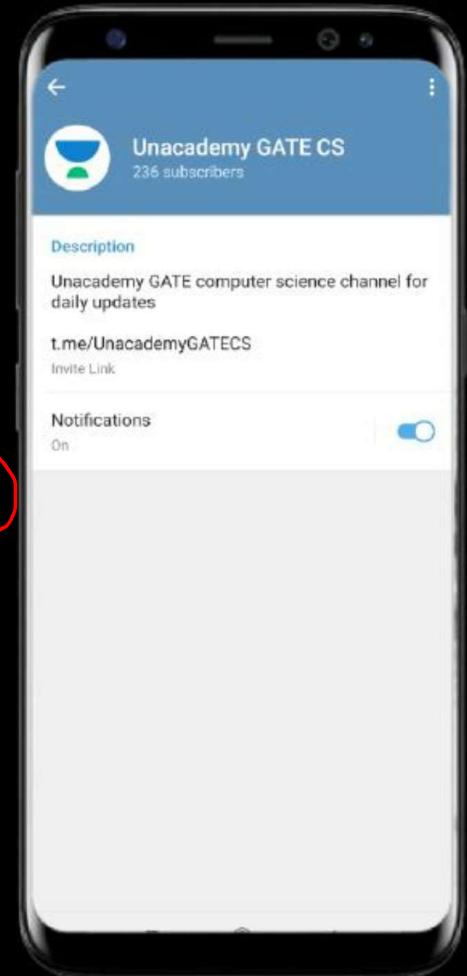


Fig. Transition from user to kernel mode.





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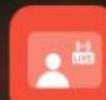
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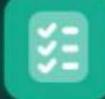
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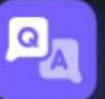
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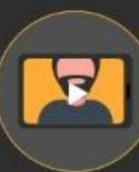
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