Assignment -3

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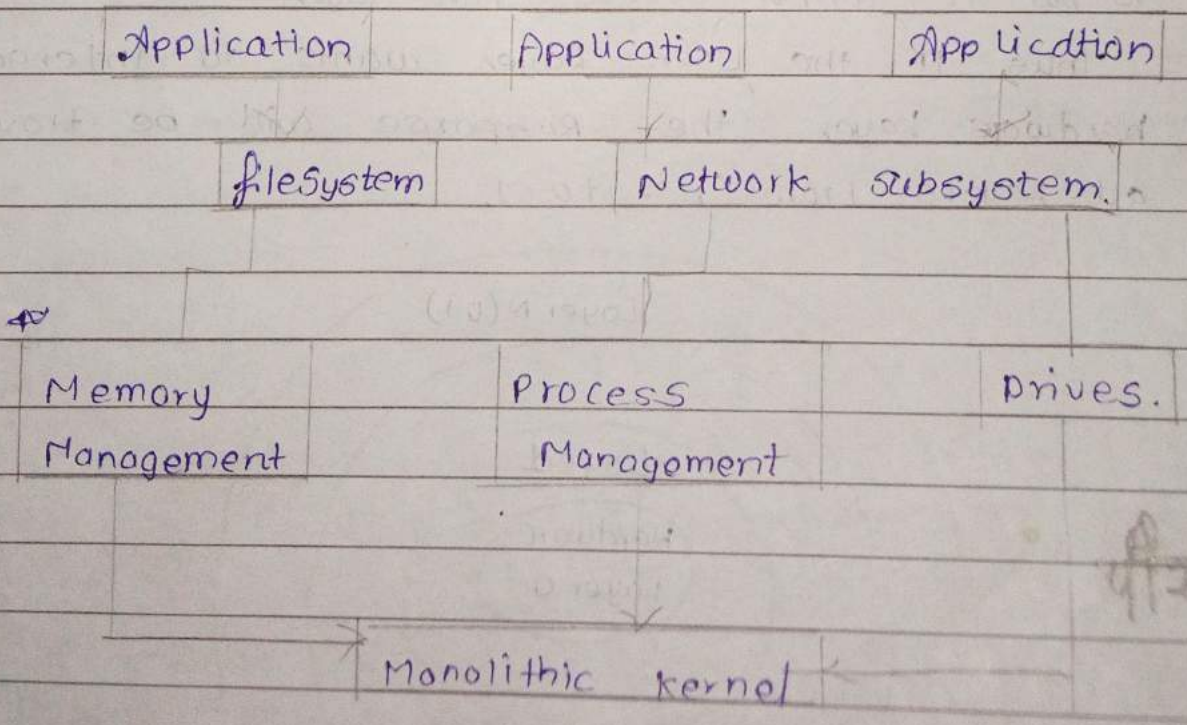
* structure of Operating System :-

1) Monolithic structure :-

- This OS controls all aspects of operating system operation, including file management, memory management device management and operational operations.
- The kernel can access all the Resource present in the system. In monolithic system, each component of Operating system is contained with in the kernel.
- Monolithic OS is also known as the monolithic kernel.
- This is an old operating system used to perform small task like processing and time sharing task in banks.
- The monolithic kernel acts as virtual machine that control all hardware part.



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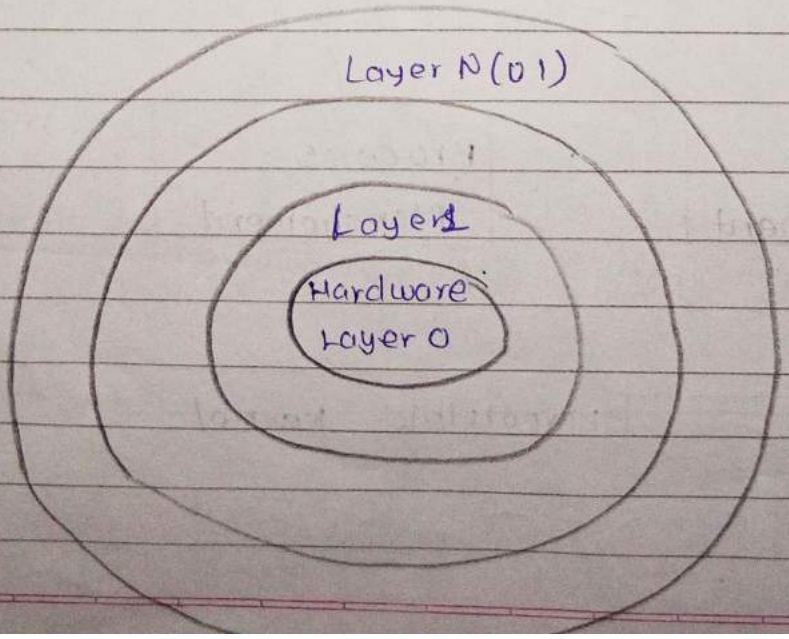
2) Structured Layered :-

- Layed structure is type of system structure in which the different services of operating system are split into various layers, where each layer has specific well-defined task to perform
- It was created to impro the pre-existing structures like monolithic structure (UNIX) & simple structure (MS-DOS)

- Each layer must have a specific function to perform.
1) The outermost layer must be the User Interface layer
2) The innermost layer must be the Hardware layer.
3) Particular layer can access the layers present below it but it cannot access the layers present above it That is layer n-1 can access all layers from n-2 to but it cannot access nth layer

Thus if the User layer wants to interact with hardware layer the Response will be travel through all layers from n-1 to 1.



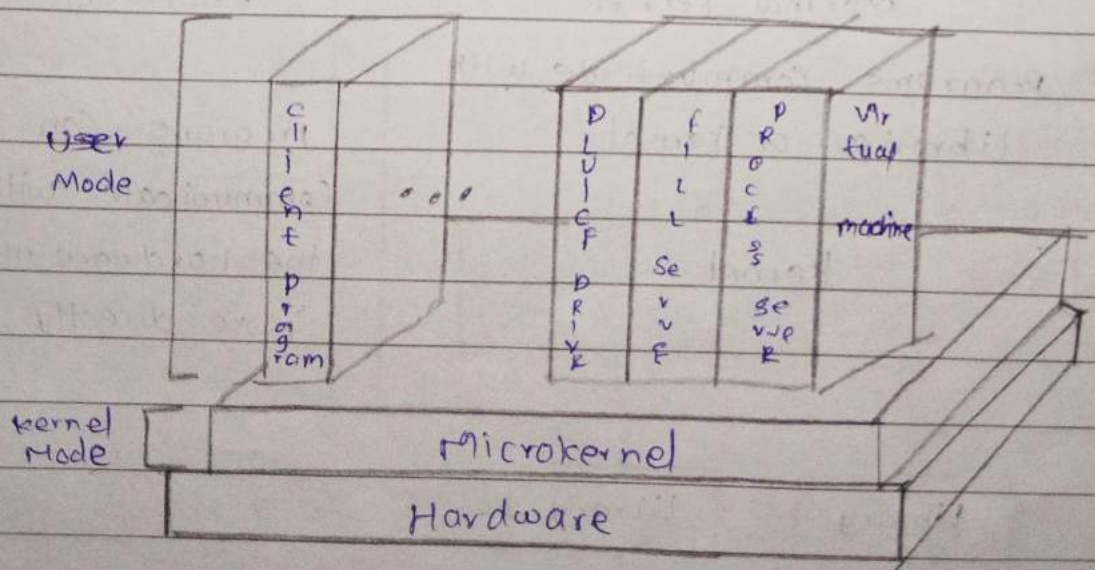
- Micro - kernel structure :-

- The OS created using a microkernel framework that strips the kernel of any unnecessary parts. Systems and user applications are used to implement these optional kernel components. So micro kernels is the name given to these systems that have been developed.

- This structure designs the operating - System by removing all non - essential components from the kernel and implementing them as system and user programs. This results in smaller kernel called the micro kel. Advantages of this structure are that all new services need to be added to user space and does not require the kernel to be modified. Thus it is more secure & Reliable as if a service fails, the rest of OS remains untouched.

Advantages :-

- It makes OS portable to various platforms.
- As microkernels are small so these can be tested effectively.

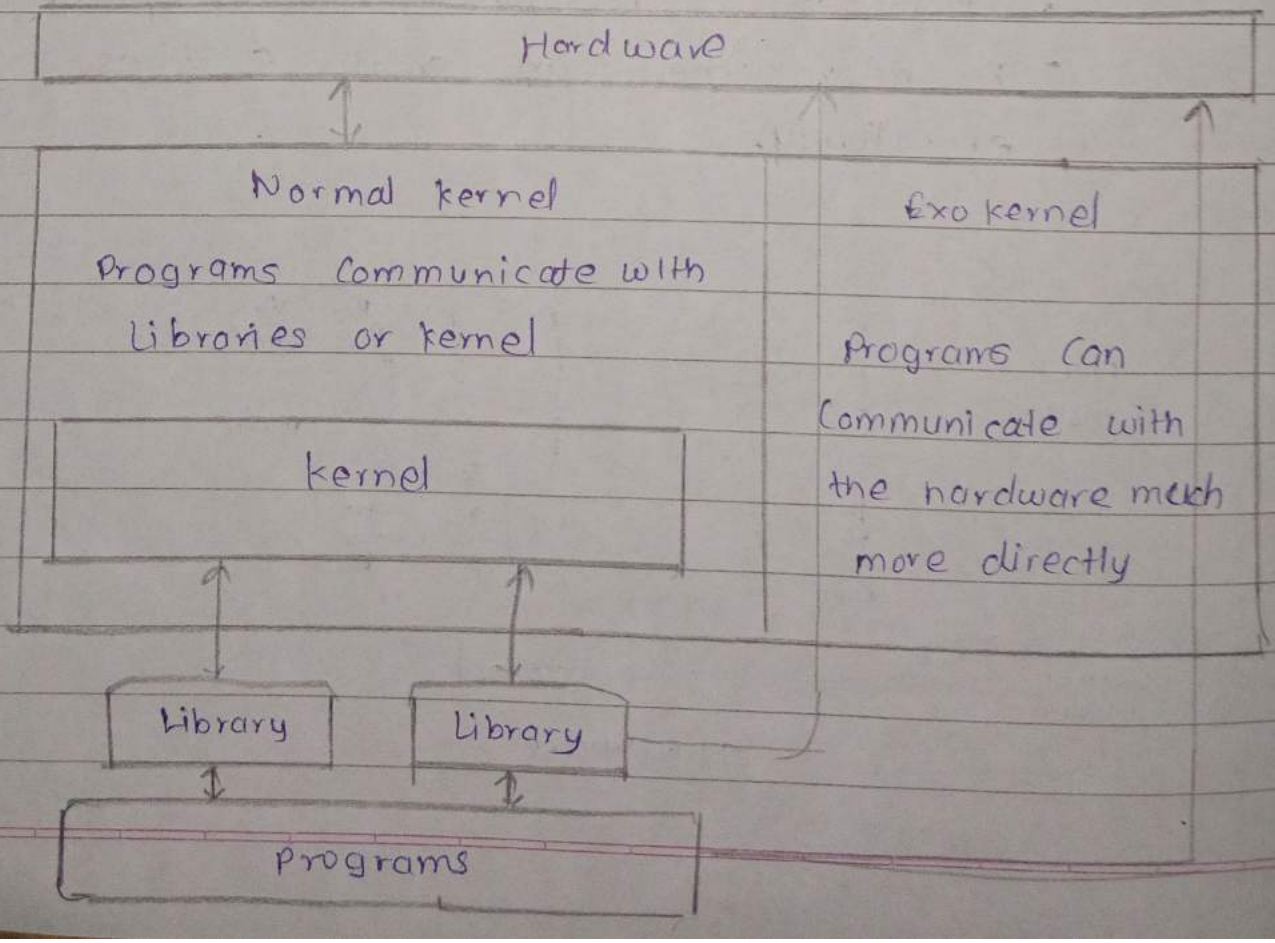


4) Exo kernel Structure

- Exo kernel is an Operating System developed at MIT to provide application level management of hardware resources. By separating Resource management from protection, the exokernel architecture aims to enable application specific customization. Due to its limited operability, exokernel size typically tends to be minimal.

- The OS will always have an impact on the functionality, performance, and scope of apps that are developed on it because it sits in between the software and the hardware.

The exokernel OS makes an attempt to Address this problem by Rejecting the notion that an Operating System must provide abstractions upon which to base applications. The objective is to limit developers use of abstractions as little as possible while still giving them freedom



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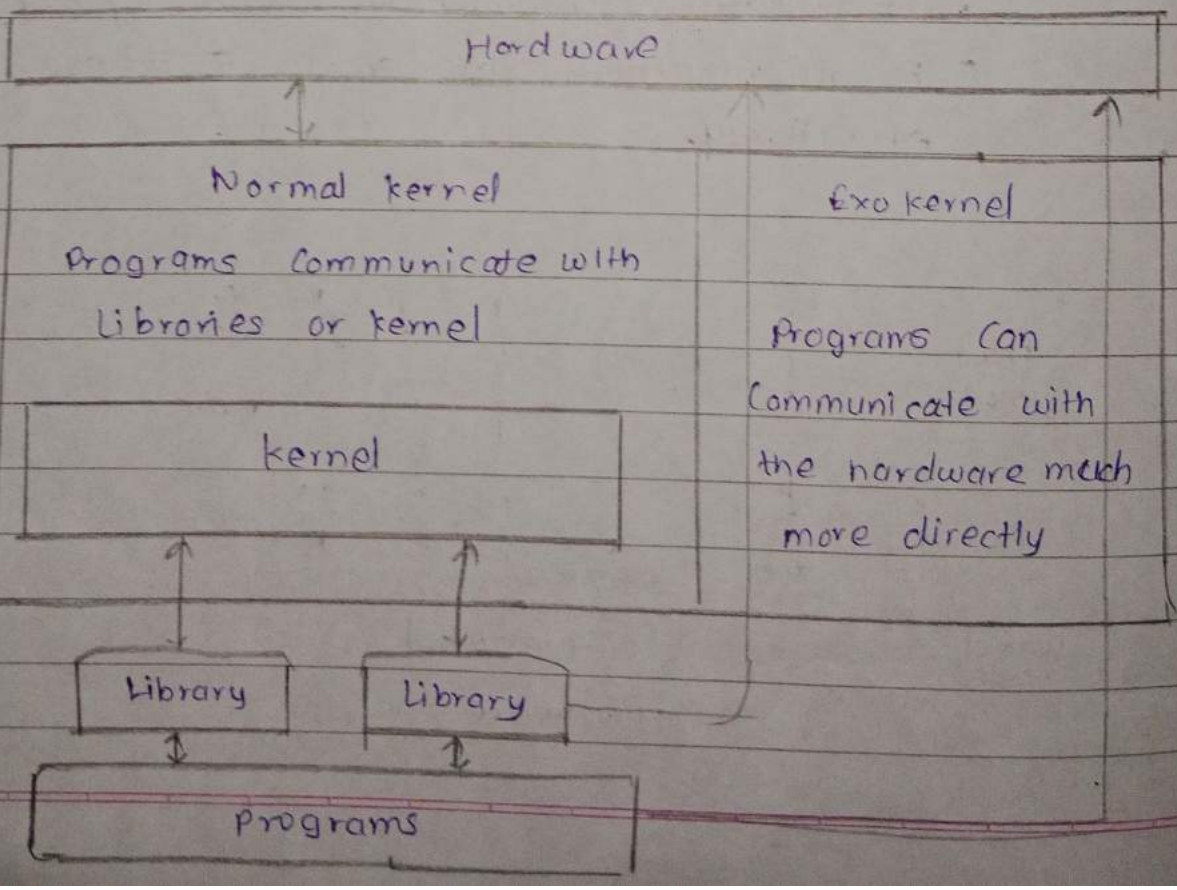

5) Hybrid kernel Structure :-

- Hybrid - kernel Structure is nothing but, just a combination of both monolithic - kernel Structure and micro kernel Structure.

Basically, it combines properties of both monolithic and micro - kernels and make a more advanced & helpful approach.

It Implement Speed and design of monolithic and modularity and stability of micro kernel Structure.

- Advantages:-
  - It offers good performance as it Implements the advantages of both Structure in it.
  - It supports a wide range of hardware & Applications.
  - It Provides better Isolation & Security by Implementing microkel approach.

- Dis Advantages :-
  - It Increases overall complexity of System by Implementing both Structure (monolithic & micro) and making the System difficult to Understand.
  - The layer of Communication between micro-kerne and other component increases time complexity an decreases performance compared to monolithic kernel