2. System Structure

- User O.S Interface.
- System calls.
- System program
- O.S structure.

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* User O.S interface -
there are two fundamental approaches for user to interact O.S.

① command line interface.
② Graphical user interface.

1) command line interface ⇒
i) In command line interface user can interact with computer system by taping the commands to perform the specific task.
ii) The main funct of C.L.I is to execute the next user specified command.
iii) the example C.L.I is Dos.

2) Graphical User Interface ⇒
i) In GUI the User interacts with O.S by using mouse, keyboard to access windows icons, menues

ii) An e.g of GUI is windows 7, windows vhista & latest version of windows.

* System calls -
Define the term system call & explain various type of system call.

⇒ Defⁿ :-
"System calls provides the interface betⁿ running programmes & O.S."

ii) this calls generally available in assembly lang. instructions.

● Types of system calls :-

① Process or job Control
② file mgmt
③ Device mgmt
④ Information maintainance
⑤ Communication.

① Process or job control -
i) this type of system calls are used to control the processes.

ii) system calls related process or job control are given as below :-

i) create Process & terminate Process.
ii) end or abort.
iii) load, exicute Process.

iv) allocate & deallocate memory to Process

② file mgmt →

i) this type of System calls are used to manage the falls related to files.

ii) System calls related to file mgmt are given below.

1) Create file, delete file.
2) open, close file.
3) read file, write file.
4) reposition the file, renaming file.
5) getfile attributes the file & setfile attributes.

In unix open(), Read(), write().

③ Device mgmt :-

① this type of System calls are used to manage the calls related to device.

ii) System calls related to device mgmt are given below:-

① request for device, released device.
② logically attached device & detached devices.
③ set console mode.
④ read & write console mode.
⑤ set device attributes & get device attributes.

4) Information maintanance :-

i) this type of system calls are used to set the system data & get process information.

ii) System calls related to information maintainance are given below:

① get system data & set system data.
② get system date & time & set system date & time.
③ get current Process id & get Process, file or device attribute.
④ set, Process, file or device attributes

iii) many system calls are for the Purpose of transferring info. betn user & O.S.

⑤ Communication :-

this type of system calls are used to establish connectn betn user & O.S.
there are two ways of comm
① Shared memory method.
② message passing method.

① message Passing method :-

i) In message passing method the Communicating process exchange msg with one another to tranfer the inform.
ii) this method is uses the common mainbox to pass msgs betn processes.

2) Shared memory method -
In shared memory system two or more processes can shared the common memory to create & gain access to the regions of memory own by another process.

iii) System calls related to communication are given as below.

① create and delete comm.
② send msg and receive msg

* System Program ⇒

Q Define the term system Program? explain various system Program.

⇒ Defn :-
"system Program Provides Convinient or efficient environment for development & eaicution of the Program."
i.e is they are bundles of useful system calls.
the system programs can be classified into following groups -
1) file mgmt
2) status informatn
3) file modificatn
4) Programming lang. support.
5) Program loading & exicution.

1) file mgmt -
System Program for files mgmt gives facilities for file creatn, deletn, renaming, copying, Printing & all other related file operation.

2) Status information -
this system Program Provides inform. status of system such as date & time of system, ammount of available memory, no. of users all similiar status informatn.

3) file modification ⇒
this system Program is used to modify the contents of the file stored on the disk. several text editor may be available to create & modify the file

4) Programming lang. Support ⇒
compilior, assembler, interpreter for the common Programming lang. like pascal, c, c++, java & so on. are provided with the help of O.S.

(5) Program loading & exicution ⇒
One's the Program is assembled or compiled it must be loaded into the memory & then exicuted for that O.S may provide loader, linker, debuger, in order to achieve the Program exicution.

Q. Write a short note on Operating System Structure.

Ans i) MS.DOS Structure.
ii) Unix Operating structure
iii) Layered approach.
iv) Microkernel O.S.

i) MS.DOS structure ⇒

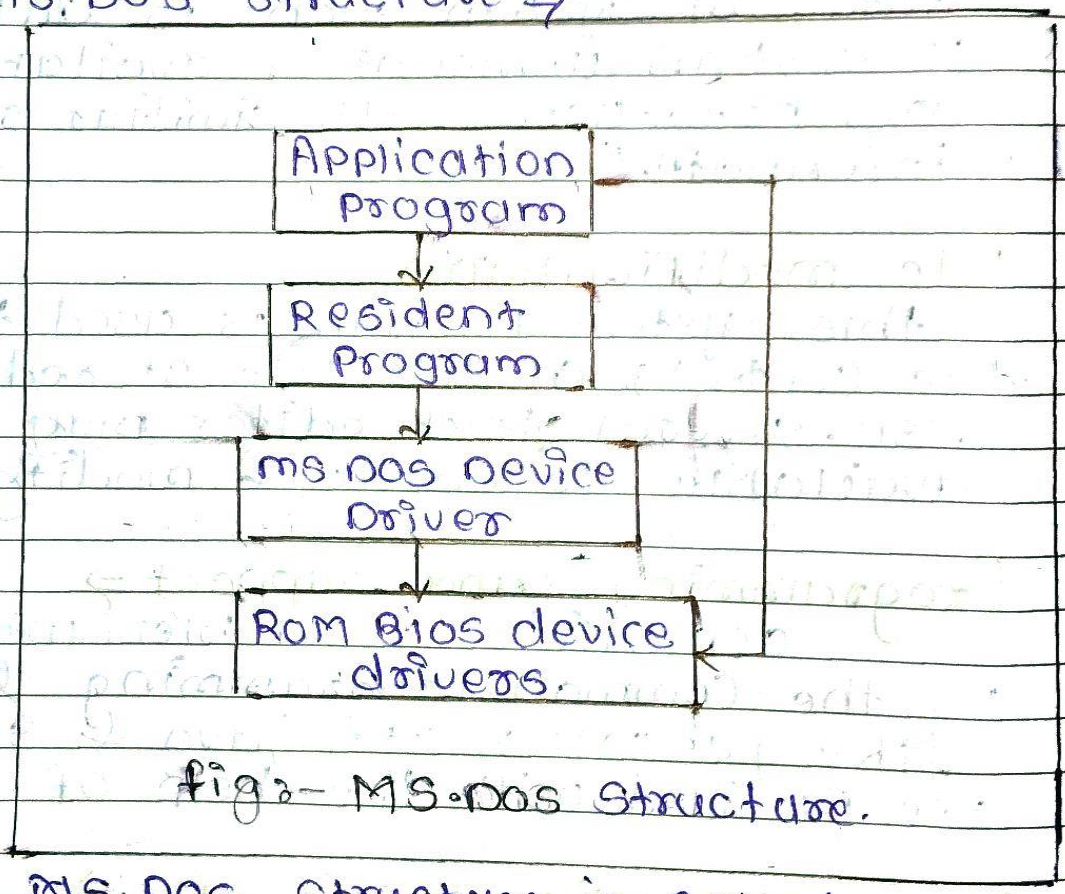


fig:- MS.DOS Structure.

1) MS.DOS Structure is called as simple structure it was originally designe implemented by few peoples who had no idea that it would become so popular.

2) it was written to provides maximum functionality in the ~~minimum~~ least space. So, it was not divided into module eacefully.

3) In ms dos structure interfaces & level of functionality are not well separated.

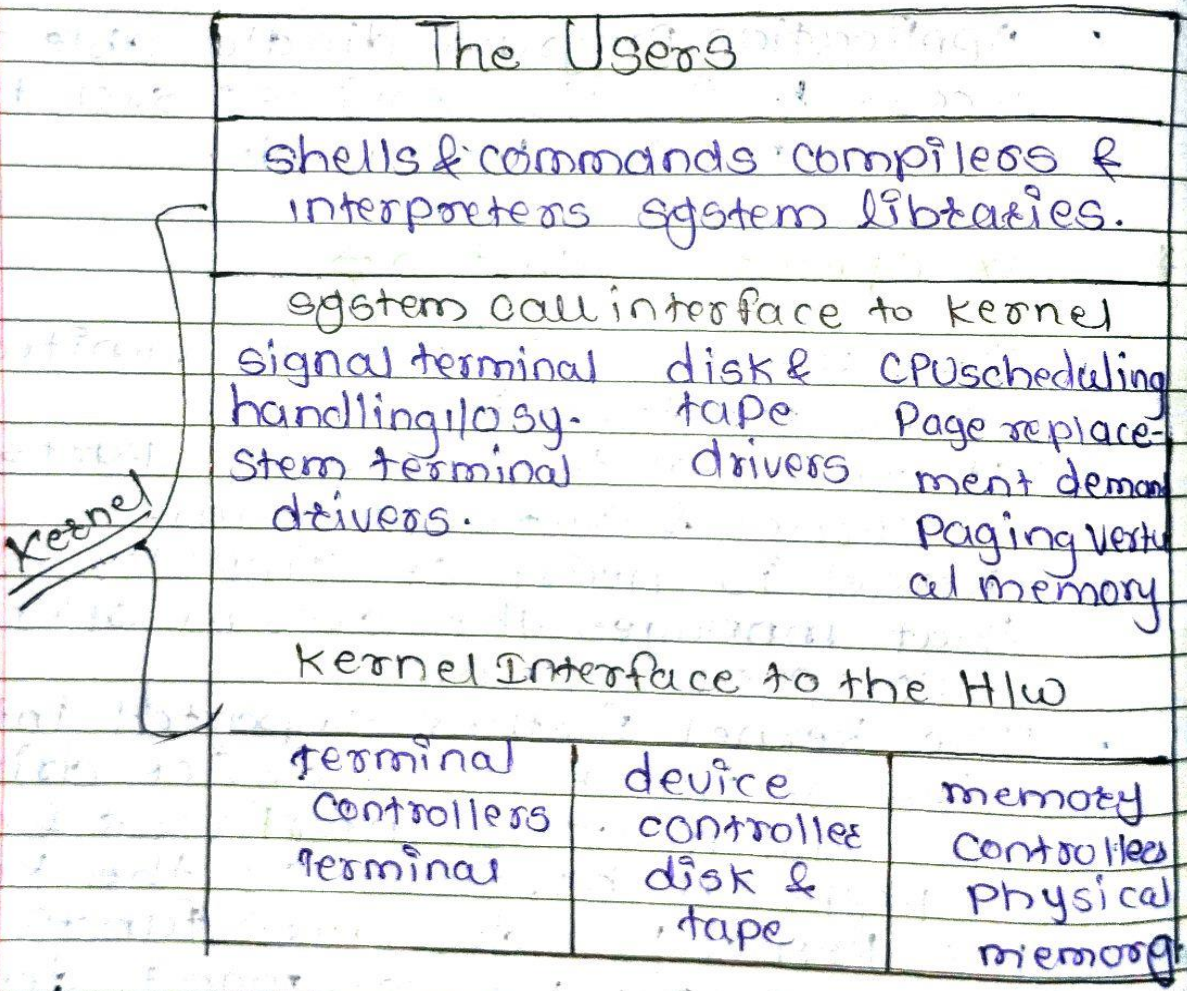
4) Application Program direatly able to access basic i/o services such freedom leaves ms dos vulurnable.

* Unix Operating System ⇒

i) Like ms dos unix was intially limited by hardware functionality.
ii) It consist of two separate parts i.e is kernel & system Program.
iii) kernel is heart of Computer system that manages the overall operation of Computer system.
iv) The kernel further separted into series of interfaces & device drivers.
v) The system calls interfaces & above the physical hardware is the kernel.
vi) The kernel provides diff funct like Process mgmt, memory mgmt, device mgmt, CPU scheduling & other stystem funct with the help of system calls.
vii) System Program Provides efficient & convient environment for program development & exicution. there various

types of system program given below.

1) file mgmt
2) status info.
3) file modificatn.
4) Programming lang. support.
5) Program loadding & exicution.



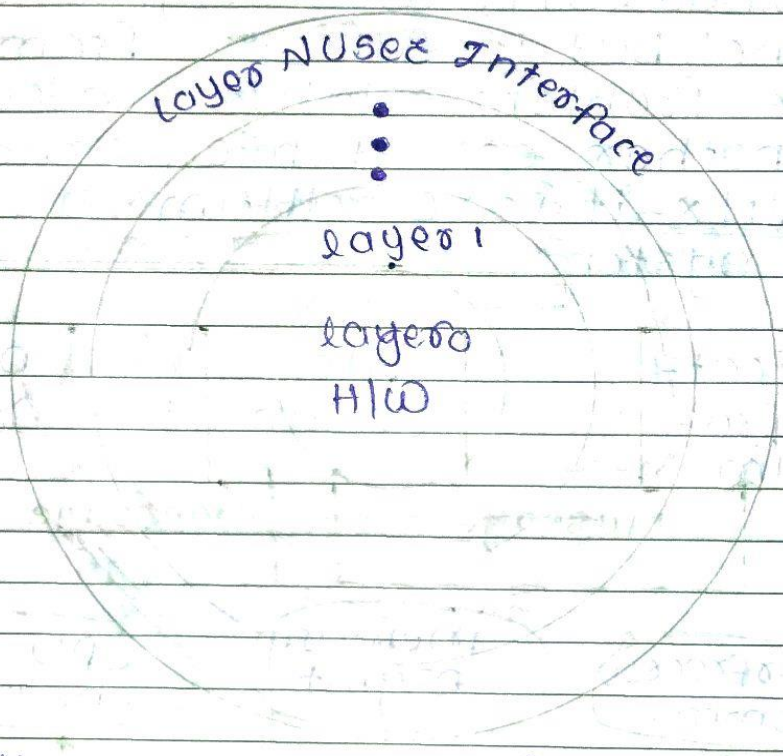
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III] Layered Approach ⇒

1) In this type of approach operating system is broken down into the no. of smaller layer. each of two which depend

MAC :- Media access control system.

Diagram ⇒ Layered Operating System.



on the layer below it.

ii) This approach allows each layered to be developed & debugged independently.

iii) Layered approach can also be less efficient as request for service from higher level to lower level before it reaches to h/w..

IV] Microkernel O.S ⇒

The basic ided behind microkernel is to removed non-essential services from kernel & implement them as system application. by making the kernel as small & efficient as possible.

MAc (media access control) O.S is 1st & most widely known microkernel O.S.

ii) Windows NT was originally micro-kernel but it suffered from performance problem relative windows 95 O.S.

iii) another e.g of microkernel is QNX - it is a realtime O.S for embedded system.

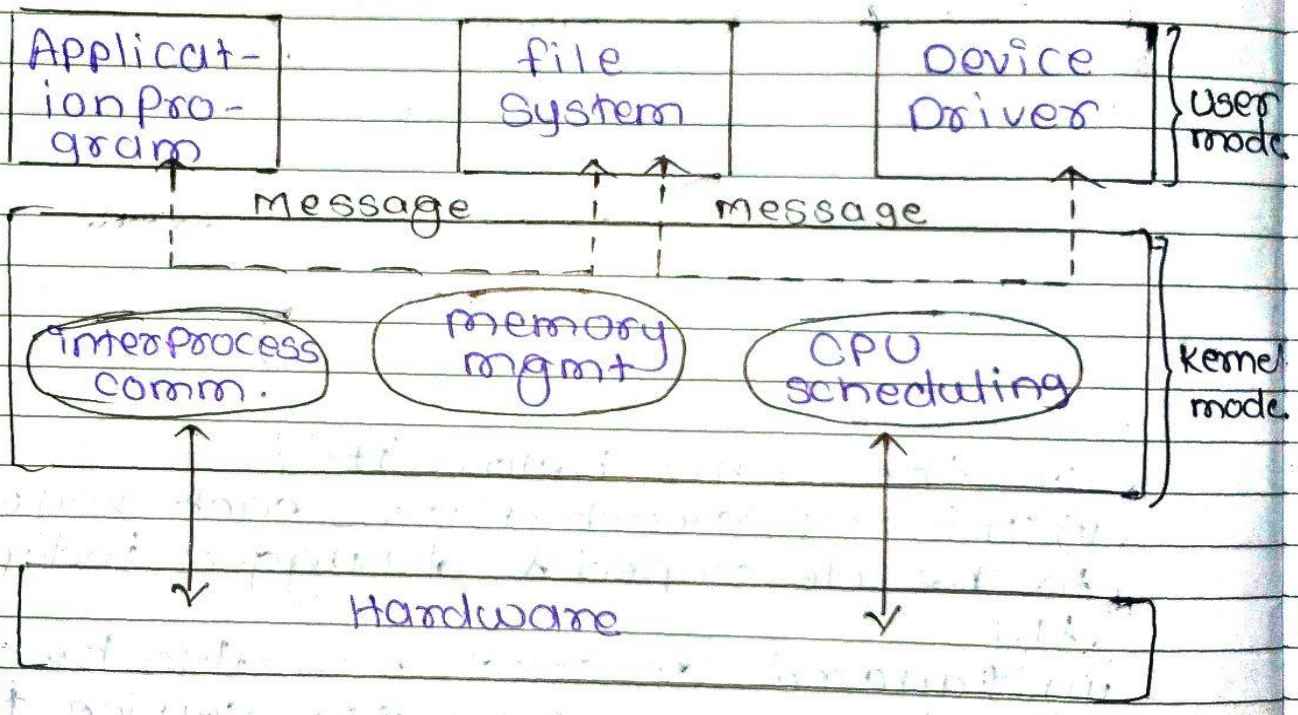


fig:- Microkernel O.S