

## Assignment - 01

Ques 1 Explain OS as a Resource Manager and Virtual Machine

Internally an operating system acts as a manager of resources of the computer system, such as processor, memory, files and I/O device.

- In this role, the operating system keeps track of the status of each resource, and decides who gets a resource for how long and when.

In a system that supports concurrent execution of programs, the operating system resolves conflicting requests for resources in a manner that preserves system integrity and in doing so attempts to optimize the resulting performance.

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When a computer has multiple users, the need for managing and protecting the memory, I/O devices and other devices is even greater.

The primary task of OS is to keep track of who is using which resources, to grant resource requests, to mediate conflicting requests from different programs etc.

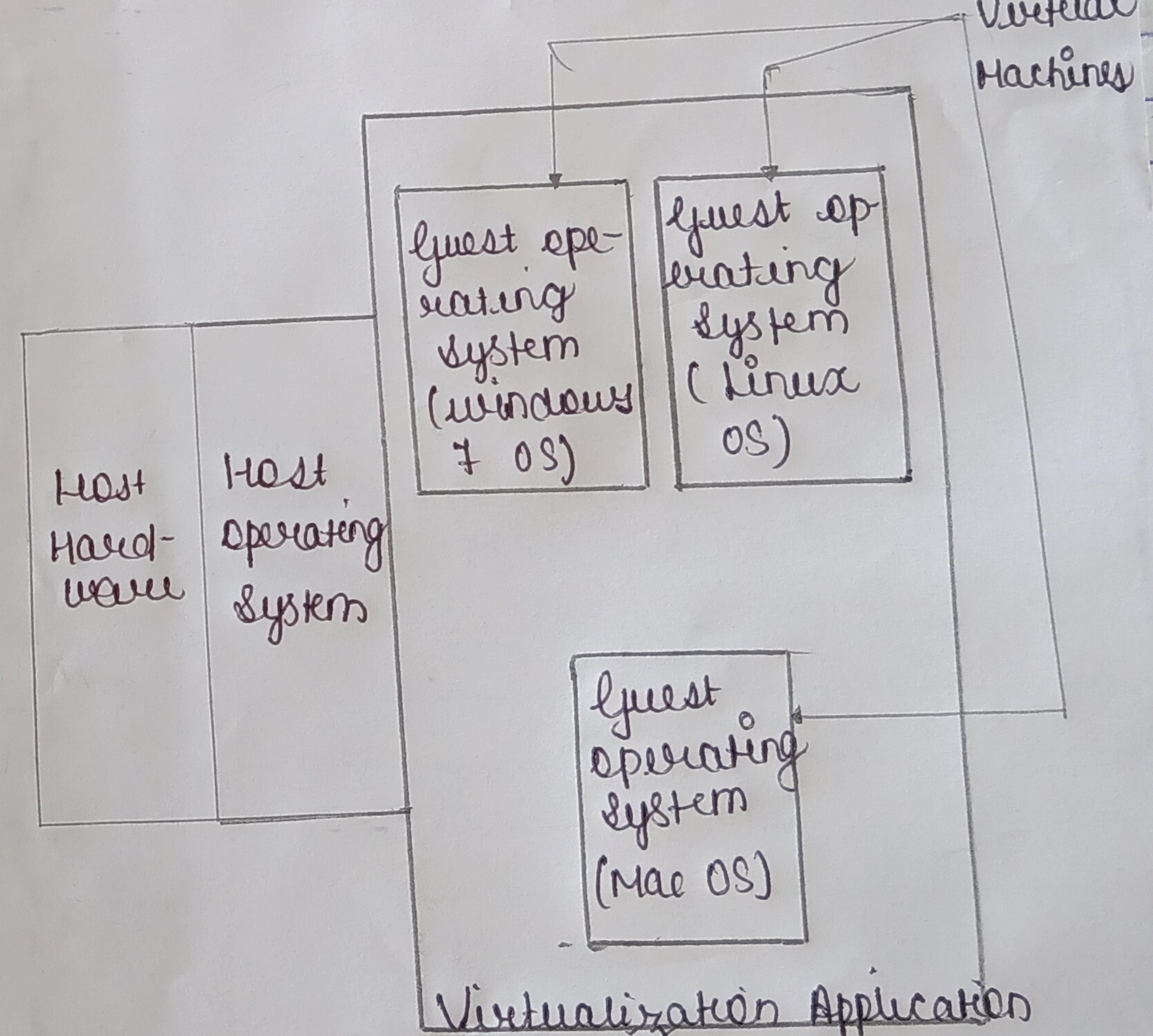
Operating system as a Virtual Machine

The function of operating system is to present the user with the equivalent of an extended machine or virtual machine that is easier to program than underlying hardware.

Virtual machine allows you to run an operating system in the app window on

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Your desktop behaves like a full separate computer.



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Que 2 Define firmware and Bootstrap loader.

Ans → Firmware → ~~firm~~ Firmware is programming that's written to a hardware device's nonvolatile memory. ~~nonvolatile memory~~ is a form static random access memory whose contents are saved where a hardware device is turned off or loses its external power source.

Firmware, which is added at the time of manufacturing, is used to run user programs on the device and can be used thought of as the software that allows hardware to run.

Hardware makers use embedded firmware to control the functions of various hardware devices and systems, much

like a computer's operating system (OS) controls the function of software applications.

Firmware may be written into read-only memory (ROM), erasable programmable read-only memory (EPROM) or flash memory.

Firmware that is embedded in flash memory chips can be updated easier than firmware written to ROM or EPROM, which makes it more adaptable.

### Applications

Operating System

Device Drivers

Firmware Firm-  
ware  
(BIOS)  
(MOMNT)

### Hardware

## Bootstrap loader

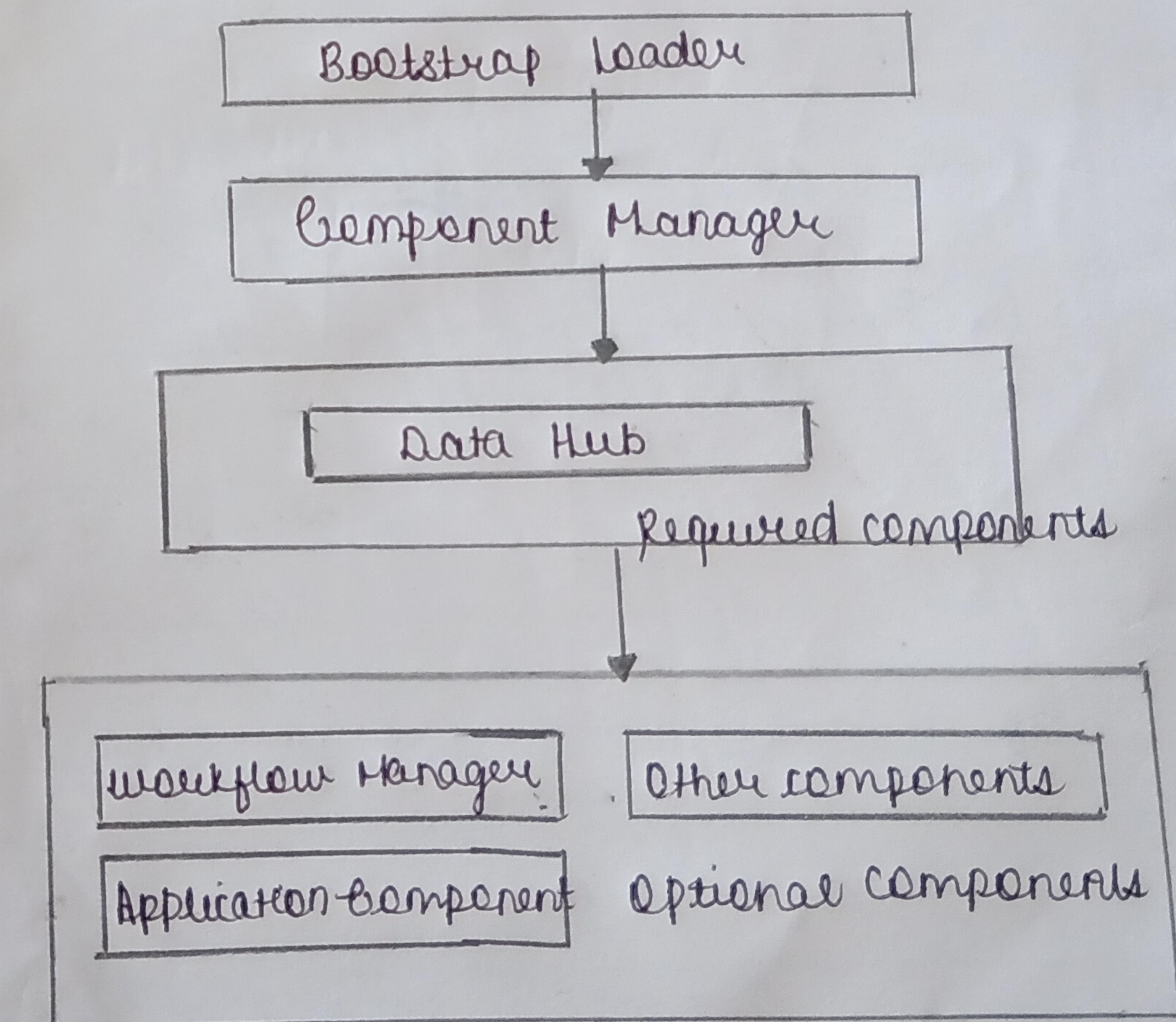
A bootstrap loader is a program that resides in the computer's EPROM, ROM or another non-volatile memory.

It is automatically executed by the processor when turning on the computer. The Bootstrap Loader reads the hard drives Boot sector to continue the process of loading the computer's operating system. The term Bootstrap comes from the old phrase, pull yourself up by your bootstraps.

When the computer is turned on or restarted, the bootstrap loader first performs the power-on-self-test, also known as POST. If the post is successful and no issues are found, the Bootstrap loader will load

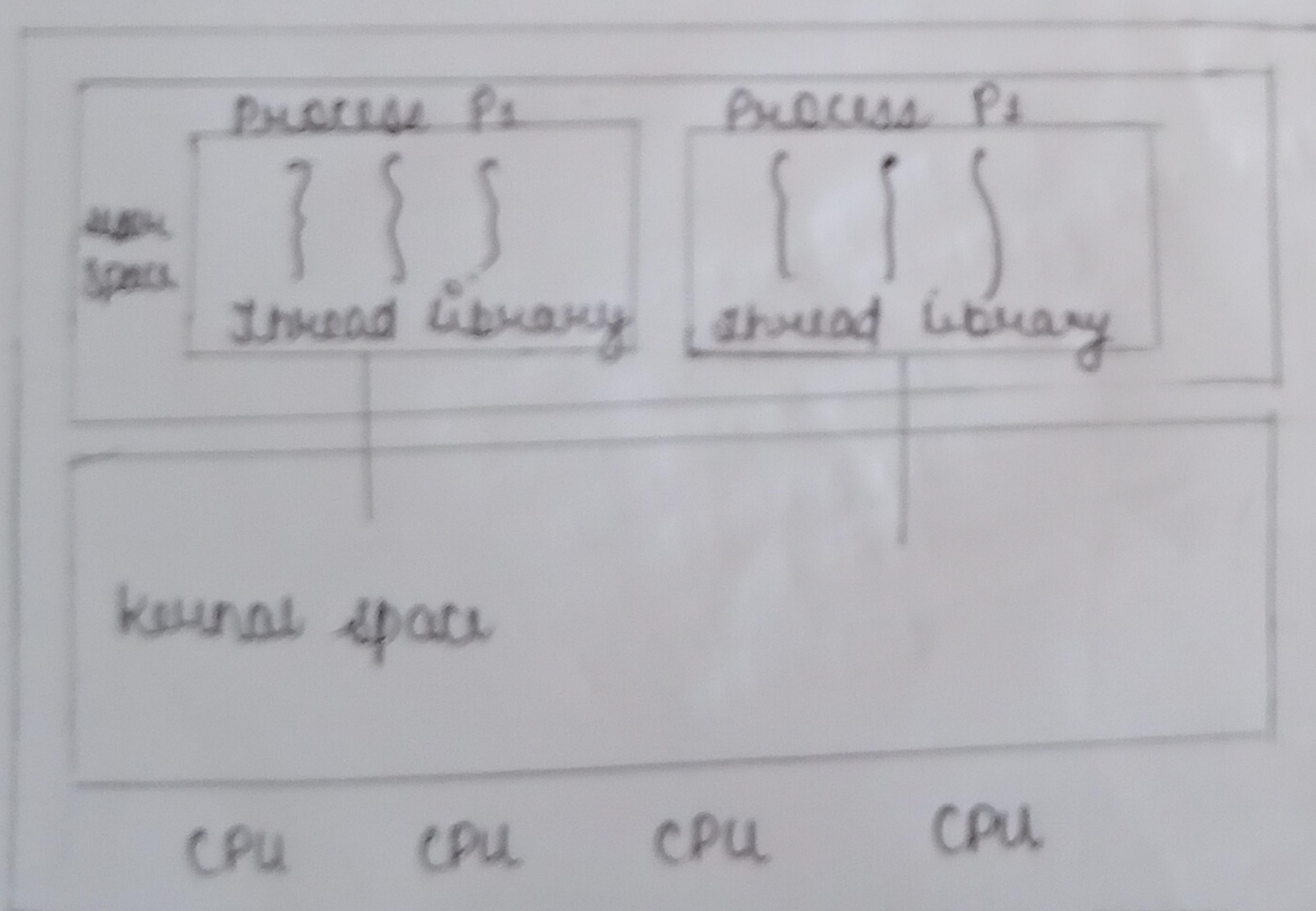
the operating system for the computer into memory. The computer will then be able to quickly access, load, run the operating system.

## BOOT-STRAP LOADER IN OS



After which the author and the editor and  
Bengtsson and Hvidt.

→ thousands and millions of mechanism that allows application to performing multiple task concurrently. It can be said that class is a set of functional that shares the same individual memory as well as range of other attributes. Each should be structuring the same program code shares same data. It has arguments but have their own stack arguments.



Walls of Uganda in springtime

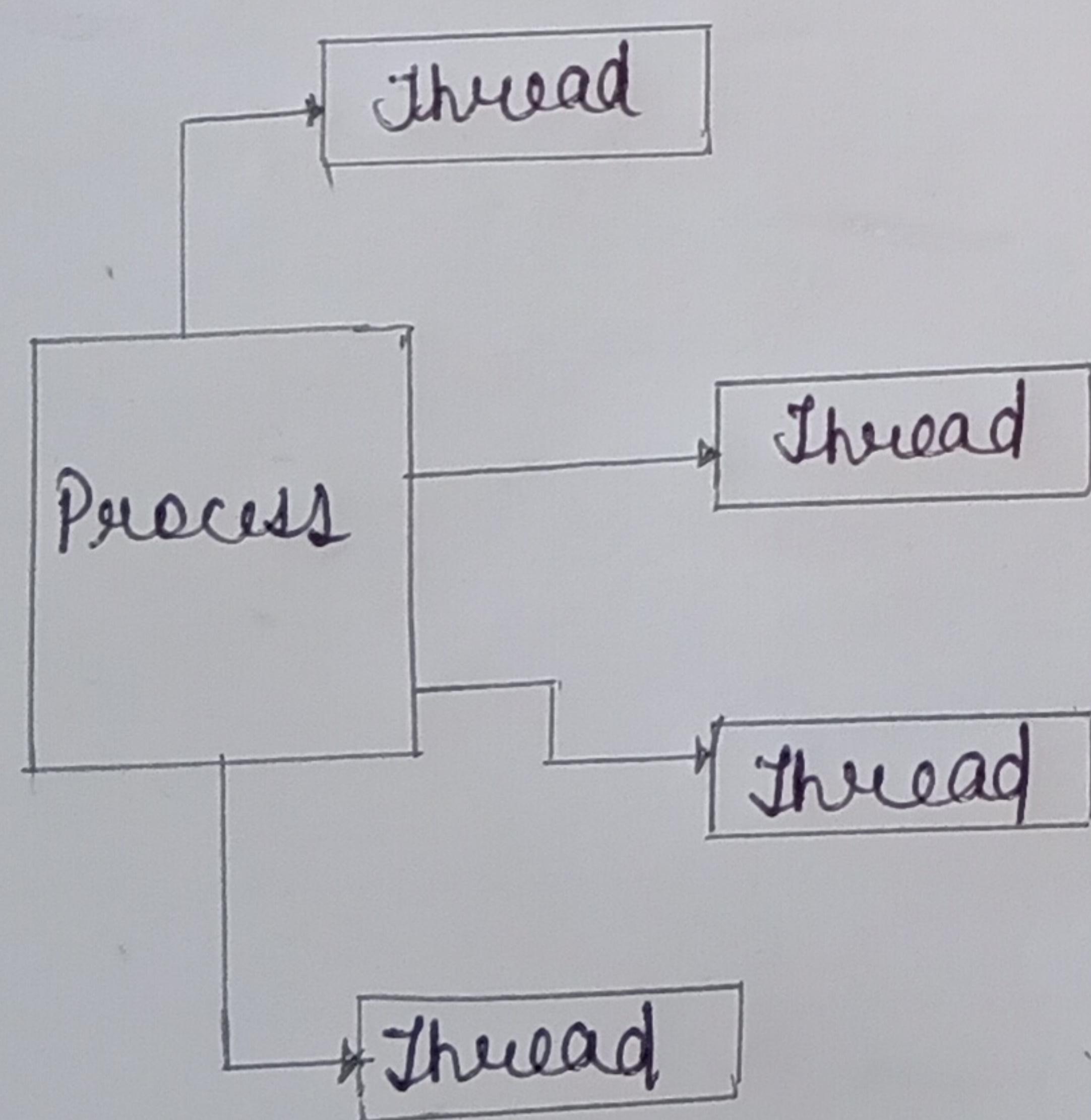
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- i) Threads minimize the context switching time.
- ii) Use of threads provides concurrency within a process.
- iii) Efficient communication.
- iv) It is more economical to create and context switch threads.
- v) Threads allow utilization of multiprocessor architectures to a greater scale and efficiency.



All Q4 Compare Hard Real time and soft - Real time operating system.

- | soft - Real time operating System   | Hard Real time operating System  |
|---|--|
| i) soft Response time Hard response time is required.   | time is required.  |
| ii) Data integrity is Data integrity is long short term.  | short term.  |
| iii) size of data file is large   | size of data files is small or medium  |
| iv) Peak load performance is degraded.  | Peak load performance is predictable.  |
| v) soft real-time systems are more flexible. They have greater stability and can tolerate certain amounts of deadline misses. | Hard real time systems have little laxity and generally provide laxity and can full deadline compliance. |

- vii) Linux and many safety critical OS provide a systems are soft real time typically hard real-time system.
- viii) This systems do Hard real-time not guarantees about the completion of the task on time. system guarantees that critical tasks complete on time.

Ques 75 write short note on monitor calls.