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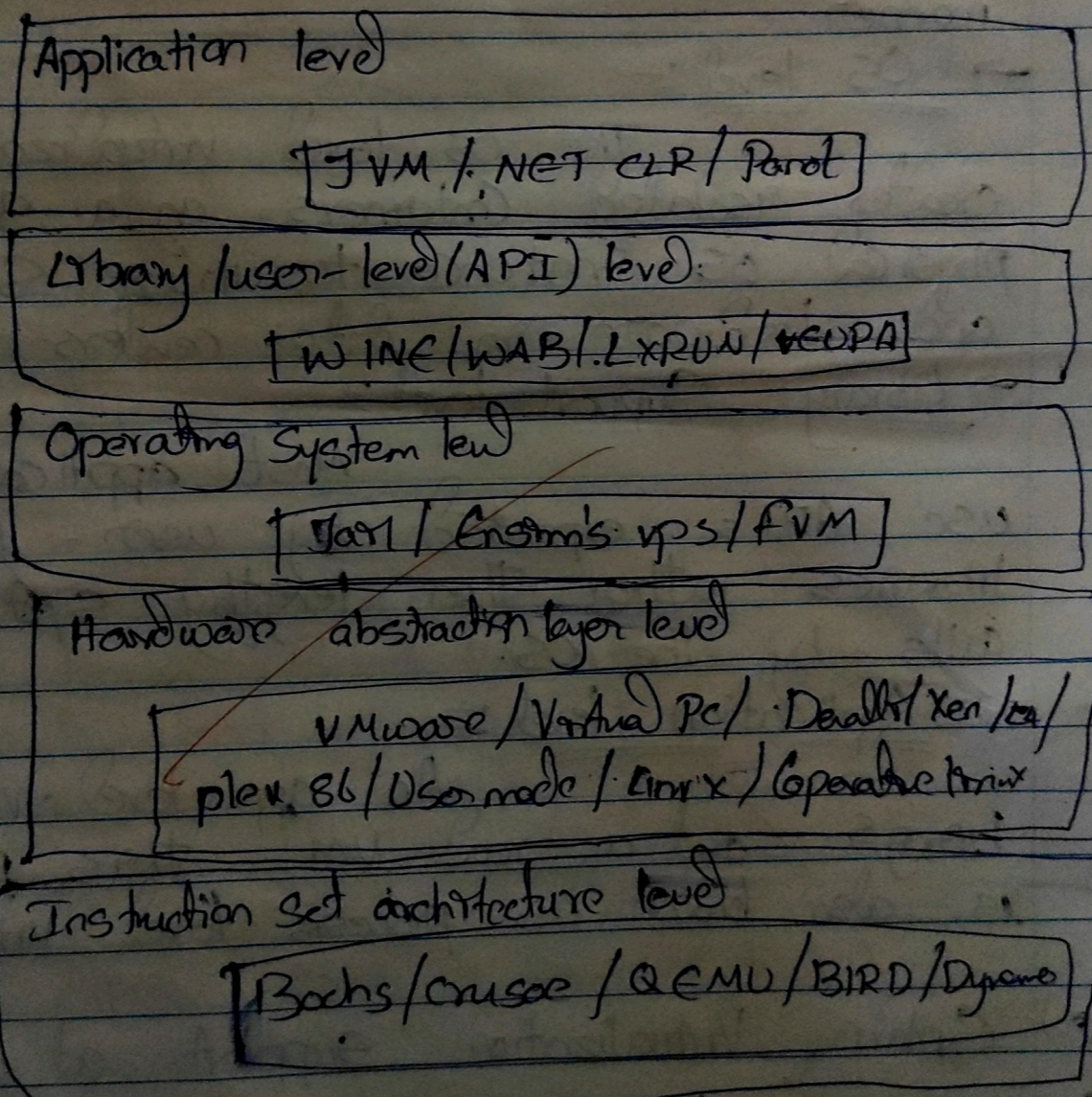
1. Explain Implementation levels of Virtualization

Ans: Virtualization is a concept by which several VM's are multiplexed into same hardware machine. To enhance the resource sharing by many users and improve Computer performance in terms of resource utilization and flexibility



Instruction Set Architecture level:- At the ISA level, virtualization is performed by emulation

of the given ISA by the ISA of the host machine.

→ Abstraction layer level :-

Hardware level Virtualization is performed on the bare hardware. This approach generates a virtual hardware and processes the hardware in a virtual manner.

→ OS level :-

The OS level virtualization creates isolated containers on a single physical OS instance to utilize software and hardware in data centers.

→ Library Support level :-

Most applications use APIs exported by user-level libraries rather than lengthy system calls by the OS.

→ Application level :-

An app-level virtualization brings out a real VM; this process is also known as process level virtualization.

2) Explain Virtualization Support at OS-level.

Ans

Virtualization Support at OS level :-

Cloud Computing is transforming the

Computing landscape by shifting the hardware and management costs of a data centre to third parties like banks. The challenges are :-

(a) The ability to use a variable no. of physical machines and instances depending on the needs of problem.

(b) The slow operation of instanting new VM's

→ It is slow to initiate a hardware

→ Redundancy content is high in these VM's

→ slow performance and low density.

To provide a solution to all these problem OS level virtualization is needed. It inserts a virtualization physical resources of a system.

3) Write about KVM :-

Ans :-

Kernal Based VM is a Linux para-virtualization system. It is a part of Linux kernal. Memory management and Scheduling activities are carried out by the existing Linux kernal.

Other activities are taken care of by the KVM and this methodology makes it easier to handle than the hypervisor.

It improves performance and supports operating systems like windows, Linux & others

4) Write about Xen hypervisor.

Ans: Xen hypervisor :-

Xen is a hypervisor that enable the simultaneous creation, execution and management of multiple virtual machines on one physical computer.

features of Xen :-

There are some of the features :-

→ Dom 0 → Xen launches a virtual machine called Dom 0, that has direct access to hardware by default.

→ Small footprints → Xen comes with a small microkernal, and it provides a limited guest interface.

→ Driver isolation - Xen can isolate drivers on multiple virtual machines.

→ para Virtualization - Xen provides modified guest OS that is similar to the underlying software interface (or) hardware that can make calls to hypervisors for resources, storage and CPU access.

Answer