1.done

2.**What do you think are the fundamental reasons behind the success of the cloud? Name three pros and three cons of the cloud.**

**Reasons for Success:**

**Scalability**: Cloud services offer on-demand resource allocation, meaning users only pay for what they use, allowing easy scaling of services as needed.

**Cost-effectiveness**: It reduces the need for on-premises infrastructure and expensive hardware maintenance.

**Accessibility**: Cloud services can be accessed from anywhere with an internet connection, which is ideal for remote work and global teams.

**Pros:**

**Flexibility & Scalability**: Easily scale services up or down according to demand.

**Cost Savings**: Reduced capital expenditures on hardware and infrastructure.

**Disaster Recovery:** Automatic backups and data redundancy help with data recovery during failures.

**Cons:**

**Security**: Sensitive data stored in the cloud may be vulnerable to breaches or cyberattacks.

**Downtime:** Cloud providers may experience outages that affect the availability of services.

**Limited Control:** Users have less control over the infrastructure and resources in cloud environments compared to on-premise systems.

**3. What is the primary function of a hypervisor in virtualization?**

The primary function of a hypervisor is to manage virtual machines (VMs) by allocating resources such as CPU, memory, and storage to them. It sits between the physical hardware and the virtual machines, allowing multiple VMs to run concurrently on a single physical machine.

**4.What is a virtual machine (VM)?**

A virtual machine (VM) is a software-based simulation of a physical computer. It runs an operating system and applications just like a physical computer, but it is isolated from the host machine through a hypervisor.

**5.What are the benefits of using virtual machines?**

**Isolation:** VMs are isolated from the host machine and each other, preventing conflicts.

Resource Optimization: Multiple VMs can run on a single physical machine, efficiently utilizing hardware resources.

**Portability:** VMs can be easily moved between different host machines or environments.

Testing & Development: VMs provide a safe environment for testing software without affecting the host system.

**Disaster Recovery:** VMs can be backed up and restored easily, making them ideal for disaster recovery.

**6.List five use cases of virtual machines.**

1**.Running Multiple Operating Systems**: Allow running different operating systems (Windows, Linux, etc.) on the same physical machine.

2**.Software Testing and Development**: Testing new software or updates without affecting the host system.

3.**Cloud Services:** Virtual machines are the foundation of cloud computing platforms like AWS, Azure, and Google Cloud.

4.**Disaster Recovery**: VMs can be easily backed up and restored to ensure business continuity.

5.**Legacy Application Support:** Running older software that requires specific operating systems or environments.

**7.In virtualization, what is the guest operating system?**

**b) The operating system installed on a virtual machine**

Explanation:

Host OS: The main operating system running directly on the physical hardware

Guest OS: The operating system that runs inside a virtual machine, isolated from the host OS

**8.What does virtual machine isolation mean?**

**c) Virtual machines run independently and are isolated from each other and the host system.**

Explanation:

Isolation means that each VM operates in its own secure environment. If one VM crashes, gets infected with malware, or has configuration issues, it doesn't affect other VMs or the host system.

**9.What is the benefit of virtual machine portability?**

**c) It allows virtual machines to be moved between different physical machines with compatible hypervisors.**

Explanation:

VM portability enables:

1.Live Migration: Moving running VMs between physical servers without downtime

2.Disaster Recovery: Quickly restoring services on different hardware

3.Load Balancing: Distributing VMs across servers for better performance

4.Hardware Maintenance: Moving VMs away from servers needing repair

**10. What is the purpose of cloning a virtual machine?**

Purposes of cloning a virtual machine:

**Rapid Deployment**: Create multiple identical VMs quickly for scaling or testing

**Template Creation**: Make a "golden image" for standardized deployments

**Backup and Recovery**: Preserve a known good state before making changes

**Development and Testing**: Create identical environments for different team members

**Disaster Recovery**: Maintain ready-to-deploy copies of critical systems