Lab 01

Cloud Data Centers

# Question 01:

Done

# Question 02:

Cloud Computing is a significant change from traditional way business think about IT resources. It offers a range of benefits that enable organizations to scale efficiently, optimize resource management, and drive growth. Below are some advantages and disadvantages of Cloud Computing.

## Advantages:

1. Companies who opt for cloud based infrastructure become cost efficient, by reducing the capital investment of by physical resources, like hardware, softwares, round the clock electricity supply and staff managing those data centers.
2. It is flexible and scalable. With traditional infrastructure it is hard to scale an already established infrastructure, which can cost time and money, with cloud based infrastructure customer can increase and reduce their resources according to their needs.
3. With a global centralized system, cloud users can access their data from anywhere and anytime with any device, which makes collaboration easier.

## Disadvantages:

1. Cloud services are heavily based on internet, which means with a poor internet user might not be able to access the desired services, additionally it is possible even for reputed cloud service providers to be effected by unforeseen challenges and it can cause the data centers to go down.
2. Usually it is a bit risky to put sensitive data on a third party server, for security and privacy reasons.
3. The control over the resources can be limited because all the management and updates are done by service providers.

# Question 03:

Hypervisor is a software which allows multiple virtual machines with different Operating Systems to run on a single hardware machine. It’s primary feature is to allocate resources like, memory, CPU cores and Storage to each VM running on a single hardware machine.

# Question 04:

A Virtual Machine aka VM is a software based emulation of an actual physical machine by running on virtualized resources. It pretty much can do all the functionalities like a traditional computer like having an OS or running applications independently. Multiple VMs can coexist on a single physical server and run independently by efficiently managing the given resources.

# Question 05:

Virtual machines have many significant advantages and some of them are:

1. VMs allow multiple operating systems to run on same hardware, which can increase efficiency and resources can be utilized to their maximum, many public cloud services also utilize them.
2. They are easy to create, clone or delete, making them ideal of dynamic IT environments.
3. As multiple VMs can run on a same hardware. Their resources are also isolated from each other, so if something goes wrong with one machine it doesn’t effect the others.

# Question 06:

Following are the five use cases of a virtual machine.

1. Organizations can consolidate multiple virtual servers on single hardware. Reducing additional hardware cost and better resource management.
2. It is useful for testing cross platform applications on different operating systems.
3. They are easy to setup, so in case of any disaster it should not take much time to get system up and running.
4. Cloud providers use VM to provide scalable on demand services to business developers.
5. Businesses can run outdated applications on a VM without compatibility issues.

# Question 07:

B

# Question 08:

C

# Question 09:

C

# Question 10:

Cloning a Virtual Machine is a process of copying an exact same virtual machine with all the applications and operating system. It has multiple purposes mentioned below.

1. Developers can clone VM multiple times to have an exact same environment everywhere, faster than installing everything manually
2. Cloning creates an image of an existing VM, which can be stored as a backup incase of a data loss due to any reason.
3. Organizations can deploy multiple clones of a VM to distribute workloads across different servers and improve performance.