Lab 1:

1. Check if your processor supports Intel/AMD virtualization technology. Enable Intel virtualization technology in BIOS if possible.

- Intel processors: look for Intel VT-x.
- AMD processors: look for AMD-V.
- We can check support using tools like Task Manager (Windows → Performance tab → Virtualization) or commands like lscpu on Linux.
- If disabled, enable it in BIOS/UEFI under Virtualization Technology.
- The M series chips are based on the ARM architecture and natively support hardware virtualization (called Apple Virtualization Framework).This type of virtualization is enabled at the system level and does not require manual activation in the BIOS.

2. The cloud is almost everywhere in our lives now. What do you think are the fundamental reasons behind its success? Name three pros and three cons of cloud.

Reasons behind success:

- On-demand access to resources.
- Scalability (grow/shrink resources easily).
- Cost efficiency (pay-as-you-go).

Pros:

- Cost savings (no need to buy/manage physical hardware).
- Scalability (resources can be adjusted quickly).
- Accessibility (access from anywhere with internet).

Cons:

- Security concerns (data breaches, privacy issues).
- Downtime risks (cloud provider outages).
- Dependency on internet connection.

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

A hypervisor manages and allocates physical resources (CPU, memory, storage, network) to virtual machines and ensures isolation between them.

4. What is a virtual machine (VM)?

A VM is a software-based emulation of a physical computer, running its own operating system and applications, isolated from other VMs.

5. What are the benefits of using virtual machines?

- solation and security between environments.
- Portability across compatible systems.
- Efficient hardware utilization (multiple VMs per host).
- Easier testing and development (sandbox environments).
- Disaster recovery via snapshots/cloning.

6. List five use cases of virtual machines.

Software development and testing.
Running legacy applications.
Training and educational environments.
Server consolidation (multiple servers on one machine).
Disaster recovery and backup.

7-9: b, c, c

10. What is the purpose of cloning a virtual machine?
Cloning a VM allows you to create an exact copy (including OS, applications, and settings) for:

- Rapid deployment.
- Backup and recovery.
- Testing environments without affecting production.