

RESEARCH & PROJECT SUBMISSIONS



Program: CESS

Course Code:

CSE 451

Course Name:

Computer and Network Security

Examination Committee

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Student Name:

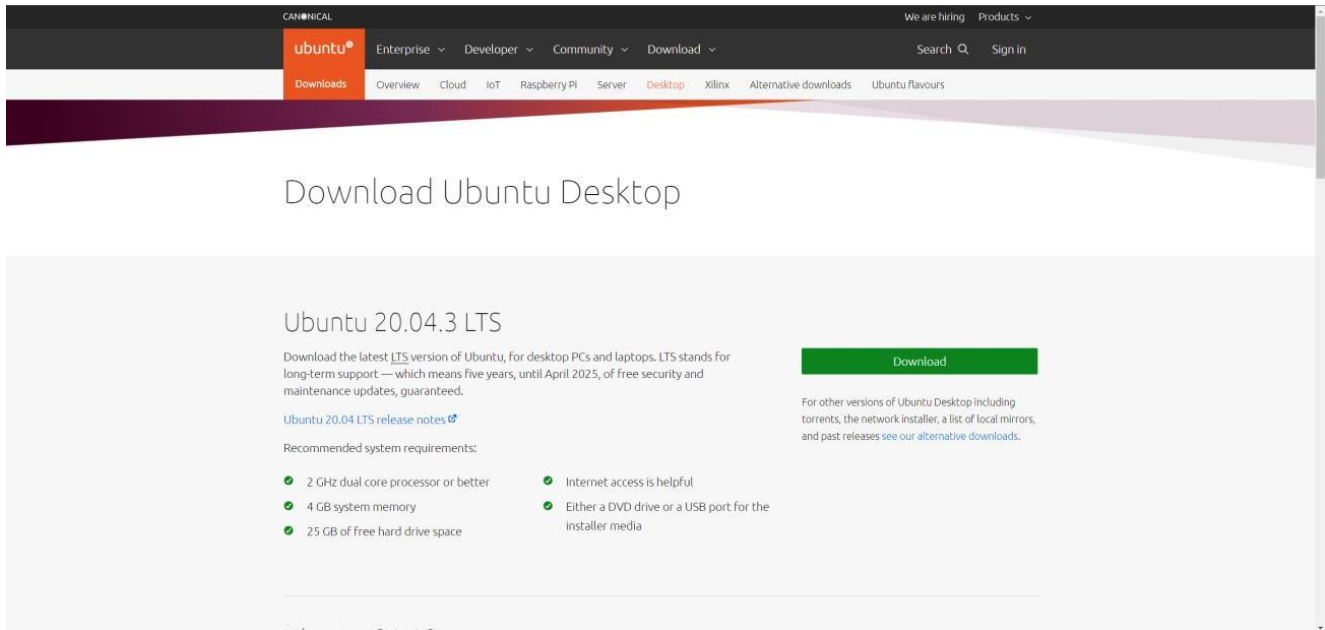
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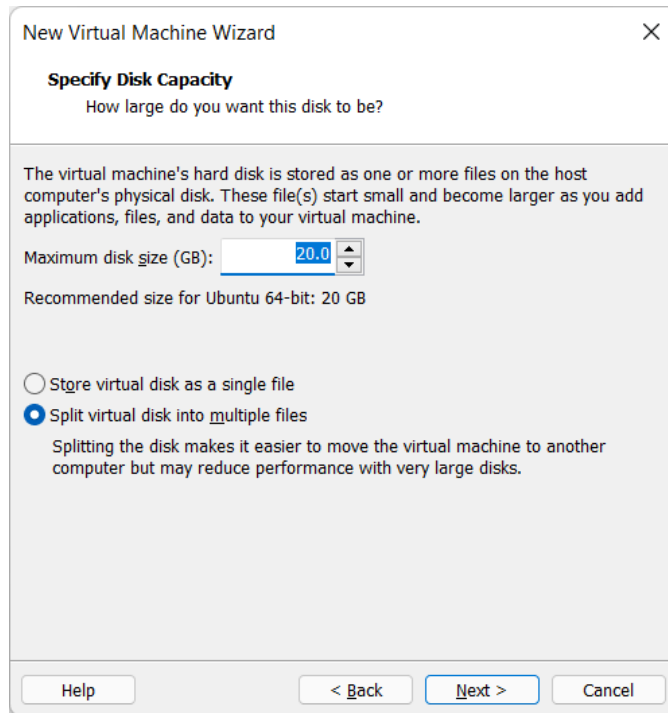
**Ain Shams University
Faculty of Engineering
Fall Semester – 2022**

Step 1: Downloading ISO Ubuntu from developers website



Step 2: Setting computer resources for VM Ubuntu.





New Virtual Machine Wizard

Specify Disk Capacity
How large do you want this disk to be?

The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.

Maximum disk size (GB):

Recommended size for Ubuntu 64-bit: 20 GB

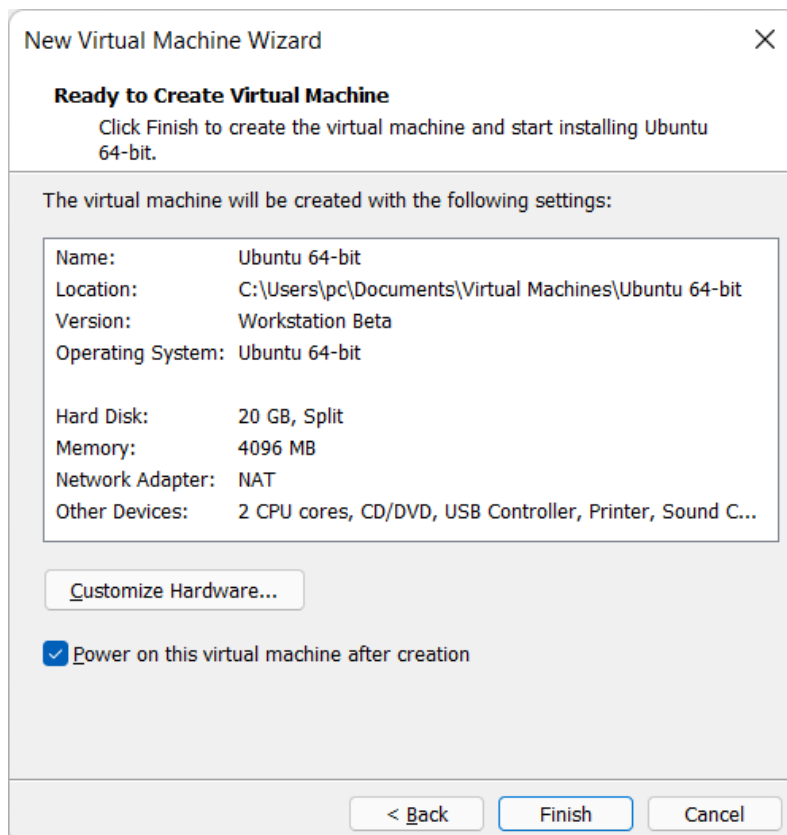
☐ Store virtual disk as a single file

☒ Split virtual disk into multiple files

Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.

Help < Back Next > Cancel

I decided to give Ubuntu 2 cores and 4 GBs of RAM (25% of my memory) as I will not use it as much. If I'm going to use it regularly, I can always edit these setting later. I also decided to give the VM 20 GBs of HDD storage, this can be expanded later if I needed extra storage, but Linux generally is light on usage compared to Windows so that should be fine.



New Virtual Machine Wizard

Ready to Create Virtual Machine
Click Finish to create the virtual machine and start installing Ubuntu 64-bit.

The virtual machine will be created with the following settings:

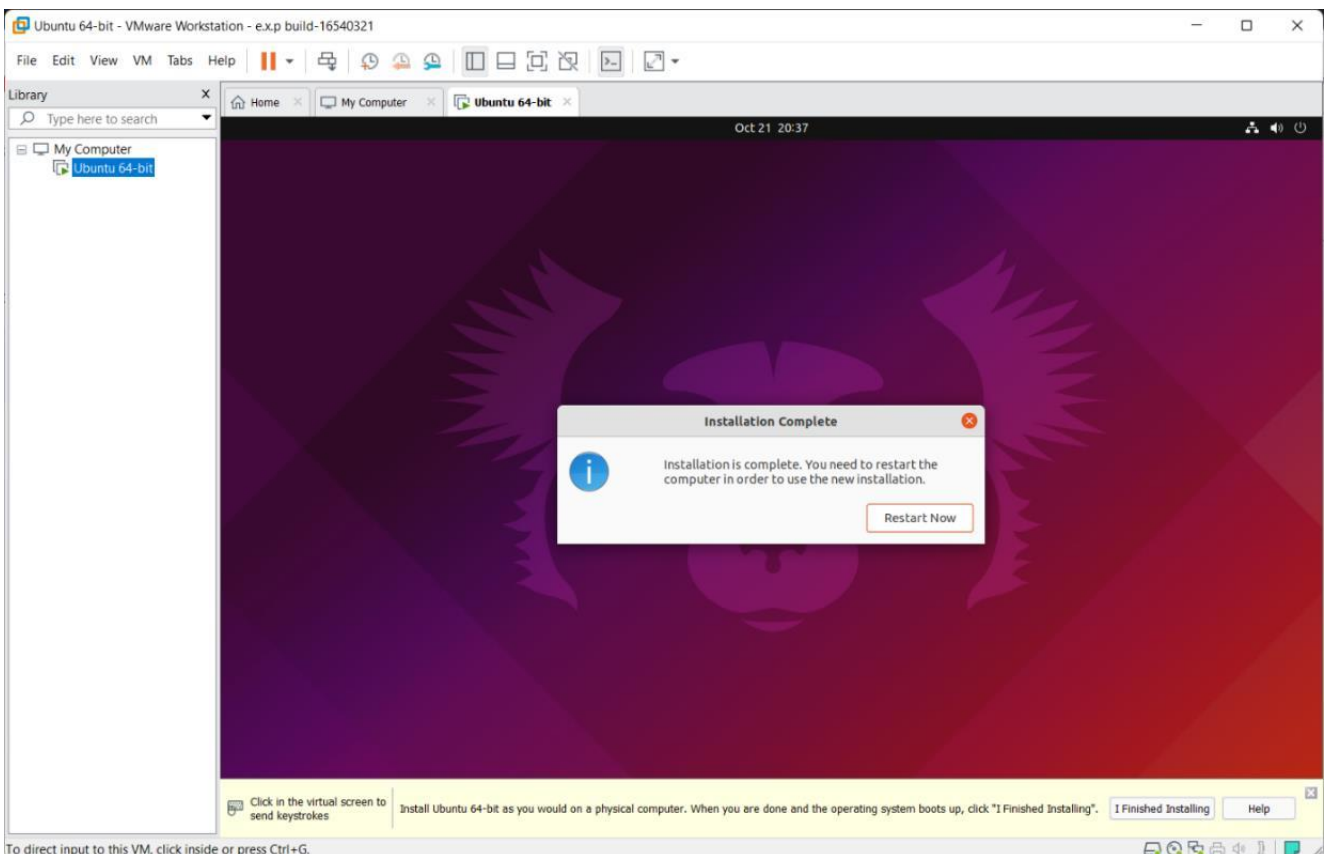
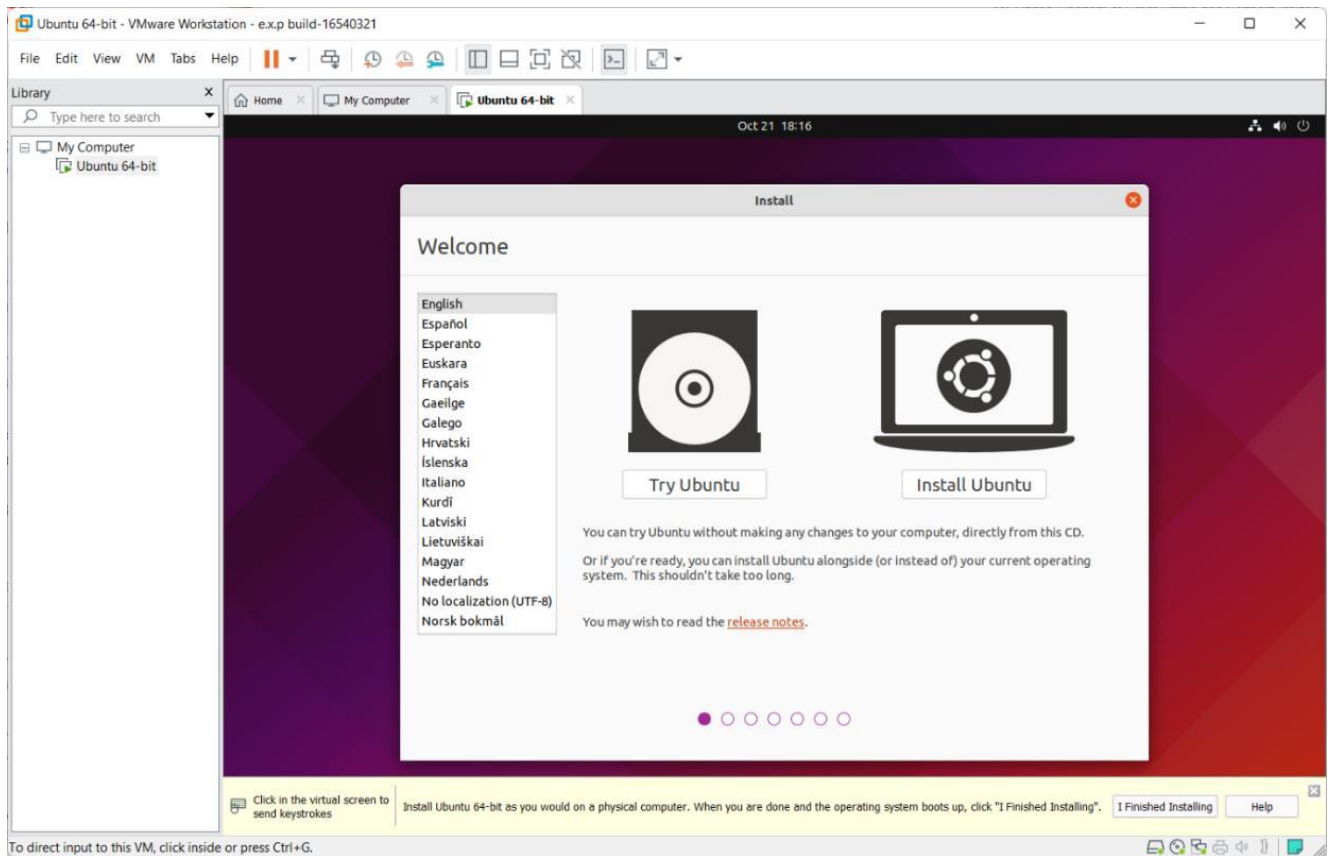
Name:	Ubuntu 64-bit
Location:	C:\Users\pc\Documents\Virtual Machines\Ubuntu 64-bit
Version:	Workstation Beta
Operating System:	Ubuntu 64-bit
Hard Disk:	20 GB, Split
Memory:	4096 MB
Network Adapter:	NAT
Other Devices:	2 CPU cores, CD/DVD, USB Controller, Printer, Sound C...

☒ Power on this virtual machine after creation

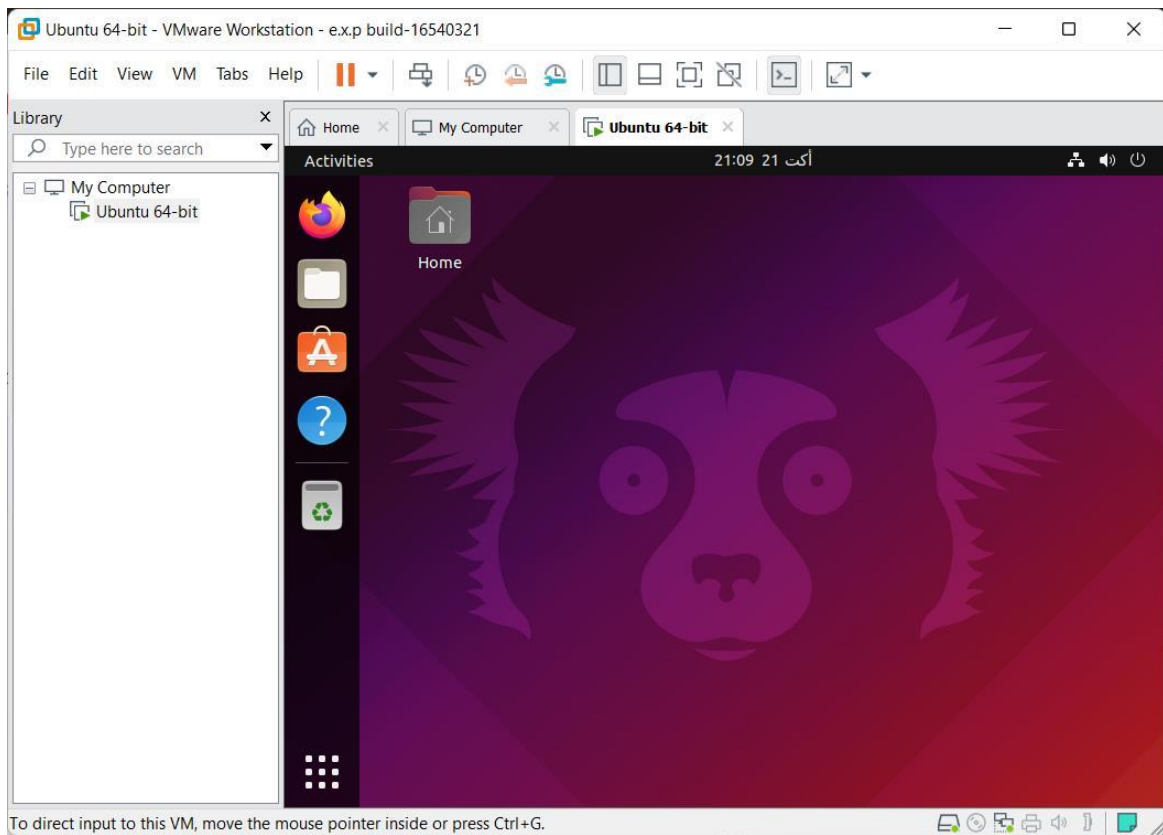
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Step 3: Installing Ubuntu

Simple installing process, even easier than windows.

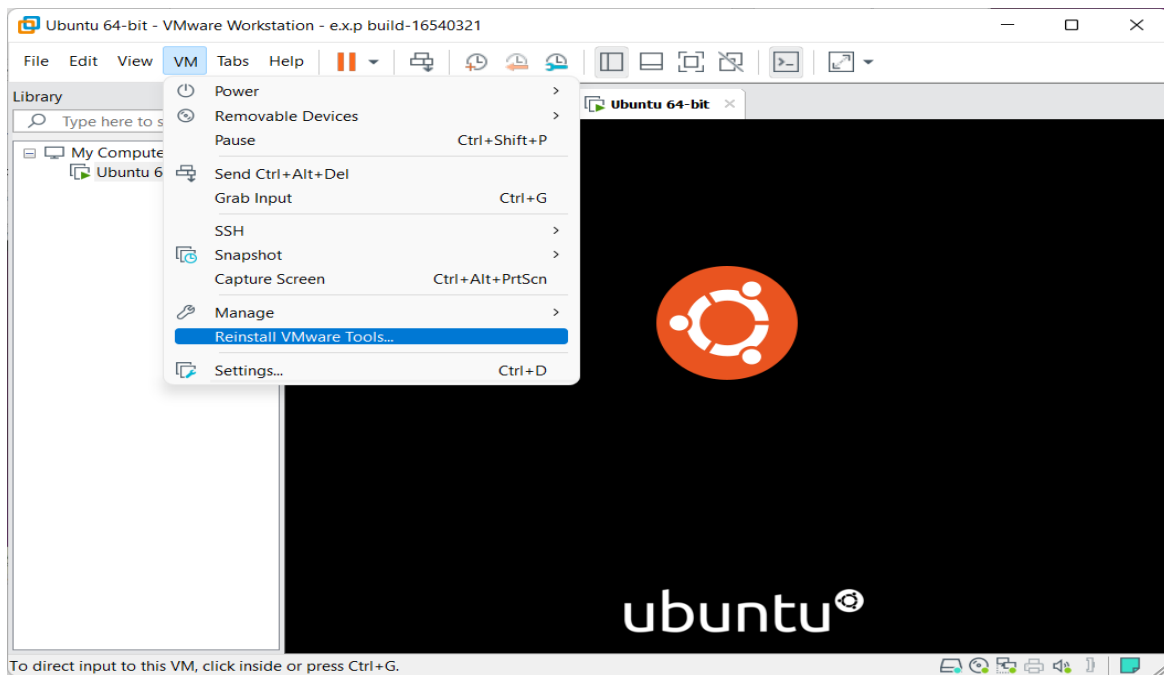


Final installed OS:



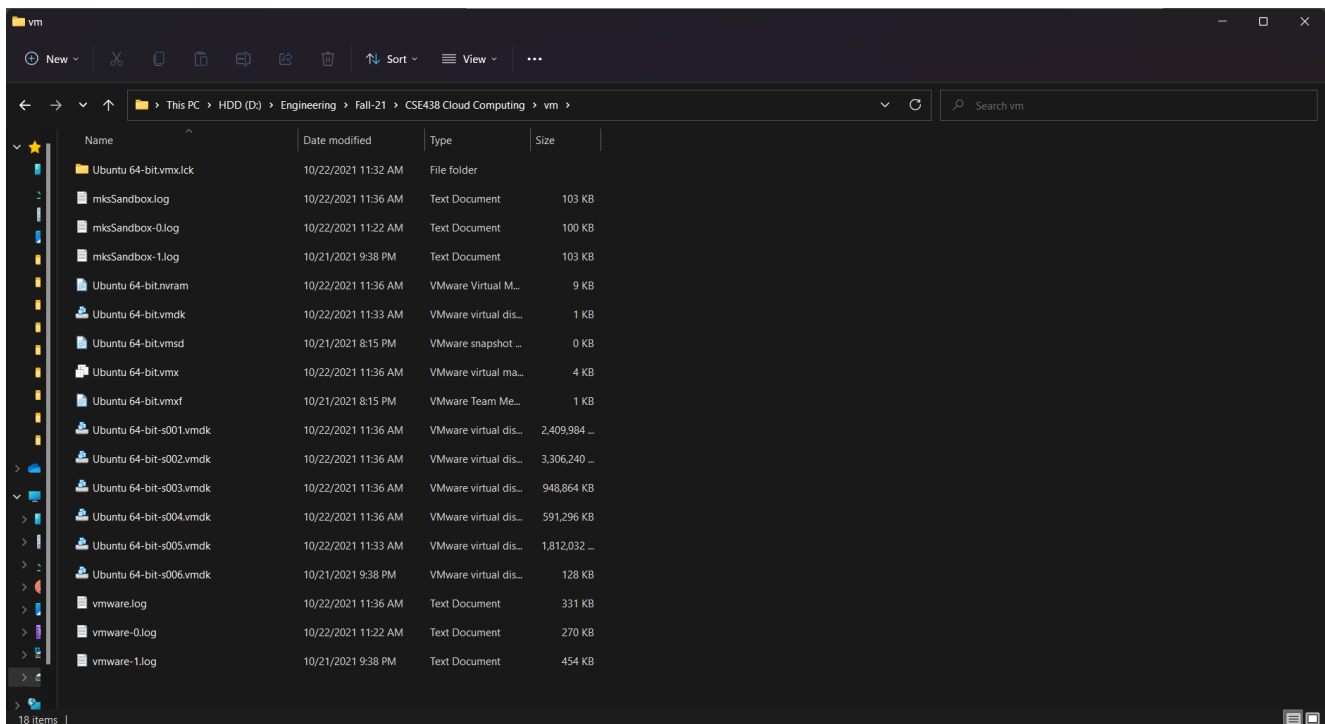
Step 4: Installing VM Tools

My VM Workstation version automatically installed VM tools. However, the option to install the tools again can be found in View > re-install VM Tools.



Step 5: Identifying Installation Directory

VM files are stored in the folder that I set in the settings before installation.





1. Which of the following characteristics should you consider when deciding whether to deploy an application or service to a virtual machine?
- a) Hardware requirements
 - b) Software support and compatibility
 - c) Licensing
 - d) Performance and resource requirements
 - e) Historical performance data
 - f) All of the above

all the above, because: a) we need to know how much hardware resources are needed for the application in order to make it work correctly. b) We need to know whether the application is supported in the VM OS that we are installing in (i.e., software is compatible with Linux, which is our VM OS). c) The license of the software developers allows us to use the software on multiple instances (VMs). d and e) we need to consider the performance of our service on that VM and compare performance data of similar software against the aligned resource we specified for the VM.

2. Which of the following terms describes a situation in which many virtual machines are deployed without proper IT oversight?
- a) Server sprawl
 - b) Server consolidation
 - c) Network virtualization
 - d) Virtual machine sprawl
 - e) Storage virtualization
 - f) None of the above

VM sprawl occurs when IT organizations fail to manage all the virtual machines that are deployed in their production environments. Server sprawl refers to the proliferation of physical servers. Network and storage virtualization are used to increase data center capacity, performance, and manageability.

3. Which of the following virtualization management approaches can help organizations maintain optimal hardware resource utilization over time?

- a) Automatically reconfiguring virtual machines based on performance statistics
- b) Deploying multiple copies of virtual machines to different host servers
- c) Automatically moving virtual machines based on changes to resource requirements
- d) Placing virtual machines on isolated virtual network switches
- e) Storing virtual machines on a Storage Area Network (SAN)
- f) Both a and c

Automation is crucial in organizations that use cloud resources. Most data center environments experience changes to performance requirements and workload activity over time. By allowing automation to automatically reconfigure VMs and move them to other host servers, systems administrators can reduce potential performance issues while ensuring that data center servers are being adequately utilized

4. You are a systems administrator that manages a lab environment for your organization's software developers and testers. How can you reduce the amount of time and effort you spend on managing the lab environment while providing quicker deployments of new virtual machines?

- a) Create a library of virtual machine templates and copy them to create new VMs
- b) Invest in self-service virtualization provisioning systems
- c) Give developers and testers permissions to create and deploy new VMs
- d) Define standardized configurations for test environment virtual machines
- e) All of the above

all of the options given are suitable in reducing effort and time spent on new Vms.

5. You are a software tester that is testing a complex application that is running within a single virtual machine. You have recently encountered a rare and intermittent software defect that developers have been unable to reproduce or troubleshoot in the past. Which of the following steps should you take to allow developers to recreate the issue?
- a) Power off the virtual machine and discard any saved state information
 - b) Save the state of the virtual machine and provide a copy of it to your developers to troubleshoot the problem
 - c) Roll back the state of the virtual machine to a point in time prior to when the defect was discovered
 - d) Move the virtual machine to another host server to which developers have access

B is the answer, but C can also be helpful in the troubleshooting process. B will let the developers deploy the VM as it is to their computers and can troubleshoot the problem as they see it live. C will give them a chance to reproduce the environment that has led to the defect and see what went wrong from there.

6. You are a systems administrator that is responsible for supporting a team of software testers in your organization. The test department frequently requires new VMs running a wide variety of different operating systems to thoroughly test a new application your company is developing. VMs must be able to communicate with each other over the network. You are concerned about the potential security impact of these new VMs. Which of the following steps can you take to reduce security risks?
- a) Disable network and Internet access for all virtual machines
 - b) Place all test-related virtual machines on a private virtual network
 - c) Power on virtual machines only when they are being actively used in the environment
 - d) Configure virtual machines to run under an account with limited permissions

We must have a network in order to make the VMs communicate with each other. We can make this network as private one to isolate it from other devices and contain any potential hazard of leaking to the outside devices where they are crucial for the organization.



7. In which of the following types of virtualization are applications stored and executed on the server?
- a) Application Virtualization
 - b) Storage Virtualization
 - c) **Presentation Virtualization**
 - d) Network Virtualization
 - e) Server Virtualization

By definition, Presentation virtualization involves installing and running applications on a central server and allowing clients to access the VMs over the network.
