Name:_____ Class:_____ Date:_____

Chapter 20 - Virtualization, Linux, and Mac OS X

True / False

1. The Android OS for mobile devices is based on Linux.
   a. True
   b. False

ANSWER: True

2. VMs running under a Type 1 hypervisor are isolated from each other.
   a. True
   b. False

ANSWER: True

3. On Linux, the root user's home directory is /home/root.
   a. True
   b. False

ANSWER: False

4. Programs on Mac that launch at startup are called login items.
   a. True
   b. False

ANSWER: False

5. LILO is the most commonly installed boot loader by the Linux operating system.
   a. True
   b. False

ANSWER: False

Multiple Choice

6. What operating system is based on open source code?
   a. Android
   b. Blackberry
   c. Windows Phone
   d. iOS

ANSWER: a

7. What type of virtualization should you deploy to provide a Virtual Desktop Infrastructure?
   a. server-side
   b. client-side
   c. fat-client
   d. type-2

ANSWER: a

Chapter 20 - Virtualization, Linux, and Mac OS X

8. What keypress sequence is used to open the Force Quit window on a Mac?
   a. ctrl+alt+delete
   b. command+option+delete
   c. ctrl+option+delete
   d. command+option+esc

ANSWER: d

9. What statement regarding Type 1 hypervisors is accurate?
   a. They are typically used on desktops and laptops
   b. The VirtualBox software is an example
   c. They are called bare-metal hypervisors
   d. They install as an application

ANSWER: c

10. What command below is used to test network connections by sending a request packet to a host?
   a. ps
   b. ifconfig
   c. ping
   d. df

ANSWER: c

11. A bootable Linux USB flash drive or CD that can be used to repair system issues is known by what term?
   a. live CD
   b. repair disk
   c. boot CD
   d. supplemental OS

ANSWER: a

12. What occurs when Linux encounters an error from which it cannot recover?
   a. BSOD
   b. page fault
   c. segmentation fault
   d. kernel panic

ANSWER: d

13. When using Mac OS X, what gesture can be used to show the Launchpad?
   a. secondary click
   b. pinch
   c. swipe
   d. slide

ANSWER: c

Chapter 20 - Virtualization, Linux, and Mac OS X

14. Swiping up with three fingers on Mac OS X launches what?
   a. Dashboard
   b. Mission Control
   c. Spotlight
   d. System Preferences

ANSWER: b

15. On Linux, where are the commands required for system administration stored?
   a. /bin
   b. /usr
   c. /opt
   d. /sbin

ANSWER: d

16. What command can be used to copy and convert files, directories, partitions, and even entire DVDs or hard drives?
   a. copy
   b. cp
   c. dd
   d. cat

ANSWER: c

17. What user account is known as the system administrator or super user account?
   a. root
   b. sysadmin
   c. admin
   d. super

ANSWER: a

18. What is the name of the OS X built-in backup utility?
   a. iBackup
   b. Time Machine
   c. Backup Utility
   d. Cloner

ANSWER: b

19. What is the main advantage of using a thick client?
   a. reduced cost of the machine
   b. can be used for purposes other than server-side virtualization
   c. does not require an operating system
   d. a tablet can serve as a thick client

Chapter 20 - Virtualization, Linux, and Mac OS X

ANSWER: b

20. How much drive space should be available for each virtual machine on a system?
     a. 5 GB
     b. 10 GB
     c. 20 GB
     d. 50 GB
ANSWER: c

21. What might be required to set up a virtual machine such that hardware is virtualized and presented to the VM, including such devices as a virtual processor, memory, motherboard, hard drive, optical drive, keyboard, mouse, monitor, and other components or peripherals?
     a. external motherboard
     b. PCI virtual expansion cards
     c. dummy system
     d. emulator
ANSWER: d

22. What Linux distribution is considered a cutting-edge distribution?
     a. Debian
     b. Fedora
     c. Red Hat Enterprise Linux
     d. Ubuntu
ANSWER: b

23. What command lets you view the contents of a file?
     a. cat
     b. view
     c. open
     d. rm
ANSWER: a

24. If you need to redirect the output from a command, what symbol should you use?
     a. |
     b. *
     c. >
     d. ?
ANSWER: c

25. In order to break out of a command or process on a terminal, what keys should you press?
     a. ctrl+alt+del
     b. ctrl+space

Chapter 20 - Virtualization, Linux, and Mac OS X

    c. alt+del

    d. ctrl+c

ANSWER: d

Multiple Response

26. What is a typical use of a Type 2 hypervisor? (Choose all that apply.)

    a. by developers to test applications

    b. as honeypots to lure hackers

    c. for VDI deployment

    d. cloud computing

ANSWER: a, b

27. What two commands are used to change the permissions and ownership of a file or directory in Linux?

    a. chmod

    b. cacls

    c. usermod

    d. chown

ANSWER: a, d

28. In order to ensure that a Mac has no startup items, what two directories should you check for items?

    a. /etc

    b. /Library/StartupItems

    c. ˜/.startup

    d. /System/Library/StartupItems

ANSWER: b, d

29. Linux utilizes what two different wildcard characters at the command line?

    a. and

    b. |

    c. *

    d. ?

ANSWER: c, d

30. What terms are used to describe a machine that does not have an operating system and merely provides an interface between the user and the server? (Choose all that apply.)

    a. thick client

    b. zero client

    c. dumb terminal

    d. ultra-thin client

ANSWER: b, c, d

Chapter 20 - Virtualization, Linux, and Mac OS X

Matching

Match each item with a statement below.
a. dump

b. client-side virtualization

c. Finder

d. hypervisor

e. clone

f. presentation virtualization

g. vi editor

h. bash shell

i. thin client

j. Spotlight

31. a collection of data that is copied to a backup media
ANSWER: a

32. a personal computer that provides multiple virtual environments for applications
ANSWER: b

33. functions similar to File Explorer in Windows, used to find and access Mac's files and applications
ANSWER: c

34. software that is installed on a computer and used to manage virtual machines
ANSWER: d

35. an image of the entire partition on which an operating system is installed
ANSWER: e

36. a remote application running on a server is controlled by a local computer
ANSWER: f

37. a text editor that works in command mode or insert mode
ANSWER: g

38. stands for Bourne Again Shell
ANSWER: h

39. a computer that has an operating system, but has little computing power and might only need to support a browser used to communicate with the server
ANSWER: i

40. the search app for Mac, can be configured to search the local computer, Wikipedia, iTunes, the Maps app, the web, and more.

Chapter 20 - Virtualization, Linux, and Mac OS X

ANSWER: j

Subjective Short Answer

41. Explain what a thin client is, and detail when it might be used.

ANSWER: If a client does little or no processing with server-side virtualization, a thin client can be used. A thin client is a computer that has an operating system, but has little computing power and might only need to support a browser used to communicate with the server. The main advantage of using thin clients is the reduced cost of the client machine. A decent tablet can serve as a thin client.

42. Define a Type 1 hypervisor and give two examples of a Type 1 hypervisor.

ANSWER: A Type 1 hypervisor installs on a computer before any operating system, and is, therefore, called a bare-metal hypervisor. After it installs, it partitions the hardware computing power into multiple VMs. An OS is installed in each VM. Examples of Type 1 hypervisors are XenServer by Citrix, ESXi by VMware, and Hyper-V by Microsoft.

43. Define a Type 2 hypervisor, and provide two examples of a Type 2 hypervisor.

ANSWER: A Type 2 hypervisor installs in a host operating system as an application. Client Hyper-V, VirtualBox, and VMware Player are examples of Type 2 hypervisors. A Type 2 hypervisor is not as powerful as a Type 1 hypervisor because it is dependent on the host OS to allot its computing power. A VM in a Type 2 hypervisor is not as secure or as fast as a VM in a Type 1 hypervisor. Type 2 hypervisors are typically used on desktops and laptops when performance and security are not significant issues.

44. What is the Linux operating system?

ANSWER: A variation of the Unix operating system, Linux was created by Linus Torvalds. Basic versions of this OS are open source, and all the underlying programming instructions (called source code) are freely distributed. Linux can be used both as a server platform and a desktop platform, but its greatest popularity is in the server market. In addition, the Android operating system for mobile devices is based on Linux, and bootable CDs and flash drives that contain utility software often use Linux. Versions of Linux are called distributions or flavors.

45. Describe the Mac OS X operating system.

ANSWER: OS X is the latest version of the proprietary operating system only available for Macintosh computers by Apple Inc. Like Linux, OS X is built on a Unix foundation. The first Mac OS was released in 1984, and the final "classic" Mac OS, called Mac OS 9, was released in 1999. The first iteration of the desktop version of Mac OS X, dubbed "Cheetah," became available in 2001. From that point forward, the operating system continued to be called OS X (pronounced "O-S-ten") and received a version number to track its progress.

46. What is the Boot Camp utility?

ANSWER: Boot Camp is a utility in Mac OS X that allows you to install and run Windows on a Mac Computer. Boot Camp can split a partition and install Windows in the new partition for a dual boot. The Boot Camp Assistant is accessed through the Utilities folder. After Windows is installed, you can choose which OS to use as your default for the computer, or press and hold the option key when starting the computer to reach the Startup Manager, which lets you choose from the installed operating systems.

47. What are the three methods of implementing client side virtualization?

ANSWER: Using presentation virtualization, a remote application running on a server is controlled by a local computer. Presentation virtualization is a form of SaaS cloud computing. The user remotely controls the application running on the server and the application data is also stored on the server. Using application virtualization, an

Name:‌‍‎‏ Class:‌‍‎‏ Date:‌‍‎‏

Chapter 20 - Virtualization, Linux, and Mac OS X

application can be made available to users without having to install the application on the user's computer. For example, Application Virtualization (App-V) by Microsoft manages applications so they don't install in Windows on the client computer. Using client-side desktop virtualization, software installed on a desktop or laptop manages virtual machines. Each VM has its own operating system installed.

48. When looking to install a hypervisor, what considerations should be made for the motherboard?

ANSWER: The motherboard UEFI/BIOS and the processor should support hardware-assisted virtualization (HAV). For Intel processors, this feature is called IntelVT. For AMD processors, the technology is called AMD-V. Most of today's motherboards support the feature, and it must be enabled in UEFI/BIOS setup.

49. List three methods for keeping a virtual machine secured.

ANSWER: For a Windows VM, be sure to configure Windows Firewall in the VM, keep Windows updates current, install and run antivirus software, require passwords for all user accounts in the VM, and encrypt data folders. One major advantage of using VMs on a desktop computer is that VMs running under a Type 1 hypervisor are isolated from each other. If one VM gets infected, the other VMs will not be affected. You can move a VM from one computer to another by moving the files that contain the VM. Be sure these files that hold the VM are secured with permissions that allow access only to specific local or network users. Protect your VMs by applying security measures to protect the host computer that holds the VMs. For example, require password authentication to sign in to the host computer.

50. What is the terminal in Linux?

ANSWER: In Linux, the terminal refers to the command-line interface for the OS and the default shell for the terminal is the Bash shell. The name stands for "Bourne Again Shell" and takes the best features from two previous shells, the Bourne and the Korn shells. In Linux, a command prompt in the terminal is called a shell prompt.

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