Chapter 07

Secondary Storage

**Multiple Choice Questions**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. | Hard disks store and organize files using all the following, except \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | tracks |  |  |  | | --- | --- | | B. | sectors |  |  |  | | --- | --- | | C. | cylinders |  |  |  | | --- | --- | | D. | paths | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2. | Which of the following is true about an internal hard disk?      |  |  | | --- | --- | | A. | Variable amount of storage |  |  |  | | --- | --- | | B. | Fixed amount of storage |  |  |  | | --- | --- | | C. | Portable |  |  |  | | --- | --- | | D. | Slow | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3. | On a hard disk each track is divided into invisible wedge-shaped sections called \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | bits |  |  |  | | --- | --- | | B. | platters |  |  |  | | --- | --- | | C. | cylinders |  |  |  | | --- | --- | | D. | sectors | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4. | The hard disk's disk surface is scratched and some or all of the data is destroyed when there is a \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | head crash |  |  |  | | --- | --- | | B. | cylinder crash |  |  |  | | --- | --- | | C. | track crash |  |  |  | | --- | --- | | D. | sector crash | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. | Which of the following is not an example of secondary storage?      |  |  | | --- | --- | | A. | External hard drives |  |  |  | | --- | --- | | B. | RAID |  |  |  | | --- | --- | | C. | RAM |  |  |  | | --- | --- | | D. | Flash drives | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. | An external hard disk \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | is heavy |  |  |  | | --- | --- | | B. | is hard to remove |  |  |  | | --- | --- | | C. | cannot be used in addition to an internal hard disk |  |  |  | | --- | --- | | D. | usually connects to a USB or Thunderbolt port | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7. | Storage that retains its data after the power is turned off is referred to as \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | volatile storage |  |  |  | | --- | --- | | B. | sequential storage |  |  |  | | --- | --- | | C. | direct storage |  |  |  | | --- | --- | | D. | nonvolatile storage | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8. | The process of accessing information from secondary storage devices is referred to as \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | backing up |  |  |  | | --- | --- | | B. | restoring |  |  |  | | --- | --- | | C. | writing |  |  |  | | --- | --- | | D. | reading | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9. | The \_\_\_\_\_\_\_ of a secondary storage device indicates how much data the storage medium can hold.      |  |  | | --- | --- | | A. | access |  |  |  | | --- | --- | | B. | capacity |  |  |  | | --- | --- | | C. | memory |  |  |  | | --- | --- | | D. | storage | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. | Which of the following measures the amount of time required by the storage device to retrieve data and programs?      |  |  | | --- | --- | | A. | Nonvolatile media |  |  |  | | --- | --- | | B. | Capacity |  |  |  | | --- | --- | | C. | Access speed |  |  |  | | --- | --- | | D. | RAM | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11. | One way to improve the storage capacity of a hard disk is to \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | format often |  |  |  | | --- | --- | | B. | use file compression |  |  |  | | --- | --- | | C. | increase memory |  |  |  | | --- | --- | | D. | use disk caching | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12. | This process improves system performance by acting as a temporary high-speed holding area between a secondary storage device and the CPU.      |  |  | | --- | --- | | A. | Data compression |  |  |  | | --- | --- | | B. | Data access |  |  |  | | --- | --- | | C. | Disk caching |  |  |  | | --- | --- | | D. | RAID | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13. | Which of the following characteristics about RAID is incorrect?      |  |  | | --- | --- | | A. | expanded storage capability |  |  |  | | --- | --- | | B. | fast access speed |  |  |  | | --- | --- | | C. | highly reliable |  |  |  | | --- | --- | | D. | one high-capacity hard disk drive | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14. | Three ways to improve the performance of a hard disk include \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | disk caching, RAID, and file expansion |  |  |  | | --- | --- | | B. | file compression, disk caching, and file encryption |  |  |  | | --- | --- | | C. | disk caching, RAID, and file compression |  |  |  | | --- | --- | | D. | RAID, file compression and disk expansion | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15. | Which of these is not an example of solid state storage?      |  |  | | --- | --- | | A. | Digital versatile disc |  |  |  | | --- | --- | | B. | SSDs |  |  |  | | --- | --- | | C. | Flash memory cards |  |  |  | | --- | --- | | D. | USB drives | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 16. | Smartphones use which of these storage technologies?      |  |  | | --- | --- | | A. | Optical drive |  |  |  | | --- | --- | | B. | Solid state drive |  |  |  | | --- | --- | | C. | Flash memory card |  |  |  | | --- | --- | | D. | Flash drive | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17. | Optical discs use these to represent data.      |  |  | | --- | --- | | A. | Analog signals |  |  |  | | --- | --- | | B. | Magnetic charges |  |  |  | | --- | --- | | C. | Pits and lands |  |  |  | | --- | --- | | D. | Laser beams | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18. | A CD-RW disc \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | can be written to only once |  |  |  | | --- | --- | | B. | can be erased and rewritten |  |  |  | | --- | --- | | C. | cannot be written on |  |  |  | | --- | --- | | D. | cannot be erased | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19. | All of the following are true of DVD-ROM drives except:      |  |  | | --- | --- | | A. | They are also known as erasable optical discs. |  |  |  | | --- | --- | | B. | They can provide over two hours of high-quality video and sound comparable to that found in motion picture theatres. |  |  |  | | --- | --- | | C. | They are a type of optical disc. |  |  |  | | --- | --- | | D. | DVD-ROM stands for "digital versatile disc-read only memory". | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20. | The standard for high definition optical discs is \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | DVD-RAM |  |  |  | | --- | --- | | B. | HD DVD |  |  |  | | --- | --- | | C. | Blu-ray |  |  |  | | --- | --- | | D. | HD CD | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 21. | These discs have a capacity of 50 gigabytes on one side.      |  |  | | --- | --- | | A. | HD DVD |  |  |  | | --- | --- | | B. | CD |  |  |  | | --- | --- | | C. | DVD |  |  |  | | --- | --- | | D. | Blu-Ray | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 22. | Solid-state storage devices are different than hard disks in that they \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | have no moving parts |  |  |  | | --- | --- | | B. | have a higher capacity |  |  |  | | --- | --- | | C. | have greater access speed |  |  |  | | --- | --- | | D. | are volatile | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 23. | What is it called when servers on the Internet supply applications as a service, rather than a product?      |  |  | | --- | --- | | A. | Digital versatile computing |  |  |  | | --- | --- | | B. | Service computing |  |  |  | | --- | --- | | C. | Cloud computing |  |  |  | | --- | --- | | D. | Optical computing | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 24. | This allows you to upload and store documents on the Internet.      |  |  | | --- | --- | | A. | Cloud storage |  |  |  | | --- | --- | | B. | Flash drive |  |  |  | | --- | --- | | C. | Solid State storage |  |  |  | | --- | --- | | D. | Hard Disk drive | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 25. | Which of these is not a mass storage device?      |  |  | | --- | --- | | A. | RAID system |  |  |  | | --- | --- | | B. | File server |  |  |  | | --- | --- | | C. | Optical disc |  |  |  | | --- | --- | | D. | Organizational cloud storage | |

**True / False Questions**

|  |  |
| --- | --- |
| 26. | Media are the actual physical material that holds the data and programs.    True    False |

|  |  |
| --- | --- |
| 27. | The process of saving information to a secondary storage device is referred to as embedding.    True    False |

|  |  |
| --- | --- |
| 28. | Secondary storage provides temporary or volatile storage.    True    False |

|  |  |
| --- | --- |
| 29. | Hard disks use tracks, sectors, and cylinders to store and organize files.    True    False |

|  |  |
| --- | --- |
| 30. | A smoke particle, fingerprint, dust, or human hair could cause a hard disk head crash.    True    False |

|  |  |
| --- | --- |
| 31. | A hard crash typically occurs on an optical disk when it makes contact with particles on its surface.    True    False |

|  |  |
| --- | --- |
| 32. | External hard drives are used primarily to complement an internal hard disk.    True    False |

|  |  |
| --- | --- |
| 33. | External hard disks use different technology than internal hard disks.    True    False |

|  |  |
| --- | --- |
| 34. | Disk caching improves hard-disk performance by compressing files.    True    False |

|  |  |
| --- | --- |
| 35. | Disk caching uses a combination of hardware and software.    True    False |

|  |  |
| --- | --- |
| 36. | RAID connects several inexpensive hard-disk drives to one another.    True    False |

|  |  |
| --- | --- |
| 37. | File compression is only available on hard disk drives.    True    False |

|  |  |
| --- | --- |
| 38. | CD-ROMs are often used to archive data and to record music downloaded from the Internet.    True    False |

|  |  |
| --- | --- |
| 39. | DVDs have replaced CDs as the standard optical disc.    True    False |

|  |  |
| --- | --- |
| 40. | Blu-ray discs are the high definition standard and have a far greater capacity than DVDs.    True    False |

|  |  |
| --- | --- |
| 41. | Facebook is an example of cloud storage.    True    False |

|  |  |
| --- | --- |
| 42. | If you have used Google Docs to create a word processing document, you have used cloud computing.    True    False |

|  |  |
| --- | --- |
| 43. | In order to access your documents and files that are stored in the cloud, you must have an Internet connection.    True    False |

|  |  |
| --- | --- |
| 44. | Mass storage devices are specialized high-capacity secondary storage devices designed to store large amounts of data for an organization.    True    False |

|  |  |
| --- | --- |
| 45. | File servers are appropriate devices to use in an enterprise storage system.    True    False |

**Fill in the Blank Questions**

|  |  |
| --- | --- |
| 46. | \_\_\_\_\_\_\_ speed is the measure of the amount of time required by a storage device to retrieve data and programs.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 47. | Tracks are divided into invisible wedge-shaped sections called \_\_\_\_\_\_\_.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 48. | Disk \_\_\_\_\_\_\_ improves hard-disk performance by anticipating data needs and reducing time to access data from secondary storage.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 49. | A(n) \_\_\_\_\_\_\_ hard disk is typically connected to a USB or Thunderbolt port.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 50. | A(n) \_\_\_\_\_\_\_ occurs when a read/write head makes contact with the hard disk's surface or with particles on its surface.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 51. | File \_\_\_\_\_\_\_ programs scan files for ways to reduce the amount of required storage.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 52. | File \_\_\_\_\_\_\_ expands compressed files.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 53. | Due to its expanded storage capability, fast access speed, and high reliability, \_\_\_\_\_\_\_ is often used by Internet servers and large organizations.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 54. | USB drives are also known as \_\_\_\_\_\_\_ drives.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 55. | \_\_\_\_\_\_\_ memory cards are a form of a solid-state storage device widely used in smartphones, digital media players, and GPS navigation systems.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 56. | CD-ROM is an example of a(n) \_\_\_\_\_\_\_ type of storage medium.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 57. | DVD + R and DVD-R both stand for DVD \_\_\_\_\_\_\_.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 58. | Typically a personal computer uses a(n) \_\_\_\_\_\_\_ hard disk to store the operating system and software applications.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 59. | DVD stands for digital versatile disc or digital \_\_\_\_\_\_\_ disc.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 60. | The hi-def standard for optical discs is the \_\_\_\_\_\_\_ disc.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 61. | Three common storage options discussed in your text are hard disk, \_\_\_\_\_\_\_, and solid-state storage.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 62. | With \_\_\_\_\_\_\_, or online storage, you can access your files from any computer with an Internet connection.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 63. | A good way to share files with others is to use a(n) \_\_\_\_\_\_\_, or online, storage service.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| 64. | Most large organizations store data through a strategy called a(n) \_\_\_\_\_\_\_ to promote efficient and safe use of data across the networks within their organizations.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Essay Questions**

|  |  |
| --- | --- |
| 65. | Discuss the importance and uses of secondary storage devices. |

|  |  |
| --- | --- |
| 66. | List and explain some of the important characteristics of secondary storage. |

|  |  |
| --- | --- |
| 67. | What causes a head crash to occur? |

|  |  |
| --- | --- |
| 68. | Describe a RAID. |

|  |  |
| --- | --- |
| 69. | What is solid-state storage? Give examples. |

|  |  |
| --- | --- |
| 70. | Differentiate between CD, DVD, and Blu-ray discs. |

|  |  |
| --- | --- |
| 71. | Describe how file compression works. Explain the advantages of file compression. |

|  |  |
| --- | --- |
| 72. | Describe some of the advantages and disadvantages of using cloud computing and cloud storage. |

|  |  |
| --- | --- |
| 73. | Describe some of the mass storage devices that support an enterprise storage system. |

|  |  |
| --- | --- |
| 74. | What is a storage area network? |

Chapter 07 Secondary Storage Answer Key

**Multiple Choice Questions**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. *(p. 173)* | Hard disks store and organize files using all the following, except \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | tracks |  |  |  | | --- | --- | | B. | sectors |  |  |  | | --- | --- | | C. | cylinders |  |  |  | | --- | --- | | **D.** | paths | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 3 Hard Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2. *(p. 174)* | Which of the following is true about an internal hard disk?      |  |  | | --- | --- | | A. | Variable amount of storage |  |  |  | | --- | --- | | **B.** | Fixed amount of storage |  |  |  | | --- | --- | | C. | Portable |  |  |  | | --- | --- | | D. | Slow | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 1 Easy Learning Outcome: 07-04 Compare internal and external hard drives Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3. *(p. 173)* | On a hard disk each track is divided into invisible wedge-shaped sections called \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | bits |  |  |  | | --- | --- | | B. | platters |  |  |  | | --- | --- | | C. | cylinders |  |  |  | | --- | --- | | **D.** | sectors | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4. *(p. 174)* | The hard disk's disk surface is scratched and some or all of the data is destroyed when there is a \_\_\_\_\_\_\_.      |  |  | | --- | --- | | **A.** | head crash |  |  |  | | --- | --- | | B. | cylinder crash |  |  |  | | --- | --- | | C. | track crash |  |  |  | | --- | --- | | D. | sector crash | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. *(p. 172-173)* | Which of the following is not an example of secondary storage?      |  |  | | --- | --- | | A. | External hard drives |  |  |  | | --- | --- | | B. | RAID |  |  |  | | --- | --- | | **C.** | RAM |  |  |  | | --- | --- | | D. | Flash drives | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 2 Medium Learning Outcome: 07-02 Identify the important characteristics of secondary storage including media, capacity, storage devices, and access speed Topic: Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. *(p. 174)* | An external hard disk \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | is heavy |  |  |  | | --- | --- | | B. | is hard to remove |  |  |  | | --- | --- | | C. | cannot be used in addition to an internal hard disk |  |  |  | | --- | --- | | **D.** | usually connects to a USB or Thunderbolt port | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-04 Compare internal and external hard drives Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7. *(p. 172)* | Storage that retains its data after the power is turned off is referred to as \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | volatile storage |  |  |  | | --- | --- | | B. | sequential storage |  |  |  | | --- | --- | | C. | direct storage |  |  |  | | --- | --- | | **D.** | nonvolatile storage | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-01 Distinguish between primary and secondary storage Topic: Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8. *(p. 172-173)* | The process of accessing information from secondary storage devices is referred to as \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | backing up |  |  |  | | --- | --- | | B. | restoring |  |  |  | | --- | --- | | C. | writing |  |  |  | | --- | --- | | **D.** | reading | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-01 Distinguish between primary and secondary storage Topic: Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9. *(p. 173)* | The \_\_\_\_\_\_\_ of a secondary storage device indicates how much data the storage medium can hold.      |  |  | | --- | --- | | A. | access |  |  |  | | --- | --- | | **B.** | capacity |  |  |  | | --- | --- | | C. | memory |  |  |  | | --- | --- | | D. | storage | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-02 Identify the important characteristics of secondary storage including media, capacity, storage devices, and access speed Topic: Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. *(p. 173)* | Which of the following measures the amount of time required by the storage device to retrieve data and programs?      |  |  | | --- | --- | | A. | Nonvolatile media |  |  |  | | --- | --- | | B. | Capacity |  |  |  | | --- | --- | | **C.** | Access speed |  |  |  | | --- | --- | | D. | RAM | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 1 Easy Learning Outcome: 07-02 Identify the important characteristics of secondary storage including media, capacity, storage devices, and access speed Topic: Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11. *(p. 175)* | One way to improve the storage capacity of a hard disk is to \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | format often |  |  |  | | --- | --- | | **B.** | use file compression |  |  |  | | --- | --- | | C. | increase memory |  |  |  | | --- | --- | | D. | use disk caching | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12. *(p. 175)* | This process improves system performance by acting as a temporary high-speed holding area between a secondary storage device and the CPU.      |  |  | | --- | --- | | A. | Data compression |  |  |  | | --- | --- | | B. | Data access |  |  |  | | --- | --- | | **C.** | Disk caching |  |  |  | | --- | --- | | D. | RAID | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13. *(p. 175)* | Which of the following characteristics about RAID is incorrect?      |  |  | | --- | --- | | A. | expanded storage capability |  |  |  | | --- | --- | | B. | fast access speed |  |  |  | | --- | --- | | C. | highly reliable |  |  |  | | --- | --- | | **D.** | one high-capacity hard disk drive | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14. *(p. 175)* | Three ways to improve the performance of a hard disk include \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | disk caching, RAID, and file expansion |  |  |  | | --- | --- | | B. | file compression, disk caching, and file encryption |  |  |  | | --- | --- | | **C.** | disk caching, RAID, and file compression |  |  |  | | --- | --- | | D. | RAID, file compression and disk expansion | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Apply Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15. *(p. 178-179)* | Which of these is not an example of solid state storage?      |  |  | | --- | --- | | **A.** | Digital versatile disc |  |  |  | | --- | --- | | B. | SSDs |  |  |  | | --- | --- | | C. | Flash memory cards |  |  |  | | --- | --- | | D. | USB drives | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 2 Medium Learning Outcome: 07-07 Define solid-state storage including solid-state drives, flash memory cards, and USB drives Topic: Solid-State Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 16. *(p. 179)* | Smartphones use which of these storage technologies?      |  |  | | --- | --- | | A. | Optical drive |  |  |  | | --- | --- | | B. | Solid state drive |  |  |  | | --- | --- | | **C.** | Flash memory card |  |  |  | | --- | --- | | D. | Flash drive | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-07 Define solid-state storage including solid-state drives, flash memory cards, and USB drives Topic: Solid-State Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17. *(p. 176)* | Optical discs use these to represent data.      |  |  | | --- | --- | | A. | Analog signals |  |  |  | | --- | --- | | B. | Magnetic charges |  |  |  | | --- | --- | | **C.** | Pits and lands |  |  |  | | --- | --- | | D. | Laser beams | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18. *(p. 177)* | A CD-RW disc \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | can be written to only once |  |  |  | | --- | --- | | **B.** | can be erased and rewritten |  |  |  | | --- | --- | | C. | cannot be written on |  |  |  | | --- | --- | | D. | cannot be erased | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19. *(p. 177)* | All of the following are true of DVD-ROM drives except:      |  |  | | --- | --- | | **A.** | They are also known as erasable optical discs. |  |  |  | | --- | --- | | B. | They can provide over two hours of high-quality video and sound comparable to that found in motion picture theatres. |  |  |  | | --- | --- | | C. | They are a type of optical disc. |  |  |  | | --- | --- | | D. | DVD-ROM stands for "digital versatile disc-read only memory". | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 3 Hard Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20. *(p. 177)* | The standard for high definition optical discs is \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | DVD-RAM |  |  |  | | --- | --- | | B. | HD DVD |  |  |  | | --- | --- | | **C.** | Blu-ray |  |  |  | | --- | --- | | D. | HD CD | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 21. *(p. 178)* | These discs have a capacity of 50 gigabytes on one side.      |  |  | | --- | --- | | A. | HD DVD |  |  |  | | --- | --- | | B. | CD |  |  |  | | --- | --- | | C. | DVD |  |  |  | | --- | --- | | **D.** | Blu-Ray | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 22. *(p. 178)* | Solid-state storage devices are different than hard disks in that they \_\_\_\_\_\_\_.      |  |  | | --- | --- | | **A.** | have no moving parts |  |  |  | | --- | --- | | B. | have a higher capacity |  |  |  | | --- | --- | | C. | have greater access speed |  |  |  | | --- | --- | | D. | are volatile | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-07 Define solid-state storage including solid-state drives, flash memory cards, and USB drives Topic: Solid-State Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 23. *(p. 180)* | What is it called when servers on the Internet supply applications as a service, rather than a product?      |  |  | | --- | --- | | A. | Digital versatile computing |  |  |  | | --- | --- | | B. | Service computing |  |  |  | | --- | --- | | **C.** | Cloud computing |  |  |  | | --- | --- | | D. | Optical computing | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-08 Define cloud storage and cloud storage services Topic: Cloud Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 24. *(p. 180)* | This allows you to upload and store documents on the Internet.      |  |  | | --- | --- | | **A.** | Cloud storage |  |  |  | | --- | --- | | B. | Flash drive |  |  |  | | --- | --- | | C. | Solid State storage |  |  |  | | --- | --- | | D. | Hard Disk drive | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-08 Define cloud storage and cloud storage services Topic: Cloud Storage* |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 25. *(p. 183)* | Which of these is not a mass storage device?      |  |  | | --- | --- | | A. | RAID system |  |  |  | | --- | --- | | B. | File server |  |  |  | | --- | --- | | **C.** | Optical disc |  |  |  | | --- | --- | | D. | Organizational cloud storage | |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 2 Medium Learning Outcome: 07-09 Discuss mass storage, mass storage devices, enterprise storage systems, and storage area networks Topic: Mass Storage Devices* |

**True / False Questions**

|  |  |
| --- | --- |
| 26. *(p. 173)* | Media are the actual physical material that holds the data and programs.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-02 Identify the important characteristics of secondary storage including media, capacity, storage devices, and access speed Topic: Storage* |

|  |  |
| --- | --- |
| 27. *(p. 172-173)* | The process of saving information to a secondary storage device is referred to as embedding.    **FALSE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-01 Distinguish between primary and secondary storage Topic: Storage* |

|  |  |
| --- | --- |
| 28. *(p. 172)* | Secondary storage provides temporary or volatile storage.    **FALSE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-01 Distinguish between primary and secondary storage Topic: Storage* |

|  |  |
| --- | --- |
| 29. *(p. 173)* | Hard disks use tracks, sectors, and cylinders to store and organize files.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 1 Easy Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |
| --- | --- |
| 30. *(p. 174)* | A smoke particle, fingerprint, dust, or human hair could cause a hard disk head crash.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |
| --- | --- |
| 31. *(p. 174)* | A hard crash typically occurs on an optical disk when it makes contact with particles on its surface.    **FALSE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |
| --- | --- |
| 32. *(p. 174)* | External hard drives are used primarily to complement an internal hard disk.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 1 Easy Learning Outcome: 07-04 Compare internal and external hard drives Topic: Hard Disks* |

|  |  |
| --- | --- |
| 33. *(p. 174)* | External hard disks use different technology than internal hard disks.    **FALSE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-04 Compare internal and external hard drives Topic: Hard Disks* |

|  |  |
| --- | --- |
| 34. *(p. 175)* | Disk caching improves hard-disk performance by compressing files.    **FALSE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 35. *(p. 175)* | Disk caching uses a combination of hardware and software.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 36. *(p. 175)* | RAID connects several inexpensive hard-disk drives to one another.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 37. *(p. 175)* | File compression is only available on hard disk drives.    **FALSE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 38. *(p. 176-177)* | CD-ROMs are often used to archive data and to record music downloaded from the Internet.    **FALSE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |
| --- | --- |
| 39. *(p. 177)* | DVDs have replaced CDs as the standard optical disc.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |
| --- | --- |
| 40. *(p. 177)* | Blu-ray discs are the high definition standard and have a far greater capacity than DVDs.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |
| --- | --- |
| 41. *(p. 180)* | Facebook is an example of cloud storage.    **FALSE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Apply Difficulty: 3 Hard Learning Outcome: 07-08 Define cloud storage and cloud storage services Topic: Cloud Storage* |

|  |  |
| --- | --- |
| 42. *(p. 180)* | If you have used Google Docs to create a word processing document, you have used cloud computing.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 1 Easy Learning Outcome: 07-08 Define cloud storage and cloud storage services Topic: Cloud Storage* |

|  |  |
| --- | --- |
| 43. *(p. 180)* | In order to access your documents and files that are stored in the cloud, you must have an Internet connection.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-08 Define cloud storage and cloud storage services Topic: Cloud Storage* |

|  |  |
| --- | --- |
| 44. *(p. 183)* | Mass storage devices are specialized high-capacity secondary storage devices designed to store large amounts of data for an organization.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-09 Discuss mass storage, mass storage devices, enterprise storage systems, and storage area networks Topic: Mass Storage Devices* |

|  |  |
| --- | --- |
| 45. *(p. 183-184)* | File servers are appropriate devices to use in an enterprise storage system.    **TRUE** |

|  |
| --- |
| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 07-09 Discuss mass storage, mass storage devices, enterprise storage systems, and storage area networks Topic: Mass Storage Devices* |

**Fill in the Blank Questions**

|  |  |
| --- | --- |
| 46. *(p. 173)* | \_\_\_\_\_\_\_ speed is the measure of the amount of time required by a storage device to retrieve data and programs.    **Access** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-02 Identify the important characteristics of secondary storage including media, capacity, storage devices, and access speed Topic: Storage* |

|  |  |
| --- | --- |
| 47. *(p. 173)* | Tracks are divided into invisible wedge-shaped sections called \_\_\_\_\_\_\_.    **sectors** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |
| --- | --- |
| 48. *(p. 175)* | Disk \_\_\_\_\_\_\_ improves hard-disk performance by anticipating data needs and reducing time to access data from secondary storage.    **caching** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 49. *(p. 174)* | A(n) \_\_\_\_\_\_\_ hard disk is typically connected to a USB or Thunderbolt port.    **external** |

|  |
| --- |
| *AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-04 Compare internal and external hard drives Topic: Hard Disks* |

|  |  |
| --- | --- |
| 50. *(p. 174)* | A(n) \_\_\_\_\_\_\_ occurs when a read/write head makes contact with the hard disk's surface or with particles on its surface.    **head crash** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 2 Medium Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |
| --- | --- |
| 51. *(p. 175)* | File \_\_\_\_\_\_\_ programs scan files for ways to reduce the amount of required storage.    **compression** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 52. *(p. 175)* | File \_\_\_\_\_\_\_ expands compressed files.    **decompression** |

|  |
| --- |
| *AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 53. *(p. 175)* | Due to its expanded storage capability, fast access speed, and high reliability, \_\_\_\_\_\_\_ is often used by Internet servers and large organizations.    **RAID** |

|  |
| --- |
| *AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 54. *(p. 179)* | USB drives are also known as \_\_\_\_\_\_\_ drives.    **flash** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-07 Define solid-state storage including solid-state drives, flash memory cards, and USB drives Topic: Solid-State Storage* |

|  |  |
| --- | --- |
| 55. *(p. 179)* | \_\_\_\_\_\_\_ memory cards are a form of a solid-state storage device widely used in smartphones, digital media players, and GPS navigation systems.    **Flash** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-07 Define solid-state storage including solid-state drives, flash memory cards, and USB drives Topic: Solid-State Storage* |

|  |  |
| --- | --- |
| 56. *(p. 176)* | CD-ROM is an example of a(n) \_\_\_\_\_\_\_ type of storage medium.    **optical** |

|  |
| --- |
| *AACSB: Technology Blooms: Apply Difficulty: 2 Medium Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |
| --- | --- |
| 57. *(p. 177)* | DVD + R and DVD-R both stand for DVD \_\_\_\_\_\_\_.    **recordable** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |
| --- | --- |
| 58. *(p. 174)* | Typically a personal computer uses a(n) \_\_\_\_\_\_\_ hard disk to store the operating system and software applications.    **internal** |

|  |
| --- |
| *AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-04 Compare internal and external hard drives Topic: Hard Disks* |

|  |  |
| --- | --- |
| 59. *(p. 177)* | DVD stands for digital versatile disc or digital \_\_\_\_\_\_\_ disc.    **video** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |
| --- | --- |
| 60. *(p. 177)* | The hi-def standard for optical discs is the \_\_\_\_\_\_\_ disc.    **Blu-ray** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |
| --- | --- |
| 61. *(p. 173-179)* | Three common storage options discussed in your text are hard disk, \_\_\_\_\_\_\_, and solid-state storage.    **optical disc** |

|  |
| --- |
| *AACSB: Technology Blooms: Apply Difficulty: 2 Medium Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Learning Outcome: 07-07 Define solid-state storage including solid-state drives, flash memory cards, and USB drives Topic: Hard Disks Topic: Optical Discs Topic: Solid-State Storage* |

|  |  |
| --- | --- |
| 62. *(p. 180)* | With \_\_\_\_\_\_\_, or online storage, you can access your files from any computer with an Internet connection.    **cloud** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-08 Define cloud storage and cloud storage services Topic: Cloud Storage* |

|  |  |
| --- | --- |
| 63. *(p. 180)* | A good way to share files with others is to use a(n) \_\_\_\_\_\_\_, or online, storage service.    **cloud** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 2 Medium Learning Outcome: 07-08 Define cloud storage and cloud storage services Topic: Cloud Storage* |

|  |  |
| --- | --- |
| 64. *(p. 183)* | Most large organizations store data through a strategy called a(n) \_\_\_\_\_\_\_ to promote efficient and safe use of data across the networks within their organizations.    **enterprise storage system** |

|  |
| --- |
| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 07-09 Discuss mass storage, mass storage devices, enterprise storage systems, and storage area networks Topic: Mass Storage Devices* |

**Essay Questions**

|  |  |
| --- | --- |
| 65. *(p. 172)* | Discuss the importance and uses of secondary storage devices.     Secondary storage provides permanent or nonvolatile storage. Using secondary storage devices such as a hard disk drive, data and programs can be retained after the computer has been shut off. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Apply Difficulty: 2 Medium Learning Outcome: 07-01 Distinguish between primary and secondary storage Topic: Storage* |

|  |  |
| --- | --- |
| 66. *(p. 173)* | List and explain some of the important characteristics of secondary storage.     Some important characteristics of secondary storage include (1) Media which are the actual physical material that holds the data and programs, (2) Capacity which measures how much a particular storage medium can hold, (3) Storage devices which are the hardware that reads data and programs from storage media. Most also write to storage media and (4) Access speed which measures the amount of time required by the storage device to retrieve data and programs. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-02 Identify the important characteristics of secondary storage including media, capacity, storage devices, and access speed Topic: Storage* |

|  |  |
| --- | --- |
| 67. *(p. 174)* | What causes a head crash to occur?     A head crash occurs when a read/write head makes contact with the hard disk's surface or with particles on its surface. A head crash is a disaster for a hard disk. The disk surface is scratched and some or all of the data is destroyed. At one time, head crashes were commonplace. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-03 Describe hard-disk platters, tracks, sectors, cylinders, and head crashes Topic: Hard Disks* |

|  |  |
| --- | --- |
| 68. *(p. 175)* | Describe a RAID.     RAID, or redundant array of inexpensive disks, improves performance by expanding external storage, improving access speed, and providing reliable storage. In a RAID, several inexpensive hard-disk drives are connected to one another. The connected hard-disk drives are related or grouped together, and the computer system interacts with the RAID system as though it were a single large-capacity drive. The result is expanded storage capability, fast access speed, and high reliability. For these reasons, RAID is often used by Internet servers and large organizations. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 69. *(p. 178-179)* | What is solid-state storage? Give examples.     Solid-state storage devices have no moving parts. Data and information are stored and retrieved electronically directly from these devices much as they would be from conventional computer memory. Solid-state drives (SDDs) are similar to hard disk drives, but they use solid-state memory instead of magnetic discs to store data. SSDs are faster and more durable than hard disks. SSDs also require less power, which can lead to increased battery life for laptops and mobile devices. SSDs are more expensive and generally have a lower capacity than hard disks, but this is changing as the popularity of SSDs continues to increase. SDDs are widely used for tablet PCs, such as the iPad. Flash memory cards are small solid-state storage devices used in portable devices like smartphones and GPS navigation systems. They are also used to store images from digital cameras and then to transfer the images to a personal computer. USB drives, or flash drives, are so compact they can be transported on a key ring. These drives connect to a computer's USB port to transfer files. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Apply Difficulty: 2 Medium Learning Outcome: 07-07 Define solid-state storage including solid-state drives, flash memory cards, and USB drives Topic: Solid-State Storage* |

|  |  |
| --- | --- |
| 70. *(p. 176-177)* | Differentiate between CD, DVD, and Blu-ray discs.     CDs, DVDs, and Blu-ray are all optical disc formats. All three come in read only, write once, and rewritable versions. CDs have the smallest capacity, followed by DVDs, with Blu-ray having the largest capacity. Although Blu-ray media are the same size as CDs and DVDs, the discs require special drives. Most Blu-ray drives can also read CDs and DVDs as well. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Analyze Difficulty: 3 Hard Learning Outcome: 07-06 Define optical storage including compact discs, digital versatile discs, and Blu-ray discs Topic: Optical Discs* |

|  |  |
| --- | --- |
| 71. *(p. 175)* | Describe how file compression works. Explain the advantages of file compression.     File compression programs, such as WinZip, scan files for ways to reduce the amount of required storage. One way is to search for repeating patterns. The repeating patterns are replaced with a token, leaving enough tokens so that the original can be rebuilt or decompressed. These programs often shrink files to a quarter of their original size. In addition to increasing storage capacity, file compression also helps to speed up transmission of files from one computer to another, and makes sending files across the Internet far more efficient. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 07-05 Compare performance enhancements including disk caching, RAID, file compression, and file decompression Topic: Hard Disks* |

|  |  |
| --- | --- |
| 72. *(p. 180)* | Describe some of the advantages and disadvantages of using cloud computing and cloud storage.     A few of the advantages or benefits of using cloud computing and cloud storage include: (1) The cloud service will take care of disk defragmentation, backups, encryption, and security; (2) The cloud service will never run out of disk space, can replace failed hard disks without interruption to the user, and handles RAID disk issues for the user; and (3) Users can share documents, spreadsheets, and files with others from anywhere with an Internet connection. As for disadvantages, (1) the data transfer rate is dependent upon the speed of your Internet connection, which most likely is not as fast as a user's internal network; and (2) users are dependent upon the cloud service's security procedures, which may not be as effective as your own. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Analyze Difficulty: 2 Medium Learning Outcome: 07-08 Define cloud storage and cloud storage services Topic: Cloud Storage* |

|  |  |
| --- | --- |
| 73. *(p. 184)* | Describe some of the mass storage devices that support an enterprise storage system.     File servers are dedicated computers with very large storage capacities that provide users access to fast storage and retrieval of data. Network attached storage (NAS) is similar to a file server except it is simpler and less expensive. It is widely used for home and small business storage needs. RAID systems enhance organizational security by constantly making backup copies of files moving across the organization's networks. Organizational cloud storage utilizes a high-speed Internet connection to a dedicated remote storage facility. These facilities contain banks of file servers to offer enormous amounts of storage. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Apply Difficulty: 2 Medium Learning Outcome: 07-09 Discuss mass storage, mass storage devices, enterprise storage systems, and storage area networks Topic: Mass Storage Devices* |

|  |  |
| --- | --- |
| 74. *(p. 184)* | What is a storage area network?  Storage area network (SAN) is an architecture to link remote computer storage devices, such as enterprise storage systems, to computers such that the devices are as available as locally attached drives. In a SAN system, the user's computer provides the file system for storing data, but the SAN provides the disk space. The key to a SAN is a high-speed network, connecting individual computers to mass storage devices. |

|  |
| --- |
| *AACSB: Reflective Thinking AACSB: Technology Blooms: Remember Difficulty: 2 Medium Learning Outcome: 07-09 Discuss mass storage, mass storage devices, enterprise storage systems, and storage area networks Topic: Mass Storage Devices* |