Guide to Operating Systems 5th edition Tomsho Solutions Manual

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Guide to Operating Systems
Chapter 1 Solutions

Answers to Chapter 1 Review Questions

1. Which of the following is a basic function all computers perform? (Choose all that apply.)
   - **a. processing**
   - b. Internet access
   - c. graphics
   - **d. input**
   - e. e-mail
   - **f. output**
2. Which of the following executes instructions provided by computer programs?
   - a. NIC
   - b. USB
   - **c. CPU**
   - d. drive
3. The large bank where you work uses an older mainframe to make a customer service database available for complex reports and queries about customer profiles. Which of the following occurs when 12 users run large reports on the mainframe at the same time?
   - a. batching
   - b. interfacing
   - c. overload
   - **d. time sharing**
4. Which of the following is a feature typically provided by an operating system? (Choose all that apply.)
   - **a. file system**
   - b. spreadsheet
   - c. database app
   - **d. kernel**
5. What is another name for a client operating system?

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a. real-time operating system
b. multiuser operating system
c. server operating system
d. desktop operating system

6. While on a coffee break, your colleague asserts that cooperative multitasking is the best operating system design. What is your response? (Choose all that apply.)
   a. A disadvantage of cooperative multitasking is that it relies on each program to decide when to give control back to the operating system.
   b. Cooperative multitasking can be faster than other forms of multitasking because it increases the clock speed of the processor.
   c. Cooperative multitasking OSs can get stuck in an endless loop.
   d. Modern operating systems use preemptive multitasking so that the operating system is fully in control.
7. You are called into a small business in which 25 people are using one Windows 10 computer to share files. The business wants you to diagnose why file sharing is often slow or seems to grind to a halt. What is your assessment?
   a. Windows 10 is only meant for 20 or fewer simultaneous users. The company should upgrade to a server system.
   b. Windows 10 is working in batch mode and should be reset for multitasking mode.
   c. The company should switch to Windows 7.
   d. Windows 10 is experiencing task locks and task locking should be turned off.
8. Which type of server plugs into slots in an enclosure that contains a backplane?
   a. rack-mounted
   b. blade
   c. tower
   d. mainframe
9. What is the core code of an operating system called?
   a. kernel
   b. blade
   c. driver
   d. bus
10. You are using e-mail to send a message over the Internet. Which of the following

types of software acts like a hook in the operating system to enable e-mail transmissions over the Internet?

a. software compiler
b. hook driver
c. Internet translator
d. application programming interface

11. Which of the following operating systems only comes in a 64-bit version and not a 32-bit version?

a. Mac OS X Leopard
b. Linux
c. Windows Server 2016
d. Windows 10
e. No current operating system operates only on a 64-bit computer.

12. Which processor was used in the original IBM PC?

a. Zilog Z80
b. Motorola 68000
c. AMD Opteron
d. Intel 8088

13. Which of the following operating systems are multitasking systems? (Choose all that apply.)

a. MS-DOS
b. Windows 10
c. Mac OS X
d. Linux

14. To help manage access to the CPU, programs and processes are assigned which of the following by the operating system?

a. a time-stamp
b. 100 KB of RAM
c. a program unit interval
d. a priority

15. Today's class discussion is a comparison of high-end computers and lower-end computers. Which of the following factors help to differentiate these types of

computers? (Choose all that apply.)

a. number of CPUs

b. size of the monitor

c. size of the data pathways in the computer

d. number of USB ports

16. Where is a computer's BIOS typically stored in modern computers?

a. RAM

b. flash memory

c. ROM

d. hard disk

17. Which of the following is performed by the BIOS? (Choose all that apply.)

a. runs the power-on self test

b. starts the operating system

c. manages the file system

d. allocates memory to applications

18. Operating systems that give programs direct access to manipulating hardware are more susceptible to which of the following problems? (Choose all that apply.)

a. malicious software vulnerabilities

b. runaway BIOS

c. memory block conflicts that make hardware devices unstable

d. CPU clocking problems

19. Which type of operating system is most likely to be part of an embedded system?

a. task-switching

b. cooperative multitasking

c. real-time

d. time sharing

20. What are two types of cloud computing models? (Choose two.)

a. private cloud

b. public cloud

c. preemptive cloud

d. cooperative cloud

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Solutions to Case Projects

Case Project 1-1: Basic operating system functions

Students can start by discussing I/O tasks that operating systems perform, such as how they:

- Handle input from the keyboard, mouse, and other input devices
- Handle output to the monitor and printer
- Handle remote communications using a digital modem (such as a cable modem) or analog modem (for nondigital telephone communications)
- Manage network communications, such as for a local network and the Internet
- Control input/output for devices such as network interface cards
- Control information storage and retrieval using various types of disk, DVD/CD-ROM, and removable storage drives
- Enable multimedia use for voice and video composition or reproduction, such as recording video from a camera or playing music through speakers

Students might also discuss the OS's relationship to the BIOS and to cooperative versus preemptive multitasking.

Case Project 1-2: Device drivers

As discussed in Chapter 1, a device driver translates computer code to display text on a screen or translates movements of a mouse into action, among other things. A separate device driver is usually present for each I/O device. In general, operating systems have a standardized way of communicating with device drivers. The device driver contains the actual code (instructions) to communicate with the chips on the device. This way, if another piece of hardware is introduced into the computer, the operating system code does not have to change. To enable the computer to communicate with the new device, all you need to do is load a new device driver onto the operating system. Device drivers are important to interface with devices such as:

- Monitors
- Keyboards
- Disk drives
- Pointing devices
- Network interfaces
- DVD/CD-ROM drives
- Removable drives

Case Project 1-3: Choose a new server

The options for a server operating system include the following systems mentioned in this text:

- Windows Server 2012 R2 or Server 2016
- UNIX
- Linux
- Mac OS X Server

The options that students recommend can vary depending on how they defend their selections. All of these options are viable server systems for the situation. In their discussion, students might consider the importance of having a full-featured network operating system and full-featured

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multiuser capabilities. They also might discuss matching the server with anticipated new desktop systems, as discussed in Case Project 1-4. For example, if the desktop systems are Windows systems, students might discuss the value of using a Windows-based server. Another element to consider is the software applications that must be used, particularly in light of whether the applications will only run in Windows, Linux, or another server operating system.

Case Project 1-4: Choose new desktop systems

Candidates for the desktop operating system should include:

- Windows 8.1 and Windows 10. Windows 8 was short-lived and probably should not be used.
- UNIX
- Linux
- Mac OS X

Modern operating system capabilities to look for include:

- Multitasking to run multiple programs at once
- Drivers for modern devices that are written for the operating system
- Capability to run the software needed for desktops in the library
- Capability to fully access the selected server and to run any programs accessed from the server
- Capability to use new hardware devices that are released
- Support from the vendor

Cost is another factor to consider. For example, many Linux distributions can be obtained for free as open source software. Also, applications that run on Linux computers are often free, such as software from OpenOffice.org. Some public institutions have adopted Linux and open source software because of the costs. However, a hidden cost is retraining users and the transition to new systems.

Case Project 1-5: A problem with a newly released operating system

On the basis of what students have learned thus far, there are several possibilities they can discuss. For example, the new operating system might have a problem with the resource manager programs. These programs within the operating system manage computer memory and central processor use.

Another problem might exist with one or more device drivers in terms of how they interface with the operating system. A poorly written device driver might affect the operation of the resource managers or might not enable proper release of memory after a specific action.

Other possibilities might be problems with an API or even with the new code in the system kernel.

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