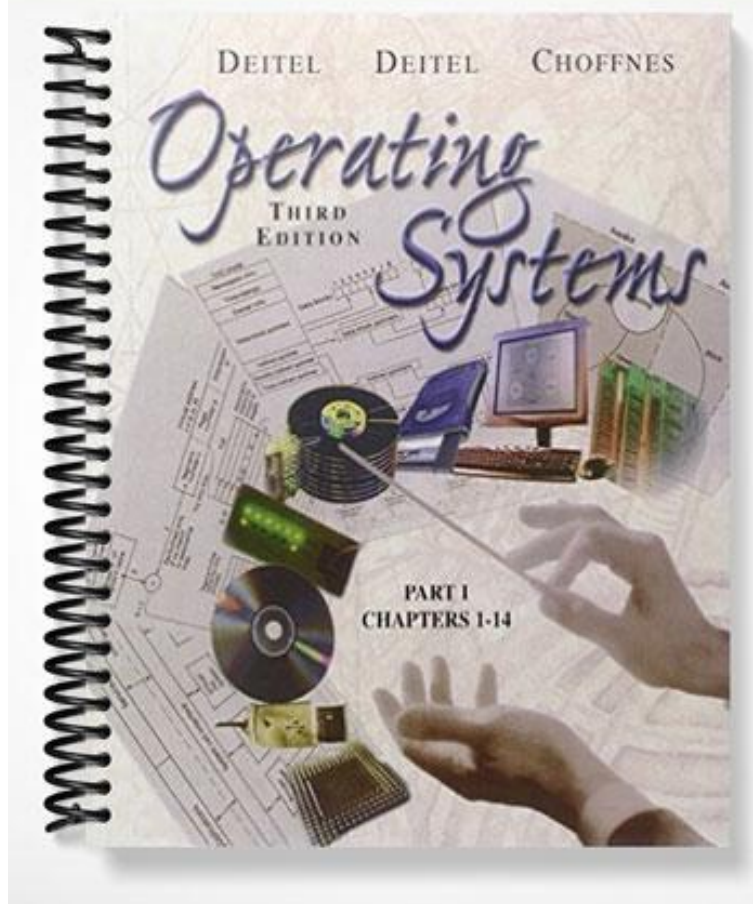


**TEST BANK**



## Chapter 2

### Section 2.1

No questions.

### Section 2.2

2.1 Operating systems use \_\_\_\_\_, often provided by hardware manufacturers, to perform device-specific I/O operations.

- a) controllers
- b) device drivers
- c) APIs
- d) none of the above

Ans: b

2.2 From the user's point of view, plug-and-play devices that are added to the system typically are ready to use \_\_\_\_\_.

- a) after restarting the computer
- b) after manually configuring the operating system to identify the device
- c) immediately, with little or no user interaction
- d) after logging off and logging back onto the system

Ans: c

### Section 2.3

#### Section 2.3.1

2.3 Which of the following hardware components are required to execute instructions in a general-purpose computer?

- a) mainboard
- b) processor
- c) main memory
- d) all of the above

Ans: d

2.4 The \_\_\_\_\_ chip, typically located on the mainboard, stores instructions for basic hardware initialization and management.

- a) bootstrap
- b) firmware
- c) basic input/output system (BIOS)
- d) device driver

Ans: c

#### Section 2.3.2

2.5 A(n) \_\_\_\_\_ is a piece of hardware that executes a set of machine-language instructions.

- a) controller
- b) bus
- c) processor
- d) motherboard

Ans: c

2.6 Within a processor, the \_\_\_\_\_ loads instructions into high-speed memory (i.e., instruction registers), the \_\_\_\_\_ interprets the instructions and the \_\_\_\_\_ performs basic arithmetic and logical operations.

- a) arithmetic and logic unit, instruction fetch unit, instruction decode unit
- b) instruction fetch unit, arithmetic and logic unit, instruction decode unit
- c) arithmetic and logic unit, instruction decode unit, instruction fetch unit
- d) instruction fetch unit, instruction decode unit, arithmetic and logic unit

Ans: d

2.7 Which type of memory provides the fastest data access?

- a) registers
- b) L1 cache
- c) L2 cache
- d) L3 cache

Ans: a

### Section 2.3.3

2.8 What is the role of a computer system's clock generator?

- a) It keeps track of the current date and time.
- b) It provides power for the computer's internal clock.
- c) It sets the frequency at which buses in the system transfer data.
- d) Both a) and c)

Ans: c

### Section 2.3.4

2.9 Which of the following lists memory types from highest to lowest speed?

- a) secondary storage, main memory, L2 cache, registers
- b) registers, L1 cache, secondary storage, main memory
- c) registers, L2 cache, main memory, secondary storage
- d) L1 cache, registers, main memory, secondary storage

Ans: c

2.10 Data stored on \_\_\_\_\_ media (i.e., caches) vanishes when the computer is turned off, whereas \_\_\_\_\_ media (i.e., hard disks) preserve data when no power is present.

- a) persistent, volatile
- b) volatile, persistent
- c) random-access, sequential-access
- d) dynamic, static

Ans: b

### Section 2.3.5

2.11 As manufacturers develop new memory technologies, the speed and capacity of memory tend to \_\_\_\_\_, while the cost per storage unit tends to \_\_\_\_\_.

- a) increase, increase
- b) increase, decrease
- c) decrease, increase
- d) decrease, decrease

Ans: b

### Section 2.3.6

2.12 Why is hard disk storage much slower to access than main memory?

- a) Accessing data on a hard disk requires mechanical movement of the read/write head.
- b) Disks are located farther from a system's processors.
- c) Disks must be accessed via a hardware controller.
- d) all of the above

Ans: a

2.13 Removable media such as CD-Rs generally have \_\_\_\_\_ capacity and \_\_\_\_\_ latency than other forms of storage such as hard disks.

- a) higher, higher
- b) higher, lower
- c) lower, higher
- d) lower, lower

Ans: c

### Section 2.3.7

2.14 A(n) \_\_\_\_\_ is a bus that connects exactly two devices, and a(n) \_\_\_\_\_ is a bus that several devices share to perform I/O operations.

- a) data bus, I/O channel
- b) port, I/O channel
- c) I/O channel, port
- d) data bus, port

Ans: b

2.15 To prevent signals from colliding on the bus, \_\_\_\_\_ prioritize(s) access to memory by I/O channels and processors.

- a) a register
- b) interrupts
- c) the processor scheduler
- d) a controller

Ans: d

### Section 2.3.8

2.16 \_\_\_\_\_ enables devices and controllers to transfer blocks of data to and from main memory directly.

- a) Programmed I/O
- b) Direct memory access (DMA)
- c) Interrupt-driven I/O
- d) Pipelining

Ans: b

### Section 2.3.9

2.17 Which of the following devices is not considered a peripheral device?

- a) printer
- b) DVD drive
- c) mainboard
- d) hard disk drive

Ans: c

2.18 Which of the following is not a serial interface?

- a) USB
- b) IEEE 1394 (FireWire or iLink)
- c) SCSI
- d) none of the above

Ans: c

## Section 2.4

### Section 2.4.1

2.19 In what ways do processors support operating system services?

- a) To create a secure system, processors often implement protection mechanisms by preventing processes from accessing privileged instructions.
- b) Most processors provide mechanisms for memory protection and memory management.
- c) Processors inform the operating system of events such as program execution errors and changes in device status
- d) all of the above

Ans: d

2.20 As computer architectures have evolved, the number of privileged instructions (i.e., those instructions not accessible in user mode) has \_\_\_\_\_.

- a) increased
- b) decreased
- c) increased dramatically
- d) remained the same

Ans: a

2.21 Which of the following events would *not* lead to an exception being generated?

- a) a hardware failure
- b) a disk I/O completion
- c) a logic error
- d) a protection violation

Ans: b

### Section 2.4.2

2.22 A(n) \_\_\_\_\_ periodically generates an interrupt that causes a processor to invoke the operating system.

- a) clock generator
- b) time-of-day clock
- c) interval timer
- d) none of the above

Ans: c

### Section 2.4.3

2.23 Which of the following does not occur during bootstrapping?

- a) low-level operating system components are loaded into memory
- b) a login prompt is loaded
- c) processor registers are initialized
- d) the system prepares to run user applications

Ans: b

#### Section 2.4.4

2.24 Which of the following events does not occur when a plug-and-play device is attached to a computer?

- a) The device uniquely identifies itself to the operating system.
- b) The device indicates to the operating system the resources and services it requires to function properly.
- c) The device identifies the driver it requires to function.
- d) The device notifies the user that it is ready to use.

Ans: d

#### Section 2.5

2.25 A cache hit occurs when \_\_\_\_\_.

- a) a referenced piece of data is present in cache memory.
- b) a piece of data is removed from the cache.
- c) a referenced piece of data is not present in cache memory.
- d) a piece of data is placed in cache memory.

Ans: a

2.26 \_\_\_\_\_ improve system performance by temporarily storing data during transfers between devices or processes that operate at different speeds.

- a) Caches
- b) Controllers
- c) Buffers
- d) Registers

Ans: c

#### Section 2.6

##### Section 2.6.1

2.27 Computer languages can be classified as one of three types. Which of the following is not one of these types?

- a) Assembly languages
- b) High-level languages
- c) Microcode languages
- d) Machine languages

Ans: c

2.28 Specifying elementary computer operations with English-like abbreviations forms the basis of \_\_\_\_\_ languages.

- a) Assembly languages
- b) High-level languages
- c) Mid-level languages
- d) Machine languages

Ans: a

##### Section 2.6.2

2.29 Translator programs called \_\_\_\_\_ convert high-level language programs into machine language.

- a) assemblers
- b) compilers
- c) interpreters
- d) none of the above

Ans: b

2.30 \_\_\_\_\_ are programs that directly execute source code or code that has been reduced to low-level language but not machine code.

- a) assemblers
- b) compilers
- c) interpreters
- d) none of the above

Ans: c

#### Section 2.6.3

2.31 IBM developed \_\_\_\_\_ in the mid 1950s for scientific and engineering applications that require complex mathematical computations.

- a) C
- b) Fortran
- c) COBOL
- d) Pascal

Ans: b

#### Section 2.6.4

2.32 \_\_\_\_\_, a programming language designed for teaching structured programming in academic environments, was developed by Professor Nicklaus Wirth in 1971.

- a) C
- b) Fortran
- c) COBOL
- d) Pascal

Ans: d

2.33 The \_\_\_\_\_ programming language facilitated concurrent programming.

- a) Fortran
- b) COBOL
- c) Pascal
- d) Ada

Ans: d

#### Section 2.6.5

2.34 Objects have \_\_\_\_\_, such as color, size and weight; and they perform \_\_\_\_\_, such as moving, sleeping or drawing.

- a) properties, actions
- b) properties, attributes
- c) methods, actions
- d) actions, properties

Ans: a

2.35 Fortran, Pascal, BASIC and C are all forms of \_\_\_\_\_.

- a) concurrent programming languages
- b) procedural programming languages
- c) object-oriented programming languages
- d) none of the above

Ans: b

## Section 2.7

2.36 The Portable Operating System Interface (POSIX) is an example of a(n):

- a) GUI
- b) API
- c) protocol suite
- d) device driver

Ans: b

## Section 2.8

### Section 2.8.1

2.37 A compiler accepts \_\_\_\_\_ code, written in a high-level language, and returns executable \_\_\_\_\_ code that contains machine-language instructions.

- a) source, object
- b) object, source
- c) assembly, object
- d) assembly, source

Ans: a

2.38 What is the role of the lexical analyzer in a compiler?

- a) The lexical analyzer groups tokens in a program's source code into syntactically correct statements.
- b) The lexical analyzer separates the source code into tokens (e.g., keywords, identifiers, operators and punctuation).
- c) The lexical analyzer converts syntactic structures into instructions.
- d) The lexical analyzer attempts to optimize the efficiency of the code.

Ans: b

### Section 2.8.2

2.39 \_\_\_\_\_ is the process of integrating the various modules referenced by a program into a single executable unit.

- a) Parsing
- b) Loading
- c) Linking
- d) Compiling

Ans: c

2.40 Input to the linker can include which of the following items?

- a) object modules
- b) load modules
- c) control statements
- d) all of the above

Ans: d

2.41 Which of the following statements about dynamic linking is false?

- a) References to external functions are not resolved until a process issues calls to the functions.
- b) A dynamically linked program must be relinked when a library that it uses is modified.
- c) Shared library code can be stored separately from other program code.
- d) Dynamic linking saves space on secondary storage, as only a single copy of a shared library must be stored.

Ans: b



### Section 2.8.3

2.42 \_\_\_\_\_ occurs when the loader places instructions and data units at particular memory addresses.

- a) Absolute loading
- b) Relocatable loading
- c) Memory binding
- d) Address binding

Ans: d

2.43 Which of the following represents a correct sequence of events to transform software written in a high-level language to an executable program?

- a) compiling, linking, loading
- b) linking, loading, compiling
- c) linking, compiling, loading
- d) compiling, loading, linking

Ans: a

### Section 2.9

2.44 Firmware consists of executable instructions, written using \_\_\_\_\_ and stored in persistent memory that is attached to a particular \_\_\_\_\_.

- a) microprogramming, process
- b) concurrent programming, hardware device
- c) microprogramming, hardware device
- d) concurrent programming, process

Ans: c

### Section 2.10

2.45 Which of the following is a true statement about middleware?

- a) Middleware enables communication between computers in distributed systems.
- b) Middleware permits applications to run on heterogeneous computer platforms.
- c) Middleware simplifies application development, as developers do not need to know the implementation details of the middleware.
- d) all of the above

Ans: d

2.46 An ODBC driver is a piece of middleware that:

- a) hides the details of connecting an application to databases of several common database formats.
- b) handles retrieving information from a database as requested by an application.
- c) both a and b
- d) neither a nor b

Ans: c