**Assignment**

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# **Assignment 1**

**1. Page 67, Chapter Review Problems:**

5, 7 (a, b, c), 8, 9, 24, 26 (a, b, c), 27 (a, b, c), 30 (a, b, c), 31 (a, b, c), 34 (a, b, c), 35 (a, b, c), 36 (a, b, c), 37 (a, b, c)(don’t need to indicate truncation)

**2. Page 106, Chapter Review Problems:**

34(a, e, i), 35(a,b,d), 38(a,b,c)

**3. Additional questions:**

1) To compare the memory facilities including register, main memory and mass storage, answer the following questions:

a. Which should be used to hold the data immediately applicable to the operation at hand?

b. Which should be used to hold the data that will be needed in the near future?

c. Which should be used to hold the data that will not be needed in the immediate future?

|  |  |  |
| --- | --- | --- |
| **5.** | **Address** | **Contents** |
|  | **00** | **02** |
|  | **01** | **53** |
|  | **02** | **01** |
|  | **03** | **53** |
|  |  |  |
| **7.** | **a.** | **b.** | **c.** |
|  | **11001101** | **01100111** | **10011010** |
|  |  |  |  |
| **8.** | **a.** | **b.** | **c.** | **d.** |
|  | **1** | **1** | **0** | **0** |
|  |  |  |  |
| **9.** | **a.** | **b.** | **c.** |
|  | **A0A** | **C7B** | **0BE** |
|  |  |  |  |
| **24.** | **a.** | | **b.** |
|  | **00110010 00110011** | | **10111** |
|  |  |  |  |
| **26.** | **a.** | **b.** | **c.** |
|  | **15** | **1** | **21** |
|  |  |  |  |
| **27.** | **a.** | **b.** | **c.** |
|  | **111** | **1011** | **10000** |
|  |  |  |  |
| **30.** | **a.** | **b.** | **c.** |
|  | **15** | **-12** | **12** |
|  |  |  |  |
| **31.** | **a.** | **b.** | **c.** |
|  | **0001101** | **1110011** | **1111111** |
|  |  |  |  |
| **34.** | **a.** | **b.** | **c.** |
|  | **3 3/4** | **4 5/16** | **13/16** |
|  |  |  |  |
| **35.** | **a.** | **b.** | **c.** |
|  | **101.11** | **1111.1111** | **101.011** |
|  |  |  |  |
| **36.** | **a.** | **b.** | **c.** |
|  | **1 1/8** | **-1/2** | **-3/16** |
|  |  |  |  |
| **37.** | **a.** | **b.** | **c.** |
|  | **11111111** | **01001000** | **11101111** |
|  |  |  |  |
| **Chapter 2** | |  |  |
| **Chapter Review Problems** | | | |
|  |  |  |  |
| **34.** | **a.** | **e.** | **i.** |
|  | **101001** | **111001** | **010000** |
|  |  |  |  |
| **35.** |  | **logical operation** | | **mask** | |
|  | **a.** | **OR** | | **11110000** | |
|  | **b.** | **XOR** | | **10000000** | |
|  | **d.** | **AND** | | **11111110** | |
|  |  |  |  |
| **38.** | **a.** | **b.** | **c.** |
|  | **11010** | **00001111** | **010** |
|  |  |  |  |
| **Additional Questions** | | | |
|
|  |  |  |  |
| **1).** | **a.** | | **b.** | | **c.** | |
|  | **Register** | | **Main memory** | | **Mass storage** | |

# **Assignment 2**

**Chapter 3. Operating Systems**

**Multiple Choice Questions**

1. Which of the following components of an operating system maintains the directory system?

A. Device drivers B. File manager C. Memory manager

ANSWER: B

2. Which of the following components of an operating system handles the details associated with particular peripheral equipment?

A. Device drivers B. File manager C. Memory manager

ANSWER: A

3. Which of the following components of an operating system is not part of the kernel?

A. Shell B. File manager C. Scheduler

ANSWER: A

4. Multitasking in a computer with only one CPU is accomplished by a technique called .

A. Bootstrapping B. Batch processing C. Multiprogramming

ANSWER: C

5. Execution of an operating system is initiated by a program called the .

A. Window manager B. Scheduler C. Bootstrap

ANSWER: C

6. The end of a time slice is indicted by the occurrence of a signal called .

A. An interrupt B. A semaphore C. A login

ANSWER: A

7. A set of instructions that should be executed by only one process at a time is called .

A. Utility B. Critical region C. Privileged instruction

ANSWER: B

8. Which of the following is not an attempt to provide security?

A. Passwords B. Privilege instructions C. Multitasking

ANSWER: C

9. Which of the following events is harmful to an operating system’s performance?

A. Deadlock B. Interrupt C. Booting

ANSWER: A

10. Which of the following is a technique for controlling access to a critical region?

A. Spooling B. Time sharing C. Semaphore D. Booting

ANSWER: C

11. Which of the following is not involved in a process switch?

A. Interrupt B. Process table C. Dispatcher D. Shell

ANSWER: D

12. Which of the following is a task that is not performed by the kernel of an operating system?

A. Communicate with the user B. Schedule processes

C. Allocate resources D. Avoid deadlock

ANSWER: A

13. Which of the following components of an operating system is executed to handle an interrupt signal?

A. Dispatcher B. Memory manager C. File manager

ANSWER: A

**Fill-in-the-blank/Short-answer Questions**

1. In contrast to early batch processing techniques, \_\_A\_\_ allows the user to communicate with the computer while the user’s application is being executed. In turn, this type of processing requires that the computer’s responses to its environment be performed in a timely manner, a requirement known as \_\_B\_\_.

ANSWER: A. Interactive processing B. Real-time processing

2. Fill in the blanks below with the part on the operating system (file manager, memory manager, device drivers, window manager, scheduler, dispatcher) that performs the activity described.

A. \_\_\_\_\_ maintains a record of what is displayed on the computer’s screen

B. \_\_\_\_\_ performs the switching from one process to another

C. \_\_\_\_\_ maintains the directory system

D. \_\_\_\_\_ creates virtual memory

E. \_\_\_\_\_\_ places new entries in the process table

F. \_\_\_\_\_\_ performs the actual communication with I/O units

ANSWER: A. Window manager B. Dispatcher C. File manager D. Memory manager

E. Scheduler F. Device drivers

3. A \_\_\_A\_\_\_ is a set of instructions. In contrast, a \_\_\_B\_\_\_ is the activity of executing those instructions.

ANSWER: A. program B. process

**Chapter 4 Networks and the Internet**

**Multiple Choice Questions**

1. Which of the following is not a way of classifying networks?

A. WAN versus LAN B. Closed versus open

C. Router versus bridge D. Star versus bus

ANSWER: C

2. Ethernet is a means of implementing which of the following network topologies?

A. Star B. WiFi C. Bus

ANSWER: C

3. Which of the following connects existing networks to form an internet?

A. Bridge B. Router C. Switch D. Repeater

ANSWER: B

4. Which of the following is a protocol for controlling the right to transmit a message in a network?

A. UDP B. CSMA/CD C. TCP D. FTP

ANSWER: B

5. Which of the following is not a means of performing inter-process communication over a network?

A. Client/server B. ICANN C. Peer-to-peer

ANSWER: B

6. Which of the following provides individual user access to the Internet?

A. Tier-1 ISPs B. Tier-2 ISPs C. Access ISPs D. ICANN

ANSWER: C

7. Which of the following is not an application of the Internet?

A. FTP B. Email C. Telnet D. CERT

ANSWER: D

8. Which of the following is not designed to enhance the security?

A. ICANN B. Firewall C. Encryption D. CERT

ANSWER: A

9. Which of the following is used to translate between IP addresses and mnemonic addresses?

A. File server B. Mail server C. Name server D. FTP server

ANSWER: C

10. Which of the following is not a means of connecting networks?

A. Switch B. Server C. Router D. Bridge

ANSWER: B

11. Which layer of the internet software actually transmits a message?

A. Application B. Transport C. Network D. Link

ANSWER: D

12. Which layer of the internet software chops messages into units whose size is compatible with the Internet?

A. Application B. Transport C. Network D. Link

ANSWER: B

13. Which layer of the internet software decides the direction in which message segments are transferred across the Internet?

A. Application B. Transport C. Network D. Link

ANSWER: C

14. Which layer of the internet software presents incoming messages to the computer user?

A. Application B. Transport C. Network D. Link

ANSWER: A

15. Which of the following identifies the application to which a message arriving from the Internet should be given?

A. Protocol B. Port number C. Domain D. Interrupt

ANSWER: B

**Fill-in-the-blank/Short-answer Questions**

1. List two network topologies: A. \_\_\_\_\_\_\_\_\_\_\_\_\_ B. \_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: A. star B. bus

2. What are two protocols for implementing the transport level in the TCP/IP protocol suite?

A. \_\_\_\_\_\_\_\_\_\_\_\_\_ B. \_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: A. TCP B. UDP

3. According to the URL below, the directory containing the file being access is A , the protocol that should be used when accessing the file is B , and the file name is C .

http://batcave.metropolis.com/heroes/superheroes/batpage.html

ANSWER: A. superheroes B. http C. batpage.html

4. According to the email address “Fido@dogmail.zoo.org”, the “person” who should receive the message should be A and the location of the mail server that handles the mail for that person is B .

ANSWER: A. Fido B. dogmail.zoo.org

5. The main purpose of \_\_\_A\_\_\_\_ and \_\_\_B\_\_\_\_\_ ISPs is to provide a system of high-speed routers as the Internet’s communication backbone, whereas \_\_\_\_C\_\_\_\_\_ ISPs concentrate on providing Internet access to the Internet’s users.

ANSWER: A. Tier-1 B. tier-2 C. access

6. The term A and B in the following HTML document are linked to other documents.

<html>

<head>

<title>This is the title</title>

</head>

<body>

<h1>Favorite Animals</h1>

<p>Of all the animals in the world, the

<a href=”http://pigs.org/pigs.html”>pig</a> is perhaps the most charming.</p>

<p>However, the

<a href=”http://hippopotamuscity.org/hippo.html”>hippopotamus</a> is also cute.</p>

</body>

</html>

ANSWER: A. pig B. hippopotamus

7. Identify two protocols used in networks to determine the right to transmit an original message.

A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ B. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: A. CSMA/CD B. CSMA/CA

8. In each blank below write the HTML tag that performs the indication function.

A. \_\_\_\_\_\_\_\_\_\_ Begins the part that describes what will appear on the computer screen

B. \_\_\_\_\_\_\_\_\_\_ Marks the end of the HTML document

C. \_\_\_\_\_\_\_\_\_\_ Marks the beginning of a paragraph

D. \_\_\_\_\_\_\_\_\_\_ Marks the end of a term that is linked to another document

ANSWER: A. <body> B. </html> C. <p> D. </a>

# **Assignment 3**

**Chapter 5. Algorithms**

**Multiple Choice Questions**

1. Which of the following is an activity?

A. Algorithm B. Program C. Process

ANSWER: C

2. Which of the following is not a means of repeating a block of instructions?

A. Pretest loop B. Posttest loop C. Recursion D. Assignment statement

ANSWER: D

3. When searching within the list：Lewis, Maurice, Nathan, Oliver, Pat, Quincy, Roger, Stan, Tom，which of the following entries will be found most quickly using the sequential search algorithm?

A. Lewis B. Pat C. Tom

ANSWER: A

4. When searching within the list：Lewis, Maurice, Nathan, Oliver, Pat, Quincy, Roger, Stan, Tom，which of the following entries will be found most quickly using the binary search algorithm?

A. Lewis B. Pat C. Tom

ANSWER: B

5. If X is integer, which of the following is the termination condition for the following loop?

while (X < 5) do ( . . . )

A. X < 5 B. X > 4 C. X < 4

ANSWER: B

6. If X is integer, which of the following is the termination condition for the following loop?

repeat ( . . . ) until (X < 5)

A. X < 5 B. X > 4 C. X > 5

ANSWER: A

7. If N is integer, which of the following is the termination condition in the following recursive procedure?

procedure xxx (N)

if (N < 5) then (apply the procedure xxx to the value N + 1)

else (print the value of N)

A. N < 5 B. N > 4 C. N < 4

ANSWER: B

8. Which of the following does not print the same sequence of numbers as the others?

A. X 🠠 5 B. X 🠠 4 C. X 🠠 5

while (X < 6) do while (X < 5) do repeat (print the value of X;

(print the value of X; (X 🠠 X + 1; X 🠠 X + 1)

X 🠠 X + 1) print the value of X) until (X > 6)

ANSWER: C

9. Which of the following is not a way of representing algorithms?

A. Stepwise refinement B. Pseudocode C. Flowchart D. Programming language

ANSWER: A

10. Which algorithms would find the name Kelly more quickly in the list**:** John, Kelly, Lewis, Maurice, Nathan, Oliver, Pat, Quincy, Roger, Stan, Tom?

A. sequential search B. binary search

ANSWER: A

**Fill-in-the-blank/Short-answer Questions**

1. An ordered collection of unambiguous, executable steps that defines a terminating process is called A , and the representation of an algorithm is B . The action of executing a program is C .

ANSWER: A.Algorithm B. Program C. Process

2. What sequence of values will be printed when the following instructions are executed?

X 🠠 5;

if (X < 7) then (print the value 6;

Y 🠠 6)

else (print the value 4;

Y 🠠 4)

if (Y < 5) then (print the value 3)

else (print the value 2)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: 6, 2

3. What sequence of values would be printed if the procedure xxx described below were executed with N = 9?

procedure xxx (N)

if (N < 4) then (print the value of N;

apply the procedure yyy to the value 7)

else (apply the procedure yyy to the value 2;

print the value of N)

procedure yyy (N)

if (N < 5) then (print the value of N;

apply the procedure zzz to the value 6)

else (apply the procedure zzz to the value 5)

procedure zzz (N)

if (N = 5) then (print the value 7)

else (print the value 8)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: 2, 8, 9

4. When using binary search algorithm to search for the letter X within the list**:** R, S, T, U, V, W, Z. How many entries will be checked before discovering that the letter is not in the list? \_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: 3

5. When using sequential search algorithm to search for the letter X within the list**:** R, S, T, U, V, W, Z. How many entries will be checked before discovering that the letter is not in the list? \_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: 7

6. Suppose the binary search algorithm was being used to search for the entry Tom in the list**:**

Nathan, Oliver, Pat, Quincy, Rodger, Stan, Tom

A. What would be the first entry in the list to be considered? \_\_\_\_\_\_\_\_\_\_\_\_\_

B. What would be the second entry in the list to be considered? \_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: A. Quincy B. Stan

7. At most, how many entries in a list of 5000 names will be interrogated when using the sequential search algorithm? \_\_\_\_\_\_\_\_\_\_\_

ANSWER: 5000

8. Which of the sequential or binary search algorithms would find the name Roger in the following list more quickly?

John, Kelly, Lewis, Maurice, Nathan, Oliver, Pat, Quincy, Roger, Stan, Tom

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: Binary

9. What sequence of numbers would be printed if the following procedure were executed with N = 0?

procedure xxx (N)

while (N < 4) do

(print the value of N;

N 🠠 N + 2;

print the value of N

)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: 0, 2, 2, 4

10. What sequence of numbers would be printed if the following procedure were executed with N = 0?

procedure xxx (N)

print the value of N;

if (N < 5) then (apply the procedure xxx to the value N + 2);

print the value of N

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: 0, 2, 4, 6, 6, 4, 2, 0

11. What sequence of numbers would be printed if the procedure xxx were executed with N =2?

procedure xxx (N) procedure yyy (N)

print the value of N; print the value of N;

if (N < 3) apply the procedure xxx to the value 5;

then (apply procedure yyy print the value of N

to the value 4);

print the value of N

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: 2, 4, 5, 5, 4, 2

12. Fill in the blank in the procedure below so that the procedure prints the integers from 0 up to the integer value it was given for N. That is, if the procedure is executed with N = 3, it should print 0, 1, 2, 3.

procedure xxx (N)

if (\_\_\_\_\_\_\_\_\_) then (apply the procedure xxx to the value N - 1);

print the value of N)

ANSWER: N > 0

**Chapter 6. Programming Languages**

**Multiple Choice Questions**

1. Most machine languages are based on the

A. Imperative paradigm B. Declarative paradigm

C. Functional paradigm D. Object-oriented paradigm

ANSWER: A

2. Which of the following does not require a Boolean structure?

A. If-then-else statement B. While loop statement

C. Assignment statement D. For loop statement

ANSWER: C

3. Which of the following is not a control statement?

A. If-then-else statement B. While loop statement

C. Assignment statement D. For loop statement

ANSWER: C

4. Which of the following is not a step in the process of translating a program?

A. Executing the program B. Parsing the program

C. Lexical analysis D. Code generation

ANSWER: A

5. Which of the following is not associated with object-oriented programming?

A. Inheritance B. Resolution C. Encapsulation D. Polymorphism

ANSWER: B

6. Positions within arrays are identified by means of numbers called

A. Indices B. Parameters C. Instance variables D. Constants

ANSWER: A

7. Which of the following is ignored by a compiler?

A. Control statements B. Declarations of constants

C. Procedure headers D. Comment statements

ANSWER: D

8. Which of the following is not a way of referring to a value in a program?

A. Variable B. Literal C. Constant D. Type

ANSWER: D

9. Which of the following is the scope of a variable?

A. The number of characters in the variable’s name

B. The portion of the program in which the variable can be accessed

C. The type associated with the variable

D. The structure associated with the variable

ANSWER: B

10. Which of the following is a means of nullifying conflicts among data types?

A. Inheritance B. Parsing C. Coercion D. Code optimization

ANSWER: C

11. Which of the following is not constructed by a typical compiler?

A. Source code B. Symbol table C. Parse tree D. Object program

ANSWER: A

12. Which of the following is a means of defining similar but different classes in an object-oriented program?

A. Inheritance B. Parsing C. Coercion D. Code optimization

ANSWER: A

**Fill-in-the-blank/Short-answer Questions**

1. Indicate how each of the following types of programming languages is classified in terms of generation (first generation, second generation, or third generation).

A. High-level languages \_\_\_\_\_\_\_\_\_\_\_\_\_

B. Machine languages \_\_\_\_\_\_\_\_\_\_\_\_\_

C. Assembly languages \_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: A. Third generation B. First generation C. Second generation

2. What encoding system is commonly used to encode data of each of the following types?

A. Integer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B. Real \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C. Character \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: (CAUTION: This question relies on material from chapter 1)

A. Two’s complement

B. Floating-point

C. ASCII or Unicode

3. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ array is an array in which all entries are of the same type whereas entries in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ array may be of different types.

ANSWER: homogeneous, heterogeneous

4. In programming languages that use + to mean concatenation of character strings, the expression “2x” + “3x” will produce what result?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: “2x3x”

5. The following is a program segment and the definition of a procedure named sub.

**…**

X ← 3; procedure sub (Y)

sub (X); Y 🠠 5;

print the value of X;

**…**

A. What value will be printed by the program segment if parameters are passed by value?

\_\_\_\_\_\_\_\_\_\_\_\_

B. What value will be printed by the program segment if parameters are passed by reference?

\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: A. 3 B. 5

6. The following is a program segment and the definition of a procedure named sub.

**…** procedure sub

X 🠠 8; . X 🠠 2;

apply procedure sub;

print the value of X;

**...**

A. What value will be printed by the program segment if X is a global variable?

\_\_\_\_\_\_\_\_\_\_\_\_

B. What value will be printed by the program segment if X is a local variable within the procedure?

\_\_\_\_\_\_\_\_\_\_\_\_

ANSWER: A. 2 B. 8

7. In the context of the object-oriented paradigm, \_\_\_\_\_A\_\_\_\_\_ are templates from which

\_\_\_\_\_B\_\_\_\_\_\_\_ are constructed. We say that the latter is an instance of the former.

ANSWER: A. classes, B. objects

8. In the context of the object-oriented paradigm, a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an imperative program unit that describes how an object should react to a particular stimulus.

ANSWER: method (or member function for C++ programmers)