

CSIT 104 – Midterm Exam Solutions

1. In HTML, if I wanted the word "Stop!" in red on my Web page, I would have to:
- A. make all the text on the page red
 - B. use a red graphic that said "Stop!" and pick a different color for my text
 - C. set my RGB specification to FF0000

ANSWER: C

2. Which of the following is not a binary system?
- A. test answer
 - B. a light
 - C. traffic light

ANSWER: A

3. The computer's speed is measured in megahertz, that is:
- A. thousands of cycles per second
 - B. millions of cycles per second
 - C. millions of cycles per minute
 - D. thousands of cycles per minute

ANSWER: B

4. Which of the following bit patterns represents the value 5?

A. 00011010 B. 11111011 C. 00000101 D. 11111011

ANSWER: C

5. Which of the following representations in two's complement notation represents the largest value?
- A. 01000000 B. 11111111 C. 00000001 D. 11111110

ANSWER: A

6. Which of the following data storage systems provides the most efficient random access to individual data items?
- A. Main memory B. Magnetic disk C. CDs/DVDs D. Flash drives

ANSWER: A

7. Which of the following storage systems is best suited for storing and retrieving long strings of data that are processed in their sequential order?
- A. Main memory B. Magnetic disk C. CDs/DVDs

ANSWER: C

8. Which of the following mass storage system does not require physical motion?
- A. Magnetic tape B. Magnetic disk C. DVDs D. Flash drives

ANSWER: D

9. Which of the following is a means of formatting compressed video movies?

- A. ASCII B. MIDI C. JPEG D. MPEG

ANSWER: D

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

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

ANSWER: B

11. 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

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

- A. Bootstrapping B. Batch processing C. Multiprogramming

ANSWER: C

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

- A. Passwords B. Privilege levels C. Multitasking

ANSWER: C

14. Which of the following items of information would not be contained in an operating system's process table?

- A. The location of the memory area assigned to the process
- B. The priority of each process
- C. Whether the process is ready or waiting
- D. The machine language instructions being executed by the process

ANSWER: D

15. Which of the following events is detrimental to an operating system's performance?

- A. Deadlock B. Interrupt C. Booting

ANSWER: A

16. Which of the following is not a means of performing multiple activities at the same time?

- A. Pipelining B. Multiprogramming C. Virtual memory D. Multiple processors

ANSWER: C

17. Which of the following would be a concern of the file manager in a multi-user computer system that would not be a concern in a single-user system?

- A. Maintain records regarding the location of files
- B. Maintain records regarding the ownership of files
- C. Maintain records regarding the size of files
- D. None of the above

ANSWER: B

18. Which of the following would not require real-time processing?

- A. Typing a document with a word processor
- B. Navigation of an aircraft
- C. Forecasting world-wide trend for the next five year period
- D. Maintaining a airline reservation system

ANSWER: C

19. Which of the following statements is true?

- A. Allowing several processes to share time in a multiprogramming system is less efficient than executing each of them to completion one after the other.
- B. The use of passwords provides an impenetrable safeguard.
- C. Both A and B
- D. Neither A nor B

ANSWER: D

20. 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

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

- A. Star
- B. WiFi
- C. Bus

ANSWER: C

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

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

ANSWER: B

23. Which of the following is not a means of performing interprocess communication over a network?

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

ANSWER: B

24. Which of the following is assigned the task of providing individual users access to the Internet?

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

ANSWER: C

25. The primary purpose of which of the following is not the enhancement of security?

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

ANSWER: A

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

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

ANSWER: C

27. Which layer of the TCP/IP hierarchy actually transmits a message?

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

ANSWER: D

28. Which layer of the TCP/IP hierarchy chops messages into units whose size is compatible with the Internet?

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

ANSWER: B

29. Which of the following is an activity?

- A. Algorithm B. Program C. Process

ANSWER: C

30. Which of the following is a representation?

- A. Algorithm B. Program C. Process

ANSWER: B

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

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

ANSWER: A

32. What is the decimal value for 100110 ?

- A. 6 B. 38 C. -16 D. 66

ANSWER: B

33. What is the binary representation for -5 in twos complement when using 4 bits?

- A. 1101 B. 1011 C. 0101 D. 1010

ANSWER: B

34. What is the decimal value for the hex number A0?

- A. -15 B. 100 C. 120 D. 160

ANSWER: D

35. www.cs.washington.edu is a:

- A. email address B. pathname C. protocol D. domain

ANSWER: B

36. Identify the largest of the following

- A. Byte B. bit C. kilobyte D. megabit

ANSWER: D

37. How many bits does each hex digit require?

- A. 2 B. 4 C. 16 D. hex is not measured in bits

ANSWER: B

38. The sampling rate for sound is:

- A. time-based B. 16 bits C. measured in MHz D. none of the above

ANSWER: C

39. Which layer of the TCP/IP hierarchy decides the direction in which message segments are transferred across the Internet?

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

ANSWER: C

40. Which layer of the TCP/IP hierarchy decides which application should receive an incoming message?

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

ANSWER: A

41. Which of the following items of information would not be contained in an operating system's process table?

- A. The location of the memory area assigned to the process
B. The priority of each process
C. Whether the process is ready or waiting
D. The machine language instructions being executed by the process

ANSWER: D

42. Which of the following events is detrimental to an operating system's performance?

- A. Deadlock B. Interrupt C. Booting

ANSWER: A

43. 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

44. Which of the following would not require real-time processing?

- A. Typing a document with a word processor
B. Navigation of an aircraft
C. Forecasting world-wide trend for the next five year period
D. Maintaining a airline reservation system

ANSWER: C

45. (6 pts) Explain the difference between application software and system software.

ANSWER: System software provides the infrastructure required by the application software. It includes the operating system and utilities. Application software provides the unique functionality required to perform the particular tasks for which the computer is used. Examples include word processors, spreadsheet systems, database systems, and image processing systems.

46. (6 pts) What is the difference between hubs, switches, and routers?

ANSWER: A hub is merely a central (short) bus to which computers are connected to form a bus network. A switch connects several bus networks to form a larger network. A router connects two networks to form an internet in which the original two networks continue to function as independent networks.

47. (6 pts) Briefly summarize what is meant by the term “cloud computing.”

ANSWER: Cloud computing refers to distributed systems in which pools of shared computers on the network can be allocated for use by clients as needed.

48. (7 pts) How does encryption work? Explain in a short paragraph.

ANSWER: In cryptography, encryption is the process of encoding messages or information in such a way that only authorized parties can read it. Encryption does not of itself prevent interception, but denies the message content to the interceptor. In an encryption scheme, the intended communication information or message, referred to as plaintext, is encrypted using an encryption algorithm, generating ciphertext that can only be read if decrypted.

51. (6 pts) The following function was designed to compute the largest integer whose square is no greater than N, where N is assumed to be a positive number. (If N is 5, then the function should report the value 2.) The code would then print the answer. Explain

```
X = 0
while (X*X <= N):
    X = X + 1
return X
```

ANSWER: The value returned should be X - 1.

52. (6 pts) Suppose a software package is so expensive that it is totally out of your price range. Is it ethical to copy it for your own use? (After all, you are not cheating the supplier out of a sale because you would not have bought the package anyway.)

ANSWER: Varies

53. (8 pts) Knowing that the ASCII Code for 'A' is 65 encode in ASCII the following text:
CABBAGE

ANSWER: 67 65 66 66 65 71 69

54. (6 pts) The book Harry Potter and the Cursed Child has approximately 700 pages. Each page has approximately 500 symbols. Knowing that the book is stored as a computer file with each symbol stored in extended ASCII Code (8 bits), approximately how many kilobytes is the size of the book file? Explain your answer

ANSWER: 700 pages * 500 symbols = 350 000 symbols = 350 KB

55. (6 pts) What sequence of values will be printed when the following instructions are executed?

```
X = 5
if (X < 7):
    print(6)
    Y = 6
else:
    print(4)
    Y = 4
if (Y < 5):
    print(3)
else:
    print(2)
```

ANSWER: 6, 2

56. (6 pts) Given the number 117 in decimal, write its representation in BINARY and HEX

ANSWER:

Binary : 1110101

Hex: 75

57. (8 pts) Which industries have prospered and which ones might have suffered because of the growth of the internet? Give at least two examples of each and explain

ANSWER: Varies, but you had to give at least four concrete examples for full points.