Chapter 3

1. Identify examples of queues. In each case, indicate any situations that violate the FIFO structure.
2. Which of the following activities require real-time processing?
   a. Printing mailing labels
   b. Playing a computer game
   c. Displaying numbers on a smartphone screen as they are dialed
   d. Executing a program that predicts the state of next year’s economy
   e. Playing an MP3 recording
3. What is the difference between embedded systems and PCs?
4. What is the difference between time-sharing and multitasking?

1. List the components of a typical operating system and summarize the role of each in a single phrase.
2. What is the difference between application software and utility software?
3. What is virtual memory?
4. Summarize the booting procedure.

1. List four activities of a typical operating system.
2. Summarize the distinction between batch processing and interactive processing.
3. What is a multitasking operating system?

Chapter 4

1. What is an open network?
2. Summarize the distinction between a bridge and a switch.
3. What is a router?
4. Identify some relationships in society that conform to the client/server model.
5. Identify some protocols used in society.
6. Summarize the distinction between cluster computing and grid computing.

1. What is a URL? What is a browser?
2. What is a markup language?
3. What is the difference between HTML and XML?

1. What layers of the Internet software hierarchy are not needed at a router?
2. What are some differences between a transport layer based on the TCP protocol and another based on the UDP protocol?
3. How does the transport layer determine which unit with the application layer should receive an incoming message?
4. What keeps a computer on the Internet from recording copies of all the messages passing through it?
1. What is phishing? How are computers secured against it?
4. What advantage does public-key encryption have over more traditional encryption techniques?
5. What problems are associated with legal attempts to protect against network security problems?
1. What is a protocol? Identify three protocols introduced in this chapter and describe the purpose of each.
2. Describe the client/server model.
3. Describe the peer-to-peer model.

19. Explain the components of the email address kermit@animals.com

19. What is a proxy server and what are its benefits?
19. Summarize the principles of public-key encryption.
19. In what way is an unprotected idle PC a danger to the Internet?
Chapter 5.

13. What is the difference between a formal programming language and a pseudocode?

14. What is the difference between syntax and semantics?

Chapter 6

1. In what sense is a program in a third-generation language machine independent? In what sense is it still machine dependent?
2. What is the difference between an assembler and a compiler?
3. We can summarize the imperative programming paradigm by saying that it places emphasis on describing a process that leads to the solution of the problem at hand. Give a similar summary of the declarative, functional, and object-oriented paradigms.
4. In what sense are the third-generation programming languages at a higher level than the earlier generations?

1. Why is the use of a constant considered better programming style than the use of a literal?
2. What is the difference between a declarative statement and an imperative statement?
3. List some common data types.
4. What is the difference between an array and an aggregate type?

1. What is meant by the “scope” of a variable?
2. What is the difference between a procedure and a function?
3. What is the difference between a formal parameter and an actual parameter?

Chapter 7

1. How does the development stage of the software life cycle affect the maintenance stage?
2. Summarize each of the four stages (requirements analysis, design, implementation, and testing) within the development phase of the software life cycle.
3. What is the role of a software requirements specification?
4. Identify two contexts in which the field of software engineering has been or currently is progressing toward improvements.

2. Suggest a metric for measuring software quality. What weaknesses does your metric have?
3. What technique can be used to determine how many errors are in a unit of software?
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Chapter 8

1. Give examples (outside of computer science) of each of the following structures: list, stack, queue, and tree.
2. Summarize the distinction between lists, stacks, and queues.

1. In what sense are data structures such as arrays, lists, stacks, queues, and trees abstractions?
2. Describe an application that you would expect to involve a static data structure. Then describe an application that you would expect to involve a dynamic data structure.
3. Describe contexts outside of computer science in which the pointer concept occurs.
1. Show how the array below would be arranged in main memory when stored in row major order.
2. Show how the array below would be arranged in main memory when stored in row major order.

5 3 7
4 2 8
4. What condition indicates that a linked list is empty?

1. Draw a binary tree that you could use to store the list R, S, T, U, V, W, X, Y, and Z for future searching.

1. What is the difference between a data type and an instance of that type?
2. What is the difference between a user-defined data type and an abstract data type?
2. What is the difference between a class and an object?
3. Describe a class that would be used as a template for constructing objects of type queue-of-integers.

AND Slices of Week 13-AI