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Chapter 1 Questions

Multiple Choice Questions

1. The specifications of an ADT's operations indicate _____.
    a. what the operations do
    b. how to implement the operations
    c. how to store the data in the ADT
    d. how to carry out the operations

Answer: a.

2. Data structures are part of an ADT's _____.
    a. definition
    b. implementation
    c. specifications
    d. usage

Answer: b.

3. A(n) _____ allows two modules to communicate with each other.
    a. data structure
    b. axiom
    c. interface
    d. client

Answer: c.

4. An ADT's _____ govern(s) what its operations are and what they do.
    a. specifications
    b. implementation
    c. documentation
    d. data structure

Answer: a.

5. When each module performs one well-defined task, we say that it is ___.
    a. loosely coupled
    b. highly coupled
    c. cohesive
    d. not easily reused

Answer: c.

6. When should an operation contract be written?
    a. during analysis
    b. after coding
    c. at the same time as user documentation
    d. when taking initial notes from client

Answer: a.

7. What information is included in the operation contract?
    a. the method's interface
    b. data flow among the modules
    c. assumptions about input
    d. all of these

Answer: d.

8. What kind of interface contains a method if and only that method is essential to that class's responsibilities?
    a. complete
    b. minimal
    c. expanded
    d. compact

Answer: b.

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9. Object-oriented programming views a program as _____.
    a. a sequence of actions
    b. a collection of classes
    c. a group of methods
    d. an interaction among objects

Answer: d.

10. An ADT's operations are known as its _____.
    a. axioms
    b. member functions
    c. variables
    d. interfaces

Answer: b.

11. Encapsulation combines an ADT's data with its operations to form a(n) _____.
    a. exception
    b. method
    c. object
    d. variable

Answer: c.

12. A(n) _____ is an instance of a class.
    a. method
    b. data field
    c. interface
    d. object

Answer: d.

13. A(n) _____ is a class that inherits the members of another class.
    a. base class
    b. superclass
    c. abstract class
    d. subclass

Answer: d.

14. Understanding what the problem is and what the requirements of a solution are is called
    a. Object Oriented Analysis
    b. Object Oriented Design
    c. Object Oriented Solution
    d. Algorithmic Oriented Design

Answer: a.

15. Objects collaborate when they
    a. are cohesive
    b. are used by a programming team
    c. send each other messages
    d. model a real life situation

Answer: c.

16. Which of the following could *not* be a module?
    a. a standalone function
    b. a data member
    c. a class method
    d. a class itself

Answer: b.

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Chapter 1 Questions

True/False Questions

1. According to the principle of information hiding, a module should be completely isolated from other modules.

Answer: False.

2. Data structures are part of an ADT's implementation.

Answer: True.

3. An abstract data type is another name for a data structure.

Answer: False.

4. An interface for a class that allows programmers to accomplish any reasonable task is called a complete interface.

Answer: True

5. It is possible to use one ADT to implement another ADT.

Answer: True

6. An application can use the operations of an ADT without knowing how the ADT is implemented.

Answer: True.

7. By default, all members in a class are public.

Answer: False.

8. A highly cohesive module is less robust.

Answer: False

9. Highly coupled modules should be avoided.

Answer: True

10. Any instance of a subclass can be used in a program anywhere that an instance of the superclass can be used.

Answer: True.

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Chapter 1 Questions

Short Answer Questions

1. What are some of the benefits of modularity?
   Answer: A modular problem is easier to write, read, and modify. Modularity also isolates errors and eliminates redundancies.

2. What is functional abstraction?
   Answer: Functional abstraction is a design principle that separates the purpose and use of a module from its implementation.

3. What is information hiding?
   Answer: Information hiding is a process that hides certain implementation details within a module and makes them inaccessible from outside the module.

4. What are the three types of operations on a data collection?
   Answer: The three types of operations on data are:
   a. Add data to a data collection.
   b. Remove data from a data collection.
   c. Ask questions about the data in a data collection.

5. What is data abstraction?
   Answer: Data abstraction is a design principle that separates the operations performed on a collection of data from the implementation of the operations.

6. Define the client of a class?
   Answer: The client of a class is a program or module that uses the class.

7. What does inheritance allow the system designer to do?
   Answer: Inheritance allows the programmer to reuse classes previously defined for a related purpose. It extends the implementation or makes slight modifications

8. What are the three principles of object oriented programming?
   Answers: Encapsulation, inheritance, and polymorphism

9. What are the advantages of a highly cohesive module?
   Answer: A highly cohesive module will be well named, promoting self-documenting and easily understood code. It can be easy to reuse in other projects. It is easier to maintain. It will be more robust, less likely to be affected by change.

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