C++ Plus Data Structures 6th edition Dale Test Bank

SKU: 9781284089189-TEST-BANK

Multiple Choice
1. The application view of a data structure is associated with which of the following?
[1] What?
[2] Why?
[3] How?

<Answer: 2>
<Complexity: Moderate>
<A-Head: Different Views of Data>
<Subject: Chapter 2>

Multiple Choice
2. The implementation view of a data structure is associated with which of the following?
[1] What?
[2] Why?
[3] How?

<Answer: 3>
<Complexity: Easy>
<A-Head: Different Views of Data>
<Subject: Chapter 2>

True/False
3. One interpretation of rows and columns is that each of these dimensions can represent a particular relationship and that an entry in the array can represent a value involving the two relationships.

<Answer: True>
<Complexity: Moderate>
<A-Head: Abstraction and Built-In Types>
<Subject: Chapter 2>

True/False
4. A struct differs from an array in that its elements need not occupy a consecutive block of memory cells.

<Answer: False>
<Complexity: Easy>
<A-Head: Abstraction and Built-In Types>
<Subject: Chapter 2>

Multiple Choice
5. The file containing the definition of class DateType is called the _____ file.
[1] specification
[2] implementation
[3] client

<Answer: 1>

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<Complexity: Easy>
<A-Head: Higher-Level Abstraction and the C++ Class Type>
<Subject: Chapter 2>

Multiple Choice
6. The file containing the definitions of the member functions of class DateType is called the _____ file.
[1] specification
[2] implementation
[3] client

<Answer: 2>
<Complexity: Easy>
<A-Head: Higher-Level Abstraction and the C++ Class Type>
<Subject: Chapter 2>

True/False
7. In C++, inheritance allows accessibility.

<Answer: False>
<Complexity: Moderate>
<A-Head: Object-Oriented Programming>
<Subject: Chapter 2>

True/False
8. Composition is a mechanism by which an internal data member of one class is defined to be an object of another class type.

<Answer: True>
<Complexity: Moderate>
<A-Head: Object-Oriented Programming>
<Subject: Chapter 2>

True/False
9. Exceptions cannot be handled within the block in which they occur.

<Answer: True>
<Complexity: Moderate>
<A-Head: Constructs for Program Verification>
<Subject: Chapter 2>

True/False
10. C++ does have built-in exceptions.

<Answer: True>

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<Complexity: Easy>
<A-Head: Constructs for Program Verification>
<Subject: Chapter 2>

Multiple Choice
11. The order of adding 1 to each element in a square two-dimensional array of integers where the number of rows is *N* is represented as:
[1] O(1).
[2] O(log*N*).
[3] O(*N*).
[4] O(*N* log*N*).
[5] O(*N***N*).

<Answer: 5>
<Complexity: Moderate>
<A-Head: Comparison of Algorithms>
<Subject: Chapter 2>

True/False
12. An algorithm that has complexity O(logN) is always faster than one that has O(N) complexity.

<Answer: False>
<Complexity: Difficult>
<A-Head: Comparison of Algorithms>
<Subject: Chapter 2>

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Chapter 02

True/False

1. True or False? The members of a struct are private by default.
Ans: False
Subject: Chapter 2
Ahead: Abstraction and Built-In Types
Complexity: Easy

2. True or False? The members of a class are private by default.
Ans: True
Subject: Chapter 2
Ahead: Higher-Level Abstraction and the C++ Class Type
Complexity: Easy

3. True or False? Polymorphism is the ability to determine which function to call for a particular object.
Ans: True
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Easy

4. True or False? Static binding refers to run-time binding.
Ans: False
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

5. True or False? Dynamic binding refers to run-time binding.
Ans: True
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

6. True or False? An inheritance hierarchy gives a visual picture of has-a relationships.
Ans: False
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

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7. True or False? O(N) is called linear time.
Ans: True
Subject: Chapter 2
Ahead: Comparison of Algorithms
Complexity: Easy

8. True or False? In OOP, a subclass usually is "smaller" (containing fewer functions and less data) than its superclass.
Ans: False
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Easy

9. True or False? Neither client code nor derived class code can directly access the private members of the base class.
Ans: True
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Easy

Multiple Choice

1. The member variables and functions declared following the word _____ are accessible only to the class's member functions.
A) public
B) private
Ans: B
Subject: Chapter 2
Ahead: Higher-Level Abstraction and the C++ Class Type
Complexity: Easy

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Chapter 02 Quiz

Multiple Choice

1. Examine the following class declaration:

```
class DateType
{
public:
   void Initialize(int, int, int);
   int GetYear() const;                    // returns year
   int GetMonth() const;            // returns month
   int GetDay() const;                     // returns day

private:
   int  year;
   int  month;
   int  day;
};
```

Which of the following statements in a client program correctly prints out the year of the variable day1 of type DateType?
A) cout << day1.GetYear;
B) cout << GetYear(day1);
C) cout << GetYear.day1;
D) cout << day1.GetYear();
E) The year cannot be printed by a client program.
Ans: D
Subject: Chapter 2
Ahead: Higher-Level Abstraction and the C++ Class Type
Complexity: Easy

2. When writing the code to define a member function, the name of _____ must precede the function name with the _____ operator in between.
A) the class, . (dot)
B) the class, ::
C) the record, ::
D) the record, . (dot)
E) the data member, ::
Ans: B
Subject: Chapter 2
Ahead: Higher-Level Abstraction and the C++ Class Type
Complexity: Moderate

3. Examine the following class definition:

```
class DateType
{

public:
```


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```
    void Initialize(int, int, int);
    int GetYear() const;              // returns year
    int GetMonth() const;  // returns month
    int GetDay() const;               // returns day
  private:
    int  year;
    int  month;
    int  day;
};
```

Which of the following statements in a client program correctly prints out the day of the variable day1 of type DateType?
A) cout << day1.GetDay;
B) cout << day1.GetDay();
C) cout << GetDay.day1;
D) cout cout << GetDay(day1);
E) The day cannot be printed by a client program.
Ans: B
Subject: Chapter 2
Ahead: Higher-Level Abstraction and the C++ Class Type
Complexity: Easy

4. What is the order of adding 10.0 to each element in a one-dimensional array of N real numbers?
A) O(1)
B) O(logN)
C) O(N)
D) O(N logN)
E) O(N*N)
Ans: C
Subject: Chapter 2
Ahead: Comparison of Algorithms
Complexity: Easy

5. The file containing the definitions of the member functions of class DateType is called the _____ file.
[1] specification
[2] implementation
[3] client

<Answer: 2>
<Complexity: Easy>
<A-Head: Higher-Level Abstraction and the C++ Class Type>
<Subject: Chapter 2>

6. When a class member function is a binary operation, how are the operands specified?
[1] Both operands are passed to the member function as parameters.
[2] One operand is passed to the member function and the second is a global variable.
[3] One operand is passed to the member function and the second is the class instance to which the function is applied.
[4] It depends on the compiler.

<Answer: 3>

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<Complexity: Moderate>
<A-Head: Higher-Level Abstraction and the C++ Class Type>
<Subject: Chapter 2>

7. The logical view of a data structure is associated with which of the following?
[1] What?
[2] Why?
[3] How?

<Answer: 1>
<Complexity: Easy>
<A-Head: Different Views of Data>
<Subject: Chapter 2>

8. The member variables and functions declared following the word "_____" are accessible to the client program.
[1] public
[2] private

<Answer: 1>
<Complexity: Easy>
<A-Head: Higher-Level Abstraction and the C++ Class Type>
<Subject: Chapter 2>

9. What is the order of adding 1 to each element in a one dimensional array of N integers?
A) O(1)
B) O(logN)
C) O(N)
D) O(N logN)
E) O(N*N)
Ans: C
Subject: Chapter 2
Ahead: Comparison of Algorithms
Complexity: Easy

True/False

10. True or false? Reset and GetNextItem implement an iterator.
Ans: True
Subject: Chapter 2
Ahead: Different Views of Data
Complexity: Moderate

11. True or false? using myNames::GetData is a using directive.
Ans: False
Subject: Chapter 2
Ahead: Constructs for Program Verification
Complexity: Moderate

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12. True or false? Derived class code can directly access the private members of the base class but client code cannot.
Ans: True
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

13. True or False? In C++, a derived class's constructor is executed before the base class constructor is executed.
Ans: False
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

14. True or False? Containment is a mechanism by which an internal data member of one class is defined to be an object of another class type.
Ans: True
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

15. Exceptions must be handled within the function in which they occur.

<Answer: False>
<Complexity: Easy>
<A-Head: Constructs for Program Verification>
<Subject: Chapter 2>

16. Code that can cause an exception should be enclosed within a *try* clause.

<Answer: True>
<Complexity: Easy>
<A-Head: Constructs for Program Verification>
<Subject: Chapter 2>

17. Exception handlers are enclosed within a *catch* clause.

<Answer: True>
<Complexity: Easy>
<A-Head: Constructs for Program Verification>
<Subject: Chapter 2>

18. The members of a class are public by default.

<Answer: False>
<Complexity: Easy>
<A-Head: Higher-Level Abstraction and the C++ Class Type>

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<Subject: Chapter 2>

19. Reset and GetNextItem implement a transformer.

<Answer: False>
<Complexity: Easy>
<A-Head: Different Views of Data>
<Subject: Chapter 2>

20. The following statement means that any subsequent use of GetData without qualification refers to myNames::GetData: using myNames::GetData.

<Answer: True>
<Complexity: Easy>
<A-Head: Constructs of Program Verification>
<Subject: Chapter 2>

21. using myNames::GetData is a using declaration.

<Answer: True>
<Complexity: Easy>
<A-Head: Constructs of Program Verification>
<Subject: Chapter 2>

22. using namespace myName is a using directive.

<Answer: True>
<Complexity: Easy>
<A-Head: Constructs of Program Verification>
<Subject: Chapter 2>

23. C++ does not have any built-in exceptions.

<Answer: False>
<Complexity: Easy>
<A-Head: Constructs of Program Verification>
<Subject: Chapter 2>

24. Client code can directly access the private members of the base class but derived code cannot.

<Answer: False>
<Complexity: Easy>
<A-Head: Object-Oriented Programming>
<Subject: Chapter 2>

25. Inheritance is a language mechanism by which one class acquires data and operations of another class.

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<Answer: True>
<Complexity: Easy>
<A-Head: Object-Oriented Programming>
<Subject: Chapter 2>

26. The OOP term "instance variable" corresponds to the C++ term "class object."

<Answer: False>
<Complexity: Easy>
<A-Head: Object-Oriented Programming>
<Subject: Chapter 2>

27. In C++, if class X is a base class of class Y, then Y cannot directly access X's private data.

<Answer: True>
<Complexity: Easy>
<A-Head: Object-Oriented Programming>
<Subject: Chapter 2>

28. O(N) is called log time.

<Answer: False>
<Complexity: Easy>
<A-Head: Comparison of Algorithms>
<Subject: Chapter 2>

29. O(N*N) is called quadratic time.

<Answer: True>
<Complexity: Easy>
<A-Head: Comparison of Algorithms>
<Subject: Chapter 2>

30. O(1) is called constant time.

<Answer: True>
<Complexity: Easy>
<A-Head: Comparison of Algorithms>
<Subject: Chapter 2>

Short Answer

31. Define derived class.
Ans: The class that inherits is the derived class.
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Easy

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32. Define overloading.
Ans: Overloading is giving the same name to more than one function or using the same operator symbol for more than one operation; usually associated with static binding.
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

33. What are the three necessary constructs of an object-oriented language?
Ans: Encapsulation, inheritance, polymorphism
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

34. What are the characteristics of an array?
Ans: Base address, size of each element, number of items
Subject: Chapter 2
Ahead: Abstraction and Built-In Types
Complexity: Moderate

35. If an operation is encapsulated, how can the client use it?
Ans: Encapsulated operations provide an interface through which the user can access the operations—that is, operations are provided for the client, but how the operations are implemented is not known to the user.
Subject: Chapter 2
A-Head: Different Views of Data
Complexity: Moderate

36. Which view of data does the client program use?
Ans: Application
Subject: Chapter 2
Ahead: Different Views of Data
Complexity: Easy

37. Which view of data does the implementor use?
Ans: Implementation
Subject: Chapter 2
Ahead: Different Views of Data
Complexity: Easy

38. Abstraction is associated with which view of data?
Ans: Logical
Subject: Chapter 2
Ahead: Different Views of Data
Complexity: Easy

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39. How does a struct differ from a class in C++?
Ans: The members of a struct are public by default; the members of a class are private by default.
Subject: Chapter 2
Ahead: Higher-Level Abstraction and the C++ Class Type
Complexity: Moderate

40. Define data abstraction.
Ans: The separation of a data type's logical properties from its implementation
Subject: Chapter 2
Ahead: Different Views of Data
Complexity: Easy

41. Data encapsulation is a language feature that enforces what?
Ans: Information hiding
Subject: Chapter 2
Ahead: Different Views of Data
Complexity: Easy

42. A one dimensional array data is declared as follows:

```
char data[75];
```

The base address is 1120 and each value takes up one location in memory. What is the address of the third element?
Ans: data[2] is in location 1122.
Subject: Chapter 2
Ahead: Abstraction and Built-In Types
Complexity: Easy

43. A one dimensional array data is declared as follows:

```
char data[4];
```

The base address is 2222 and each value takes up one location in memory. What is the address of the fourth element?
Ans: data[3] is in location 2225.
Subject: Chapter 2
Ahead: Abstraction and Built-In Types
Complexity: Easy

44. A record is declared as follows:

```
struct NameType
{
   char first[10];
   char last[20];
    int age;
}
```


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The first letter in the first name is stored in location 1000. Each letter takes one location and an integer takes two locations. What is the address of last[2]?
Ans: last[2] is in location 1012.
Subject: Chapter 2
Ahead: Abstraction and Built-In Types
Complexity: Moderate

45. A record is declared as follows:

```
struct NameType
{
   char first[10];
    char last[20];
    int age;
}
```

The first letter in the first name is stored in location 1000. Each letter takes one location and an integer takes two locations. What is the beginning address of age?
Ans: The beginning location of age is 1030.
Subject: Chapter 2
Ahead: Abstraction and Built-In Types
Complexity: Easy

46. Define polymorphism.
Ans: Polymorphism is the ability to determine which of several operations with the same name is appropriate; a combination of static and dynamic binding.
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Moderate

47. Define composition (containment).
Ans: Composition and containment refer to the mechanism by which an internal data member of one class is defined to be an object of another class type.
Subject: Chapter 2
Ahead: Object-Oriented Programming
Complexity: Easy

48. Define abstract data type.
Ans: An abstract data type (ADT) is a data type whose properties (domain and operations) are specified independently of any particular implementation.
Subject: Chapter 2
Ahead: Different Views of Data
Complexity: Easy

49. A one dimensional array data is declared as follows:

```
int data[10];
```

The base address is 1000 and each value takes up two locations in memory. What is the beginning

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address of the fourth element?
Ans: data[3] begins in location 1006.
Subject: Chapter 2
Ahead: Abstraction and Built-In Types
Complexity: Easy

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