

TEST BANK



**Data
Structures**
Using **Java™**

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Chapter 2 - Inheritance and Exception Handling

TRUE/FALSE

1. The superclass inherits all its properties from the subclass.

ANS: F PTS: 1 REF: 76

2. Private members of a superclass can be accessed by a subclass.

ANS: F PTS: 1 REF: 77

3. Inheritance implies an “is-a” relationship.

ANS: T PTS: 1 REF: 76

4. A subclass cannot directly access public members of a superclass.

ANS: F PTS: 1 REF: 78

5. The subclass can override public methods of a superclass.

ANS: T PTS: 1 REF: 78

6. In multiple inheritance, the subclass is derived from more than one superclass.

ANS: T PTS: 1 REF: 78

7. Java supports both single and multiple inheritance.

ANS: F PTS: 1 REF: 78

8. To override a public method of a superclass in a subclass, the corresponding method in the subclass must have the same name but a different number of parameters.

ANS: F PTS: 1 REF: 78

9. A subclass can directly access protected members of a superclass.

ANS: T PTS: 1 REF: 92

10. The class Object is directly or indirectly the superclass of every class in Java.

ANS: T PTS: 1 REF: 97

11. Using the mechanism of inheritance, every public member of the class Object can be overridden and/or can be invoked by every object of any class type.

ANS: T PTS: 1 REF: 97

12. In Java, you can automatically make a reference variable of a subclass type point to an object of its superclass.

ANS: F PTS: 1 REF: 98

13. To determine whether a reference variable that points to an object is of a particular class type, Java provides the operator instanceof.

ANS: T PTS: 1 REF: 99

14. Composition is a “has-a” relationship.

ANS: T PTS: 1 REF: 105

15. An abstract class can only contain abstract methods.

ANS: F PTS: 1 REF: 104

16. You can instantiate an object of a subclass of an abstract class, but only if the subclass gives the definitions of all the abstract methods of the superclass.

ANS: T PTS: 1 REF: 104

17. In dynamic binding the method that gets executed is determined at execution time, not at compile time.

ANS: T PTS: 1 REF: 99

18. The class Throwable is derived from the class Exception.

ANS: F PTS: 1 REF: 111

19. A checked exception is any exception checked for by the programmer.

ANS: F PTS: 1 REF: 117

20. Every program with a try block must end with a finally block.

ANS: F PTS: 1 REF: 118

21. If in the heading of a catch block you declare an exception using the class Exception, then that catch block can catch all types of exceptions because the class Exception is the superclass of all exception classes.

ANS: T PTS: 1 REF: 120

22. If an exception occurs in a try block and that exception is caught by a catch block, then the remaining catch blocks associated with that try block are ignored.

ANS: T PTS: 1 REF: 120

23. The order in which catch blocks are placed in a program has no impact on which catch block is executed.

ANS: F PTS: 1 REF: 120

24. If you have created an exception class, you can define other exception classes extending the definition of the exception class you created.

ANS: T PTS: 1 REF: 130

25. The try block contains statements that should be executed regardless of whether or not an exception occurs.

ANS: F PTS: 1 REF: 118

MULTIPLE CHOICE

1. Inheritance is an example of what type of relationship?
- a. is-a
 - b. has-a
 - c. was-a
 - d. had-a

ANS: A PTS: 1 REF: 76

2. Any new class you create from an existing class is called a(n) ____.
- a. base class
 - b. superclass
 - c. derived class
 - d. extended class

ANS: C PTS: 1 REF: 76

3. A subclass can directly access ____.
- a. public members of a superclass
 - b. private members of a superclass
 - c. all members of a superclass
 - d. none of the members of a superclass

ANS: A PTS: 1 REF: 78

4. If there are three classes, Shape, Circle and Square, what is the most likely relationship between them?
- a. Square is a superclass, and shape and circle are subclasses of Square.
 - b. Shape is a superclass, and circle and square are subclasses of Shape.
 - c. Shape, circle and square are all sibling classes.
 - d. These three classes cannot be related.

ANS: B PTS: 1 REF: 77

5. Which of the following statements about the reference super is true?
- a. It must be used every time a method from the superclass is called.
 - b. It must be the last statement of the constructor.
 - c. It must be the first statement of the constructor.
 - d. It can only be used once in a program.

ANS: C PTS: 1 REF: 84

6. If class Dog has a subclass Retriever, which of the following is true?
- a. Because of single inheritance, Dog can have no other subclasses.
 - b. Because of single inheritance, Retriever can extend no other class except Dog.
 - c. The relationship between these classes implies that Dog "is a" Retriever.
 - d. The relationship between these classes implies that Retriever "has-a" Dog.

ANS: B PTS: 1 REF: 78

Suppose a class Car and its subclass Honda both have a method called speed as part of the class definition. rentalH refers to an object of the type Honda and the following statements are found in the code:

```
rentalH.cost();  
super.speed();
```

7. What will the first statement in the situation described above do?
- The cost method in Honda will be called.
 - The cost method in Car will be called.
 - Nothing will be called since the code will not compile as a result of multiple definitions of speed.
 - Overloading will be used to determine which cost method to use.

ANS: A PTS: 1 REF: 82

8. What does the second statement in the description above do?
- The speed method in Honda will be called.
 - The speed method in Car will be called.
 - Nothing will be called since the code will not compile as a result of multiple definitions of speed.
 - Overloading will be used to determine which method of speed to use.

ANS: B PTS: 1 REF: 82

9. An abstract class ____.
- does not have any subclasses
 - is a superclass with many subclasses
 - cannot be instantiated
 - is the base class of all other classes

ANS: C PTS: 1 REF: 104

10. An abstract method ____.
- is any method in the abstract class
 - cannot be inherited
 - has no body
 - is found in a subclass and overrides methods in a superclass using the reserved word abstract

ANS: C PTS: 1 REF: 104

11. Composition is a(n) ____ relationship.
- is-a
 - has-a
 - was-a
 - had-a

ANS: B PTS: 1 REF: 105

12. An abstract class can define ____.
- only abstract methods
 - only non-abstract methods
 - abstract and non-abstract methods
 - only abstract instance variables

ANS: C PTS: 1 REF: 104

13. What is the correct syntax for defining a new class Parakeet based on the superclass Bird.
- class Parakeet is a Bird{ }
 - class Bird defines Parakeet{ }
 - class Bird has a Parakeet{ }

d. class Parakeet extends Bird{ }

ANS: D PTS: 1 REF: 77

14. Which operator is used to determine if an object is of a particular class type?
- a. The operator new
 - b. The dot (.) operator
 - c. The instanceof operator
 - d. The + operator

ANS: C PTS: 1 REF: 99

15. When is a finally{ } block executed?
- a. Only when an exception is thrown by a try block.
 - b. Only when there are no exceptions thrown.
 - c. At the end of a program.
 - d. Always after the execution of a try block, regardless of whether or not an exception is thrown.

ANS: D PTS: 1 REF: 118

16. How many finally blocks can there be in a try/catch structure?
- a. There must be 1.
 - b. There can be 1 following each catch block.
 - c. There can be 0 or 1 following the last catch block.
 - d. There is no limit to the number of catch blocks following the last catch block.

ANS: C PTS: 1 REF: 118

```
done=false;
```

```
do
{
    try
    {
        System.out.print("Enter an integer: ");
        System.out.flush();
        number=Integer.parseInt(keyboard.readLine());
        System.out.println();
        done=true;
    }
    catch(ThisException exRef)
    {
        System.out.println("\n Exception "+ nfeRef.toString());
    }
} while(!done);
```

17. Which exception-handling technique is the code above using?
- a. Terminate the program
 - b. Fix the error and continue
 - c. Log the error and continue
 - d. Fix the error and terminate the program

ANS: B PTS: 1 REF: 129

18. What is most likely the type of exception (ThisException) in the code above?
- a. IllegalArgumentException
 - c. FileNotFoundException

b. NullPointerException d. NumberFormatException

ANS: D PTS: 1 REF: 129

19. How many times will the code in the try block above execute?
- Until the user specifies that he/she wants to quit the program.
 - Until the user inputs a valid integer.
 - If there is an exception thrown it will execute just once, because the program will terminate at that point.
 - Zero times; the program will terminate before it reaches the try block.

ANS: B PTS: 1 REF: 129

20. Which class of exceptions is not checked?
- IOException
 - ArithmeticException
 - RuntimeExceptions
 - All exceptions are checked

ANS: C PTS: 1 REF: 118

21. Which of the following is not a typical action of the catch block?
- Completely handling the exception
 - Partially processing the exception.
 - Rethrowing the same exception for the calling environment
 - Throwing the exception

ANS: D PTS: 1 REF: 124

22. Which of the following statements is true?
- The class Object, which is derived from the class Throwable, is the superclass of the class Exception.
 - The class Exception, which is derived from the class Object, is the superclass of the class Throwable.
 - The class Throwable, which is derived from the class Object, is the superclass of the class Exception.
 - The class Throwable, which is derived from the class Exception, is the superclass of the class Object.

ANS: C PTS: 1 REF: 111

```
import java.io.*;
public class ExceptionExample1
{
    static BufferedReader keyboard=new BufferedReader(new InputStreamReader(System.in));

    public static void main(String[] args) {

        int dividend, divisor, quotient;
        try
        {
            System.out.print("Enter dividend: ");
            System.out.flush();
            dividend = Integer.parseInt(keyboard.readLine());
            System.out.println();
            System.out.print("Enter divisor: ");
            System.out.flush();
```

```

        divisor = Integer.parseInt(keyboard.readLine());
        System.out.println();
        quotient=dividend/divisor;
        System.out.println("quotient = " +quotient);
    }
    catch(ArithmeticException aeRef)
    {
        System.out.println("Exception" + aeRef.toString());
    }
    catch(NumberFormatException nfeRef)
    {
        System.out.println("Exception " + nfeRef.toString());
    }
    catch(IOException ioeRef)
    {
        System.out.println("Exception "+ioeRef.toString());
    }
}
}

```

23. Which of the following will cause the first exception to occur in the code above?
- if the divisor is zero
 - is the dividend is zero
 - if the quotient is zero
 - this code will not compile so an exception cannot be triggered

ANS: A PTS: 1 REF: 124

24. Which of the following inputs would be caught by the second catch block in the program above?
- 0
 - 10
 - h3
 - 1

ANS: C PTS: 1 REF: 122

25. The term overriding is synonymous with ____.
- overloading
 - redefining
 - binding
 - referencing

ANS: B PTS: 1 REF: 78