

Name_____ **Score**_____

Q1: For which of the following would polymorphism not provide a clean solution?

- a. A billing program where there is a variety of client types that are billed with different fee structures.
- b. A maintenance log program where data for a variety of types of machines is collected and maintenance schedules are produced for each machine based on the data collected.
- c. A program to compute a 5% savings account interest for a variety of clients.
- d. An IRS program that maintains information on a variety of taxpayers and determines who to audit based on criteria for classes of taxpayers.

Q2: Inheritance is also known as the

- a. “knows-a” relationship.
- b. “has-a” relationship.
- c. “uses-a” relationship.
- d. “is-a” relationship.

Q3: Constructors:

- a. Initialize instance variables.
- b. When overloaded, can have identical argument lists.
- c. When overloaded, are selected by number, types and order of types of parameters.
- d. a and c.

Q4: Polymorphism allows for specifics to be dealt with during:

- a. execution.
- b. compilation.
- c. programming.
- d. debugging.

Q5: Information is passed to a method in:

- a. the method name.
- b. that method's return.
- c. the method body.
- d. the arguments to the method.

Q6: Which of the following is not a superclass/subclass relationship?

- a. Ford/Taurus.
- b. University/Brown University.
- c. Sailboat/Tugboat.
- d. Country/USA.

Q7: To declare a method as static, place the keyword static before _____ in the method's declaration.

- a. the method modifier.
- b. the return type.
- c. the method name.
- d. the argument list.

Q8: Consider the abstract superclass below:

```
public abstract class Foo
{
    private int a;
    public int b;

    public Foo( int aVal, int bVal )
    {
        a = aVal;
        b = bVal;
    } // end Foo constructor

    public abstract int calculate();
} // end class Foo
```

Any concrete subclass that extends class Foo:

- a. Must implement a method called calculate.
- b. Will not be able to access the instance variable a.
- c. Neither (a) nor (b).
- d. Both (a) and (b).

Q9: Which is a correct static method call of Math class method sqrt?

- a. sqrt(900);.
- b. math.sqrt(900);.
- c. Math.sqrt(900);.
- d. Math math = new Math(); math.sqrt(900);.

Q10: Which of the following can be an argument to a method?

- a. Constants.
- b. Variables.
- c. Expressions.
- d. All of the above.

Q11: In a class containing methods with the same name, the methods are distinguished by:

- a. Number of arguments.
- b. Types of arguments.
- c. Return type.
- d. A and B.
- e. B and C.

Q12: Consider the array:

`s[0] = 7`

`s[1] = 0`

`s[2] = -12`

`s[3] = 9`

`s[4] = 10`

`s[5] = 4`

`s[6] = 6`

The value of `s[s[6] - s[5]]` is:

- a. -12.
- b. 1.
- c. 9.
- d. 2.

Q13: Declaring `main` as _____ allows the JVM to invoke `main` without creating an instance of the class.

- a. `public`.
- b. `void`.
- c. `static`.
- d. `final`.

Q14: Consider the following Java statements:

```
int x = 9;
```

```
double y = 5.3;
```

```
result = calculateValue( x, y );
```

Which of the following statements is false?

- a. A method is called with its name and parentheses.
- b. `x` and `y` are parameters.
- c. Copies of `x` and `y` are passed to the method `calculateValue()`.
- d. `x` and `y` are arguments.

Q15: Which statement is *false*?

- a. If a method does not return a value, the *return-value-type* in the method declaration can be omitted.
- b. Placing a semicolon after the right parenthesis enclosing the parameter list of a method declaration is a syntax error.
- c. Redefining a method parameter as a local variable in the method's body is a compilation error.
- d. Forgetting to return a value from a method that should return a value is a compilation error.

Q16: Which statement below could be used to simulate the outputs of rolling a six-sided die? Suppose `randomNumbers` is a `Random` object.

- a. `1 + randomNumbers.nextInt(6);`
- b. `1 + randomNumbers.nextInt(2);`
- c. `6 + randomNumbers.nextInt(1);`
- d. `3 + randomNumbers.nextInt(3);`

Q17: The static method _____ of class String returns a formatted String.

- a. printf.
- b. format.
- c. formatString.
- d. toFormatString.

Q18: Which of the following statements is *true*?

- a. Methods and instance variables can both be either public or private.
- b. Information hiding is achieved by restricting access to class members via keyword public.
- c. The private members of a class are directly accessible to the client of a class.
- d. None of the above is true.

Q19: Consider integer array values, which contains 5 elements. Which statements successfully swap the contents of the array at index 3 and index 4?

- | | |
|--|---|
| a.
values[3] = values[4];
values[4] = values[3]; | c.
int temp = values[3];
values[3] = values[4];
values[4] = temp; |
| b.
values[4] = values[3];
values[3] = values[4]; | d.
int temp = values[3];
values[3] = values[4];
values[4] = values[3]; |

Q20: Which of the following should usually be private?

- a. Methods.
- b. Constructors.
- c. Variables (or fields).
- d. All of the above.

Q21: Suppose method1 is declared as

```
void method1 ( int a, float b )
```

Which of the following methods correctly overloads method1?

- a. void method2 (int a, float b).
- b. void method2 (float a, int b).
- c. void method1 (float a, int b).
- d. void method1 (int b, float a).

Q22: Which statement creates a random value from the sequence 2, 5, 8, 11 and 14. Suppose `randomNumbers` is a `Random` object.

- a. `2 + 5 * randomNumbers.nextInt(3);`
- b. `3 + 2 * randomNumbers.nextInt(5);`
- c. `5 + 3 * randomNumbers.nextInt(2);`
- d. `2 + 3 * randomNumbers.nextInt(5);`

Q23: An overloaded method is one that

- a. has a different name than another method, but the same parameters.
- b. has the same name as another method, but different parameters (by number, types or order of the types).
- c. has the same name and parameters as a method defined in another class.
- d. has the same name and parameters, but a different return type as another method.

Q24: When implementing a method, use the class's *set* and *get* methods to access the class's _____ data.

- a. `public`.
- b. `private`.
- c. `protected`.
- d. All of the above.

Q25: Which of the following methods are overloaded with respect to one another?

```
public int max ( int a, int b ) { ... }  
public double max ( double a, double b ) { ... }  
public int max ( int a, int b, int c ) { ... }  
public double max ( double a, double b, double c ) { ... }
```

- a. A and B are overloaded; C and D are overloaded.
- b. A and C are overloaded; B and D are overloaded.
- c. A, B and C are overloaded.
- d. All these four methods are overloaded.

Q26: Assume array `items` contains the values 0, 2, 4, 6 and 8. Which of the following set of statements uses the enhanced for loop to display each value in array `items`?

- a.

```
for ( int i = 0; i < items.length; i++ )  
    System.out.printf( "%d\n", items[ i ] );
```
- b.

```
for ( int i : items )  
    System.out.printf( "%d\n", items[ i ] );
```
- c.

```
for ( int i : items )  
    System.out.printf( "%d\n", i );
```
- d.

```
for ( int i = 0 : items.length )  
    System.out.printf( "%d\n", items[ i ] );
```

Q27: A constructor cannot:

- a. be overloaded.
- b. initialize variables to their defaults.
- c. specify return types or return values.
- d. have the same name as the class.

Q28: Composition is sometimes referred to as a(n) _____.

- a. is-a relationship.
- b. has-a relationship.
- c. many-in-one relationship.
- d. one-to-many relationship.

Q29: When a subclass constructor calls its superclass constructor, what happens if the superclass's constructor does not assign a value to an instance variable?

- a. A syntax error occurs.
- b. A compile-time error occurs.
- c. A run-time error occurs.
- d. The program compiles and runs because the instance variables are initialized to their default values.

Q30: Which of the following statements is false?

- a. A subclass is generally larger than its superclass.
- b. A superclass object is a subclass object.
- c. The class following the extends keyword in a class declaration is the direct superclass of the class being declared.
- d. Java uses interfaces to provide the benefits of multiple inheritance.

Q31: An advantage of inheritance is that:

- a. All methods can be inherited.
- b. All instance variables can be uniformly accessed by subclasses and superclasses.
- c. Objects of a subclass can be treated like objects of their superclass.
- d. None of the above.

Q32: Which of the following keywords allows a subclass to access a superclass method even when the subclass has overridden the superclass method?

- a. base.
- b. this.
- c. public.
- d. super.

Q33: Superclass methods with this level of access cannot be called from subclasses.

- a. private.
- b. public.
- c. protected.
- d. package.

Q34: Which of the following is the superclass constructor call syntax?

- a. keyword super, followed by a dot (.) .
- b. keyword super, followed by a set of parentheses containing the superclass constructor arguments.
- c. keyword super, followed by a dot and the superclass constructor name.
- d. None of the above.

Q35: private fields of a superclass can be accessed in a subclass

- a. by calling private methods declared in the superclass.
- b. by calling public or protected methods declared in the superclass.
- c. directly.
- d. All of the above.

Q36: Which superclass members are inherited by all subclasses of that superclass?

- a. private instance variables and methods.
- b. protected instance variables and methods.
- c. private constructors.
- d. protected constructors.

Q37: Which of the following statements is (are) *true*?

- A. We can use inheritance to customize existing software.
 - B. A superclass specifies commonality.
 - C. A superclass can be modified without modifying subclasses
 - D. A subclass can be modified without modifying its superclass.
- a. All of the above.
 - b. None of the above.
 - c. A, B and C.
 - d. A, B and D.

Q38: Which of the following statements about interfaces is *false*?

- a. An interface describes a set of methods that can be called on an object, providing a default implementation for the methods.
- b. An interface describes a set of methods that can be called on an object, not providing concrete implementation for the methods.
- c. Interfaces are useful when attempting to assign common functionality to possibly unrelated classes.
- d. Once a class implements an interface, all objects of that class have an *is-a* relationship with the interface type.

Q39: Which statement *best* describes the relationship between superclass and subclass types?

- a. A subclass reference *cannot* be assigned to a superclass variable and a superclass reference *cannot* be assigned to a subclass variable.
- b. A subclass reference *can* be assigned to a superclass variable and a superclass reference *can* be assigned to a subclass variable.
- c. A superclass reference *can* be assigned to a subclass variable, but a subclass reference *cannot* be assigned to a superclass variable.
- d. A subclass reference *can* be assigned to a superclass variable, but a superclass reference *cannot* be assigned to a subclass variable.

Q40: Which of the following could be used to declare abstract method `method1` in abstract class `Class1` (`method1` returns an `int` and takes no arguments)?

- a. `public int method1();`
- b. `public int abstract method1();`
- c. `public abstract int method1();`
- d. `public int nonfinal method1();`

Q41: Which of the following statements about abstract superclasses is *true*?

- a. abstract superclasses may contain data.
- b. abstract superclasses may not contain implementations of methods.
- c. abstract superclasses must declare all methods as abstract.
- d. abstract superclasses must declare all data members not given values as abstract.

Q42: Consider classes A, B and C, where A is an abstract superclass, B is a concrete class that inherits from A and C is a concrete class that inherits from B. Class A declares abstract method `originalMethod`, implemented in class B. Which of the following statements is true of class C?

- a. Method `originalMethod` cannot be overridden in class C—once it has been implemented in concrete class B, it is implicitly final.
- b. Method `originalMethod` must be overridden in class C, or a syntax error will occur.
- c. If method `originalMethod` is not overridden in class C but is called by an object of class C, an error occurs.
- d. None of the above.

Q43: When a superclass variable refers to a subclass object and a method is called on that object, the proper implementation is determined at execution time. What is the process of determining the correct method to call?

- a. execution time binding.
- b. execution binding.
- c. just-in-time binding.
- d. late binding.

Q44: Assigning a subclass reference to a superclass variable is safe:

- a. because the subclass object *has an* object of its superclass.
- b. because the subclass object *is an* object of its superclass.
- c. only when the superclass is abstract.
- d. only when the superclass is concrete.

Q45: Which of the following does *not* complete the sentence correctly?

An interface ____.

- a. forces classes that implement it to declare all the interface methods.
- b. can be used in place of an abstract class when there is no default implementation to inherit.
- c. is declared in a file by itself and is saved in a file with the same name as the interface followed by the `.java` extension.
- d. can be instantiated.

Q46: Interfaces can have ____ methods.

- a. 0
- b. 1
- c. 2
- d. any number of

Q47: Which of the following initializer lists would correctly set the elements of array n?

- a. `int n[] = { 1, 2, 3, 4, 5 };`
- b. `array n[int] = { 1, 2, 3, 4, 5 };`
- c. `int n[5] = { 1; 2; 3; 4; 5 };`
- d. `int n = new int(1, 2, 3, 4, 5);`

Q48: Every class in Java, except _____, extends an existing class.

- a. Integer.
- b. Object.
- c. String.
- d. Class.

Q49: Consider the classes below, declared in the same file:

```
public class A
{
    int a;
    public A()
    {
        a = 7;
    }
}
```

```
public class B extends A
```

```
{
    int b;
    public B()
    {
        b = 8;
    }
}
```

Which of the statements below is *false*?

- a. Both variables a and b are instance variables.
- b. After the constructor for class B executes, the variable a will have the value 7.
- c. After the constructor for class B executes, the variable b will have the value 8.
- d. A reference of type A can be treated as a reference of type B.

Q50: Which expression adds 1 to the element of array arrayName at index i?

- a. ++arrayName[i].
- b. arrayName++[i].
- c. arrayName[i++].
- d. None of the above.

Q51: In an expression containing values of the types int and double, the _____ values are _____ to _____ values for use in the expression.

- a. int, promoted, double.
- b. int, demoted, double.
- c. double, promoted, int.
- d. double, demoted, int.

Q52: Which of the following statements about the **continue** statement is true?

- a. The **continue** statement is used to exit a repetition structure early and continue execution after the loop.
- b. The **continue** statement is used to continue after a **switch** statement.
- c. The **continue** statement does not alter the flow of control.
- d. A **continue** statement proceeds with the next iteration of the immediately enclosing **while**, **for**, **do...while** statement.

Q53: Which of the following is *not* true about the conditional operator (?:)?

- a. The conditional operator is a ternary operator, meaning that it takes three operands.
- b. The first operand is a boolean expression.
- c. The second operand is the result value if the condition evaluates to false.
- d. The second operand is the result value if the condition evaluates to true.

Q54: The parameter list in the method header and the arguments in the method call must agree in:

- a. number
- b. type
- c. order
- d. all of the above

Q55: A class that implements an interface but does not declare all of the interface's methods must be declared:

- a. public.
- b. interface.
- c. abstract.
- d. final.

Q56: A class instance creation expression contains:

- a. Parentheses.
- b. The new keyword.
- c. The name of the class.
- d. All of the above.

Q57: Which of the following statements describes block scope?

- a. It begins at the opening { of the class declaration and terminates at the closing }
- b. It limits label scope to only the method in which it is declared.
- c. It begins at the identifier's declaration and ends at the terminating right brace {}.
- d. It is valid for one statement only.

Q58: To avoid duplicating code, use _____, rather than _____.

- a. inheritance, the “copy-and-paste” approach.
- b. the “copy-and-paste” approach, inheritance.
- c. a class that explicitly extends Object, a class that does not extend Object.
- d. a class that does not extend Object, a class that explicitly extends Object.

Q59: Which keyword is used to specify that a class will define the methods of an interface?

- a. uses.
- b. implements.
- c. defines.
- d. extends.

Q60: Which of the following is *not* a syntax error?

- a. Neglecting to initialize a local variable in a method before it is used.
- b. Using a single equals sign instead of a double equals sign in the condition of an *if* statement.
- c. Placing a semicolon at the end of the first line of an *if* statement.
- d. Omitting the left and right parenthesis for the condition of an if statement.