1. Which of the following statements are correct?
   
   A. char[][] charArray = {'a', 'b'};
   B. char[2][2] charArray = {{'a', 'b'}, {'c', 'd'}};
   C. char[2][] charArray = {{'a', 'b'}, {'c', 'd'}};
   D. char[][2] charArray = {{'a', 'b'}, {'c', 'd'}};

2. Assume double[][] x = new double[4][5], what are x.length and x[2].length?
   
   A. 4 and 4
   B. 4 and 5
   C. 5 and 4
   D. 5 and 5

3. What is the index variable for the element at the first row and first column in array a?
   
   A. a[0][0]
   B. a[1][1]
   C. a[0][1]
   D. a[1][0]

4. When you create an array using the following statement, the element values are automatically initialized to 0.

   ```java
   int[][] matrix = new int[5][5];
   ```

   A. True
   B. False

5. How many elements are array matrix (int[][] matrix = new int[5][5])?

   A. 14
   B. 20
   C. 25
   D. 30

6. Analyze the following code:

   ```java
gpublic class Test {
   public static void main(String[] args) {
       boolean[][] x = new boolean[3][3];
       x[0] = new boolean[1]; x[1] = new boolean[1]; x[2] = new boolean[1];
       System.out.println("x[2][2] is " + x[2][2]);
   }
}
```
A. The program has a compile error because new boolean[3][] is wrong.
B. The program has a runtime error because x[2][2] is null.
C. The program runs and displays x[2][2] is null.
D. The program runs and displays x[2][2] is true.
E. The program runs and displays x[2][2] is false.

7. Assume int[][] x = {{1, 2}, {3, 4}, {5, 6}}, what are x.length and x[0].length?

A. 2 and 1
B. 2 and 2
C. 3 and 2
D. 2 and 3
E. 3 and 3

8. Assume int[][] x = {{1, 2}, {3, 4, 5}, {5, 6, 5, 9}}, what are x[0].length, x[1].length, and x[2].length?

A. 2, 3, and 3
B. 2, 3, and 4
C. 3, 3, and 3
D. 3, 3, and 4
E. 2, 2, and 2

9. What is the printout of the following program?

```java
public class Test {
    public static void main(String[] args) {
        int[][] values = {{3, 4, 5, 1}, {33, 6, 1, 2}};
        int v = values[0][0];
        for (int row = 0; row < values.length; row++)
            for (int column = 0; column < values[row].length; column++)
                if (v < values[row][column])
                    v = values[row][column];
        System.out.print(v);
    }
}
```

A. 1
B. 3
C. 5
D. 6
E. 33

10. What is the printout of the following program?
public class Test {
    public static void main(String[] args) {
        int[][] values = {{3, 4, 5, 1}, {33, 6, 1, 2}};

        int v = values[0][0];
        for (int[] list : values)
            for (int element : list)
                if (v > element)
                    v = element;

        System.out.print(v);
    }
}

A. 1
B. 3
C. 5
D. 6
E. 33

11. What is the printout of the following program?

public class Test {
    public static void main(String[] args) {
        int[][] values = {{3, 4, 5, 1}, {33, 6, 1, 2}};

        for (int row = 0; row < values.length; row++) {
            java.util.Arrays.sort(values[row]);
            for (int column = 0; column < values[row].length; column++)
                System.out.print(values[row][column] + " ");
            System.out.println();
        }
    }
}

A. The program prints two rows 3 4 5 1 followed by 33 6 1 2
B. The program prints on row 3 4 5 1 33 6 1 2
C. The program prints two rows 3 4 5 1 followed by 33 6 1 2
D. The program prints two rows 1 3 4 5 followed by 1 2 6 33
E. The program prints one row 1 3 4 5 1 2 6 33

12. What is the output of the following code?

public class Test {
    public static void main(String[] args) {
        int[][] matrix = 
            {{1, 2, 3, 4},
             {1, 2, 3, 4}};

        System.out.println(matrix[0][0] + " ");
        System.out.println(matrix[0][1] + " ");
        System.out.println(matrix[0][2] + " ");
        System.out.println(matrix[0][3] + " ");
        System.out.println(matrix[1][0] + " ");
        System.out.println(matrix[1][1] + " ");
        System.out.println(matrix[1][2] + " ");
        System.out.println(matrix[1][3] + " ");
    }
}

A. 1 2 3 4 1 2 3 4
B. 1 2 3 4 1 2 3 4
C. 1 2 3 4 1 2 3 4
D. 1 2 3 4 1 2 3 4
E. 1 2 3 4 1 2 3 4
for (int i = 0; i < 4; i++)
    System.out.print(matrix[i][1] + " ");
}

13. What is the output of the following code?

```
public class Test5 {
    public static void main(String[] args) {
        int[][] matrix = {
            {1, 2, 3, 4},
            {4, 5, 6, 7},
            {8, 9, 10, 11},
            {12, 13, 14, 15}};

        for (int i = 0; i < 4; i++)
            System.out.print(matrix[1][i] + " ");
    }
}
```

A. 1 2 3 4  
B. 4 5 6 7  
C. 1 3 8 12  
D. 2 5 9 13  
E. 3 6 10 14  

14. Suppose a method p has the following heading:

```
public static int[][] p()
```

What return statement may be used in p()?

A. return 1;  
B. return {1, 2, 3};  
C. return int[][]{1, 2, 3};  
D. return new int[][]{{1, 2, 3}, {2, 4, 5}};  
E. return new int[][]{{1, 2, 3}, {2, 4, 5}};
15. What is the printout of the following program?

```java
public class Test {
    public static void main(String[] args) {
        int[][] values = {{3, 4, 5, 1}, {33, 6, 1, 2}};

        for (int row = 0; row < values.length; row++) {
            System.out.print(m(values[row]) + " ");
        }
    }

    public static int m(int[] list) {
        int v = list[0];
        for (int i = 1; i < list.length; i++)
            if (v < list[i])
                v = list[i];
        return v;
    }
}
```

A. 3 33  
B. 1 1  
C. 5 6  
D. 5 33  
E. 33 5

16. Assume double[][][] x = new double[4][5][6], what are x.length, x[2].length, and x[0][0].length?

A. 4, 5, and 6  
B. 6, 5, and 4  
C. 5, 5, and 5  
D. 4, 5, and 4

17. Which of the following statements are correct?

A. char[][][] charArray = new char[2][2][];  
B. char[2][2][] charArray = {'a', 'b'};  
C. char[][][] charArray = {{'a', 'b'}, {'c', 'd'}, {'e', 'f'}};  
D. char[][][] charArray = {={'a', 'b'}, {'c', 'd'}, {'e', 'f'}};

18. What is the printout of the following code?

```java
public class Test {
    public static void main(String[] args) {
        int[][][] data = {{{1, 2}, {3, 4}},
                          {{5, 6}, {7, 8}}};
    }
}
```
19. What is the printout of the following code?

```java
public class Test {
    public static void main(String[] args) {
        int[][][] data = {{{1, 2}, {3, 4}}, {{5, 6}, {7, 8}}};
        System.out.print(ttt(data[0]));
    }

    public static int ttt(int[][] m) {
        int v = m[0][0];
        for (int i = 0; i < m.length; i++)
            for (int j = 0; j < m[i].length; j++)
                if (v < m[i][j])
                    v = m[i][j];
        return v;
    }
}
```

A. 1  
B. 2  
C. 4  
D. 5  
E. 6

20. __________ represents an entity in the real world that can be distinctly identified.

   A. A class  
   B. An object  
   C. A method  
   D. A data field

21. ________ is a construct that defines objects of the same type.
A. A class  
B. An object  
C. A method  
D. A data field

22. An object is an instance of a __________.

A. program  
B. class  
C. method  
D. data

23. The keyword __________ is required to declare a class.

A. public  
B. private  
C. class  
D. All of the above.

24. ________ is invoked to create an object.

A. A constructor  
B. The main method  
C. A method with a return type  
D. A method with the void return type

25. Which of the following statements are true?

A. A default constructor is provided automatically if no constructors are explicitly declared in the class.
B. At least one constructor must always be defined explicitly.
C. Every class has a default constructor.
D. The default constructor is a no-arg constructor.

26. Which of the following statements are true?
A. Multiple constructors can be defined in a class.
B. Constructors do not have a return type, not even void.
C. Constructors must have the same name as the class itself.
D. Constructors are invoked using the new operator when an object is created.

27. Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        A a = new A();
        a.print();
    }
}

class A {
    String s;
    A(String s) {
        this.s = s;
    }
    void print() {
        System.out.println(s);
    }
}
```

A. The program has a compilation error because class A is not a public class.
B. The program has a compilation error because class A does not have a default constructor.
C. The program compiles and runs fine and prints nothing.
D. The program would compile and run if you change A a = new A() to A a = new A("5").

28. What is wrong in the following code?

```java
class TempClass {
    int i;
    public void TempClass(int j) {
        int i = j;
    }
}

class C {
    public static void main(String[] args) {
        TempClass temp = new TempClass(2);
    }
```
A. The program has a compilation error because TempClass does not have a default constructor.
B. The program has a compilation error because TempClass does not have a constructor with an int argument.
C. The program compiles fine, but it does not run because class C is not public.
D. The program compiles and runs fine.

29. Given the declaration Circle x = new Circle(), which of the following statement is most accurate.

A. x contains an int value.
B. x contains an object of the Circle type.
C. x contains a reference to a Circle object.
D. You can assign an int value to x.

30. Analyze the following code.

```java
class Test {
    int x;

    public Test(String t) {
        System.out.println("Test");
    }

    public static void main(String[] args) {
        Test test = null;
        System.out.println(test.x);
    }
}
```

A. The program has a compile error because test is not initialized.
B. The program has a compile error because x has not been initialized.
C. The program has a compile error because you cannot create an object from the class that defines the object.
D. The program has a compile error because Test does not have a default constructor.
E. The program has a runtime NullPointerException because test is null while executing test.x.

31. The default value for data field of a boolean type, numeric type, object type is _________, respectively.

A. true, 1, Null
B. false, 0, null
32. Which of the following statements are true?

A. Local variables do not have default values.
B. Data fields have default values.
C. A variable of a primitive type holds a value of the primitive type.
D. A variable of a reference type holds a reference to where an object is stored in the memory.
E. You may assign an int value to a reference variable.

33. Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        double radius;
        final double PI = 3.15169;
        double area = radius * radius * PI;
        System.out.println("Area is " + area);
    }
}
```

A. The program has compile errors because the variable radius is not initialized.
B. The program has a compile error because a constant PI is defined inside a method.
C. The program has no compile errors but will get a runtime error because radius is not initialized.
D. The program compiles and runs fine.

34. Analyze the following code:

```java
public class Test {
    int x;

    public Test(String t) {
        System.out.println("Test");
    }

    public static void main(String[] args) {
        Test test = new Test();
        System.out.println(test.x);
    }
}
```
A. The program has a compile error because System.out.println method cannot be invoked from the constructor.
B. The program has a compile error because x has not been initialized.
C. The program has a compile error because you cannot create an object from the class that defines the object.
D. The program has a compile error because Test does not have a default constructor.

35. Suppose TestCircle1 and Circle1 in Listing 8.1 are in two separate files named TestCircle1.java and Circle1.java, respectively. What is the outcome of compiling TestCircle.java and then Circle.java?

A. Only TestCircle1.java compiles.
B. Only Circle1.java compiles.
C. Both compile fine.
D. Neither compiles successfully.

36. Which of the following statement is most accurate?

A. A reference variable is an object.
B. A reference variable refers to an object.
C. An object may contain other objects.
D. An object may contain the references of other objects.

37. Which of the following code in A or B, or both creates an object of the Date class:

A:
```java
public class Test {
    public Test() {
        new java.util.Date();
    }
}
```

B:
```java
public class Test {
    public Test() {
        java.util.Date date = new java.util.Date();
    }
}
```

A. A.
B. B.
C. Neither

38. Which of the following statements are correct?

A. When creating a Random object, you have to specify the seed or use the default seed.
B. If two Random objects have the same seed, the sequence of the random numbers obtained from these two objects are identical.
C. The nextInt() method in the Random class returns the next random int value.
D. The nextDouble() method in the Random class returns the next random double value.

39. How many JFrame objects can you create and how many can you display?

A. one
B. two
C. three
D. unlimited

40. Variables that are shared by every instances of a class are __________.

A. public variables
B. private variables
C. instance variables
D. class variables

41. You should add the static keyword in the place of ? in Line ________ in the following code:

```java
1 public class Test {
2   private int age;
3
4   public int square(int n) {
5     return n * n;
6   }
7
8   public int getAge() {
9   }
10}
```
42. A method that is associated with an individual object is called __________.

A. a static method
B. a class method
C. an instance method
D. an object method

43. To declare a constant MAX_LENGTH as a member of the class, you write

A. final static MAX_LENGTH = 99.98;
B. final static float MAX_LENGTH = 99.98;
C. static double MAX_LENGTH = 99.98;
D. final double MAX_LENGTH = 99.98;
E. final static double MAX_LENGTH = 99.98;

44. Analyze the following code.

```java
public class Test {
    public static void main(String[] args) {
        int n = 2;
        xMethod(n);
        System.out.println("n is " + n);
    }

    void xMethod(int n) {
        n++;
    }
}
```

A. The code has a compile error because xMethod does not return a value.
B. The code has a compile error because xMethod is not declared static.
C. The code prints n is 1.
D. The code prints n is 2.
E. The code prints n is 3.
45. What is the printout of the second println statement in the main method?

    public class Foo {
        int i;
        static int s;

        public static void main(String[] args) {
            Foo f1 = new Foo();
            System.out.println("f1.i is " + f1.i + " f1.s is " + f1.s);
            Foo f2 = new Foo();
            System.out.println("f2.i is " + f2.i + " f2.s is " + f2.s);
            Foo f3 = new Foo();
            System.out.println("f3.i is " + f3.i + " f3.s is " + f3.s);
        }

        public Foo() {
            i++;
            s++;
        }
    }

A. f2.i is 1 f2.s is 1
B. f2.i is 1 f2.s is 2
C. f2.i is 2 f2.s is 2
D. f2.i is 2 f2.s is 1

46. What is the printout of the third println statement in the main method?

    public class Foo {
        int i;
        static int s;

        public static void main(String[] args) {
            Foo f1 = new Foo();
            System.out.println("f1.i is " + f1.i + " f1.s is " + f1.s);
            Foo f2 = new Foo();
            System.out.println("f2.i is " + f2.i + " f2.s is " + f2.s);
            Foo f3 = new Foo();
            System.out.println("f3.i is " + f3.i + " f3.s is " + f3.s);
        }

        public Foo() {
            i++;
            s++;
        }
    }
A. f3.i is 1 f3.s is 1  
B. f3.i is 1 f3.s is 2  
C. f3.i is 1 f3.s is 3  
D. f3.i is 3 f3.s is 1  
E. f3.i is 3 f3.s is 3  

47. What code may be filled in the blank without causing syntax or runtime errors:

```java
public class Test {
    java.util.Date date;

    public static void main(String[] args) {
        Test test = new Test();
        System.out.println(_________________);
    }
}
```

A. test.date  
B. date  
C. test.date.toString()  
D. date.toString()  

48. Suppose the xMethod() is invoked in the following constructor in a class, xMethod() is _________ in the class.

```java
public MyClass() {
    xMethod();
}
```

A. a static method  
B. an instance method  
C. a static method or an instance method  

49. Suppose the xMethod() is invoked from a main method in a class as follows, xMethod() is _________ in the class.

```java
public static void main(String[] args) {
    xMethod();
}
```
A. a static method  
B. an instance method  
C. a static method or an instance method

To prevent a class from being instantiated, ______________

A. don't use any modifiers on the constructor.  
B. use the public modifier on the constructor.  
C. use the private modifier on the constructor.  
D. use the static modifier on the constructor.

50. Analyze the following code:

public class Test {  
    public static void main(String args[]) {  
        NClass nc = new NClass();  
        nc.t = nc.t++;  
    }  
}

class NClass {  
    int t;  
    private NClass() {  
    }  
}

A. The program has a compilation error because the NClass class has a private constructor.  
B. The program does not compile because the parameter list of the main method is wrong.  
C. The program compiles, but has a runtime error because t has no initial value.  
D. The program compiles and runs fine.

51. Analyze the following code:

public class Test {  
    private int t;  

    public static void main(String[] args) {  
        int x;  
        System.out.println(t);  
    }  
}

A. The variable t is not initialized and therefore causes errors.  
B. The variable t is private and therefore cannot be accessed in the main method.
C.  is non-static and it cannot be referenced in a static context in the main method.
D.  The variable  is not initialized and therefore causes errors.
E.  The program compiles and runs fine.

52. Analyze the following code and choose the best answer:

```java
public class Foo {
    private int x;

    public static void main(String[] args) {
        Foo foo = new Foo();
        System.out.println(foo.x);
    }
}
```

A. Since  is private, it cannot be accessed from an object foo.
B. Since  is defined in the class Foo, it can be accessed by any method inside the class without using an object. You can write the code to access  without creating an object such as foo in this code.
C. Since  is an instance variable, it cannot be directly used inside a main method. However, it can be accessed through an object such as foo in this code.
D. You cannot create a self-referenced object; that is, foo is created inside the class Foo.

53. Which of the following statements are true?

A. Use the private modifier to encapsulate data fields.
B. Encapsulating data fields makes the program easy to maintain.
C. Encapsulating data fields makes the program short.
D. Encapsulating data fields helps prevent programming errors.

54. Suppose you wish to provide an accessor method for a boolean property finished, what signature of the method should be?

A. public void getFinished()
B. public boolean getFinished()
C. public boolean isFinished()
D. public void isFinished()

55. Which is the advantage of encapsulation?
A. Only public methods are needed.
B. Making the class final causes no consequential changes to other code.
C. It changes the implementation without changing a class’s contract and causes no consequential changes to other code.
D. It changes a class’s contract without changing the implementation and causes no consequential changes to other code.

56. When invoking a method with an object argument, ___________ is passed.

A. the contents of the object
B. a copy of the object
C. the reference of the object
D. the object is copied, then the reference of the copied object

57. What is the value of myCount.count displayed?

```java
public class Test {
    public static void main(String[] args) {
        Count myCount = new Count();
        int times = 0;

        for (int i=0; i<100; i++)
            increment(myCount, times);

        System.out.println("myCount.count = "+ myCount.count);
        System.out.println("times = "+ times);
    }

    public static void increment(Count c, int times) {
        c.count++;
        times++;
    }
}

class Count {
    int count;

    Count(int c) {
        count = c;
    }

    Count() {
        count = 1;
    }
```
58. What is the value of times displayed?

```java
public class Test {
    public static void main(String[] args) {
        Count myCount = new Count();
        int times = 0;

        for (int i = 0; i < 100; i++)
            increment(myCount, times);

        System.out.println("myCount.count = "+ myCount.count);
        System.out.println("times = "+ times);
    }

    public static void increment(Count c, int times) {
        c.count++;
        times++;
    }
}

class Count {
    int count;

    Count(int c) {
        count = c;
    }

    Count() {
        count = 1;
    }
}
```

A. 101  
B. 100  
C. 99   
D. 98   
E. 0
59. What is the output of the following program?

```java
import java.util.Date;

public class Test {
    public static void main(String[] args) {
        Date date = new Date(1234567);
        m1(date);
        System.out.print(date.getTime() + " ");
        m2(date);
        System.out.println(date.getTime());
    }

    public static void m1(Date date) {
        date = new Date(7654321);
    }

    public static void m2(Date date) {
        date.setTime(7654321);
    }
}
```

A. 1234567 1234567  
B. 1234567 7654321  
C. 7654321 1234567  
D. 7654321 7654321  

60. Given the declaration Circle[] x = new Circle[10], which of the following statement is most accurate?

A. x contains an array of ten int values.  
B. x contains an array of ten objects of the Circle type.  
C. x contains a reference to an array and each element in the array can hold a reference to a Circle object.  
D. x contains a reference to an array and each element in the array can hold a Circle object.  

61. Assume java.util.Date[] dates = new java.util.Date[10], which of the following statements are true?

A. dates is null.  
B. dates[0] is null.  
C. dates = new java.util.Date[5] is fine, which assigns a new array to dates.  
D. dates = new Date() is fine, which creates a new Date object and assigns to dates.  

62. What is the representation of the third element in an array called a?

A. a[2]
B. a(2)
C. a[3]
D. a(3)

63. If you declare an array double[] list = {3.4, 2.0, 3.5, 5.5}, list[1] is ________.

A. 3.4
B. 2.0
C. 3.5
D. 5.5
E. undefined

64. Which of the following is incorrect?

A. int[] a = new int[2];
B. int a[] = new int[2];
C. int[] a = new int(2);
D. int a = new int[2];
E. int a() = new int[2];

65. If you declare an array double[] list = {3.4, 2.0, 3.5, 5.5}, the highest index in array list is __________.

A. 0
B. 1
C. 2
D. 3
E. 4

66. How many elements are in array double[] list = new double[5]?

A. 4
B. 5
67. What is the correct term for numbers[99]?

A. index
B. index variable
C. indexed variable
D. array variable
E. array

68. Suppose int i = 5, which of the following can be used as an index for array double[] t = new double[100]?

A. i
B. (int)(Math.random() * 100))
C. i + 10
D. i + 6.5
E. Math.random() * 100

69. Analyze the following code.

```java
public class Test {
    public static void main(String[] args) {
        int[] x = new int[3];
        System.out.println("x[0] is "+ x[0]);
    }
}
```

A. The program has a compile error because the size of the array wasn't specified when declaring the array.
B. The program has a runtime error because the array elements are not initialized.
C. The program runs fine and displays x[0] is 0.
D. The program has a runtime error because the array element x[0] is not defined.

70. Which of the following statements is valid?

A. int i = new int(30);
B. double d[] = new double[30];
C. int[] i = {3, 4, 3, 2};
D. char[] c = new char();
E. char[] c = new char[4]['a', 'b', 'c', 'd'];

71. How can you initialize an array of two characters to 'a' and 'b'?  

A. char[] charArray = new char[2]; charArray = {'a', 'b'};
B. char[2] charArray = {'a', 'b'};
C. char[] charArray = {'a', 'b'};
D. char[] charArray = new char[]{'a', 'b'};

72. What would be the result of attempting to compile and run the following code?

```java
public class Test {
    public static void main(String[] args) {
        double[] x = new double[]{1, 2, 3};
        System.out.println("Value is " + x[1]);
    }
}
```

A. The program has a compile error because the syntax new double[]{1, 2, 3} is wrong and it should be replaced by {1, 2, 3}.
B. The program has a compile error because the syntax new double[]{1, 2, 3} is wrong and it should be replaced by new double[3]{1, 2, 3};
C. The program has a compile error because the syntax new double[]{1, 2, 3} is wrong and it should be replaced by new double[1.0, 2.0, 3.0];
D. The program compiles and runs fine and the output "Value is 1.0" is printed.
E. The program compiles and runs fine and the output "Value is 2.0" is printed.

73. Assume int[] t = {1, 2, 3, 4}. What is t.length?

A. 0
B. 3
C. 4
D. 5

74. What is the output of the following code?

```java
double[] myList = {1, 5, 5, 5, 5, 1};
```
double max = myList[0];
int indexOfMax = 0;
for (int i = 1; i < myList.length; i++) {
    if (myList[i] > max) {
        max = myList[i];
        indexOfMax = i;
    }
}
System.out.println(indexOfMax);

A. 0
B. 1
C. 2
D. 3
E. 4

75. Analyze the following code:

    public class Test {
        public static void main(String[] args) {
            int[] x = new int[5];
            int i;
            for (i = 0; i < x.length; i++)
                x[i] = i;
            System.out.println(x[i]);
        }
    }

A. The program displays 0 1 2 3 4.
B. The program displays 4.
C. The program has a runtime error because the last statement in the main method causes ArrayIndexOutOfBoundsException.
D. The program has a compile error because i is not defined in the last statement in the main method.

76. (for-each loop) Analyze the following code:

    public class Test {
        public static void main(String[] args) {
            double[] x = {2.5, 3, 4};
            for (double value: x)
                System.out.print(value + " ");
        }
    }
A. The program displays 2.5, 3, 4
B. The program displays 2.5 3 4
C. The program displays 2.5 3.0 4.0
D. The program displays 2.5, 3.0 4.0
E. The program has a syntax error because value is undefined.

77. What is the output of the following code?

```java
int[] myList = {1, 2, 3, 4, 5, 6};
for (int i = myList.length - 2; i >= 0; i--)
    myList[i + 1] = myList[i];
for (int e : myList)
    System.out.print(e + " ");
```

A. 1 2 3 4 5 6
B. 6 1 2 3 4 5
C. 6 2 3 4 5 1
D. 1 1 2 3 4 5
E. 2 3 4 5 6 1

78. (Tricky) What is output of the following code:

```java
public class Test {
    public static void main(String[] args) {
        int[] x = {120, 200, 016};
        for (int i = 0; i < x.length; i++)
            System.out.print(x[i] + " ");
    }
}
```

A. 120 200 16
B. 120 200 14
C. 120 200 20
D. 016 is a compile error. It should be written as 16.

79. What is output of the following code:
public class Test {
    public static void main(String[] args) {
        int list[] = {1, 2, 3, 4, 5, 6};

        for (int i = 1; i < list.length; i++)
            list[i] = list[i - 1];

        for (int i = 0; i < list.length; i++)
            System.out.print(list[i] + " ");
    }
}

A. 1 2 3 4 5 6
B. 2 3 4 5 6 6
C. 2 3 4 5 6 1
D. 1 1 1 1 1

80. In the following code, what is the printout for list2?

class Test {
    public static void main(String[] args) {
        int[] list1 = {1, 2, 3};
        int[] list2 = {1, 2, 3};
        list2 = list1;
        list1[0] = 0; list1[1] = 1; list2[2] = 2;

        for (int i = 0; i < list2.length; i++)
            System.out.print(list2[i] + " ");
    }
}

A. 1 2 3
B. 1 1 1
C. 0 1 2
D. 0 1 3

81. In the following code, what is the printout for list1?
for (int i = 0; i < list1.length; i++)
    System.out.print(list1[i] + " ");
}
}

A. 1 2 3
B. 1 1 1
C. 0 1 2
D. 0 1 3

82. Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        int[] x = {1, 2, 3, 4};
        int[] y = x;

        x = new int[2];

        for (int i = 0; i < y.length; i++)
            System.out.print(y[i] + " ");
    }
}
```

A. The program displays 1 2 3 4
B. The program displays 0 0
C. The program displays 0 0 3 4
D. The program displays 0 0 0 0

83. Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        int[] x = {1, 2, 3, 4};
        int[] y = x;

        x = new int[2];

        for (int i = 0; i < x.length; i++)
            System.out.print(x[i] + " ");
    }
}
```
A. The program displays 1 2 3 4
B. The program displays 0 0
C. The program displays 0 0 3 4
D. The program displays 0 0 0 0

84. Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        final int[] x = {1, 2, 3, 4};
        int[] y = x;
        x = new int[2];
        for (int i = 0; i < y.length; i++)
            System.out.print(y[i] + " ");
    }
}
```

A. The program displays 1 2 3 4
B. The program displays 0 0
C. The program has a compile error on the statement `x = new int[2]`, because `x` is final and cannot be changed.
D. The elements in the array `x` cannot be changed, because `x` is final.

85. Analyze the following code:

```java
int[] list = new int[5];
list = new int[6];
```

A. The code has compile errors because the variable `list` cannot be changed once it is assigned.
B. The code has runtime errors because the variable `list` cannot be changed once it is assigned.
C. The code can compile and run fine. The second line assigns a new array to `list`.
D. The code has compile errors because you cannot assign a different size array to `list`.

86. Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        int[] a = new int[4];
        a[1] = 1;
        a = new int[2];
```
A. The program has a compile error because new int[2] is assigned to a.
B. The program has a runtime error because a[1] is not initialized.
C. The program displays a[1] is 0.
D. The program displays a[1] is 1.

87. The __________ method copies the sourceArray to the targetArray.

A. System.copyArrays(sourceArray, 0, targetArray, 0, sourceArray.length);
B. System.copyarrays(sourceArray, 0, targetArray, 0, sourceArray.length);
C. System.arrayCopy(sourceArray, 0, targetArray, 0, sourceArray.length);
D. System.arraycopy(sourceArray, 0, targetArray, 0, sourceArray.length);

When you pass an array to a method, the method receives __________.

A. a copy of the array
B. a copy of the first element
C. the reference of the array
D. the length of the array

88. Show the output of the following code:

```java
public class Test {
    public static void main(String[] args) {
        int[] x = {1, 2, 3, 4, 5};
        increase(x);

        int[] y = {1, 2, 3, 4, 5};
        increase(y[0]);

        System.out.println(x[0] + " " + y[0]);
    }

    public static void increase(int[] x) {
        for (int i = 0; i < x.length; i++)
            x[i]++;
    }

    public static void increase(int y) {
        y++;
    }
}
```
89. Do the following two programs produce the same result?

Program I:
public class Test {
    public static void main(String[] args) {
        int[] list = {1, 2, 3, 4, 5};
        reverse(list);
        for (int i = 0; i < list.length; i++)
            System.out.print(list[i] + " ");
    }
    public static void reverse(int[] list) {
        int[] newList = new int[list.length];
        for (int i = 0; i < list.length; i++)
            newList[i] = list[list.length - 1 - i];
        list = newList;
    }
}

Program II:
public class Test {
    public static void main(String[] args) {
        int[] oldList = {1, 2, 3, 4, 5};
        reverse(oldList);
        for (int i = 0; i < oldList.length; i++)
            System.out.print(oldList[i] + " ");
    }
    public static void reverse(int[] list) {
        int[] newList = new int[list.length];
        for (int i = 0; i < list.length; i++)
            newList[i] = list[list.length - 1 - i];
        list = newList;
    }
}
90. Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        int[] oldList = {1, 2, 3, 4, 5};
        reverse(oldList);
        for (int i = 0; i < oldList.length; i++)
            System.out.print(oldList[i] + " ");
    }

    public static void reverse(int[] list) {
        int[] newList = new int[list.length];
        for (int i = 0; i < list.length; i++)
            newList[i] = list[list.length - 1 - i];
        list = newList;
    }
}
```

A. The program displays 1 2 3 4 5.
B. The program displays 1 2 3 4 5 and then raises an ArrayIndexOutOfBoundsException.
C. The program displays 5 4 3 2 1.
D. The program displays 5 4 3 2 1 and then raises an ArrayIndexOutOfBoundsException.

91. Analyze the following code:

```java
public class Test1 {
    public static void main(String[] args) {
        xMethod(new double[]{3, 3});
        xMethod(new double[5]);
        xMethod(new double[3]{1, 2, 3});
    }

    public static void xMethod(double[] a) {
        System.out.println(a.length);
    }
}
```
A. The program has a compile error because xMethod(new double[] {3, 3}) is incorrect.
B. The program has a compile error because xMethod(new double[5]) is incorrect.
C. The program has a compile error because xMethod(new double[3] {1, 2, 3}) is incorrect.
D. The program has a runtime error because a is null.

92. The JVM stores the array in an area of memory, called _______, which is used for dynamic memory allocation where blocks of memory are allocated and freed in an arbitrary order.

A. stack
B. heap
C. memory block
D. dynamic memory

95. When you return an array from a method, the method returns __________.

A. a copy of the array
B. a copy of the first element
C. the reference of the array
D. the length of the array

96. Suppose a method p has the following heading:

public static int[] p()

What return statement may be used in p()?

A. return 1;
B. return {1, 2, 3};
C. return int[] {1, 2, 3};
D. return new int[] {1, 2, 3};

97. The reverse method is defined in the textbook. What is list1 after executing the following statements?

int[] list1 = {1, 2, 3, 4, 5, 6};
list1 = reverse(list1);

A. list1 is 1 2 3 4 5 6
B. list1 is 6 5 4 3 2 1
C. list1 is 0 0 0 0 0 0
D. list1 is 6 6 6 6 6 6

98. The reverse method is defined in this section. What is list1 after executing the following statements?
int[] list1 = {1, 2, 3, 4, 5, 6};
int[] list2 = reverse(list1);

A. list1 is 1 2 3 4 5 6
B. list1 is 6 5 4 3 2 1
C. list1 is 0 0 0 0 0 0
D. list1 is 6 6 6 6 6 6

99. Which of the following declarations are correct?

A. public static void print(String... strings, double... numbers)
B. public static void print(double... numbers, String name)
C. public static double... print(double d1, double d2)
D. public static void print(double... numbers)
E. public static void print(int n, double... numbers)

100. For the binarySearch method in Section 6.9.2, what is low and high after the first iteration of the while loop when invoking binarySearch(new int[]{1, 4, 6, 8, 10, 15, 20}, 11)?

A. low is 0 and high is 6
B. low is 0 and high is 3
C. low is 3 and high is 6
D. low is 4 and high is 6
E. low is 0 and high is 5

101. If a key is not in the list, the binarySearch method returns __________.

A. insertion point
B. insertion point - 1
C. -(insertion point + 1)
D. -insertion point

102. Use the selectionSort method presented in this section to answer this question. Assume list is {3.1, 3.1, 2.5, 6.4, 2.1}, what is the content of list after the first iteration of the outer loop in the method?

A. 3.1, 3.1, 2.5, 6.4, 2.1
B. 2.5, 3.1, 3.1, 6.4, 2.1
C. 2.1, 2.5, 3.1, 3.1, 6.4
D. 3.1, 3.1, 2.5, 2.1, 6.4
E. 2.1, 3.1, 2.5, 6.4, 3.1

103. Use the selectionSort method presented in this section to answer this question. What is list1 after executing the following statements?
double[] list1 = {3.1, 3.1, 2.5, 6.4};
selectionSort(list1);

A. list1 is 3.1, 3.1, 2.5, 6.4
B. list1 is 2.5 3.1, 3.1, 6.4
C. list1 is 6.4, 3.1, 3.1, 2.5
D. list1 is 3.1, 2.5, 3.1, 6.4

104. The __________ method sorts the array scores of the double[] type.
A. java.util.Arrays(scores)
B. java.util.Arrays.sorts(scores)
C. java.util.Arrays.sort(scores)
D. Njava.util.Arrays.sortArray(scores)

105. Assume int[] scores = {1, 20, 30, 40, 50}, what value does java.util.Arrays.binarySearch(scores, 30) return?
A. 0
B. -1
C. 1
D. 2
E. -2

106. Assume int[] scores = {1, 20, 30, 40, 50}, what value does java.util.Arrays.binarySearch(scores, 3) return?
A. 0
B. -1
C. 1
D. 2
E. -2

107. Suppose your method does not return any value, which of the following keywords can be used as a return type?
A. void
B. int
C. double
D. public
E. None of the above

108. The signature of a method consists of ____________.
A. method name
B. method name and parameter list
C. return type, method name, and parameter list
109. All Java applications must have a method __________.

A. public static Main(String[] args)
B. public static Main(String args[])
C. public static void main(String[] args)
D. public void main(String[] args)
E. public static main(String[] args)

110. Arguments to methods always appear within __________.

A. brackets
B. parentheses
C. curly braces
D. quotation marks

111. Does the return statement in the following method cause compile errors?

```java
public static void main(String[] args) {
    int max = 0;
    if (max != 0)
        System.out.println(max);
    else
        return;
}
```

A. Yes
B. No

112. Does the method call in the following method cause compile errors?

```java
public static void main(String[] args) {
    Math.pow(2, 4);
}
```

A. Yes
B. No

113. Each time a method is invoked, the system stores parameters and local variables in an area of memory, known as __________, which stores elements in last-in first-out fashion.

A. a heap
B. storage area
C. a stack
D. an array

114. Which of the following should be defined as a void method?
A. Write a method that prints integers from 1 to 100.
B. Write a method that returns a random integer from 1 to 100.
C. Write a method that checks whether current second is an integer from 1 to 100.
D. Write a method that converts an uppercase letter to lowercase.

115. You should fill in the blank in the following code with ______________.

```
public class Test {
    public static void main(String[] args) {
        System.out.print("The grade is ");
        printGrade(78.5);
        System.out.print("The grade is ");
        printGrade(59.5);
    }

    public static __________ printGrade(double score) {
        if (score >= 90.0) {
            System.out.println('A');
        } else if (score >= 80.0) {
            System.out.println('B');
        } else if (score >= 70.0) {
            System.out.println('C');
        } else if (score >= 60.0) {
            System.out.println('D');
        } else {
            System.out.println('F');
        }
    }
}
```

A. int
B. double
C. boolean
D. char
E. void

116. You should fill in the blank in the following code with ______________.

```
public class Test {
    public static void main(String[] args) {
```
System.out.print("The grade is " + getGrade(78.5));
System.out.print("The grade is " + getGrade(59.5));
}

public static _________ getGrade(double score) {
    if (score >= 90.0)
        return 'A';
    else if (score >= 80.0)
        return 'B';
    else if (score >= 70.0)
        return 'C';
    else if (score >= 60.0)
        return 'D';
    else
        return 'F';
}

A. int
B. double
C. boolean
D. char
E. void

117. When you invoke a method with a parameter, the value of the argument is passed to the parameter. This is referred to as _________.

A. method invocation
B. pass by value
C. pass by reference
D. pass by name

118. Given the following method

static void nPrint(String message, int n) {
    while (n > 0) {
        System.out.print(message);
        n--;
    }
}

What is the printout of the call nPrint('a', 4)?

A. aaaaa
B. aaaa
C. aaa
D. invalid call
119. Given the following method

```java
static void nPrint(String message, int n) {
    while (n > 0) {
        System.out.print(message);
        n--;
    }
}
```

What is k after invoking `nPrint("A message", k)`?

```java
int k = 2;
nPrint("A message", k);
```

A. 0  
B. 1  
C. 2  
D. 3

120. Analyze the following code:

```java
class Test {
    public static void main(String[] args) {
        System.out.println(xMethod(5, 500L));
    }

    public static int xMethod(int n, long l) {
        System.out.println("int, long");
        return n;
    }

    public static long xMethod(long n, long l) {
        System.out.println("long, long");
        return n;
    }
}
```

A. The program displays int, long followed by 5.  
B. The program displays long, long followed by 5.  
C. The program runs fine but displays things other than 5.  
D. The program does not compile because the compiler cannot distinguish which `xMethod` to invoke.

121. Analyze the following code:

```java
class Test {
    public static void main(String[] args) {
```
A. The program displays int followed by 5.
B. The program displays long followed by 5.
C. The program runs fine but displays things other than 5.
D. The program does not compile because the compiler cannot distinguish which xmethod to invoke.

122. Analyze the following code.

public class Test {
    public static void main(String[] args) {
        System.out.println(max(1, 2));
    }
}

public static double max(int num1, double num2) {
    System.out.println("max(int, double) is invoked");
    if (num1 > num2)
        return num1;
    else
        return num2;
}

public static double max(double num1, int num2) {
    System.out.println("max(double, int) is invoked");
    if (num1 > num2)
        return num1;
    else
        return num2;
}

A. The program cannot compile because you cannot have the print statement in a non-void method.
B. The program cannot compile because the compiler cannot determine which max method should be invoked.
C. The program runs and prints 2 followed by "max(int, double)" is invoked.
D. The program runs and prints 2 followed by "max(double, int)" is invoked.
E. The program runs and prints "max(int, double) is invoked" followed by 2.

123. Analyze the following code.

```java
public class Test {
    public static void main(String[] args) {
        System.out.println(m(2));
    }

    public static int m(int num) {
        return num;
    }

    public static void m(int num) {
        System.out.println(num);
    }
}
```

A. The program has a compile error because the two methods m have the same signature.
B. The program has a compile error because the second m method is defined, but not invoked in the main method.
C. The program runs and prints 2 once.
D. The program runs and prints 2 twice.

124. A variable defined inside a method is referred to as __________.

A. a global variable
B. a method variable
C. a block variable
D. a local variable

125. What is k after the following block executes?

```java
{ 
    int k = 2;
    nPrint("A message", k);
}
```

A. 0
B. 1
C. 2
D. k is not defined outside the block. So, the program has a compile error
The client can use a method without knowing how it is implemented. The details of the implementation are encapsulated in the method and hidden from the client who invokes the method. This is known as __________.

A. information hiding  
B. encapsulation  
C. method hiding  
D. simplifying method

126. Which of the following is a possible output from invoking `Math.random()`?

A. 3.43  
B. 0.5  
C. 0.0  
D. 1.0

127. What is `Math.round(3.6)`?

A. 3.0  
B. 3  
C. 4  
D. 4.0

128. What is `Math.rint(3.6)`?

A. 3.0  
B. 3  
C. 4.0  
D. 5.0

129. What is `Math.rint(3.5)`?

A. 3.0  
B. 3  
C. 4  
D. 4.0  
E. 5.0

130. What is `Math.ceil(3.6)`?

A. 3.0  
B. 3  
C. 4.0  
D. 5.0

131. What is `Math.floor(3.6)`?

A. 3.0
132. \((\text{int})(\text{Math.random()} * (65535 + 1))\) returns a random number __________.

A. between 1 and 65536
B. between 1 and 65535
C. between 0 and 65535
D. between 0 and 65536

133. \((\text{int})('a' + \text{Math.random()} * ('z' - 'a' + 1))\) returns a random number __________.

A. between 0 and (int)'z'
B. between (int)'a' and (int)'z'
C. between 'a' and 'z'
D. between 'a' and 'y'

134. \((\text{char})('a' + \text{Math.random()} * ('z' - 'a' + 1))\) returns a random character __________.

A. between 'a' and 'z'
B. between 'a' and 'y'
C. between 'b' and 'z'
D. between 'b' and 'y'

135. Which of the following is the best for generating random integer 0 or 1?

A. (int)\(\text{Math.random()}\)
B. (int)\(\text{Math.random()} + 1\)
C. (int)\(\text{Math.random()} + 0.5\)
D. (int)\(\text{Math.random()} + 0.2\)
E. (int)\(\text{Math.random()} + 0.8\)

136. __________ is to implement one method in the structure chart at a time from the top to the bottom.

A. Bottom-up approach
B. Top-down approach
C. Bottom-up and top-down approach
D. Stepwise refinement

137. __________ is a simple but incomplete version of a method.

A. A stub
B. A main method
C. A non-main method
D. A method developed using top-down approach

138. How many times will the following code print “Welcome to Java”? 

```java
B. 3
C. 4
D. 5.0
```
int count = 0;
while (count < 10) {
    System.out.println("Welcome to Java");
    count++;
}

A. 8  
B. 9  
C. 10  
D. 11  
E. 0  

139. Analyze the following code.

int count = 0;
while (count < 100) {
    // Point A
    System.out.println("Welcome to Java!");
    count++;
    // Point B
}

    // Point C

A. count < 100 is always true at Point A  
B. count < 100 is always true at Point B  
C. count < 100 is always false at Point B  
D. count < 100 is always true at Point C  
E. count < 100 is always false at Point C

140. How many times will the following code print "Welcome to Java"?

int count = 0;
while (count++ < 10) {
    System.out.println("Welcome to Java");
}

A. 8  
B. 9  
C. 10  
D. 11  
E. 0  

141. How many times will the following code print "Welcome to Java"?

int count = 0;
do {


System.out.println("Welcome to Java");
count++;
} while (count < 10);

A. 8
B. 9
C. 10
D. 11
E. 0

142. How many times will the following code print "Welcome to Java"?

int count = 0;
do {
    System.out.println("Welcome to Java");
} while (count++ < 10);

A. 8
B. 9
C. 10
D. 11
E. 0

143. How many times will the following code print "Welcome to Java"?

int count = 0;
do {
    System.out.println("Welcome to Java");
} while (++count < 10);

A. 8
B. 9
C. 10
D. 11
E. 0

144. What is the value in count after the following loop is executed?

int count = 0;
do {
    System.out.println("Welcome to Java");
} while (count++ < 9);
System.out.println(count);

A. 8
B. 9
C. 10
D. 11
145. Analyze the following statement:

```java
double sum = 0;
for (double d = 0; d < 10;) {
    d += 0.1;
    sum += sum + d;
}
```

A. The program has a compile error because the adjustment is missing in the for loop.
B. The program has a compile error because the control variable in the for loop cannot be of the double type.
C. The program runs in an infinite loop because d<10 would always be true.
D. The program compiles and runs fine.

146. Which of the following loops prints "Welcome to Java" 10 times?

A: ```java
for (int count = 1; count <= 10; count++) {
    System.out.println("Welcome to Java");
}
```

B: ```java
for (int count = 0; count < 10; count++) {
    System.out.println("Welcome to Java");
}
```

C: ```java
for (int count = 1; count < 10; count++) {
    System.out.println("Welcome to Java");
}
```

D: ```java
for (int count = 0; count <= 10; count++) {
    System.out.println("Welcome to Java");
}
```

A. BD  
B. ABC  
C. AC  
D. BC  
E. AB

147. Which of the following loops correctly computes 1/2 + 2/3 + 3/4 + ... + 99/100?

A: ```java
double sum = 0;
```
for (int i = 1; i <= 99; i++) {
    sum = i / (i + 1);
}
System.out.println("Sum is " + sum);

B:
double sum = 0;
for (int i = 1; i < 99; i++) {
    sum += i / (i + 1);
}
System.out.println("Sum is " + sum);

C:
double sum = 0;
for (int i = 1; i <= 99; i++) {
    sum += 1.0 * i / (i + 1);
}
System.out.println("Sum is " + sum);

D:
double sum = 0;
for (int i = 1; i <= 99; i++) {
    sum += i / (i + 1.0);
}
System.out.println("Sum is " + sum);

E:
double sum = 0;
for (int i = 1; i < 99; i++) {
    sum += i / (i + 1.0);
}
System.out.println("Sum is " + sum);

A. BCD
B. ABCD
C. B
D. CDE
E. CD

148. The following loop displays ________________.
for (int i = 1; i <= 10; i++) {
    System.out.print(i + " ");
i++;
}
149. Do the following two statements in (I) and (II) result in the same value in sum?

(I):
for (int i = 0; i<10; ++i) {
    sum += i;
}

(II):
for (int i = 0; i<10; i++) {
    sum += i;
}

A. Yes  
B. No

150. What is the output for y?

int y = 0;
for (int i = 0; i<10; ++i) {
    y += i;
}
System.out.println(y);

A. 10  
B. 11  
C. 12  
D. 13  
E. 45

151. What is i after the following for loop?

int y = 0;
for (int i = 0; i<10; ++i) {
    y += i;
}

A. 9  
B. 10  
C. 11  
D. undefined
152. Is the following loop correct?

for (; ; );

A. Yes
B. No

153. Analyze the following fragment:

double sum = 0;
double d = 0;
while (d != 10.0) {
    d += 0.1;
    sum += sum + d;
}

A. The program does not compile because sum and d are declared double, but assigned with integer value 0.
B. The program never stops because d is always 0.1 inside the loop.
C. The program may not stop because of the phenomenon referred to as numerical inaccuracy for operating with floating-point numbers.
D. After the loop, sum is 0 + 0.1 + 0.2 + 0.3 + ... + 1.9

154. Analyze the following code:

public class Test {
    public static void main (String args[]) {
        int i = 0;
        for (i = 0; i < 10; i++);
            System.out.println(i + 4);
    }
}

A. The program has a compile error because of the semicolon (;) on the for loop line.
B. The program compiles despite the semicolon (;) on the for loop line, and displays 4.
C. The program compiles despite the semicolon (;) on the for loop line, and displays 14.
D. The for loop in this program is same as for (i = 0; i < 10; i++) { }; System.out.println(i + 4);

155. How many times is the println statement executed?

for (int i = 0; i < 10; i++)
    for (int j = 0; j < i; j++)
        System.out.println(i * j)

A. 100
B. 20
C. 10
156. To add 0.01 + 0.02 + ... + 1.00, what order should you use to add the numbers to get better accuracy?

A. add 0.01, 0.02, ..., 1.00 in this order to a sum variable whose initial value is 0.
B. add 1.00, 0.99, 0.98, ..., 0.02, 0.01 in this order to a sum variable whose initial value is 0.

157. Will the following program terminate?

```java
int balance = 10;

while (true) {
    if (balance < 9) break;
    balance = balance - 9;
}
```

A. Yes
B. No

158. What is sum after the following loop terminates?

```java
int sum = 0;
int item = 0;
do {
    item++;
    sum += item;
    if (sum > 4) break;
} while (item < 5);
```

A. 5
B. 6
C. 7
D. 8

159. What is the printout after the following loop terminates?

```java
int number = 25;
int i;
boolean isPrime = true;
for (i = 2; i < number && isPrime; i++) {
    if (number % i == 0) {
        isPrime = false;
    }
}
```
System.out.println("i is " + i + " isPrime is " + isPrime);

A. i is 5 isPrime is true
B. i is 5 isPrime is false
C. i is 6 isPrime is true
D. i is 6 isPrime is false

160. What is the printout after the following loop terminates?

int number = 25;
int i;

boolean isPrime = true;
for (i = 2; i < number; i++) {
    if (number % i == 0) {
        isPrime = false; break;
    }
}
System.out.println("i is " + i + " isPrime is " + isPrime);

A. i is 5 isPrime is true
B. i is 5 isPrime is false
C. i is 6 isPrime is true
D. i is 6 isPrime is false

161. What is sum after the following loop terminates?

int sum = 0;
int item = 0;
do {
    item++;
    sum += item;
    if (sum >= 4) continue;
} while (item < 5);

A. 15
B. 16
C. 17
D. 18

162. Will the following program terminate?

int balance = 10;
while (true) {
    if (balance < 9) continue;
    balance = balance - 9;
}

A. Yes
B. No

163. What is the number of iterations in the following loop:

    for (int i = 1; i < n; i++) {
        // iteration
    }

A. 2*n
B. n
C. n - 1
D. n + 1

164. What is the number of iterations in the following loop:

    for (int i = 1; i <= n; i++) {
        // iteration
    }

A. 2*n
B. n
C. n - 1
D. n + 1

165. Suppose the input for number is 9. What is the output from running the following program?

```java
import java.util.Scanner;

public class Test {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter an integer: ");
        int number = input.nextInt();

        int i;

        boolean isPrime = true;
        for (i = 2; i < number && isPrime; i++) {
```


if (number % i == 0) {
    isPrime = false;
}
}

System.out.println("i is "+i);

if (isPrime)
    System.out.println(number + " is prime");
else
    System.out.println(number + " is not prime");
}
}

A. i is 3 followed by 9 is prime
B. i is 3 followed by 9 is not prime
C. i is 4 followed by 9 is prime
D. i is 4 followed by 9 is not prime

166. Analyze the following code:

import java.util.Scanner;

public class Test {
    public static void main(String[] args) {
        int sum = 0;
        for (int i = 0; i < 100000; i++) {
            Scanner input = new Scanner(System.in);
            sum += input.nextInt();
        }
    }
}

A. The program does not compile because the Scanner input = new Scanner(System.in); statement is inside the loop.
B. The program compiles, but does not run because the Scanner input = new Scanner(System.in); statement is inside the loop.
C. The program compiles and runs, but it is not efficient and unnecessary to execute the Scanner input = new Scanner(System.in); statement inside the loop. You should move the statement before the loop.
D. The program compiles, but does not run because there is not prompting message for entering the input.