MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) The extension name of a Java bytecode file is
   A) .obj          B) .exe           C) .class      D) .java

2) __________ is a device to connect a computer to a local area network (LAN).
   A) Cable modem   B) Regular modem  C) DSL         D) NIC

3) __________ contains predefined classes and interfaces for developing Java programs.
   A) Java IDE      B) Java API        C) Java JDK     D) Java language specification

4) The ________ method displays a message dialog box. (Choose all that apply.)
   A) JOptionPane.displayMessageDialog(null, "Welcome to Java!", "Example 1.2 Output",
                                             JOptionPane.INFORMATION_MESSAGE);
   B) JOptionPane.showMessageDialog(null, "Welcome to Java!", "Example 1.2 Output",
                                             JOptionPane.INFORMATION_MESSAGE);
   C) JOptionPane.showMessageDialog(null, "Welcome to Java!", "Example 1.2 Output",
                                             JOptionPane.INFORMATION_MESSAGE);
   D) JOptionPane.showMessageDialog(null, "Welcome to Java!", "Example 1.2 Output",
                                             JOptionPane.INFORMATION_MESSAGE);
   E) JOptionPane.showMessageDialog(null, "Welcome to Java!");

5) Every statement in Java ends with ________.
   A) an asterisk (*)      B) a period (.)    C) a semicolon (;)     D) a comma (,)

6) Which of the following statements is correct?
   A) Every method must end with a semicolon.
   B) Every line in a program must end with a semicolon.
   C) Every comment line must end with a semicolon.
   D) Every class must end with a semicolon.
   E) Every statement in a program must end with a semicolon.

7) Java was developed by ________.
   A) IBM             B) Sun Microsystems  C) Oracle         D) Microsoft      E) Cisco Systems

8) ________ translates high-level language program into machine language program.
   A) A compiler       B) The operating system
   C) An assembler    D) CPU
9) The main method header is written as:
   A) public static void main(String[ ] args)
   B) public static main(String[ ] args)
   C) public static void Main(String[ ] args)
   D) public static void main(String[ ] args)
   E) public void main(String[ ] args)

10) One byte has _______ bits.
    A) 4          B) 8          C) 16          D) 12

11) The extension name of a Java source code file is
    A) .java      B) .exe      C) .class      D) .obj

12) _______ is Architecture-Neutral.
    A) C          B) Java       C) Pascal      D) C++        E) Ada

13) _______ provides an integrated development environment (IDE) for rapidly developing Java programs. Editing, compiling, building, debugging, and online help are integrated in one graphical user interface.
    A) Java language specification
    B) Java IDE
    C) Java JDK
    D) Java API

14) To improve readability and maintainability, you should declare _______ instead of using literal values such as 3.14159.
    A) variables
    B) constants
    C) methods
    D) classes

15) \(-24 \mod 5\) is _______.
    A) \(-1\)
    B) \(-2\)
    C) \(-3\)
    D) \(-4\)
    E) 0

16) The _______ method parses a string s to a double value.
    A) double.parseDouble(s);
    B) double.parseDouble(s);
    C) Double.parseDouble(s);

17) Suppose i is an int type variable. Which of the following statements display the character whose Unicode is stored in variable i?
    A) System.out.println(i + " ");
    B) System.out.println(i);
    C) System.out.println((char)i);
    D) System.out.println((int)i);

18) Math.pow(2, 3) returns _______.
    A) 8
    B) 9.0
    C) 8.0
    D) 9

19) If a program compiles fine, but it produces incorrect result, then the program suffers _______.
    A) a compilation error
    B) a logic error
    C) a runtime error

20) \(-24 \mod -5\) is _______.
    A) 3
    B) \(-3\)
    C) 4
    D) \(-4\)
    E) 0
21) 25 % 1 is _______.
   A) 1  B) 2  C) 3  D) 4  E) 0

22) Suppose x is 1. What is x after x += 2?
   A) 0  B) 1  C) 2  D) 3  E) 4

23) According to Java naming convention, which of the following names can be variables?
(Choose all that apply.)
   A) TOTAL_LENGTH
   B) findArea
   C) FindArea
   D) totalLength
   E) class

24) The Unicode of 'a' is 97. What is the Unicode for 'c'?
   A) 96  B) 97  C) 99  D) 98

25) Suppose x=10 and y=10 what is x after evaluating the expression (y >= 10) || (x++ > 10)?
   A) 10  B) 9  C) 11

26) Suppose x=10 and y=10. What is x after evaluating the expression (y > 10) && (x-- > 10)?
   A) 11  B) 10  C) 9

27) Suppose x=10 and y=10 what is x after evaluating the expression (y > 10) && (x++ > 10)?
   A) 11  B) 10  C) 9

28) What is 1 + 1 + 1 + 1 + 1 == 5?
   A) true
   B) false
   C) There is no guarantee that 1 + 1 + 1 + 1 + 1 == 5 is true.

29) Which of the following code displays the area of a circle if the radius is positive?
   A) if (radius >= 0) System.out.println(radius * radius * 3.14159);
   B) if (radius <= 0) System.out.println(radius * radius * 3.14159);
   C) if (radius > 0) System.out.println(radius * radius * 3.14159);
   D) if (radius != 0) System.out.println(radius * radius * 3.14159);

30) ________ is the code with natural language mixed with Java code.
   A) Pseudocode  B) A Java statement
   C) Java program  D) A flowchart diagram

31) In Java, the word true is ________.
   A) same as value 0  B) same as value 1
   C) a Boolean literal  D) a Java keyword

32) The statement System.out.printf("%3.1f", 1234.56) outputs ________.
   A) 1234.56  B) 123.4  C) 123.5  D) 1234.5  E) 1234.6
33) Suppose \( x = 1, y = -1, \) and \( z = 1. \) What is the printout of the following statement?  

```
if (x > 0)
    if (y > 0)
        System.out.println("x > 0 and y > 0");
    else if (z > 0)
        System.out.println("x < 0 and z > 0");
```  

A) \( x > 0 \) and \( y > 0 \);  
B) \( x < 0 \) and \( z < 0 \);  
C) \( x < 0 \) and \( z > 0 \);  
D) no printout.

34) Analyze the following code:  

Code 1:

```java
boolean even;
if (number % 2 == 0)
    even = true;
else
    even = false;
```

Code 2:

```java
boolean even = (number % 2 == 0);
```

A) Both Code 1 and Code 2 are correct, but Code 2 is better.  
B) Code 2 has compile errors.  
C) Both Code 1 and Code 2 have compile errors.  
D) Code 1 has compile errors.

35) How many times will the following code print "Welcome to Java"?  

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

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

36) To add \( 0.01 + 0.02 + ... + 1.00 \), what order should you use to add the numbers to get better accuracy?  

A) add \( 1.00, 0.99, 0.98, ..., 0.02, 0.01 \) in this order to a sum variable whose initial value is 0.  
B) add \( 0.01, 0.02, ..., 1.00 \) in this order to a sum variable whose initial value is 0.
37) 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

38) After the continue outer statement is executed in the following loop, which statement is executed?

outer:
for (int i = 1; i < 10; i++) {
    inner:
        for (int j = 1; j < 10; j++) {
            if (i * j > 50)
                continue outer;
            System.out.println(i * j);
        }
    }
next:

A) The program terminates.
B) The control is in the inner loop, and the next iteration of the inner loop is executed.
C) The statement labeled next.
D) The control is in the outer loop, and the next iteration of the outer loop is executed.

39) Analyze the following fragment:

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

A) The program never stops because d is always 0.1 inside the loop.
B) The program may not stop because of the phenomenon referred to as numerical inaccuracy for operating with floating-point numbers.
C) The program does not compile because sum and d are declared double, but assigned with integer value 0.
D) After the loop, sum is 0 + 0.1 + 0.2 + 0.3 + ... + 1.9
40) 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 4 followed by 9 is not prime  
B) i is 3 followed by 9 is prime  
C) i is 3 followed by 9 is not prime  
D) i is 4 followed by 9 is prime

41) How many times will the following code print "Welcome to Java"?

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

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

42) How many times are the following loops executed?

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

A) 100  
B) 20  
C) 45  
D) 10
43) Analyze the following code. (Choose all that apply.)

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

A) count < 100 is always false at Point C  
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 A  
E) count < 100 is always true at Point C  

44) All Java applications must have a method _______.

A) public void main(String[ ] args)  
B) public static main(String[ ] args)  
C) public static Main(String[ ] args)  
D) public static Main(String args[ ])  
E) public static void main(String[ ] args)
45) Analyze the following code.

```java
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 runs and prints 2 followed by "max(double, int)" is invoked.
C) The program runs and prints 2 followed by "max(int, double)" is invoked.
D) The program runs and prints "max(int, double) is invoked" followed by 2.
E) The program cannot compile because the compiler cannot determine which max method should be invoked.

46) Arguments to methods always appear within _______.  
A) parentheses  
B) curly braces  
C) quotation marks  
D) brackets

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

48) What is Math.floor(3.6)? 
A) 3.0  
B) 5.0  
C) 3  
D) 4
49) 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

50) 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) storage area  
B) a heap  
C) an array  
D) a stack

51) Given the following method

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

What is the printout of the call `nPrint(ʹaʹ, 4)?`

A) invalid call  
B) aaaa  
C) aaaaa  
D) aaa

52) How many elements are in array `double[] list = new double[5]`?

A) 6  
B) 5  
C) 4  
D) 0
53) 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 and then raises an ArrayIndexOutOfBoundsException.
B) The program displays 5 4 3 2 1 and then raises an ArrayIndexOutOfBoundsException.
C) The program displays 5 4 3 2 1.
D) The program displays 1 2 3 4 5.

54) 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 0 0 D) The program displays 0 0 3 4

55) 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) 4 C) 1 D) 3 E) 2

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

A) 5 B) 3 C) 0 D) 4
57) Analyze the following code:

```java
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 has a compile error because i is not defined in the last statement in the main method.
C) The program has a runtime error because the last statement in the main method causes ArrayIndexOutOfBoundsException.
D) The program displays 4.

58) 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) 5.5 D) 3.4 E) undefined

59) Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        boolean[][] x = new boolean[3][];
        x[0] = new boolean[1]; x[1] = new boolean[2];
        x[2] = new boolean[3];

        System.out.println("x[2][2] is " + x[2][2]);
    }
}
```

A) The program runs and displays x[2][2] is true.
B) The program has a compile error because new boolean[3][] is wrong.
C) The program runs and displays x[2][2] is false.
D) The program has a runtime error because x[2][2] is null.
E) The program runs and displays x[2][2] is null.

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

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

61) Which of the following statements are correct?

A) char[ ] charArray = {'a', 'b'}; B) char[2][ ] charArray = {'a', 'b', 'c', 'd'};
C) char[ ][ ] charArray = {'a', 'b'}; D) char[2][2] charArray = {'a', 'b', 'c', 'd'};
62) Which of the following statements are correct? (Choose all that apply.)

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

63) Suppose a method p has the following heading:

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

What return statement may be used in p()?

A) return {1, 2, 3};
B) return int[ ][1, 2, 3];
C) return new int[ ][1, 2, 3];
D) return 1;
E) return new int[ ][ ][1, 2, 3, {2, 4, 5}];

64) Assume double[ ][ ] x = new double[4][5], what are x.length and x[2].length?

A) 5 and 5  B) 4 and 5  C) 4 and 4  D) 5 and 4

65) ________ is a construct that defines objects of the same type.

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

66) An object is an instance of a ________.

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

67) Which is the advantage of encapsulation?

A) It changes a class’s contract without changing the implementation and causes no consequential changes to other code.
B) Making the class final causes no consequential changes to other code.
C) Only public methods are needed.
D) It changes the implementation without changing a class’s contract and causes no consequential changes to other code.

68) Assume java.util.Date[ ] dates = new java.util.Date[10], which of the following statements are true? (Choose all that apply.)

A) dates = new Date() is fine, which creates a new Date object and assigns to dates.
B) dates is null.
C) dates[0] is null.
D) dates = new java.util.Date[5] is fine, which assigns a new array to dates.
69) 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 2 f2.s is 1  B) f2.i is 2 f2.s is 2  C) f2.i is 1 f2.s is 2  D) f2.i is 1 f2.s is 1

70) To prevent a class from being instantiated, _________

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

71) Assume StringBuilder strBuf is "ABCDEFG", after invoking _________, strBuf contains "ABCRRRRDEFG".

A) strBuf.insert(2, "RRRR")  B) strBuf.insert(3, "RRRR")
C) strBuf.insert(1, "RRRR")  D) strBuf.insert(4, "RRRR")

72) Which code fragment would correctly identify the number of arguments passed via the command line to a Java application, excluding the name of the class that is being invoked?

A) int count = 0; while (args[count] != null) count ++;
B) int count=0; while (!((args[count].equals(""))) count ++;
C) int count = args.length - 1;
D) int count = args.length;
73) What is displayed by the following code?

```java
public static void main(String[ ] args) throws Exception {
    String[ ] tokens = "Welcome to Java".split("o");
    for (int i = 0; i < tokens.length; i++) {
        System.out.print(tokens[i] + " ");
    }
}
```

A) Welc me to Java  
B) Welc me t Java  
C) Welcome t Java  
D) Welcome to Java

74) The StringBuilder methods ________ not only change the contents of a string buffer, but also returns a reference to the string buffer. (Choose all that apply.)

A) delete  
B) replace  
C) reverse  
D) append  
E) insert

75) Which of the following returns the path separator character?

A) File.pathSeparatorChar  
B) File.separatorChar  
C) File.pathSeparator  
D) File.separator  
E) None of the above.

76) To use JOptionPane in your program, you may import it using: (Choose all that apply.)

A) import javax.*;  
B) import javax.swing.JOptionPane;  
C) import javax.*.JOptionPane;  
D) import javax.swing.*;

77) ________ are instructions to the computer. (Choose all that apply.)

A) Software  
B) Programs  
C) Hardware  
D) Keyboards

78) The JDK command to compile a class in the file Test.java is

A) java Test  
B) java Test.java  
C) JAVAC Test.java  
D) javac Test  
E) javac Test.java

79) Which of the following are storage devices? (Choose all that apply.)

A) flash stick  
B) hard disk  
C) CD-ROM  
D) floppy disk

80) Java ________ can run from a Web browser.

A) applications  
B) servlets  
C) applets  
D) Micro Edition programs

81) 24 % 5 is ________.

A) 1  
B) 2  
C) 3  
D) 4  
E) 0
82) Which of the following are correct ways to declare variables? (Choose all that apply.)
A) int length, width;  B) int length; int width;
C) int length; width;  D) int length, int width;

83) Which of the following assignment statements is illegal? (Choose all that apply.)
A) int t = 4.5;
B) float f = -34;
C) int t = (int)false;
D) short s = 10;
E) int t = 23;

84) What is y displayed in the following code?
```java
public class Test {
    public static void main(String[ ] args) {
        int x = 1;
        int y = x++ + x;
        System.out.println("y is " + y);
    }
}
```
A) y is 4.  B) y is 3.  C) y is 2.  D) y is 1.

85) The statement System.out.printf("%3.1e", 1234.56) outputs ________.
A) 0.123456e+04  B) 0.1e+04  C) 0.123e+04  D) 1.2e+03  E) 1.23e+03

86) Suppose income is 4001, what is the output of the following code:
```java
if (income > 3000) {
    System.out.println("Income is greater than 3000");
}
else if (income > 4000) {
    System.out.println("Income is greater than 4000");
}
```
A) Income is greater than 3000
B) no output
C) Income is greater than 4000 followed by Income is greater than 3000
D) Income is greater than 4000
E) Income is greater than 3000 followed by Income is greater than 4000

15
87) What is y after the following switch statement is executed?

```java
x = 3;
switch (x + 3) {
    case 6: y = 0;
    case 7: y = 1;
    default: y += 1;
}
```

A) 1 B) 2 C) 4 D) 3

88) The statement System.out.printf("%10s", 123456) outputs _______. (Note: * represents a space)

A) 123456**** B) 12345***** C) 23456***** D) ****123456

89) Is the following loop correct?

```java
for (; ;);
```

A) Yes B) No

90) Will the following program terminate?

```java
int balance = 10;

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

A) Yes B) No

91) Analyze the following statement:

```java
double sum = 0;

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

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

92) (int)(Math.random() * (65535 + 1)) returns a random number _______.

A) between 1 and 65535 B) between 0 and 65536
C) between 0 and 65535 D) between 1 and 65536
93) The signature of a method consists of _______.
   A) method name
   B) parameter list
   C) return type, method name, and parameter list
   D) method name and parameter list

94) ________ is a simple but incomplete version of a method.
   A) A method developed using top-down approach
   B) A stub
   C) A main method
   D) A non-main method

95) 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 new int[ ]{1, 2, 3};
   C) return {1, 2, 3};
   D) return int[ ]{1, 2, 3};

96) The selectionSort method is defined in this section. What is list1 after executing the following
   statements?

   double[ ] list1 = {3.1, 3.1, 2.5, 6.4};
   selectionSort(list1);

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

97) Suppose you wish to provide an accessor method for a boolean property finished, what
   signature of the method should be?
   A) public void isFinished()
   B) public void getFinished()
   C) public boolean isFinished()
   D) public boolean getFinished()

98) You should add the static keyword in the place of ? in line ________ in the following code:

   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}

   A) in line 4
   B) in both line 4 and line 8
   C) in line 8
   D) none
99) Analyze the following code.

class Test {
    public static void main(String[ ] args) {
        String s;
        System.out.println("s is " + s);
    }
}

A) The program has a runtime error because s is not initialized, but it is referenced in the println statement.
B) The program has a compilation error because s is not initialized, but it is referenced in the println statement.
C) The program compiles and runs fine.
D) The program has a runtime error because s is null in the println statement.

100) To check if a string s contains the prefix "Java", you may write (Choose all that apply.)
A) if (s.charAt(0) == 'J' && s.charAt(1) == 'a' && s.charAt(2) == 'v' && s.charAt(3) == 'a') ...
B) if (s.substring(0, 4).equals("Java")) ...
C) if (s.startsWith("Java")) ...
D) if (s.indexOf("Java") == 0) ...

101) Computer can execute the code in ________.
A) assembly language    B) machine language
C) high-level language   D) none of the above

102) Which JDK command is correct to run a Java application in ByteCode.class?
A) java ByteCode.class
B) java ByteCode
C) javac ByteCode.java
D) JAVAC ByteCode
E) javac ByteCode

103) What is y displayed?

public class Test {
    public static void main(String[ ] args) {
        int x = 1;
        int y = x + x++;
        System.out.println("y is " + y);
    }
}

A) y is 3.    B) y is 2.    C) y is 4.    D) y is 1.

104) To add a value 1 to variable x, you write (Choose all that apply.)
A) x := 1;    B) x = 1 + x;    C) x += 1;    D) x = x + 1;    E) 1 + x = x;
105) The statement `System.out.printf("%5d", 123456)` outputs _______.
   A) 123456  B) 12345.6  C) 12345  D) 23456

106) What is the output for y?

   ```java
   int y = 0;
   for (int i = 0; i<10; ++i) {
       y += i;
   }
   System.out.println(y);
   ```
   A) 45  B) 13  C) 11  D) 12  E) 10

107) Which of the following is the best for generating random integer 0 or 1?
   A) (int)(Math.random() + 0.2)
   B) (int)Math.random()
   C) (int)Math.random() + 1
   D) (int)(Math.random() + 0.5)
   E) (int)(Math.random() + 0.8)

108) 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 5
   B) low is 0 and high is 3
   C) low is 0 and high is 6
   D) low is 4 and high is 6
   E) low is 3 and high is 6

109) 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 is not declared static.
   B) The code prints n is 3.
   C) The code prints n is 1.
   D) The code prints n is 2.
   E) The code has a compile error because xMethod does not return a value.
110) Which of the following statements is preferred to create a string "Welcome to Java"?
A) String s = "Welcome to Java";
B) String s = new String("Welcome to Java");
C) String s; s = new String("Welcome to Java");
D) String s; s = "Welcome to Java";

111) ________ is a software that interprets Java bytecode.
   A) Java compiler  
   B) Java API  
   C) Java virtual machine  
   D) Java debugger

112) The expression "Java " + 1 + 2 + 3 evaluates to ________.
   A) Java123  
   B) java123  
   C) Java6  
   D) Java123  
   E) Illegal expression

113) Which of the following is the correct expression that evaluates to true if the number x is between 1 and 100 or the number is negative?
   A) ((x < 100) && (x > 1)) && (x < 0)  
   B) 1 < x < 100 && x < 0  
   C) (1 > x > 100) || (x < 0)  
   D) ((x < 100) && (x > 1)) || (x < 0)

114) Will the following program terminate?

   int balance = 10;
   while (true) {
      if (balance < 9) continue;
      balance = balance - 9;
   }
   A) Yes  
   B) No

115) ________ is to implement one method in the structure chart at a time from the top to the bottom.
   A) Bottom-up and top-down approach  
   B) Bottom-up approach  
   C) Top-down approach  
   D) Stepwise refinement

116) 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;
    }
}

A) Yes B) No

117) Suppose TestCircle and Circle in Listing 7.1 in the textbook are in two separate files named TestCircle.java and Circle.java, respectively. What is the outcome of compiling TestCircle.java and then Circle.java?
   A) Only Circle.java compiles.   B) Only TestCircle.java compiles.
   C) Both compile fine.            D) Neither compiles successfully.

118) Which of the following is the correct statement to return JAVA?
   A) "Java".toUpperCase()       B) "Java".toUpperCase("Java")
   C) String.toUpperCase("Java") D) toUpperCase("Java")

119) Why do computers use zeros and ones?
   A) because binary numbers are simplest.
   B) because digital devices have two stable states and it is natural to use one state for 0 and the other for 1.
   C) because combinations of zeros and ones can represent any numbers and characters.
   D) because binary numbers are the bases upon which all other number systems are built.
120) Analyze the following code.

```java
public class Test {
    public static void main(String[] args) {
        int month = 09;
        System.out.println("month is "+ month);
    }
}
```

A) The program displays month is 9.0
B) The program displays month is 9
C) The program displays month is 09
D) The program has a syntax error, because 09 is an incorrect literal value.
1) C  
   Points: 1
2) D  
   Points: 1
3) B  
   Points: 1
4) C, E  
   Points: 1
5) C  
   Points: 1
6) E  
   Points: 1
7) B  
   Points: 1
8) A  
   Points: 1
9) D  
   Points: 1
10) B  
   Points: 1
11) A  
   Points: 1
12) B  
   Points: 1
13) B  
   Points: 1
14) B  
   Points: 1
15) D  
   Points: 1
16) D  
   Points: 1
17) C  
   Points: 1
18) C  
   Points: 1
19) B  
   Points: 1
20) D  
   Points: 1
21) E  
   Points: 1
22) D  
   Points: 1
23) B, D  
   Points: 1
24) C  
Points: 1
25) A  
Points: 1
26) B  
Points: 1
27) B  
Points: 1
28) A  
Points: 1
29) C  
Points: 1
30) A  
Points: 1
31) C  
Points: 1
32) E  
Points: 1
33) C  
Points: 1
34) A  
Points: 1
35) A  
Points: 1
36) B  
Points: 1
37) A  
Points: 1
38) D  
Points: 1
39) B  
Points: 1
40) A  
Points: 1
41) A  
Points: 1
42) C  
Points: 1
43) A, D  
Points: 1
44) E  
Points: 1
45) E  
Points: 1
46) A  
Points: 1
Answer Key
Testname: QUIZ2

47) D
   Points: 1
48) A
   Points: 1
49) B
   Points: 1
50) D
   Points: 1
51) A
   Points: 1
52) B
   Points: 1
53) D
   Points: 1
54) A
   Points: 1
55) D
   Points: 1
56) D
   Points: 1
57) C
   Points: 1
58) B
   Points: 1
59) C
   Points: 1
60) C
   Points: 1
61) A
   Points: 1
62) A, C
   Points: 1
63) E
   Points: 1
64) B
   Points: 1
65) D
   Points: 1
66) A
   Points: 1
67) D
   Points: 1
68) C, D
   Points: 1
69) C
   Points: 1
Answer Key
Testname: QUIZ2

70) C  
   Points: 1
71) B  
   Points: 1
72) D  
   Points: 1
73) B  
   Points: 1
74) A, B, C, D, E  
   Points: 1
75) A  
   Points: 1
76) B, D  
   Points: 1
77) A, B  
   Points: 1
78) E  
   Points: 1
79) A, B, C, D  
   Points: 1
80) C  
   Points: 1
81) D  
   Points: 1
82) A, B  
   Points: 1
83) A, C  
   Points: 1
84) B  
   Points: 1
85) D  
   Points: 1
86) A  
   Points: 1
87) B  
   Points: 1
88) D  
   Points: 1
89) A  
   Points: 1
90) A  
   Points: 1
91) A  
   Points: 1
92) C  
   Points: 1
Answer Key
Testname: QUIZ2

93) D
   Points: 1
94) B
   Points: 1
95) B
   Points: 1
96) C
   Points: 1
97) C
   Points: 1
98) A
   Points: 1
99) B
   Points: 1
100) A, B, C, D
    Points: 1
101) B
    Points: 1
102) B
    Points: 1
103) B
    Points: 1
104) B, C, D
    Points: 1
105) A
    Points: 1
106) A
    Points: 1
107) D
    Points: 1
108) D
    Points: 1
109) A
    Points: 1
110) A
    Points: 1
111) C
    Points: 1
112) D
    Points: 1
113) D
    Points: 1
114) B
    Points: 1
115) C
    Points: 1
Answer Key
Testname: QUIZ2

116) A
   Points: 1

117) C
   Points: 1

118) A
   Points: 1

119) B
   Points: 1

120) D
   Points: 1