1. What is the following code snippet?

```
int a = 5;
int b = 10;
System.out.println("The sum of " + a + " and " + b + " is " + a + b);
```

a) The sum of 5 and 10 is 15
b) The sum of 5 and 10 is 510
c) The sum of 5 and 10 is 5 + 10
d) None of the above
Answer: b) The sum of 5 and 10 is 510

2. Which of the following is not a feature of Java?
a) Dynamic Binding
b) Multiple inheritance
c) Platform-independent
d) Object-oriented
Answer: b) Multiple inheritance

3. What is the correct syntax for declaring a variable in Java?
a) int x = 5;
b) x = 5;
c) variable x = 5;
d) None of the above
Answer: a) int x = 5;

4. Which method is automatically called when an object is created in Java?
a) init()
b) start()
c) run()
d) constructor()
Answer: d) constructor()

5. What is the output of the following code snippet?

```
int x = 5;
int y = 3;
System.out.println(x+y+" equals "+(x+y));
```

a) 8 equals 8
b) 8equals8
c) 8 equals
d) None of the above
Answer: a) 8 equals 8

6. Which of the following is not a primitive data type in Java?
a) boolean
b) int
c) double
d) string
Answer: d) string

7. Which keyword is used to create a subclass in Java?
a) super
b) extends
c) this
d) implements
Answer: b) extends

8. Which of the following is a loop structure in Java?
a) if
b) switch
c) while

d) try
Answer: c) while

9. What is the output of the following code snippet?
```
int x = 10;
if (x > 5 && x < 15) {
System.out.println("x is between 5 and 15");
} else {
System.out.println("x is not between 5 and 15");
}
```
a) x is between 5 and 15
b) x is not between 5 and 15
c) Compilation error
d) Runtime error
Answer: a) x is between 5 and 15

10. Which method is used to read input from the user in Java?
a) System.out.println()
b) System.in()
c) Scanner.nextLine()
d) Math.random()
Answer: c) Scanner.nextLine()

==========

11. What is the output of the following code snippet?
```
for (int i = 0; i < 5; i++) {
System.out.println(i);
}
```
a) 0 1 2 3 4
b) 1 2 3 4 5
c) 0 1 2 3 4 5
d) None of the above
Answer: a) 0 1 2 3 4

12. Which of the following is not a primitive data type in Java?
a) int
b) float
c) double
d) String
Answer: d) String
13. Which keyword is used to create a new object in Java?
a) new
b) this
c) super
d) void
Answer: a) new

14. Which of the following is a valid way to declare a variable in Java?
a) int 1x = 10;
b) int x = 10;
c) int x = "hello";
d) None of the above
Answer: b) int x = 10;

15. What is the output of the following code snippet?
```
int a = 10;
int b = 5;
System.out.println(a % b);
```
a) 2

b) 5
c) 0
d) None of the above
Answer: a) 0

16. Which of the following is a loop structure in Java?
a) if
b) for
c) switch
d) try-catch
Answer: b) for

17. Which of the following is a correct syntax for an if-else statement in Java?
a) if (condition) {
// code
} else (condition) {
// code
}
b) if (condition) {
// code
} else {
// code
}
c) if (condition) (code);
else (code);
d) None of the above
Answer: b) if (condition) { // code } else { // code }

18. What is the output of the following code snippet?
String name = "Java";
System.out.println(name.length());
a) 1
b) 2
c) 3
d) 4
Answer: d) 4

19. Which of the following is used to initialize an array in Java?
a) new
b) this
c) super
d) void
Answer: a) new

20. What is the output of the following code snippet?
int a = 5;
int b = 10;
if (a > b) {
System.out.println("a is greater than b");
} else {
System.out.println("b is greater than a");
}
a) a is greater than b
b) b is greater than a
c) Both a and b are equal
d) None of the above
Answer: b) b is greater than a

==========

21. Which of the following is not a valid way to declare an array in Java?
a) int[] arr = new int[5];
b) int arr[] = new int[5];
c) int[] arr = {1, 2, 3};
d) int arr[5] = {1, 2, 3, 4, 5};
Answer: d) int arr[5] = {1, 2, 3, 4, 5};

22. What is the output of the following code snippet?
```
int[] arr = {1, 2, 3};
System.out.println(arr[1]);
```
a) 1
b) 2
c) 3
d) None of the above
Answer: b) 2

23. Which of the following is used to get the length of an array in Java?
a) length()
b) size()
c) count()
d) None of the above
Answer: a) length()

24. What is the output of the following code snippet?
```
int[] arr = {1, 2, 3};
for (int i = 0; i < arr.length; i++) {
System.out.print(arr[i] + " ");
}
```
a) 1 2 3
b) 2 4 6
c) 1 3 5
d) None of the above
Answer: a) 1 2 3

25. Which of the following is used to sort an array in Java?
a) sort()
b) arrange()
c) order()
d) None of the above
Answer: a) sort()

26. What is the output of the following code snippet?
```
int[] arr1 = {1, 2, 3};
int[] arr2 = {4, 5, 6};
int[] arr3 = new int[6];
System.arraycopy(arr1, 0, arr3, 0, 3);
System.arraycopy(arr2, 0, arr3, 3, 3);
for (int i = 0; i < arr3.length; i++) {
System.out.print(arr3[i] + " ");
}
```
a) 1 2 3 4 5 6
b) 4 5 6 1 2 3
c) 1 2 3 6 5 4
d) None of the above
Answer: a) 1 2 3 4 5 6

27. Which of the following is used to fill an array with a specific value in Java?
a) fill()
b) set()

c) assign()
d) None of the above
Answer: a) fill()

28. What is the output of the following code snippet?
```
int[] arr = {1, 2, 3};
int sum = 0;
for (int i : arr) {
sum += i;
}
System.out.println(sum);
```
a) 1
b) 2
c) 3
d) 6
Answer: d) 6

29. Which of the following is used to search for an element in an array in Java?
a) search()
b) find()
c) contains()
d) None of the above
Answer: d) None of the above. You would typically use a loop to search for an element in an array.

30. What is the output of the following code snippet?
```
int[] arr = {1, 2, 3, 4, 5};
int[] arr2 = Arrays.copyOf(arr, 3);
for (int i : arr2) {
System.out.print(i + " ");
}
```
a) 1 2 3
b) 1 2 3 4 5
c) 3 4 5
d) None of the above
Answer: a) 1 2 3

==========

31. Which of the following is the correct way to declare a 2D array in Java?
a) int[][] arr = new int[2][2];
b) int[] arr = new int[2][2];
c) int arr[] = new int[2];
d) int arr[] = new int[2, 2];
Answer: a) int[][] arr = new int[2][2];

32. What is the output of the following code snippet?
```
int[][] arr = {{1, 2}, {3, 4}};
System.out.println(arr[1][0]);
```
a) 1
b) 2
c) 3
d) 4
Answer: c) 3

33. Which of the following is used to get the length of a 2D array in Java?
a) length()
b) size()
c) count()
d) None of the above
Answer: a) length()

34. What is the output of the following code snippet?

```
int[][] arr = {{1, 2}, {3, 4}};
for (int i = 0; i < arr.length; i++) {
  for (int j = 0; j < arr[i].length; j++) {
    System.out.print(arr[i][j] + " ");
  }
}
```

a) 1 2 3 4
b) 1 3 2 4
c) 2 4 1 3
d) None of the above
Answer: a) 1 2 3 4

35. Which of the following is used to sort a 2D array in Java?
a) sort()
b) arrange()
c) order()
d) None of the above
Answer: d) None of the above. You would typically sort the rows of a 2D array individually using the Arrays.sort() method.

36. What is the output of the following code snippet?

```
int[][] arr = {{1, 2}, {3, 4}};
int[][] arr2 = Arrays.copyOf(arr, 2);
for (int i = 0; i < arr2.length; i++) {
  for (int j = 0; j < arr2[i].length; j++) {
    System.out.print(arr2[i][j] + " ");
  }
}
```

a) 1 2 3 4
b) 1 2
c) 1 2 0 0
d) None of the above
Answer: a) 1 2 3 4

37. Which of the following is used to fill a 2D array with a specific value in Java?
a) fill()
b) set()
c) assign()
d) None of the above
Answer: a) fill()

38. What is the output of the following code snippet?

```
int[][] arr = {{1, 2}, {3, 4}};
int sum = 0;
for (int[] row : arr) {
  for (int i : row) {
    sum += i;
  }
}
System.out.println(sum);
```

a) 3
b) 6
c) 10
d) 14
Answer: d) 10

39. Which of the following is the correct way to declare a 3D array in Java?
a) int[][][] arr = new int[2][2][2];

b) int[][][] arr = new int[2, 2, 2];
c) int[][][] arr = new int[2][2, 2];
d) int arr[][] = new int[2][2][2];
Answer: a) int[][][] arr = new int[2][2][2];

40. What is the output of the following code snippet?
int[][][] arr = {{{1, 2}, {3, 4}}, {{5, 6}, {7, 8}}};
System.out.println(arr[1][0][1]);
a) 1
b) 2
c) 6
d) 7
Answer: c) 6

==========

41. What is a jagged array in Java?
a) An array with dimensions that are not rectangular
b) An array that cannot be resized
c) An array that contains only null values
d) An array that is sorted in descending order
Answer: a) An array with dimensions that are not rectangular

42. How do you declare a jagged array in Java?
a) int[][][] arr = new int[2][3][4];
b) int[][] arr = new int[2][];
c) int[][] arr = new int[][2];
d) int[] arr = new int[2][];
Answer: b) int[][] arr = new int[2][]

43. What is the length of a jagged array?
a) The length of the first row
b) The length of the longest row
c) The length of the shortest row
d) The sum of the lengths of all rows
Answer: b) The length of the longest row

44. What is the output of the following code snippet?
int[][] arr = {{1, 2, 3}, {4, 5}, {6, 7, 8, 9}};
System.out.println(arr[0][2]);
a) 1
b) 2
c) 3
d) 8
Answer: c) 3

45. What is the output of the following code snippet?
int[][] arr = {{1, 2, 3}, {4, 5}, {6, 7, 8, 9}};
System.out.println(arr[2].length);
a) 1
b) 2
c) 3
d) 4
Answer: d) 4. The third row of arr has four elements, so arr[2].length is 4.

46. Which of the following is not a Java control statement?
a) if-else
b) while
c) for-each
d) switch

Answer: c) for-each

47. What is the output of the following code snippet?
```
int x = 5;
if (x < 10) {
System.out.println("x is less than 10");
} else {
System.out.println("x is greater than or equal to 10");
}
```
a) x is less than 10
b) x is greater than or equal to 10
c) 5
d) There is a syntax error in the code
Answer: a) x is less than 10

48. What is the output of the following code snippet?
```
int x = 0;
while (x < 5) {
System.out.println(x);
x++;
}
```
a) 0 1 2 3 4
b) 1 2 3 4 5
c) 0 1 2 3
d) There is an infinite loop in the code
Answer: a) 0 1 2 3 4

49. What is the output of the following code snippet?
```
for (int i = 0; i < 5; i++) {
if (i == 2) {
continue;
}
System.out.println(i);
}
```
a) 0 1 3 4
b) 0 1 2 3 4
c) 1 3 4
d) There is a syntax error in the code
Answer: a) 0 1 3 4. The continue statement skips over the rest of the loop's code and goes directly to the next iteration of the loop, so when i is 2, the println statement is skipped.

50. What is the output of the following code snippet?
```
int x = 2;
switch (x) {
case 1:
System.out.println("One");
break;
case 2:
System.out.println("Two");
break;
case 3:
System.out.println("Three");
break;
default:
System.out.println("Other");
break;
}
```
a) One
b) Two
c) Three

d) Other
Answer: b) Two. The switch statement checks the value of x and executes the code in the corresponding case block. Since x is 2, the case 2 block is executed, which prints "Two". The break statement at the end of the block prevents the code from falling through to the next case block.

==========

51. Which of the following is a bitwise operator in Java?
a) %
b) &&
c) &
d) ==
Answer: c) &

52. What is the result of the following bitwise OR operation: 0b101 | 0b011?
a) 0b111
b) 0b100
c) 0b001
d) 0b110
Answer: a) 0b111. The bitwise OR operator | returns a 1 in each bit position where at least one of the corresponding bits in the operands is 1.

53. What is the result of the following bitwise AND operation: 0b101 & 0b011?
a) 0b111
b) 0b100
c) 0b001
d) 0b110
Answer: c) 0b001. The bitwise AND operator & returns a 1 in each bit position where both corresponding bits in the operands are 1.

54. What is the result of the following bitwise XOR operation: 0b101 ^ 0b011?
a) 0b111
b) 0b100
c) 0b001
d) 0b110
Answer: d) 0b110. The bitwise XOR operator ^ returns a 1 in each bit position where only one of the corresponding bits in the operands is 1.

55. What is the result of the following left shift operation: 0b101 << 2?
a) 0b10100
b) 0b101000
c) 0b1000
d) 0b1101
Answer: a) 0b10100. The left shift operator << shifts the bits of the first operand to the left by the number of positions specified by the second operand. In this case, the bits of 0b101 are shifted to the left by 2 positions, resulting in 0b10100.

56. What is the result of the following right shift operation: 0b101 >> 2?
a) 0b10100
b) 0b101
c) 0b1
d) 0b0
Answer: c) 0b1. The right shift operator >> shifts the bits of the first operand to the right by the number of positions specified by the second operand. In this case, the bits of 0b101 are shifted to the right by 2 positions, resulting in 0b1.

57. What is the result of the following unsigned right shift operation: 0b101 >>> 2?
a) 0b10100
b) 0b101

c) 0b1
d) 0b0
Answer: c) 0b1. The unsigned right shift operator >>> shifts the bits of the first operand to the right by the number of positions specified by the second operand, and fills the leftmost bits with zeroes. In this case, the bits of 0b101 are shifted to the right by 2 positions, resulting in 0b0.

58. Which bitwise operator in Java performs a one's complement?
a) &
b) |
c) ~
d) ^
Answer: c) ~

59. What is the result of the following expression: ~(0b101 ^ 0b011)?
a) 0b111
b) 0b100
c) 0b001
d) 0b110
Answer: c) 0b001. The XOR operation ^ returns a 1 in each bit position where only one of the corresponding bits in the operands is 1. In this case, 0b101 ^ 0b011 equals 0b110. Then, the one's complement operator ~ is applied to the result, which flips all the bits, resulting in 0b001.

60.What is the result of the following expression: 0b101 & ~(0b011 | 0b100)?
a) 0b111
b) 0b100
c) 0b000
d) 0b110
Answer: c)

==========

61. What is the output of the following code snippet?
```
int i = 0;
while (i < 5) {
System.out.print(i + " ");
i++;
}
```
a) 0 1 2 3 4
b) 1 2 3 4 5
c) 0 2 4
d) None of the above
Answer: a) 0 1 2 3 4

62. What is an object in Java?
A) A reference to a class
B) A class itself
C) An instance of a class
D) A static member of a class
Answer: C) An instance of a class

63. Which of the following is not a primitive data type in Java?
A) int
B) double
C) boolean
D) class
Answer: D) class

64. What is a class in Java?
A) A data type
B) A template for creating objects
C) A keyword
D) A method
Answer: B) A template for creating objects

65. What is the purpose of the "new" keyword in Java?
A) To allocate memory for an object
B) To declare a variable
C) To access a method
D) To define a class
Answer: A) To allocate memory for an object

66. Which of the following is an example of a class method?
A) public void setName(String name)
B) public String getName()
C) public static int add(int a, int b)
D) public boolean equals(Object obj)
Answer: C) public static int add(int a, int b)

67. What is the default value of an uninitialized boolean variable?
A) true
B) false
C) 0
D) null
Answer: B) false

68. What is the difference between a static method and an instance method in Java?
A) Static methods can only be called by other static methods, while instance methods can be called by both static and instance methods
B) Instance methods can only be called by other instance methods, while static methods can be called by both static and instance methods
C) Static methods are declared with the "static" keyword, while instance methods are not
D) Instance methods are declared with the "instance" keyword, while static methods are not
Answer: B) Instance methods can only be called by other instance methods, while static methods can be called by both static and instance methods

69. What is the purpose of the "this" keyword in Java?
A) To refer to the current object
B) To refer to the current class
C) To create a new object
D) To call a static method
Answer: A) To refer to the current object

70. Which of the following is true about constructors in Java?
A) A class can have more than one constructor
B) A constructor can return a value
C) A constructor can be called explicitly like a regular method
D) A constructor is used to create an object and initialize its instance variables
Answer: D) A constructor is used to create an object and initialize its instance variables

==========

71. What is inheritance in Java?
A) The ability of a class to implement multiple interfaces
B) The ability of a class to inherit instance variables and methods from another class
C) The ability of a class to override methods inherited from another class
D) The ability of a class to access private variables and methods of another class
Answer: B) The ability of a class to inherit instance variables and methods from another class

72. What is polymorphism in Java?
A) The ability of a class to inherit instance variables and methods from another class
B) The ability of a class to override methods inherited from another class
C) The ability of a class to implement multiple interfaces
D) The ability of a variable to refer to objects of different types at different times
Answer: D) The ability of a variable to refer to objects of different types at different times

73. What is the difference between "==" and ".equals()" in Java?
A) "==" compares the memory addresses of two objects, while ".equals()" compares the contents of two objects
B) "==" compares the contents of two objects, while ".equals()" compares the memory addresses of two objects
C) "==" is used to compare primitive types, while ".equals()" is used to compare objects
D) "==" and ".equals()" are equivalent and can be used interchangeably
Answer: A) "==" compares the memory addresses of two objects, while ".equals()" compares the contents of two objects

74. What is the purpose of the "super" keyword in Java?
A) To refer to the superclass of a class
B) To create a new object
C) To call a static method
D) To declare a variable
Answer: A) To refer to the superclass of a class

75. What is encapsulation in Java?
A) The ability of a class to inherit instance variables and methods from another class
B) The ability of a class to override methods inherited from another class
C) The ability of a class to access private variables and methods of another class
D) The practice of hiding the implementation details of a class and exposing only the necessary methods and properties
Answer: D) The practice of hiding the implementation details of a class and exposing only the necessary methods and properties

76. What is the difference between public, private, and protected access modifiers in Java?
A) Public members can be accessed from any class, private members can only be accessed from the same class, and protected members can be accessed from the same package or subclasses
B) Public members can only be accessed from the same package, private members can be accessed from any class, and protected members can be accessed from the same class
C) Public members can be accessed from any class, private members can only be accessed from the same package, and protected members can be accessed from any package
D) Public members can be accessed from any package, private members can only be accessed from the same package, and protected members can be accessed from the same package or subclasses
Answer: A) Public members can be accessed from any class, private members can only be accessed from the same class, and protected members can be accessed from the same package or subclasses

77. What is an abstract class in Java?
A) A class that cannot be instantiated and can only be used as a superclass for other classes
B) A class that can only have static methods
C) A class that can only have instance methods
D) A class that can be instantiated and used like any other class
Answer: A) A class that cannot be instantiated and can only be used as a superclass for other classes

78. What is an interface in Java?
A) A class that cannot be instantiated and can only be used as a superclass for other classes

B) A blueprint for a class that defines its methods without providing their implementation
C) A collection of related classes and interfaces
D) A class that can be instantiated and used like any other class
Answer: B) A blueprint for a class that defines its methods without providing their implementation

79. What is the purpose of the "final" keyword in Java?
A) To declare a variable that cannot be changed
B) To prevent a class from being subclassed
C) To prevent a method from being overridden
D) All of the above
Answer: D) All of the above

80. What is a static variable in Java?
A) A variable that can only be accessed from within the same class
B) A variable that belongs to an instance of a class
C) A variable that belongs to a class and is shared by all instances of the class
D) A variable that can be changed after it has been initialized
Answer: C) A variable that belongs to a class and is shared by all instances of the class

==========

81. What is method overloading in Java?
A) Defining a method with the same name and signature as a method in a superclass
B) Defining a method with the same name and different signatures within the same class
C) Defining a method with the same name and different return types within the same class
D) Defining a method with a different name and signature within the same class
Answer: B) Defining a method with the same name and different signatures within the same class

82. Which keyword is used to denote method overriding in Java?
A) override
B) extends
C) implements
D) super
Answer: A) override

83. Which of the following is true about constructors in Java?
A) Constructors have a return type
B) Constructors can be inherited
C) Constructors can be overloaded
D) Constructors can be overridden
Answer: C) Constructors can be overloaded

84. What is the purpose of a constructor in Java?
A) To create an object of a class
B) To define a method with the same name as the class
C) To define a method with the same signature as a method in a superclass
D) To define a method with the same name and different signatures within the same class
Answer: A) To create an object of a class

85. Which of the following is true about constructor overloading in Java?
A) Constructors with the same name and parameters cannot be overloaded
B) Constructors can only be overloaded within the same class
C) Constructor overloading is used to create objects with different initial states
D) Constructor overloading is not possible in Java
Answer: C) Constructor overloading is used to create objects with different initial states

86. What is method overloading in Java?
A) Defining a method with the same name and different signatures within the same class
B) Defining a method with the same name and signature as a method in a superclass
C) Defining a method with the same name and different return types within the same class
D) Defining a method with a different name and signature within the same class
Answer: A) Defining a method with the same name and different signatures within the same class

87. Which of the following is true about method overloading in Java?
A) Methods with the same name and parameters cannot be overloaded
B) Methods can only be overloaded within the same class
C) Method overloading is used to create methods with different behaviors
D) Method overloading is not possible in Java
Answer: C) Method overloading is used to create methods with different behaviors

88. Which of the following is true about the return type of a method in Java?
A) The return type can be any primitive type or object type
B) The return type can only be a primitive type
C) The return type can only be an object type
D) The return type is not necessary in Java
Answer: A) The return type can be any primitive type or object type

89. Which of the following is true about the parameters of a method in Java?
A) The number and types of parameters must be the same for all methods with the same name
B) The number of parameters must be the same, but the types can be different for methods with the same name
C) The types of parameters must be the same, but the number can be different for methods with the same name
D) The number and types of parameters can be different for methods with the same name
Answer: D) The number and types of parameters can be different for methods with the same name

90. Which of the following is true about constructors in Java?
A) Constructors have a return type
B) Constructors can be inherited
C) Constructors can be overloaded
D) Constructors can be overridden
Answer: C) Constructors can be overloaded

==========

91. Which loop is best used when the number of iterations is known?
A) for loop
B) while loop
C) do-while loop
D) foreach loop
Answer: A) for loop

92. Which loop is best used when the number of iterations is unknown?
A) for loop
B) while loop
C) do-while loop
D) foreach loop
Answer: B) while loop

93. Which loop guarantees that the loop body will execute at least once?
A) for loop
B) while loop

C) do-while loop
D) foreach loop
Answer: C) do-while loop

94. Which of the following is true about the continue statement in Java?
A) It terminates the loop
B) It skips the current iteration and continues with the next iteration
C) It skips the current iteration and exits the loop
D) It jumps to a specific label in the code
Answer: B) It skips the current iteration and continues with the next iteration

95. Which of the following is true about the break statement in Java?
A) It terminates the loop
B) It skips the current iteration and continues with the next iteration
C) It skips the current iteration and exits the loop
D) It jumps to a specific label in the code
Answer: A) It terminates the loop

96. Which of the following is true about nested loops in Java?
A) Only one loop can be nested inside another loop
B) The inner loop must always have fewer iterations than the outer loop
C) The outer loop must always have fewer iterations than the inner loop
D) Nested loops can be used to process two-dimensional arrays
Answer: D) Nested loops can be used to process two-dimensional arrays

97. Which loop is used to iterate over the elements of an array or a collection in Java?
A) for loop
B) while loop
C) do-while loop
D) foreach loop
Answer: D) foreach loop

98. Which of the following is true about the enhanced for loop (foreach loop) in Java?
A) It can only be used with arrays
B) It can only be used with collections
C) It can be used with both arrays and collections
D) It cannot be used with arrays or collections
Answer: C) It can be used with both arrays and collections

99. Which of the following is true about labeled loops in Java?
A) Labeled loops can only be used with for loops
B) Labeled loops can only be used with while loops
C) Labeled loops can be used with any type of loop
D) Labeled loops cannot be used in Java
Answer: C) Labeled loops can be used with any type of loop

100. Which of the following is true about the do-while loop in Java?
A) The condition is checked before the loop body is executed
B) The condition is checked after the loop body is executed
C) The do-while loop is not used in Java
D) The do-while loop is the same as the while loop
Answer: B) The condition is checked after the loop body is executed.

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