# TOPIC- OPERATORS

**Operators**:- In Java, operators are symbols or characters that perform specific operations on one or more operands (variables, constants, or literals) and return a result.
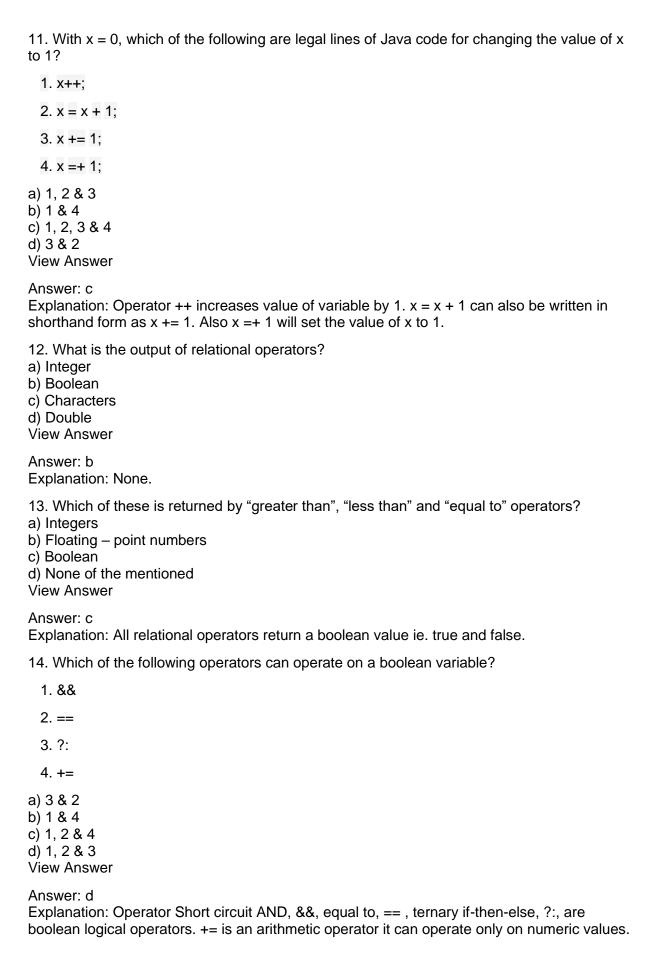
There are various types of operators in Java, including:

| Operator Type | Category | Precedence |
|---|---|---|
| Unary | postfix | expr++ expr-- |
| | prefix | ++expr --expr +expr -expr ~ ! |
| Arithmetic | multiplicative | * / % |
| | additive | + - |
| Shift | shift | << >> >>> |
| Relational | comparison | < > <= >= instanceof |
| | equality | == != |
| Bitwise | bitwise AND | & |
| | bitwise exclusive OR | ^ |
| | bitwise inclusive OR | \| |
| Logical | logical AND | && |
| | logical OR | \|\| |
| Ternary | ternary | ? : |
| Assignment | assignment | = += -= *= /= %= &= ^= \|= <<= >>= >>>= |

1. **Arithmetic Operators**: + (addition), - (subtraction), * (multiplication), / (division), % (modulus), ++ (increment), and -- (decrement).

2. **Relational Operators**: < (less than), > (greater than), <= (less than or equal to), >= (greater than or equal to), == (equal to), and != (not equal to).

3**. Logical Operators**: && (logical AND), || (logical OR), and ! (logical NOT).

4. **Bitwise Operators**: & (bitwise AND), | (bitwise OR), ^ (bitwise XOR), ~ (bitwise complement), << (left shift), >> (signed right shift), and >>> (unsigned right shift).

5. **Assignment Operators**: = (simple assignment), += (add and assign), -= (subtract and assign), *= (multiply and assign), /= (divide and assign), %= (modulus and assign), <<= (left shift and assign), >>= (signed right shift and assign), &= (bitwise AND and assign), ^= (bitwise XOR and assign), and |= (bitwise OR and assign).

6. **Conditional Operators**: ?: (conditional operator) - this operator is used to assign a value to a variable based on a condition.

1. Which are the unary operators ?

A. ++

B. --

C. Both of above

View Answer

Answer: C

2. Which are the arithmetic operators ?

A. * / %

B. + -

C. All of above

View Answer

Answer: C

3. Which are the Shift operators ?

A. >>>

B. >>

C. <<

D. All of Above

View Answer

Answer: D

4. Which are the relational operators ?

A. < <=

B. > >= instanceof

C. == !=

D. All of Above

View Answer

Answer: D

5. Which are the bitwise operators ?

A. &

B. ^

C. |

D. All of Above

View Answer

Answer: D

6. Which are the logical operators ?

A. &&

B. ||

C. All of above

D. None of Above

View Answer

Answer: C

7. Which are the ternary operators ?

A. ? :

B. ++

C. All of above

View Answer

Answer: A

8. Which are the assignment operators ?

A. = += -= *= /= %=

B. &= ^= |=

C. <<= >>= >>>=

D. All of Above

View Answer

Answer: D

9. Which of the following can be operands of arithmetic operators?
a) Numeric
b) Boolean
c) Characters
d) Both Numeric & Characters
View Answer

Answer: d
Explanation: The operand of arithmetic operators can be any of numeric or character type,
But not boolean.

10. Modulus operator, %, can be applied to which of these?
a) Integers
b) Floating – point numbers
c) Both Integers and floating – point numbers
d) None of the mentioned
View Answer

Answer: c
Explanation: Modulus operator can be applied to both integers and floating point numbers.

11. With x = 0, which of the following are legal lines of Java code for changing the value of x to 1?

   1. x++;

   2. x = x + 1;

   3. x += 1;

   4. x =+ 1;

a) 1, 2 & 3
b) 1 & 4
c) 1, 2, 3 & 4
d) 3 & 2
View Answer

Answer: c
Explanation: Operator ++ increases value of variable by 1. x = x + 1 can also be written in shorthand form as x += 1. Also x =+ 1 will set the value of x to 1.

12. What is the output of relational operators?
a) Integer
b) Boolean
c) Characters
d) Double
View Answer

Answer: b
Explanation: None.

13. Which of these is returned by "greater than", "less than" and "equal to" operators?
a) Integers
b) Floating – point numbers
c) Boolean
d) None of the mentioned
View Answer

Answer: c
Explanation: All relational operators return a boolean value ie. true and false.

14. Which of the following operators can operate on a boolean variable?

   1. &&

   2. ==

   3. ?:

   4. +=

a) 3 & 2
b) 1 & 4
c) 1, 2 & 4
d) 1, 2 & 3
View Answer

Answer: d
Explanation: Operator Short circuit AND, &&, equal to, == , ternary if-then-else, ?:, are boolean logical operators. += is an arithmetic operator it can operate only on numeric values.

15. Which of these operators can skip evaluating right hand operand?
a) !
b) |
c) &
d) &&
View Answer

Answer: d
Explanation: Operator short circuit and, &&, and short circuit or, ||, skip evaluating right hand operand when output can be determined by left operand alone.

16. Which of these statements is correct?
a) true and false are numeric values 1 and 0
b) true and false are numeric values 0 and 1
c) true is any non zero value and false is 0
d) true and false are non numeric values
View Answer

Answer: d
Explanation: True and false are keywords, they are non numeric values which do not relate to zero or non zero numbers. true and false are boolean values.

17. What are the two possible Logical Operator types?

A) Bitwise Logical

B) Boolean Logical

C) Arithmetic Logical

D) A and B

Answer: D

18. Boolean logical operators in Java work with?

A) true/false boolean data

B) 1 and 0 of individual Bits

C) characters of a String

D) None of the above

Answer: A

19. Bitwise logical operators in Java work with?

A) true/false boolean data

B) 0 and 1 individual bits of data

C) Characters of a String

D) None of the above

Answer: B

20. In general Bitwise logical operators are simply called?

A) Logical operators

B) Bitwise operators

C) Binary operators

D) None of the above

Answer: B

Explanation:

Yes. Do not call Bitwise operators by adding the word Logical. It is confusing for any one.

21. What is the input for Logical Operators?

A) 1 and 0

B) true / false

C) char / String

D) None of the above

Answer: B

22. What is the output of any Logical operation in Java?

A) 1 or 0

B) true or false

C) char or String

D) None of the above

Answer: B

23. Which is the Logical operator in Java that works with a Single Operand?

A) Logical AND

B) Logical OR

C) Logical Exclusive OR

D) Logical NOT

Answer: D

24. Which among the following is a Logical Unary NOT operator in Java?

A) ~

B) !

C) #

D) ^

Answer: B

Explanation:

~ is a Bitwise Unary NOT that complements bits from 0 to 1 and 1 to 0.

25. What is the output of the Java code snippet?

boolean b=false;

b = !b;

System.out.println(b);

A) true

B) false

C) Compiler error

D) None of the above

Answer: A

26. Which among the following is a Short Circuit AND operator?

A)

&

B)

&&

C)

|

D)

||

Answer: B

Explanation:

Two ampersands &&

27. Which among the following is a Short Circuit OR operator?

A)

&

B)

&&

C)

|

D)

||

Answer: **D**

**Explanation:**

**Two Pipes ||**

28. What is the output of a Logical OR (|) operation if one of the inputs/operands is false?

A) false

B) true

C) true or false

D) None of the above

Answer: C

Explanation:

Logical OR operator give true as output if at least one of the operands is true.

29. What is the output of Logical AND (&) operation if one of the inputs/operands is false?

A) false

B) true

C) true or false

D) None of the above

Answer: A

Explanation:

false & (anything) is false.

30. What is the output of a Logical OR (|) operation if one of the inputs/operands is true?

A) false

B) true

C) true or false

D) None of the above

Answer: B

Explanation:

true | (anything) is true.

31. What is the output of a Logical AND (&) operation if one of the inputs/operands is true?

A) false

B) true

C) true of false

D) None of the above

Answer: C

Explanation:

true & (anything) = true or false

32. What is the output of a Logical AND (&) operation if both inputs/operands are true?

A) false

B) true

C) true or false

D) None of the above

Answer: B

33. What is the output of a Logical OR (|) operation if both the inputs/operands are true?

A) true

B) false

C) true or false

D) None of the above

Answer: A

34. Which is fast among AND (&) and Short Circuit AND(&&) operators in Java?

A) AND operator

B) Short Circuit AND

C) Both work at the same speed

D) None of the above

Answer: B

35. Which is fast among OR(|) and Short Circuit OR (||) operators in Java?

A) OR Operator

B) Short Circuit OR operator

C) Both work at the same speed

D) None of the above

Answer: B

36. Why are Short Circuit AND (&&) and Short Circuit OR (||) operators are fast in Java?

A) By skipping the second expression or operand if possible and save time.

B) By using extra memory on the machine

C) By using extra CPU processing power

D) None of the above

Answer: A

Explanation:

Short Circuit operators are not 100% every time. Based on the value of the First operand, they decide whether to go evaluating the second expression.

37. Which of these statements are incorrect?

A. The right shift operator automatically fills the higher order bits with 0

B. The left shift operator can be used as an alternative to multiplying by 2

C. The left shift operator, <<, shifts all of the bits in a value to the left specified number of times

D. The right shift operator, >>, shifts all of the bits in a value to the right specified number of times

Answer: A

38. Which of these statements is correct?

A. true and false are non numeric values

B. true is any non zero value and false is 0

C. true and false are numeric values 1 and 0

D. true and false are numeric values 0 and 1

Answer: A

Explanation:

True and false are keywords, they are non numeric values which do not relate to zero or non zero numbers. true and false are boolean values.

39. What will be result of the result of the expression -14%-3

A. -2

B. 2

C. -4

D. 4

Answer: A

40. Which of the following will produce an answer that is closest in value to a double, d, while not being greater than d?

A. (int)Math.min(d);

B. (int)Math.abs(d);

C. (int)Math.max(d);

D. (int)Math.floor(d);

Answer: D