

Java Questions on Operators

1) What will be the output of the following program?

```
1 public class IncrementDecrementQuiz
2 {
3     public static void main(String[] args)
4     {
5         int i = 11;
6
7         i = i++ + ++i;
8
9         System.out.println(i);
10    }
11}
```

Answer : 24

Initially, i=11,

i = i++ + ++i

i = (i is used before increment) + (i is used after increment)

i = 11(i=12) + 13(i=13)

i = 11 + 13 = 24

2) Guess the output of the following program?

```
1 public class IncrementDecrementQuiz
2 {
3     public static void main(String[] args)
4     {
5         int a=11, b=22, c;
6
7         c = a + b + a++ + b++ + ++a + ++b;
8
9         System.out.println("a="+a);
10        System.out.println("b="+b);
11        System.out.println("c="+c);
12    }
13}
```

Answer :

a=13

b=24
c=103

Given, a=11, b=22

$c = a + b + a++ + b++ + ++a + ++b$

$c = 11 + 22 + (\text{a is used before increment}) + (\text{b is used before increment}) + (\text{a is used after increment}) + (\text{b is used after increment})$

$c = 11 + 22 + 11(\text{a}=12, \text{b}=22) + 22(\text{a}=12, \text{b}=23) + 13(\text{a}=13, \text{b}=23) + 24(\text{a}=13, \text{b}=24)$

$c = 11 + 22 + 11 + 22 + 13 + 24 = 103$ and $\text{a}=13, \text{b}=24$

3) What will be the output of the below program?

```
1 public class IncrementDecrementQuiz
2 {
3     public static void main(String[] args)
4     {
5         int i=0;
6
7         i = i++ - --i + ++i - i--;
8
9         System.out.println(i);
10
11     }
12 }
```

Answer : 0

initially, i=0

$i = i++ - --i + ++i - i--$

$i = (\text{i is used before increment}) - (\text{i is used after decrement}) + (\text{i is used after increment}) - (\text{i is used before decrement})$

$i = 0(\text{i}=1) - 0(\text{i}=0) + 1(\text{i}=1) - 1(\text{i}=0)$

$i = 0 - 0 + 1 - 1 = 0$

4) Is the below program written correctly?

```
1 public class IncrementDecrementQuiz
2 {
3     public static void main(String[] args)
4     {
5         boolean b = true;
```

```

6
7         b++;
8
9         System.out.println(b);
10    }
11}

```

Answer : No. ++ or -- can't be applied to boolean types.

5) What will be the output of the below program?

```

1 public class IncrementDecrementQuiz
2 {
3     public static void main(String[] args)
4     {
5         int i=1, j=2, k=3;
6
7         int m = i-- - j-- - k--;
8
9         System.out.println("i="+i);
10        System.out.println("j="+j);
11        System.out.println("k="+k);
12        System.out.println("m="+m);
13    }
14}

```

Answer :

i=0

j=1

k=2

m=-4

Given, i=1, j=2, k=3

$m = i-- - j-- - k--$

$m = (i \text{ is used before decrement}) - (j \text{ is used before decrement}) - (k \text{ is used before decrement})$

$m = 1(i=0) - 2(j=1) - 3(k=2)$

$m = 1 - 2 - 3$

$m = -4$ and $i=0, j=1, k=2$

6) What will be the output of the following program?

```

1public class IncrementDecrementQuiz
2{
3    public static void main(String[] args)
4    {
5        int a=1, b=2;
6
7        System.out.println(--b - ++a + ++b - --a);
8    }
9}

```

Answer : 0

Given, a=1 and b=2,

--b - ++a + ++b - --a

= (b is used after decrement) - (a is used after increment) + (b is used after increment) - (a is used after decrement)

= 1(a=1, b=1) - 2(a=2, b=1) + 2(a=2, b=2) - 1(a=1, b=2)

= 1 - 2 + 2 - 1 = 0

7) What will be the value of i, j and k in the below program?

```

1 public class IncrementDecrementQuiz
2 {
3     public static void main(String[] args)
4     {
5         int i=19, j=29, k;
6
7         k = i-- - i++ + --j - ++j + --i - j-- + ++i - j++;
8
9         System.out.println("i="+i);
10        System.out.println("j="+j);
11        System.out.println("k="+k);
12    }
13}

```

Answer :

i=19

j=29

k=-20

Given, i=19 and j=29,

k = i-- - i++ + --j - ++j + --i - j-- + ++i - j++

$k = (i \text{ is used before decrement}) - (i \text{ is used before increment}) + (j \text{ is used after decrement}) - (j \text{ is used after increment}) + (i \text{ is used after decrement}) - (j \text{ is used before decrement}) + (i \text{ is used after increment}) - (j \text{ is used before increment})$

$k = 19(i=18, j=29) - 18(i=19, j=29) + 28(i=19, j=28) - 29(i=19, j=29) + 18(i=18, j=29) - 29(i=18, j=28) + 19(i=19, j=28) - 28(i=19, j=29)$

$k = 19 - 18 + 28 - 29 + 18 - 29 + 19 - 28$

$k = -20$ and $i=19, j=29$

8) What is wrong with the below program? Why it is showing compilation error?

```
1 public class IncrementDecrementQuiz
2 {
3     public static void main(String[] args)
4     {
5         int i = 11;
6
7         int j = --(i++);
8     }
9 }
```

Answer : Because, ++ or -- can't be nested [--(i++)].

9) Guess the value of p in the below program?

```
1 public class IncrementDecrementQuiz
2 {
3     public static void main(String[] args)
4     {
5         int m = 0, n = 0;
6
7         int p = --m * --n * n-- * m--;
8
9         System.out.println(p);
10    }
11 }
```

Answer : 1

Given, $m=0$ and $n=0$

$p = --m * --n * n-- * m--$

$p = (m \text{ is used after decrement}) * (n \text{ is used after decrement}) * (n \text{ is used before decrement}) * (m \text{ is used before decrement})$

$p = -1(m=-1, n=0) * -1(m=-1, n=-1) * -1(m=-1, n=-2) * -1(m=-2, n=-2)$

$p = -1 * -1 * -1 * -1 = 1$

10) What will be the output of the following program?

```
1 public class IncrementDecrementQuiz
2 {
3     public static void main (String[] args)
4     {
5         int a=1;
6
7         a = a++ + ++a * --a - a--;
8
9         System.out.println(a);
10    }
11}
```

Answer : 5

Given a=1,

$a = a++ + ++a * --a - a--$

$a = (a \text{ is used before increment}) + (a \text{ is used after increment}) * (a \text{ is used after decrement}) - (a \text{ is used before decrement})$

$a = 1(a=2) + 3(a=3) * 2(a=2) - 2(a=1)$

$a = 1 + 3 * 2 - 2$

$a = 1 + 6 - 2 = 5$

11) What will be the outcome of the below program?

```
1public class IncrementDecrementQuiz
2{
3    public static void main (String[] args)
4    {
5        int a = 11++;
6
7        System.out.println(a);
8    }
9}
```

Answer : Compile time error : ++ or -- can't be applied to constants.

12) What will be the output of the following program?

```
1public class IncrementDecrementQuiz
2{
```

```

3    public static void main(String[] args)
4    {
5        int m=1010, n=1010;
6
7        System.out.println(m++ / ++n * n-- / --m);
8    }
9}

```

Answer : 0

m=1010 and n=1010

m++ / ++n * n-- / --m

= (m is used before increment) / (n is used after increment) * (n is used before decrement) /
(m is used after decrement)

= 1010(m=1011, n=1010) / 1011(m=1011, n=1011) * 1011(m=1011, n=1010) /
1010(m=1010, n=1010)

= 1010 / 1011 * 1011 / 1010 = 0

13) What will be the output of the following program?

```

1  public class IncrementDecrementQuiz
2  {
3      public static void main(String[] args)
4      {
5          int x = 001, y=010, z=100;
6
7          int i = --x + y++ - z-- - --z + ++y - --x + y-- - --
8  x;
9
10         System.out.println("x="+x);
11         System.out.println("y="+y);
12         System.out.println("z="+z);
13         System.out.println("i="+i);
14     }

```

Answer :

x=-2

y=11

z=98

i=-167

Given x = 001, y=010, z=100,

i = --x + y++ - z-- - --z + ++y - --x + y-- - --x

$i = (\text{x is used after decrement}) + (\text{y is used before increment}) - (\text{z is used before decrement}) - (\text{z is used after decrement}) + (\text{y is used after increment}) - (\text{x is used after decrement}) + (\text{y is used before decrement}) - (\text{x is used after decrement})$

$i = 0(x=0, y=10, z=100) + 10(x=0, y=11, z=100) - 100(x=0, y=11, z=99) - 98(x=0, y=11, z=98) + 12(x=0, y=12, z=98) - 1(x=-1, y=12, z=98) + 12(x=-1, y=11, z=98) - 2(x=-2, y=11, z=98)$

$i = 0 + 10 - 100 - 98 + 12 - (-1) + 12 - (-2)$

$i = -167$ and $x=-2, y=11, z=98$