

1. **Problem Statement:** Write a program to print sum of two numbers without using + operator. Other operators can be used.

### 1.1 Source Code: file name – SumOfTwo.java

```
import java.util.Scanner;
public class SumOfTwo {

    public static void main(String[] args) {
        // Objective is to ADD 2 numbers without using "+" operator
        System.out.print("Enter Number 1: "); // Input number 1
        Scanner sc= new Scanner(System.in); // Scanner is a class
        int num1 = sc.nextInt();
        System.out.print("Enter Number 2: "); //Input number 2
        int num2 = sc.nextInt();
        System.out.println("Number 1= "+num1);
        System.out.println("Number 2= "+num2);
        int num3 = num1 - (-num2);
        System.out.println("Sum of 2 numbers = "+num3);
        sc.close();
    }
}
```

### 1.2 Output:

```
Enter Number 1: 476
Enter Number 2: 864
Number 1= 476
Number 2= 864
Sum of 2 numbers = 1340
```

### 1.3 Output Screenshots:

The screenshot shows an IDE with several tabs: Hello.java, Operators.java, Highest.java, PrintingX.java, SumOfTwo.java (active), and PatternX.java. The SumOfTwo.java file contains the following code:

```
1 import java.util.Scanner;
2 public class SumOfTwo {
3
4     public static void main(String[] args) {
5         // Objective is to ADD 2 numbers without using "+" operator
6         System.out.print("Enter Number 1: "); // Input number 1
7         Scanner sc= new Scanner(System.in); // Scanner is a class
8         int num1 = sc.nextInt();
9         System.out.print("Enter Number 2: "); //Input number 2
10        int num2 = sc.nextInt();
11        System.out.println("Number 1= "+num1);
12        System.out.println("Number 2= "+num2);
13        int num3 = num1 - (-num2);
14        System.out.println("Sum of 2 numbers = "+num3);
15        sc.close();
16    }
17 }
18
```

Below the code editor, the 'Console' tab is active, showing the output of the program:

```
<terminated> SumOfTwo [Java Application] C:\Program Files\Java\jdk-11.0.1\bin\javaw.exe (Nov 21, 2018, 11:51:3)
Enter Number 1: 476
Enter Number 2: 864
Number 1= 476
Number 2= 864
Sum of 2 numbers = 1340
```

2. **Problem Statement:** Write a program to print the result of the following expressions provided the integer variable a is 20 and b is 10.

```
int b = a-- --a;
int c = a--;
int d = a>>2;
int e = a&b;
```

### 2.1 Source Code: File Name – Operators.Java

```
public class Operators
{
    public static void main(String[] args)
    {
        int a=20, b=10; //provided in the statement
        //problem starts
        b=a-- --a; // post decrement and pre decrement 20-18, so b=2 and a=18
```

```

        System.out.println("value of a= "+a+" and value of b =" +b);
        int c=a--; //here first we have to assign a value to c and then do post
decrement for a; so c=18,a=17
        System.out.println("value of a= "+a+" and value of c =" +c);
        int d=a>>2; //use of shift operator, this is bitwise right shift
        /* a=17 convert to bits 17= 10001. now we have to shift to bits towards
right, then it is 100,
        * the integer value for 100 bits = 2, so the value of d variable is 2*/
        System.out.println("value of a= "+a+" and value of d =" +d);
        int e=a&b; // use bitwise AND operator on a and b values
        /* a=17, b=2 in bits a= 10001, b=00010 after performing AND operation
the result is 0
        * so the value in e is 0*/
        System.out.println("value of a= "+a+" ; value of b =" +b+" and value of
e= "+e);
        System.out.println("The final result:");
        System.out.println("Value of a= "+a);
        System.out.println("Value of b= "+b);
        System.out.println("Value of c= "+c);
        System.out.println("Value of d= "+d);
        System.out.println("Value of e= "+e);
    }
}

```

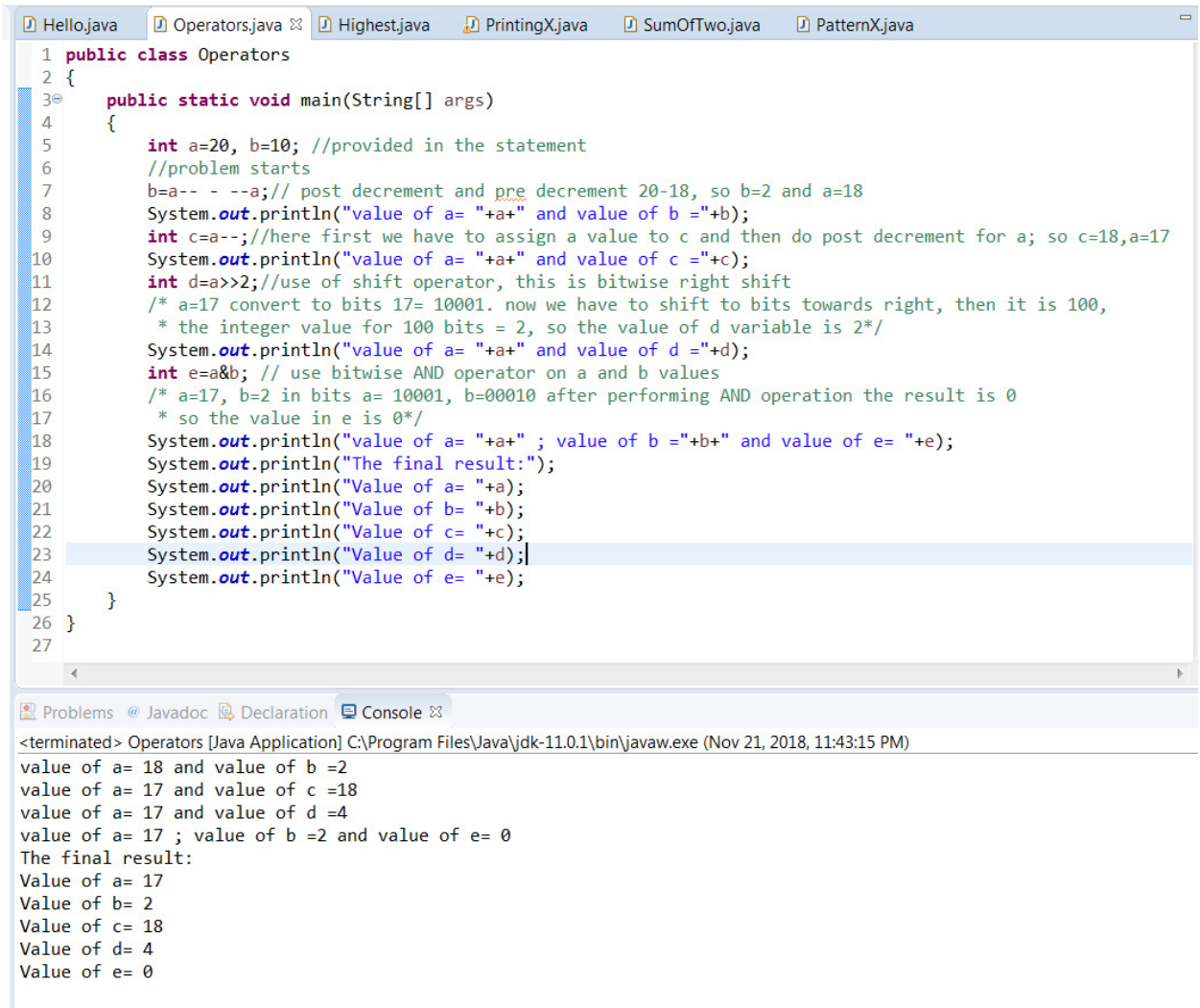
## 2.2 Output:

```

value of a= 18 and value of b =2
value of a= 17 and value of c =18
value of a= 17 and value of d =4
value of a= 17 ; value of b =2 and value of e= 0
The final result:
Value of a= 17
Value of b= 2
Value of c= 18
Value of d= 4
Value of e= 0

```

## 2.3 Output Screenshots:



The screenshot shows an IDE with a tab for 'Operators.java'. The code defines a public class 'Operators' with a main method. It initializes 'a=20' and 'b=10'. It then performs several operations: 'b=a--' (resulting in b=2, a=18), 'c=a--' (resulting in c=18, a=17), 'd=a>>2' (resulting in d=4), and 'e=a&b' (resulting in e=0). The final values are printed: a=17, b=2, c=18, d=4, and e=0.

```
1 public class Operators
2 {
3     public static void main(String[] args)
4     {
5         int a=20, b=10; //provided in the statement
6         //problem starts
7         b=a-- --a; // post decrement and pre decrement 20-18, so b=2 and a=18
8         System.out.println("value of a= "+a+" and value of b ="+"b");
9         int c=a--; //here first we have to assign a value to c and then do post decrement for a; so c=18,a=17
10        System.out.println("value of a= "+a+" and value of c ="+"c");
11        int d=a>>2; //use of shift operator, this is bitwise right shift
12        /* a=17 convert to bits 17= 10001. now we have to shift to bits towards right, then it is 100,
13         * the integer value for 100 bits = 2, so the value of d variable is 2*/
14        System.out.println("value of a= "+a+" and value of d ="+"d");
15        int e=a&b; // use bitwise AND operator on a and b values
16        /* a=17, b=2 in bits a= 10001, b=00010 after performing AND operation the result is 0
17         * so the value in e is 0*/
18        System.out.println("value of a= "+a+" ; value of b ="+"b+" and value of e= "+e);
19        System.out.println("The final result:");
20        System.out.println("Value of a= "+a);
21        System.out.println("Value of b= "+b);
22        System.out.println("Value of c= "+c);
23        System.out.println("Value of d= "+d);
24        System.out.println("Value of e= "+e);
25    }
26 }
27
```

The console output shows the execution results:

```
<terminated> Operators [Java Application] C:\Program Files\Java\jdk-11.0.1\bin\javaw.exe (Nov 21, 2018, 11:43:15 PM)
value of a= 18 and value of b =2
value of a= 17 and value of c =18
value of a= 17 and value of d =4
value of a= 17 ; value of b =2 and value of e= 0
The final result:
Value of a= 17
Value of b= 2
Value of c= 18
Value of d= 4
Value of e= 0
```

**\*\*END OF DOCUMENT\*\***