

RegNo: 23MCA1030

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Java Programming Lab (PMCA502P)

1. Write a Java program that takes an integer as input and performs the following operations:
Left shift the number by 3 positions.
Signed right shift the number by 2 positions.
Unsigned right shift the number by 2 positions.

Print the results after each operation.

Code:

```
import java.util.Scanner;

public class Shift {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.println("23MCA1030");

        System.out.println("Vinayak Kumar Singh");

        System.out.print("Enter an integer: ");

        int number = scanner.nextInt();

        int leftShifted = number << 3;

        System.out.println("Left shift Result: " + leftShifted);

        int signedRightShifted = number >> 2;

        System.out.println("Signed Right shift Result: " + signedRightShifted);

        int unsignedRightShifted = number >>> 2;

        System.out.println("Unsigned Right shift Result: " +
            unsignedRightShifted);
```

```
}  
  
}
```

Output:

Main.java	Output
<pre>1- import java.util.Scanner; 2 3- public class Shift { 4- public static void main(String[] args) { 5 Scanner scanner = new Scanner(System.in); 6 System.out.println("23MCA1030"); 7 System.out.println("Vinayak Kumar Singh"); 8 System.out.print("Enter an integer: "); 9 int number = scanner.nextInt(); 10 11 int leftShifted = number << 3; 12 System.out.println("Left shift Result: " + leftShifted); 13 14 int signedRightShifted = number >> 2; 15 System.out.println("Signed Right shift Result: " + signedRightShifted); 16 17 int unsignedRightShifted = number >>> 2; 18 System.out.println("Unsigned Right shift Result: " + unsignedRightShifted); 19 } 20 } 21</pre>	<pre>java -cp /tmp/NHYgUt1hX3 Shift 23MCA1030 Vinayak Kumar Singh Enter an integer: 10 Left shift Result: 80 Signed Right shift Result: 2 Unsigned Right shift Result: 2</pre>

3. Create a Java program that demonstrates the behavior of the right shift operators with negative numbers. Allow the user to input a negative integer, and then perform a signed right shift and an unsigned right shift by 2 positions. Print the results.

Code:

```
import java.util.Scanner;  
  
public class RightShift {  
  
    public static void main(String[] args) {  
  
        Scanner scanner = new Scanner(System.in);  
  
        System.out.print("Enter a negative integer: ");  
  
        int number = scanner.nextInt();
```

```

    int signedShift = number >> 2;

    System.out.println("Signed Right shift Result: " + signedShift);

    int unsignedShift = number >>> 2;

    System.out.println("Unsigned Right shift Result: " + unsignedShift);

    scanner.close();

}

}

```

Output:

Main.java	Output
<pre> 1 import java.util.Scanner; 2 3 public class RightShift { 4 5 public static void main(String[] args) { 6 Scanner scanner = new Scanner(System.in); 7 8 System.out.print("Enter a negative integer: "); 9 int number = scanner.nextInt(); 10 11 int signedShift = number >> 2; 12 System.out.println("Signed Right shift Result: " + signedShift); 13 14 int unsignedShift = number >>> 2; 15 System.out.println("Unsigned Right shift Result: " + unsignedShift); 16 17 scanner.close(); 18 } 19 } 20 </pre>	<pre> java -cp /tmp/A1BL0N2RKF RightShift Enter a negative integer: -25 Signed Right shift Result: -7 Unsigned Right shift Result: 1073741817 </pre>

4. Write a Java program to double number using the left shift operator. Allow the user to input a number, and then use left shift to double the number.

Code:

```
import java.util.Scanner;

public class DoubleNumber {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a number: ");

        int input = scanner.nextInt();

        int doubledNumber = input << 1;

        System.out.println("Doubled number using left shift: " +
doubledNumber);

        scanner.close();

    }

}
```

Output:

Main.java	Run	Output
<pre>1 import java.util.Scanner; 2 public class DoubleNumber { 3 public static void main(String[] args) { 4 Scanner scanner = new Scanner(System.in); 5 System.out.print("Enter a number: "); 6 int input = scanner.nextInt(); 7 int doubledNumber = input << 1; 8 System.out.println("Doubled number using left shift: " + 9 doubledNumber); 9 scanner.close(); 10 } 11 }</pre>		<pre>java -cp /tmp/A1BLoN2RKf DoubleNumber Enter a number: 5 Doubled number using left shift: 10</pre>