BITWISE LEFT SHIFT OPERATOR
AND
RIGHT SHIFT OPERATOR

Assignment - 1

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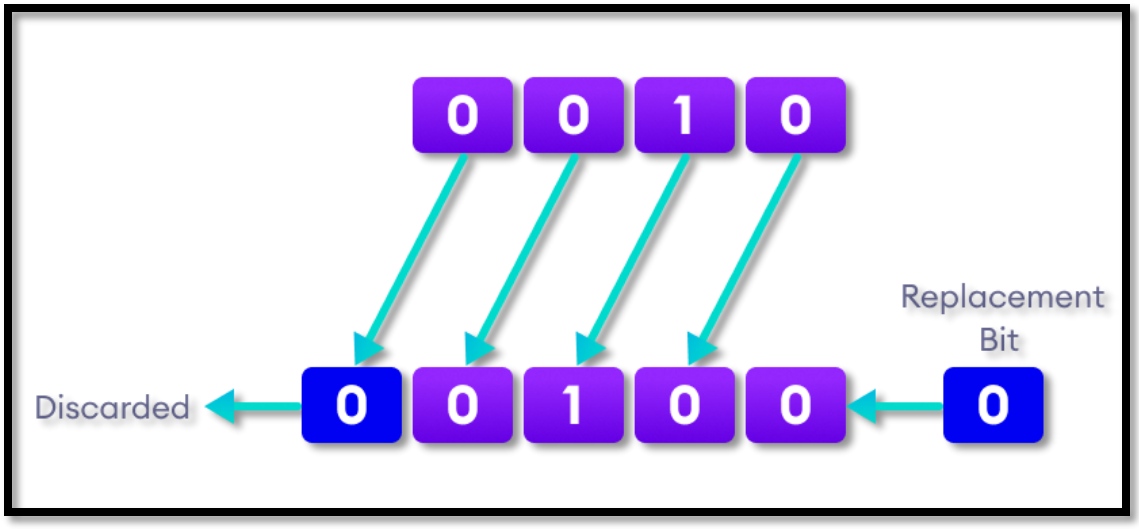
LEFT SHIFT OPERATOR:

The left shift operator shifts all bits towards the left by a certain number of specified bits. It is denoted by <<.



In the above image a 4-digit number is present.When we perform a 1 bit left shift operation on it, each individual bit is shifted to the left by 1 bit.

As a result, the left-most bit (most-significant) is discarded and the right-most position (least-significant) remains vacant. This vacancy is filled with 0s.

Example:

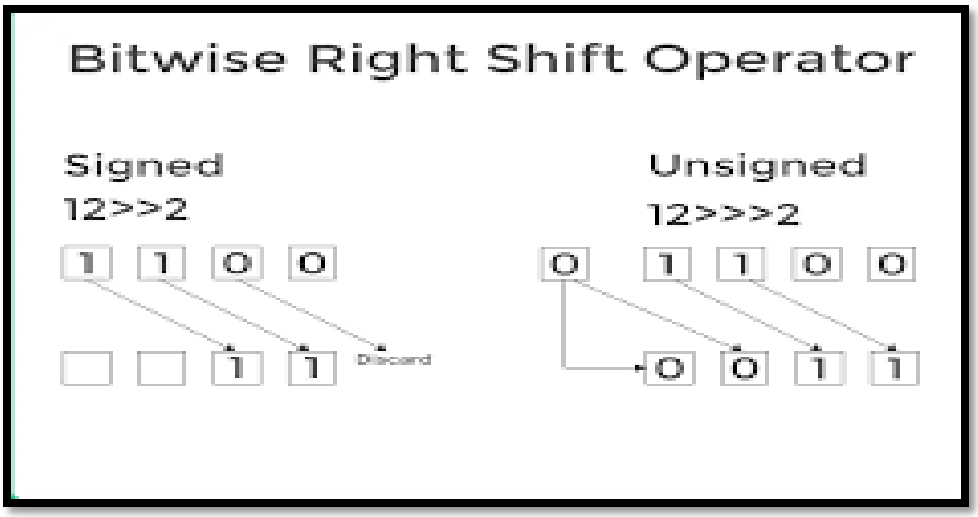
```
class Main {

public static void main(String[] args) {

int number = 2;

// 2 bit left shift operation

int result = number << 2;

System.out.println(result);

}

}
```

Output: 8

RIGHT SHIFT OPERATOR:

There are two types of right shift operators:

1. Signed Right Shift (>>)
2. Unsigned Right Shift (>>>)



1. Signed Right Shift (>>)

The signed right shift operator shifts all bits towards the right by a certain number of specified bits. It is denoted by >>.

When we shift any number to the right, the least significant bits (rightmost) are discarded and the most significant position (leftmost) is filled with the sign bit.

The signed right shift operator preserves the sign of the number being shifted.

2. Unsigned Right Shift (>>>)

The unsigned right shift operator shifts all bits towards the right by a certain number of specified bits. It is denoted by >>>.

When we shift any number to the right, the least significant bits (rightmost) are discarded and the most significant position (leftmost) is filled with 0's.

Example (signed right shift):

```
class Main {
public static void main(String[] args) {
int number1 = 8;
int number2 = -8;
// 2 bit signed right shift
System.out.println(number1 >> 2);    // prints 2
System.out.println(number2 >> 2);    // prints -2
}
}
```

Example (unsigned right shift):

```
class Main {
public static void main(String[] args) {
int number1 = 8;
int number2 = -8;
// 2 bit signed right shift
System.out.println(number1 >>> 2); // prints 2
System.out.println(number2 >>> 2);
// prints 1073741822
}
}
```