04

Operators Arithmetic
What is operators?

- Operators are special symbols that perform specific operations on one, two, or three operands, and then return a result.
One of the most common operators that you'll encounter is the simple assignment operator "=".

- `int cadence = 0;`
- `int speed = 0;`
- `int gear = 1;`
The Java programming language provides operators that perform addition, subtraction, multiplication, and division. There's a good chance you'll recognize them by their counterparts in basic mathematics. The only symbol that might look new to you is "%", which divides one operand by another and returns the remainder as its result.

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<th>Operators</th>
<th>functions</th>
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<tbody>
<tr>
<td>+</td>
<td>additive operator (also used for String concatenation)</td>
</tr>
<tr>
<td>-</td>
<td>subtraction operator</td>
</tr>
<tr>
<td>*</td>
<td>multiplication operator</td>
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<tr>
<td>/</td>
<td>division operator</td>
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<tr>
<td>%</td>
<td>remainder operator</td>
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The unary operators require only one operand; they perform various operations such as incrementing/decrementing a value by one, negating an expression, or inverting the value of a boolean.

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<tr>
<td>+</td>
<td>Unary plus operator; indicates positive value (numbers are positive without this, however)</td>
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<tr>
<td>-</td>
<td>Unary minus operator; negates an expression</td>
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<tr>
<td>++</td>
<td>Increment operator; increments a value by 1</td>
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<tr>
<td>--</td>
<td>Decrement operator; decrements a value by 1</td>
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<td>!</td>
<td>Logical complement operator; inverts the value of a boolean</td>
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</table>
package Package02;

public class ArithmeticDemo {

    public static void main (String[] args){

        // result is now 3
        int result = 1 + 2;
        System.out.println(result);

        // result is now 2
        result = result - 1;
        System.out.println(result);

        // result is now 4
        result = result * 2;
        System.out.println(result);

        // result is now 2
        result = result / 2;
        System.out.println(result);

        // result is now 10
        result = result + 8;
        // result is now 3
        result = result % 7;
        System.out.println(result);
    }
}
```java
package Package02;

public class ConcatDemo {
    public static void main(String[] args) {
        String firstString = "This is";
        String secondString = " a concatenated string.";

        String thirdString = firstString + secondString;

        System.out.println(firstString);
        System.out.println(secondString);
        System.out.println(thirdString);
    }
}
```

This is a concatenated string.
This is a concatenated string.
```java
package Package02;

public class UnaryDemo {

    public static void main(String[] args){
        // result is now 1
        int result = +1;
        System.out.println(result);
        // result is now 0
        result--;
        System.out.println(result);
        // result is now 1
        result++;
        System.out.println(result);
        // result is now -1
        result = -result;
        System.out.println(result);
        boolean success = false;
        // false
        System.out.println(success);
        // true
        System.out.println(!success);
    }
}
```