JavaScript Operators Guide

Learn more about JavaScript with Examples and Source Code Laurence Svekis
Courses https://basescripts.com/

Operators in JavaScript are symbols or keywords used to perform various operations on variables and values. They allow you to manipulate and work with data in your code. JavaScript provides several types of operators, including arithmetic, assignment, comparison, logical, and more. Let's delve into each category with coding examples:

1. Arithmetic Operators:

These operators perform basic arithmetic operations on numeric values.

Example 1: Addition and Subtraction

```
let num1 = 10;

let num2 = 5;

let sum = num1 + num2; // Addition

let difference = num1 – num2; // Subtraction

console.log(sum); // Output: 15

console.log(difference); // Output: 5
```

2. Assignment Operators:

These operators assign values to variables.

Example 2: Assignment Operator

```javascript
let x = 10;
let y = 5;
x += y; // Equivalent to x = x + y
console.log(x); // Output: 15
```

3. Comparison Operators:

These operators compare two values and return a Boolean result (true or false).

Example 3: Equality and Inequality

```javascript
let a = 5;
let b = 10;
let isEqual = a === b; // Strict equality
let isNotEqual = a !== b; // Inequality
console.log(isEqual); // Output: false
console.log(isNotEqual); // Output: true
```

4. Logical Operators:

These operators perform logical operations on Boolean values.

Example 4: Logical AND and OR

```
let hasPermission = true;

let isAuthenticated = false;

let canAccessResource = hasPermission &&

isAuthenticated; // Logical AND

let canLogin = hasPermission || isAuthenticated; //

Logical OR

console.log(canAccessResource); // Output: false

console.log(canLogin); // Output: true
```

5. Unary Operators:

These operators perform operations on a single operand.

Example 5: Increment and Decrement

```
let count = 5;

count++; // Increment by 1

count--; // Decrement by 1

console.log(count); // Output: 5 (after decrement)
```

6. Conditional (Ternary) Operator:

This operator is a shorthand way of writing conditional statements.

Example 6: Ternary Operator

```
let age = 20;

let canVote = age >= 18 ? "Yes" : "No";
```

```
console.log(canVote); // Output: "Yes"
```

7. String Concatenation Operator:

This operator is used to concatenate (join) strings.

Example 7: String Concatenation

```
let firstName = "John";

let lastName = "Doe";

let fullName = firstName + " " + lastName;

console.log(fullName); // Output: "John Doe"
```

These are some of the most commonly used operators in JavaScript. They are essential for performing calculations, making decisions, and manipulating data in your code. Understanding how to use them effectively is a crucial part of becoming proficient in JavaScript programming.

Coding Exercises for JavaScript Operators

Exercise 1: Arithmetic Operators

Description: Write a program that calculates the area of a rectangle using the formula area = length × width. Prompt the user for the length and width of the rectangle.

```
// Step 1: Prompt the user for input
```

```
let length = parseFloat(prompt("Enter the length of the
rectangle:"));
let width = parseFloat(prompt("Enter the width of the
rectangle:"));

// Step 2: Calculate the area using arithmetic
operators
let area = length * width;

// Step 3: Display the result
console.log(`The area of the rectangle is ${area}`);
```

Exercise 2: Assignment Operators

Description: Write a program that increments a variable by 5 using an assignment
operator.

```
// Step 1: Initialize a variable
let number = 10;

// Step 2: Increment the variable using an assignment
operator
number += 5;
```

```
// Step 3: Display the result
console.log(`The updated value is ${number}`);
```

Exercise 3: Comparison Operators

Description: Write a program that compares two numbers and determines if one is greater than or equal to the other.

```
// Step 1: Prompt the user for input
let num1 = parseFloat(prompt("Enter the first
number:"));
let num2 = parseFloat(prompt("Enter the second
number:"));

// Step 2: Compare the numbers using comparison
operators
let isGreaterOrEqual = num1 >= num2;

// Step 3: Display the result
console.log(`Is the first number greater than or equal
to the second number? ${isGreaterOrEqual}`);
```

Exercise 4: Logical Operators

Description: Write a program that checks if a user is eligible for a discount. The user must be a student (hasStudentID) and the purchase amount must be greater than $50.

```
// Step 1: Prompt the user for input
let hasStudentID = confirm("Do you have a student
ID?");
let purchaseAmount = parseFloat(prompt("Enter the
purchase amount:"));


// Step 2: Check eligibility using logical operators
let isEligibleForDiscount = hasStudentID &&
purchaseAmount > 50;


// Step 3: Display the result
if (isEligibleForDiscount) {
  console.log("You are eligible for a discount!");
} else {
  console.log("Sorry, you are not eligible for a
discount.");
}
```

Exercise 5: Unary Operators

Description: Write a program that calculates the square of a number using the unary operator.

```
// Step 1: Prompt the user for input
let number = parseFloat(prompt("Enter a number:"));


// Step 2: Calculate the square using the unary
operator
let square = number ** 2;


// Step 3: Display the result
console.log(`The square of the number is ${square}`);
```

Exercise 6: Conditional Operator

Description: Write a program that determines if a user is an adult (age 18 or older) and outputs a message accordingly.

```
// Step 1: Prompt the user for input
let age = parseInt(prompt("Enter your age:"));


// Step 2: Use the conditional operator to check if the
user is an adult
```

```javascript
let message = age >= 18 ? "You are an adult." : "You
are not an adult.";

// Step 3: Display the message
console.log(message);
```

Exercise 7: String Concatenation Operator

Description: Write a program that asks the user for their first name and last name, then displays a greeting message.

```javascript
// Step 1: Prompt the user for input
let firstName = prompt("Enter your first name:");
let lastName = prompt("Enter your last name:");

// Step 2: Concatenate the names using the string
concatenation operator
let fullName = firstName + " " + lastName;

// Step 3: Display the greeting message
console.log(`Hello, ${fullName}!`);
```

Exercise 8: Increment and Decrement Operators

Description: Write a program that increments a variable by 1 and then decrements it by 1.

```
// Step 1: Initialize a variable
let count = 5;


// Step 2: Increment and then decrement the variable
count++; // Increment by 1
count--; // Decrement by 1


// Step 3: Display the updated value
console.log(`The updated value is ${count}`);
```

Exercise 9: Bitwise Operators (Advanced)

Description: Write a program that performs a bitwise AND operation between two numbers.

```
// Step 1: Prompt the user for input
let num1 = parseInt(prompt("Enter the first number:"));
let num2 = parseInt(prompt("Enter the second number:"));


// Step 2: Perform a bitwise AND operation
```

```
let result = num1 & num2;


// Step 3: Display the result
console.log(`The result of the bitwise AND operation is
${result}`);
```


Exercise 10: Logical NOT Operator (Advanced)

Description: Write a program that checks if a user is not logged in and prompts them to log in.

```
// Step 1: Prompt the user for login status
let isLoggedIn = confirm("Are you logged in?");


// Step 2: Use the logical NOT operator to check if the
user is not logged in
if (!isLoggedIn) {
  alert("Please log in to access this feature.");
} else {
  console.log("You are logged in.");
}
```


These exercises cover a range of operators in JavaScript, from basic arithmetic and assignment operators to more advanced bitwise and logical operators. Practice

these exercises to enhance your understanding of how operators work in JavaScript.