JavaScript Objects

Module 4 - Number Object in JavaScript

JavaScript Number Object

Definition:

The JavaScript Number object is a built-in wrapper for numeric values. It allows numerical operations and provides properties and methods for working with numbers, including integers, floating-point numbers, and special values like Infinity and NaN.

Applications of Number Object

- Mathematical Calculations – Perform arithmetic operations.
- Handling Large/Small Numbers – Manage very large or small values with Number.MAX_VALUE and Number.MIN_VALUE.
- Type Conversion – Convert strings to numbers using Number(), parseInt(), and parseFloat().
- Precision Handling – Control decimal places with toFixed() and toPrecision().
- Validating Numbers – Check if a value is a valid number using isNaN() or isFinite().
- Working with Special Values – Handle Infinity and NaN (Not-a-Number).

Introduction to 'JavaScript' Language

Method/Property	Description
`Number(value)`	Converts a value to a number.
`parseInt(value)`	Converts a string to an integer.
`parseFloat(value)`	Converts a string to a floating-point number.
`toFixed(n)`	Formats a number with `n` decimal places.
`toPrecision(n)`	Formats a number with `n` significant digits.
`isNaN(value)`	Checks if a value is `NaN` (Not-a-Number).
`isFinite(value)`	Checks if a value is a finite number.
`MAX_VALUE`	Largest number in JavaScript.
`MIN_VALUE`	Smallest number in JavaScript.
`POSITIVE_INFINITY`	Represents `Infinity`.
`NEGATIVE_INFINITY`	Represents `-Infinity`.

Solved Example: Display Special Number Values using the Number Object

Ques: Write a JavaScript program to display special number values using the Number object. Your program should:

- Display the maximum possible number in JavaScript (Number.MAX_VALUE).
- Display the smallest possible number greater than zero (Number.MIN_VALUE).
- Show positive infinity (Number.POSITIVE_INFINITY).
- Show negative infinity (Number.NEGATIVE_INFINITY).
- Demonstrate an example of NaN (Not-a-Number) by performing an invalid mathematical operation.

Use document.write() to display the results on the webpage.

Solution:

```
<!DOCTYPE html>
<html lang="en">
<head>
```

```
    <title>Special Number Values</title>
</head>
<body>
    <script>
        document.write("<h2>Maximum Value: " + Number.MAX_VALUE + "</h2>");
        document.write("<h2>Minimum Value: " + Number.MIN_VALUE + "</h2>");
        document.write("<h2>Infinity: " + Number.POSITIVE_INFINITY + "</h2>");
        document.write("<h2>-Infinity: " + Number.NEGATIVE_INFINITY + "</h2>");
        document.write("<h2>NaN Example: " + (0 / 0) + "</h2>");
    </script>
</body>
</html>
```

OUTPUT:

- Maximum Value: 1.7976931348623157e+308
- Minimum Value: 5e-324
- Infinity: Infinity
- -Infinity: -Infinity
- NaN Example: NaN

Solved Example: Convert a Numeric String into different Number Formats

Ques: Write a JavaScript program to convert a numeric string into different number formats. Your program should:

- Take a string containing a decimal number (e.g., "123.45").
- Convert the string to a Number using Number().
- Convert the string to an Integer using parseInt().
- Convert the string to a Floating-point number using parseFloat().
- Display all the converted values using document.write().

Hint: Use Number(), parseInt(), and parseFloat() to perform the conversions.

Solution:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Number Conversion</title>
</head>
<body>
    <script>
```

Introduction to 'JavaScript' Language

```
        let strNum = "123.45";
        let num1 = Number(strNum);  // Convert string to number
        let num2 = parseInt(strNum); // Convert to integer
        let num3 = parseFloat(strNum); // Convert to floating point

        document.write("<h2>Original String: " + strNum + "</h2>");
        document.write("<h2>Converted to Number: " + num1 + "</h2>");
        document.write("<h2>Converted to Integer: " + num2 + "</h2>");
        document.write("<h2>Converted to Float: " + num3 + "</h2>");
    </script>
</body>
</html>
```

OUTPUT:

Original String: "123.45"
Converted to Number: 123.45
Converted to Integer: 123
Converted to Float: 123.45

Assignment

Ques: Convert a Numeric String into Different Number Formats:
Write a JavaScript program that takes a numeric string as input (e.g., "456.78") and:

- Converts it to a Number.
- Converts it to an Integer using parseInt().
- Converts it to a Floating-point number using parseFloat().
- Displays all results using document.write().

Ques: Check if a Value is a Number:
Write a JavaScript program that:

- Takes an input value (e.g., "Hello", 123, "42abc", NaN).
- Checks if the value is a valid number using isNaN().
- Displays the result (true or false) using document.write().