

JavaScript Basics

Introduction to JavaScript

JavaScript is a programming language that adds interactivity to web pages. It can manipulate HTML elements, create dynamic content, and respond to user actions.

Basic Syntax

- **Variables:**

- Used to store data.
- Declared using `let` or `const`.
- Example:

JavaScript

```
let name = "Alice";  
const age = 30;
```

- **Data Types:**

- Numbers: `10`, `3.14`
- Strings: `"Hello"`
- Booleans: `true`, `false`
- Null: `null`
- Undefined: `undefined`

- **Operators:**

- Arithmetic: `+`, `-`, `*`, `/`, `%`
- Comparison: `==`, `!=`, `===`, `!==`, `<`, `>`, `<=`, `>=`

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- Logical: `&&`, `||`, `!`
- **Control Flow:**
 - `if`, `else if`, `else`: Conditional statements
 - `switch`: Multiple choices
 - `for`, `while`, `do while`: Loops

Functions

- Reusable blocks of code.
- Defined using `function` keyword.
- Example:

JavaScript

```
function greet(name) {  
  console.log("Hello, " + name + "!");  
}
```

Arrays

- Ordered collections of data.
- Accessed using indices.

JavaScript

```
const fruits = ["apple", "banana", "orange"];
```

Objects

- Unordered collections of key-value pairs.
- JavaScript

JavaScript Basics

```
const person = {  
  name: "Bob",  
  age: 25,  
  city: "New York"  
};
```

DOM Manipulation

- Accessing and manipulating HTML elements.
 - `document.getElementById()`: Get element by ID
 - `document.querySelector()`: Get element by selector
 - `element.innerHTML`: Modify content
 - `element.style`: Modify styles
 - `element.addEventListener()`: Add event listeners

Events

- Actions that occur on a web page.
 - `click`, `mouseover`, `keydown`, etc.
 - Example:

JavaScript

```
button.addEventListener("click", () => {  
  alert("Button clicked!");  
});
```

Practice Exercises

- Create a simple calculator.
- Build a to-do list app.

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- Create a guessing game.
- Develop a basic quiz.

Additional Topics

- Debugging
- Error handling
- Advanced JavaScript concepts (closures, promises, async/await)

Resources

- MDN Web Docs: <https://developer.mozilla.org/en-US/docs/Web/JavaScript>
- W3Schools: <https://www.w3schools.com/js/>
- FreeCodeCamp:
<https://www.freecodecamp.org/learn/javascript-algorithms-and-data-structures/>
- Codecademy: <https://www.codecademy.com/learn/introduction-to-javascript>

Remember: Practice is key to mastering JavaScript. Build small projects to apply your knowledge and gradually increase complexity.

Online Tutorial:

<https://www.w3schools.com/js/>