📜**JavaScript Programming Notes – AetherCode (Notion Template)**

🖥️Cover Page

Course Title: JavaScript – Make Your Web Pages Alive\ **Prepared By:** AetherCode Team\ **Website:** www.aethercode.com

> *"Code. Notes. Clarity."*

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Introduction

JavaScript is a lightweight, dynamic, and interpreted programming language used to build interactive web applications.

💡JavaScript Basics

```
<script>
  alert("Welcome to AetherCode!");
</script>
```

- Script can be written inline, internal, or external.

📊Variables & Data Types

```
let name = "John";
const age = 25;
var isStudent = true;
```

- Types: string, number, boolean, null, undefined, object, symbol

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Operators

- Arithmetic: `+ - * / %`
- Assignment: `= += -=`
- Comparison: `== != === !== > <`
- Logical: `&& || !`

🔦Control Structures

```
if (score >= 90) {
  console.log("A grade");
} else {
  console.log("Try again");
}
```

- Also: `switch`, `try...catch`

🔧Functions

```
function greet(name) {
  return `Hello ${name}`;
}
```

- Arrow function: `const greet = (name) => "Hello " + name;`

🧰Objects & Arrays

```
const person = {
  name: "Alice",
  age: 22
};
```

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

🧱DOM Manipulation

```
document.getElementById("btn").innerText = "Clicked!";
document.querySelector(".box").style.color = "red";
```

🧲Events

```
document.getElementById("btn").addEventListener("click", function() {
  alert("Button clicked");
});
```

🕐Loops

```
for (let i = 0; i < 5; i++) {
  console.log(i);
}
```

- Also: `while`, `for...of`, `for...in`, `forEach`

⚙️ES6 Features

- `let`, `const`
- Arrow functions `() => {}`
- Template literals `Hello ${name}`
- Destructuring: `const {a, b} = obj;`
- Spread/rest `...`

⏳Async JS: Callbacks, Promises, Async/Await

```
// Callback
setTimeout(() => console.log("Loaded"), 1000);

// Promise
fetch(url).then(res => res.json());
```

```
// Async/Await
async function fetchData() {
  const res = await fetch(url);
  const data = await res.json();
}
```

🩲Browser APIs

- `localStorage`, `sessionStorage`
- `navigator.geolocation`
- `fetch()` for HTTP requests

🔗Form Validation

```
const email = document.getElementById("email");
if (!email.value.includes("@")) {
  alert("Invalid Email");
}
```

📌Best Practices

- Use `const` and `let` over `var`
- Organize code into functions
- Handle errors with `try-catch`
- Minimize global variables

🔗Summary

JavaScript is the heart of front-end interactivity. Mastering it enables DOM manipulation, API usage, and real-time behavior for modern web apps.

Next: Dive deeper with Data Structures & Algorithms.