JavaScript Complete Guide (Basic to Advanced)

A Complete Textbook with Examples and Explanations

Chapter 1: Introduction to JavaScript

JavaScript is a powerful programming language used to create dynamic and interactive websites.

It is one of the core technologies of web development along with HTML and CSS.

JavaScript allows developers to:

- Create dynamic content

- Handle user interactions

- Validate forms

- Communicate with servers

- Build full stack applications

JavaScript runs in the browser and also on servers using Node.js.

Chapter 2: Variables and Data Types

Variables are used to store data values.

There are three ways to declare variables:

var, let, and const

Example:

let name = "Gopi";

const age = 22;

Data Types:

String, Number, Boolean, Array, Object, Undefined, Null

Example:

let marks = [85, 90, 78];

let student = { name: "Gopi", course: "JavaScript" };

Chapter 3: Operators and Expressions

Operators are used to perform operations on variables.

Arithmetic Operators: + - * / %

Comparison Operators: == === != > <

Logical Operators: && || !

Example:

```
let a = 10;

let b = 20;

console.log(a + b);
```

Chapter 4: Conditional Statements

Conditional statements control the flow of execution.

if, else, else if and switch are used.

Example:

```
let age = 18;
if(age >= 18){
console.log("Eligible to vote");
}else{
console.log("Not eligible");
}
```

Chapter 5: Loops

Loops are used to repeat a block of code.

Types of loops:

for loop, while loop, do while loop

Example:

```
for(let i=1; i<=5; i++){

console.log(i);

}
```

Chapter 6: Functions

Functions are reusable blocks of code.

Example:

```
function add(a, b){
return a + b;
}
```

Arrow Function:

```
const add = (a,b) => a+b;
```

Chapter 7: Arrays and Objects

Arrays store multiple values.

Objects store key-value pairs.

Example:

```
let numbers = [10,20,30];
```

```
let user = { name:"Gopi", role:"Developer" };
```

Chapter 8: DOM Manipulation

DOM allows JavaScript to interact with HTML.

Example:

```
document.getElementById("title").innerHTML = "Welcome";
```

Chapter 9: Events

Events handle user interactions.

Example:

```
button.addEventListener("click", function(){
alert("Clicked");
});
```

Chapter 10: ES6 Features

Modern JavaScript features include:

let, const, arrow functions, destructuring, template literals.

Chapter 11: Asynchronous JavaScript

Asynchronous programming allows non-blocking operations.

setTimeout, Promises, async and await are used.

Chapter 12: API and Fetch

Fetch API is used to get data from servers.

Example:

```
fetch(url).then(res=>res.json()).then(data=>console.log(data));
```

Chapter 13: Advanced Concepts

Closures, Hoisting, Prototypes and Modules are advanced JavaScript concepts.

Chapter 14: Real Time Projects

Projects:

Weather App, ToDo App, Quiz App, E-commerce Cart.