JAVASCRIPT FOR CYBER SECURITY EXPERT

1. Basics of JavaScript

JavaScript runs in web browsers, and you can test it using the browser's Developer Tools (press F12 or Ctrl+Shift+I > "Console").

1. Hello, World

```
console.log("Hello, World!");
```

This prints "Hello, World!" in the browser console.

2. Variables and Data Types

```
let name = "Hassan"; // String
let age = 25; // Number
let isStudent = true; // Boolean

console.log("Name:", name);
console.log("Age:", age);
console.log("Is a student:", isStudent);
```

- let: Used to declare a variable.
- Data types: string, number, boolean.

3. Arithmetic Operations

```
let x = 10;
let y = 5;

console.log("Addition:", x + y);
console.log("Subtraction:", x - y);
console.log("Multiplication:", x * y);
console.log("Division:", x / y);
```

4. Conditional Statements

```
let marks = 80;

if (marks >= 50) {
    console.log("Pass");
} else {
    console.log("Fail");
}
```

5. Loops

5.1. For Loop:

```
for (let i = 1; i <= 5; i++) {
    console.log("Number:", i);
}
```

5.2. While Loop:

```
let i = 1;
while (i <= 5) {
    console.log("Number:", i);
    i++;
}
```

6. Functions

```
function greet(name) {
    return "Hello, " + name + "!";
}

console.log(greet("Hassan"));
```

7. Arrays

```
let fruits = ["Apple", "Banana", "Cherry"];
console.log(fruits[0]); // Access first element
console.log(fruits.length); // Length of array
fruits.push("Orange"); // Add element
console.log(fruits);
```

8. Objects

```
let person = {
    name: "Hassan",
    age: 25,
    isStudent: true
};

console.log(person.name); // Access properties
console.log(person["age"]);
```

2. JavaScript for Web Application Development

1. DOM (Document Object Model) Manipulation

The DOM is the interface through which JavaScript interacts with HTML elements.

Example: Changing Text Content

```
<!DOCTYPE html>
<html>
<body>
    <h1 id="heading">Hello!</h1>
    <button onclick="changeText()">Click Me</button>

    <script>
        function changeText() {
            document.getElementById("heading").textContent = "Hello, Hassan!";
        }
    </script>
</body>
</html>
```

What Happens: Clicking the button changes the heading text.

2. Event Handling

Events are actions like clicks or key presses.

Example: Button Click

```
<!DOCTYPE html>
<html>
<body>
    <button id="btn">Click Me</button>
    <p id="output"></p>

    <script>
        document.getElementById("btn").addEventListener("click",
function() {
            document.getElementById("output").textContent = "Button
Clicked!";
        });
    </script>
</body>
</html>
```

```
```

What Happens: Clicking the button updates the paragraph with the text

3. Form Validation

JavaScript can validate user input in forms.

Example: Simple Validation

```
<!DOCTYPE html>
<html>
<body>
    <form id="myForm">
        <label for="name">Name:</label>
        <input type="text" id="name" />
        <button type="button"
onclick="validateForm()">Submit</button>
    </form>
    <p id="message"></p>

    <script>
        function validateForm() {
            let name = document.getElementById("name").value;
            if (name === "") {
                document.getElementById("message").textContent =
"Name is required!";
            } else {
                document.getElementById("message").textContent =
"Form Submitted!";
            }
        }
    </script>
</body>
</html>
```

What Happens: The form checks if the input is empty and displays a message.

4. Asynchronous Programming (Promises and Async/Await)

For tasks like fetching data from servers, JavaScript uses asynchronous programming.

Example: Fetch API

```
fetch("https://jsonplaceholder.typicode.com/posts/1")
    .then(response => response.json())
    .then(data => console.log(data))
    .catch(error => console.error("Error:", error));
```

3. Projects to Practice JavaScript

Beginner Projects

1. Counter App

Features:

- Increment, decrement, and reset a number.

```
<!DOCTYPE html>
<html>
<head>
    <title>Counter App</title>
</head>
<body>
    <h1>Counter: <span id="counter">0</span></h1>
    <button onclick="increment()">Increment</button>
    <button onclick="decrement()">Decrement</button>
    <button onclick="reset()">Reset</button>

    <script>
        let count = 0;

        function increment() {
            count++;
            document.getElementById("counter").textContent = count;
        }

        function decrement() {
            count--;
            document.getElementById("counter").textContent = count;
        }

        function reset() {
            count = 0;
            document.getElementById("counter").textContent = count;
        }
    </script>
</body>
</html>
```

2. Todo List

Features:

- Add, mark, and remove tasks.

```
<!DOCTYPE html>
<html>
<head>
    <title>Todo List</title>
</head>
<body>
    <h1>Todo List</h1>
    <input type="text" id="taskInput" placeholder="Enter a task" />
    <button onclick="addTask()">Add Task</button>
    <ul id="taskList"></ul>

    <script>
        function addTask() {
            const taskInput = document.getElementById("taskInput");
            const taskList = document.getElementById("taskList");

            if (taskInput.value === "") {
                alert("Task cannot be empty!");
                return;
            }

            const li = document.createElement("li");
            li.textContent = taskInput.value;

            li.addEventListener("click", function() {
                li.style.textDecoration = li.style.textDecoration === "line-through" ?
"none" : "line-through";
            });

            li.addEventListener("dblclick", function() {
                taskList.removeChild(li);
            });

            taskList.appendChild(li);
            taskInput.value = "";
        }
    </script>
</body>
</html>
```

3. Random Quote Generator

Features:

- Displays a random quote from a predefined set.

```
<!DOCTYPE html>
<html>
<head>
    <title>Random Quote Generator</title>
</head>
<body>
    <h1>Random Quote</h1>
    <p id="quote">Click the button to see a quote!</p>
    <button onclick="generateQuote()">New Quote</button>

    <script>
        const quotes = [
            "The only way to do great work is to love what you do. - 
Steve Jobs",
            "Success is not how high you have climbed, but how you 
make a positive difference. - Roy T. Bennett",
            "Life is what happens when you're busy making other 
plans. - John Lennon",
            "Do not watch the clock. Do what it does. Keep going. - 
Sam Levenson",
            "Believe you can and you're halfway there. - Theodore 
Roosevelt"
        ];

        function generateQuote() {
            const randomIndex = Math.floor(Math.random() * 
quotes.length);
            document.getElementById("quote").textContent = 
quotes[randomIndex];
        }
    </script>
</body>
</html>
```

4. Color Picker

Features:

- Allows users to pick and preview a color.

```
<!DOCTYPE html>
<html>
<head>
    <title>Color Picker</title>
</head>
<body>
    <h1>Color Picker</h1>
    <input type="color" id="colorInput" />
    <button onclick="changeColor()">Set Background Color</button>

    <script>
        function changeColor() {
            const color = document.getElementById("colorInput").value;
            document.body.style.backgroundColor = color;
        }
    </script>
</body>
</html>
```

5. Digital Clock

Features:

- Displays and updates the current time every second.

```
<!DOCTYPE html>
<html>
<head>
    <title>Digital Clock</title>
</head>
<body>
    <h1 id="clock">00:00:00</h1>

    <script>
        function updateClock() {
            const now = new Date();
            const hours = String(now.getHours()).padStart(2, "0");
            const minutes = String(now.getMinutes()).padStart(2,
"0");
            const seconds = String(now.getSeconds()).padStart(2,
"0");
            document.getElementById("clock").textContent =
`${hours}:${minutes}:${seconds}`;
        }

        setInterval(updateClock, 1000);
        updateClock(); // Initial call to avoid 1-second delay
    </script>
</body>
</html>
```

Hassan Mazhar

Intermediate Projects Overview

1. **Quiz App**
   An interactive quiz that evaluates user answers.
2. **Weather App**
   Fetch real-time weather data using an API.
3. **Image Carousel**
   A sliding image gallery controlled by buttons.
4. **Currency Converter**
   Converts between currencies using a public API.
5. **Expense Tracker**
   Track daily expenses and display totals.

visit my github profile to see & use these projects and stay tunned for the updation in this repository. As I will make advanced projects!!