

Day 3 – JavaScript Basics and DOM Manipulation

Date: 25-10-2025

Objective: Learn the fundamentals of JavaScript — variables, data types, functions, and how to manipulate web page elements dynamically. Understand how to handle user events and connect with REST APIs using the Fetch API.

1. INTRODUCTION TO JAVASCRIPT

JavaScript (JS) is a scripting language used to make web pages interactive and dynamic.

It runs inside the browser and can:

- Manipulate HTML elements
- Respond to user actions (clicks, typing, scrolling)
- Communicate with web servers using APIs

Adding JavaScript to a Web Page:

1. **Internal Script:**
2. `<script>`
3. `console.log("Hello JavaScript");`
4. `</script>`
5. **External File:**
6. `<script src="script.js"></script>`

2. VARIABLES AND DATA TYPES

Variables store data values.

You can declare variables using:

```
var name = "Udaya"; // old method
```

```
let age = 23; // block-scoped
```

```
const company = "Dhruv"; // constant value
```

JavaScript Data Types:

1. **String** – "Hello"
2. **Number** – 100, 10.5
3. **Boolean** – true or false
4. **Array** – [1, 2, 3]
5. **Object** – { name: "Udaya", age: 23 }
6. **Null / Undefined**

Example:

```
let student = {  
  name: "Udaya",  
  course: ".NET",  
  marks: 90  
};  
  
console.log(student.name);
```

3. OPERATORS AND CONDITIONAL STATEMENTS

Arithmetic Operators: +, -, *, /, %

Comparison: ==, ===, !=, <, >, <=, >=

Logical: &&, ||, !

If-Else Example:

```
let marks = 85;  
  
if (marks >= 90) {  
  console.log("Excellent");  
} else if (marks >= 75) {  
  console.log("Good");  
} else {  
  console.log("Needs Improvement");  
}
```

Switch Example:

```
let course = "Java";  
  
switch (course) {  
  case "Java":  
    console.log("You selected Java.");  
    break;  
  case ".NET":  
    console.log("You selected .NET.");  
    break;
```

default:

```
    console.log("Invalid choice.");  
}
```

4. LOOPS

Used to execute code repeatedly.

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

```
let courses = ["Java", ".NET", "Python"];  
for (let c of courses) {  
    console.log(c);  
}
```

5. FUNCTIONS

Functions are reusable blocks of code.

Function Declaration:

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

Arrow Function:

```
const add = (a, b) => a + b;  
  
console.log(add(5, 3));
```

6. ARRAYS AND OBJECTS

Array Example:

```
let students = ["Udaya", "Rahul", "Arun"];
```

```
students.push("Ravi");  
console.log(students[0]); // First item
```

Object Example:

```
let student = {  
  name: "Udaya",  
  course: ".NET",  
  score: 90  
};  
console.log(student.course);
```

7. DOM (DOCUMENT OBJECT MODEL) MANIPULATION

The DOM is a tree-like structure representing all elements in an HTML page. JavaScript can access and change them dynamically.

Selecting Elements:

```
let heading = document.getElementById("title");  
heading.innerText = "Welcome to JavaScript!";
```

Changing Styles:

```
document.getElementById("title").style.color = "blue";
```

Creating Elements:

```
let newPara = document.createElement("p");  
newPara.textContent = "This paragraph was created dynamically.";  
document.body.appendChild(newPara);
```

8. EVENT HANDLING

Events are actions performed by users — like clicking, typing, or submitting a form.

HTML Example:

```
<button onclick="showMessage()">Click Me</button>
```

JavaScript Function:

```
function showMessage() {  
  alert("Button clicked!");
```

```
}
```

Using Event Listener (Recommended):

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

9. FETCH API (CALLING REST ENDPOINTS)

Fetch API is used to communicate with backend servers (e.g., ASP.NET Core APIs). It helps retrieve or send data asynchronously.

GET Request Example:

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

POST Request Example:

```
fetch("https://jsonplaceholder.typicode.com/posts", {  
    method: "POST",  
    headers: { "Content-Type": "application/json" },  
    body: JSON.stringify({  
        title: "New Post",  
        body: "This is a demo post.",  
        userId: 1  
    })  
})  
  
    .then(res => res.json())  
    .then(data => console.log("Created:", data))  
    .catch(err => console.log(err));
```

10. BEST PRACTICES

- Use const and let instead of var

- Write modular, reusable functions
- Handle errors with try...catch
- Avoid global variables
- Use === for strict comparisons
- Comment code for clarity

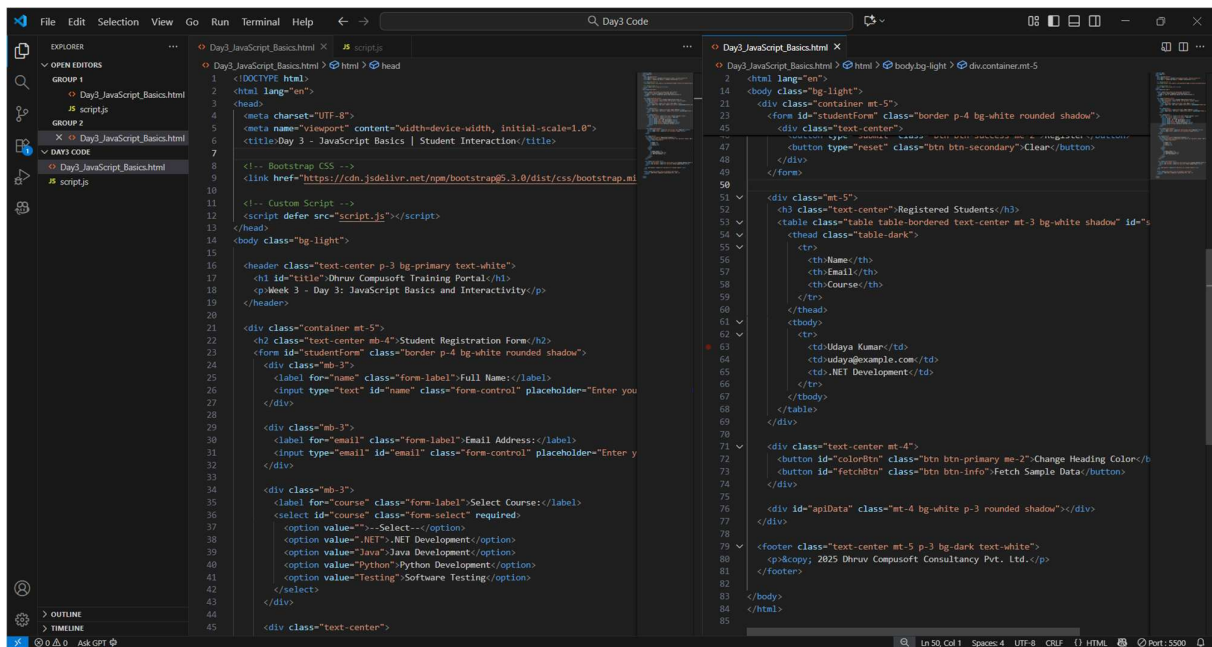
Mini Practice Task (Day 3)

Objective: Add JavaScript to your Day 2 project to make it interactive.

Tasks:

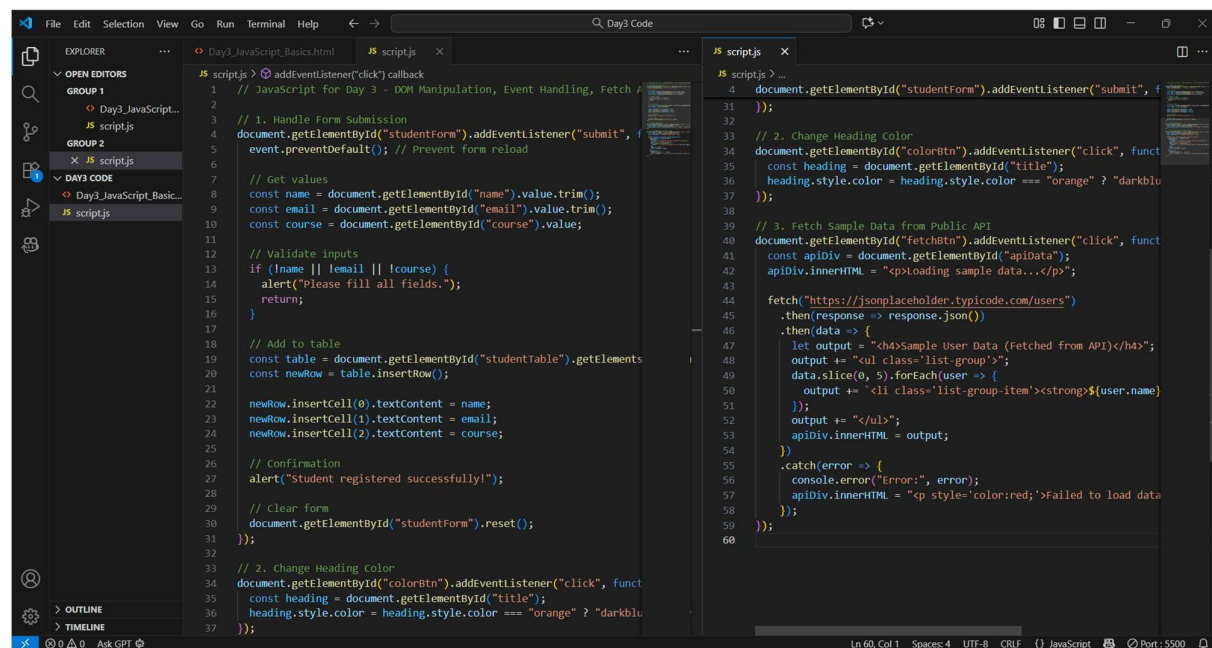
1. When the user submits the form, show a confirmation alert.
2. Display entered student details in the table dynamically.
3. Change heading color using a button click event.
4. Fetch mock student data using a public API.

Snapshots:



```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <meta charset="UTF-8">
5 <meta name="viewport" content="width=device-width, initial-scale=1.0">
6 <title>Day 3 - JavaScript Basics | Student Interaction</title>
7
8 <!-- Bootstrap CSS -->
9 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">
10
11 <!-- Custom Script -->
12 <script defer src="script.js"></script>
13 </head>
14 <body class="bg-light">
15
16 <div class="text-center p-3 bg-primary text-white">
17 <h1 id="title">Ohruv Compusoft Training Portal</h1>
18 <p>Week 3 - Day 3: JavaScript Basics and Interactivity</p>
19 </div>
20
21 <div class="container mt-5">
22 <div class="text-center mb-4">Student Registration Form</div>
23 <form id="studentForm" class="border p-4 bg-white rounded shadow">
24 <div class="mb-3">
25 <label for="name" class="form-label">Full Name</label>
26 <input type="text" id="name" class="form-control" placeholder="Enter your name">
27 </div>
28
29 <div class="mb-3">
30 <label for="email" class="form-label">Email Address</label>
31 <input type="email" id="email" class="form-control" placeholder="Enter your email">
32 </div>
33
34 <div class="mb-3">
35 <label for="course" class="form-label">Select Course</label>
36 <select id="course" class="form-select" required>
37 <option value="">--Select--</option>
38 <option value=".NET">.NET Development</option>
39 <option value="Java">Java Development</option>
40 <option value="Python">Python Development</option>
41 <option value="Testing">Software Testing</option>
42 </select>
43 </div>
44
45 <div class="text-center">
```

Code : Day3_JavaScript_Basics.html



```
1 // JavaScript for Day 3 - DOM Manipulation, Event Handling, Fetch API
2
3 // 1. Handle Form Submission
4 document.getElementById("studentForm").addEventListener("submit", function(e) {
5     e.preventDefault(); // Prevent form reload
6
7     // Get values
8     const name = document.getElementById("name").value.trim();
9     const email = document.getElementById("email").value.trim();
10    const course = document.getElementById("course").value;
11
12    // Validate inputs
13    if (!name || !email || !course) {
14        alert("Please fill all fields.");
15        return;
16    }
17
18    // Add to table
19    const table = document.getElementById("studentTable").getElementsByTagName("tbody")[0];
20    const newRow = table.insertRow();
21
22    newRow.insertCell(0).textContent = name;
23    newRow.insertCell(1).textContent = email;
24    newRow.insertCell(2).textContent = course;
25
26    // Confirmation
27    alert("Student registered successfully!");
28
29    // Clear form
30    document.getElementById("studentForm").reset();
31 });
32
33 // 2. Change Heading Color
34 document.getElementById("colorBtn").addEventListener("click", function() {
35     const heading = document.getElementById("title");
36     heading.style.color = heading.style.color === "orange" ? "darkblue" : "orange";
37 });
38
39 // 3. Fetch Sample Data from Public API
40 document.getElementById("fetchBtn").addEventListener("click", function() {
41     const apiDiv = document.getElementById("apiData");
42     apiDiv.innerHTML = "<p>Loading sample data...</p>";
43
44     fetch("https://jsonplaceholder.typicode.com/users")
45     .then(response => response.json())
46     .then(data => {
47         let output = "<h4>Sample User Data (Fetched from API)</h4>";
48         output += "<ul class='list-group'>";
49         data.slice(0, 5).forEach(user => {
50             output += "<li class='list-group-item'><strong>${user.name}</strong>";
51         });
52         output += "</ul>";
53         apiDiv.innerHTML = output;
54     })
55     .catch(error => {
56         console.error("Error:", error);
57         apiDiv.innerHTML = "<p style='color:red'>Failed to load data</p>";
58     });
59 });
60
```

Code : script.js

Dhruv Compusoft Training Portal
Week 3 - Day 3: JavaScript Basics and Interactivity

Dhruv Compusoft Training Portal
Week 3 - Day 3: JavaScript Basics and Interactivity

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Student Registration Form

Full Name:

Email Address:

Select Course:

--Select--

Register

Clear

Registered Students

Name	Email	Course
Udaya Kumar	udaya@example.com	.NET Development
Udaya Kumar Shetty	udayshetty465@gmail.com	.NET

Change Heading Color

Fetch Sample Data

Sample User Data (Fetched from API)

Leanne Graham — Sincere@april.biz

Ervin Howell — Shanna@melissa.tv

Clementine Bauch — Nathan@yesenia.net

Patricia Lebsack — Julianne.OConner@kory.org

Chelsey Dietrich — Lucio_Hettinger@annie.ca

Output: Day3_JavaScript_Basics.html **and** script.js

```

Pretty-print [ ]
[
  {
    "id": 1,
    "name": "Leanne Graham",
    "username": "Bret",
    "email": "Sincere@april.biz",
    "address": {
      "street": "Kulas Light",
      "suite": "Apt. 556",
      "city": "Gwenborough",
      "zipcode": "92998-3874",
      "geo": {
        "lat": "-37.3159",
        "lng": "81.1496"
      }
    },
    "phone": "1-770-736-8031 x56442",
    "website": "hildegard.org",
    "company": {
      "name": "Romaguera-Crona",
      "catchPhrase": "Multi-layered client-server neural-net",
      "bs": "harness real-time e-markets"
    }
  }
]

```

JSON Data of Sample Users