

Lab Report – BIM 3rd Semester – Web Technology I

Demonstrate Internal, Inline and External Javascript.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>JavaScript Types in One File</title>

<script>

    function showInternalMessage() {

        alert("Internal JavaScript Demonstrated");

    }

    function showExternalMessage() {

        alert("External JavaScript Demonstrated");

    }

</script>

</head>

<body>

<h2>JavaScript Demonstration</h2>

// Inline JavaScript

<button onclick="alert('Inline JavaScript Demonstrated')">Inline JavaScript

</button>

<br><br>

// Internal JavaScript

<button onclick="showInternalMessage()">Internal JavaScript

</button>

<br><br>

// External JavaScript

<button onclick="showExternalMessage()">External JavaScript

</button>

</body>

</html>
```

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Demonstrate different methods of document object.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>Document Methods (Easy)</title>

<script>

    function changeById() {

        document.getElementById("idText").innerHTML = "Changed by ID!";

    }

    function changeByClass() {

        document.getElementsByClassName("classText")[0].innerHTML = "Changed by Class!";

    }

    function changeByTag() {

        document.getElementsByTagName("p")[2].innerHTML = "Changed by Tag!";

    }

    function useWrite() {

        document.write("This is from document.write()");

    }

</script>

</head>

<body>

<p id="idText">This is ID text</p>

<p class="classText">This is Class text</p>

<p>This is Tag text</p>

<button onclick="changeById()">By ID</button>

<button onclick="changeByClass()">By Class</button>

<button onclick="changeByTag()">By Tag</button>

<button onclick="useWrite()">document.write()</button>

</body>

</html>
```

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Create a program that declares variables of different data types and displays their values and types.

Source Code:

```
<!DOCTYPE html>

<html>
<head>
  <title>Data Types</title>
  <script>
    function showData() {
      let name = "John";    // String
      let age = 20;         // Number
      let isStudent = true; // Boolean
      document.getElementById("output").innerHTML =
        "Name: " + name + " (Type: " + typeof name + ")<br>" +
        "Age: " + age + " (Type: " + typeof age + ")<br>" +
        "Is Student: " + isStudent + " (Type: " + typeof isStudent + ")";
    }
  </script>
</head>
<body>
  <h2>Data Types in JavaScript</h2>
  <button onclick="showData()">Show</button>
  <p id="output"></p>
</body>
</html>
```

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Write a program that takes two numbers and performs all arithmetic operations (add, subtract, multiply, divide).

Source Code:

```
<!DOCTYPE html>

<html>

<head>

  <title>Arithmetic Operations</title>

  <script>

    function calculate() {

      // Get values from input fields

      let num1 = parseFloat(document.getElementById("number1").value);

      let num2 = parseFloat(document.getElementById("number2").value);

      // Perform operations

      let add = num1 + num2;

      let subtract = num1 - num2;

      let multiply = num1 * num2;

      let divide = num2 !== 0 ? (num1 / num2) : "Cannot divide by 0";

      // Display results

      document.getElementById("result").innerHTML =

        "Addition: " + add + "<br>" +

        "Subtraction: " + subtract + "<br>" +

        "Multiplication: " + multiply + "<br>" +

        "Division: " + divide;

    }

  </script>

</head>

<body>

  <h2>Arithmetic Operations</h2>

  <label>Enter first number:</label>

  <input type="number" id="number1"><br><br>

  <label>Enter second number:</label>
```

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```
<input type="number" id="number2"><br><br>
<button onclick="calculate()">Calculate</button>
<p id="result"></p>
</body>
</html>
```

Create a script to check if a number is even or odd using if-else.

Source Code:

```
<!DOCTYPE html>
<html>
<head>
<title>Even or Odd Checker</title>
<script>
function checkEvenOdd() {
    let num = parseInt(document.getElementById("number").value);
    if (num % 2 === 0) {
        document.getElementById("result").innerHTML = num + " is Even";
    } else {
        document.getElementById("result").innerHTML = num + " is Odd";
    }
}
</script>
</head>
<body>
<h2>Even or Odd Checker</h2>
<label>Enter a number:</label>
<input type="number" id="number">
<button onclick="checkEvenOdd()">Check</button>
<p id="result"></p>
</body>
</html>
```

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Write a program using switch to create a basic calculator.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>Switch Calculator</title>

<script>

function calculate() {

    let num1 = parseFloat(document.getElementById("num1").value);

    let num2 = parseFloat(document.getElementById("num2").value);

    let operator = document.getElementById("operator").value;

    let result;

    switch (operator) {

        case "+":

            result = num1 + num2;

            break;

        case "-":

            result = num1 - num2;

            break;

        case "*":

            result = num1 * num2;

            break;

        case "/":

            result = num2 !== 0 ? (num1 / num2) : "Cannot divide by 0";

            break;

        default:

            result = "Invalid operator";

    }

    document.getElementById("output").innerHTML = "Result: " + result;

}

</script>
```

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```
</head>

<body>

  <h2>Basic Calculator (Switch Statement)</h2>

  <label>First Number:</label>

  <input type="number" id="num1"><br><br>

  <label>Operator (+, -, *, /):</label>

  <input type="text" id="operator"><br><br>

  <label>Second Number:</label>

  <input type="number" id="num2"><br><br>

  <button onclick="calculate()">Calculate</button>

  <p id="output"></p>

</body>

</html>
```

Use a for loop to print numbers 1 to 10. Do the same with while and do...while.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

  <title>Loops Example</title>

  <script>

    function printWithFor() {

      let result = "";

      for (let i = 1; i <= 10; i++) {

        result += i + " ";

      }

      document.getElementById("forResult").innerHTML = result;

    }

    function printWithWhile() {

      let i = 1;

      let result = "";

      while (i <= 10) {
```

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```
    result += i + " ";
    i++;
}
document.getElementById("whileResult").innerHTML = result;
}
function printWithDoWhile() {
    let i = 1;
    let result = "";
    do {
        result += i + " ";
        i++;
    } while (i <= 10);
    document.getElementById("doWhileResult").innerHTML = result;
}
</script>
</head>
<body>
    <h2>Print Numbers 1 to 10 Using Different Loops</h2>
    <button onclick="printWithFor()">For Loop</button>
    <p id="forResult"></p>
    <button onclick="printWithWhile()">While Loop</button>
    <p id="whileResult"></p>
    <button onclick="printWithDoWhile()">Do...While Loop</button>
    <p id="doWhileResult"></p>
</body>
</html>
```

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Write a function that takes a name as an argument and displays a greeting.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

  <title>Greeting Function</title>

  <script>

    function greet(name) {

      alert("Namaste, " + name);

    }

  </script>

</head>

<body>

  <label>Enter your name:</label>

  <input type="text" id="nameInput">

  <button onclick="greet(document.getElementById('nameInput').value)">Greet</button>

</body>

</html>
```

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Create a function to calculate the factorial of a number.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>Factorial Calculator</title>

<script>

function calculateFactorial() {

    let number = parseInt(document.getElementById("numberInput").value);

    let result = 1;

    if (number < 0) {

        document.getElementById("result").innerHTML = "Please enter a positive number.";

        return;

    }

    for (let i = 1; i <= number; i++) {

        result *= i;

    }

    document.getElementById("result").innerHTML = "Factorial of " + number + " is: " + result;

}

</script>

</head>

<body>

<h2>Factorial Calculator</h2>

<label>Enter a number:</label>

<input type="number" id="numberInput">

<button onclick="calculateFactorial()">Calculate Factorial</button>

<p id="result"></p>

</body>

</html>
```

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Declare an array of student names. Display them using a loop.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>Student Names</title>

<script>

function displayStudentNames() {

    let students = ["Ashesh", "Bishow", "Sanyam", "Nikesh", "Nishant"];

    let output = "<b>Student Names:</b><br>";

    for (let i = 0; i < students.length; i++) {

        output += students[i] + "<br>";

    }

    document.getElementById("result").innerHTML = output;

}

</script>

</head>

<body>

<button onclick="displayStudentNames()">Show Student Names</button>

<p id="result"></p>

</body>

</html>
```

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Write a program to concatenate two arrays.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>Array Concatenation</title>

<script>

function concatenateArrays() {

    // Declare two arrays

    let array1 = ["Ashesh", "Bishow", "Sanyam"];

    let array2 = ["Nikesh", "Nishant", "Parbat"];

    // Concatenate the arrays

    let combinedArray = array1.concat(array2);

    // Display the combined array

    document.getElementById("result").innerHTML = "Combined Array: " + combinedArray.join(", ");

}

</script>

</head>

<body>

<h2>Concatenate Two Arrays</h2>

<button onclick="concatenateArrays()">Concatenate</button>

<p id="result"></p>

</body>

</html>
```

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Use join() to convert an array into a string using the default separator.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>Array to String</title>

<script>

function convertArrayToString() {

    // Declare an array of student names

    let students = ["Ashesh", "Bishow", "Sanyam", "Nikesh", "Nishant"];

    // Use join() to convert the array to a string with the default separator (comma)

    let result = students.join();

    // Display the result

    document.getElementById("result").innerHTML = "Array as String: " + result;

}

</script>

</head>

<body>

<button onclick="convertArrayToString()">Convert</button>

<p id="result"></p>

</body>

</html>
```

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Reverse an array and access the first element after reversal.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

  <title>Reverse Array</title>

  <script>

    function reverseArray() {

      // Declare an array

      let numbers = [10, 20, 30, 40, 50];

      // Reverse the array

      let reversedArray = numbers.reverse();

      // Access the first element after reversing

      let firstElement = reversedArray[0];

      // Display the reversed array and the first element

      document.getElementById("result").innerHTML = "Reversed Array: " + reversedArray.join(", ") + "<br>First element after reversal: " + firstElement;

    }

  </script>

</head>

<body>

  <h2>Reverse an Array and Access the First Element</h2>

  <button onclick="reverseArray()">Reverse Array</button>

  <p id="result"></p>

</body>

</html>
```

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Slice a specific range of elements and store them in a new array.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>Slice Array</title>

<script>

function sliceArray() {

    // Original array

    let name = ["Nikesh", "Bishow", "Sanyam", "Ashesh", "Nishant", "Parbat"];

    // Slice elements from index 1 to 4 (4 not included)

    let slicedName = name.slice(1, 4);

    // Display the new sliced array

    document.getElementById("result").innerHTML =

        "Original Array: " + name.join(", ") + "<br>" +

        "Sliced Array (index 1 to 3): " + slicedName.join(", ");

}

</script>

</head>

<body>

<button onclick="sliceArray()">Slice Array</button>

<p id="result"></p>

</body>

</html>
```

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Filter an array to display only items that match a user-entered keyword.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

<title>Filter Array</title>

<script>

function filterArray() {

    // Sample array

    let items = ["apple", "banana", "grape", "orange", "pineapple", "mango"];

    // Get keyword entered by user

    let keyword = document.getElementById("keywordInput").value.toLowerCase();

    // Filter items that include the keyword

    let filteredItems = items.filter(function(item) {

        return item.includes(keyword);

    });

    // Display the filtered array

    document.getElementById("result").innerHTML =

        "Filtered Items: " + (filteredItems.length > 0 ? filteredItems.join(", ") : "No match found");

}

</script>

</head>

<body>

<label>Enter keyword:</label>

<input type="text" id="keywordInput">

<button onclick="filterArray()">Filter</button>

<p id="result"></p>

</body>

</html>
```

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Demonstrate global vs local variables with two functions accessing a variable of the same name.

Source Code:

```
<!DOCTYPE html>
<html>
<head>
  <title>Global vs Local Variables</title>
  <script>
    // Global variable
    let message = "Hello from Global!";
    function showGlobalMessage() {
      // Accessing global variable
      document.getElementById("globalResult").innerHTML = "Global Function: " + message;
    }
    function showLocalMessage() {
      // Local variable with the same name
      let message = "Hello from Local!";
      document.getElementById("localResult").innerHTML = "Local Function: " + message;
    }
  </script>
</head>
<body>
  <button onclick="showGlobalMessage()">Show Global Variable</button><br>
  <p id="globalResult"></p>
  <button onclick="showLocalMessage()">Show Local Variable</button><br>
  <p id="localResult"></p>
</body>
</html>
```

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Write a program to show how default parameters work in functions.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

  <title>Default Parameters</title>

  <script>

    function greet(name = "Guest") {

      document.getElementById("result").innerHTML = "Hello, " + name + "!";

    }

  </script>

</head>

<body>

  <button onclick="greet('Ashesh')">Greet Ashesh</button>

  <button onclick="greet()">Greet without Name</button>

  <p id="result"></p>

</body>

</html>
```

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Design a registration form that includes all major form elements listed below.

- Use JavaScript to validate the inputs before submission.
- Text field (Full Name) – Required, only alphabets allowed
- Password & Confirm Password – Password must be strong; both must match
- Text field (Age) – Must be a number between 18 and 60
- Radio buttons (Gender) – One option must be selected
- Checkbox (Accept Terms & Conditions) – Must be checked
- Select dropdown (Country) – Must choose a non-default value
- Textarea (Address) – Required, minimum character limit
- File Upload (Profile Picture) – Required, only images allowed (jpg/png)
- Phone number – Required, 10 digits
- Reset and Submit buttons – Use proper event handling

Source Code:

```
<!DOCTYPE html>

<html>

<head>

  <title>Registration Form</title>

</head>

<body>

  <h2>Registration Form</h2>

  <form id="myForm" onsubmit="return validateForm()">

    Full Name: <input type="text" id="fullName"><br><br>

    Password: <input type="password" id="password"><br><br>

    Confirm Password: <input type="password" id="confirmPassword"><br><br>

    Age: <input type="number" id="age"><br><br>

    Gender:

    <input type="radio" name="gender" value="Male">Male

    <input type="radio" name="gender" value="Female">Female<br><br>

    Country:

    <select id="country">

      <option value="">--Select--</option>

      <option value="Nepal">Nepal</option>

      <option value="India">India</option>

    </select><br><br>
```

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Address:


```
<textarea id="address" rows="4" cols="30"></textarea><br><br>
```

Profile Picture:

```
<input type="file" id="profilePic" accept="image/png, image/jpeg"><br><br>
```

Phone Number: <input type="text" id="phone">


```
<input type="checkbox" id="terms"> I accept the Terms & Conditions<br><br>
```

```
<input type="submit" value="Submit">
```

```
<input type="reset" value="Reset">
```

```
</form>
```

```
<script>
```

```
function validateForm() {  
    let name = document.getElementById("fullName").value;  
    let password = document.getElementById("password").value;  
    let confirmPassword = document.getElementById("confirmPassword").value;  
    let age = document.getElementById("age").value;  
    let gender = document.querySelector('input[name="gender"]:checked');  
    let country = document.getElementById("country").value;  
    let address = document.getElementById("address").value;  
    let file = document.getElementById("profilePic").value;  
    let phone = document.getElementById("phone").value;  
    let terms = document.getElementById("terms").checked;
```

```
// Full name (only letters)
```

```
if (name === "" || !/^[A-Za-z ]+$/ .test(name)) {  
    alert("Please enter a valid full name (only letters).");  
    return false;  
}
```

```
// Password check
```

```
if (password.length < 6) {  
    alert("Password must be at least 6 characters.");  
    return false;  
}  
  
if (password !== confirmPassword) {
```

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```
    alert("Passwords do not match.");

    return false;

}

// Age check
if (age < 18 || age > 60) {
    alert("Age must be between 18 and 60.");
    return false;
}

// Gender
if (!gender) {
    alert("Please select a gender.");
    return false;
}

// Country
if (country === "") {
    alert("Please select a country.");
    return false;
}

// Address
if (address.length < 10) {
    alert("Address must be at least 10 characters.");
    return false;
}

// File check
if (file === "") {
    alert("Please upload a profile picture.");
    return false;
}

// Phone number
if (!/^d{10}$/.test(phone)) {
    alert("Phone number must be 10 digits.");
    return false;
}
```

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```
}  
  
// Terms check  
if (!terms) {  
    alert("You must accept the terms and conditions.");  
    return false;  
}  
alert("Form submitted successfully!");  
return true;  
}  
  
</script>  
</body>  
</html>
```

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Design a user creation form with three elements(username, password, confirm password). Create a submit button to create the user. Perform all the required validations.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

  <title>User Creation Form</title>

</head>

<body>

  <form onsubmit="return validateUserForm()">

    Username: <input type="text" id="username"><br><br>

    Password: <input type="password" id="password"><br><br>

    Confirm Password: <input type="password" id="confirmPassword"><br><br>

    <input type="submit" value="Create User">

  </form>

  <script>

    function validateUserForm() {

      let username = document.getElementById("username").value;

      let password = document.getElementById("password").value;

      let confirmPassword = document.getElementById("confirmPassword").value;

      // Username required

      if (username === "") {

        alert("Please enter a username.");

        return false;

      }

      // Password required and strong

      if (password.length < 6) {

        alert("Password must be at least 6 characters long.");

        return false;

      }

      // Passwords must match
```

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```
if (password !== confirmPassword) {  
    alert("Passwords do not match.");  
    return false;  
}  
  
// Success message  
alert("User created successfully!");  
return true;  
}  
</script>  
</body>  
</html>
```

Demonstrate console.log, alert, confirm and prompt functions.

Source Code:

```
<!DOCTYPE html>  
<html>  
<head>  
    <title>JS Demo</title>  
</head>  
<body>  
    <h2>JavaScript Functions Demo</h2>  
    <button onclick="runDemo()">Click to Run Demo</button>  
    <script>  
        function runDemo() {  
            // 1. console.log – for developers (seen in browser console)  
            console.log("This is a message in the console!");  
            // 2. alert – shows a popup message to the user  
            alert("Hello! This is an alert box.");  
            // 3. confirm – asks user to confirm (OK/Cancel), returns true or false  
            let isSure = confirm("Do you want to continue?");  
            if (isSure) {  
                alert("You clicked OK!");  
            }  
        }  
    </script>  
</body>  
</html>
```

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```
} else {  
    alert("You clicked Cancel!");  
}  
  
// 4. prompt – asks for input, returns the value or null if canceled  
  
let name = prompt("What is your name?");  
  
if (name) {  
    alert("Hello, " + name + "!");  
    console.log("User's name is: " + name);  
} else {  
    alert("You didn't enter your name.");  
}  
}  
  
</script>  
</body>  
</html>
```

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Demonstrate error handling in Javascript.

Source Code:

```
<!DOCTYPE html>

<html>

<head>

  <title>Error Handling Demo</title>

</head>

<body>

  <h2>JavaScript Error Handling</h2>

  <button onclick="runErrorDemo()">Run Error Demo</button>

  <script>

    function runErrorDemo() {

      try {

        let age = prompt("Enter your age:");

        if (!age) {

          throw "Age is required!";

        }

        if (isNaN(age)) {

          throw "Age must be a number!";

        }

        if (age < 18) {

          throw "You must be at least 18 years old.";

        }

        alert("Access granted!");

      } catch (error) {

        // Handle the error

        alert("Error: " + error);

        console.error("Caught error:", error);

      } finally {

        // This always runs

        console.log("Validation attempt completed.");

      }

    }

  </script>

</body>

</html>
```

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```
}  
}  
  
</script>  
  
</body>  
  
</html>
```

Demonstrate custom error handling in Javascript.

Source Code:

```
<!DOCTYPE html>  
  
<html>  
  
<head>  
  <title>Custom Error Handling</title>  
</head>  
  
<body>  
  <h2>Custom Error Handling in JavaScript</h2>  
  <button onclick="checkUsername()">Check Username</button>  
  <script>  
    function checkUsername() {  
      try {  
        let username = prompt("Enter a username:");  
        // Custom rule: username must be at least 5 characters  
        if (!username) {  
          throw new Error("Username cannot be empty.");  
        }  
        if (username.length < 5) {  
          throw new Error("Username must be at least 5 characters long.");  
        }  
        alert("Username is valid!");  
      } catch (err) {  
        // Catch and display custom error  
        alert("Custom Error: " + err.message);  
        console.error("Custom Error Details:", err);  
      }  
    }  
  }  
</script>  
</body>  
</html>
```

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```
} finally {  
    console.log("Username validation finished.");  
}  
}  
  
</script>  
</body>  
</html>
```

Write a program to demonstrate set, get and delete cookie.

Source Code:

```
<!DOCTYPE html>  
<html>  
<head>  
    <title>Cookie Demo</title>  
</head>  
<body>  
    <h2>JavaScript Cookie Example</h2>  
    <button onclick="setCookie()">Set Cookie</button>  
    <button onclick="getCookie()">Get Cookie</button>  
    <button onclick="deleteCookie()">Delete Cookie</button>  
    <p id="output"></p>  
    <script>  
        // Set a cookie  
        function setCookie() {  
            document.cookie = "username=AsheshNeupane; path=/; max-age=3600";  
            document.getElementById("output").innerText = "Cookie has been set.";  
        }  
        // Get a cookie  
        function getCookie() {  
            let allCookies = document.cookie;  
            let username = "";  
            // Parse cookies
```

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```
allCookies.split(';').forEach(cookie => {  
    let [key, value] = cookie.trim().split('=');  
    if (key === "username") {  
        username = value;  
    }  
});  
if (username) {  
    document.getElementById("output").innerText = "Cookie value: " + username;  
} else {  
    document.getElementById("output").innerText = "Cookie not found.";  
}  
}  
  
// Delete a cookie  
function deleteCookie() {  
    document.cookie = "username=; expires=Thu, 01 Jan 2026 00:00:00 UTC; path=/";  
    document.getElementById("output").innerText = "Cookie has been deleted.";  
}  
  
</script>  
</body>  
</html>
```

