Assignment -JavaScript

- JavaScript Introduction

  • Task:

  • Create a simple HTML page and add a <script> tag within the page.

  • Write JavaScript code to display an alert box with the message "Welcome to JavaScript!" when the page loads.

  Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   alert("Welcome to javascript");
  </script>
 </body>
</html>
```

- Variables and Data Types

  Task:

  • Write a JavaScript program to declare variables for different data types (string, number, boolean, null, and undefined).

• Log the values of the variables and their types to the console using console.log().

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   let str = "Dhruvi";
   let num = 30;
   let bool = true;
   let nullVal = null;
   let udf = undefined;

   console.log(typeof str);
   console.log(typeof num);
   console.log(typeof bool);
   console.log(typeof nullVal);
   console.log(typeof udf);
  </script>
 </body>
</html>
```

- JavaScript Operators

• Task:
• Create a JavaScript program to perform the following:
• Add, subtract, multiply, and divide two numbers using arithmetic operators.
• Use comparison operators to check if two numbers are equal and if one number is greater than the other.
• Use logical operators to check if both conditions (e.g., a > 10 and b < 5) are true.

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   let a = 10;
   let b = 20;

   console.log("Sum of " + a + " + " + b + " = " + (a + b));
   console.log("Subtract of " + a + " - " + b + " = " + (a - b));
   console.log("Multiplication of " + a + " * " + b + " = " + a * b);
   console.log("Division of " + a + " / " + b + " = " + a / b);

   if (a < b) {
    console.log("A is greater than B");
   } else if (a < b) {
    console.log("A is less than B");
   } else {
    console.log("A is equal to B");
   }

   if (a > 10 && b < 5) {
    console.log("True");
   } else {
```

```
    console.log("False");
   }
  </script>
 </body>
</html>
```

• Control Flow (If-Else, Switch)

• Task 1:

• Write a JavaScript program to check if a number is positive, negative, or zero using an if-else statement.

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   let num = 5;

   if (num > 0) {
    console.log(num + " is Positive");
   } else if (num < 0) {
    console.log(num + " is Negative");
   } else {
    console.log(num + " is Zero");
```

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

• Task 2:

• Create a JavaScript program using a switch statement to display the day of the week based on the user input (e.g., 1 for Monday, 2 for Tuesday, etc.).

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   let day = 5;

   switch (day) {
    case 1:
     console.log("Monday");
     break;
    case 2:
     console.log("Tuesday");
     break;
    case 3:
```

```
        console.log("Wednesday");
        break;
      case 4:
        console.log("Thursday");
        break;
      case 5:
        console.log("Friday");
        break;
      case 6:
        console.log("Saturday");
        break;
      case 7:
        console.log("Sunday");
        break;
      default:
        console.log("Invalid");
    }
  </script>
 </body>
</html>
```

• Loops (For, While, Do-While)

Task 1:
• Write a JavaScript program using a for loop to print numbers from 1 to 10.

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
```

```
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   for (let i = 1; i <= 10; i++) {
    console.log(i);
   }
  </script>
 </body>
</html>
```

• Task 2:

• Create a JavaScript program that uses a while loop to sum all even numbers between 1 and 20.

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   let num = 1;

   while (num <= 20) {
    if (num % 2 == 0) {
     console.log(num);
    }
    num++;
   }
  </script>
      </body>
     </html>
```

- Task 3:
  - Write a do-while loop that continues to ask the user for input until they enter a number greater than 10.

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   let num;
   do {
    num = Number(prompt("Enter a number : "));
   } while (num < 10);
  </script>
 </body>
</html>
```

- Functions

- Task 1:
- Write a function greetUser that accepts a user's name as a parameter and displays a greeting message (e.g., "Hello, John!").

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   function greetUser(name) {
    return "Hello, " + name + "!";
   }
```

```
      console.log(greetUser("Dhruvi"));
    </script>
  </body>
</html>
```

• Task 2:

• Create a JavaScript function calculateSum that takes two numbers as parameters, adds them, and returns the result.

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
 </head>
 <body>
  <script>
   function calculateSum(a, b) {
    return "sum : " + (a + b);
   }

   console.log(calculateSum(5, 7));
  </script>
 </body>
</html>
```

• Arrays

• Task 1:

• Declare an array of fruits (["apple", "banana", "cherry"]). Use JavaScript to:

• Add a fruit to the end of the array.

• Remove the first fruit from the array.

• Log the modified array to the console.

Ans:

```
<!DOCTYPE html>
<html lang="en">
```

```
<head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Document</title>
</head>
<body>
  <script>
    let arr = ["apple", "banana", "cherry"];

    arr.push("mango");
    console.log(arr);

    arr.shift();
    console.log(arr);
  </script>
</body>
</html>
```

- Task 2: • Write a program to find the sum of all elements in an array of numbers.

Ans:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Document</title>
  </head>
  <body>
    <script>
      let arr = [1, 2, 3, 4, 5];
      let sum = 0;
      for (let i = 1; i < arr.length; i++) {
        sum = sum + arr[i];
      }

      console.log("Sum : " + sum);
          </script>
```

```
 </body>
</html>
```

• Objects

• Task:
• Create a JavaScript object car with properties brand, model, and year.
Use JavaScript to:
• Access and print the car's brand and model.
• Update the year property.
• Add a new property color to the car object.
Ans:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0"
/>
    <title>Document</title>
  </head>
  <body>
    <script>
      let car = {
        brand: "BMW",
        model: "7 Series",
        year: 2021,
      };

      console.log(car.brand, car.model);

      car.year = 2022;
      console.log(car.year);

      car.color = "Black";
      console.log(car);
    </script>
  </body>
</html>
```

• JavaScript Events

• Task:
• Create a simple webpage with a button that, when clicked, displays an alert saying "Button clicked!" using JavaScript event listeners.

Ans:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0"
/>
    <title>Document</title>
  </head>
  <body>
    <button onclick="callme()">Click</button>
    <button id="btn">Button</button>

    <script>
      let btn = document.getElementById("btn");

      function callme() {
        alert("Button Clicked");
      }

      btn.addEventListener("click", () => alert("Button clicked"));
    </script>
  </body>
</html>
```

• DOM Manipulation

• Task:
• Create an HTML page with a paragraph (<p>) that displays "Hello, World!".
• Use JavaScript to:
• Change the text inside the paragraph to "JavaScript is fun!".
• Change the color of the paragraph to blue.

Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0"
/>
  <title>Document</title>
 </head>
 <body>
  <p id="para">Hello World!</p>

  <script>
   let para = document.getElementById("para");

   para.innerText = "JavaScript is fun!";
   para.style.color = "blue";
  </script>
 </body>
</html>
```

• JavaScript Timing Events (setTimeout, setInterval)

• Task 1:
• Write a program that changes the background color of a webpage after 5 seconds using setTimeout().
Ans:

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0"
/>
  <title>Document</title>
 </head>
 <body>
  <div id="para" style="background: bisque">
   Lorem ipsum dolor sit amet consectetur, adipisicing elit. Architecto quae,
   quo ad odit voluptatibus magnam qui, ducimus aperiam excepturi
dignissimos
```

```
      beatae autem illo. Rem repellendus impedit reprehenderit porro! Porro,
      non!
    </div>
    <script>
      let para = document.getElementById("para");

      setTimeout(() => {
        para.style.background = "gray";
      }, 5000);
    </script>
  </body>
</html>
```

• Task 2: • Create a digital clock that updates every second using setInterval().

Ans:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Document</title>
  </head>
  <body>
    <div id="count"></div>
    <script>
      let count = document.getElementById("count");

      setInterval(() => {
        let now = new Date();
        let hours = now.getHours();
```

```
        let minutes = now.getMinutes();
        let seconds = now.getSeconds();


        count.innerHTML = `${hours} : ${minutes} : ${seconds}`;
      }, 1000);
    </script>
  </body>
</html>
```

• JavaScript Error Handling

• Task:

• Write a JavaScript program that attempts to divide a number by zero. Use try- catch to handle the error and display an appropriate error message.

Ans:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Document</title>
  </head>
  <body>
    <!-- Write a JavaScript program that attempts to divide a number by zero. Use try- catch to handle the error and display an appropriate error message.-->
    <script>
      try {
```

```
      let num = 10,
        div = 0;
      if (div === 0) throw new Error("Division by zero is not allowed!");
      console.log(num / div);
    } catch (err) {
      console.log("Error: " + err.message);
    }
  </script>
 </body>
</html>
```