**Practical 6: JavaScript Hands-on (Loops and Conditions)**

**Aim:** To demonstrate use of Loops and Conditions in Javascript

**Concepts:**

|  |  |
| --- | --- |
| Concept | Explanation |
| if Statement | Used to execute a block of code if a condition is true. |
| else Statement | Executes a block of code if the if condition is false. |
| else if Statement | Tests multiple conditions. Used when the first if condition fails. |
| switch Statement | Evaluates an expression and executes code based on different possible values (alternative to multiple if-else statements). |
| for Loop | Loops through a block of code a set number of times, controlled by initialization, condition, and iteration. |
| while Loop | Repeats a block of code as long as the condition is true. |
| do...while Loop | Executes the block of code at least once before checking the condition, then repeats while the condition is true. |
| for...in Loop | Iterates over the properties of an object or the elements in an array. |

**Q1: Write a JavaScript program to get the factorial of a number.**

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Q1</title>

    <script>

      function fact() {

        var fact = 1;

        var n = Number(document.getElementById("num").value);

        for (var i = n; i >= 1; i--) {

          fact = fact \* i;

        }

        document.getElementById("ans").innerHTML = fact;

      }

    </script>

  </head>

  <body>

    <p>Enter Num: <input id="num" /></p>

    <button onclick="fact()" style="color: white; background-color: green">

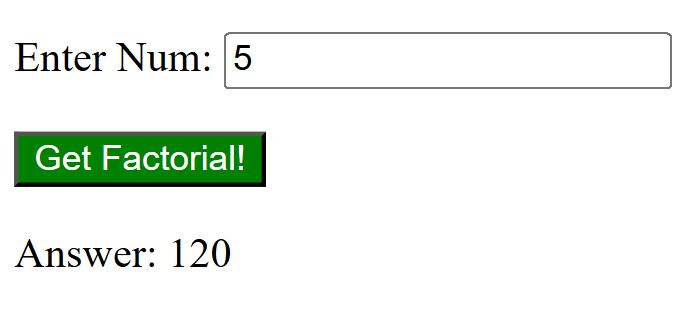
      Get Factorial!

    </button>

    <p>Answer: <span id="ans" */*></p>

  </body>

</html>



**Q2: Make a functioning calculator using JavaScript and HTML.**

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Q2</title>

  </head>

  <body>

    <form name="calculator">

      <input type="text" name="ans" value="" />

      <p>

        <button type="button" onClick="document.calculator.ans.value+=7">

          7

        </button>

        <button type="button" onClick="document.calculator.ans.value+=8">

          8

        </button>

        <button type="button" onClick="document.calculator.ans.value+=9">

          9

        </button>

        <button type="button" onclick="document.calculator.ans.value+='\*'">

          x

        </button>

      </p>

      <p>

        <button type="button" onClick="document.calculator.ans.value+=4">

          4

        </button>

        <button type="button" onClick="document.calculator.ans.value+=5">

          5

        </button>

        <button type="button" onClick="document.calculator.ans.value+=6">

          6

        </button>

        <button type="button" onClick="document.calculator.ans.value+='-'">

          -

        </button>

      </p>

      <p>

        <button type="button" onClick="document.calculator.ans.value+=1">

          1

        </button>

        <button type="button" onClick="document.calculator.ans.value+=2">

          2

        </button>

        <button type="button" onClick="document.calculator.ans.value+=3">

          3

        </button>

        <button type="button" onClick="document.calculator.ans.value+='+'">

          +

        </button>

      </p>

      <p>

        <button type="button" onClick="document.calculator.ans.value=''">

          AC

        </button>

        <button type="button" onClick="document.calculator.ans.value+=0">

          0

        </button>

        <button type="button" onClick="document.calculator.ans.value+='.'">

          .

        </button>

        <button

          type="button"

          onClick="document.calculator.ans.value=eval(document.calculator.ans.value)"

        >

          =

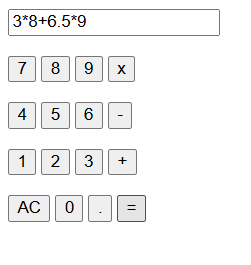
        </button>

      </p>

    </form>

  </body>

</html>

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**Q3: Write JavaScript to print numbers from 1-20 but print Zig if the number is divisible by 3, Zag if it is by 5 and ZigZag if divisible by both.**

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Q3</title>

    <script>

      var output = "";

      for (var i = 1; i <= 20; i++) {

        if (i % 3 == 0 && i % 5 == 0) {

          output += "<p>ZigZag";

        } else if (i % 3 == 0) {

          output += "<p>Zig";

        } else if (i % 5 == 0) {

          output += "<p>Zag";

        } else {

          output += i;

        }

        output += "</p>";

      }

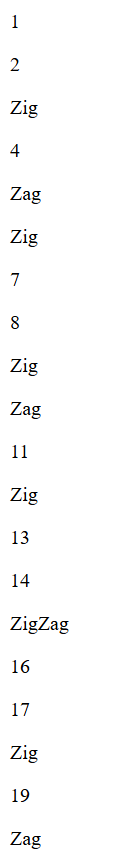
      document.write(output);

    </script>

  </head>

  <body></body>

</html>

****

**Q4: A Cinema charges different ticket prices based on age**

* **Under 5 --> Free**
* **5 - 12  --> 100**
* **13 - 59 --> 150**
* **60+     --> 80**

**Perform the following using javascript:**

**1. Ask the user for their age using prompt box**

**2. Use if, else if, else to determine the ticket price**

**3. Show the result using the alert box**

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Q4</title>

    <script>

      var age, price;

      function getAge() {

        age = Number(window.prompt("What is your Age?"));

      }

      function checkAge() {

        if (age < 5) {

          price = 0;

        } else if (age < 12) {

          price = 100;

        } else if (age < 59) {

          price = 150;

        } else {

          price = 80;

        }

        window.alert("Price: " + price);

      }

    </script>

  </head>

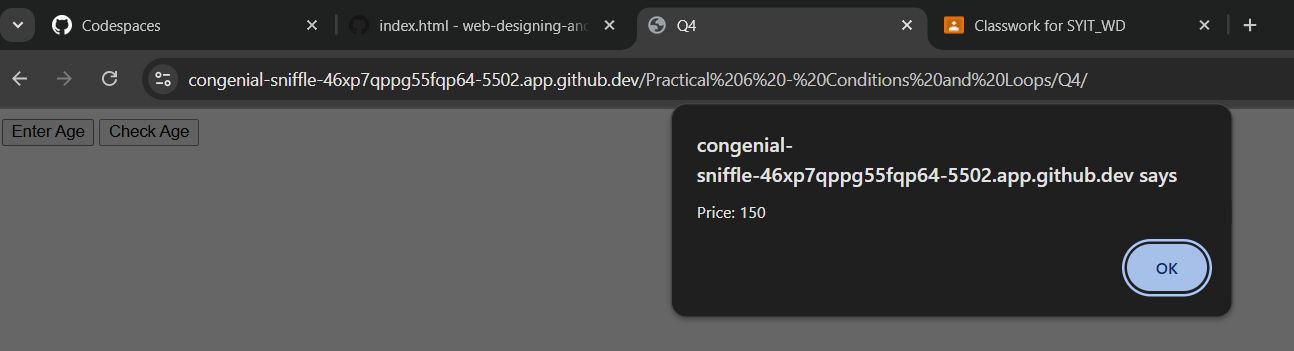
  <body>

    <button onclick="getAge()">Enter Age</button>

    <button onclick="checkAge()">Check Age</button>

  </body>

</html>

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**Q5: Write a JavaScript program to check if a character is a vowel or not (Use switch case)**

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Q5</title>

    <script>

      function isVowel() {

        var chr = document.getElementById("chr").value;

        var ans = "";

        switch (chr) {

          case "a":

            ans = "Vowel";

            break;

          case "e":

            ans = "Vowel";

            break;

          case "i":

            ans = "Vowel";

            break;

          case "o":

            ans = "Vowel";

            break;

          case "u":

            ans = "Vowel";

            break;

          default:

            ans = "Consonant";

        }

        document.getElementById("ans").innerHTML = ans;

      }

    </script>

  </head>

  <body>

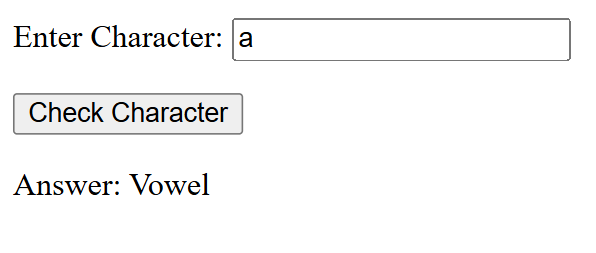
    <p>Enter Character: <input type="text" id="chr" /></p>

    <button type="button" onclick="isVowel()">Check Character</button>

    <p>Answer: <span id="ans"></span></p>

  </body>

</html>

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**Q6: Build a simple password length checker. Perform the following:**

* **Ask the user to enter a password**
* **Use the if statement to check if it contains at least 8 characters**
* **Display strong password if length matches otherwise weak password**

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Q6</title>

    <script>

      function checkStrength() {

        var pass = document.getElementById("pass").value;

        if (pass.length >= 8) {

          document.getElementById("strength").innerHTML = "Strong Password";

        } else {

          document.getElementById("strength").innerHTML = "Weak Password";

        }

      }

    </script>

  </head>

  <body>

    <p>

      Enter Password: <input type="text" id="pass" />

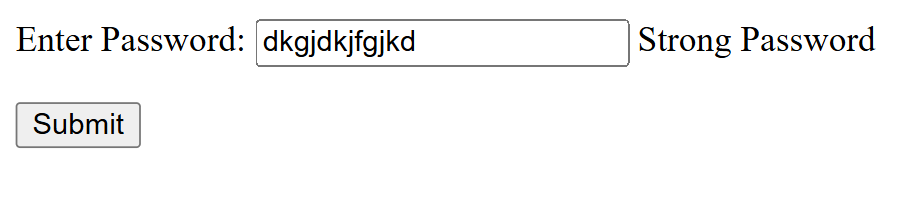
      <span id="strength"></span>

    </p>

    <button type="button" onclick="checkStrength()">Submit</button>

  </body>

</html>

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**Q7: Write a JavaScript program to demonstrate the for in loop. The Details should be iterate over the following:**

* **Name**
* **Age**
* **Course**
* **Year**
* **City**

**And then print the details.**

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <title>Q7</title>

    <script>

      var details = {

        Name: "Ian",

        Age: 19,

        Course: "BScIT",

        Year: "SY",

        City: "Mumbai",

      };

      var output = "";

      var value, key;

      for (key in details) {

        output += key + " : " + details[key] + "<br>";

      }

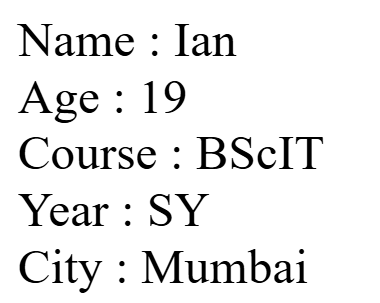
      document.write(output);

    </script>

  </head>

  <body></body>

</html>

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**Conclusion:**

In this practical, I worked with various JavaScript conditions and loops, such as if, else, for, and for...in. These concepts helped me understand how to control the flow of a program, make decisions based on conditions, and iterate over data structures like arrays and objects. By applying these techniques, I gained a better understanding of how to build dynamic and interactive web applications.