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

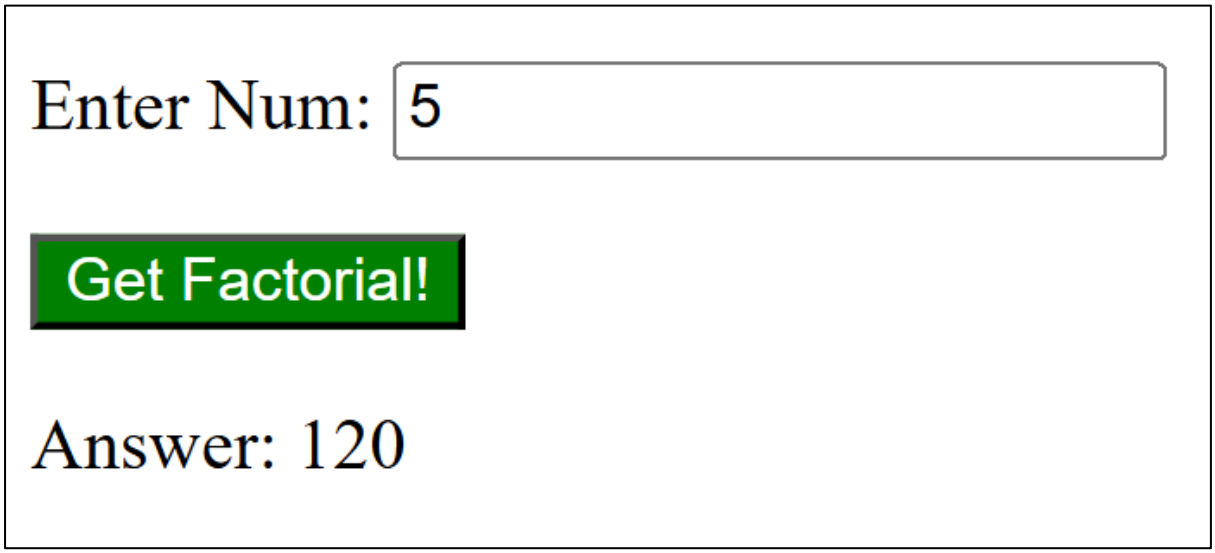
Aim: To demonstrate use of Loops and Conditions in Javascript

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.

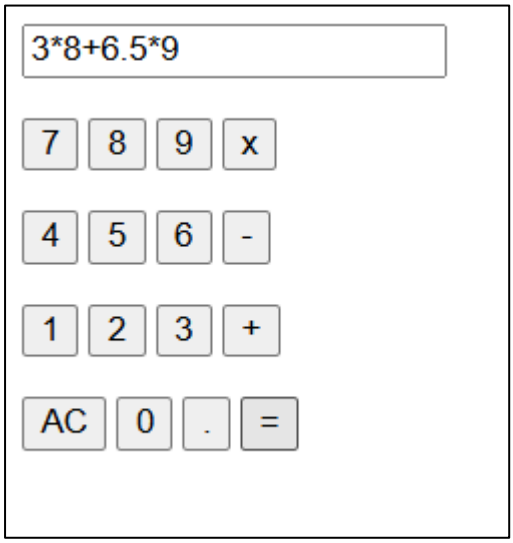
```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Q1</title>
    <script>
      function fact() {
        var fact = 1;
        var n = Number(document.getElementById("num").value);
        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>
```



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>
```

1

2

Zig

4

Zag

Zig

7

8

Zig

Zag

11

Zig

13

14

ZigZag

16

17

Zig

19

Zag

Q4: A Cinema charges different ticket prices based on age

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

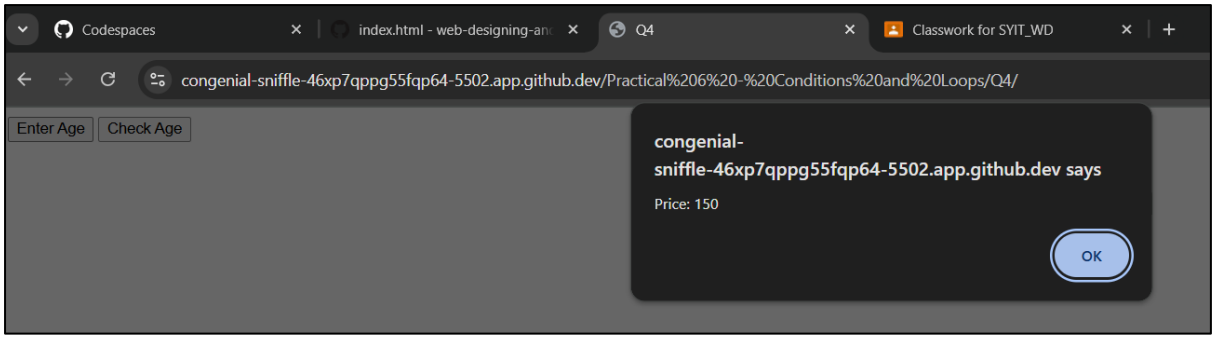
Perform the following using javascript:

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

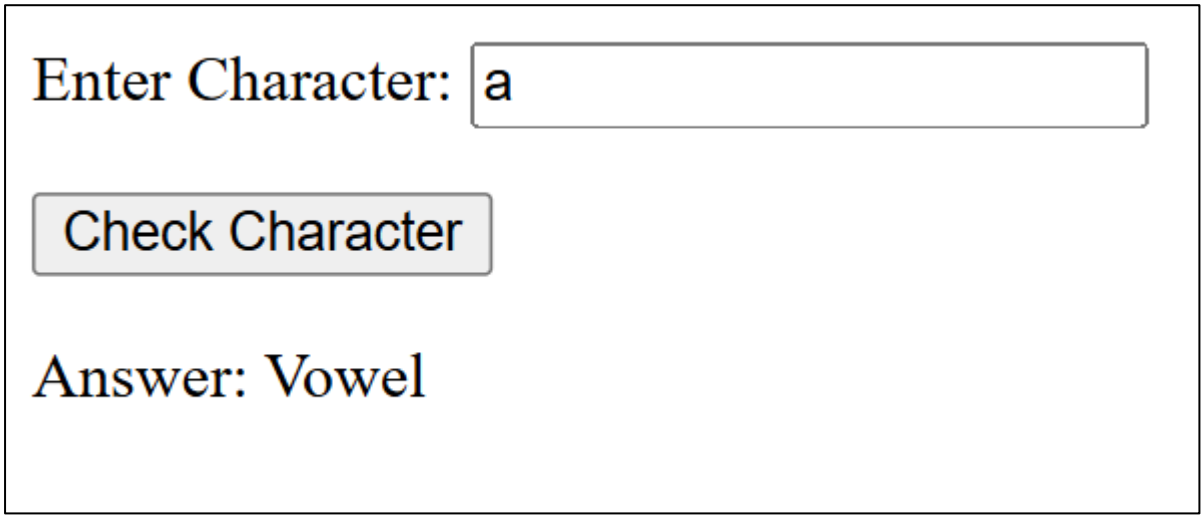
```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Q4</title>
    <script>
      var age, price;
      function getAge() {
        age = Number(window.prompt("What is your Age?"));
      }

      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>
```



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>
```



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>
```

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>
```

Name : Ian
Age : 19
Course : BScIT
Year : SY
City : Mumbai

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.