SVKM's NMIMS
School of Technology Management & Engineering (MPSTME Shirpur Campus)
Computer Science Department (BTech IV)
Web Programming
Lab Manual

PART A

(Part A: TO BE REFFERED BY STUDENTS)

Experiment No. 05

A.1 AIM:

Implement basic JavaScript operators, conditional statements, loops etc.

A.2 Pre requisite:

Basic Knowledge of HTML and JavaScript

A.3 Outcome:

After successful completion of this experiment students will be able to:

1. Create formatted web pages/websites with attractive look and feel
2. Use various JavaScript features

A.4 Theory:

JavaScript is the programming language of the Web. All modern HTML pages are using JavaScript.

JavaScript is one of **3** languages all web developers **MUST** learn:

1. **HTML** to define the content of web pages
2. **CSS** to specify the layout of web pages
3. **JavaScript** to program the behavior of web pages

JavaScript operators

JavaScript operators are symbols that are used to perform operations on operands.

There are following types of operators in JavaScript.

1. Arithmetic Operators
2. Comparison (Relational) Operators
3. Bitwise Operators
4. Logical Operators

5. Assignment Operators
6. Special Operators

JavaScript Loops

The JavaScript loops are used to iterate the piece of code using for, while, do while or for-in loops. It makes the code compact. It is mostly used in array.

There are three types of loops in JavaScript.

1. **for loop**

```
for (initialization; condition; increment)
{
   code to be executed
}
```

2. **while loop**

```
while (condition)
{
   code to be executed
}
```

3. **do-while loop**

```
do{
   code to be executed
}while (condition);
```

A.5 Procedure/Task:

1. Write a JavaScript program to find the area of a triangle where lengths of the three of its sides are 5, 6, 7.
2. Write a JavaScript program to compute the sum of the two given integers. If the two values are same, then returns triple their sum.
3. Write a JavaScript function that reverse a number.
4. Write a JavaScript function that accepts a string as a parameter and converts the first letter of each word of the string in upper case.
5. Write a JavaScript conditional statement to find the largest of five numbers. Display an alert box to show the result.
6. Write a JavaScript program which compute, the average marks of the following students Then, this average is used to determine the corresponding grade.

Student Name	Marks
David	80
Vinoth	77
Divya	88
Ishitha	95
Thomas	68

The grades are computed as follows:

Range	Grade
<60	F
<70	D
<80	C
<90	B
<100	A

7. Write a JavaScript program to construct the following pattern, using a nested for loop.

```
*
* *
* * *
* * * *
* * * * *
```

SVKM's NMIMS

School of Technology Management & Engineering (MPSTME Shirpur Campus)

Computer Science Department (BTech IV)

Web Programming

Lab Manual

PART B

(PART B: TO BE COMPLETED BY STUDENTS)

(Students must submit the soft copy as per following segments within two hours of the practical. The soft copy must be uploaded on the Blackboard or emailed to the concerned lab in charge faculties at the end of the practical in case the there is no Black board access available)

Roll No. : E258	Name: Kundan S. Patil
Class : B Tech CS	Batch : A-3
Date of Experiment : 08/02/2025	Date/Time of Submission :09/02/2025
Grade :	

B.1 Code:

```html
<!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>1.  Write a JavaScript program to find the area of a triangle where lengths of the three of its sides are 5, 6, 7.</p>
    <script>
        function Area(a, b, c) {
        var s = (a + b + c) / 2;
        var area = Math.sqrt(s * (s - a) * (s - b) * (s - c));
        return area;
        }
        var a = 5, b = 6, c = 7;
        area = Area(a, b, c);
        document.write("The area of the triangle is: ", area);
    </script>
</body>
</html>
```

```html
<!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>2.  Write a JavaScript program to compute the sum of the two given integers. If the two values are same, then returns triple their sum.</p>
    <script>
        function sumOfTwoNumbers(a, b)
        {
            if (a === b)
            {
                return (a + b) * 3;
            }
            else
            {
                return a + b;
            }
        }
        document.write("Sum of 5 & 7: "+sumOfTwoNumbers(5, 7)+"<br>");
        document.write("Sum of 10 & 10: "+sumOfTwoNumbers(10, 10));
    </script>
</body>
</html>
```

SVKM's NMIMS

School of Technology Management & Engineering (MPSTME Shirpur Campus)

Computer Science Department (BTech IV)

Web Programming

Lab Manual

```html
<!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>3.  Write a JavaScript function that reverse a number. </p>
    <script>
        function reverseNumber(num)
        {
        var reversed = 0;
        var isNegative = num < 0;
        num = Math.abs(num);

        while (num > 0) {
            var digit = num % 10;
            reversed = reversed * 10 + digit;
            num = Math.floor(num / 10);
        }
        return isNegative ? -reversed : reversed;
        }

        document.write("Reverse of 12345: "+reverseNumber(12345));
    </script>
</body>
</html>
```

```html
<!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>4.  Write a JavaScript function that accepts a string as a parameter and converts the first letter of each word of the string in upper case.</p>
    <script>
        function convertToUpperCase(str)
        {
            let words = str.split(' ');
            let result = '';
            for (let i = 0; i < words.length; i++)
            {
                result += words[i].charAt(0).toUpperCase() + words[i].slice(1)
                if (i < words.length - 1)
                {
                    result += ' ';
                }
            }
            return result;
        }
        document.write("String: "+convertToUpperCase("kundan patil e258"));
    </script>
</body>
</html>
```

SVKM's NMIMS

School of Technology Management & Engineering (MPSTME Shirpur Campus)

Computer Science Department (BTech IV)

Web Programming

Lab Manual

```html
<!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>5.   Write a JavaScript conditional statement to find the largest of five numbers. Display an alert box to show the result.</p>
    <script>
        function findLargest(a, b, c, d, e)
        {
            var largest = a;

            if (b > largest)
            {
                largest = b;
            }
            if (c > largest)
            {
                largest = c;
            }
            if (d > largest)
            {
                largest = d;
            }
            if (e > largest)
            {
                largest = e;
            }

            alert("The largest number is: " + largest);
        }
        findLargest(10, 25, 5, 98, 45);
    </script>
</body>
</html>
```

SVKM's NMIMS
School of Technology Management & Engineering (MPSTME Shirpur Campus)
Computer Science Department (BTech IV)
Web Programming
Lab Manual

```html
<!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>6.  Write a JavaScript program which compute, the average marks of the following students Then, this average is used to determine the corresponding grade.</p>
    <script>
        var students = {
            "David": 80,
            "Vinoth": 77,
            "Divya": 88,
            "Ishitha": 95,
            "Thomas": 68
        };

        var totalMarks = 0;
        var studentCount = 0;

        for (let student in students) {
            totalMarks += students[student];
            studentCount++;
        }
        var averageMarks = totalMarks / studentCount;
        var grade;
        if (averageMarks < 60) {
            grade = 'F';
        } else if (averageMarks < 70) {
            grade = 'D';
        } else if (averageMarks < 80) {
            grade = 'C';
        } else if (averageMarks < 90) {
            grade = 'B';
        } else {
            grade = 'A';
        }

        // Display results
        document.write("Average Marks: " + averageMarks.toFixed(2)+"<br>");
        document.write("Grade: " + grade);
    </script>
</body>
</html>
```

```html
<!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>7.  Write a JavaScript program to construct the following pattern, using a nested for loop.</p>
    <script>
        var rows = 5;
        for (var i = 1; i <= rows; i++) {
            for (var j = 1; j <= i; j++) {
                document.write("* ")
            }
            document.write("<br>")
        }
    </script>
</body>
</html>
```

B.2 Output

SVKM's NMIMS

School of Technology Management & Engineering (MPSTME Shirpur Campus)

Computer Science Department (BTech IV)

Web Programming

Lab Manual

---

1. Write a JavaScript program to find the area of a triangle where lengths of the three of its sides are 5, 6, 7.

The area of the triangle is: 14.696938456699069

2. Write a JavaScript program to compute the sum of the two given integers. If the two values are same, then returns triple their sum.

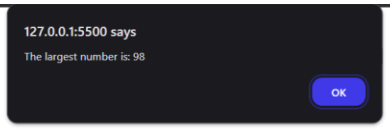
Sum of 5 & 7: 12
Sum of 10 & 10: 60

3. Write a JavaScript function that reverse a number.

Reverse of 12345: 54321

4. Write a JavaScript function that accepts a string as a parameter and converts the first letter of each word of the string in upper case.

String: Kundan Patil E258



---

6. Write a JavaScript program which compute, the average marks of the following students Then, this average is used to determine the corresponding grade.

Average Marks: 81.60
Grade: B

7. Write a JavaScript program to construct the following pattern, using a nested for loop.

```
*
* *
* * *
* * * *
* * * * *
```

B.3 Conclusion:

After successfully completing this experiment, I have gained hands-on experience with JavaScript operators, conditional statements, and loops. I can now implement fundamental JavaScript functionalities to create interactive and dynamic web pages.

B.3 Observations and Learning:

- Understanding JavaScript Operators – Learned how arithmetic, comparison, logical, and assignment operators function.
- Using Conditional Statements – Practiced if, else if, and else to make logical decisions in programs.
- Implementing Loops – Used for, while, and do-while loops to iterate over data efficiently.
- Working with Functions – Created reusable functions to perform tasks like reversing numbers and capitalizing words.
- Pattern Printing with Nested Loops – Constructed patterns using loops and string concatenation.
- Computing and Assigning Grades – Applied logic to process student marks and determine grades dynamically.
- Triangle Area Calculation – Used mathematical formulas and JavaScript operators to compute values.