

Program No.1(A): Write a JavaScript program to calculate area of Triangle

```
//Program: To find Area of Triangle

<!DOCTYPE HTML>
<html>

<head>
    <meta http-equiv="Content-Type"
          content="text/html; charset=utf-8">

    <title>
        JavaScript function to find
        the area of a triangle
    </title>
</head>

<body style="text-align: center;">
    <h1 style="color: green;">
        E&TC Department AVCOE
    </h1>

    <h4>
        JavaScript function to find
        the area of a triangle
    </h4>

    <label for="side1">
        Enter the value of side 1:
    </label>

    <input type="number" id="side1"
           placeholder="Enter value of side 1">
    <br><br>

    <label for="side2">
        Enter the value of side 2:
    </label>

    <input type="number" id="side2"
           placeholder="Enter value of side 2">
    <br><br>

    <label for="side3">
        Enter the value of side 3:
    </label>

    <input type="number" id="side3"
           placeholder="Enter value of side 2">
    <br><br>
```

```
<button onclick="Area()>Click Here!</button>
<p>      Area of Triangle: <span id="display"></span>
</p>
<script type="text/javascript">
    function Area() {
        var side1 = parseInt(document
            .getElementById("side1").value);

        var side2 = parseInt(document
            .getElementById("side2").value);

        var side3 = parseInt(document
            .getElementById("side3").value);

        console.log(typeof(side1));
        var s = (side1 + side2 + side3) / 2;

        var area = Math.sqrt(s * ((s - side1)
            * (s - side2) * (s - side3)));

        document.getElementById(
            "display").innerHTML = area;
    }
</script>
</body>
</html>
```

Output:

E&TC Department AVCOE

JavaScript function to find the area of a triangle

Enter the value of side 1:

Enter the value of side 2:

Enter the value of side 3:

Area of Triangle: 1.7320508075688772

Program No.1(B): Write a JavaScript program to calculate area of Rectangle

```

<!DOCTYPE HTML>
<html>
<head>
    <meta http-equiv="Content-Type"
        content="text/html; charset=utf-8">
</head>
<title>
    JavaScript function to find
    the area of a rectangle
</title>
</head>
<body style="text-align: center;">
    <h1 style="color: green;">
        E&TC Department AVCOE
    </h1>
    <h4>
        JavaScript function to find
        the area of a rectangle
    </h4>
    <label for="Length">
        Enter the value of Length:
    </label>
    <input type="number" id="Length"
        placeholder="Enter value of Length">
    <br><br>
    <label for="Width">
        Enter the value of Width:
    </label>
    <input type="number" id="Width"
        placeholder="Enter value of Width">
    <br><br>
    <button onclick="Area()">Click Here!</button>
    <p>
        Area of Rectangle: <span id="display"></span>
    </p>
    <script type="text/javascript">
        function Area() {
            var Length = parseInt(document
                .getElementById("Length").value);

```

```

            var Width = parseInt(document
                .getElementById("Width").value);

            console.log(typeof(side1));
            var Area = (Length * Width);

            document.getElementById(
                "display").innerHTML = Area;
        }
    </script>
</body>
</html>

```

Output:

E&TC Department AVCOE

JavaScript function to find the area of a rectangle

Enter the value of Length:

Enter the value of Width:

Area of Rectangle: 20

Program No.1(C): Write a JavaScript program to calculate area of Circle.

```
<!DOCTYPE HTML>
<html>

<head>
    <meta http-equiv="Content-Type"
        content="text/html; charset=utf-8">
    <title>
        JavaScript function to find
        the area of a circle
    </title>
</head>

<body style="text-align: center;">
    <h1 style="color: green;">
        E&TC Department AVCOE
    </h1>

    <h4>
        JavaScript function to find
        the area of a circle
    </h4>

    <label for="radius">
        Enter the value of radius:
    </label>

    <input type="number" id="radius"
        placeholder="Enter value of radius">
    <br><br>

    <button onclick="Area()">Click Here!</button>

    <p>
        Area of Circle: <span id="display"></span>
    </p>

    <script type="text/javascript">
        function Area() {
            var radius = parseInt(document
                .getElementById("radius").value);

            console.log(typeof(side1));
            var Area = (3.14 * radius * radius);

            document.getElementById(
                "display").innerHTML = Area;
        }
    </script>

```

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

Output:

E&TC Department AVCOE

JavaScript function to find the area of a circle

Enter the value of radius:

Area of Circle: 452.15999999999997

Program 2: Write a JavaScript program to generate the multiplication table of a given number.

```
<!DOCTYPE HTML>
<html>

<head>
    <meta http-equiv="Content-Type"
          content="text/html; charset=utf-8">

    <title>
        JavaScript function to generate multiplication table
    </title>
</head>

<body style="text-align: center;">
    <h1 style="color: green;">
        E&TC Department AVCOE
    </h1>

    <h4>
        JavaScript function to generate multiplication table
    </h4>

    <script>
        var table = 2;
        var length = 10;
        var i = 1;
        document.write("Multiplication table: " + table);
        for(i=1; i<= length; i++)
            document.write("<br>" + i + " * " + table + " = " + (i * table));
    </script>
</body>
</html>
```

Output:

E&TC Department AVCOE

JavaScript function to generate multiplication table

Multiplication table: 2

```
1 * 2 = 2  
2 * 2 = 4  
3 * 2 = 6  
4 * 2 = 8  
5 * 2 = 10  
6 * 2 = 12  
7 * 2 = 14  
8 * 2 = 16  
9 * 2 = 18  
10 * 2 = 20
```

Program 3: Write a JavaScript program to following operations on a given string,

(A)Reverse string

```
let string = "AVCOE"  
string = [...string].reverse().join("");  
console.log(string);
```

Output:

EOCVA

(B)Replace characters of a string

```
const p = "The quick brown fox jumps over the lazy dog";  
  
console.log(p.replace('dog', 'monkey'));  
// expected output: "The quick brown fox jumps over the lazy monkey.  
  
const regex = /Dog/i;  
  
console.log(p.replace(regex, 'ferret'));  
//expected output: "The quick brown fox jumps over the lazy ferret.
```

Output:

The quick brown fox jumps over the lazy monkey

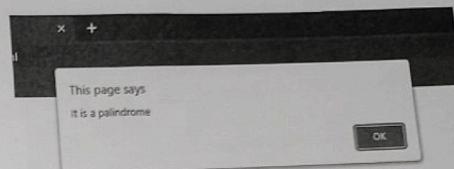
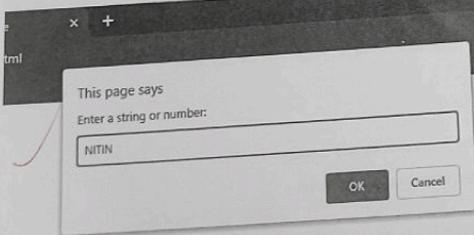
The quick brown fox jumps over the lazy ferret

(C)String is Palindrome

```
<html>  
  <head><title> JavaScript Palindrome </title>  
  </head>  
  <body>  
    <!-- Use JavaScript programming code to validate the Palindrome numbers or strings. -->  
    <script>  
      function validatePalin(str) {
```

```
// get the total length of the words  
const len = string.length;  
  
// Use for loop to divide the words into 2 half  
for (let i = 0; i<len / 2; i++) {  
    // validate the first and last characters are same  
    if (string[i] !== string[len - 1 - i]) {  
        alert('It is not a palindrome');  
    }  
    else  
        alert('It is a palindrome');  
}  
  
// accept the string or number from the prompt  
const string = prompt('Enter a string or number:');  
  
const value = validatePalin(string);  
console.log(value);  
</script>  
</body>  
</html>
```

OUTPUT:



Program 4: Write a JavaScript program to compare two strings using various methods.

```
//js program to perform string comparison
//Using toUpperCase()
const string1 = 'JavaScript Program';
const string2 = 'JavaScript Program';

// compare both strings
const result = string1.toUpperCase() === string2.toUpperCase();

if(result) {
  console.log('The strings are similar.');
} else {
  console.log('The strings are not similar.');
}
```

OUTPUT:

The screenshot shows a terminal window with tabs for PROBLEMS (15), OUTPUT, DEBUG CONSOLE, and TERMINAL. The TERMINAL tab is active, displaying the following output:

```
PS E:\AVCOE\JS\Demo> node str_similar.js
The strings are similar.
PS E:\AVCOE\JS\Demo> []
```

```
// program to perform string comparison
//JS String Comparison Using RegEx

const string1 = 'JavaScript Program';
const string2 = 'javascript1';

// create regex
const pattern = new RegExp(string1, "gi");

// compare the strings
const result = pattern.test(string2)

if(result) {
    console.log('The strings are similar.');
} else {
    console.log('The strings are not similar.');
}
```

✓ OUTPUT:

The screenshot shows a terminal window with the following interface elements at the top:

- PROBLEMS
- 15
- OUTPUT
- DEBUG CONSOLE
- TERMINAL

The terminal window displays the following text:

```
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS E:\AVCOE\JS\Demo> node str_similar1.js
The strings are not similar.
PS E:\AVCOE\JS\Demo>
```

Program 5: Program to create a countdown timer

```
// time to countdown from (in milliseconds)
let countDownDate = new Date().getTime() + 24 * 60 * 60 * 1000;

// countdown timer
let x = setInterval(function() {

    // get today's date and time in milliseconds
    let now = new Date().getTime();

    // find the interval between now and the countdown time
    let timeLeft = countDownDate - now;

    // time calculations for days, hours, minutes and seconds
    const days = Math.floor( timeLeft/(1000*60*60*24) );
    const hours = Math.floor( (timeLeft/(1000*60*60)) % 24 );
    const minutes = Math.floor( (timeLeft/1000/60) % 60 );
    const seconds = Math.floor( (timeLeft/1000) % 60 );

    // display the result in the element with id="demo"
    console.log(days + "d " + hours + "h " + minutes + "m " + seconds + "s ");

    // clearing countdown when complete
    if(timeLeft< 0) {
        clearInterval(x);
        console.log('CountDown Finished');
    }
},2000);
```

OUTPUT:

PROBLEMS 15 OUTPUT DEBUG CONSOLE TERMINAL

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

```
PS E:\AVCOE\JS\Demo> node Exp_5.js
0d 23h 59m 57s
0d 23h 59m 55s
0d 23h 59m 53s
0d 23h 59m 51s
0d 23h 59m 49s
```

Program 6: Write a JavaScript program that will create an array and perform following operations :

i. To remove specific element from the array

```
// program to remove item from an array

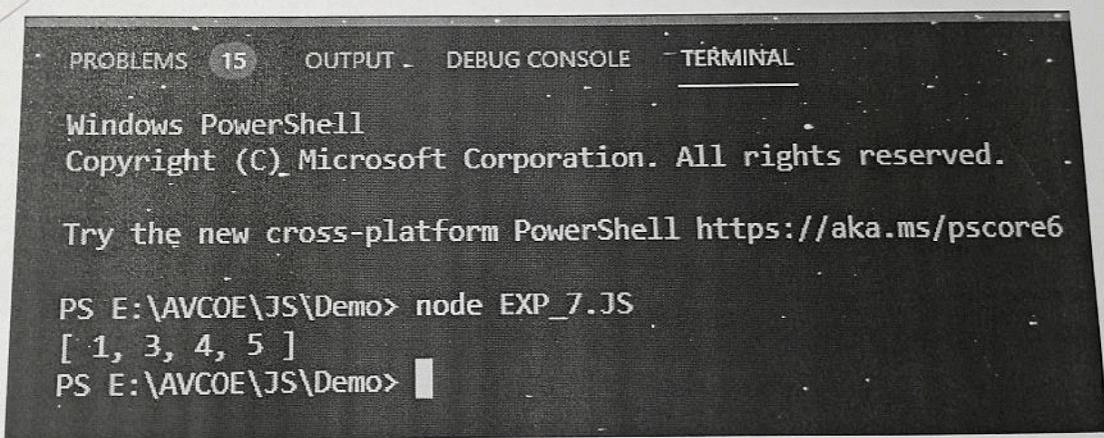
function removeItemFromArray(array, n) {
    const newArray = [];

    for (let i = 0; i < array.length; i++) {
        if(array[i] !== n) {
            newArray.push(array[i]);
        }
    }
    return newArray;
}

const result = removeItemFromArray([1, 2, 3, 4, 5], 2);

console.log(result);
```

OUTPUT:



```
PROBLEMS 15 OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS E:\AVCOE\JS\Demo> node EXP_7.JS
[ 1, 3, 4, 5 ]
PS E:\AVCOE\JS\Demo>
```

ii. Check if an array contains a specified value.

```
// program to check if an array contains a specified value
const array = ['you', 'will', 'learn', 'javascript'];
const hasValue = array.includes('javascript');

// check the condition
if(hasValue) {
    console.log('Array contains a value.');
} else {
    console.log('Array does not contain a value.');
}
```

OUTPUT:

A screenshot of a terminal window titled "Windows PowerShell". The window shows the following text:
PROBLEMS 15 OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell <https://aka.ms/pscore6>
PS E:\AVCOE\JS\Demo> node EXP_7_2.js
Array contains a value.
PS E:\AVCOE\JS\Demo>

iii. To empty an array

```
// program to empty an array
function emptyArray(arr) {

    // substituting new array
    arr = [];

    return arr;
}

const array = [1, 2, 3];
console.log(array);
// call the function
const result = emptyArray(array);
console.log(result);
```

OUTPUT:

A screenshot of a terminal window titled "Windows PowerShell". The window shows the following text:
PROBLEMS 15 OUTPUT DEBUG CONSOLE TERMINAL
PS E:\AVCOE\JS\Demo> node EXP_7_3.js
[1, 2, 3]
[]
PS E:\AVCOE\JS\Demo>

Program 6: Write a JavaScript program that will create an array and perform following operations :

- i. To remove specific element from the array

```
// program to remove item from an array

function removeItemFromArray(array, n) {
    const newArray = [];

    for ( let i = 0; i < array.length; i++) {
        if(array[i] !== n) {
            newArray.push(array[i]);
        }
    }
    return newArray;
}

const result = removeItemFromArray([1, 2, 3 , 4 , 5], 2);

console.log(result);
```

OUTPUT:

The screenshot shows a terminal window with the following interface elements at the top: PROBLEMS (15), OUTPUT, DEBUG CONSOLE, and TERMINAL (which is underlined). The terminal content is as follows:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

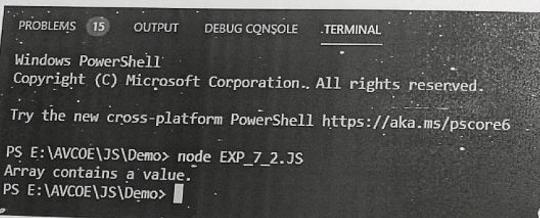
PS E:\AVCOE\JS\Demo> node EXP_7.JS
[ 1, 3, 4, 5 ]
PS E:\AVCOE\JS\Demo>
```

ii. Check if an array contains a specified value.

```
// program to check if an array contains a specified value
const array = ['you', 'will', 'team', 'javascript'];
const hasValue = array.includes('javascript');

// check the condition
if(hasValue) {
    console.log('Array contains a value.');
} else {
    console.log('Array does not contain a value.');
}
```

OUTPUT:



PROBLEMS 15 OUTPUT DEBUG CONSOLE TERMINAL

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell <https://aka.ms/powershell>

```
PS E:\AVCOE\JS\Demo> node EXP_7_2.js
Array contains a value.
PS E:\AVCOE\JS\Demo>
```

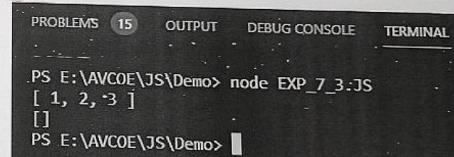
iii. To empty an array

```
// program to empty an array
function emptyArray(arr) {
    // substituting new array
    arr = [];

    return arr;
}

const array = [1, 2, 3];
console.log(array);
// call the function
const result = emptyArray(array);
console.log(result);
```

OUTPUT:



PROBLEMS 15 OUTPUT DEBUG CONSOLE TERMINAL

```
PS E:\AVCOE\JS\Demo> node EXP_7_3.js
[ 1, 2, 3 ]
[]
PS E:\AVCOE\JS\Demo>
```

Program 7: Write a JavaScript program that will append an object to an array and will check if an object is an array.

```
// program to append an object to an array
function insertObject(arr, obj) {
    // append object
    arr.push(obj);

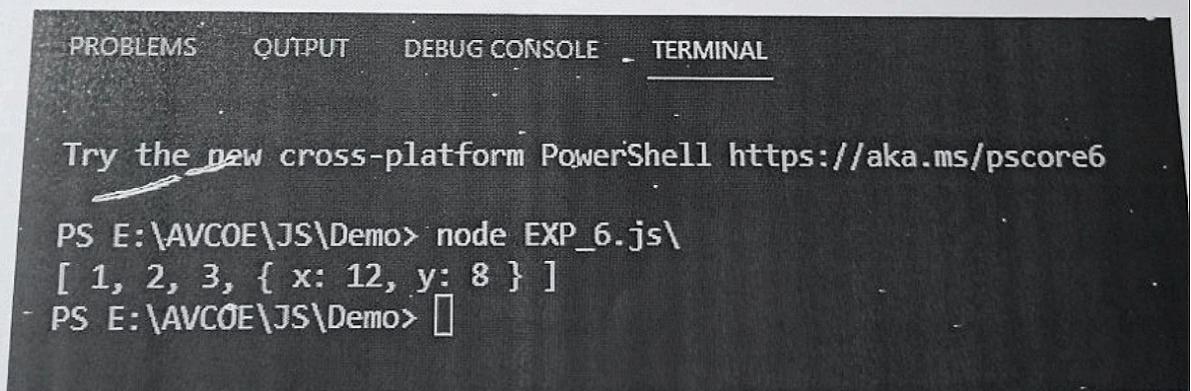
    console.log(arr);
}

// original array
let array = [1, 2, 3];

// object to add
let object = {x: 12, y: 8};

// call the function
insertObject(array, object);
```

OUTPUT:



PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

```
PS E:\AVCOE\JS\Demo> node EXP_6.js
[ 1, 2, 3, { x: 12, y: 8 } ]
PS E:\AVCOE\JS\Demo> []
```

Program 8: Write a JavaScript program to create a home page of any website and change background color using

- i. On mouse over event**
- ii. On focus event**

```
<!DOCTYPE html>
<html>
<body>
<h2>Demonstrate mouseOver() and focusFunction()</h2>
<h3 id="demo" onmouseover="mouseOver()" onmouseout="mouseOut()">Mouse over me</h3>
<input type="text" placeholder = "Enter Text" id="focus" onfocus="focusFunction()"
onblur="blurFunction()">

<script>
function mouseOver() {
    document.getElementById("demo").style.color = "red";
}

function mouseOut() {
    document.getElementById("demo").style.color = "black";
}

function focusFunction() {
    document.getElementById("focus").style.background = "yellow";
}

function blurFunction() {
    document.getElementById("focus").style.background = "red";
}
</script>

</body>
</html>
```

OUTPUT:

Demonstrate mouseOver() and focusFunction()

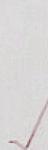
Mouse over me

AVCOE

Demonstrate mouseOver() and focusFunction()

Mouse over me

AVCOE



Program 9: Design and implement a simple calculator using Java script for operations like addition, multiplication, subtraction, division, square of a number etc.

a. Design a calculator like text field for input and output, buttons for numbers and operations etc.

b. Validate input values

c. Prompt/ alerts for invalid values etc.

```
<!DOCTYPE html>
<html>
<body>
<h3>Calculator</h3>
<input id = "text1" placeholder = "Enter Num1">
<br>
<br>
<br>
<input id = "text2" placeholder = "Enter Num2">
<br>
<br>
<br>
<br>
<button onclick="sum()" id = "btn1">Add</button>
<button onclick="diff()" id = "btn1">Sub</button>
<button onclick="mul()" id = "btn1">Mult</button>
<button onclick="div()" id = "btn1">Div</button>
<br>
<br>
<br>
<br>
<input id = "text3" placeholder = "result">
<script>
function sum(){
var x = parseFloat(document.getElementById("text1").value);
var y = parseFloat(document.getElementById("text2").value);
var s1 = x + y;
document.getElementById("text3").value = s1;
alert(s1);
}
function diff(){
var x = parseFloat(document.getElementById("text1").value);
var y = parseFloat(document.getElementById("text2").value);
var s2 = x - y;
document.getElementById("text3").value = s2;
alert(s2);
}
function mul(){
var x = parseFloat(document.getElementById("text1").value);
var y = parseFloat(document.getElementById("text2").value);
var s3 = x * y;
document.getElementById("text3").value = s3;
alert(s3);
}
```

```
function div(){
var x = parseFloat(document.getElementById("text1").value);
var y = parseFloat(document.getElementById("text2").value);
var s4 = x / y;
document.getElementById("text3").value = s4;
alert(s4);
}

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

OUTPUT:

Calculator

Add Sub Mult Div

Calculator

Add Sub Mult Div

Calculator

Add Sub Mult Div

Calculator

Add Sub Mult Div