Miscellaneous Task

Example:

Write a code using JS. Create a function that takes an array of objects (groceries) which calculates the total price and returns it as a number. A grocery object has a product, a quantity and a price.

```
<script>
   function calculateTotalPrice(groceries) {
   let totalPrice = 0;
   for (let i = 0; i < groceries.length; i++) {
      const { quantity, price } = groceries[i];
      totalPrice += quantity * price;
   }
   return totalPrice;
}
// Example usage:
const groceryList = [
   { product: "Apple", quantity: 3, price: 80 },
   { product: "Banana", quantity: 2, price: 25 },
   { product: "Milk", quantity: 1, price: 32}
];
const total = calculateTotalPrice(groceryList);
console.log(`Total Price: ${total.toFixed(2)} Rupees`);
</script>
```

Example:

Write java script program to check occurrence of a given character in to string entered by user. (For ex., If you check the number of occurrences of 'o' in the string 'school', the result is 2.)

```
<script>
   // Get user input
const userInput = prompt("Enter a string:");
const charToCheck = prompt("Enter the character to check:");

// Check if user input is valid
if (userInput && charToCheck && charToCheck.length === 1) {
   // Count occurrences
   const occurrences = userInput.split(charToCheck).length - 1;
   console.log(`The character '${charToCheck}' occurs ${occurrences} time(s) in the
string.`);
} else {
   console.log("Please enter a valid string and a single character to check.");
}
</script>
```

Example:

Write a JavaScript to accept a number from user & check whether it is Armstrong number or not. (Hint: Armstrong number means the summation of cubes of all the three digits of the number should be exactly to the number) E.g., 153= (1*1*1) +(5*5*5) +(3*3*3)

```
<script>
   function isArmstrongNumber(number) {
   let num = number;
   let sum = 0;

   // Calculate the sum of cubes of each digit
   while (num > 0) {
      const digit = num % 10;
      sum += Math.pow(digit, 3);
      num = Math.floor(num / 10);
   }

   // Check if the sum equals the original number
   return sum === number;
}

// Get user input
const userInput = parseInt(prompt("Enter a number:"));

// Check if user input is valid
if (!isNaN(userInput)) {
   // Check if the number is an Armstrong number
   if (isArmstrongNumber(userInput)) {
      console.log(`${userInput} is an Armstrong number.`);
   } else {
      console.log(`${userInput} is not an Armstrong number.`);
   }
} else {
   console.log("Please enter a valid number.");
}
</script>
```

Example:

Write a JavaScript that handles following mouse events. Add necessary elements.

I. **If the mouse is over the heading, heading should change its text and color red and if the mouse goes out of the heading the text should return with same text as before and color should turn black.**

II. If mouse button is pressed, background color should be black. If mouse button is released up, background color should be cyan.

```
<html>
<body>
<h1 id="heading"
   onmouseover="changeHeadingText('Mouse Over!', 'red')"
   onmouseout="changeHeadingText('Mouse Events', 'black')"
   onmousedown="changeBackgroundColor('black')"
   onmouseup="changeBackgroundColor('cyan')"
>
   Mouse Events
</h1>

<script>
   function changeHeadingText(text, color) {
      document.getElementById("heading").textContent = text;
      document.getElementById("heading").style.color = color;
   }

   function changeBackgroundColor(color) {
      document.body.style.backgroundColor = color;
   }
</script>
</body>
</html>
```

Example: Write an HTML form accepting an integer having 4-digits. Provide necessary validations using JavaScript. Input should not accept characters.

```
<html><body>
<form onsubmit="validateForm()">
   <input type="text" id="integerInput" title="Please enter a 4-digit integer" required>
   <input type="submit" value="Submit">
</form>
<script>
   function validateForm() {
      pat=/^\d{4}$/
      const inputValue = document.getElementById("integerInput").value
      if (pat.test(inputValue)) {
         alert("Perfect")
      }
      else{
         alert("Not Perfect")
```

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

Example: Write an ES6 function using rest operator to receive 1st 10 natural no.s. Compute addition of all odd and even no.s using for…of loop.

```
<script>
  const computeOddEvenSum = (...numbers) => {
 let oddSum = 0;
 let evenSum = 0;

 for (const number of numbers) {
  if (number % 2 === 0) {
   // Even number
   evenSum += number;
  } else {
   // Odd number
   oddSum += number;
  }
 }
 return { oddSum, evenSum };
};
// Example usage with the first 10 natural numbers
const first10NaturalNumbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10];
const { oddSum, evenSum } = computeOddEvenSum(...first10NaturalNumbers);
console.log(`Sum of odd numbers: ${oddSum}`);
console.log(`Sum of even numbers: ${evenSum}`);
</script>
```

Example: Write an ES6 script that creates a class time having members hours, minutes and second. Create two-time objects and add both the time objects so that it should return in third time object. Third time object should have hour, minute and second such that after addition if second exceeds 60 then minute should be incremented also if minutes exceeds 60 then hour should be incremented.

```
<script>
class Time {
 constructor(hours, minutes, seconds) {
  this.hours = hours;
  this.minutes = minutes;
  this.seconds = seconds;
 }
```

```
  addTime(otherTime) {
    // Add seconds, minutes, and hours separately
    this.seconds += otherTime.seconds;
    this.minutes += otherTime.minutes;
    this.hours += otherTime.hours;

    // Adjust minutes and hours if seconds exceed 60
    if (this.seconds >= 60) {
      this.seconds -= 60;
      this.minutes += 1;
    }
    // Adjust hours if minutes exceed 60
    if (this.minutes >= 60) {
      this.minutes -= 60;
      this.hours += 1;
    }

    // Return the updated current time object
    return this;
  }
}
// Example usage
const time1 = new Time(3, 45, 30);
const time2 = new Time(2, 15, 45);
// Add two time objects
time1.addTime(time2);
console.log("Resultant Time:", time1);
</script>
```

Example:
Write JavaScript code to print following pattern.
1
0 1
1 0 1
0 1 0 1
1 0 1 0 1

```
function pat(rows) {
    for (let i = 0; i < rows; i++) {
        let rowPattern = "";
        for (let j = 0; j <= i; j++) {
            if ((i + j) % 2 === 0) {
                rowPattern += "1 ";
            } else {
                rowPattern += "0 ";
```

```
        }
      }
      console.log(rowPattern);
  }}
pat(5);
```

Tasks

PROGRAM:1 <!--1+ x/1! + x2/2! + x3/3!.... -->

Solution:

```
<html><head>
<script type="text/javascript">
function fact(n)
{   if(n==1)
     return(1);
          else
          {
                    factorial=n*fact(n-1);
                    return factorial;
          }
}
</script></head>
<body>
<script type="text/javascript">
x=3;sum=0;
for(n=1;n<=4;n++)
{
          sum=sum+Math.pow(x,n)/fact(n);
}
total=1+sum;
document.write(total);
</script></body></html>
```

Output:

16.375

PROGRAM-2 Given digit is 23. divide it into two parts 2 and 3 and find 2^3

```
<html><head>
   <script type="text/javascript">
      n=23;mul=0;
      m=n%10;
      n=parseInt(n/10);
       mul=Math.pow(n,m);
       document.write("answer is :" + mul);
    </script>
</head></html>
```

Output:
answer is :8

PROGRAM-3 LUCKY NUMBER (Hint : number = 7777 => 28 => 10 => 1) if final sum=1 then given number is lucky number

Solution:

```
<html>
<head>
</head>
<body>
<script type="text/javascript">
  n=101;m=n;
  while(n>9)
  {  sum=0;
     while(n>0)
    {
      i=n%10;
      sum=sum+i;
            n=parseInt(n/10);
          }
          n=sum;
        }
        if(n==1)
          document.write( m + " is lucky no" );
        else
          document.write( m+ "  is not lucky number");
   </script>
</body>
</html>
```

Output:
101 is not lucky no

OR

```
function isLuckyNumber(number) {
let sum = 0;
while (number > 0 || sum > 9) {
if (number === 0) { number = sum; sum = 0;
}
sum += number % 10;
number = Math.floor(number / 10);
}
return sum === 1;
}
```

Output: console.log(isLuckyNumber(7777)); // true console.log(isLuckyNumber(1234)); // false

PROGRAM-4 Concept on BUBBLE SORT

Solution:

```
<html>
<head>
<script type="text/javascript">
arr=new Array();
for(i=0;i<5;i++)
{
    arr[i]=parseInt(prompt("enter value"));
 }
// arr=[30,67,12,4,29];
document.write("elements before swap: "+ "</br>");
for(i=0;i<arr.length;i++)
 document.write(arr[i]+ "</br>");
  for(i=0;i<arr.length;i++)
 { for(j=0;j<arr.length-1;j++)
   { if(arr[i]<arr[j])
      { temp=arr[i];
              arr[i]=arr[j];
                    arr[j]=temp;
                  }
}
}
document.write("elements after swap: "+ "</br>");
for(i=0;i<arr.length;i++){
     document.write(arr[i] + "</br>");}
 </script> </head> </html>
```

Output:

elements before swap:
10
5
8
16
58

elements after swap:
5
8
10
16

PROGRAM-5 Check String Palindrome Or Not

```
<script>
    // function that check str is palindrome or not
    function check_palindrome(str) {
        let j = str.length - 1;
        for (let i = 0; i < j / 2; i++) {
            let x = str[i];//forward character
            let y = str[j - i];//backward character
            if (x != y) {
                // return false if string not match
                return false;
            }
        }
        /// return true if string is palindrome
        return true;

    }

    //function that print output if string is palindrome
    function is_palindrome(str) {
        // variable that is true if string is palindrome
        let ans = check_palindrome(str);
        //condition checking ans is true or not
        if (ans == true) {
            document.write("passed string is palindrome ");
        }
        else {
            document.write("passed string not a palindrome");
        }
    }
    // test variable
    // let test = "Hello";
    let test=prompt("Enter String")
    is_palindrome(test);
</script>
```

OR

```
function isPalindrome(str) {
    let j = str.length - 1
    for (let i = 0; i < str.length / 2; i++) {
        if (str[i] != str[j]) {
            return false;
        }
        j--;
    }
    return true;
}
let str1 = "1234321";
console.log(isPalindrome(str1));
```

PROGRAM-6 User input factorial Number

```
    <script>
        // program to find the factorial of a number

// take input from the user
const number = parseInt(prompt('Enter a positive integer: '));

// checking if number is negative
if (number < 0) {
    console.log('Error! Factorial for negative number does not exist.');
}
// if number is 0
else if (number === 0) {
    console.log(`The factorial of ${number} is 1.`);
}

// if number is positive
else {
    let fact = 1;
    for (i = 1; i <= number; i++) {
        fact *= i;
    }
    console.log(`The factorial of ${number} is ${fact}.`);
}
    </script>
```

PROGRAM-7 Odd Even Number

```
<script>
      // Returns true if n is
// even, else odd
function isEven(n) {
   return (n % 2 == 0);
}

// Driver code
let n = 1004;

isEven(n) ? console.log("Even") : console.log("Odd");
   </script>
```

Note: [ternary operator approach - condition? Value if true:value if false]

PROGRAM-8 Find first 10 prime from user input

```
<script>
      function isPrime(num) {
   if (num <= 1) {
      return false;
   }

   for (let i = 2; i <= Math.sqrt(num); i++) {
      if (num % i === 0) {
         return false;
      }
   }

   return true;
}

function findFirstNPrimes(n) {
   const primes = [];
   let num = 10;

   while (primes.length < n) {
      if (isPrime(num)) {
         primes.push(num);
```

```
        }
        num++;
    }

    return primes;
}

const first10Primes = findFirstNPrimes(10);
console.log("First 10 prime numbers:", first10Primes);

    </script>
```

PROGRAM-9 Swapping Two Numbers

```
let a = 20;
let b = 10;
let temp;

console.log(`before swapping: a= ${a}`);
console.log(`before swapping b= ${b}`);

temp = a;
a = b;
b = temp;

console.log(`after swapping a= ${a}`);
console.log(`after swapping b= ${b}`);
        </script>
```

PROGRAM - 10 Positive negative or zero number

```
<script type="text/javascript" language="javascript">
const number = prompt("Enter a number");
if (number > 0) {
    console.log("The number is positive");
}
else if (number < 0) {
    console.log("The number is negative");
}
else {
    console.log("The number is zero");
};
</script>
```

PROGRAM-11 Armstrong number of 3 digit

```
// program to check an Armstrong number of three digits

let sum = 0;
const number = prompt('Enter a three-digit positive integer: ');

// create a temporary variable
let temp = number;
while (temp > 0) {
    // finding the one's digit
    let remainder = temp % 10;

    sum += remainder * remainder * remainder;

    // removing last digit from the number
    temp = parseInt(temp / 10); // convert float into integer
}
// check the condition
if (sum == number) {
    console.log(`${number} is an Armstrong number`);
}
else {
    console.log(`${number} is not an Armstrong number.`);
}
```

PROGRAM-11 Armstrong number of n digit (Only Logic)

```
// program to check an Armstrong number of n digits

// take an input
const number = prompt("Enter a positive integer");
const numberOfDigits = number.length;
let sum = 0;

// create a temporary variable
let temp = number;

while (temp > 0) {

    let remainder = temp % 10;

    sum += remainder ** numberOfDigits;
```

```
    // removing last digit from the number
    temp = parseInt(temp / 10); // convert float into integer
}

if (sum == number) {
    console.log(`${number} is an Armstrong number`);
}
else {
    console.log(`${number} is not an Armstrong number.`);
}
```

Program 12:
Write JS to handle following mouse events
1) If mouse is over heading should turn yellow, If mouse goes out then it should turn black.
2) If find time button is clicked then show date and time information.
3) If button named "red" is clicked then background color should turn red, and button named "green" is clicked then background color should turn green

```
<html>
<head>
<script type="text/javascript">
function fun(id)
{
id.style.color = "yellow";
}
function fun2(id)
{
id.style.color = "black";
}
function fun3(id)
{
d = new Date();
document.getElementById("demo").innerHTML = d;
}
function fun4()
{
id=document.getElementById("bd");
id.bgColor = "red";
}
function fun5()
{
id=document.getElementById("bd");
id.bgColor = "green";
}
</script>
</head>
```

```
<body id="bd">
<h1 onmouseover="fun(this)" onmouseout="fun2(this)">Hello</h1>
<input type="submit" value="Find Time" onclick="fun3(this)"/>
<p id="demo"></p>
<input type="submit" value="red" onclick="fun4()"/>
<input type="submit" value="green" onclick="fun5()"/>
</body>
</html>
```

More Examples For Reference

Example:

Write a function using ES6 to calculate and print all prime numbers between given two numbers passed as an argument assume that first number is smaller then second number.

```
// take input from the user
const lowerNumber = parseInt(prompt('Enter lower number: '));
const higherNumber = parseInt(prompt('Enter higher number: '));

prime_num = (lowerNumber,higherNumber) =>{
// looping from lowerNumber to higherNumber
for (let i = lowerNumber; i <= higherNumber; i++) {
    let count = 0;

    // looping through 2 to user input number
    for (let j = 2; j < i; j++) {
        if (i % j == 0) {
            count = 1;
            break;
        }
    }

    // if number greater than 1 and not divisible by other numbers
    if (i > 1 && count == 0) {
        console.log(i);
    }}
}
prime_num(lowerNumber,higherNumber)
```

Example:

Write Java Script for find first 10 prime numbers

```
var count = 10;
for(let i=0;i<50;i++) {
   if(count > 0) {
      const number = i;
      let isPrime = true;

   // check if number is equal to 1
   if (number === 1) {
      console.log("1 is neither prime nor composite number.");
   }

   // check if number is greater than 1
   else if (number > 1) {

   // looping through 2 to number-1
      for (let i = 2; i < number; i++) {
         if (number % i == 0) {
            isPrime = false;
            break;
         }
      }

      if (isPrime) {
         document.write(number + "<br>");
         count = count-1;
      }
   }

   // check if number is less than 1
   else {
      console.log("The number is not a prime number.");
   }
   }
}
</script>
```

Example: (Alternate)

Write a JavaScript that uses function to calculate how many days are left in your birthday?

```
<script>
function daysdifference(date1, date2)
{
   one_day =24*60*60*1000; // one day time in milliseconds (86400000)
   date1_ms= date1.getTime(); //get time in milliseconds ( 0 hours, 0 minutes, 0
seconds starting from January 1, 1970 to Sat Feb 10 2024)
```

```
    date2_ms= date2.getTime(); //get time in milliseconds ( 0 hours, 0 minutes, 0
seconds starting from January 1, 1970 to current date)
    difference_ms = Math.abs(date1_ms-date2_ms);
    return(Math.round(difference_ms/one_day));
}
var d1 = new Date();
d1.setDate(10); // set date
d1.setMonth(1); //set month
// now d1 = Sat Feb 10 2024
var d2 = new Date(); //current date
document.write("No of days left : "+ daysdifference(d1,d2));
</script>
```

Example:
Write a program using Java Script, which sorts elements of an array in descending order.

```
const arr2 = [54,23,12,10,40,400,97,100];
function arrSort(arr) {
    arr.sort((a,b)=>b-a);   //for ascending a-b
    return arr;
}
console.log(arrSort(arr2));
</script>
```

Write a JavaScript program to print first N odd numbers divisible by 7.

```
function NumGen(n)
{

    // Iterate from 0 to N
    for(let j = 1; j < n + 1; j++)
    {
        if ( j % 2  == 1 && j % 7 == 0)
            document.write(j + " ");
    }
    return n;
}
NumGen(50);
```

Example:
Write java script function to find maximum value among three different value entered by user.

```
<script>
   // take input from the user
const num1 = parseInt(prompt("Enter first number: "));
const num2 = parseInt(prompt("Enter second number: "));
const num3 = parseInt(prompt("Enter third number: "));
let largest = Math.max(num1,num2,num3)

// display the result
console.log("The largest number is " + largest);
</script>
```

or

```
<script>
   // take input from the user
const num1 = parseInt(prompt("Enter first number: "));
const num2 = parseInt(prompt("Enter second number: "));
const num3 = parseInt(prompt("Enter third number: "));
let largest;

// check the condition
if(num1 >= num2 && num1 >= num3) {
   largest = num1;
}
else if (num2 >= num1 && num2 >= num3) {
   largest = num2;
}
else {
   largest = num3;
}


// display the result
console.log("The largest number is " + largest);
</script>
```

Example:
Write a JavaScript program which accepts N as input and print N Fibonacci numbers as list.

```
// take input from the user
const number = parseInt(prompt('Enter the number of terms: '));
let n1 = 0, n2 = 1, nextTerm;

console.log('Fibonacci Series:');
for (let i = 1; i <= number; i++) {
```

```
    console.log(n1);
    nextTerm = n1 + n2;
    n1 = n2;
    n2 = nextTerm;
}
```

Example: (Logic)
Write a JS to print all number from 1-100 by adhering following condition:
print only those number whose reverse of square and square of reverse are same.
For ex. Square(12)=144, Reverse(144)=441 and Reverse(12)=21,Square(21)=441.
so, final results of both the cases are same.Print all numbers following these cases between 1-100.

```
// To reverse Digits of numbers
function reverseDigits(num)
{
    let rev = 0;
    while (num > 0)
    {
        rev = rev * 10 + num % 10;
        num = parseInt(num / 10, 10);
    }
    return rev;
}

// To square number
function square(num)
{
    return (num * num);
}

// To check Adam Number
function checkAdamNumber(num)
{
    // Square first number and square reverse digits of second number
    let a = square(num);
    let b = square(reverseDigits(num));

    // If reverse of b equals a then given number is Adam number
    if (a == reverseDigits(b)) {
        document.write(num + " is Adam Number <br>");
    }
}

for(i=0;i<100;i++){
    checkAdamNumber(i)
}
```

Example:
Write a JS to check that given no. is perfect no. or not. For ex. 6 is a perfect no., bcoz the factors of 6 are 1,2,3 & 6. So addition of all factors excluding no. itself is 6. So it is a perfect no. Likewise 28 is also a perfect no.

```
function is_perfect(number) {
  // Initialize a variable temp to store the sum of factors
  var temp = 0;

  // Iterate through numbers from 1 to half of the input number to find factors
  for (var i = 1; i <= number / 2; i++) {
    // Check if i is a factor of the input number
    if (number % i === 0) {
      // If i is a factor, add it to the sum
      temp += i;
    }
  }

  // Check if the sum of factors is equal to the original number and not zero
  if (temp === number && temp !== 0) {
    // If true, log that it is a perfect number
    console.log("It is a perfect number.");
  } else {
    // If false, log that it is not a perfect number
    console.log("It is not a perfect number.");
  }
}
// Call the is_perfect function with the input number 28
is_perfect(28);
```

Example:
Write an ES6 script to find distance between two points using two point objects.

```
<script>
class point
{
   constructor(x,y,z)
   {
      this.x=x;
      this.y=y;
      this.z=z;
   }
   dist=(p2)=>
   {
      let ans=Math.pow((p1.x-p2.x),2)+Math.pow((p1.y-p2.y),2)+Math.pow((p1.zp2.z),2);

let dist= Math.sqrt(ans);
```

```
return dist;

    }
}
let p1=new point(5,5,5);
let p2=new point(4,4,4);
console.log(`distance=${p1.dist(p2)}`)
</script>
```

Output:

```
distance=1.7320508075688772
```

Example:

Design a registration form with username and password and email fields using HTML and JavaScript. Perform following validations. (i) Username field: minimum length5 and maximum length 10 characters, it should not start with special charcters (ii) Password field: it must contain at least one digit and at least one special character(iii)Email field: it must follow proper email syntax(for ex.,xyz.pqr@mnp.co.in)

```
<html>
<head>
<script type="text/javascript">
function fun()
{
   pat_u1=/^\W/;
   pat_u2=/^\w{5,10}$/
   pat_p=/\W+\d+/;
   pat_e = /^\w+([\.-]?\w+)@\w+([\.-]?\w+)(\.\w{2,3})+$/

   u = document.getElementById("u1").value;
   p = document.getElementById("p1").value;
   e = document.getElementById("e1").value;
   if(pat_u1.test(u))
   {
      alert("Must not start with special character");
   }
   else if(!pat_u2.test(u)){
       alert("Username must contain 5 to 10 characters.")
   }
   else if(!pat_p.test(p)){
       alert("Must contain atleast 1 symbol and 1 digit.")
   }
   else if(!pat_e.test(e)){
      alert("enter valid email id")
   }
   else{
      alert("perfect")
   }
```

```
}
</script>
</head>
<body>
<input type="text" id="u1"/>
<input type="password" id="p1"/>
<input type="text" id="e1"/>
<input type="submit" onclick="fun()"/>
</body>
</html>
```

Note: Above codes are only for reference. Alternate way/Logic is always possible.