

1. Reverse a string

```
function reverseString(string){  
    return string.split('').reverse().join('');  
}  
console.log(reverseString('Hello')); //Output:'olleH'
```

2. Check for Palindrome

```
function isPalindrome(num){  
    let num1 = num.split('').reverse().join('');  
    return (num == num1) ? "Yes it is" : "No it isn't" ;  
}  
console.log(isPalindrome("121")); //Output:"Yes it is"  
console.log(isPalindrome("911")); //Output:"No it isn't"  
console.log(isPalindrome("0")); //Output:"Yes it is"
```

3. Fibonacci Series

```
function fibonacci(n){  
    let series = [0,1];  
    for(let i=2;i<n;i++){  
        series.push(series[i-1]+series[i-2]);  
    }  
    return series.slice(0,n);  
}  
console.log(fibonacci(10)); //Output:[0, 1, 1, 2, 3,  
                                     5, 8, 13, 21, 34]
```

4. Factorial of a number

```
function factorial(n) {  
    let fact = 1;  
    if(n<0) return "Factorial is undefined for negative  
integers";  
    for(let i=1;i<=n;i++){  
        fact = fact*i;  
    }  
    return fact;  
}  
console.log(factorial(5)); //Output:120  
console.log(factorial(0)); //Output:1  
console.log(factorial(-5)); //Output:Factorial is  
                           undefined for  
                           negative integers
```

5. Prime Number Check

```
function primeCheck(num) {  
    if(num<2) return false;  
    for(let i=2;i<=Math.sqrt(num);i++){  
        if(num%i==0) return false;  
    }  
    return true;  
}  
console.log(primeCheck(16)); //Output:false  
console.log(primeCheck(17)); //Output:true
```

6. Count Vowels and Consonants

```
function count(string){
    let consonants =
string.match(/[bcdfghjklmnpqrstvxyz]/ig);
    let vowels = string.match(/[aeiou]/ig);
    return `Vowels:${vowels.length},
Consonants:${consonants.length}`;
}
console.log(count("Ganesh205")); //Output:- Vowels:2,
                                         Consonants:4
```

7. Sort an Array

```
function sort(array){
    return array.sort((a,b) => a-b);
}
console.log(sort([10, 1, 4, 2, 3])); //Output:[1, 2, 3,
                                         4, 10]
```

8. Merge Two Arrays

```
function merge(array1,array2){
    return array1.concat(array2);
}
console.log(merge([1, 2, 3],[4, 5, 6])); //Output:[1, 2,
                                         3, 4, 5, 6]
```

9. Find the largest element in an array

```
function largest(arr){  
    return Math.max(...arr);  
}  
console.log(largest([1, 2, 15, 4, 5])); //Output:15
```

10. Remove Duplicates from an array

```
function remove(arr){  
    return arr.filter((value,index) => arr.indexOf((value)  
=== index);  
}  
console.log(remove([1, 2, 2, 3, 4, 4, 5])); //Output:[1,  
                                              2, 3, 4, 5]
```

11. Check if a Number is Armstrong

```
function isArmstrong(n,sum=0){  
    let num = n.toString();  
    for(let i=0;i<num.length;i++){  
        sum += Math.pow(Number(num[i]),num.length);  
    }  
    return (sum == n) ? "Yes it is" : "it is not";  
}  
console.log(isArmstrong(153)); //Output:Yes it is  
console.log(isArmstrong(9474)); //Output:Yes it is
```

12. Reverse a Number

```
function reverseNumber(n) {
  let result =
    Number(Math.abs(n).toString().split('').reverse().join('')
);
  return (n<0) ? -result : result;
}
console.log(reverseNumber(119)); //Output:911
console.log(reverseNumber(-119)); //Output:-911
```

13. Calculate GCD of Two Numbers

```
function gcd(a,b) {
  if(b==0) return a;
  return gcd(b,a%b);
}
console.log(gcd(12,8)); //Output:4
```

14. Check for Anagram

```
function anagramCheck(str1,str2){
  let word1 =
    str1.replace(/\s/g,'').toLowerCase().split('').sort().join('');
  let word2 =
    str2.replace(/\s/g,'').toLowerCase().split('').sort().join('');
  return (word1 == word2) ? "Yes it is" : "No it is not"
;
}
console.log(anagramCheck("sIl e nt","listen"));
//Output:Yes it is
```

15. Count the Number of Digits in a Number

```
function digitsCount(num) {  
    return (Math.abs(num).toString()).length;  
}  
console.log(digitsCount(911)); //Output:3
```

16. Print the Prime Numbers in a Range

```
function primeCheckInRange(n,m) {  
    let elements = [];  
    for(let i=n;i<=m;i++){  
        if(i<2) continue;  
        let isPrime = true;  
        for(let j=2;j<=Math.sqrt(i);j++){  
            if(i%j == 0){  
                (isPrime) = false;  
                break;  
            }  
        }  
        if(isPrime){  
            elements.push(i);  
        }  
    }  
    return elements;  
}  
console.log(primeCheckInRange(10,30)); //Output:[11, 13,  
                                             17, 19, 23, 29]
```

17. Find the Second Largest Element in an Array

```
function secondLargest(arr) {  
    let sorted = [...new Set(arr)];  
    let result = sorted.sort((a,b) => b-a);  
    return result[1];  
}  
console.log(secondLargest([1, 3, 5, 8, 2, 9])); //Output:8
```

18. Pascal's triangle

```
function generatePascalsTriangle(numRows) {  
    const triangle = [];  
    for (let row = 0; row < numRows; row++) {  
        triangle[row] = [1];  
        for (let col = 1; col < row; col++) {  
            triangle[row][col] = triangle[row - 1][col - 1] +  
triangle[row - 1][col];  
        }  
        if (row > 0) triangle[row].push(1);  
    }  
    for (let row of triangle) {  
        console.log(...row);  
    }  
}  
generatePascalsTriangle(5); //Output: 1
```

```
1 1  
1 2 1  
1 3 3 1  
1 4 6 4 1
```

19. Find the Missing Number in an Array

```
function findMissingNumbers(arr) {
  const maxNum = Math.max(...arr);
  const numSet = new Set(arr);
  const missing = [];
  for (let i=1;i<=maxNum;i++) {
    if (!numSet.has(i)) {
      missing.push(i);
    }
  }
  return missing;
}
console.log(findMissingNumbers([1, 2, 4, 6, 7]));
//Output:[3, 5]
```

20. Convert Decimal to Binary

```
function convert(n){
  let reminder = [];
  while(n > 0){
    reminder.push(n%2);
    n = Math.floor(n/2);
  }
  return Number(reminder.reverse().join(''));
}
console.log(convert(13)); //Output:1101
```


21. Swap Two Numbers

```
function swap(a,b) {  
    return [a,b] = [b,a];  
}  
console.log(swap(2,3)); //Output:[3, 2]
```

22. Check for Perfect Number

```
function perfectNumber(n, sum=0) {  
    for(let i=1; i<n; i++) {  
        if (n%i==0) {  
            sum+=i;  
        }  
    }  
    return (sum==n)? "Perfect number":"Not a perfect  
number";  
}  
console.log(perfectNumber(28)); //Output:Perfect number  
console.log(perfectNumber(10)); //Output:Not a Perfect  
                                number
```

23. Find the Sum of Digits of a Number

```
function sumOfDigits(num) {  
    return num.toString().split('').reduce((a,b) => a +  
    Number(b), 0);  
}  
console.log(sumOfDigits(1234)); //Output:10
```

24. Implementing a Simple Calculator

```
function calculator(a,b,sign) {
  if ((typeof a === "number") && (typeof b === "number"))
  {
    switch (sign) {
      case "+":
        return a + b;
      case "-":
        return a - b;
      case "*":
        return a * b;
      case "/":
        return (b!=0)? a / b: "Can't divide by zero";
    }
  }
  return "unknown value";
}
console.log(calculator(5,5,"+")); //Output:10
```

25. Find the First Non-Repeated Character in a String

```
function nonRepeatedChar(str){
  for(let char of str){
    let regex =new RegExp(char,'ig');
    if (str.match(regex).length == 1){
      return char;
    }
  }
  return null;
}
console.log(nonRepeatedChar("Malayalam")); //Output:y
```

26. Check if a String is Empty

```
function stringCheck(str) {  
    return (str === "") ? "string is empty":"String isn't  
empty";  
}  
console.log(stringCheck(" ")); //Output:String is empty
```

27. Find the Length of a String

```
function stringLength(str) {  
    return str.length;  
}  
console.log(stringLength("JavaScript")); //Output:10
```

28. Count the Occurrences of a Character in a String

```
function occurrencesOfCharacter(str,char) {  
    return (str.match(char)).length;  
}  
console.log(occurrencesOfCharacter("MalAyalam",/a/ig));  
//Output:4
```

29. Remove All Whitespaces from a String

```
function removeWhiteSpace(str){
    return str.replace(/\s/g, "");
}
console.log(removeWhiteSpace("J a v a S c r i p t"));
//Output:JavaScript
```

30. Find the Common Elements in Two Arrays

```
function commonElements(arr1,arr2){
    return arr1.filter((val) => arr2.includes(val));
}
console.log(commonElements([1, 2, 2, 3, 4], [3, 4, 5, 6]));
//Output:[3, 4]
```

31. Find the Factorial of a Number using Recursion

```
function factorial(n){
    if(n==0) return 1;
    if(n==1) return 1;
    return n*factorial(n-1);
}
console.log(factorial(5)); //Output:120
```

32. Generate Random Numbers

```
function randomNumber() {  
    return Math.round(Math.random()*1000);  
}  
console.log(randomNumber()); //Output:911
```

33. Check if a Year is Leap Year

```
function leapYearCheck(year) {  
    return ((year%4==0 && year%100!=0) || (year%400==0))?  
true : false;  
}  
console.log(leapYearCheck(2004)); //Output:true  
console.log(leapYearCheck(2025)); //Output:false
```

34. Find the Sum of First N Natural Numbers

```
function sumOfNaturalNumbers(n,sum=0) {  
    for(let i=1;i<=n;i++) {  
        sum += i;  
    }  
    return sum;  
}  
console.log(sumOfNaturalNumbers(100)); //Output:5050
```

35. Implement a Simple Login System

```
function validateLogin(username, password) {
    // Username must start with a capital letter, have a
    hyphen, and 0-4 digits
    const usernamePattern = /^[A-Z].*[-].*\d{0,4}.*$/;
    // Password must start with lowercase, have 1+
    uppercase, 4+ digits, and 1+ special character
    const passwordPattern =
/^[a-z] (?.*[A-Z]) (?.*(?:\d){4,}) (?.*[#+-]).*$/;
    const isUsernameValid =
usernamePattern.test(username);
    const isPasswordValid =
passwordPattern.test(password);
    if (isUsernameValid && isPasswordValid) {
        console.log("Login successful!");
        return true;
    } else {
        console.log("Login failed:");
        if (!isUsernameValid) console.log(" - Invalid
username format.");
        if (!isPasswordValid) console.log(" - Invalid
password format.");
        return false;
    }
}

validateLogin('Gan-esh2001', 'gPass1234#'); //Output:Login
successful!
validateLogin('gPass1234#', 'John-Doe1234');
//Output:Login failed:
    - Invalid username format.
    - Invalid password format.
```

36. Find the Maximum Occurring Character in a String

```
function maxChar(str) {
  let maxLength = 0;
  let maxChar = '';
  for(let char of str){
    let regex = new RegExp(char, 'ig');
    let maxArr = str.match(regex);
    if (maxArr.length > maxLength) {
      maxLength = maxArr.length;
      maxChar = maxArr[0];
    }
  }
  return maxChar;
}
console.log(maxChar("MalAyalam")); //Output:a
```

37. Implementing Bubble Sort

```
function bubbleSort(arr) {
  let n = arr.length;
  for(let i=0; i<n-1; i++){
    for (let j=0; j<n-1-i; j++)
      if (arr[j] > arr[j+1]){
        let temp = arr[j];
        arr[j] = arr[j+1];
        arr[j+1] =temp;
      }
  }
  return arr;
}
console.log(bubbleSort([5, 2, 4, 3, 1])); //Output:[1, 2,
                                           3, 4, 5]
```

38. Implementing Selection Sort

```
function selectionSort(arr) {
  let n = arr.length;
  for(let i=0;i<n-1;i++){
    let minIndex = i;
    for(let j=i+1;j<n;j++){
      if(arr[j]<arr[minIndex]){
        minIndex = j;
      }
    }
    if(minIndex!==i){
      let temp = arr[i];
      arr[i] = arr[minIndex];
      arr[minIndex] = temp;
    }
  }
  return arr;
}
console.log(selectionSort([5, 2, 4, 3, 1])); //Output:[1,
                                             2, 3, 4, 5]
```

39. Check if a String Contains Another String

```
function substringCheck(str,subStr){
  return
  str.toLowerCase().includes(subStr.toLowerCase());
}
console.log(substringCheck("Javascript","Script"));
//Output:true
console.log(substringCheck("Javascript","data"));
//Output:false
```