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
```