```javascript
//1. Remove falsy values from array
//ja a 6 ta falsy value ai gulo k chara amra onno value gulo bar kore anbo
// passing Boolean to array.filter() will remove falsy values from array
let miscellaneous = ['🍎', false, '🐋', NaN, 0, undefined, '🏏🏐', null, '', '🐛'];
let fruits = miscellaneous.filter(Boolean);//Boolean function reference pass koraci call kori ni.
console.log(fruits);
//output: ["🍎", "🐋", "🏏🏐", "🐛"]


// Boolean(expression) in JS returns true/false
Boolean(5 < 6);//true
Boolean( 100 > 200);//false
Boolean('JavaScript');//true
Boolean(' ');//false




//array example
let miscellaneous = ['🍎', false, '🐋', NaN];
let fruits = miscellaneous.filter(function(element) {});//function liklam call kori ni kintu.





//2. Convert any value to boolean
//je kono value k boolean a convert korbo
//So je kono value k boolean a convert korte hole tar age double not boshiya dile e hoiya jabey
// Using !! in front of any value
console.log(!!"mashrafi");//true
console.log(!!1);//true
console.log(!!0);//false
console.log(!!undefined);//false


// We can also use Boolean() to achieve same
console.log(Boolean("mashrafi"));//true



// 3. Resizing any array
let animals = ["🐕", "🐈", "🐛", "🦎"];



// We can use array's length property
animals.length = 3;//Amra koto tuko length chai length a bole dile e hobey

console.log(animals); // ["🐕", "🐈", "🐛"]








//4. How to flattern a multi-dimensional array
let smileys = ['🐛', ['😄', '😃'], '🙂', ['🐛', '😑']];

//ai multi-dimensional array k single kore felbo mane alada alada kore felbo
//flat use kore amra aita korte pari aita shudu one level array k flat korte pare
console.log(smileys.flat());
//output: ["🐛", "😄", "😃", "🙂", "🐛", "😑"]
```

```javascript
//je kono level porjonto flat korte chaile flat Infinity baboher korbo.
console.log(smileys.flat(Infinity));
//output:["🤐", "😅", "😆", "😊", "🤐", "😅"]




//5. Short conditionals.... & (&& ||)
const captain = "Mashrafi";


//1
//simple if use kore aita korbo amra
if(captain === "Mashrafi"){
    console.log("♥🤐");
}
//output: ♥🤐




//2
//1. k amra 1 line korte pari && use kore
//short conditional and holo: &&
captain === "Mashrafi" && console.log("♥🤐");
//output: ♥🤐


//3
//2. er ulta korbo... not diya ekta value output shishabe dekhabo
if(captain !== "Mashrafi"){
    console.log("😊");
}



//4
//3 k ai vabe o likte pari
// || use kory
captain === "Mashrafi" || console.log("😒")// true hole:Mashrafi  or false hole: 😒




//6. Replace all occurances of a string
//ekta boro string k boro string er maddo replace kore dibo
const quote = "React is a JS framework & this framework is the most popular front-end framework right now";



//joto jaigai framework kotha ta ase amra oitake library diya replace kore dibo
// Replace all occurances of 'framework' with 'library'
//aita amra String.replace use kore korte pari
console.log(quote.replace(/framework/g, "library"));//1st parameter bolbo ki replace korbo or ki replace korbo, Akhon sh
eta boro hater & choto hater hote pare so amra RegExp use korbo, joto gula framework ase shob replace korbo so g use kor
bo mane global   //2nd parameter ki diya replace korte chassi
//output: // React is a JS library & this library is the most popular front-end library right now




//7. Log values with variable names smartly
const library1 = "jQuery";
const library2 = "React";
```

```javascript
// //jeta korte pari
// console.log(`library1 - ${library1}`);// library1 - jQuery
// console.log(`library2 - ${library2}`);// library2 - React


//mainly je babe korte pari (aita smart way)
console.log({library1});//output:{library1: "jQuery"}
console.log({library1/*property*/});//{library1: "jQuery"}
// console.log({library1 : library1}); //property: value aita k e choto kore likha hoise ai vabe likher dorkar nai
//object patern use koresi object diya diyasi
//property shohokare value chai
console.log({library2});// {library2: 'React'}
//object patern use korlam




//8. Amra jodi kono ekta task er performance jante chai
// Know performance of a task
// We can wrap our task with performance.now()


//for loop ta hote koto khon laglo dekbo performance.now() use kore wrap kore dibo
const startTime = performance.now();

for(let i = 0; i <= 50; i++) {
    console.log(i);
}

const endTime = performance.now();

console.log(`loop took ${endTime - startTime} milliseconds to finish`);




//1. one line a swaping kore dekhaw..
//array descructuring
let array = [1, 2, 3, 4, 5];
[array[0], array[4]] = [array[4], array[0]];
console.log(array);
//output: [5, 2, 3, 4, 1]

//in math
let a = 1;
let b = 2;
b = a + (a = b) - b;
console.log(a, b);
//output: 2 1


// 2. copy to clipboard


// <!DOCTYPE html>
// <html lang="en">
//   <head>
//     <meta charset="UTF-8" />
//     <meta http-equiv="X-UA-Compatible" content="IE=edge" />
//     <meta name="viewport" content="width=device-width, initial-scale=1.0" />
```

```javascript
//      <title>JavaScript Tips & Tricks</title>
//    </head>
//    <body>
//        <h1>২ হলি JavaScript Tips</h1>
//        <p id="text">learnwithsumit.com</p>
//        <p><button id="copy" onclick="handleClick()">Copy</button></p>
//        <input id="number" type="number" value="123" />
//        <script src="./main.js"></script>
//    </body>
// </html>


//Example 2
//2
function copyToClipBoard(str) {
    const element = document.createElement("textarea");
    element.value = str;
    document.body.appendChild(element);
    element.select();
    document.execCommand("copy");//execCommand er bitor vibino command er name dewa jai
    document.body.removeChild(element);//user jeno na dekhe element remove kore dilam
  }
  //1
  function handleClick() {
    let text = document.querySelector("#text");
    copyToClipBoard(text.innerText);
  }
  //output: learnwithsumit.com    Copy button a click korle aita jabo outpu




// 3. destructuring aliases

const language = {
    name: "JavaScript",
    founded: 1995,
    founder: "Brendan Eich",
  };

  const { name, founder} = language;

  console.log(name, founder);

  //Amon jodi hoi amr onek bor ekta application she khane name ek e name variable thakte pare & founder name o. So Akhon
 ami onno name aita k ber korbo. Ki babe ber korbo? dekhi....
  //short cart ekta way ase
  //Clone mane(:) = aliase/ dak name


  const language = {
    name: "JavaScript",
    founded: 1995,
    founder: "Brendan Eich",
  };

  const { name:language, founder: creator} = language;//name er language name dilam

  console.log(languageName, createrName);




// 4. get value as data type
```

```javascript
//<input id="number" type="number" value="123" />
const element = document.querySelector("#number").valueAsNumber;//querySelector thake amra je value ta pabo sheta always
 text hishebe pai
//value k ami jodi number hishabe pete chai ekta shohoj opai ache .valueAsNumber diya dibo
console.log(typeof element);//sure hote chile typeof diya check kore nite pari




// 5. remove duplicates from array
const array = [1, 2, 2, 2, 3, 5, 6, 5];

console.log([...new Set(array)]); //set crate korte hole new keywork diya korte hoi then array spreade kore dilam akhon
ekta notun array pelam




// 6. compare two arrays by value
//array reference type
//2 ta array kokhono same hoina So amra dekbo element gula same ki na
const hasSameElements = (a, b) => {
  return a.length === b.length && a.every((v, i) => v === b[i]);//every hosse array er ekta method
};

console.log(hasSameElements([1, 2], [1, 2]));



//pottek ta element er jonno function call hoi ai Example gula te



// 7. shuffling array
//array ulta palta korte thakbo
const numbers = [1, 2, 3, 4, 5, 6];

console.log(numbers.sort(() => Math.random() - 0.5));//.5 minus kore delam jeno kokhono positivr kokhono negative value
dai. half + & half - k  diya dilam
//array .sort 2 ta 2 ta kore pair akare nei




// 8. comma operator

let x = 1;
x = (x++, x);

console.log(x);
//output: 2

let y = (2, 3);
console.log(y);
//output: 3

let a = [[1, 2, 3, 4], [3, 4, 5], [5, 6], [7]];

for (let i = 0, j = 3; i <= 3; i++, j--) {
  console.log("a[" + i + "][" + j + "] = " + a[i][j]);
}
```

```javascript
//1. what will be the output of the below codes?
console.log([] + []);
// output: faka

console.log([] - []);
//output: 0

console.log([1, 2] + [ 1, 2]);
//output: 1,21,2

console.log([1, 2] - [ 1, 2]);
//output: NaN

console.log("Ami" + "Tomi");
//output: AmiTomi

console.log("Ami" - "Tomi");
//output: NaN

console.log({} + []);//Obj + Array
//output: [object Object]

console.log({} - []);
//output: NaN

const a = {};//boro obj er bitor choto obj
const b = [];//boro array
console.log(a, b);

console.log(true + 5);
//output: 6


// Boolean k number a convert kora jai So js shetake jug korte parbey




//2. what will be the output of the below codes?
function myFunction(){
  return 'Bangladesh';
}
const string = myFunction `hello`;
console.log(string);
//output: Bangladesh
//keno Bangladesh output ashce? myFunction to call kori ni ki vabe ashlo? Tag Tamplate literal er karone dekte passi. Ta
mplate literal er age amra jokhon kono function likhe dai tar mane function er por je Tamplate literal ongsho ta ase she
ta ai function er Argument akare chole jai. Mane ai function ta call hoiya jai.
//Arguments aita ekta function er builtin array like object. Jeter modda function er shob arguments gulo thake.




//3. how to make all text contents of a website editable?
document.body.contentEditable = true;




//4. what will be the output of the below codes?
function b(){
  console.log(`The length is ${this.length}`);
}

let a = {
  length: 10,
  method: function(b){
```

```javascript
    arguments[0]();
  }
};
a.method(b, 5);
//output: The length is 2




//5. what will be the output of the below codes?
const a = 'constructor';//aita string aita iterable
console.log(a[a](01));//1
//String[constrator property]


let b = new String("Bangladesh");
console.log(b); //constructor method pabo ai string er bitory
console.log(String(01));//1
//(01) = boro hater string function er modda ekta number 01 diya dilam she eta k string a convert kore disse




//6. what will be the output?
console.log(0.1 + 0.3);
//output: 0.4
console.log(0.1 + 0.2);//aita float number tai output normal na.
//output: 0.30000000000000004 kisu kisu khatre ai rokom hoi, jahatu 2 tar base alada
console.log(0.3 + 0.6);
//Base 2 = 0, 1
//Base 3 = 0, 1, 2
//decimal niya jokhon kaj kori tar base 10. Computer er shob kisur base hosse 2.




//7. what will be the output of below code?
console.log(("Bangladesh").__proto__.__proto__.__proto__);//("string/Bangladesh").__String__.__Object__.__Null__ //choto
 string ashse bor string theke boro string ashse bor Object theke er opor r kisu nai
//.__proto she string ta je khan theke create hoiyase sheta return kore.

let c = new String("Bangladesh");
console.dir(c);//aiter bitore __proto__ pabo.






//8. make a function that sorts its arguments without using loops
const myFunction = function (){
  console.log([].slice.call(arguments));
  return [].slice.call(arguments).sort();
};
console.log(myFunction(2, 4, 5, 1));
//output: (4) [1, 2, 4, 5]
```