**JavaScript**

**General Points**

1. JavaScript on Server helps in **Powering websites**, **Communicate with databases** and **native feel to web apps**.
2. JS is used in IOT for programming devices and in React Native for mobile app development.
3. Initially jQuery(JavaScript Library) is used to make the JS compatible for Different Browsers, we just needed to add it and use it feature which work on all browser like same(the solution was not efficient BTW).
4. Old Code == Legacy Code 🡪 same thing
5. Unlimited arguments in JS is done with Normal and Arrow function.
   1. In normal function we don’t have to take any arguments e.g.: function fun-name (){ console.log(arguments)}.
   2. In Arrow Function we mention arguments in spread operator type and then we can use inside as an array e.g.: const func = (…args) => {console.log(args)}
6. Anonymous Function = const func\_Name = function(){console.log()}
7. Self-Invoking Function = let func\_Name = (function(N)=>{console.log(N)})(10 -> Value of N)
8. isNaN = it will give true to all value who are not in digit including Undefined. Undefined will result true. But null will be false. Type of Null = “object”
9. to Check type use “” when mentioning the Data Type like: type of “HELLO” == ‘string’ => true
10. isFinite => will give true to all number only. Null will also be true. Undefined is false
11. When Variables are not declared with let and const it becomes a global variable. Same with “var” (declared variable becomes global), let and const introduced the concept of block scope in es7 after 2015
12. Object.assign({},OBJ\_NAME): Will copy properties of on object to another.
13. Object.keys(OBJ\_NAME), Object.values(OBJ\_NAME)
14. Object.entries(OBJ\_NAME) = to give key and value in an array
15. OBJ\_NAME.hasOwnProperty(“key”): To check if a specific key or property exist in an object
16. For-Of is used for Arrays and For-In is used for Objects
17. In a function, we can pass the callback function as a parameter. But if we don’t pass it, the. Function which is using the callback function, works fine. As we have to declare the callback function prior to the normal callback function (which the function which is using the Callback function).
    1. const callback = function(element) { sum += element } arr.forEach(callback). FOR EACH function does not change the original array or make new array. I guess mostly used to make new results based on that array
18. when we create an object form class that process is called Class Instantiation
19. A set can have property. Of inserting an arbitrary element and deleting an arbitrary element. Because when you. Print a set, there is no pattern of printing they will. Show up in output randomly We can use add function to add elements in set, delete to delete insets and has to check whether the element exists in a set or not.

Ex. *Set(6) {1, 2, 3, 4, 5,6}*

1. A map is more like an object. It is not clearly work on key value pair objective. When we provide input it take? One in the left, which is like symbol of key and one in the right, which is symbol of value and we can input it with the help of set function.

Example: *Map(3) {"Finland" => "Helsinki", "Sweden" => "Stockholm", "Norway" => "Oslo"}*

1. With the help of object entities, we can. Use objects and print their value and key collectively. With the help of for in loop but in case of map we can do with for off loop without using object class.

For example: *for (const [country, city] of countriesMap){*

*console.log(country, city)*

*}*

1. When we want to declare a function inside a class, the use of function keyword as prefix is not needed.
2. Static functions do not have access to instance variables because they don't have an instance of the class to access them from.
3. In classes if you want to use a value inside a function but the value is coming from the object you created for that very class. It’s not going to work because the value which is passed in class as an object is only for the instances of that class not for the class itself, in order to use a value during class declare as static property
4. instance level variable cannot accessible in static function
5. Key difference between JSON and JS object is in JSON the key is under “\_” and in object it is not.
6. Closures: they are used to make a variable private by making the variable inside a nested function. Closures can be declared in return statement as self-invoking function.
7. High-level functions, also known as higher-order functions, are functions that can accept other functions as arguments and/or return functions as results.
8. ***Passing a function as an argument*** is not strictly necessary, but it is often done to make the function more flexible and reusable. By passing a function as an argument, you allow the caller of the function to specify custom behavior without modifying the function itself. This promotes code reusability and modularity, as the same function can be used with different callback functions to achieve different results. Stops us to declare same function again for just little difference.
9. Tip: do not get fixated by the way HTML tag is printing in your console. It varies a lot.
10. **Interesting Fact**: When we get data form JSON file or online API *sort() will not be applied to it*, u have to bypass the inbuilt function and return (1,0,-1) based on ascending or descending order.

**Example**: jsonData.countries.country.sort((a, b) => {

// Convert countryName to lowercase for case-insensitive sorting

const countryNameA = a.countryName.toLowerCase();

const countryNameB = b.countryName.toLowerCase();

// Compare the country names

if (countryNameA < countryNameB) {

return -1; // Country A comes before Country B

}

if (countryNameA > countryNameB) {

return 1; // Country A comes after Country B

}

return 0; // Country names are equal

1. window.getComputedStyle(document.querySelector(‘.<class-name>’), null).getPropertyValue(<css-property-name>) => get the property used in css of the class defined in HTML tag.
2. To remove a class from a HTML tag we should use classList.remove(‘<class-name>’) not removeAttribute(‘class’) because it will remove the whole class attribute instead of a lone class.
3. document.getElementById("my-element").getBoundingClientRect() => retrieve the size and position of a specific element relative to the viewport. It returns a DOMRect(top, left, bottom, right,width and height) object containing valuable information about the element's location and dimensions*. It can be helpful for detecting collisions between elements on the page, which can be useful for creating interactive elements or games.*
4. Document.<---->. style.animationDuration = changes the animation speed which was declared in CSS attribute named *animation*.
5. const Music = new Audio("./Sounds/music.mp3") => way to import sound in JS.
6. Using *for of* for iteration of OBJECT makes the iteration go through its prototype as well as object[<properties>], but if we use *for in* with Object.keys(<object-name>) it will undergo iteration only for the object[<property>] not the prototype the object was created with or prototype of the object in general.
7. Const newObj = Object.create(<prototype-object>) => way to create a new object with old prototype properties too.
8. Const str = “Hello” is a string literal (primitive JS DataType).
9. Const str2 = new String(“World”) is a String Object. And every string object have a unique signature so new String(“World”) === str2 is FALSE as well as “World” === str2.
10. Constructor functions are used to create objects with specific properties and behaviors.
    1. Example:

function Icecream(flavor) {

    this.flavor = flavor;

    this.meltIt = function() {

        console.log(`The ${this.flavor} icecream has melted`);

    }

}

let kiwiIcecream = new Icecream("kiwi");

let appleIcecream = new Icecream("apple");

kiwiIcecream; // --> Icecream {flavor: 'kiwi', meltIt: ƒ}

appleIcecream; // --> Icecream {flavor: 'apple', meltIt: ƒ}

The Icecream constructor function serves as a blueprint to ***create ice cream objects*** with flavor properties and a meltIt method.

1. inheritance in JavaScript is based around the prototype object.
2. Node.js is a standalone language. npm is node package manager. Frameworks and libraries are used as node.js modules
3. JavaScript treats numbers with leading zeros as octal (base 8) literals if they are parsed in strict mode.

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**Q&A**

1. What is Global in JS or in Programming Language?
2. What is Window Object in JavaScript?
3. Advantages of callback function if we don’t pass the callback function as a parameter, what will happen?
4. Actual meaning and usage of higher order function in JavaScript.