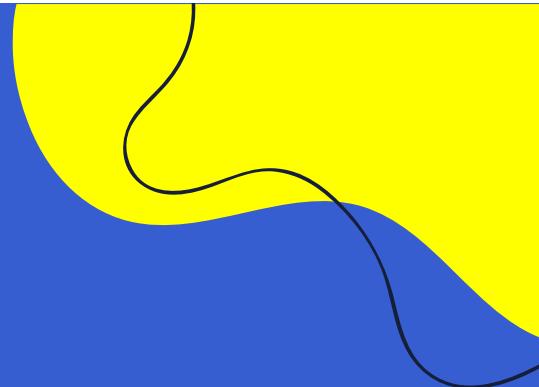




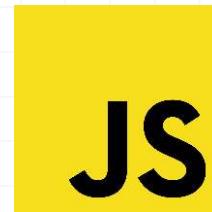
# Thapa Technical JavaScript Complete Course

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# COURSE TOPICS



JS

## BASICS

- How Website Works?
- What is JavaScript?
- History of JavaScript
- Values & Variables
- Data Types in JavaScript
- Concat & Type Coercion
- Operators & Expression
- If Statements & Loops
- Functions in JavaScript
- Arrays in JavaScript
- Strings in JavaScript
- Math Object
- Date & Time in JavaScript

## ADVANCED

- EcmaScript 2015 - 2024
- Window Objects –  
BOM vs DOM
- Events Objects in JavaScript
- localStorage in JavaScript
- Timing Based Events
- Objects in JavaScript
- OOPs in JavaScript
- Event Propagation
- Advanced Functions
- JSON & FETCH API & other APIs
- Promises, Async-Await
- Error Handling in JavaScript

## PRO LEVEL

- How JavaScript Works ?
- 100+ Interview Questions
- 50+ Tips & Tricks
- Notes + List of  
Deprecated properties
- 150+ Animated Slides

PROJECT -  
[ECOM WEBSITE WITH  
HTML, CSS &  
JAVASCRIPT](#) ❤️

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# How to get Most from Our JavaScript Course?

**Code Along:** Avoid passively watching the videos. You'll learn **zero JavaScript skills** by just observing.

**Code along with me!** Get your hands dirty and practice coding yourself.

**Use the Timeline:** Utilize YouTube's timeline feature to skip sections or revisit topics as needed.

**Problem-Solving Practice:** Attempt coding **challenges independently before watching** the solutions.

**Play and Learn:** Don't be afraid to mess around with code to understand it better.

**Find Help:** If you're stuck, look up explanations or ask for help online (**Comment Section / Discord**).

**Think Back and Practice:** Look back on what you've learned and practice it again (**After 5days**).

**Set Targets:** Decide what you want to achieve and take small steps to get there. Don't rush.



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# My recommendation - JavaScript Course

**Make a Plan:** Consider how much time you can dedicate each day. For instance, watching 1 hour daily will finish the course in 12 days, while 3 hours daily will complete it in 4 days. Adjust your schedule to fit your learning pace.

**What I want:** You could aim to watch 2 hours of videos and practice for 1 hour each day.

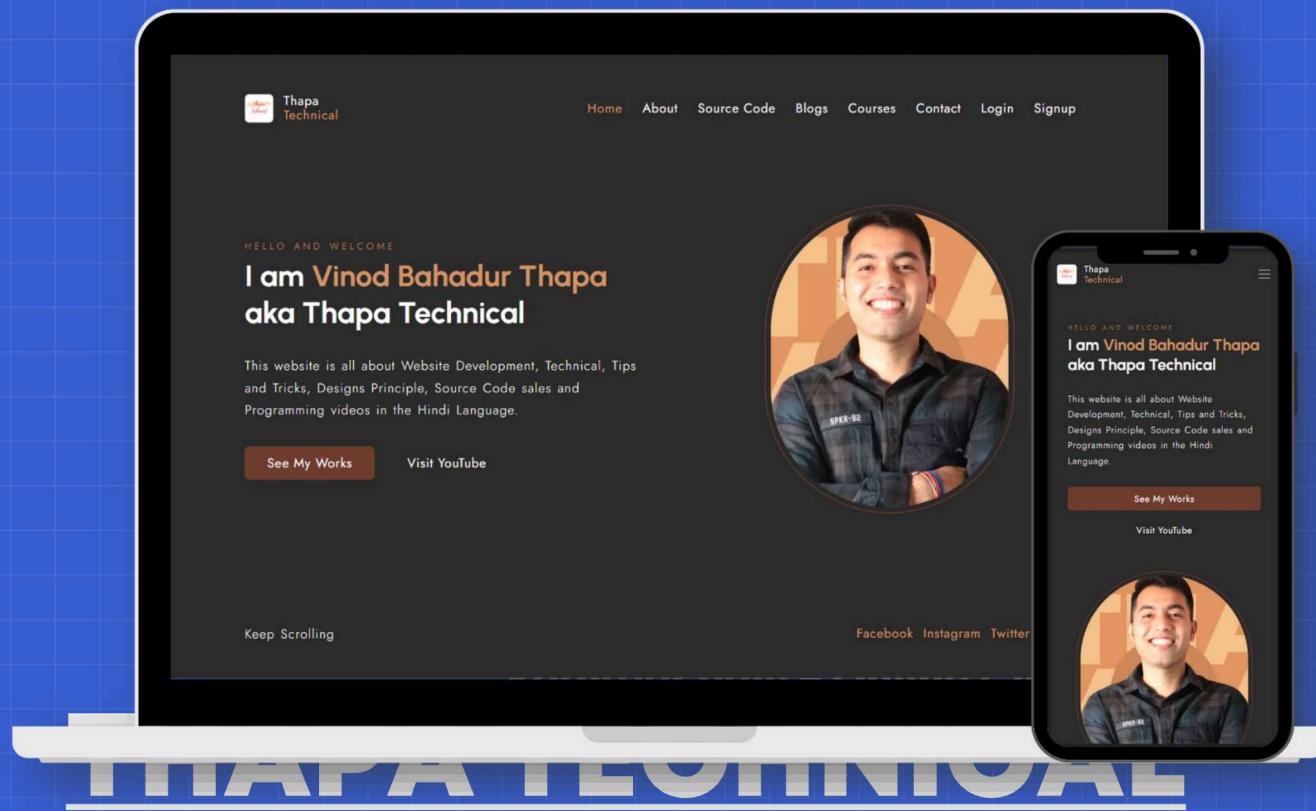
In just 6 days, you'll have a basic understanding of JavaScript.

**Bonus:** I added JS quizzes in my website, you can go there and see how much you learned.

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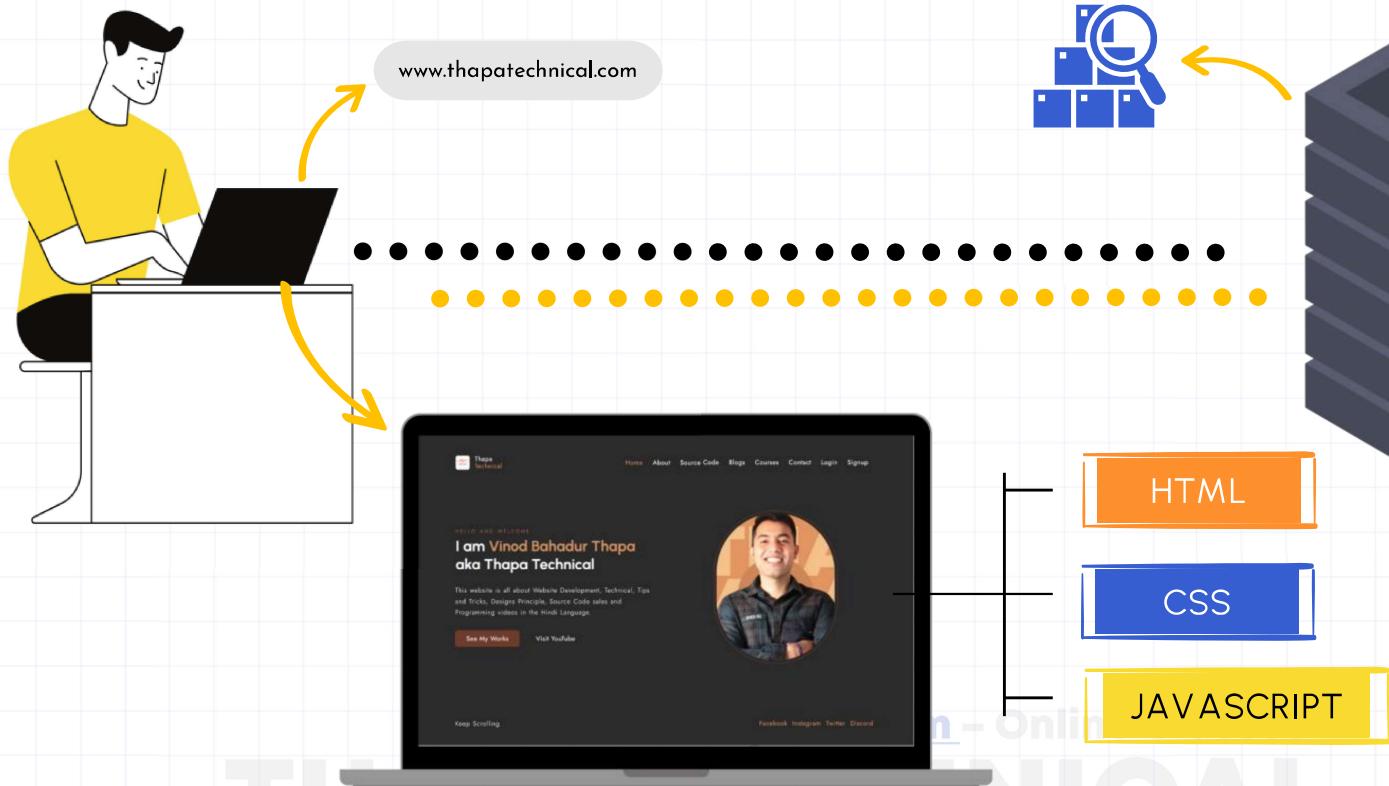
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# 01 HOW WEBSITE WORKS?

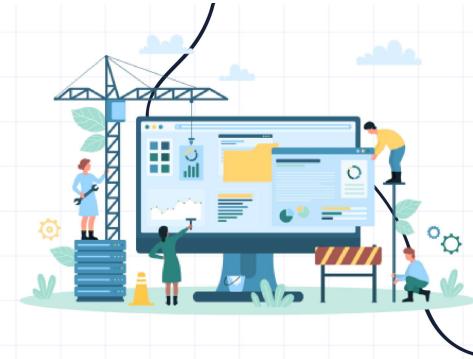


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# CLIENT VS SERVER



# BUILDING BLOCK OF WEBSITE



## HTML

Provides the structure and content of a webpage.

## CSS

Styles and designs the appearance of the webpage

## JS

Adds interactivity and dynamic behavior to the webpage.



# REAL-LIVE EXAMPLE



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# What is **JavaScript**?

**JavaScript** improves the user experience of the **web page** by converting it from a static page into an **interactive** one.

OR

**JavaScript** is used to update and change both HTML and CSS. It adds **behavior** to web pages.

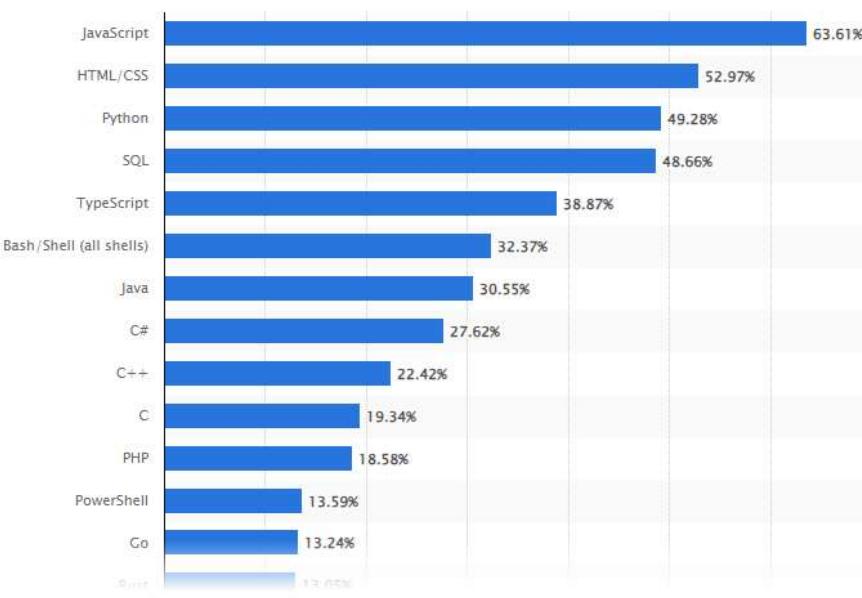
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# Why JavaScript?

Most used **programming languages** among **developers** worldwide  
as of 2023



⊕ Expand statistic

<https://www.statista.com/statistics/793628/worldwide-developer-survey-most-used-languages/>

Additional Information

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Show source

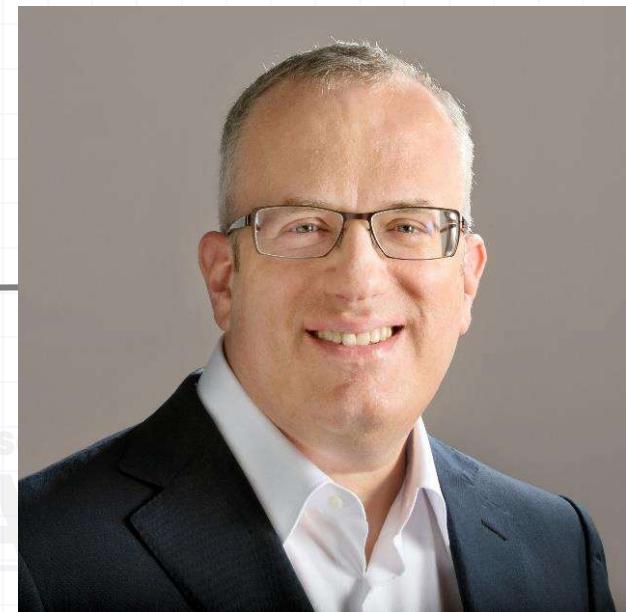
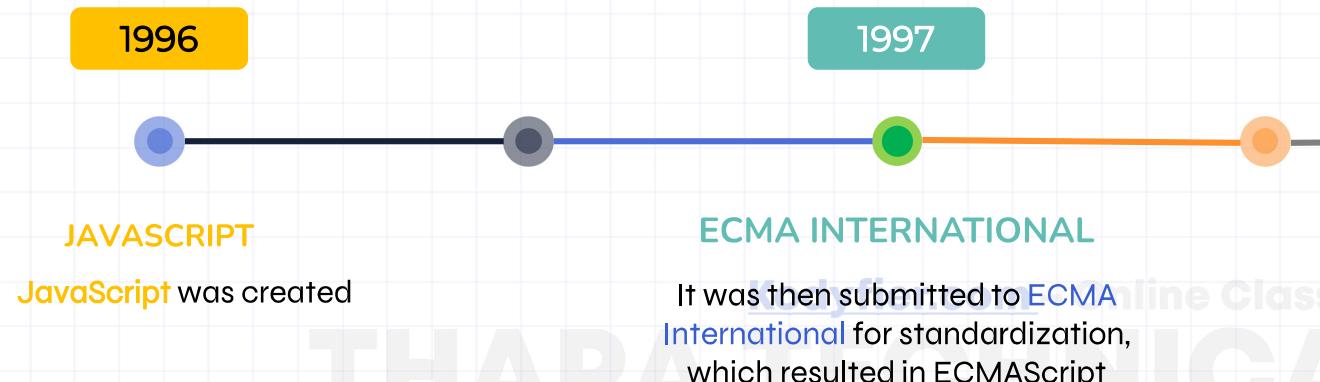
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# History of JavaScript

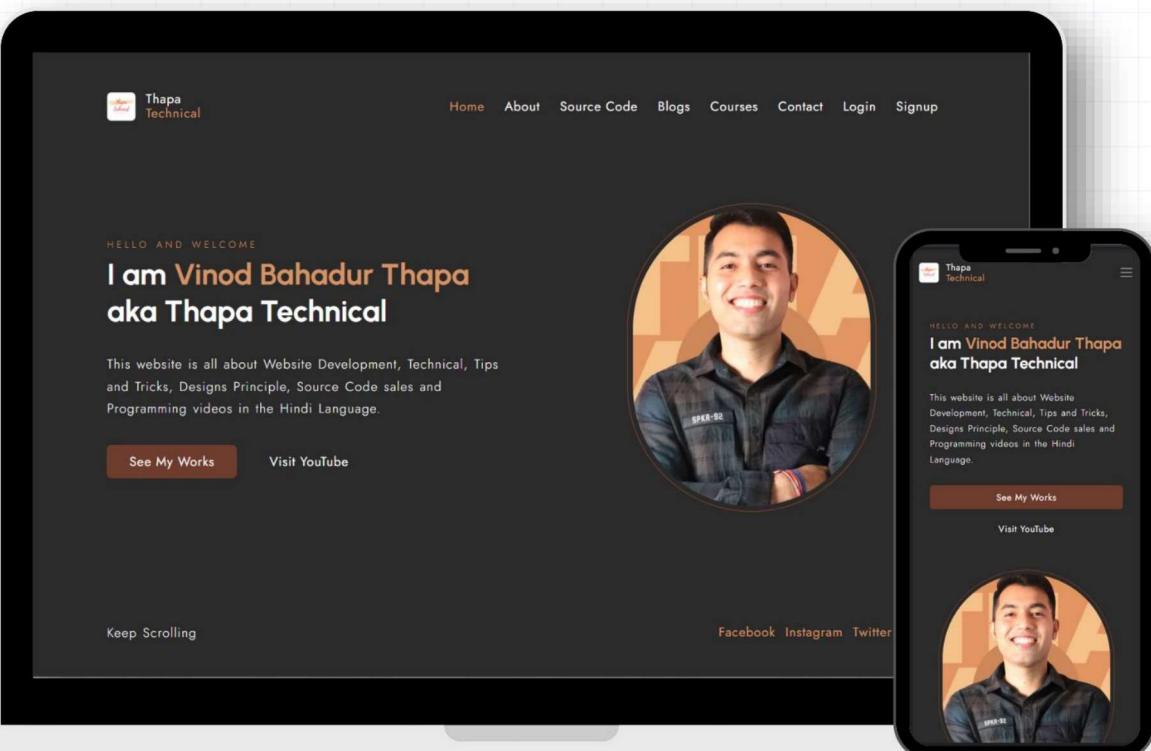
In 1995 - Created by **Brendan Eich** at **Netscape** in just **10** days.



Switching from **LiveScript** to **JavaScript** was a smart move to make it sound cooler and piggyback on **Java's** fame, while also cozying up to Sun Microsystems.



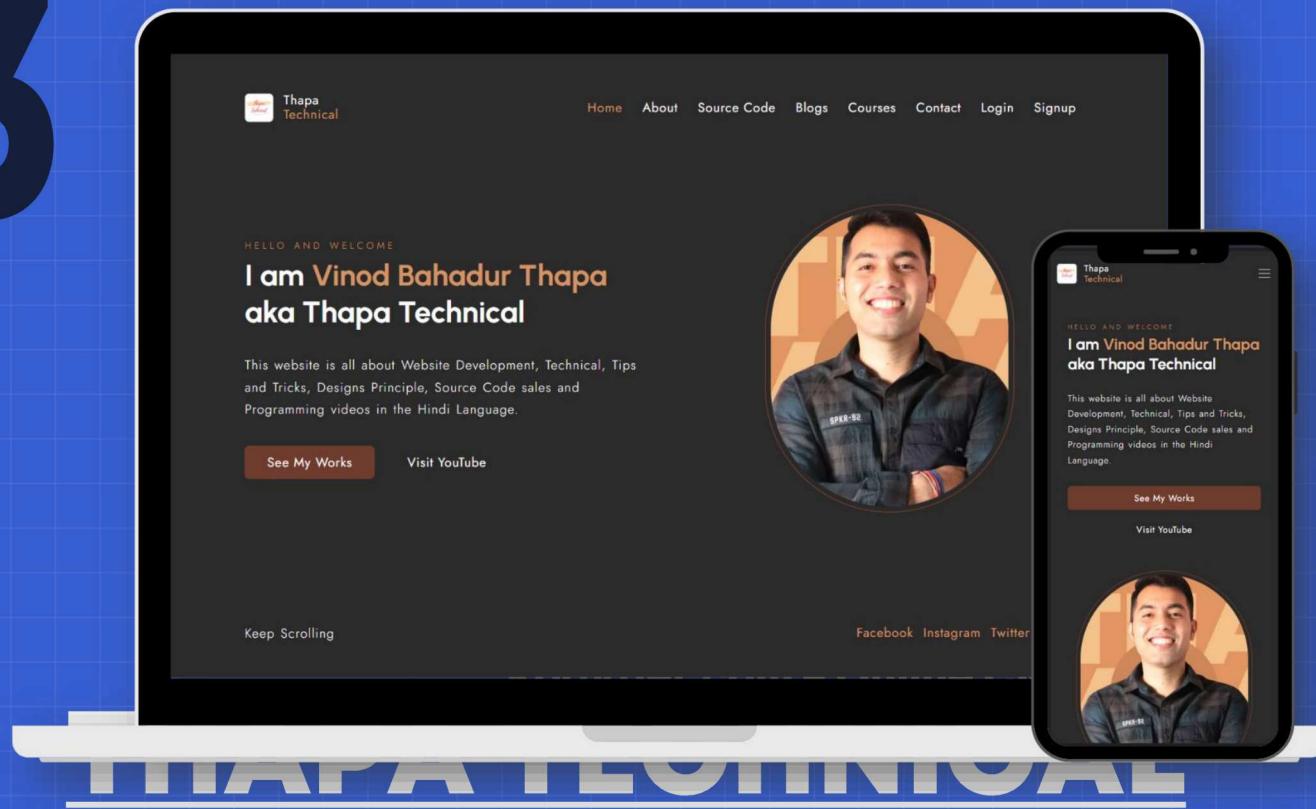
# Let's write Our First JavaScript Code in Console



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# WAYS TO WRITE JAVASCRIPT

03



# We need a Code Editor

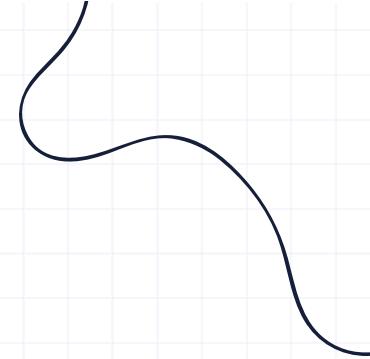


The screenshot shows the Visual Studio Code interface. On the left, there's a sidebar with icons for file operations like Open, Save, Find, and Delete. The main area features the classic blue 'X' logo of VS Code. Below the logo, the text 'VS Code' is displayed in a large, bold, white font. To the right of the logo, there's a code editor window showing a snippet of JavaScript code related to service workers. At the bottom of the code editor, there are status bars for 'src > JS serviceWorker.js', 'JS App.js', and '# App.css'. The status bar also includes line numbers (57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81) and various status indicators. On the far right, there are buttons for 'Set Interval', 'Set Timeout', 'Share', 'State', 'MediaSession', 'Storage', 'Check Valid Service Worker', 'On Success', 'Import Statement', and 'Request Media Key System Access'.

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# Inline JavaScript

```
<button onclick="alert('Hello')">Click me</button>
```



# Internal JavaScript

```
<script> console.log('Hello, world!'); </script>
```



# External JavaScript

```
<script src="script.js"></script>
```

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JAVASCRIPT

\* **Values &  
Variables**

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## Variable Name

A variable is a container(box) that holds a value.

```
var myName = "vinod"
```

Variable (key)

Value

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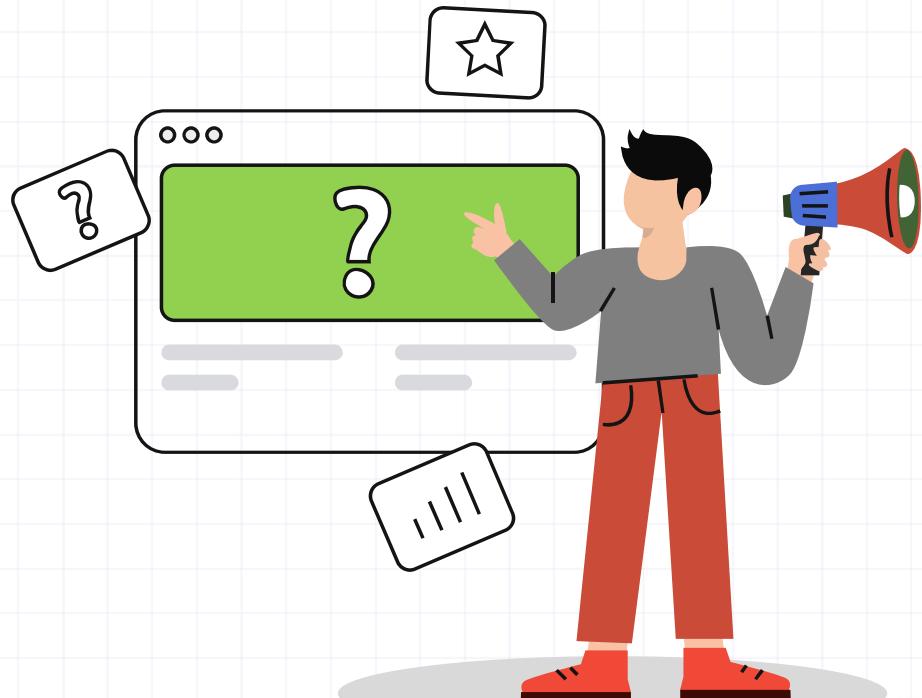
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# Naming Variables: Rules and Best Practices

- \* Variable names must start with a letter, an **underscore** (\_) or a **dollar sign** (\$).
- \* Variable names cannot contain spaces.
- \* By convention, JavaScript variable names are written in **camelCase**.
- \* Variables cannot be the same as **reserved keywords** such as if or const.
- \* Variable names are **case sensitive**.
- \* Variable names can be as long as you need

JavaScript challenge - 1



# Challenge Time?

Are you ready for the challenge.



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Pause the video & try yourself

# Questions



```
var my(firstName = "John";
```

```
var _myLastName$ = "Doe";
```

```
var 123myAge = 25;
```

```
var $cityName = "New York";
```

```
var my@Email = "Thapa@me.com";
```

# Answers

Pause the video & try yourself

# Questions



```
var my(firstName = "John";
```

```
var _myLastName$ = "Doe";
```

```
var 123myAge = 25;
```

```
var $cityName = "New York";
```

```
var my@Email = "Thapa@me.com";
```

# Answers

\* This is a valid variable name.

\* This is a valid variable name.

\* This is not a valid variable name.

\* This is a valid variable name.

\* This is not a valid variable name.

JAVASCRIPT

# \* Data Types

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## Data Types

### Data Types

#### Primitive Data Types

#### Object Data Types

String 1

Number 2

Boolean 3

Undefined 4

Null 5

Bigint 6

Symbol 7

An Object 1

An Array 2

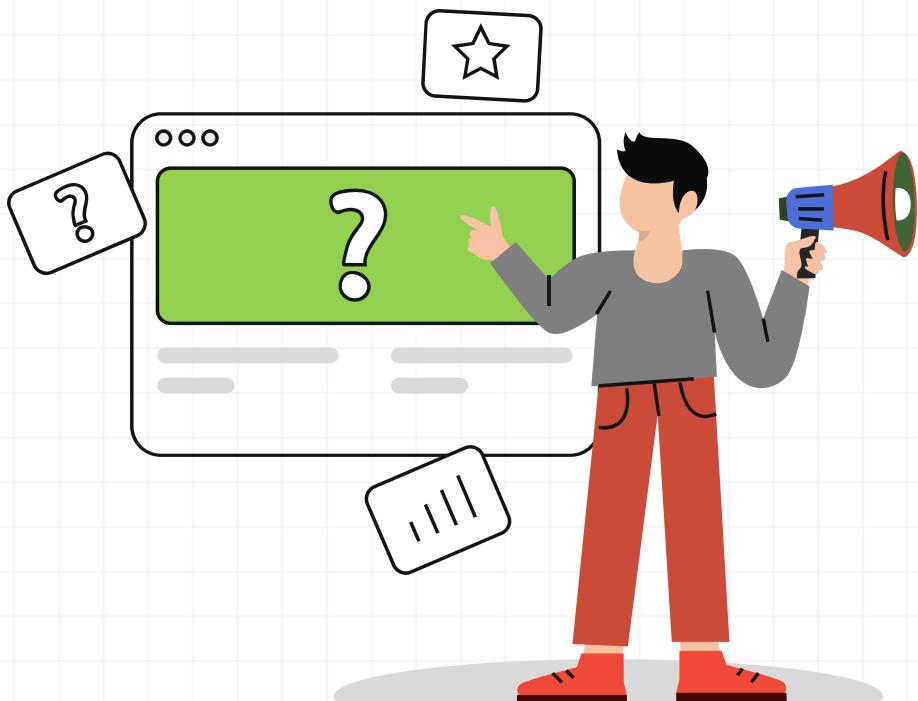
A Date 3

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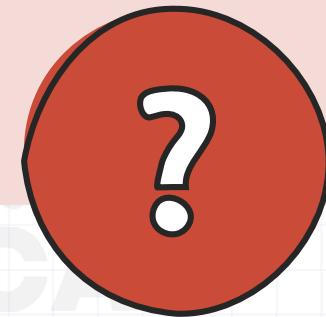
# Interview Questions – Data Types

- 1: What is the difference between `null` and `undefined` in JavaScript ?
- 2: What is the purpose of `typeof` operator in JavaScript ?
- 3: What is the result of ``typeof null`` in JavaScript ?
- 4: What are `primitive data types` in JavaScript ?
- 5: Explain the concept of `truthy` and `falsy` values in JavaScript. Provide examples ?



# Challenge Time?

Are you ready for the challenge.



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# Wait!!!



Explore more  
for a solid  
understanding

I want you to understand it thoroughly.



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More on Data Types

- a. 10 + "20"
- b. 9 - "5"
- c. "Java" + "Script"
- d. " " + " "
- e. " " + 0
- f. "vinod" - "thapa"
- g. true + true
- h. true + false
- i. false + true

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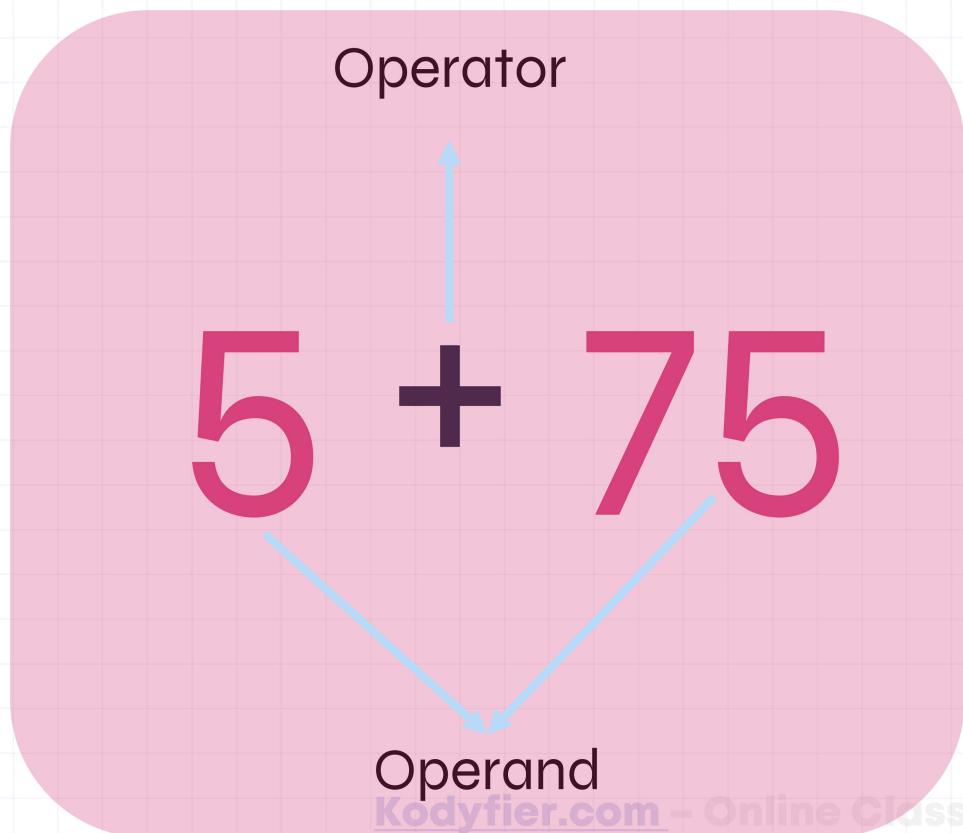
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\* **Expressions  
& operators**

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# Expression



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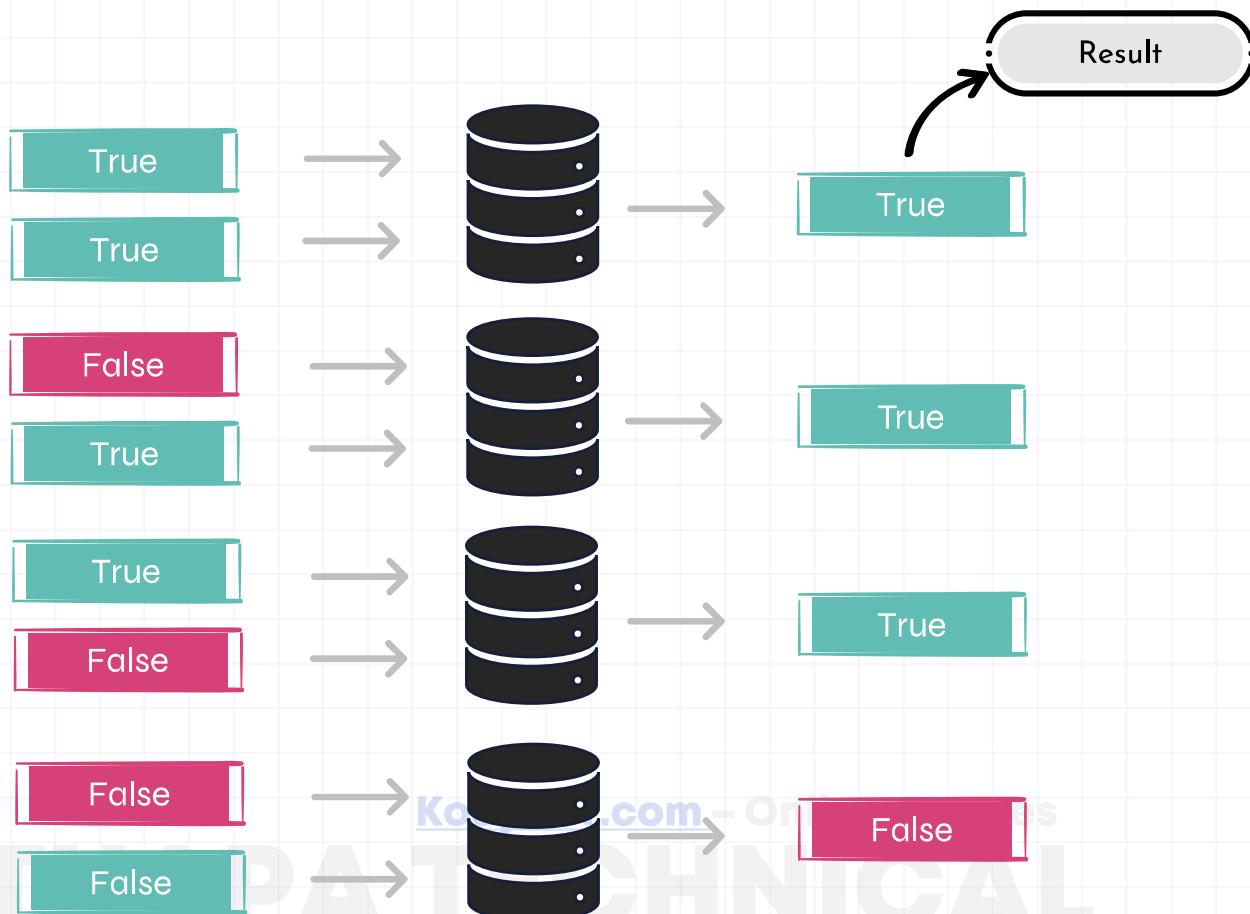
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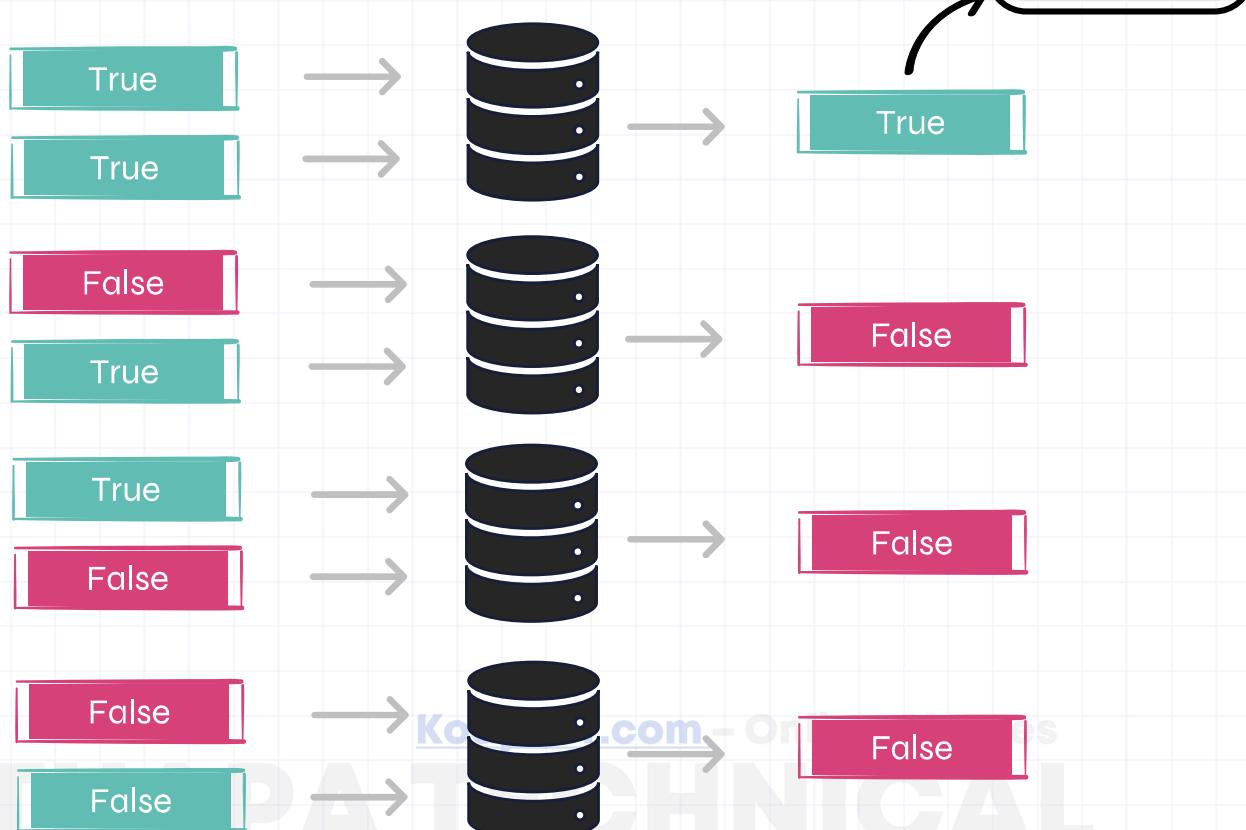
# Types of Operators



# How Logical OR Operator Works?



# How Logical AND Operator Works?



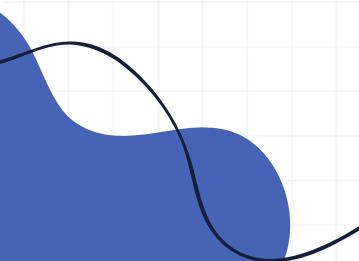
## Ternary Operator

Syntax:

`condition ? expressionIfTrue : expressionIfFalse;`

We get the output, If  
condition is true

We get the output, If  
condition is false



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# Wait!!!



# Interview Questions

I want you to understand it thoroughly.



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Interview Questions

console.log("5" - 3);

2 (Type Coercion)

console.log(2 < 12 < 5);

True (Exp. evaluates from  
Left to Right)

console.log("20" + 10 + 10);

'201010' (same as 2nd)

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# JAVASCRIPT \* Control Statement & loops

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# Control Statements & Loops

1 If.. Else Statement

2 Switch Statement

3 While Loop

4 Do While Loop

5 For Loop

6 For In / For Of Loop  
(Later in Arrays)

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# Syntax – If Else

```
if (condition) {  
    // Code to be executed if the condition is true  
} else {  
    // Code to be executed if the condition is false  
}
```

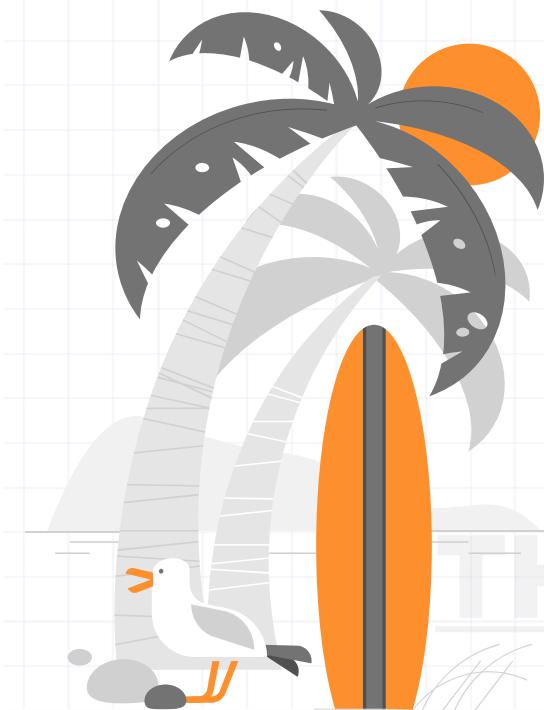
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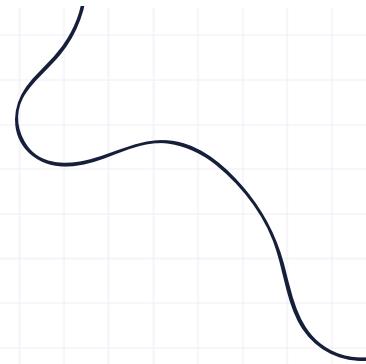
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# Example – If Statement

```
var temp = 40;  
  
if (temp > 30) {  
    console.log("Let's go to Beach 🏊♂️")  
} else {  
    console.log("Watch TV at Home 😊")  
}
```



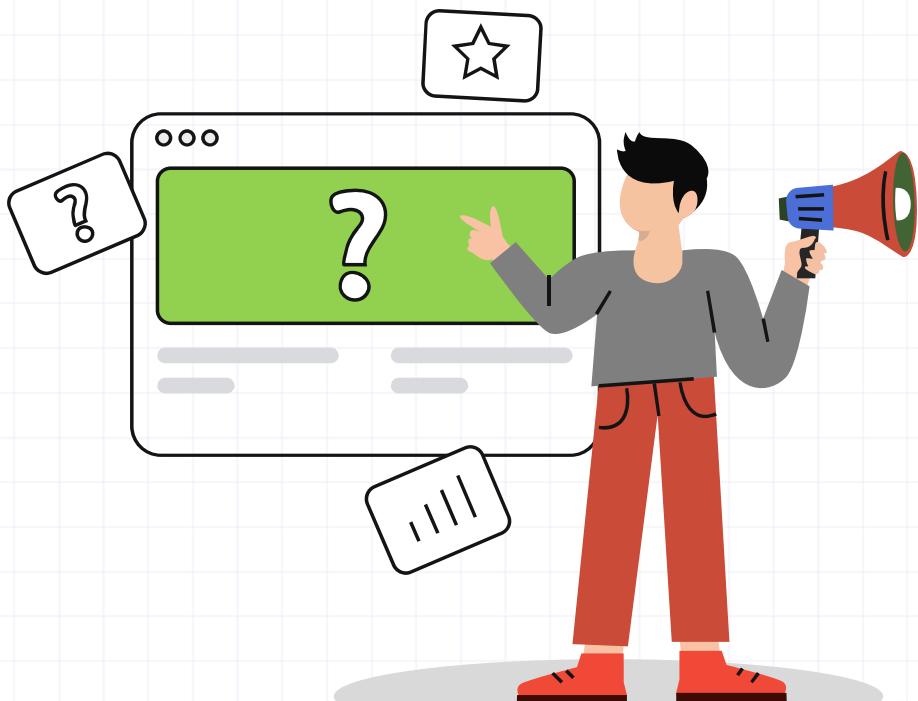
# If Else Statement



- 1: Write a program to check if a number is even or odd.
- 2: Write a program to check if a number is prime.
- 3: Write a program to check if a number is positive, negative, or zero.

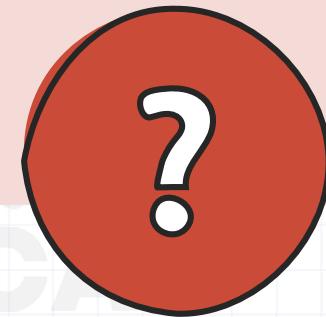
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# Challenge Time?

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Challenge No:

# Switch Statement

Q: Write a JavaScript **switch statement** that takes a variable `areaOfShapes` representing different shapes, and based on its value, calculates and logs the area of the corresponding shape. Consider three shapes: '`Rectangle`,' '`Circle`,' and '`Square`.' For '`Rectangle`,' use variables `a` and `b` as the sides; for '`Circle`,' use a variable `r` as the radius; and for '`Square`,' use variable `a` as the side length. If the provided shape is not recognized, log a message saying, '`Sorry the shape is not available.`' Test your switch statement with `areaOfShapes` set to '`Square`' and sides `a` and `b` set to `5` and `10`, respectively. Ensure that the correct area (`25` in this case) is logged to the console.

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# Syntax - While Loop

```
while (condition) {  
    // Code to be executed as long as the  
    condition is true  
}
```

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# Syntax – Do-While Loop

```
do {  
    // Code to be executed at least once  
} while (condition);
```

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# Syntax - For Loop

```
var num = 10;      num < 10      num++  
for(initializer; condition; iteration)  
{  
    // Code to be executed  
}
```

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# Syntax – While Loop

```
let i=1;  
while (i <= 10) {  
    console.log(i);  
    i++;  
}
```

Initialization: *i=1*

Condition: *(i <= 10)*

Iteration: *i++*

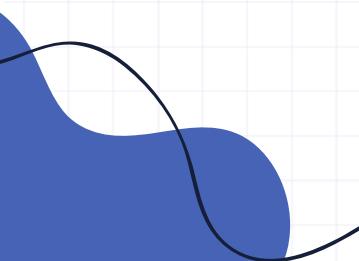
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# Syntax – Do-While Loop

```
let i=1;           Initialization  
do{  
    console.log(i);  
    i++;           Iteration  
} while (i<=10)  Condition
```



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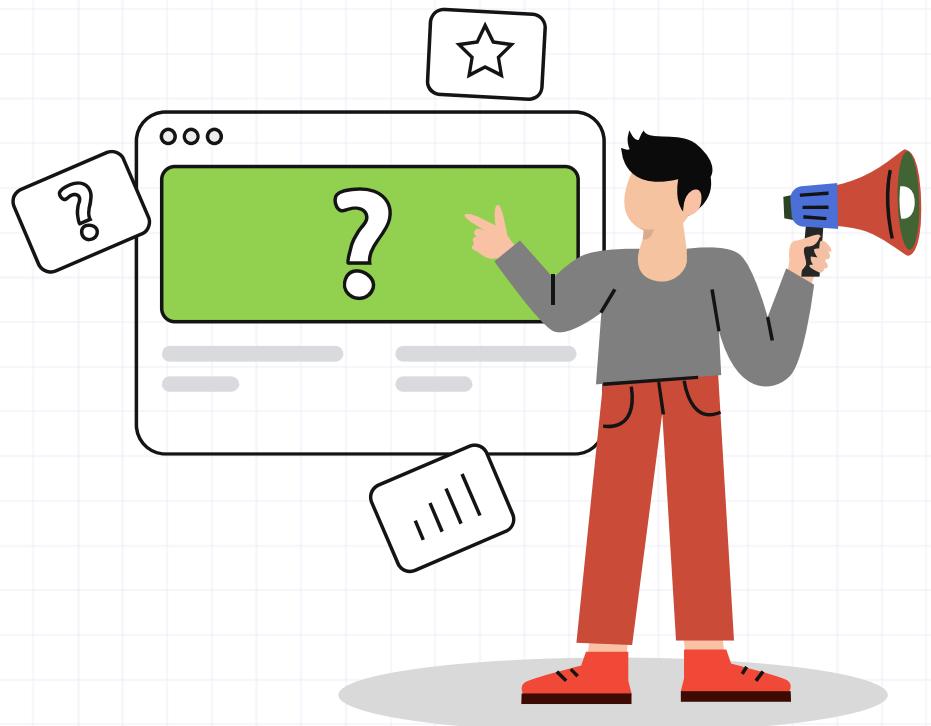
# Syntax – For Loop

```
initializer    condition    iteration  
for (let i=1; i<=10; i++){  
    console.log(i);  
}
```

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# Challenge Time?

Are you ready for the challenge.



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# For Loop

Program To check if a year is a leap year, 🤖

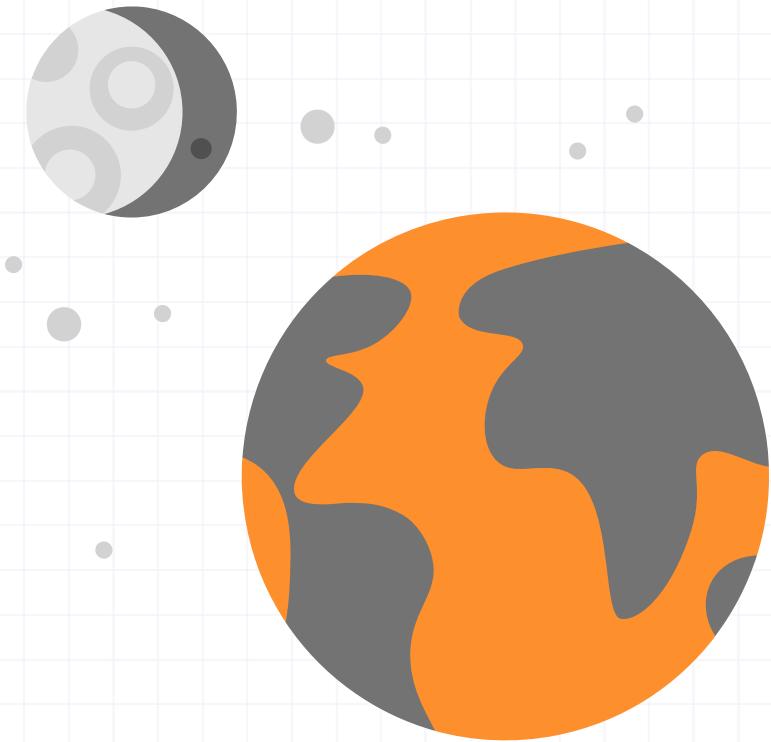
If a year is divisible by 4 and

not divisible by 100, or

If a year is divisible by 400,

then it is a leap year.

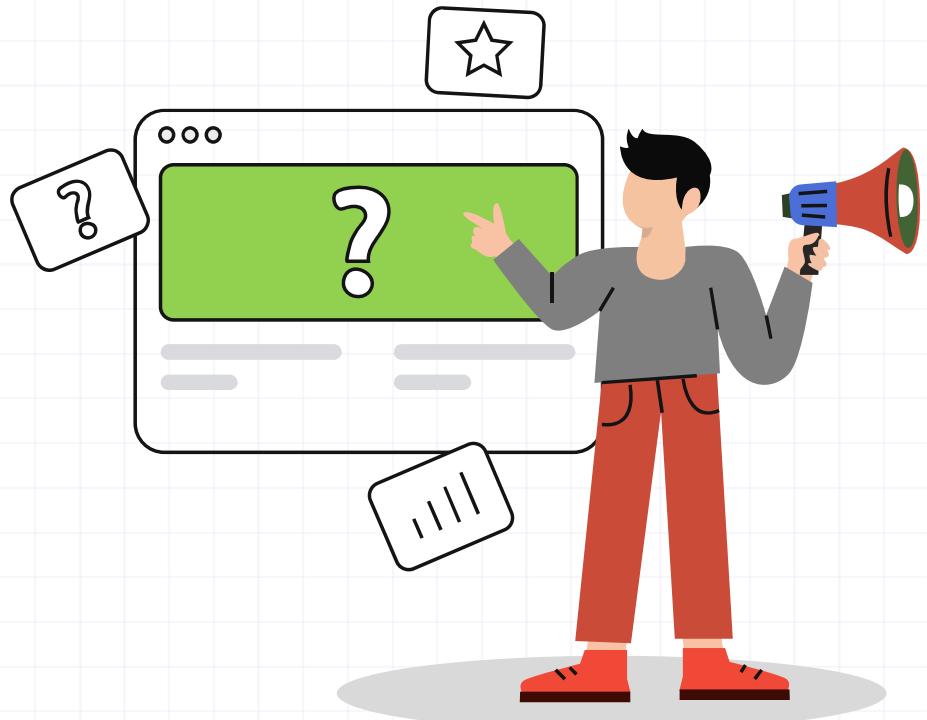
Otherwise, it is not a leap year.



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# Challenge Time?

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# For Loop

	J=1	J=2	J=3	J=4	J=5
I=1	*				
I=2	*	*			
I=3	*	*	*		
I=4	*	*	*	*	
I=5	*	*	*	*	*

**logic    I == J    =>    print \***

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# For Loop

	J=1	J=2	J=3	J=4	J=5
I=1	*				
I=2					
I=3					
I=4					
I=5					

**logic    I == J    =>    print \***

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# For Loop

	J=1	J=2	J=3	J=4	J=5
I=1	*				
I=2	*	*			
I=3					
I=4					
I=5					

logic    I == J    =>    print \*

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# For Loop

	J=1	J=2	J=3	J=4	J=5
I=1	*				
I=2	*	*			
I=3	*	*	*		
I=4					
I=5					

**logic    I == J    =>    print \***

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# For Loop

	J=1	J=2	J=3	J=4	J=5
I=1	*				
I=2	*	*			
I=3	*	*	*		
I=4	*	*	*	*	*
I=5					

**logic    I == J    =>    print \***

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# For Loop

	J=1	J=2	J=3	J=4	J=5
I=1	*				
I=2	*	*			
I=3	*	*	*		
I=4	*	*	*	*	
I=5	*	*	*	*	*

**logic    I == J    =>    print \***

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# JAVASCRIPT \* Functions

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# JavaScript Function

In JavaScript, a **function** is a block of reusable code that performs a specific task or set of tasks. Functions are used to **organize code into modular** and manageable pieces, promote **code reuse**, and make programs **more readable**.

```
function functionName(parameters) {  
    // code to be executed  
    return result; // optional return statement  
}
```

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# JavaScript Function

In JavaScript, a **function** is a block of reusable code that performs a specific task or set of tasks. Functions are used to **organize code into modular** and manageable pieces, promote **code reuse**, and make programs **more readable**.

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# What we will cover

1 Function Declaration

2 Function Invocation

3 Function Parameter

4 Function Argument

5 Function expressions

6 Anonymous Function

7 Return Keyword

8 IIFE (Immediately Invoked Function expression)

9 More we will see in advanced

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# Syntax – Function Declaration

function  
Keyword

function Name

```
function greet()
```

```
    {
```

```
        console.log("Welcome to Thapa Technical JS
```

```
        Course ");
```

```
}
```

function Body

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# Syntax – Function Invocation

```
function greet() {  
    console.log(" Welcome to Thapa Technical JS Course ");  
}  
  
greet()
```

We need to call the function name



Welcome to Thapa Technical JS Course

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# Syntax – Function Parameter

```
function greet(parameter1) {  
    console.log(" Best JS Course ");  
}
```

We need to add values here (parameter)

```
greet()
```

We need to call the function name

# Syntax – Function Parameter

```
function greet(parameter1, parameter2) {  
    console.log(" Best JS Course ");  
}
```

We need to call the function name  
**greet()**

# Syntax – Function Parameter

```
function greet(parameter1, parameter2, ...)  
{  
    console.log(" Best JS Course ");  
}
```

We need to call the function name  
**greet()**

# Syntax – Function Argument

```
function greet(parameter1, parameter2, ...)  
{  
    console.log(" Best JS Course ");  
}
```

We need to call the function name  
**greet(argument1)**

# Syntax – Function Argument

```
function greet(parameter1, parameter2, ...)  
{  
    console.log(" Best JS Course ");  
}
```

We need to call the function name  
`greet(argument1, argument2)`

# Syntax – Function Argument

```
function greet(parameter1, parameter2, ...)  
{  
    console.log(" Best JS Course ");  
}
```

We need to call the function name  
**greet(argument1, argument2, ...)**

## Interview Questions – Function

- 1: **Reverse a String:** Write a function to reverse a given string **without** using built-in reverse methods.
  
- 2: **Palindrome Check:** Create a function to determine if a given string is a **palindrome** (reads the same backward as forward).
  
- 3: **Calculator Function:** Write a JavaScript function calculator that takes two numbers and an operator as parameters and returns the result of the operation. The function should support addition, subtraction, multiplication, and division.

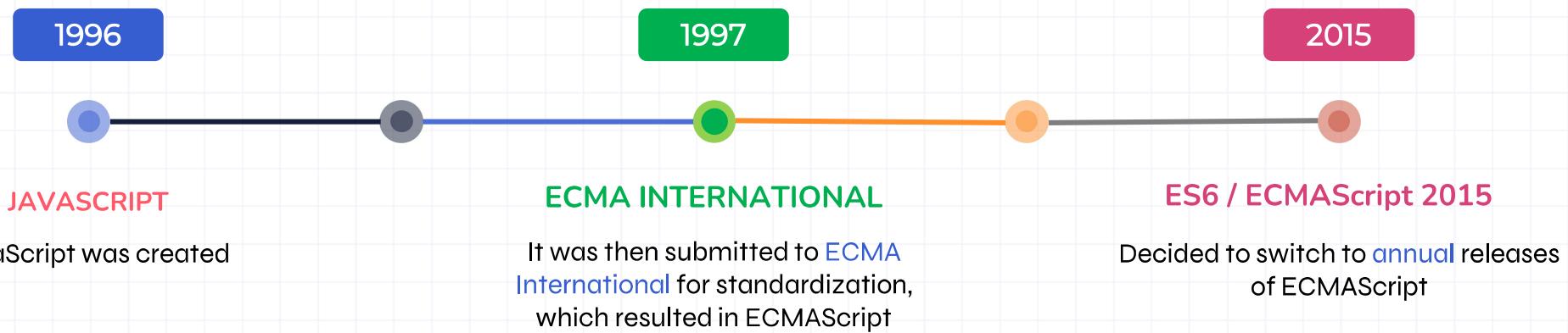
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JAVASCRIPT  
\* ECMAScript

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# EcmaScript Timeline

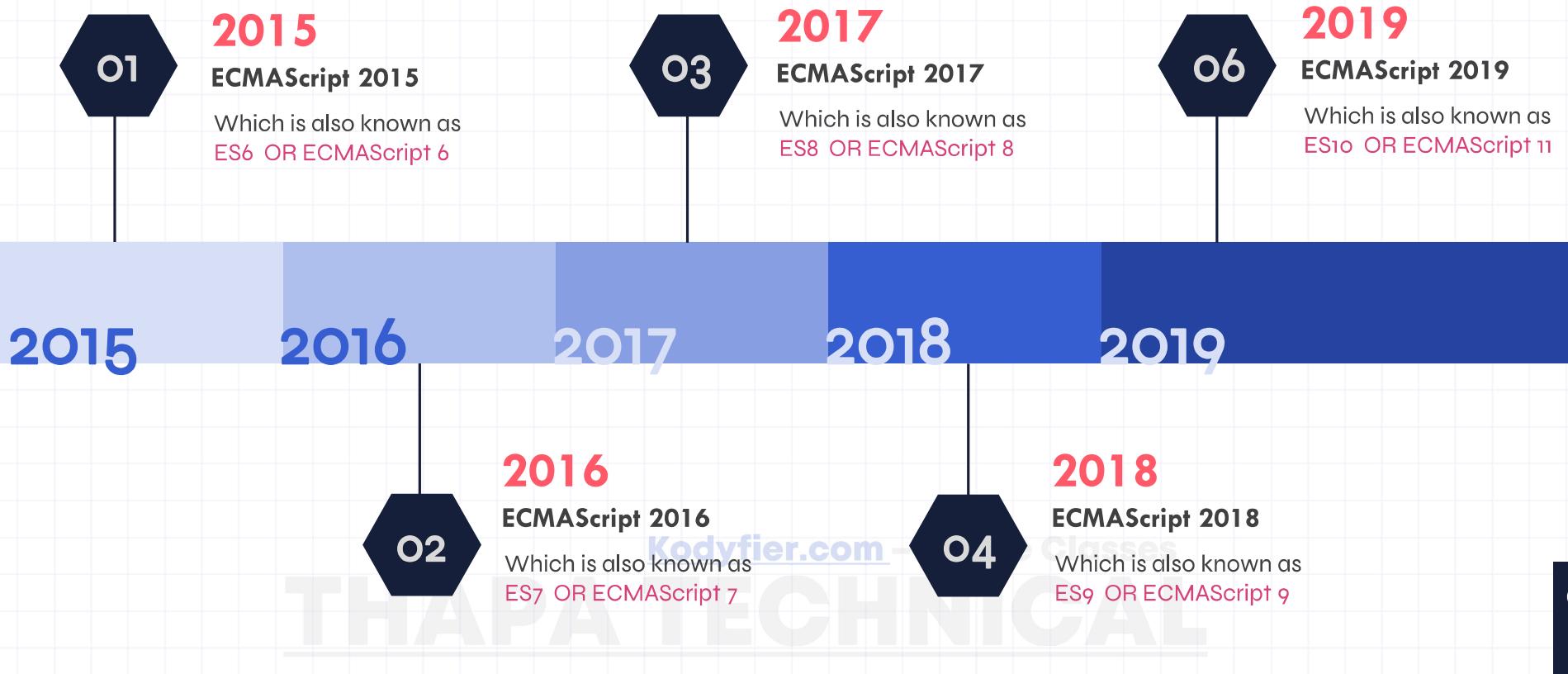


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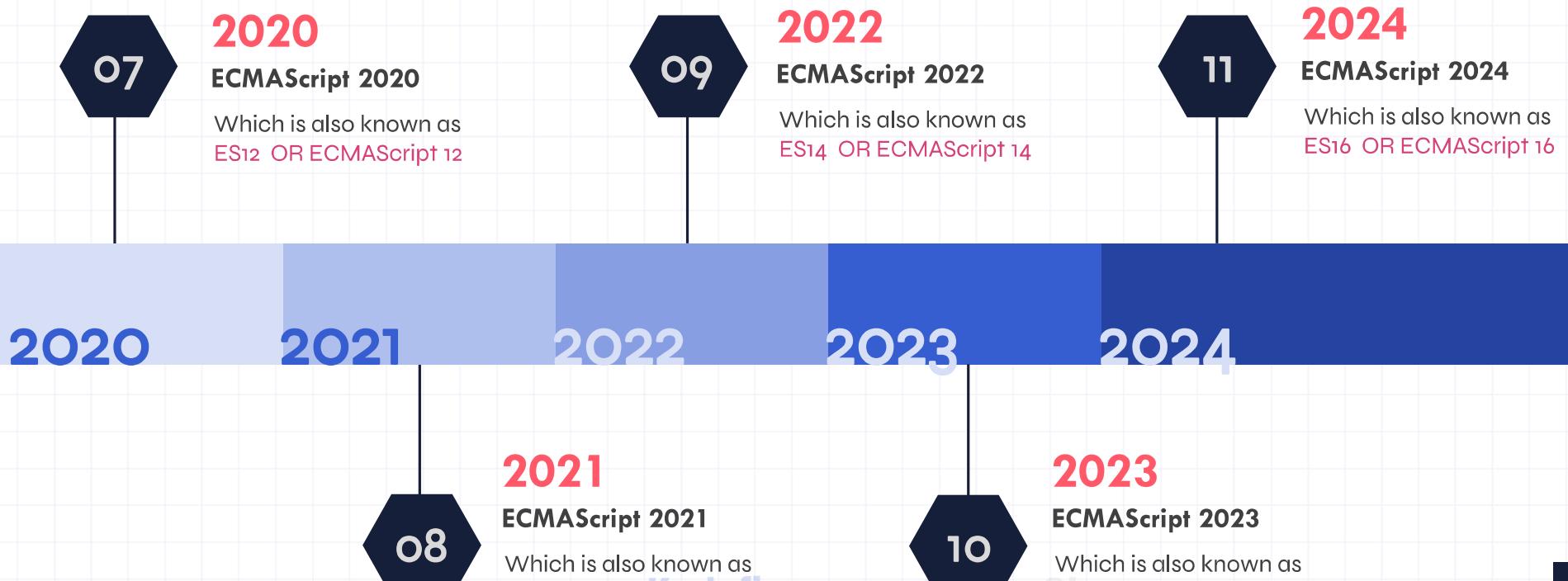
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# Timeline



# Timeline



# ECMAScript 2015 / ES6



LET AND CONST



TEMPLATE STRINGS



DEFAULT ARGUMENTS



ARROW FUNCTION



DESTRUCTURING



OBJECT PROPERTIES



REST OPERATORS



SPREAD OPERATORS

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## Interview Questions – Function

- 1: **Reverse a String:** Write a function to reverse a given string **without** using built-in reverse methods.
  
- 2: **Palindrome Check:** Create a function to determine if a given string is a **palindrome** (reads the same backward as forward).
  
- 3: **Calculator Function:** Write a JavaScript function calculator that takes two numbers and an operator as parameters and returns the result of the operation. The function should support addition, subtraction, multiplication, and division.

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# JAVASCRIPT \* ARRAYS

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# JavaScript Array



Ram



Hari



Sita



Bishal



Gita

Imagine you want to store collection of people names.

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const person1 = Ram 

const person2 = Hari 

const person3 = Sita 

const person4 = Bishal 

const person5 = Gita 

You will think of doing something like this.

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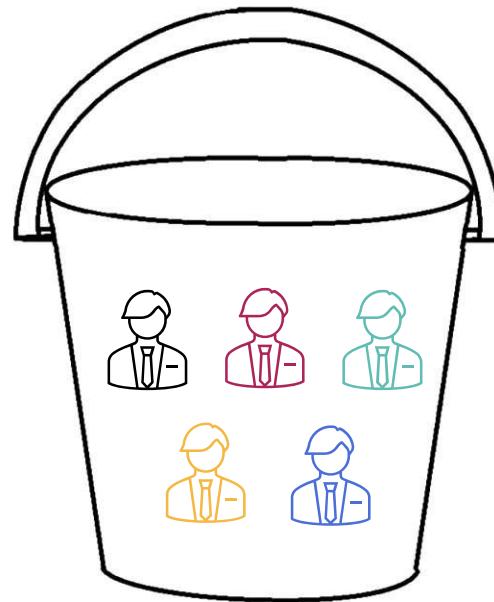
```
const person1 = Ram
```

```
const person2 = Hari
```

```
const person3 = Sita
```

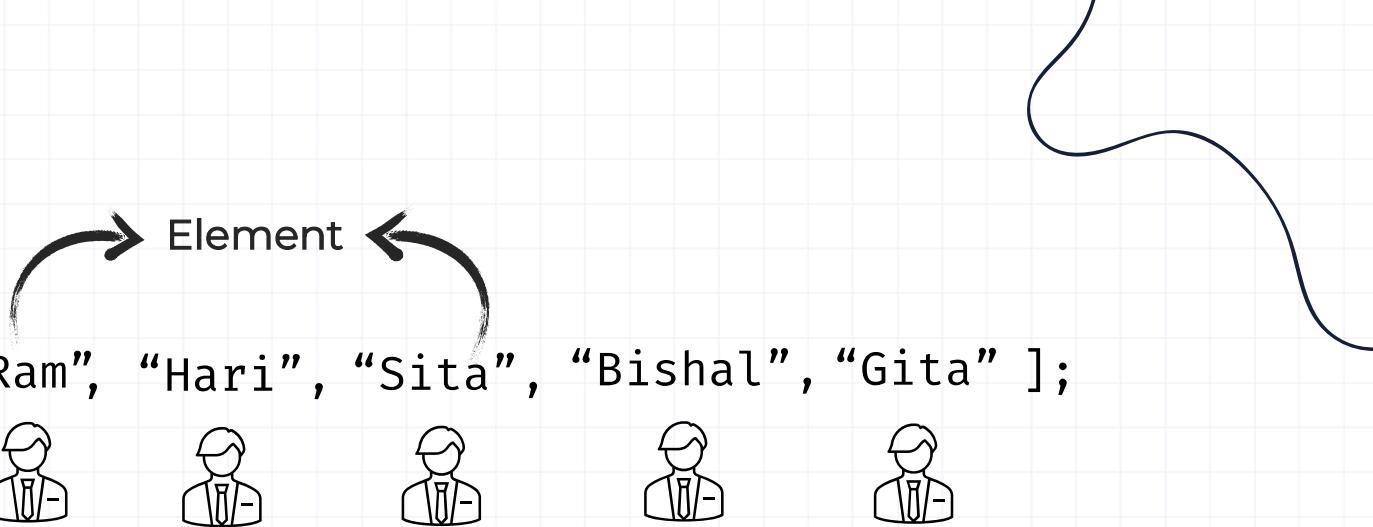
```
const person4 = Bishal
```

```
const person5 = Gita
```



What if we could store all of these into a bucket?

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```
const persons = [ "Ram", "Hari", "Sita", "Bishal", "Gita" ];
```

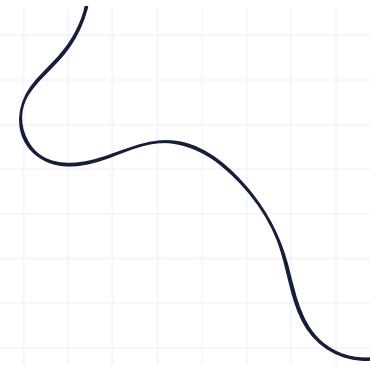


That's what array is for.

JavaScript array is an object that represents a collection of similar type of elements.

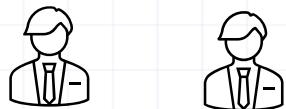
Each value(name) will be called as an Element.

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Index Number	0	1	2	3	4
--------------	---	---	---	---	---

```
const persons = ["Ram", "Hari", "Sita", "Bishal", "Gita"];
```



In arrays, each element is represented by an index which starts with zero.

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Index Number      0      1      2      3      4

```
const persons = ["Ram", "Hari", "Sita", "Bishal", "Gita"];
```



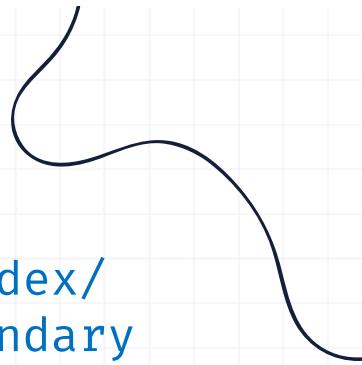
persons[0]; // Ram

persons[1]; // Hari

And we can access each element by using indexes

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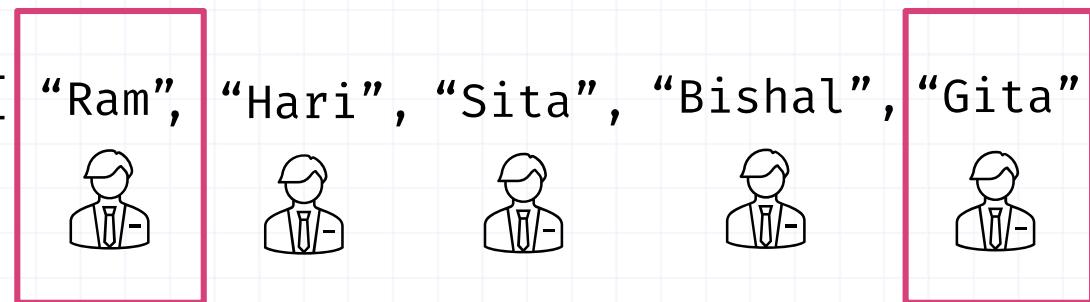
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Lower Index/  
Lower Boundary

Upper Index/  
Upper Boundary

```
const persons = [ "Ram", "Hari", "Sita", "Bishal", "Gita" ];
```



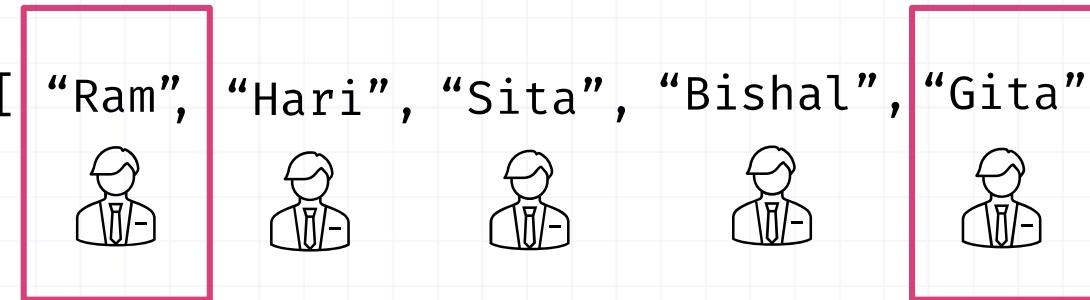
First element or head: Refers to the element at index 0.

Last element or tail: Refers to the element at the last index, which can be obtained using `array.length - 1`.

Lower Index/  
Lower Boundary

Upper Index/  
Upper Boundary

```
const persons = [ "Ram", "Hari", "Sita", "Bishal", "Gita" ];
```



```
persons[-1] // ERROR
```

```
persons.at(-1) // Gita
```

```
persons.at(-2) // Bishal
```

ECMAScript 2022 also introduces new `.at()` method in arrays which helps to index from last elements too easily.

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## **JavaScript Introduction**

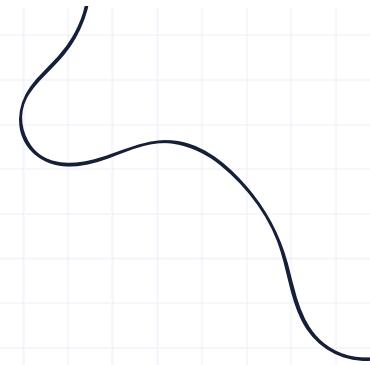
# What we will cover

- \* Creating Arrays / Accessing Elements / Modifying Elements
- \* How to Insert, Add, Replace and Delete Elements in Array(CRUD)
- \* Filter in an Array
- \* Very Very Important Array Methods
- \* Array Traversal / Iterating Over Arrays
- \* Searching in an Array
- \* How to Sort and Compare an Array

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Index Number	0	1	2	3	4
--------------	---	---	---	---	---

```
const persons = [ "Ram", "Hari", "Sita", "Bishal", "Gita" ];
```



In arrays, each element is represented by an index which starts with zero.

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# Push()

**Push Method:** The **Push** Method that adds one or more elements to the end of an array.

Syntax: `push(Element)`

`persons.push('Gita')`

Index Number = 0 1 2 3

```
const persons = ["Ram", "Hari", "Sita", "Bishal"];
```



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# Push()

**Push Method:** The Push Method that adds one or more elements to the end of an array.

Syntax: `push(Element)`

Index Number

0

1

2

3

4

```
const persons = [ "Ram", "Hari", "Sita", "Bishal", "Gita" ];
```



Gita added at the end of the array

`persons.push('Gita')`

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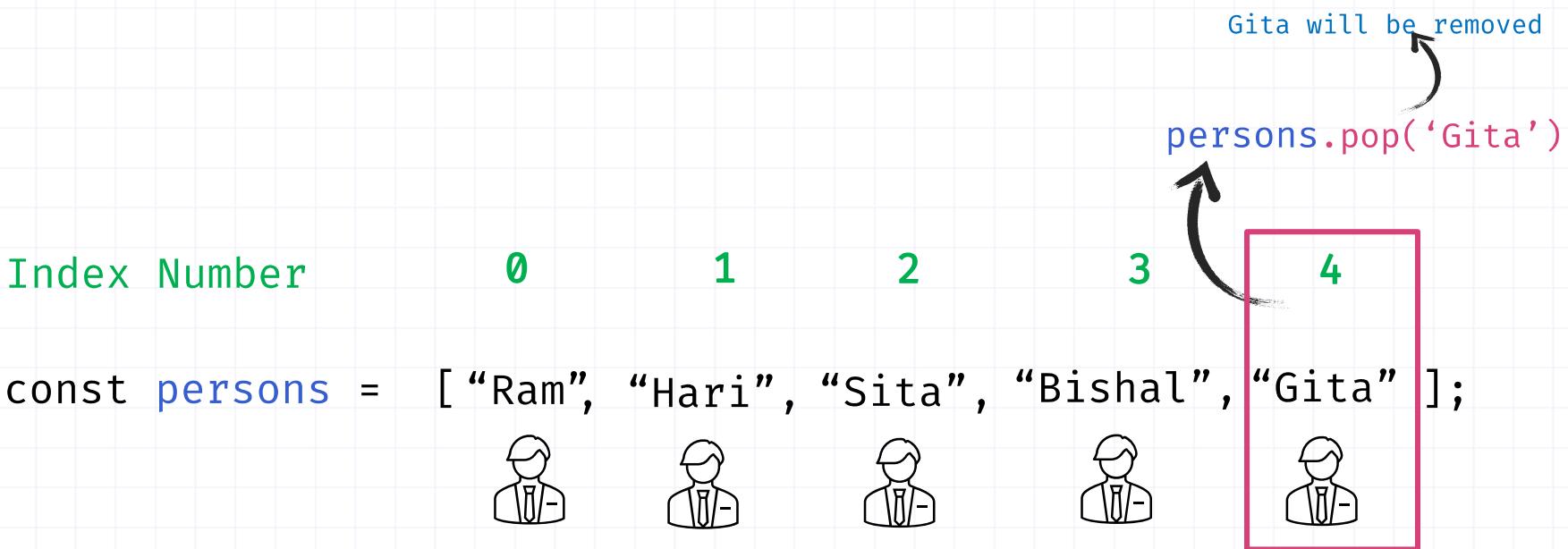
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# Pop()

**Pop Method:** Method that removes the last element from an array.

Syntax: `pop(Element)`



# Pop()

Pop Method: Method that removes the last element from an array.

Syntax: pop(Element)

Index Number = 0 1 2 3

```
const persons = [ "Ram", "Hari", "Sita", "Bishal" ];
```



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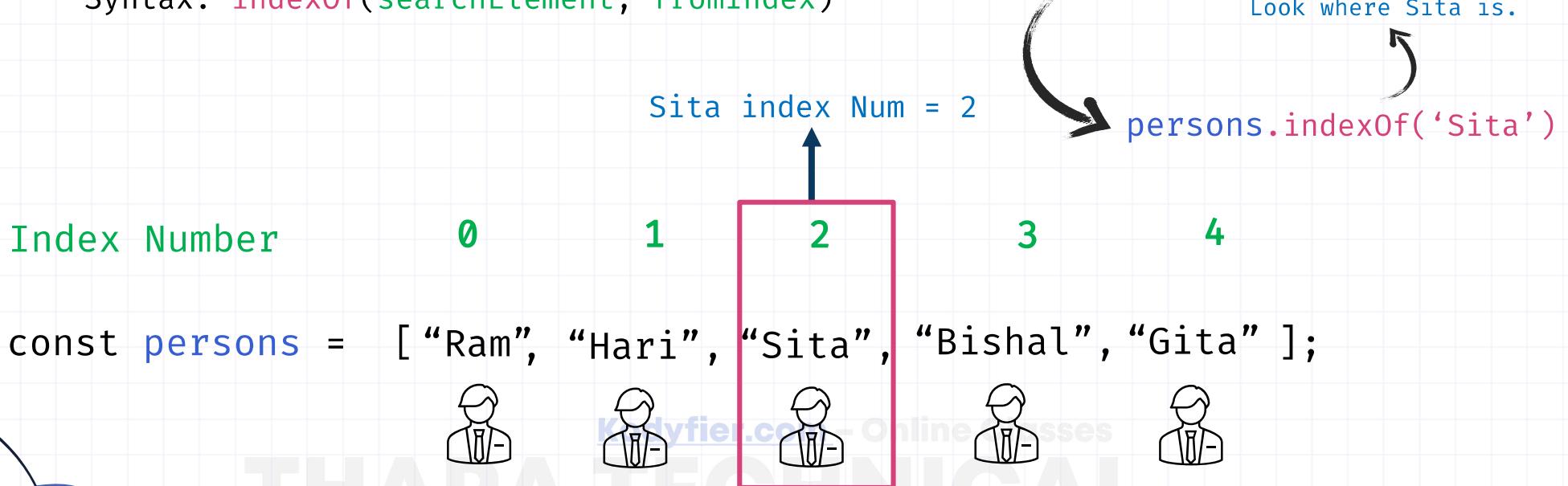
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# indexOf()

**indexOf Method:** The `indexOf` method returns the first index at which a given element can be found in the array, or `-1` if it is not present.

Syntax: `indexOf(searchElement, fromIndex)`

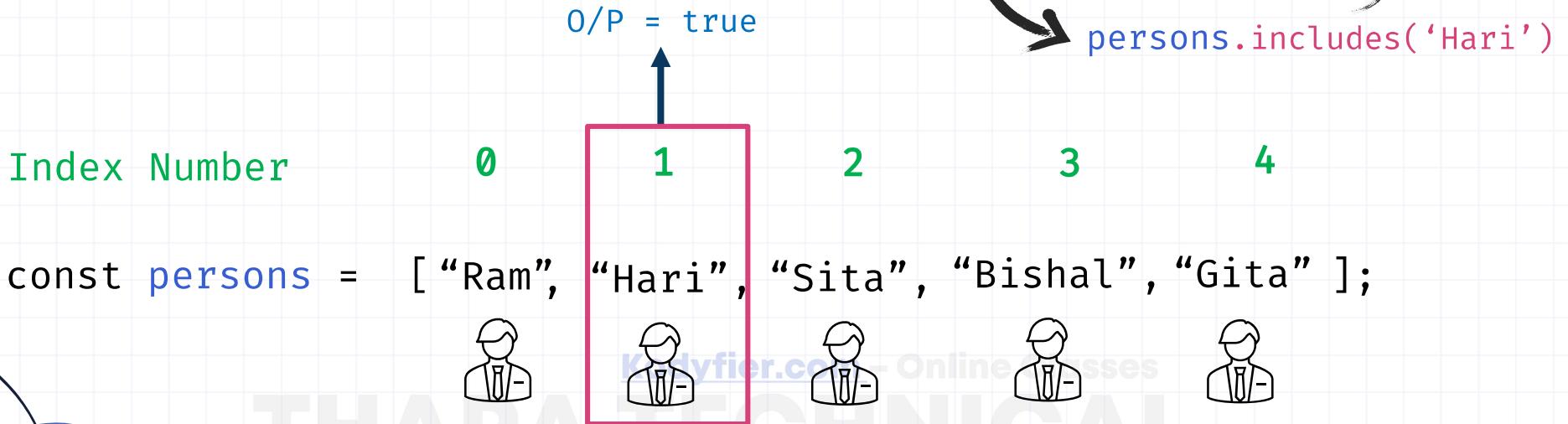


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# Includes()

**Includes Method:** The includes method checks whether an array includes a certain element, returning true or false.

Syntax: `Includes(searchElement, fromIndex)`

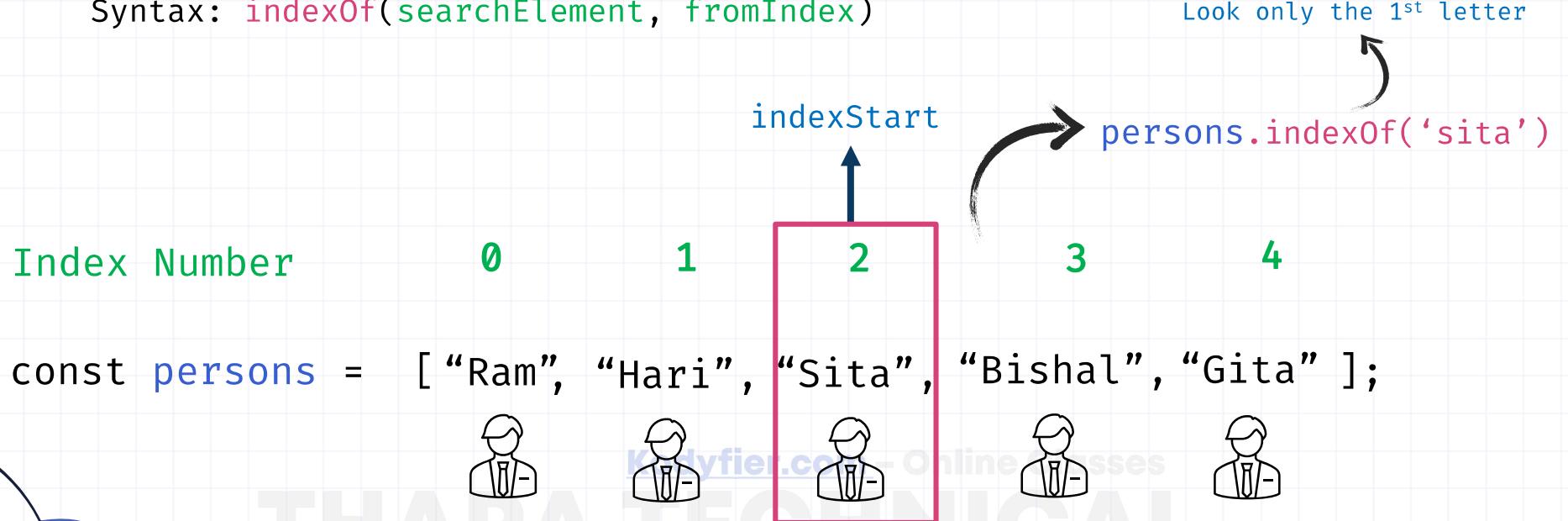


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# indexOf()

**indexOf Method:** The `indexOf` method returns the first index at which a given element can be found in the array, or `-1` if it is not present.

Syntax: `indexOf(searchElement, fromIndex)`

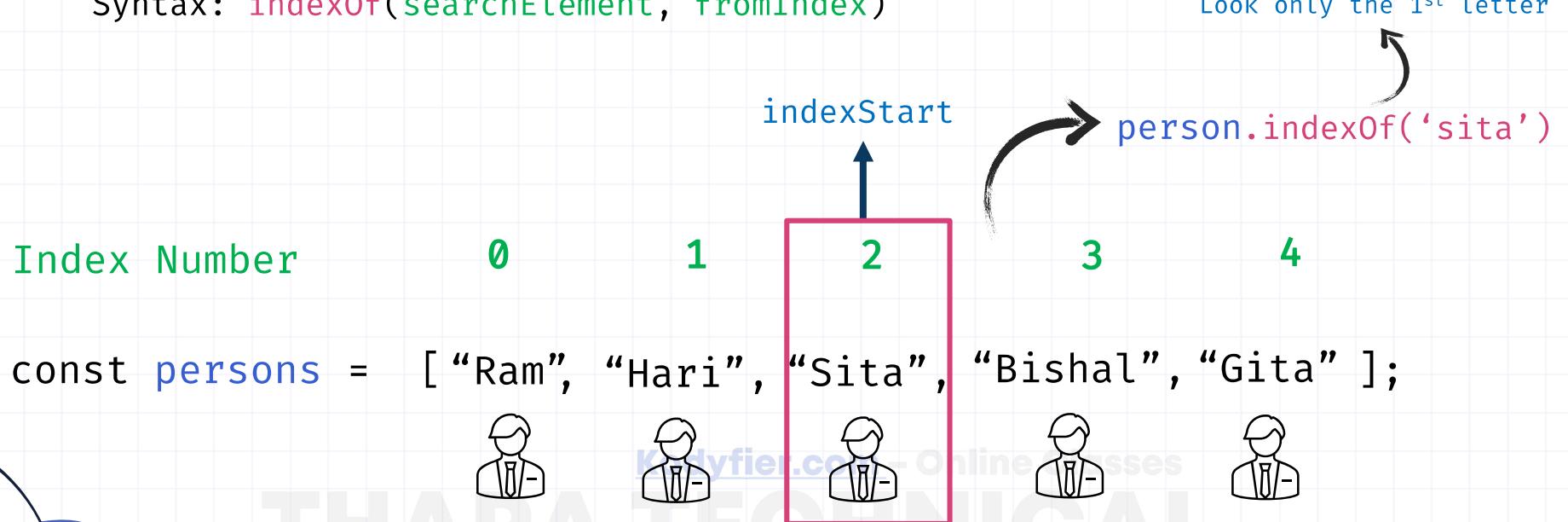


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# indexOf()

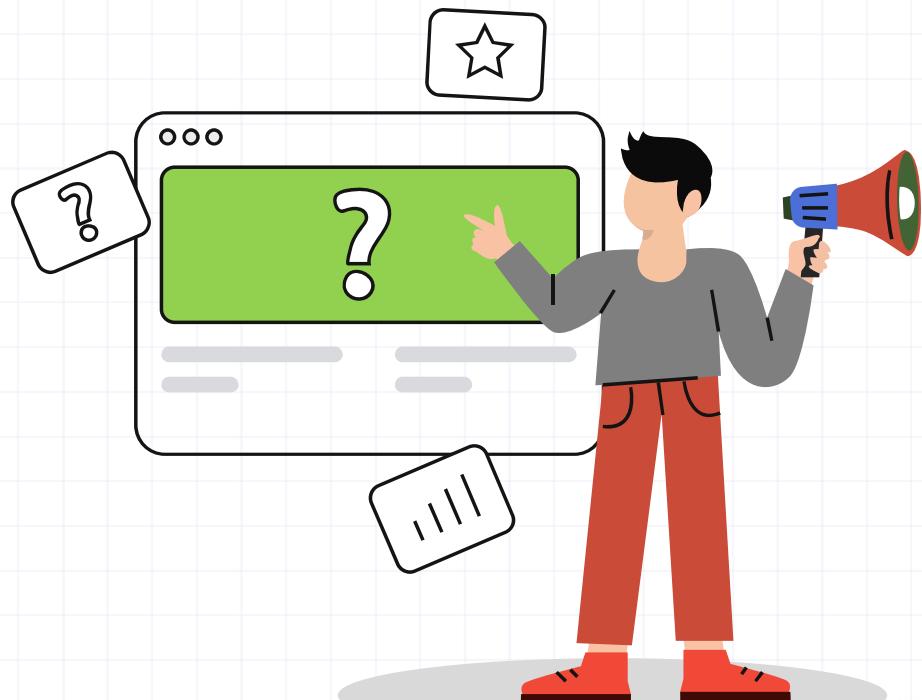
**indexOf Method:** The `indexOf` method returns the first index at which a given element can be found in the array, or `-1` if it is not present.

Syntax: `indexOf(searchElement, fromIndex)`



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JavaScript challenge - 1



# Interview Question

forEach vs Map in JavaScript?



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# Syntax – forEach

```
array.forEach(function  
  callback(currentValue, index, array) {  
    // Your logic here  
  }, thisValue);
```

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# Here's a breakdown of each part:

`array`: The array on which the `foreach` method is called.

`callback`: A function that will be called once for each element in the array.

`currentValue`: The current element being processed in the array.

`index` (optional): The index of the current element being processed.

`array` (optional): The array `foreach` was called upon.

`thisValue` (optional): A value to use as `this` when executing the callback function.

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# Syntax – forEach

```
array.forEach((currentValue, index, array)  
=> { // Your logic here }, thisValue);
```

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# Syntax – Map()

```
array.map(function callback(currentValue,  
index, array) {  
    // Your logic here  
}, thisValue);
```

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# Syntax – Map()

```
array.map((currentValue, index, array) =>  
{  
    // Your logic here  
}, thisValue);
```

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# Here's a breakdown of each part:

`array`: The array on which the `map` method is called.

`callback`: A function that will be called once for each element in the array.

`currentValue`: The current element being processed in the array.

`index` (optional): The index of the current element being processed.

`array` (optional): The array map was called upon.

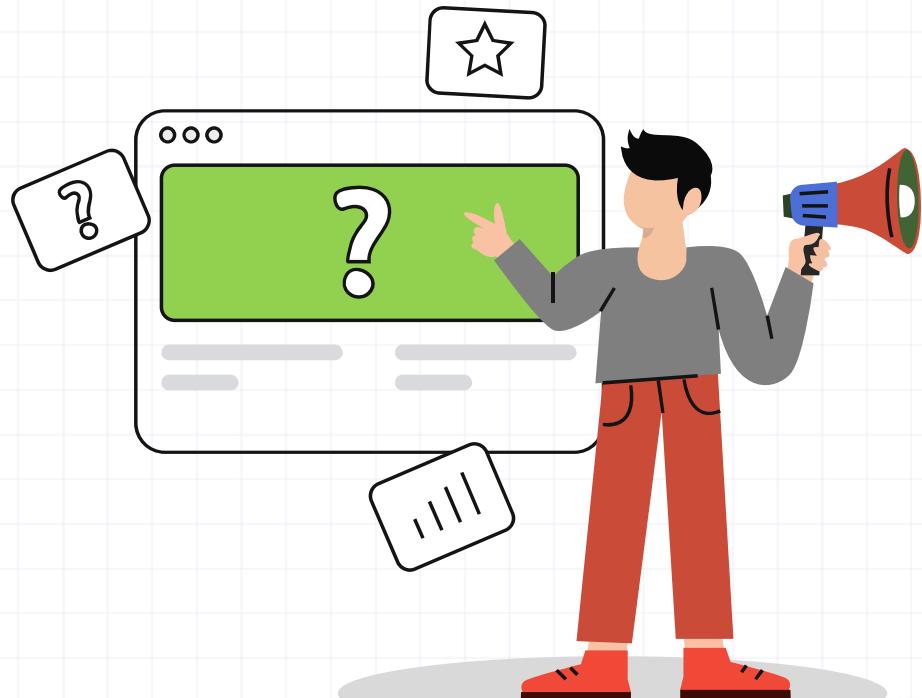
`thisValue` (optional): A value to use as `this` when executing the callback function.

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JavaScript challenge - 1



# Interview Question

Let's test our knowledge.



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# Interview Questions – Array CRUD

- 1: Add Dec at the end of an array?
- 2: What is the `return` value of splice method?
- 3: `Update` march to March (update)?
- 4: `Delete` June from an array?

```
const months = ['Jan', 'march', 'April', 'June', 'July'];
```

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## Interview Questions – Array Filter

Q: Given an array of products where each product has a **name** and a **price**, write a function that uses the **filter method** to return an array containing only the products with a **price less than or equal to 500**.

```
const products = [  
    { name: "Laptop", price: 1200 },  
    { name: "Phone", price: 800 },  
    { name: "Tablet", price: 300 },  
    { name: "Smartwatch", price: 150 },  
];
```

## Interview Questions – Array Filter

- 1: Using the `map` method, write a function that takes an array of strings and returns a new array where each `string is capitalized`.
- 2: Using the `map` method, write a function that takes an array of numbers and returns a new array where each `number is squared`, but only `if it's an even number`.
- 3: Using the `map` method, write a function that takes an array of names and returns a new array where `each name is prefixed with "Mr"`.

## Interview Questions – Array Reduce

Write a JavaScript function that **calculates the total price** of items in a shopping cart. The function should take an array of item prices as input and **return the total price**.

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JAVASCRIPT  
**\* STRINGS**

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## What we will cover

- \* String & it's properties
- \* String Search Methods
- \* Extracting String Characters
- \* Other Useful Methods
- \* Escape Character
- \* Extracting String Parts
- \* Replacing String Content

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# indexOf()

The `indexOf()` method returns the index (position) of the first occurrence of a string in a string, or it returns -1 if the string is not found:

Syntax: `indexOf(searchString, position)`

Look only the 1<sup>st</sup> letter

Index =	0	1	2	3	4	5	6	7	8	9	10
Str =	V	i	n	o	d	T	h	a	p	a	

Output: 6

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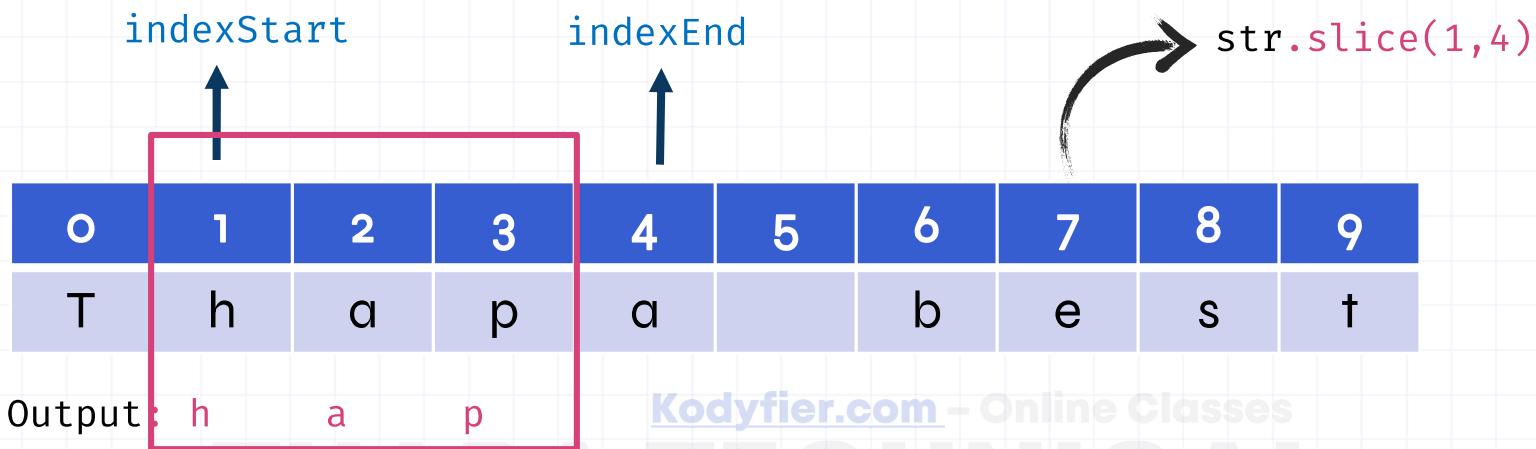
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# slice()

`slice()` extracts a part of a string and returns the extracted part in a new string.

1: JavaScript counts **positions from zero**.

2: `slice()` extracts up to but **not including indexEnd**.

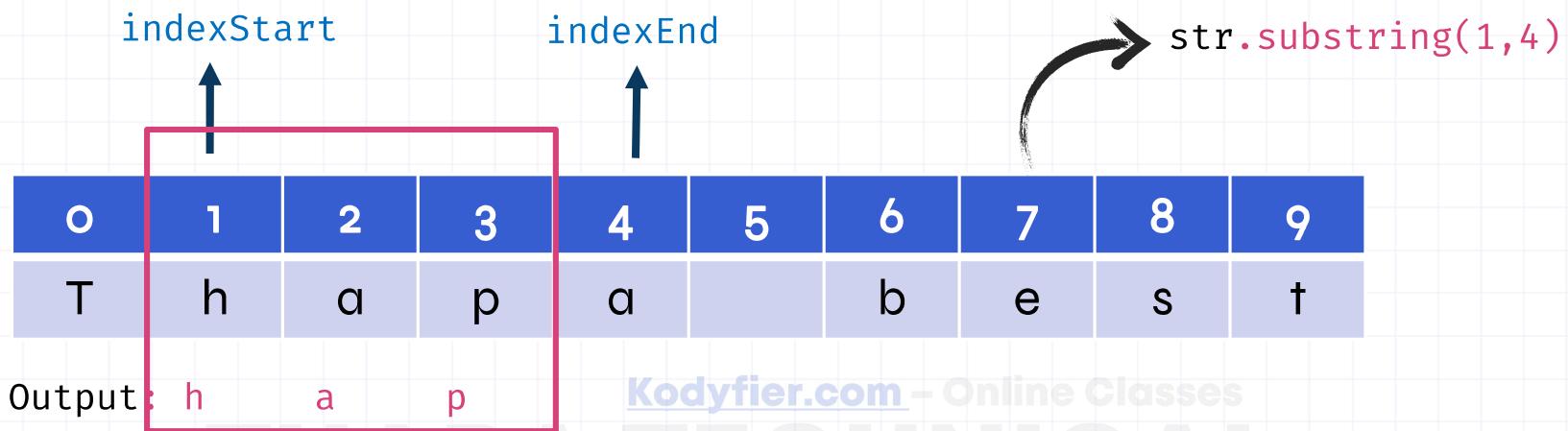


# substring()

`substring()` extracts a part of a string and returns the extracted part in a new string.

1: JavaScript counts **positions from zero**.

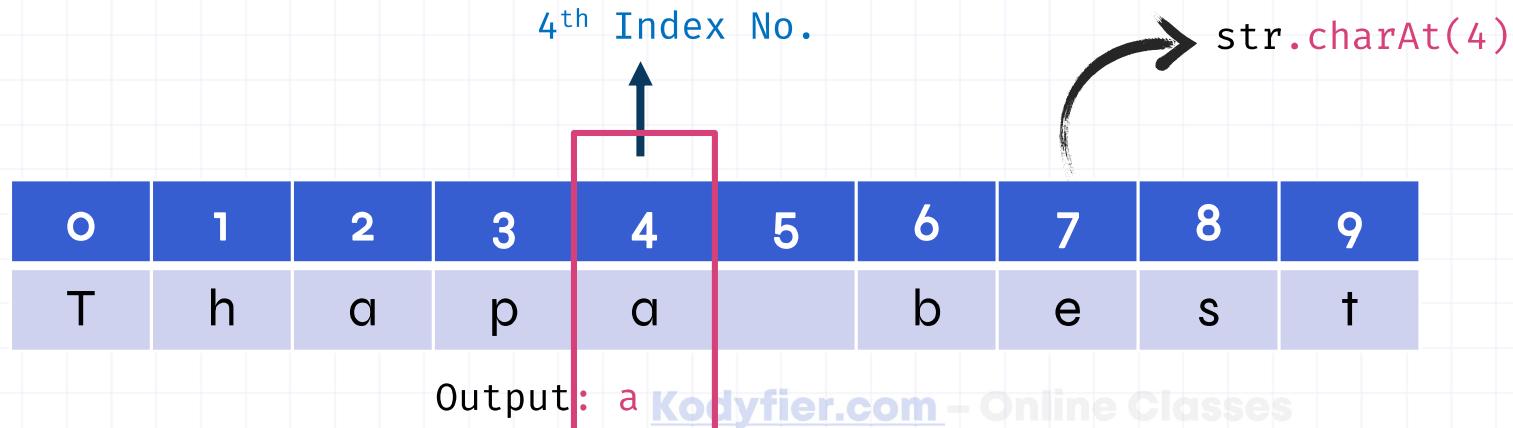
2: `substring()` extracts up to but **not including indexEnd**.



# charAt()

The `charAt()` method returns the character at a specified index (position) in a string

1: JavaScript counts **positions from zero**.

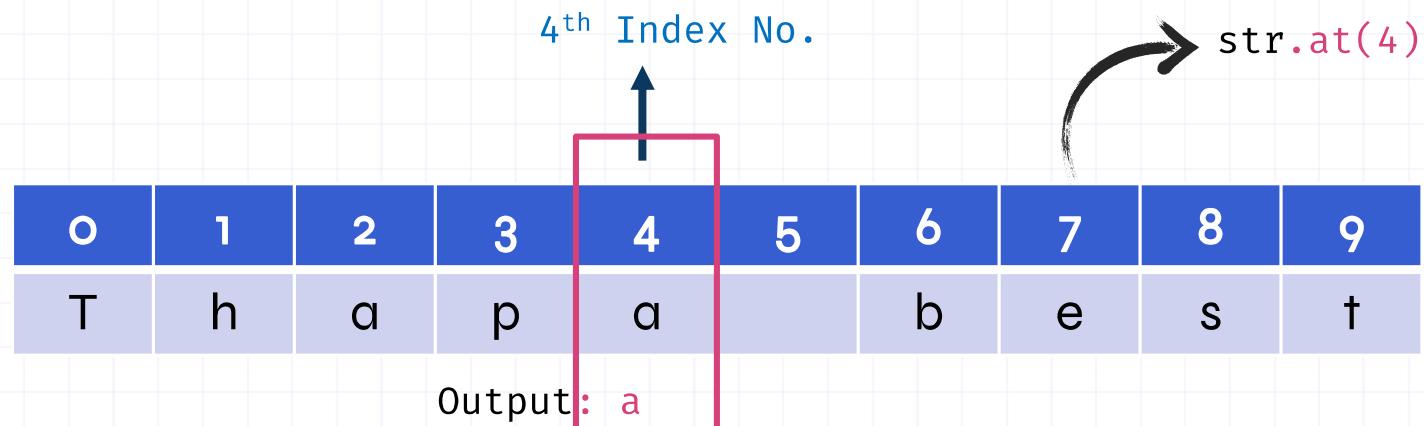


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## at()

The `at()` method returns the character at a specified index (position) in a string

1: It allows the `use of negative indexes` while `charAt()` do not.



# at()

The `at()` method returns the character at a specified index (position) in a string

1: It allows the `use of negative indexes` while `charAt()` do not.

o	1	2	3	4	5	6	7	8	9
T	h	a	p	a		b	e	s	t
-10	-9	-8	-7	-6	-5	-4	-3	-2	-1

4<sup>th</sup> Index No. 

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# Interview Questions – Strings

- 1: Write a JavaScript function that prints the letters 'a' through 'z' in the console. You should use a loop to iterate through the letters and print each one on a new line.
- 2: Write a function to count the number of vowels in a string?
- 3: Write a function to check if all the vowels presents in a string or not?

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# Interview Questions – Strings

Write a JavaScript function `isPangram` that takes a string as input and returns true if the string is a pangram (contains all letters of the alphabet) and false otherwise. The function should be case-insensitive and ignore spaces.

## Constraints:

- 1: The input string will consist of alphabetic characters and spaces.
- 2: The function should handle both uppercase and lowercase letters.
- 3: Consider the English alphabet with 26 letters.

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# \* MATH OBJECT

JAVASCRIPT

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# Difference Between Round, Floor & Ceil

## **Math.round()**

Rounds to the nearest integer.

Ex:

```
console.log(Math.round(4.5));  
// Output: 5  
console.log(Math.round(4.1));  
// Output: 4
```

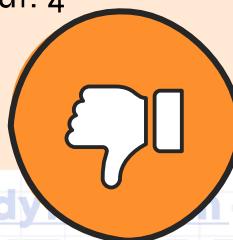


## **Math.floor()**

Always rounds down to the nearest integer.

Ex:

```
console.log(Math.floor(4.9));  
// Output: 4  
console.log(Math.floor(4.1));  
// Output: 4
```



## **Math.ceil()**

Always rounds up to the nearest integer.

Ex:

```
console.log(Math.ceil(4.2));  
// Output: 5  
console.log(Math.ceil(4.9));  
// Output: 5
```



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# Interview Questions – Strings & Functions

1: Write a JavaScript function that prints the letters 'a' through 'z' in the console. You should use a loop to iterate through the letters and print each one on a new line.

2: Write a JavaScript function `isPangram` that takes a string as input and returns true if the string is a pangram (contains all letters of the alphabet) and false otherwise. The function should be case-insensitive and ignore spaces.

**Constraints:**

- 1: The input string will consist of alphabetic characters and spaces.
- 2: The function should handle both uppercase and lowercase letters.
- 3: Consider the English alphabet with 26 letters.

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JAVASCRIPT

\* **Window in JS  
DOM & BOM**

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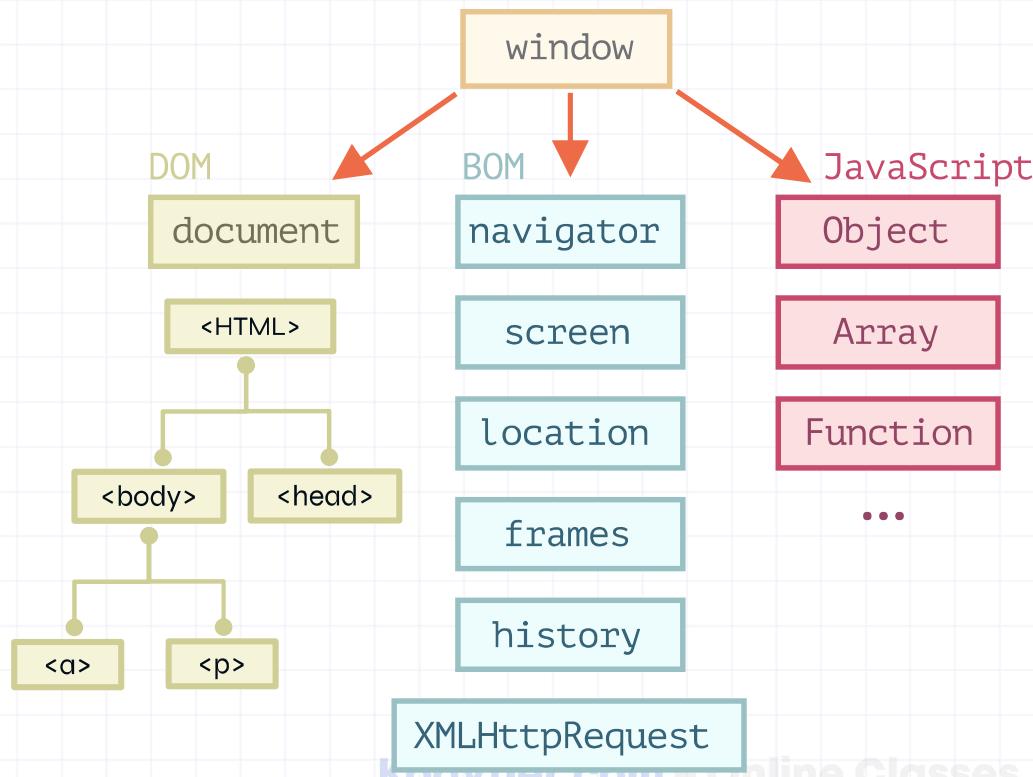
## Window

- 1: Window is the main container, or we can say the **global Object** and any operations related to entire browser window can be a part of window object.
- 2: All the members like objects, methods or properties. If they are the part of window object, then **we do not refer the window object**.
- 3: Window has methods, properties and object. ex setTimeout() or setInterval() are the methods, whereas Document is the object of the Window and It also has a screen object with properties describing the physical display.

## Document

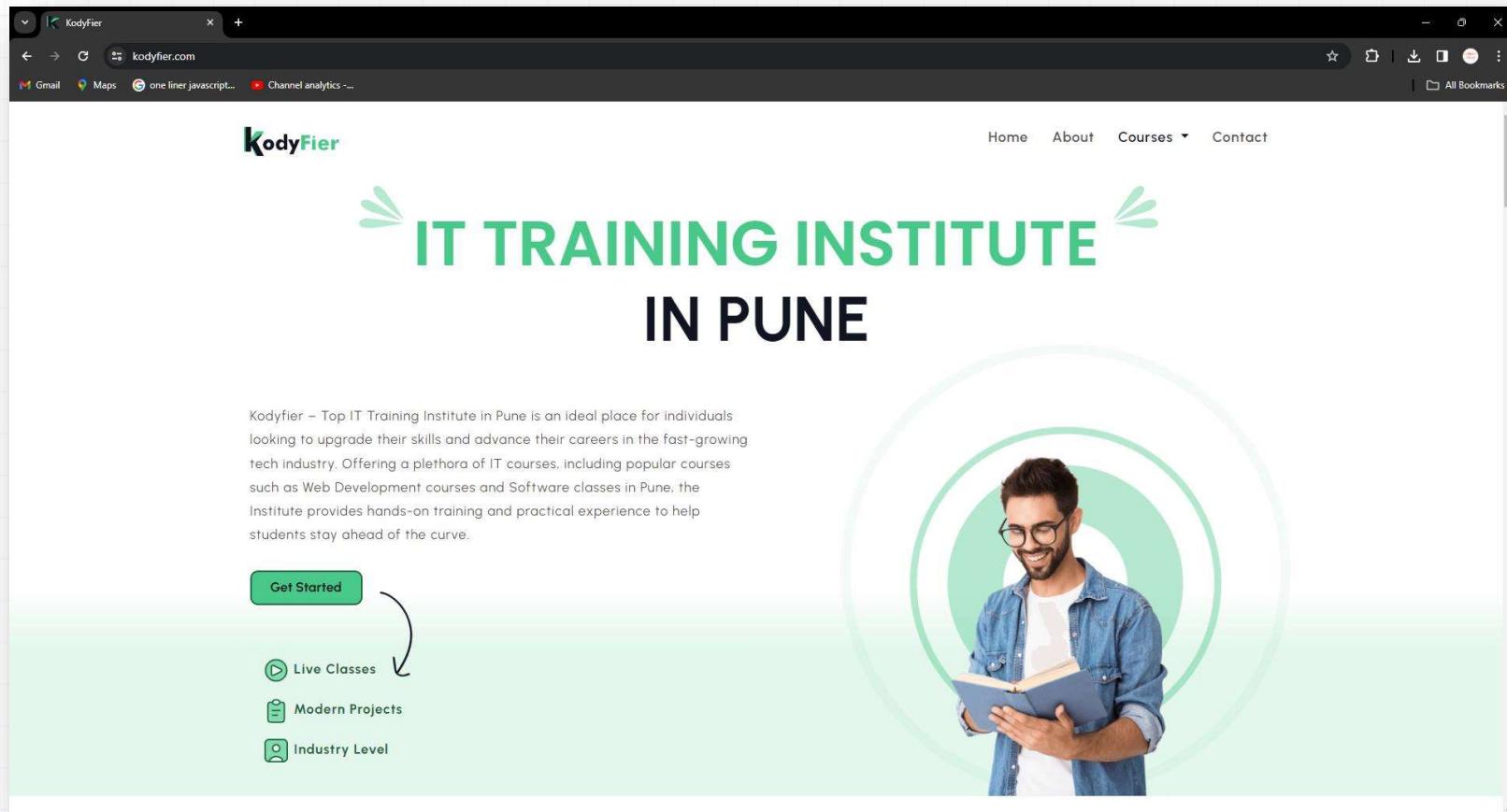
- 1: Whereas the **DOM is the child of window object**
- 2: Where in the DOM **we need to refer the document**, if we want to use the document object, methods or properties
- 3: Document is just the **object of the global object** that is Window, which deals with the document, the HTML elements themselves.

# Window Global Object

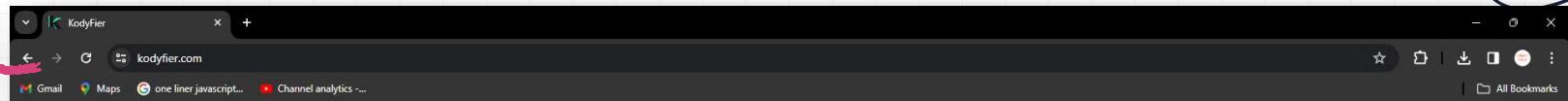


<https://javascript.info/dom-nodes#:~:text=An%20example%20of%20the%20DOM&text=Every%20tree%20node%20is%20an,%3E%20are%20its%20children%2C%20etc.>

# Window Global Object



The BOM



The DOM

A screenshot of the KodyFier website. The page features a green header with the logo 'KodyFier' and navigation links for 'Home', 'About', 'Courses', and 'Contact'. The main content area has a light green background. At the top, there is a large green title 'IT TRAINING INSTITUTE' with 'IN PUNE' below it, flanked by two green leaf-like icons. To the right of the title is a circular profile picture of a smiling man wearing glasses and a denim shirt, holding a blue book. On the left side of the main content area, there is a 'Get Started' button and three smaller items: 'Live Classes' with a play icon, 'Modern Projects' with a clipboard icon, and 'Industry Level' with a person icon. A green arrow points from the text 'The DOM' to the main content area of the website.

## Window Object:

The window object represents the global window in a browser.

Both the [Browser Object Model \(BOM\)](#) and the [Document Object Model \(DOM\)](#) are part of the window object.

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### Window Object:

The window object represents the global window in a browser. Both the **Browser Object Model (BOM)** and the **Document Object Model (DOM)** are part of the window object.

### Browser Object Model (BOM):

The BOM represents the browser as an object and provides methods and properties for interacting with the browser itself (not directly related to the content of a web page).

Examples of BOM features include `window.navigator` for browser information, `window.location` for URL manipulation, and `window.alert` for displaying alerts.

## Window Object:

The window object represents the global window in a browser.

Both the **Browser Object Model (BOM)** and the **Document Object Model (DOM)** are part of the window object.

## Document Object Model (DOM):

The DOM represents the structured document as a tree of objects, where each object corresponds to a part of the document (**such as elements, attributes, and text**).

The DOM is primarily concerned with the content of the web page and allows JavaScript to interact with and manipulate the HTML elements.

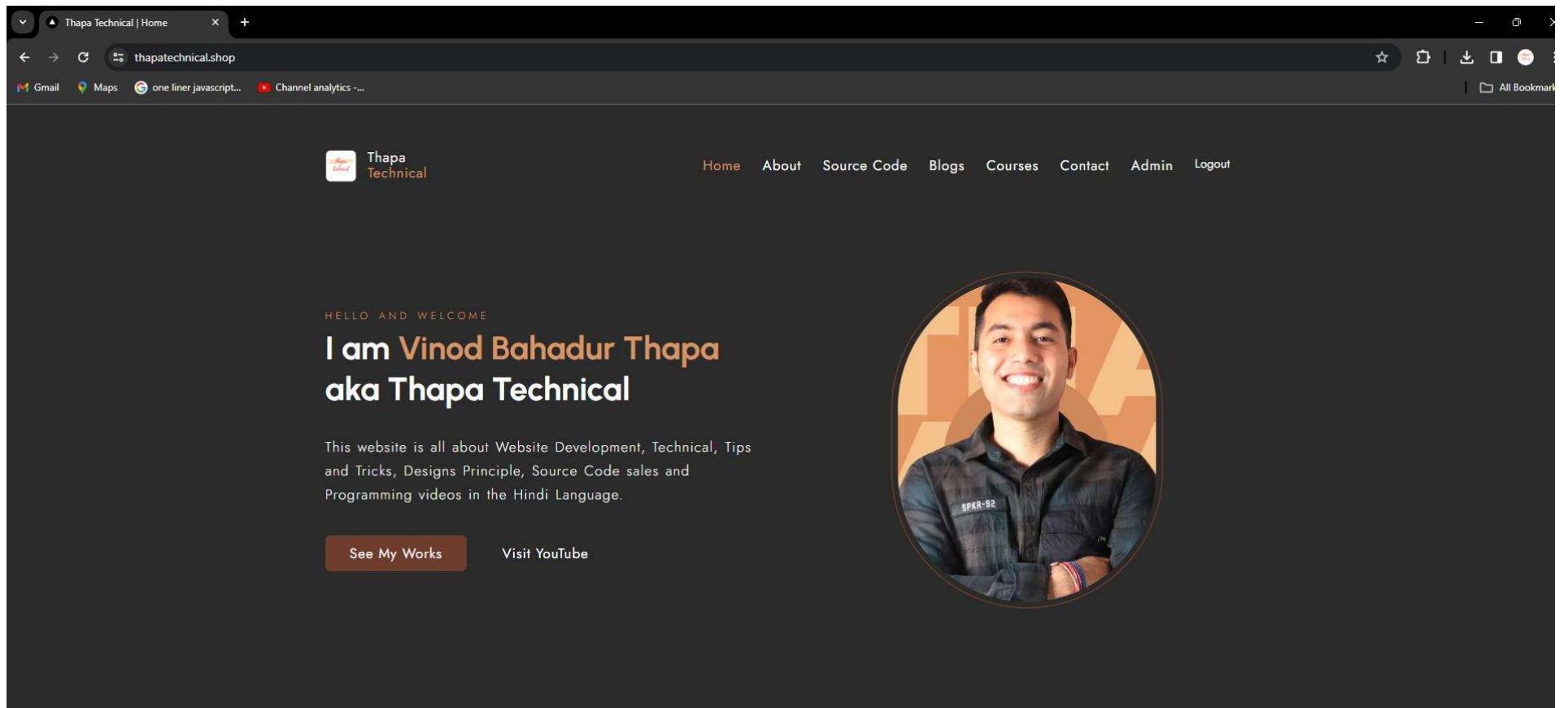
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So, while the DOM is focused on the content of the page, the BOM is focused on the browser environment. The window object serves as the global object that encompasses both the BOM and the DOM when working in a browser environment.

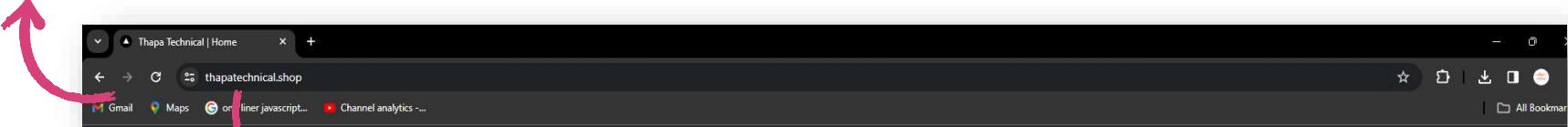
# The Window Object



A screenshot of a web browser displaying the homepage of Thapa Technical. The page has a dark background. At the top left is the Thapa Technical logo. To its right is a navigation bar with links: Home, About, Source Code, Blogs, Courses, Contact, Admin, and Logout. Below the navigation bar, the text "HELLO AND WELCOME" is displayed in a small font. In the center, there is a large, circular portrait of a smiling man with dark hair, wearing a dark shirt with "SPKR-92" on it. To the left of the portrait, the text "I am Vinod Bahadur Thapa aka Thapa Technical" is written in a large, bold, orange font. Below this text is a paragraph describing the website's purpose: "This website is all about Website Development, Technical, Tips and Tricks, Designs Principle, Source Code sales and Programming videos in the Hindi Language." At the bottom left, there are two buttons: "See My Works" (in a brown box) and "Visit YouTube".

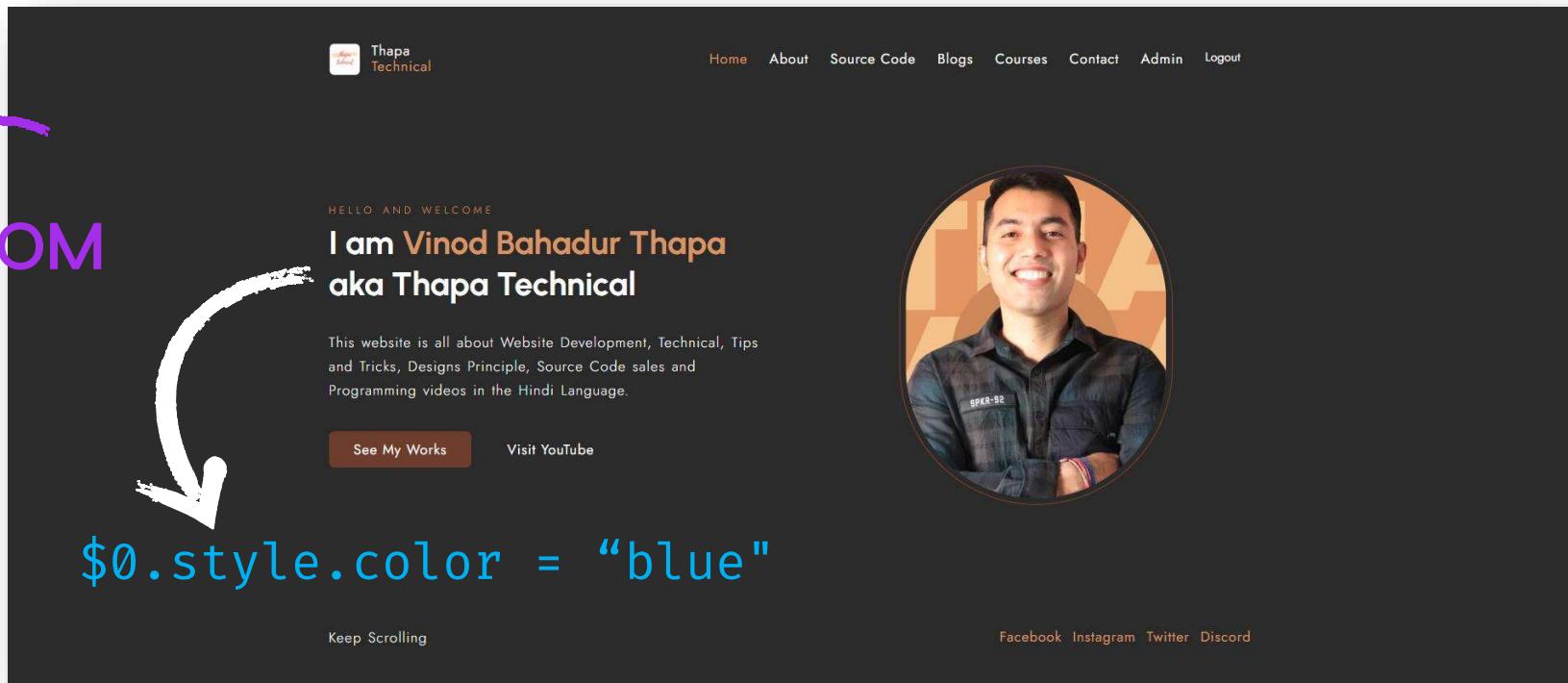
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# The BOM



window.location.href

# The DOM



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```
> <body>
>   <!-- /comment -->
>   <div>
>     Hello
>     <span>World</span>
>   </div>
>   <script></script>
> </body>
```

```
> document.body.childNodes
< ▼ NodeList(7) [text, comment, text, div, text, script, text] i
```

```
innerHTML: "\n      Hello\n      <span>World</span>\n      "
innerText: "Hello World"
```

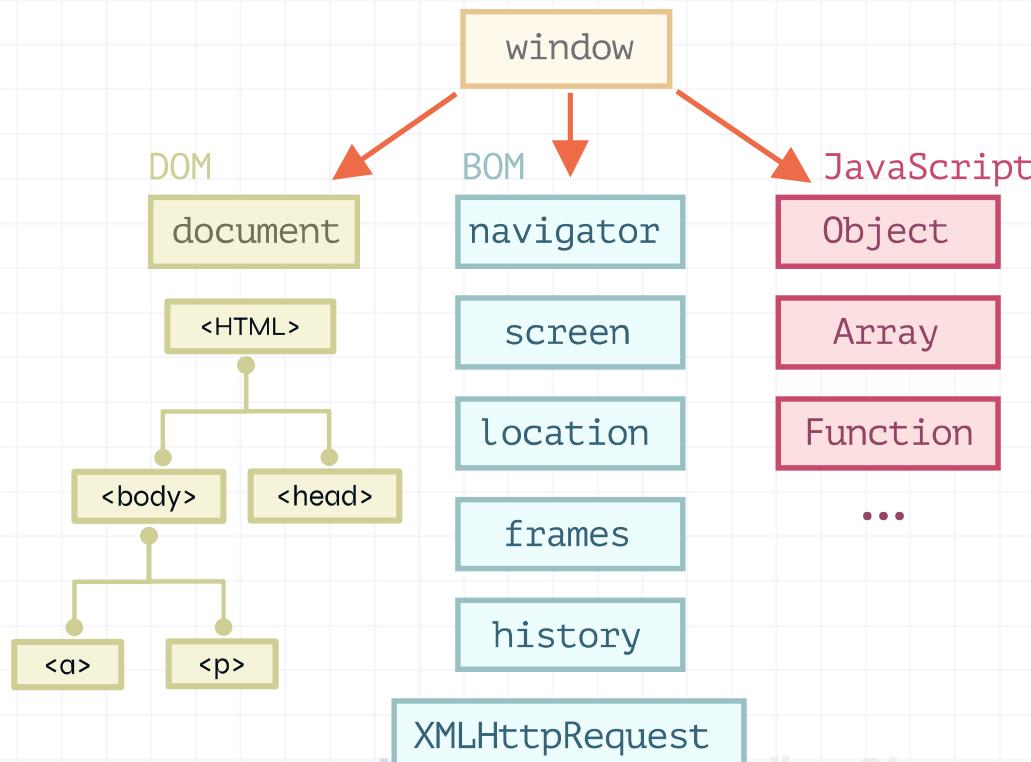
```
textContent: null
```

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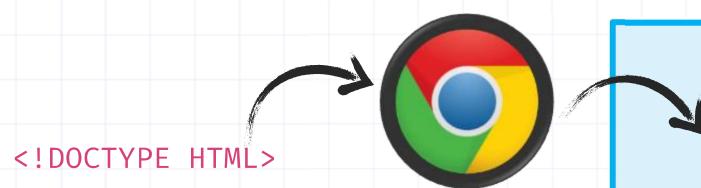
# THAPA TECHNICAL

# Window Global Object

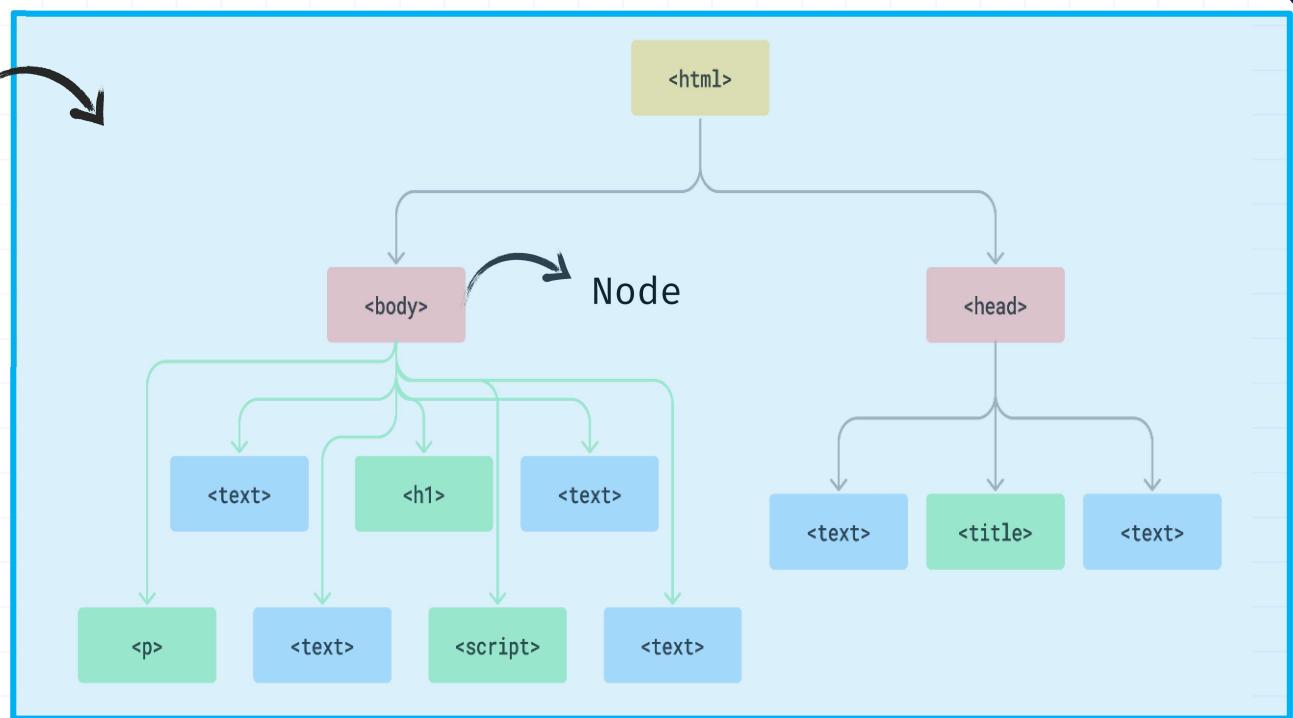


<https://javascript.info/dom-nodes#:~:text=An%20example%20of%20the%20DOM&text=Every%20tree%20node%20is%20an,%3E%20are%20its%20children%2C%20etc.>

# BROWSER - DOM TREE



```
<!DOCTYPE HTML>
<html>
<head>
  <title>JavaScript</title>
</head>
<body>
  <h1>Best JS Course</h1>
  <p> DOM Tree Structure</p>
  <script> </script>
</body>
</html>
```

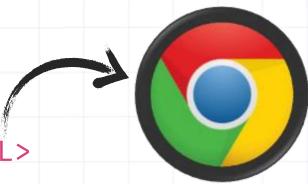


This entire DOM tree is then accessible to JavaScript as an object.

<https://javascript.info/dom-nodes#:~:text=An%20example%20of%20the%20DOM&text=Every%20tree%20node%20is%20an,%3E%20are%20its%20children%2C%20etc.>

# Window Global Object

```
<!DOCTYPE HTML>
<html>
<head>
  <title>JavaScript</title>
</head>
<body>
  <h1>Best JS Course</h1>
  <p> DOM Tree Structure</p>
</body>
</html>
```



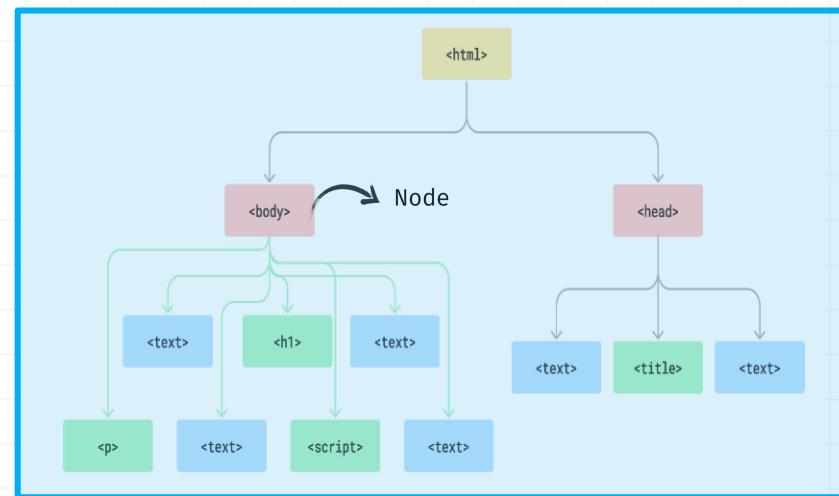
```
>   document.body.childNodes
<  ▷ NodeList(5) [text, h1, text, p, text] ⓘ
    ▷ 0: text
    ▷ 1: h1
    ▷ 2: text
    ▷ 3: p
    ▷ 4: text
    length: 5
    [[Prototype]]: NodeList
>   document.head.childNodes
<  ▷ NodeList(3) [text, title, text] ⓘ
    ▷ 0: text
    ▷ 1: title
    ▷ 2: text
    length: 3
    [[Prototype]]: NodeList
```

This entire DOM tree is then accessible to JavaScript as an object.

<https://javascript.info/dom-nodes#:~:text=An%20example%20of%20the%20DOM&text=Every%20tree%20node%20is%20an,%3E%20are%20its%20children%2C%20etc.>

The Document Object Model (DOM) is a **tree-like representation** of the HTML document. It provides a way **to interact with the HTML document using JavaScript**. The DOM provides **multiple properties** and **methods** to dynamically change the content of the HTML document using JavaScript

```
<!DOCTYPE HTML>
<html>
<head>
    <title>Javascript</title>
</head>
<body>
    <h1>Best JS Course</h1>
    <p> DOM Tree Sturture</p>
</body>
</html>
```



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## DOM Properties

```
document  
getElementById(id)  
getElementsByClassName(className)  
getElementsByTagName(tagName)  
querySelector(selector)  
querySelectorAll(selector)  
innerHTML  
textContent  
style
```

## DOM Methods

```
createElement(tagName)  
appendChild(node)  
removeChild(node)  
addEventListener(event, function)  
removeEventListener(event, function)  
setAttribute(name, value)  
getAttribute(name)  
parentNode / parentElement  
childNodes / children  
firstChild / firstElementChild  
lastChild / lastElementChild  
nextSibling / nextElementSibling  
previousSibling / previousElementSibling  
closest(selector)  
forEach (Array.from)
```

\*

# Local Storage

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The `localStorage` object allows you to save **key/value pairs** in the browser.

The `localStorage` object stores data with **no expiration date**.

The **data is not deleted** when the browser is closed and are available for future sessions.

## What we will cover

- \* How to add / store data in `localStorage`.
- \* How to get / retrieve data from `localStorage`.
- \* How to remove data from `localStorage`.

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\* **EVENTS**

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# What we will cover

- \* 3 ways of writing Events in JavaScript
- \* What is Event Object?
- \* MouseEvent in JavaScript
- \* KeyboardEvent in JavaScript
- \* InputEvents in JavaScript

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# Mouse Events

Event	Occurs When
onclick	The user <b>clicks</b> on an element
oncontextmenu	The user right-clicks on an element
ondblclick	The user <b>double-clicks</b> on an element
onmousedown	A mouse button is pressed over an element
onmouseenter	The pointer is moved onto an element
onmouseleave	The pointer is <b>moved out of</b> an element
onmousemove	The pointer is moving over an element
onmouseout	The mouse pointer moves out of an element
onmouseover	The mouse pointer is <b>moved over</b> an element
onmouseup	The mouse button is released over an element

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# JAVASCRIPT \* DATE & TIME

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# Date Objects

The `Date()` constructor creates **Date objects**. When called as a function, it returns a string representing the current time.

## Syntax

`new Date()`

`new Date(date string)`

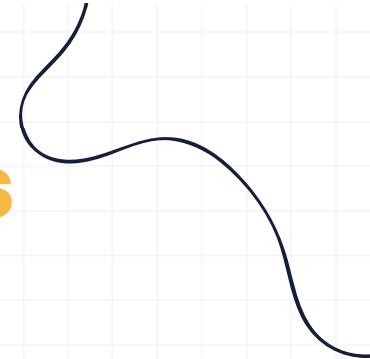
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# **9 ways to create a new Date Objects**

`new Date()`



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# 9 ways to create a new Date Objects

`new Date()`

`new Date(date string)`

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# 9 ways to create a new Date Objects

`new Date()`

`new Date(date string)`

`new Date(year,month)`

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# 9 ways to create a new Date Objects

`new Date()`

`new Date(date string)`

`new Date(year,month)`

`new Date(year,month,day)`

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# 9 ways to create a new Date Objects

`new Date()`

`new Date(date string)`

`new Date(year,month)`

`new Date(year,month,day)`

`new Date(year,month,day,hours)`

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# 9 ways to create a new Date Objects

`new Date()`

`new Date(date string)`

`new Date(year,month)`

`new Date(year,month,day)`

`new Date(year,month,day,hours)`

`new Date(year,month,day,hours,minutes)`

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# 9 ways to create a new Date Objects

`new Date()`

`new Date(date string)`

`new Date(year,month)`

`new Date(year,month,day)`

`new Date(year,month,day,hours)`

`new Date(year,month,day,hours,minutes)`

`new Date(year,month,day,hours,minutes,seconds)`

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# 9 ways to create a new Date Objects

`new Date()`

`new Date(date string)`

`new Date(year,month)`

`new Date(year,month,day)`

`new Date(year,month,day,hours)`

`new Date(year,month,day,hours,minutes)`

`new Date(year,month,day,hours,minutes,seconds)`

`new Date(year,month,day,hours,minutes,seconds,milliseconds)`

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# 9 ways to create a new Date Objects

`new Date()`

`new Date(date string)`

`new Date(year,month)`

`new Date(year,month,day)`

`new Date(year,month,day,hours)`

`new Date(year,month,day,hours,minutes)`

`new Date(year,month,day,hours,minutes,seconds)`

`new Date(year,month,day,hours,minutes,seconds,ms)`

`new Date(milliseconds)`

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# \* **Timing Based Events**

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# Lists of Timing Based Events

1 setTimeout()

4 setInterval()

2 clearTimeout()

5 clearInterval()

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# Definition - Timing Based Events

- 1 `setTimeout()` - The `setTimeout` function is used to **execute a function** or code block **after a specified delay in milliseconds**.
  
- 2 `setInterval()` - The `setInterval` function is used to **repeatedly execute a function** or code block at a **specified interval in milliseconds**.

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## Syntax – setTimeout()

```
function myCallback() {  
    console.log(" It schedule the callback function  
    after a delay of 2000 milliseconds (2sec)");  
}  
  
setTimeout(myCallback, 2000);
```



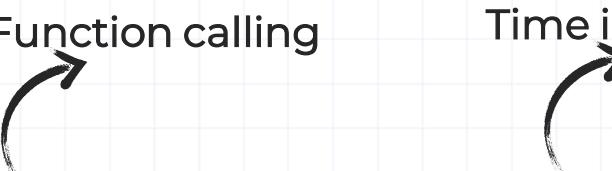
Function calling      Time in milliseconds

# Syntax – setInterval()

```
function repeatedFunction() {  
    console.log("This function will be repeated every  
    1000 milliseconds (1 second).");  
}
```

setInterval(repeatedFunction, 1000);

Function calling      Time in milliseconds



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JAVASCRIPT  
\* **OBJECTS**

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# What is an Objects?

Objects are a fundamental part of JavaScript, providing a way to group related data and functions together. In JavaScript, an object is a collection of key-value pairs, where each key is a string (or a symbol) and each value can be any data type, including other objects. Objects can have properties and methods, making them versatile for various use cases.

Syntax - obj = {}

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# Pass by Value vs Reference



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The “**this**” keyword refers to different objects depending on how it is used:

- \* In an object method, this refers to the object.
- \* Alone, this refers to the global object.
- \* In a function, this refers to the global object.
- \* In a function, in strict mode, this is undefined.
- \* In an event, this refers to the element that received the event.
- \* Methods like call(), apply(), and bind() can refer this to any object.

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# Interview Questions – Objects & Functions

1: Given an object representing a student, write a function to add a new subject with its corresponding grade to the student's record.

Also check if the grades property is present or not?

2: Write a function that compares two objects to determine if they have the same properties and values.

3: Write a function that transforms an array of objects into an object where the keys are the objects' ids.

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World Best JavaScript

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\* ECMAScript

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We'll explore all of  
**ECMAScript** in our VS Code.

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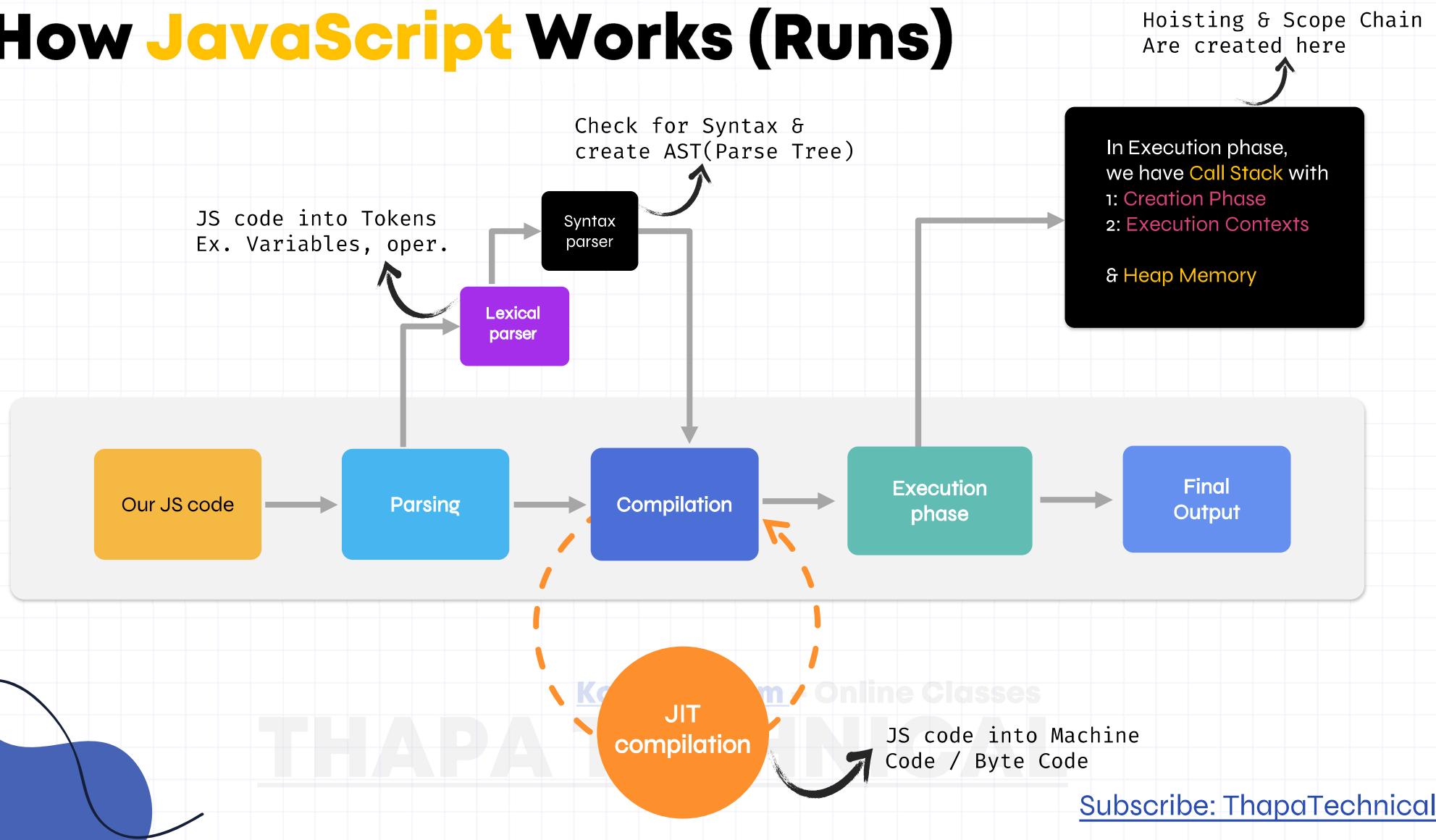
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# \* How JS Works

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# How JavaScript Works (Runs)



# CREATION PHASE (GLOBAL EXECUTION CONTEXT)

GLOBAL  
OBJECT

“this”

OUTER  
SCOPE

Memory Space for Variables &  
Functions also called **HOISTING**.

# **CREATION PHASE (GLOBAL EXECUTION CONTEXT)**

GLOBAL  
OBJECT

Final  
Output

JIT  
compilation

JS code into Machine  
Code / Byte Code

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# What's Execution Phase?

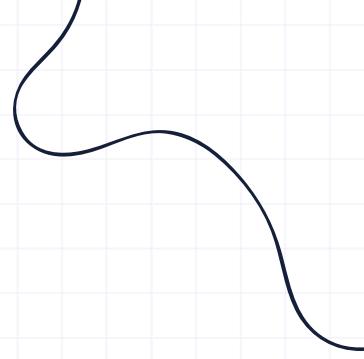
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# **Synchronous vs Asynchronous**

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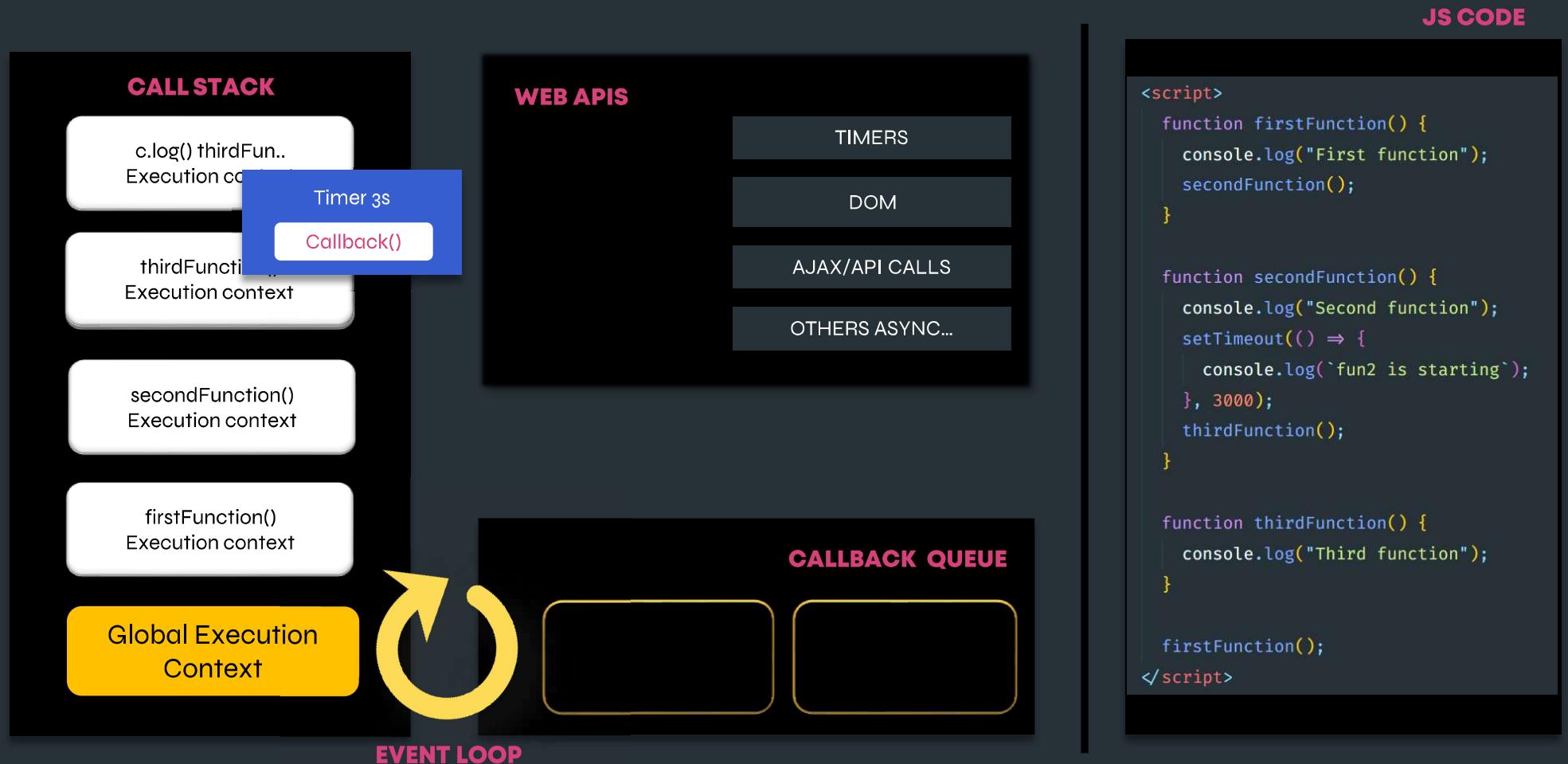
# What's the difference?

Synchronous code executes line by line, blocking further execution until each line is completed, while asynchronous code allows other code to continue executing while it waits for an asynchronous operation to complete.

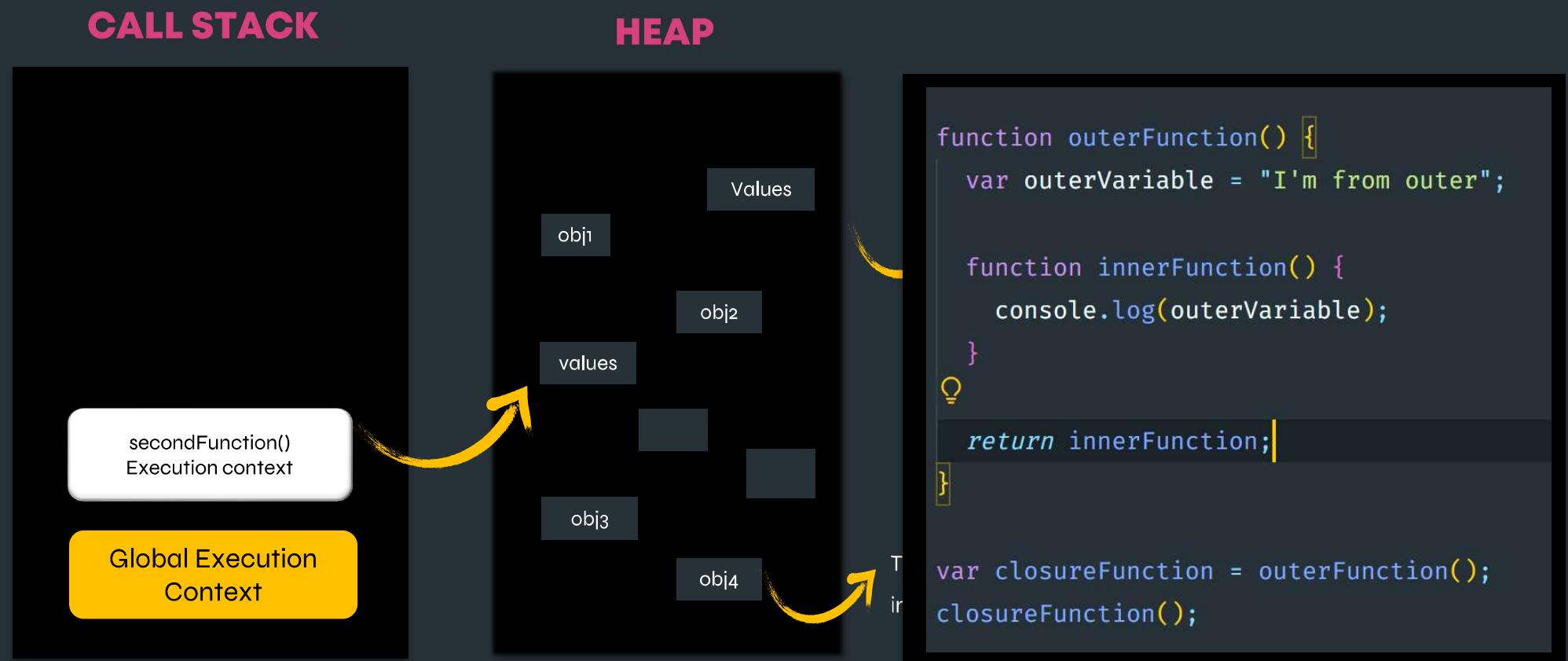
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# JAVASCRIPT RUNTIME / THE EVENT LOOP



# JAVASCRIPT ENGINE



# \* Advanced JavaScript

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# Topics in our Advanced JavaScript

Event Propagation (Event Bubbling and Event Capturing)

Higher Order Function

Callback Function

Closures & Function Currying (We will see after Async JS section)

CallBack Hell

Fetch API

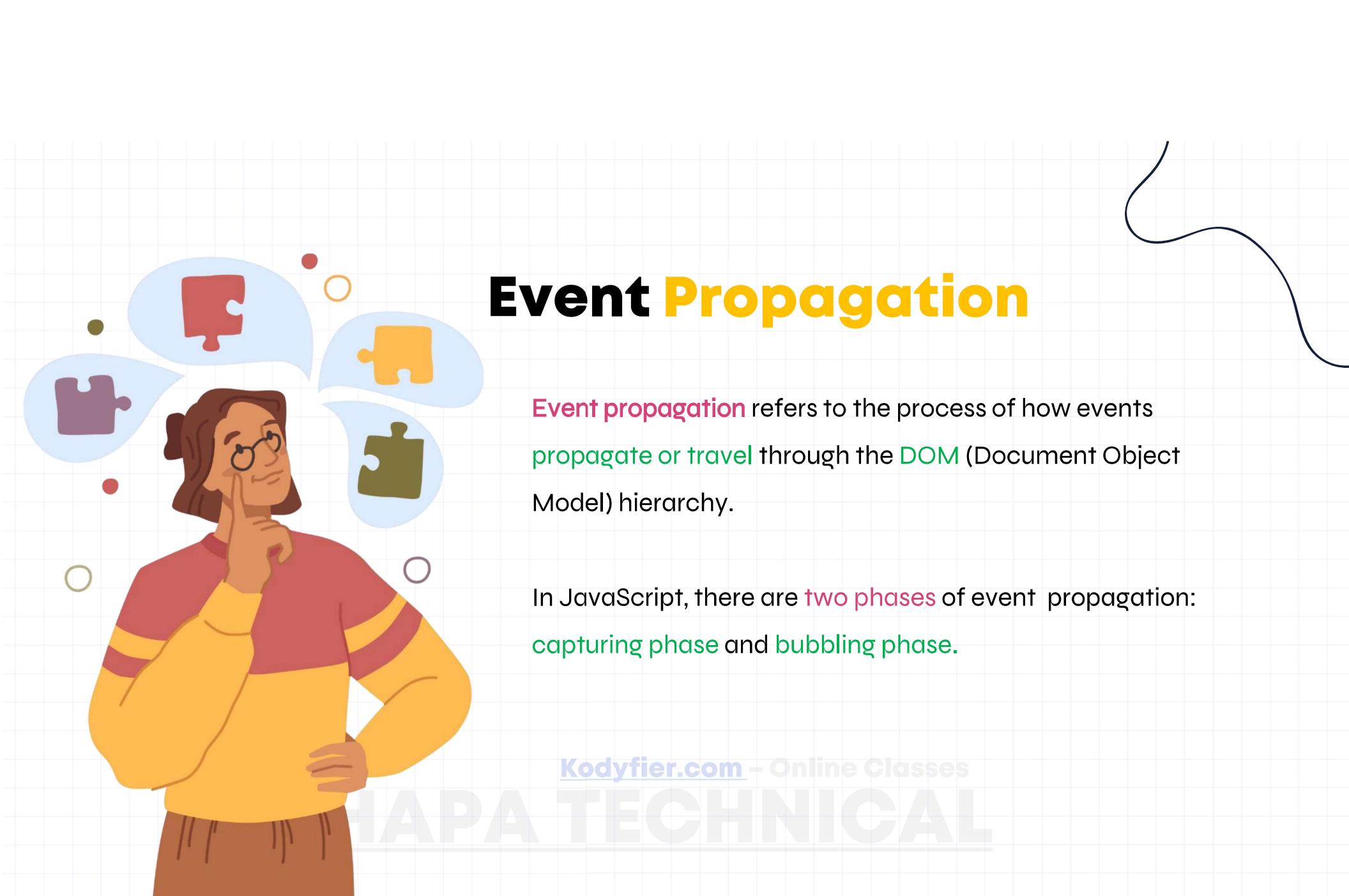
Promises

Async-Await

Error Handling in JS

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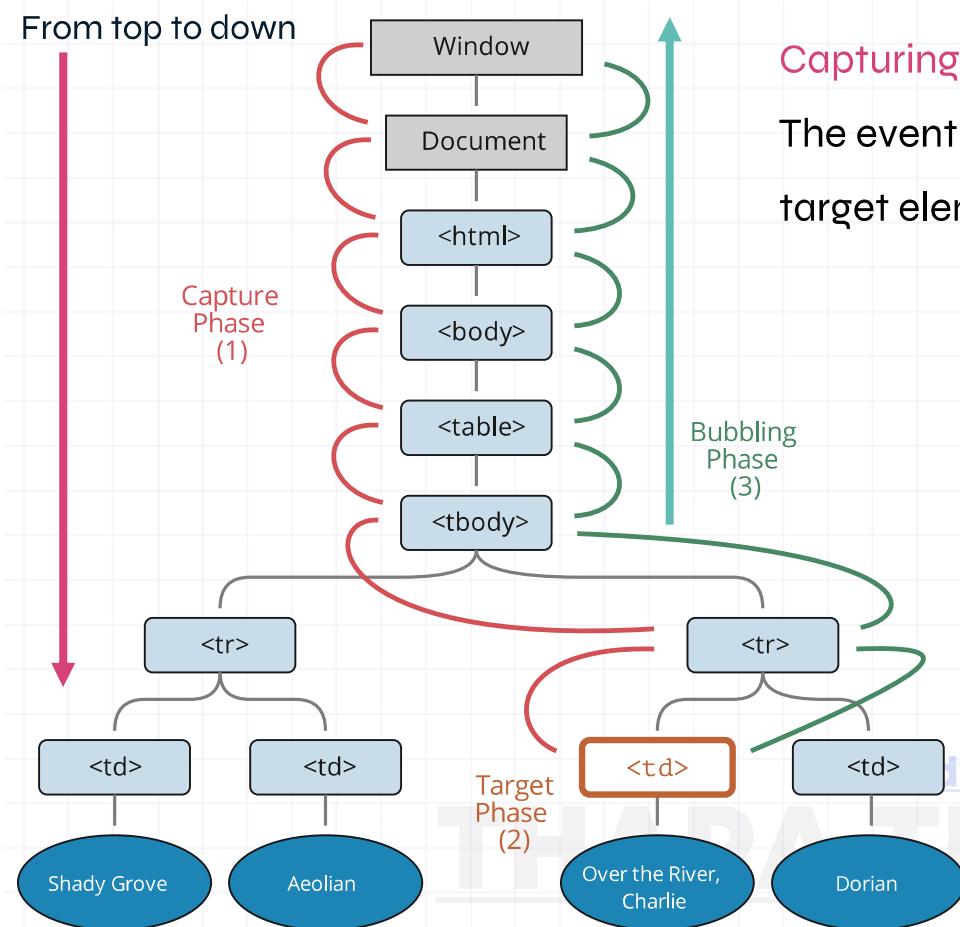


# Event Propagation

**Event propagation** refers to the process of how events propagate or travel through the **DOM** (Document Object Model) hierarchy.

In JavaScript, there are **two phases** of event propagation: capturing phase and **bubbling phase**.

# Event Propagation



## Capturing Phase:

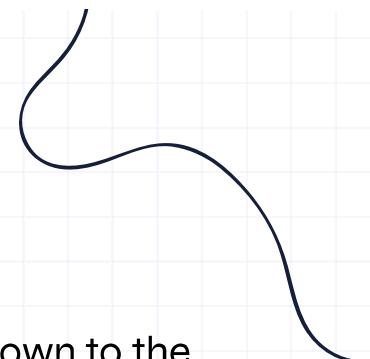
The event starts from the root of the DOM and goes down to the target element.

## Target Phase:

The event reaches the target element.

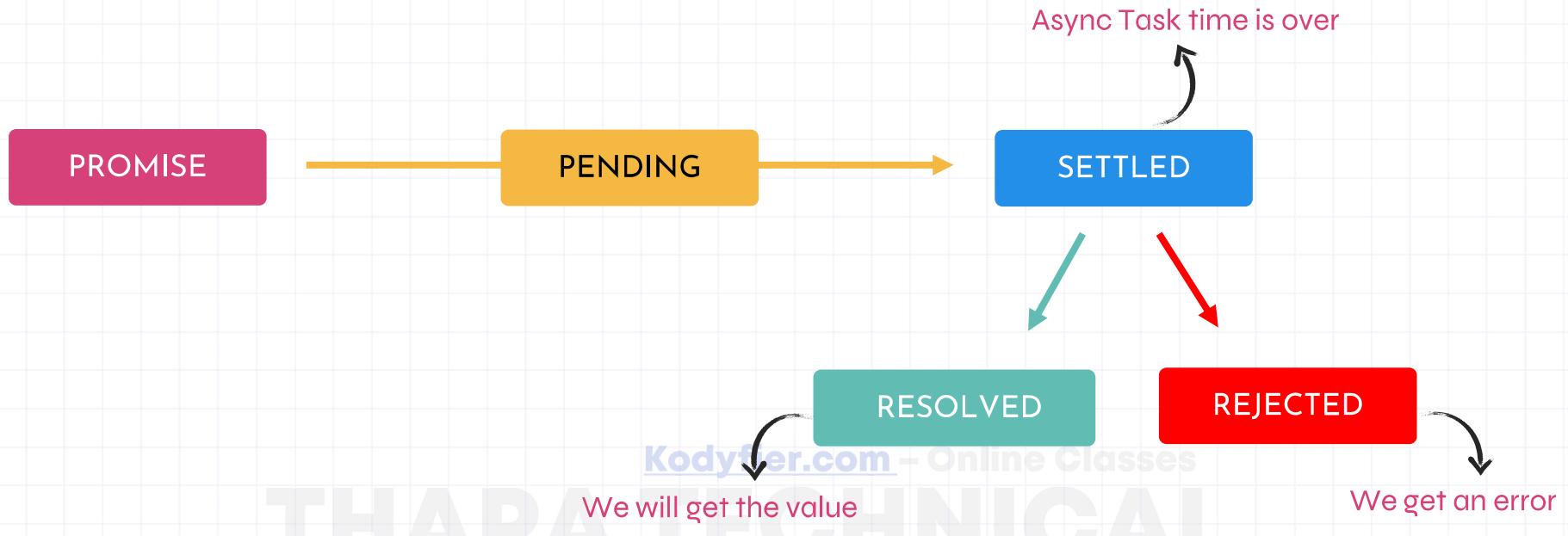
## Bubbling Phase:

The event starts from the target element and bubbles up to the root of the DOM.



# Promises in JavaScript

A **promise** is like a **placeholder** for the **result** of an **asynchronous** operation.



**Project**  
**Weather Application JS**

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Here is the link: <https://youtu.be/13gLB6hDHR8>

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