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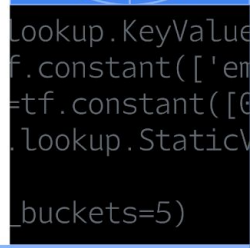
Session starting soon



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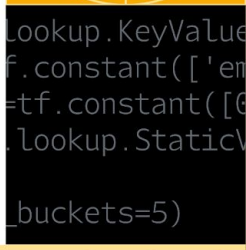
Welcome To Day <3/>

<TECH WINTER BREAK/>

Level up your skills during winter chillllsss



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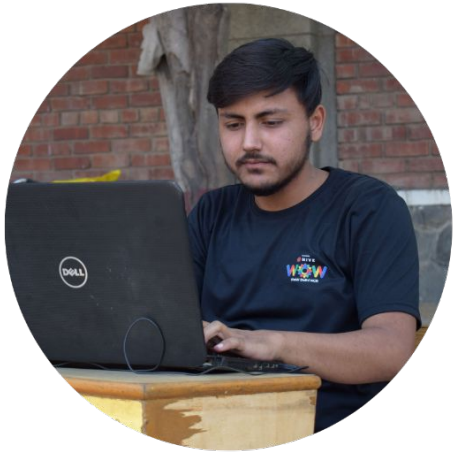
About the Mentor



Sagar Kumar Jha is an accomplished professional with diverse experience across **high-impact organizations.**

- Interned at **DRDO**, focusing on **APK & API Security**.
- Interned at the **Special Protection Groups(SPG)**, specializing in **Radar Communication Systems**.
- Interned at **NITI Aayog**, contributing to **Software Engineering projects**.

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About the Instructor

Divyansh Raj is a skilled professional currently serving as the Technical Lead of GDGC and an intern at Delhi Government University, showcasing his expertise in technical leadership and project execution.

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Connect With Us !

Sagar Kumar Jha
(Mentor)

Divyansh Raj
(Instructor)

```
lookup.KeyValue
f.constant(['em
=tf.constant([0
.lookup.StaticV

_buckets=5)
```

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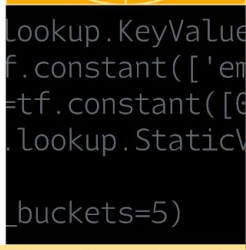
Day 3: Javascript

The Key to Dynamic Web Development !



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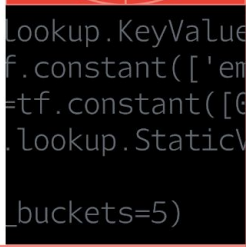
Let's Start!

Javascript: Used to make websites dynamic.

Javascript is the logic of the web and the only programming language which the browser understands.



1. Introduction to JavaScript

What is JavaScript?

A versatile, high-level programming language.
Enables dynamic behaviour on websites.
Runs on the client-side and server-side (e.g., Node.js).

Key Features:

Lightweight and interpreted.
Prototype-based, object-oriented.
Event-driven and asynchronous capabilities.

```
console.log('Hello, JavaScript!');
```

2. Javascript Basics

Operators

Types of Operators:
1. Arithmetic: +, -, *, /, %.
2. Comparison: ==, ===, !=, !==, >, <, >=, <=.
3. Logical: &&, ||, !
4. Assignment: =, +=, -=.
5. Bitwise: &, |, ^, ~, <<, >>.
6. Type: typeof, instance of

3. Conditional Statements

Types of Conditions:
1. If, Else, Else if
2. Switch

Best Practices:
- Use === for strict equality checks.
- Use default in switch to handle edge cases.

4. Loops

Types of Loops:
1. For
2. While
3. Do....while

```
for (let i = 1; i <= 5; i++) {
    console.log(i);
}

let i = 1;
while (i <= 5) {
    console.log(i);
    i++;
}

const colors = ['red', 'green', 'blue'];
for (let color of colors) {
    console.log(color);
}

const person = {name: 'John', age: 30};
for (let key in person) {
    console.log(`${key}: ${person[key]}`);
}
```

5 . Functions

What are functions?

A block of code designed to perform a task.

Types:

Function Declaration
Function Expression
Arrow Function
Immediately Invoked Function Expressions

Best Practices:

Use descriptive names for functions.
Keep functions focused on a single task.

```
function greet(name) {
    return `Hello, ${name}!`;
}

const add = (a, b) => a + b;

(function sayHi() {
    console.log('Hi there!');
})(); // IIFE

console.log(greet('Alice')); // Hello, Alice!
console.log(add(2, 3)); // 5
```

6 . Objects

What are Objects?

Collection of Key-Value Pairs.

Accessing Properties:

Dot Notation: object.property

Bracket Notation: object[‘property’]

```
const car = {
    brand: 'Toyota',
    model: 'Corolla'
};

car.year = 2020; // Adding
console.log(car);
delete car.model; // Deleting
console.log(car);
```

7. Arrays

What are Arrays?

Ordered Collection of data

Common Methods:

Mutating: push, pop, shift, unshift, splice.

Non-mutating: slice, concat, map, filter, reduce.

```
const fruits = ['apple', 'banana', 'cherry'];
fruits.push('date');
console.log(fruits); // ['apple', 'banana', 'cherry', 'date']

const numbers = [1, 2, 3, 4, 5];
const doubled = numbers.map(num => num * 2);
console.log(doubled); // [2, 4, 6, 8, 10]
```

8. More about Functions

1. Promises
2. Async & Await

https://medium.com/@hassanahmedkhan/a-beginners-guide-to-promise-api-in-javascript-c8a2fe365cdc

Asynchronous Programming

JavaScript is single-threaded and asynchronous programming is used to handle operations like API calls, timers, or file reading without blocking the main thread.

What is a Callback?

A callback is a function passed as an argument to another function, which gets executed after the completion of an operation. **Callbacks are often used for handling asynchronous tasks.**

When multiple asynchronous tasks depend on each other, nesting callbacks can make the code difficult to read, debug, and maintain. This is known as **callback hell.**

```
function fetchData(callback) {
  setTimeout(() => {
    console.log("Data fetched");
    callback(); // Execute the callback function
  }, 1000); // Simulate an asynchronous task with a delay of 1 second
}

// Call the fetchData function and pass a callback
fetchData(() => {
  console.log("Processing data...");
});
```

Promises

Promise as an object that represents the eventual completion (or failure) of an asynchronous operation.

Explain the three states of a promise:

- Pending: Initial state.
- Fulfilled: Operation completed successfully.
- Rejected: Operation failed.

Chained Promises

```
// How multiple promises can be chained together
fetchData
  .then((data) => {
    console.log(data);
    return "Processing data";
  })
  .then((result) => console.log(result))
  .catch((error) => console.error(error));
```

Async & Await

async functions return promises and await pauses execution until the promise resolves.

```
async function fetchDataAsync() {
  try {
    const data = await new Promise((resolve, reject) =>
      setTimeout(() => resolve("Data fetched"), 1000)
    );
    console.log(data);
  } catch (error) {
    console.error(error);
  }
}

fetchDataAsync();
```

9. API Fetching

An API (Application Programming Interface) is a set of rules, protocols, and tools that allows different software applications to communicate with each other.

It acts as a bridge that enables a client (like a frontend application) to interact with a server or another application.

```
async function fetchQuote() {
  try {
    const response = await fetch("https://api.kanye.rest/");
    if (!response.ok) {
      throw new Error(`HTTP error! status: ${response.status}`);
    }
    const data = await response.json();
    console.log(`Kanye Quote: "${data.quote}"`);
  } catch (error) {
    console.error("Error fetching quote:", error);
  }
}
```

10. Document Object Model

What is DOM?

The Document Object Model represents the HTML structure as objects.

Selecting Elements:

By ID: document.getElementById(‘id’)
By Class: document.getElementByClassName(‘class’)
By Tag: document.getElementByTagName(‘tag’)
CSS Selectors: document.querySelector(‘selector’)
Multiple Selectors: document.querySelectorAll(‘selector’)

```
const heading = document.querySelector('h1');
heading.textContent = 'Welcome to JavaScript!';
```

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Thank You!

That’s all for today!

Happy New Year everyone,

The fun is in the journey, success is just a place to be at.