What is website?

It’s a collection of related web pages.

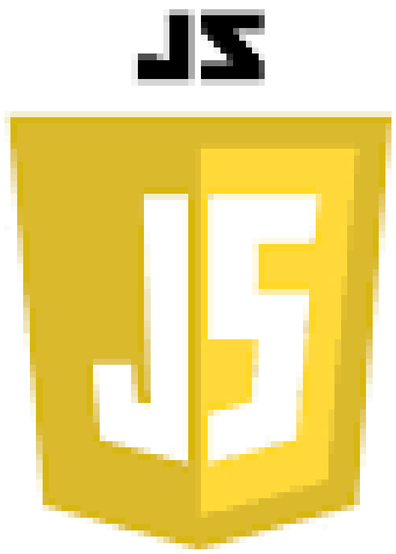
What is a web page?

A document that can be displayed in a web browser.

WEB PAGE

Structure

Presentation



Interaction

Internet

The Internet is a global network of interconnected computers and devices that communicate with each other using a common set of protocols.

Protocols:

Protocols are rules and conventions that govern how data is transmitted over the internet. HTTP (Hypertext Transfer Protocol) and HTTPS (HTTP Secure) are examples of protocols used for transmitting web pages.

Types of website

There are three types of websites on the internet.

1. **Static:**

   Imagine a static website as a digital brochure. It's like a set of pages that always look the same.

3.

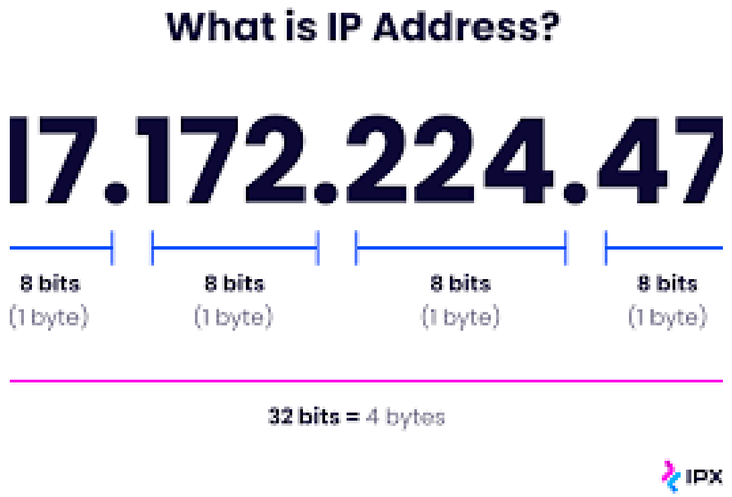
2. **Dynamic:**

   Dynamic website as a wizard. It can change and adapt based on what you do.

3. **Responsive:**

   Imagine a website that's like a shape-shifter. It can look good on any device, whether you're on a giant computer screen or a tiny smartphone.

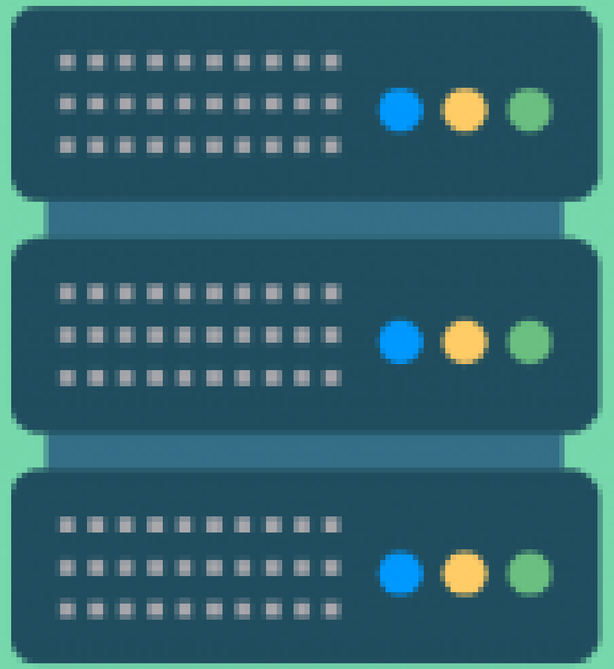
IP Address:



Computers on the internet have an IP address IP address involves either manual configuration (static IP) or dynamic assignment through DHCP.

FRONT END

{ HTML, CSS,JAVASCRIPT, REACT }



BACK END

Front- end:

- The term "frontend" refers to the client side of a website or web application.
- It encompasses all the components and elements that users interact with directly.
- Frontend development involves designing and implementing the user interface (UI) and user experience (UX) of a website, making it visually appealing and user-friendly.

Back-end:

The backend refers to the server side of a web application or software, responsible for managing data, business logic, and server-side operations.

Functionality:

- **Handles data storage, retrieval, and manipulation.**
- **Executes business logic and processes user requests.**
- **Manages user authentication and authorization.**

HTML

HTML, or HyperText Markup Language, is the standard markup language used to create the structure and content of web pages.

Basic HTML Page:

```
<!DOCTYPE html>          <-- Tells version of HTML
<html>                   <-- HTML Root Element

<head>                   <-- Used to contain page HTML metadata
  <title>Page Title</title>   <-- Title of HTML page
</head>

<body>                   <-- Hold content of HTML
  <h2>Heading Content</h2>    <-- HTML headling tag
  <p>Paragraph Content</p>    <-- HTML paragraph tag
</body>

</html>
```

Html tags and elements

Heading

Image

Paragraph

Link

Earth [edit]

Main articles: Earth and Earth science

View of the Earth, taken in 1972 by the crew of Apollo 17.

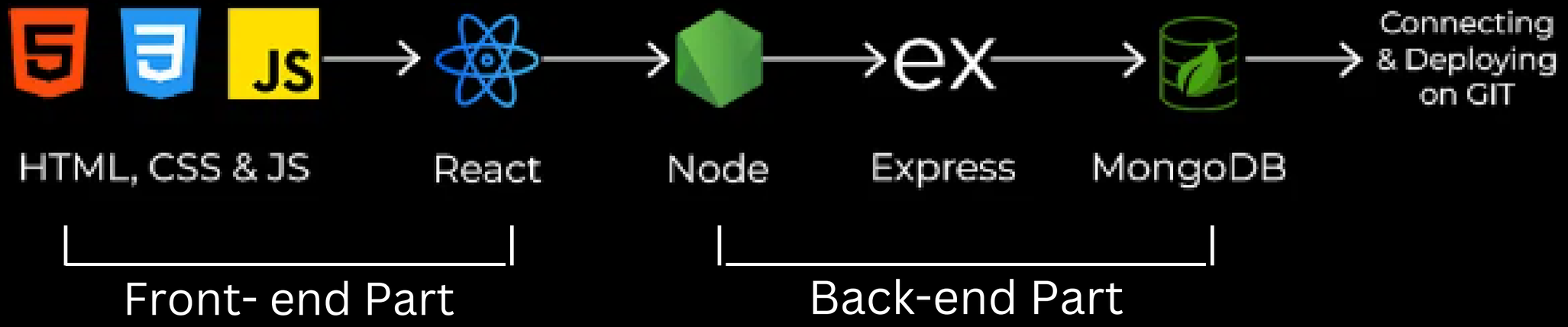
Earth is the only planet known to support life, and its natural features are the subject of many fields of scientific research. Within the solar system, it is third closest to the sun; it is the largest terrestrial planet and the fifth largest overall. Its most prominent climatic features are its two large polar regions, two relatively narrow temperate zones, and a wide equatorial tropical to subtropical region.[7] Precipitation varies widely with location, from several metres of water per year to less than a millimetre. 71 percent of the Earth's surface is covered by salt-water oceans. The remainder consists of continents and islands, with most of the inhabited land in the Northern Hemisphere.

Earth has evolved through geological and biological processes that have left traces of the original conditions. The outer surface is divided into several gradually migrating tectonic plates. The interior remains active, with a thick layer of plastic mantle and an iron-filled core that generates a magnetic

CSS

- CSS stands for Cascading Style Sheets.
- CSS is a stylesheet language used for describing the presentation of a document written in HTML or XML, including aspects such as layout, colors, fonts, and spacing
- Key Properties: Selectors, properties, values, the box model, and the concept of cascading in styles

Full stack Development Roadmap



JAVASCRIPT

History

- **Developed by Brendan Eich at Netscape**

  Scripting language for Navigator 2.

- **Later standardized for browser compatibility.**

  ECMAScript Edition 3 (aka JavaScript 1.5).

- **Related to Java in name only.**

  The name was part of a marketing deal. Java and javascript have no similarity. Just like carpet to the car.

What is JavaScript?

- **JavaScript is the world's most popular programming language that we use for adding interactivity to web pages.**
- **Feature:**
    1. **Weakly typed (Do not need to specify types while declaring variables).**
    2. **Interpreted (More accurately, Just In Time compiled)**
- **JavaScript is a client-side language, which means that it works inside a web browser.**

Common Use of Javascript

- Form Validation.
- Page embellishments and special effects.
- Navigation systems.
- Basic math calculations.
- Dynamic content manipulation.
- Sample applications.

Drawbacks of JavaScript in Comparison to Other Programming Languages

- **Single-threaded Execution**
- **Callback Hell.**
- **Lack of Strong Typing.**
- **Browser Compatibility issue.**
- **Security Concerns.**
- **No Built-in Module System (Before ES6)**

Javascript Vs PHP

PHP	JavaScript
• Server-side scripting language	• Client-side scripting language
• Used for back-end development	• Mainly used for front-end development
• More secure (as is not visible in browser)	• Has tools for enhancing security but needs more effort to do so
• Helps to build high-level interactive web pages	• Helps to build user-friendly creative web pages
• Quite slow performance	• Fast performance
• More features available	• Less load on a server and less server traffic
• Combined with HTML	• Combined with HTML, XML, Ajax
• MariaDB, MySQL, and PostgreSQL;	• AngularJS and ReactJS:
• WordPress, Drupal, Joomla	• MongoDB, CouchDB, and NoSQL
• Best for e-commerce and other websites using CMS	• Best for dynamic SPAs

How to add JS to a page ?

In order to add JS in HTML we use script tag.

```
<!doctype html>
<html>
<head>
<meta charset="UTF-8">
<title>My Web Page</title>
<script>
            /*        Write your  JS Code here            */
</script>
</head>
```

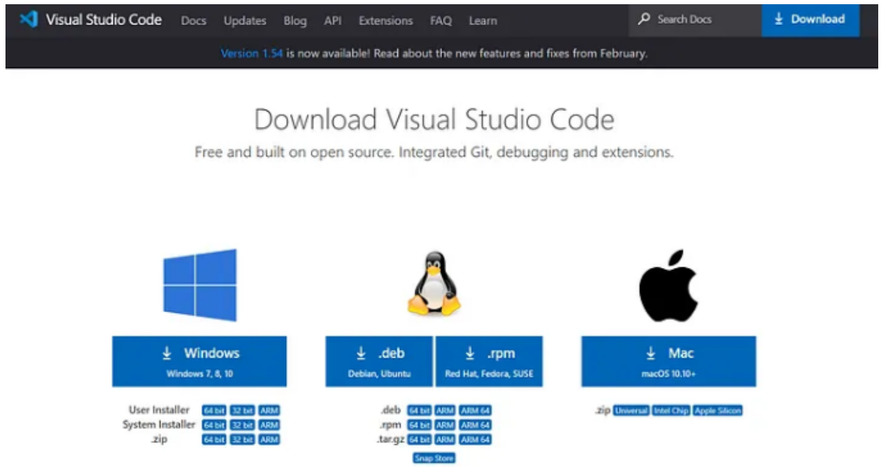
Adding External JS File in HTML:

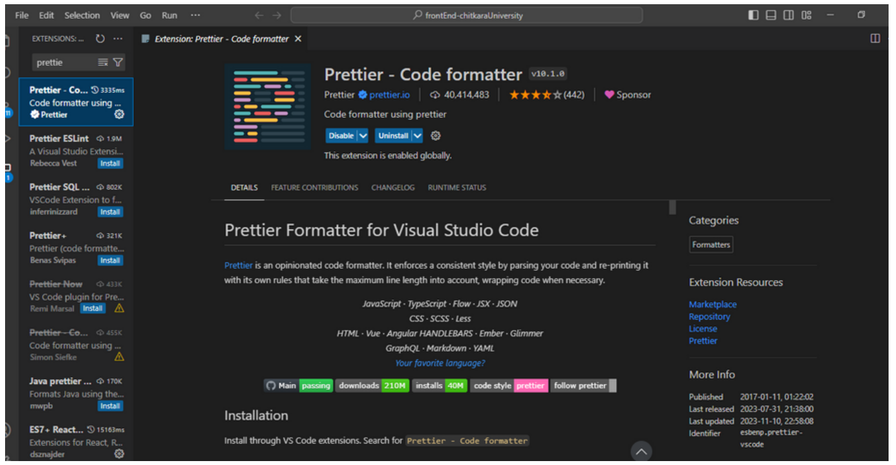
Here JS file name is *navigation.js*

```
<!doctype html>
<html>
<head>
<meta charset="UTF-8">
<title>My Web Page</title>
<script src="navigation.js"></script>   /*    Linking JS file    */
</head>
```

Tools and extentions

Install VS CODE:





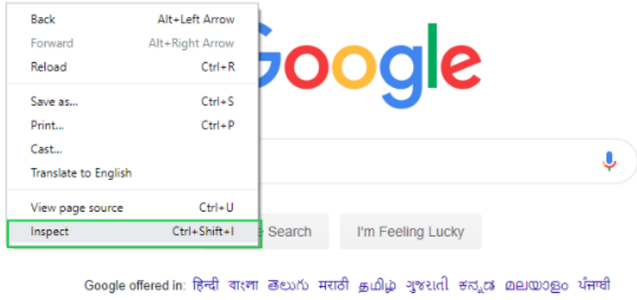
We also downloaded Prettier to make our code visibility look good.

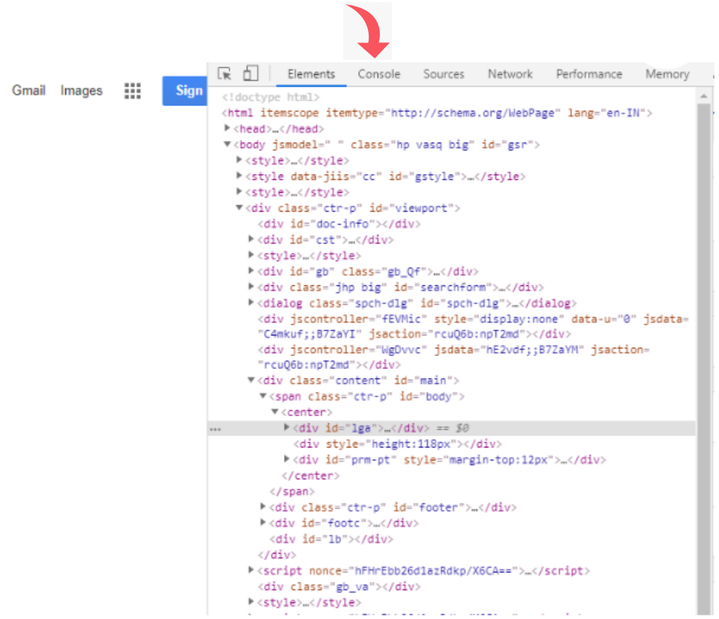
Javascript In Console:

Console provides a command-line interface where you can execute JavaScript code, log messages, and analyze the behavior of your scripts

Opening the console (Ctrl + Shift + J)

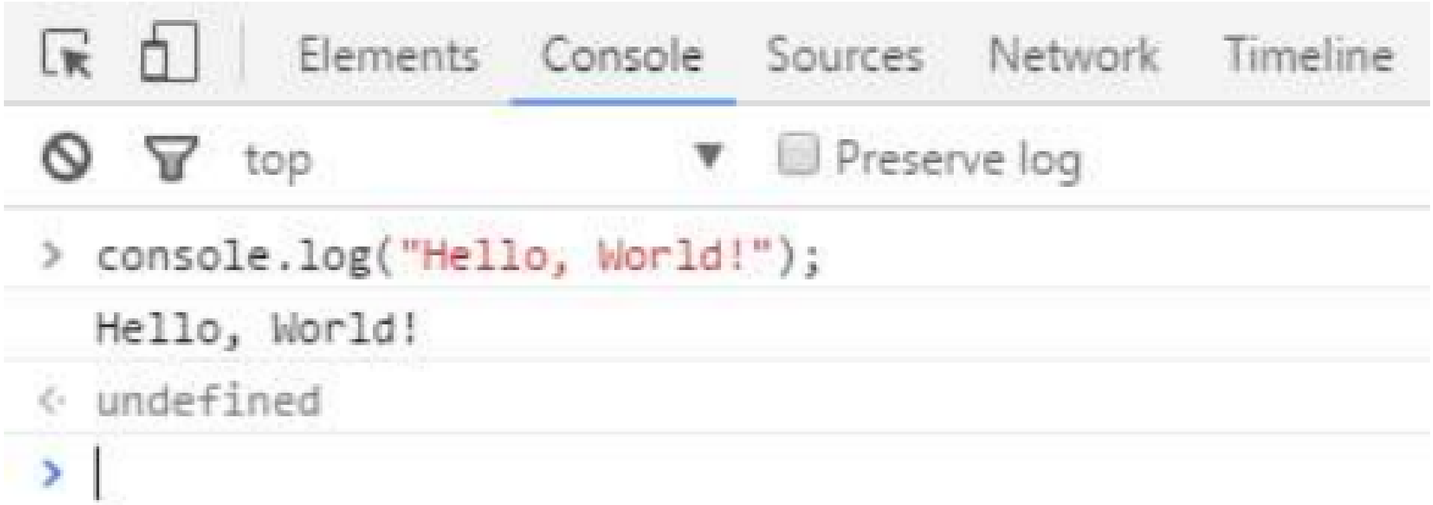
1.Right-click on the webpage and select "Inspect"





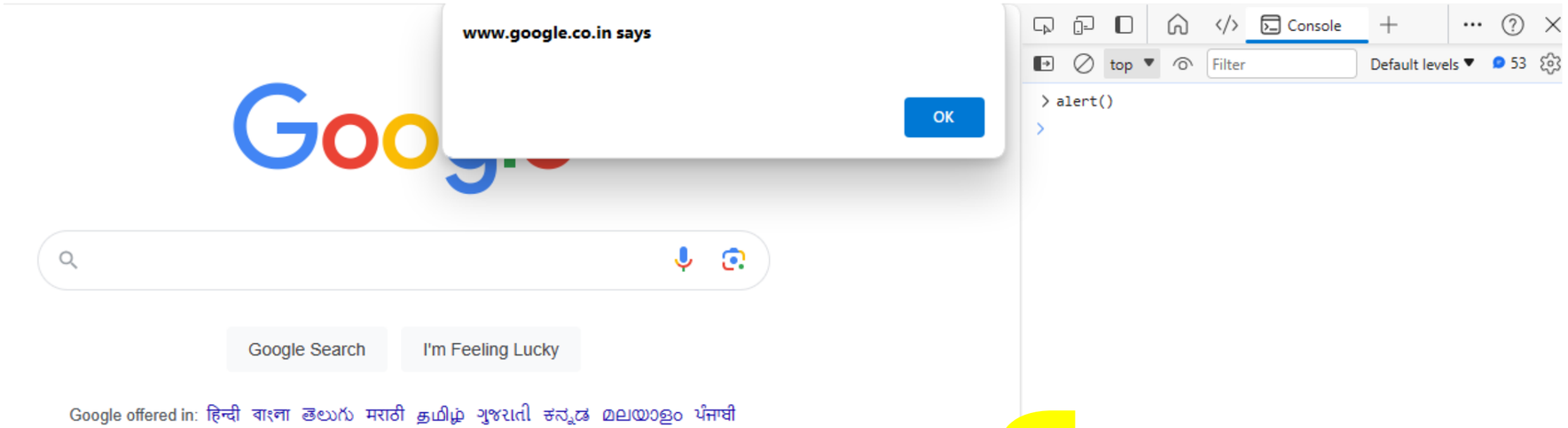
2. **Then navigate to the "Console" tab.**

Using console.log()



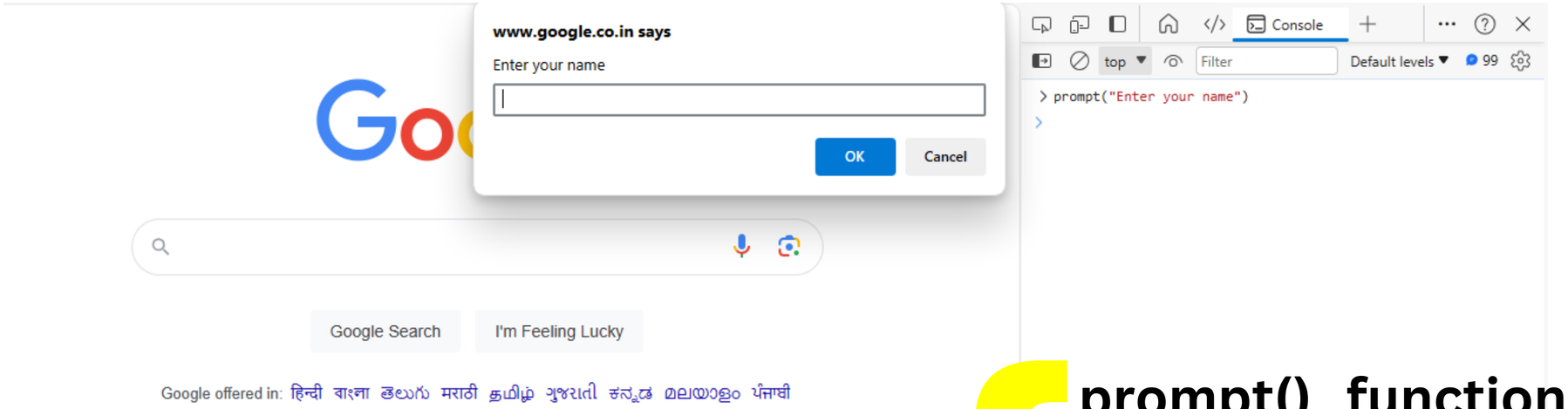
console.log() can be used to log variables of any kind; not only strings. Just pass in the variable that you want to be displayed in the console

Using alert()



The alert() function is a method in JavaScript that displays a dialog box with a specified message and an OK button.

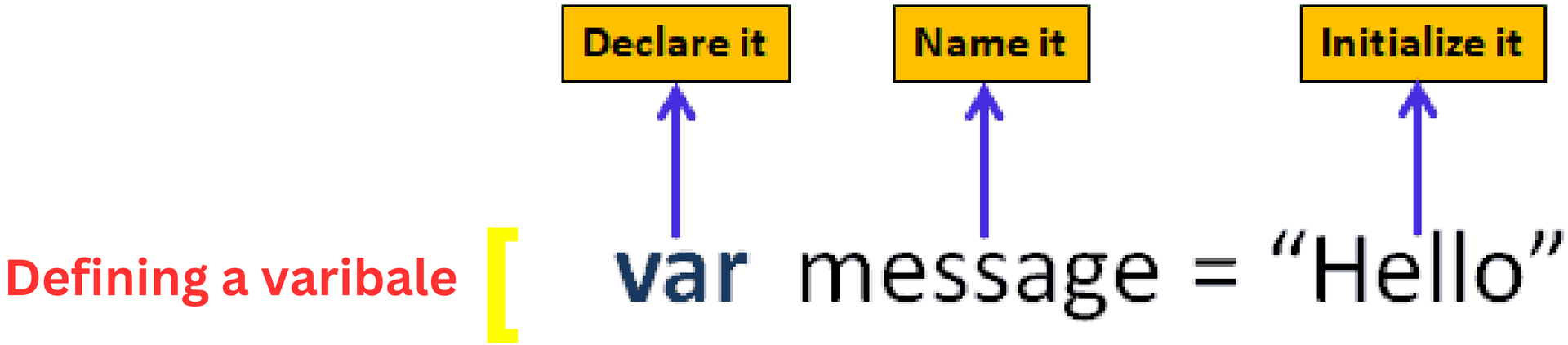
Using prompt()



prompt() function is an input field for the user to enter data. It allows you to request input from the user and capture their response.

Variables in JS

Variables are Containers for Storing Data. To create a variable in JavaScript, you can use the var, let, or const keywords.



let, const & var

var : **Used before ES6**

The variable can be re-declared and updated. A global scope variable.

let :

The variable cannot be re-declared but can be updated. A block scope variable.

const :

The variable cannot be re-declared or updated. A block scope variable.

Variable Rules

- Variable names are case-sensitive; “a” & “A” are different.
- Only letters, digits, underscore(_) and $ is allowed. White space are not allowed.
- Only a letter, underscore(_) or $ should be 1st character.
- Reserved words cannot be used as variables names.

Data Types

Primitive Types: They store a single value.
Ex- Number, String, Boolean, Undefined, Null, BigInt,

Non-Primitive Types: They can store collections of data
Ex- Symbol, Objects.

Operators

Operators are symbols or keywords in programming languages that perform operations on operands.

1. **Arithmetic Operators:**

Addition (+)
Multiplication(*)
Modulo (%)
Subtraction (-)
Division (/)
Exponentiation (**)

2. Assignment Operators:

Assignment (=)
Addition assignment (+=)
Subtraction assignment (-=)
Multiplication assignment (*=)
Division assignment (/=)
Modulus assignment (%=)

3. Comparison Operators:

== === != !== > < >= <=

4. Logical Operators:

&& (AND) || (OR) ! (NOT)

5. Increment/Decrement Operators:

++ (Increment) -- (Decrement)

Conditional Statements

IF STATEMENT:

```
if (condition) {
  // block of code to be executed if the condition is true
}
```

IF ELSE STATEMENT:

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

IF ELSE IF STATEMENT:

```
if (condition1) {
  // block of code to be executed if condition1 is true
} else if (condition2) {
  // block of code to be executed if the condition1 is false and condition2
} else {
  // block of code to be executed if the condition1 is false and condition2
}
```

Practice question:

Program to find whether a person is eligible to voting or not.

Steps:

- **Take age from the user,using prompt**
- **Age above 18 or not.**
- **18 or 18+ can vote. Rest not eligible to vote.**

.

LOOPS

- **FOR LOOP:** It is used when we know how many times we want to execute a block of code.

```
for (initialExpression; condition; updateExpression) {
  // code to be executed
}
```

- **WHILE LOOP:** It is used when we want to execute a block of code as long as a specified condition is true.

```
while (condition) {
  // code to be executed
}
```

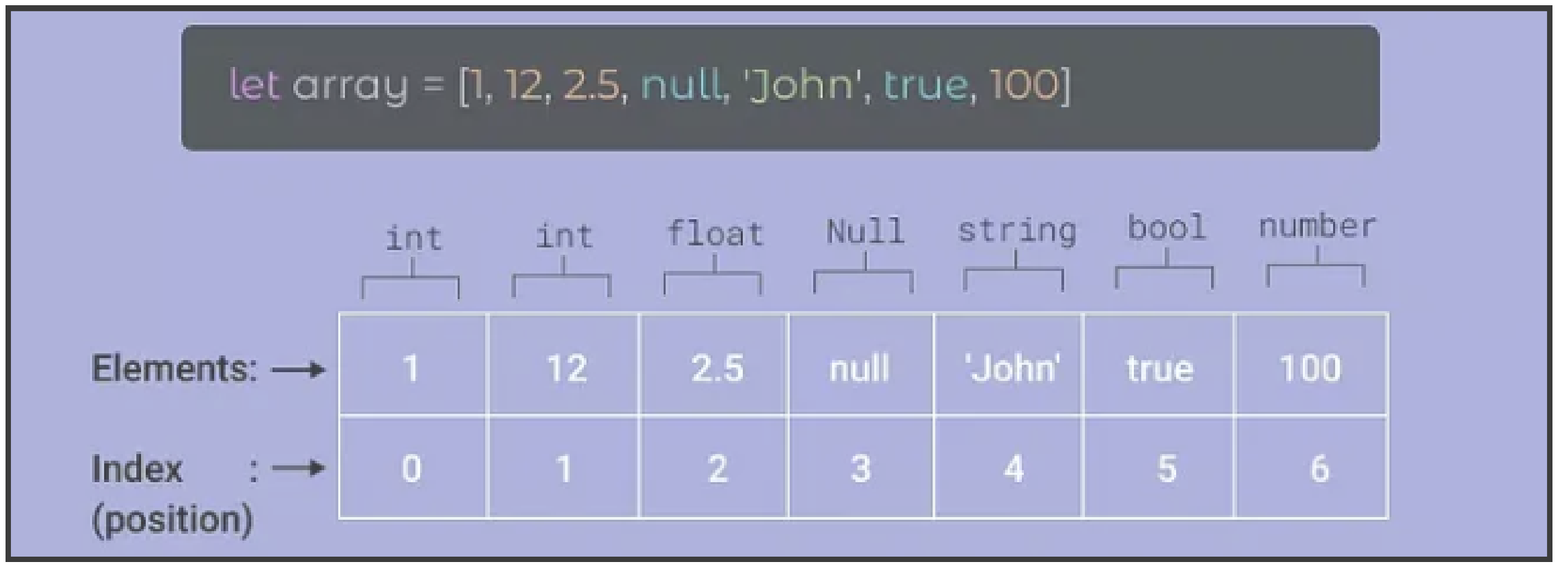
DO WHILE LOOP:

It is used to execute a block of code at least once and continue to execute it as long as a specified condition is true.

```
do {
  // code to be executed
} while (condition);
```

Arrays

- Arrays are used to store multiple values in a single variable.
- They are a special type of object and can hold various data types, including numbers, strings, and even other arrays.



Operations With Array

push() and pop():

```
let animals = ["Dog", "Cat", "Horse"];
animals.push("Elephant"); // Add an element to the end
animals.pop(); // Remove the last element
```

concat():

```
let arr2 = [4, 5, 6];
let combinedArray = arr1.concat(arr2);
console.log(combinedArray); // Output: [1, 2, 3, 4, 5, 6]
```

Shift() and Unshift():

```
let fruit = ["Apple", "Banana", "Orange"];
let firstFruit = fruit.shift();
let firstFruiT = fruit.unshift("Grapes");
console.log(firstFruit); // Output: "Apple"
console.log(fruit); // Output: ["Banana", "Orange"]
console.log(firstFruiT); // Output: ["Grapes", "Banana", "Orange"]
```

slice():

```
let fruits = ["Apple", "Banana", "Orange", "Mango"];
let citrusFruits = fruits.slice(1, 3);
console.log(citrusFruits); // Output: ["Banana", "Orange"]
```

splice():

```
 fruits = ["Apple", "Banana", "Orange", "Mango"];
its.splice(2, 1, "Lemon", "Kiwi");
sole.log(fruits); // Output: ["Apple", "Banana", "Lemon", "Kiwi", "Mango"]
```

filter():

```
let numbers = [1, 2, 3, 4, 5];
let evenNumbers = numbers.filter(function (num) {
    return num % 2 === 0;
});
console.log(evenNumbers); // Output: [2, 4]
```

Functions

Functions are used to organize code, make it more reusable, and reduce redundancy.

```
function functionName(parameters) {
  // function body
}
```

Anonymous Functions:

These functions do not have a name and are defined immediately called. They are often used with the setTimeout function or in the context of the map method

Async Functions:

These functions are used when dealing with asynchronous code, such as handling promises or working with server-side APIs. They allow you to use the await keyword to wait for a promise to resolve before proceeding.

Arrow Functions:

Introduced in ES6, these functions use the arrow function syntax and have a more concise syntax compared to traditional functions. They can be used as function declarations or expressions.

Library and Framework

- **Library: A library is like a collection of pre-written code that we can use in our program. It provides specific functionalities that we can call when we need them. We can control and decide when to use the library's functions in your code. EX: React**

- **Framework: Is more like a set of rules or a skeleton where you write your code. The framework dictates the flow of control, and we can provide specific implementations for certain parts. EX: Angular**

Assignment: