



# ETHEREUM 2.0 MASTERY PROGRAM

Instructor: Raja Rizwan Saleem



Module

ONE

# JAVASCRIPT CRASH COURSE



Instructor: Raja Rizwan Saleem



# WHY WE USE COMPUTERS

- Computers have become part of our lives. We all have different reasons for wanting or needing to use computers.
- Computers can make our jobs become easier. They can be used for communication purposes (internet), to store and calculate data and to write up massive documents multiple times while only needing to write it up once

# WHY WE USE COMPUTERS?

Benefits Overview

## Why We Use Computers

Enhancing Productivity and Connectivity



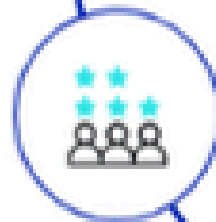
### Communication

Computers facilitate seamless information exchange and collaboration, enhancing team interactions and project coordination.



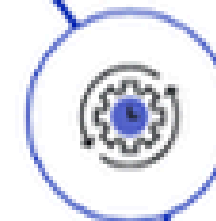
### Accuracy

Computers perform calculations and operations with precision, minimizing human errors and ensuring correctness.



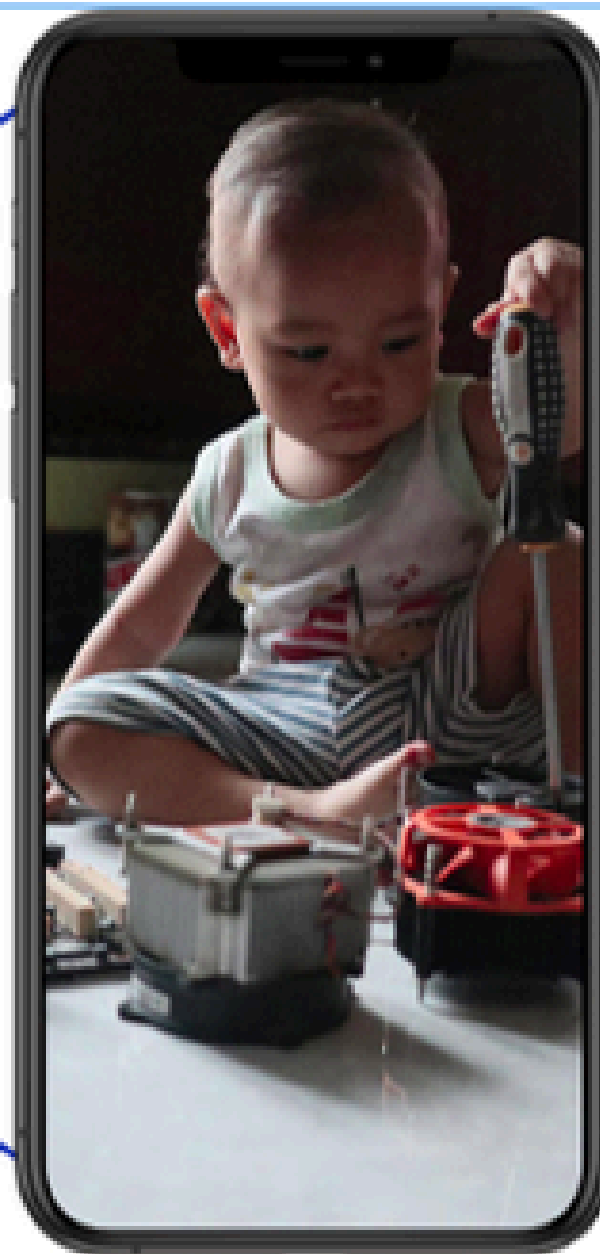
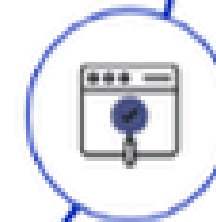
### Efficiency

Computers streamline tasks and processes, allowing for faster completion and resource optimization.



### Reliability

Computers provide consistent performance and operation, reducing the likelihood of errors or downtime.



# INTRODUCTION TO PROGRAMMING

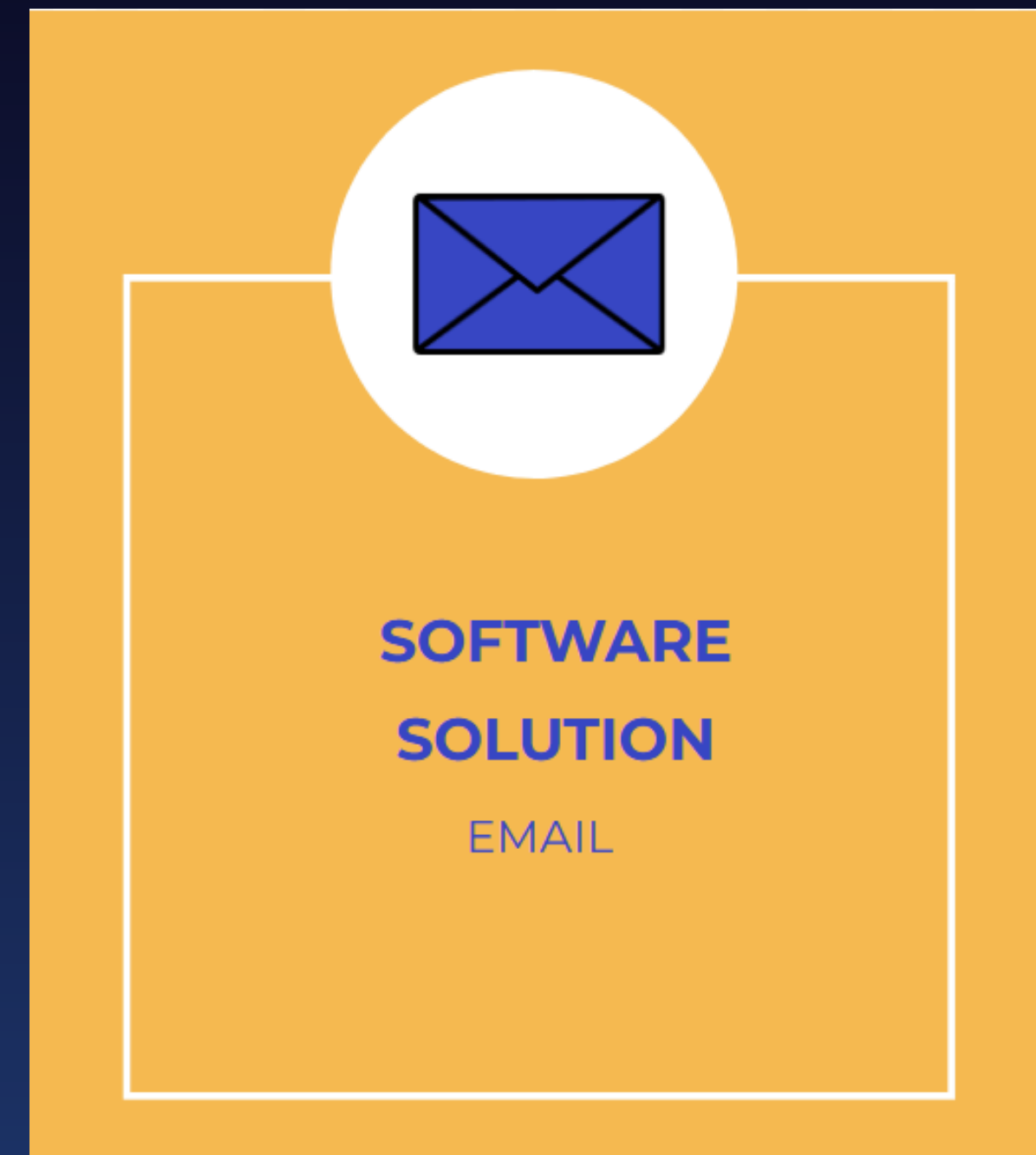
Programming languages are the vocabulary and set of grammatical rules for instructing a computer to perform specific tasks. There are many different types of programming languages each having a unique set of keywords (words that it understands) and a special syntax (grammar) for organising program instructions.

# WHY WE DEVELOP SOFTWARE APPLICATIONS

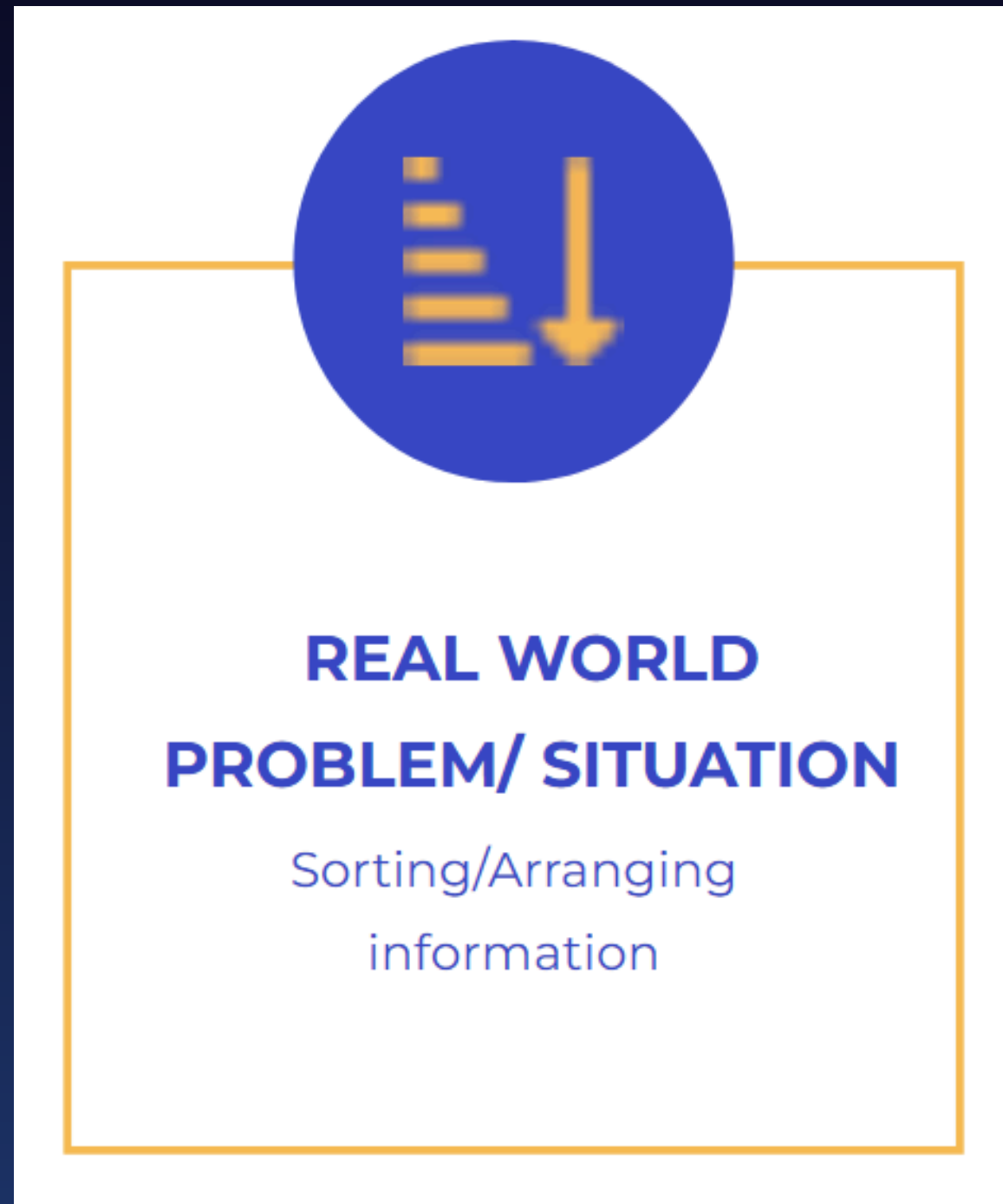
# WHY WE DEVELOP SOFTWARE APPLICATION

- To solve our real world problem by converting it into computer program
- We convert our real world scenario/situation into software application
- So that it can be done more efficiently, reliably and accurately


# WHY WE DEVELOP SOFTWARE APPLICATION




# WHY WE DEVELOP SOFTWARE APPLICATION



# WHY WE DEVELOP SOFTWARE APPLICATION



**REAL WORLD  
PROBLEM/ SITUATION**  
Driving



**SOFTWARE  
SOLUTION**  
Driverless Car

# WHY WE DEVELOP SOFTWARE APPLICATION



**REAL WORLD  
PROBLEM/ SITUATION**  
Networking



**SOFTWARE  
SOLUTION**  
Facebook

# HOW DO WE COMMUNICATE WITH COMPUTER

???

# HOW DO WE COMMUNICATE WITH COMPUTER

- Computer acts like our servant
- It will do whatever we ask computer to do.
- But the problem is computer don't understand what we say
- It does not understand our plain English language
- Computer understands only 0s and 1s

# HOW DO WE COMMUNICATE WITH COMPUTER



JAVASCRIPT

# JAVASCRIPT CRASH COURSE

**BOOK WE  
WILL  
FOLLOW**



**A Smarter Way to Learn JavaScript**

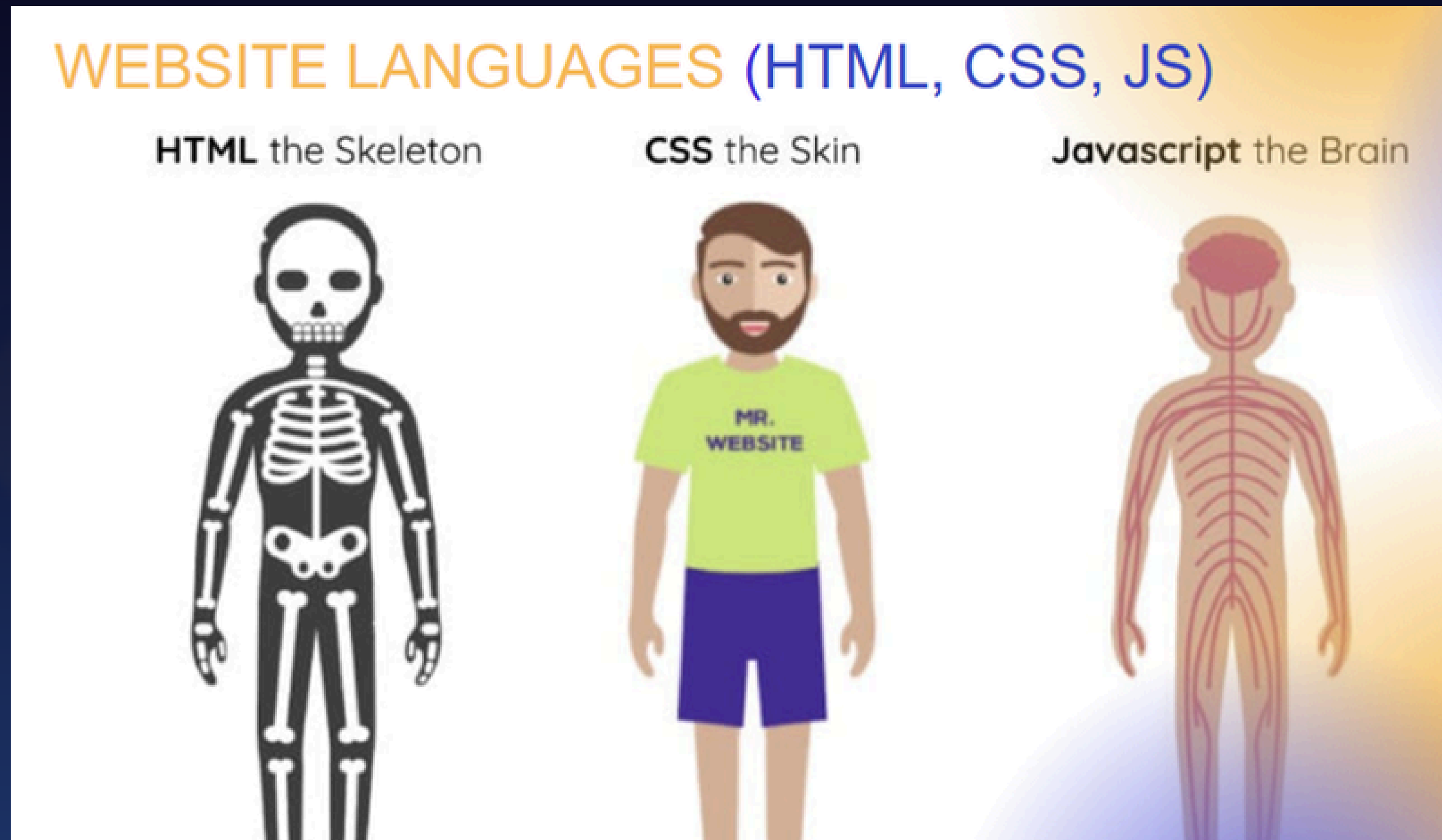
The new approach that uses technology to cut your effort in half

**1** Read a 10-minute chapter of this book to get each concept.

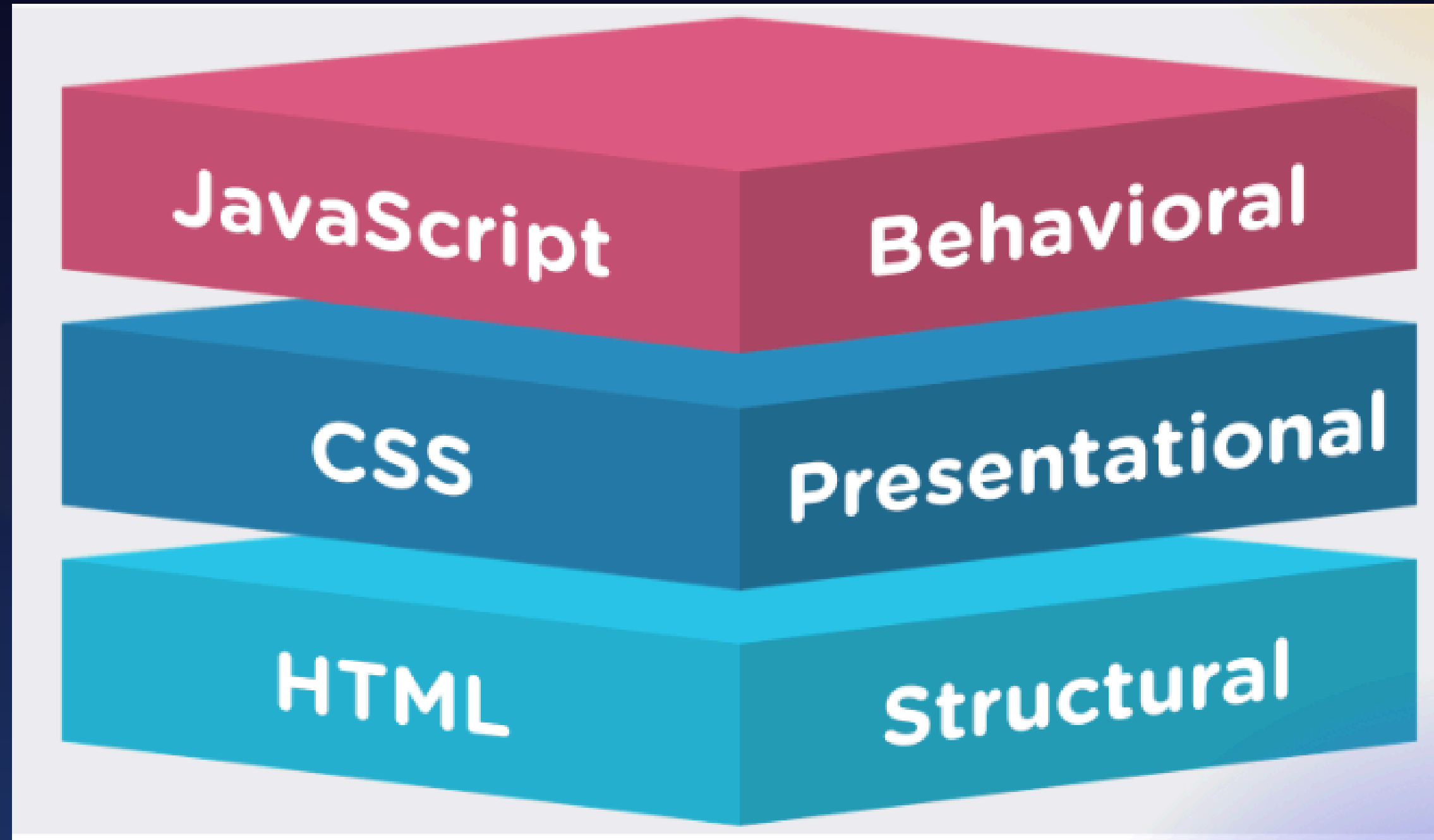
**2** Code for 20 minutes at [ASmarterWayToLearn.com](http://ASmarterWayToLearn.com) to own the skill. (It's free.)

**Mark Myers**

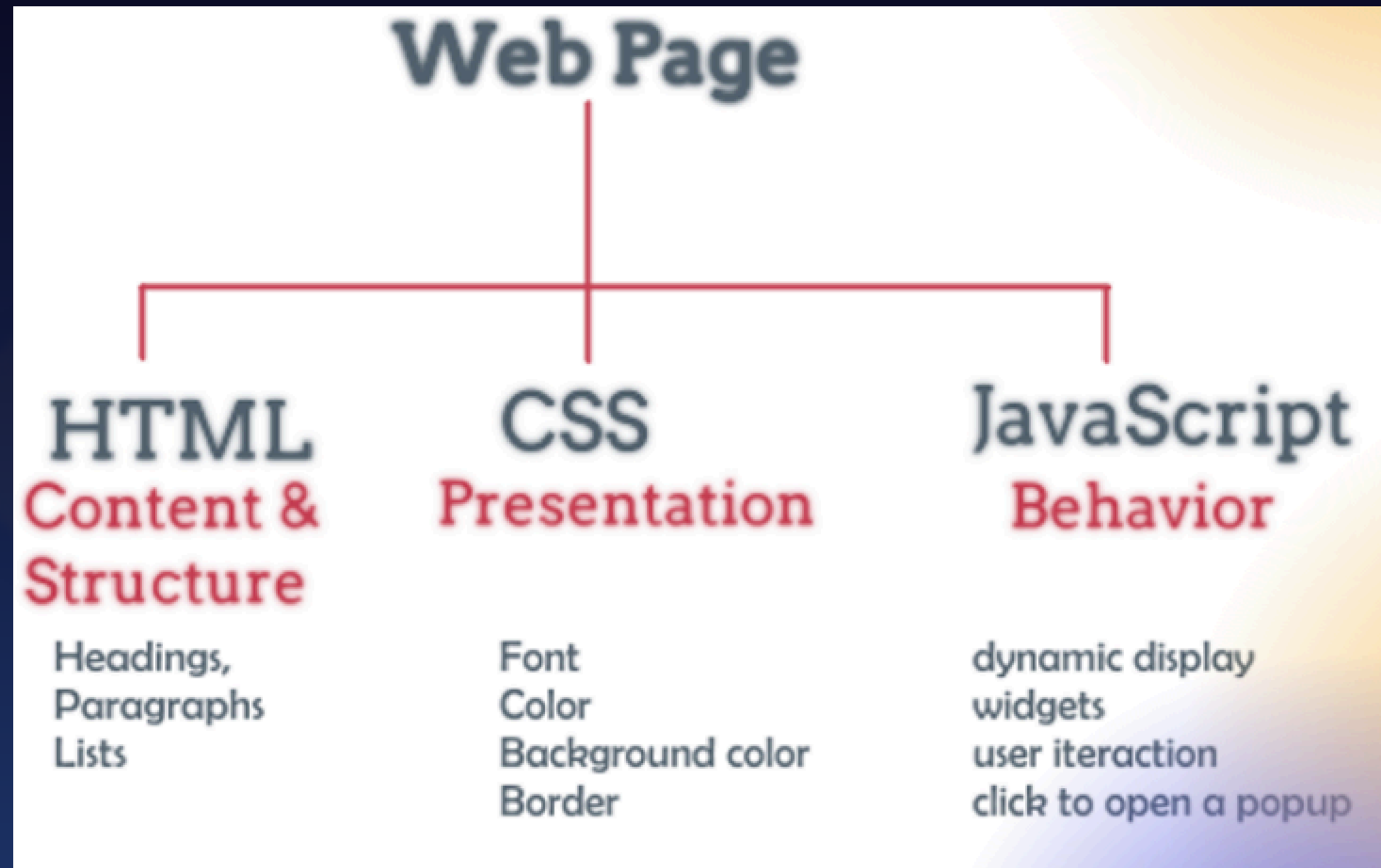
# BASIC REQUIREMENTS TO BUILD A WEBSITE



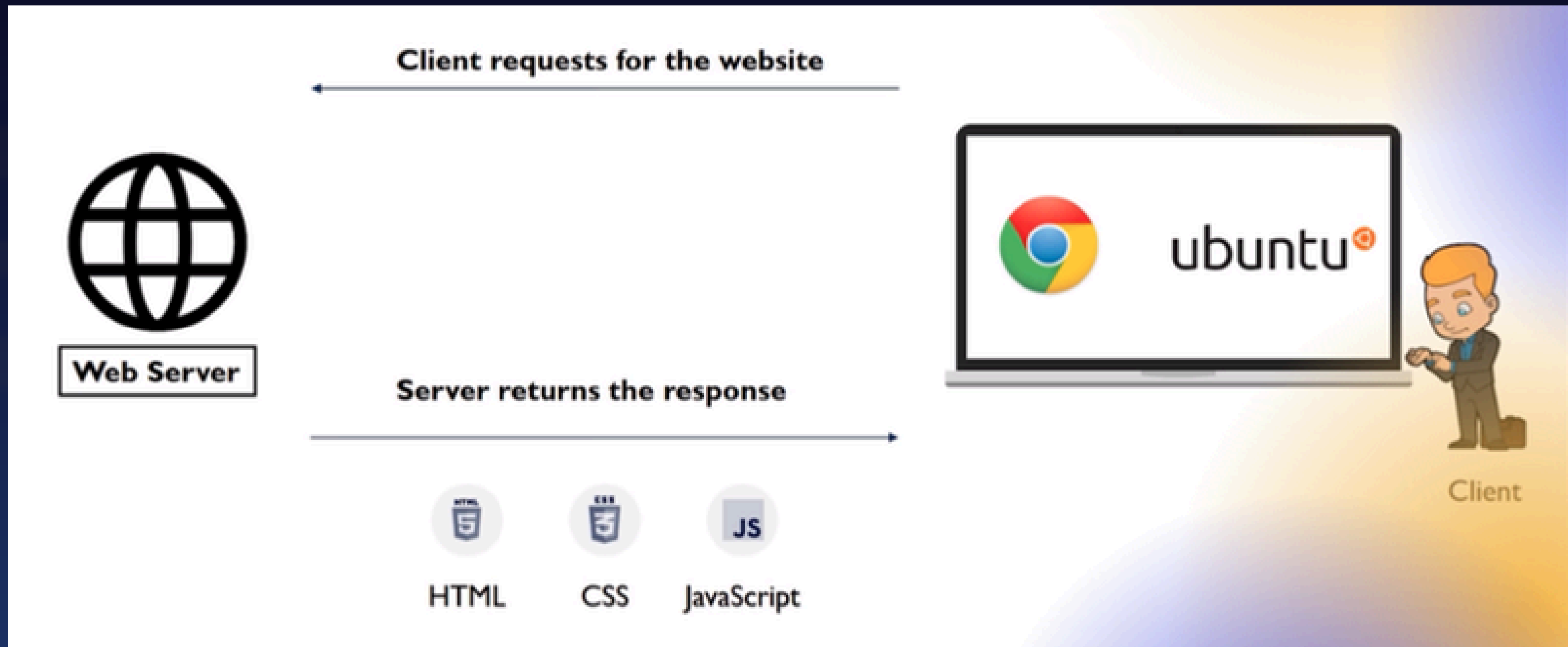
# BASIC REQUIREMENTS TO BUILD A WEBSITE



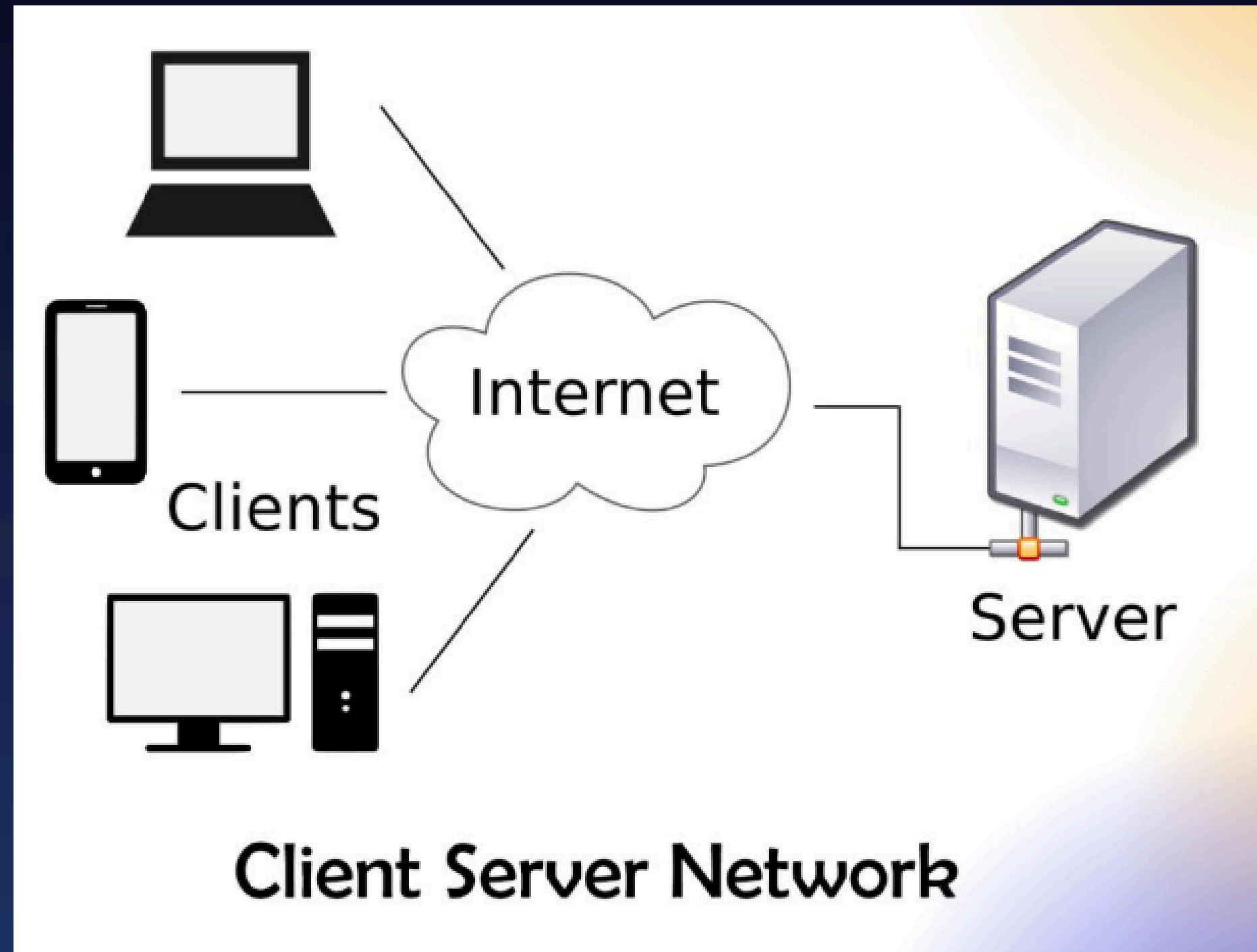
# WEBSITE LANGUAGES



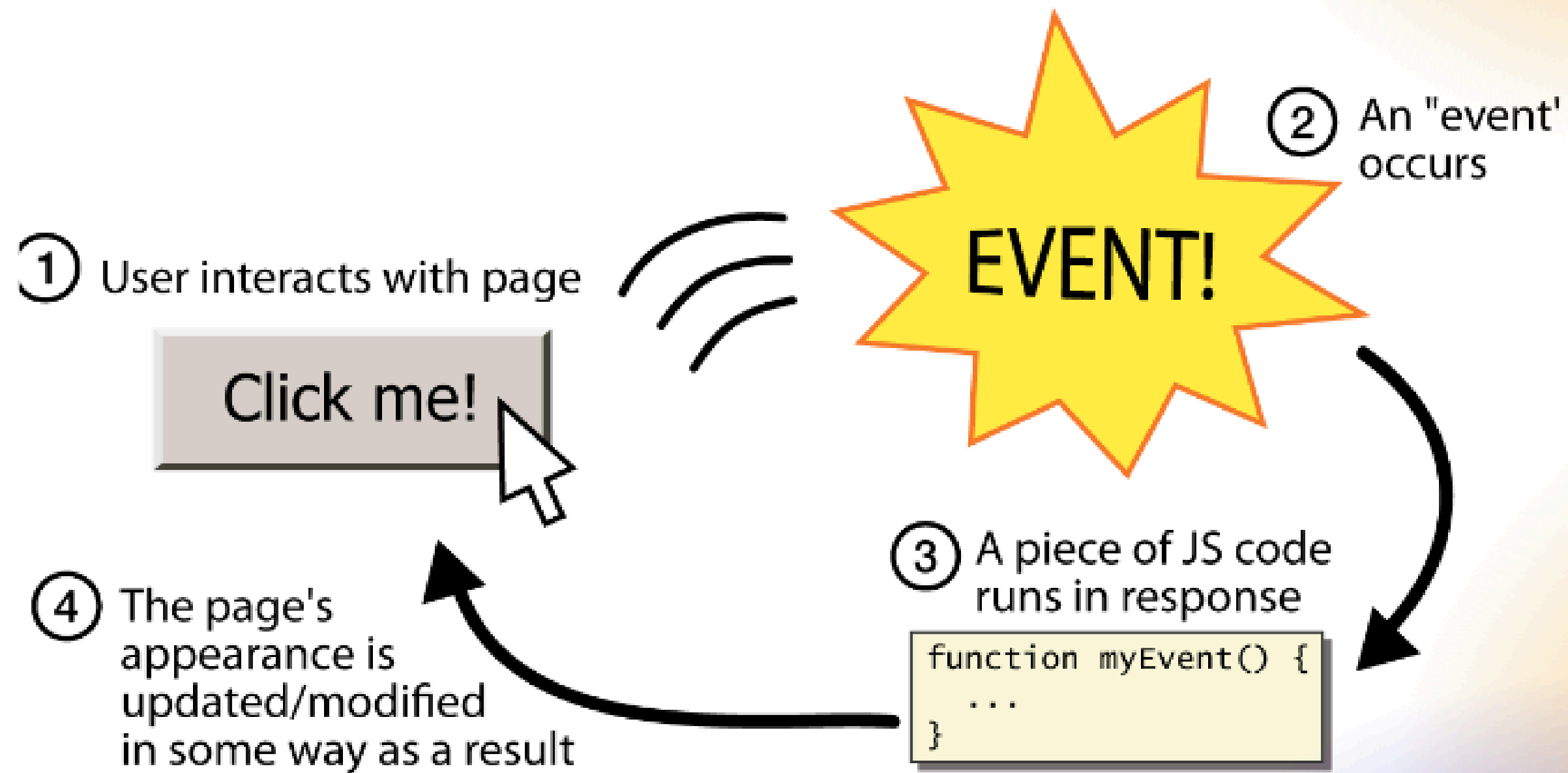
# CLIENT SIDE VS SERVER SIDE



# CLIENT SIDE VS SERVER SIDE



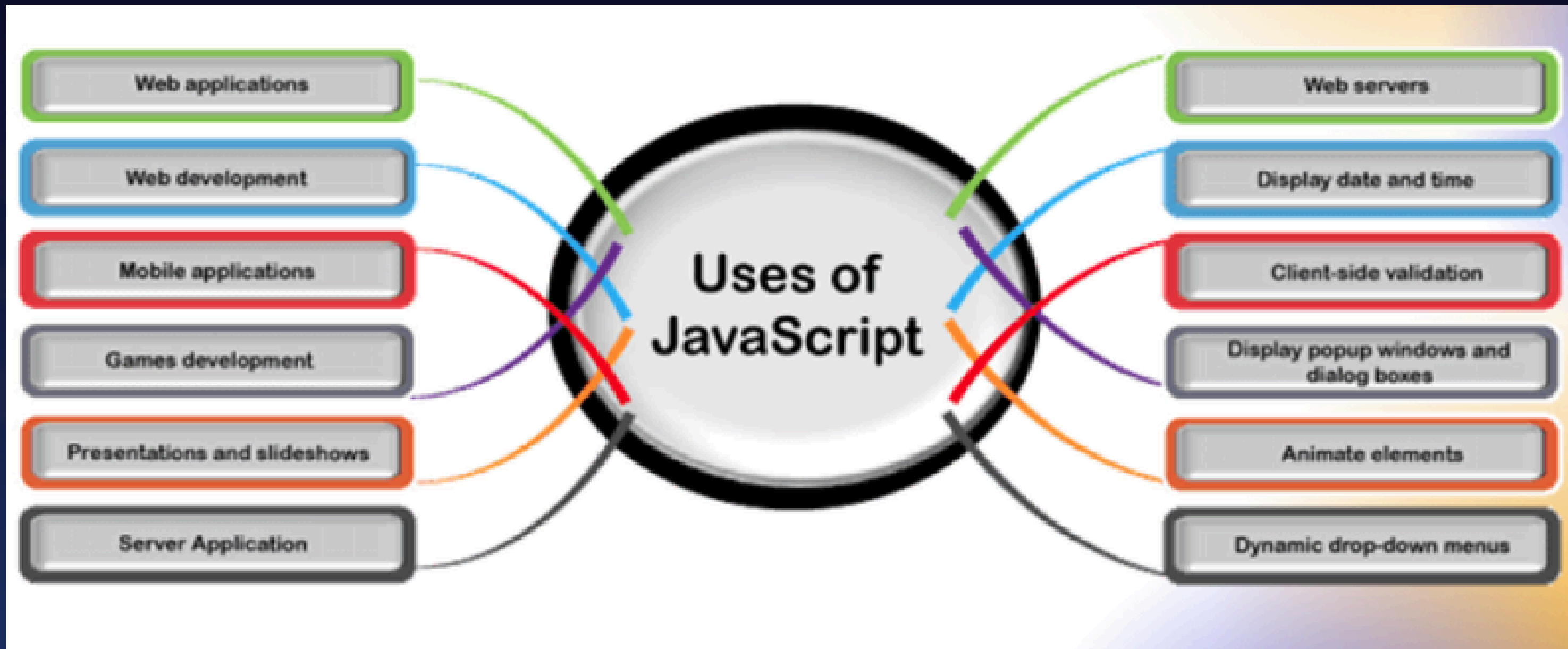
# EVENT DRIVEN PROGRAMMING



# WHY TO LEARN JAVASCRIPT

Today JavaScript is most used language and it has advantage to learn single language that can be used on both client side and server side.

# USE OF JAVASCRIPT



# LEARNING JAVASCRIPT

LETS DEEP DIVE  
IN WORLD OF



JAVASCRIPT



# WHAT IS JAVASCRIPT

- JavaScript, which is abbreviated as JS, is a programming language that conforms to the ECMAScript specification.
- It was initially created to make web pages alive.
- It is lightweight and most commonly used as a part of web pages, whose implementations allow client-side script to interact with the user and make dynamic pages.
- JavaScript has no link with Java programming language. It is a fully independent language with its own specification.

# BENRFITS OF JAVASCRIPT

- JavaScript is a very powerful client-side scripting language.
- JavaScript is used mainly for enhancing the interaction of a user with the webpage.
- You can make your webpage more lively and interactive, with the help of JavaScript.
- JavaScript is also being used widely in game development and mobile application development.

# WHAT CAN BUILD USING JAVASCRIPT?

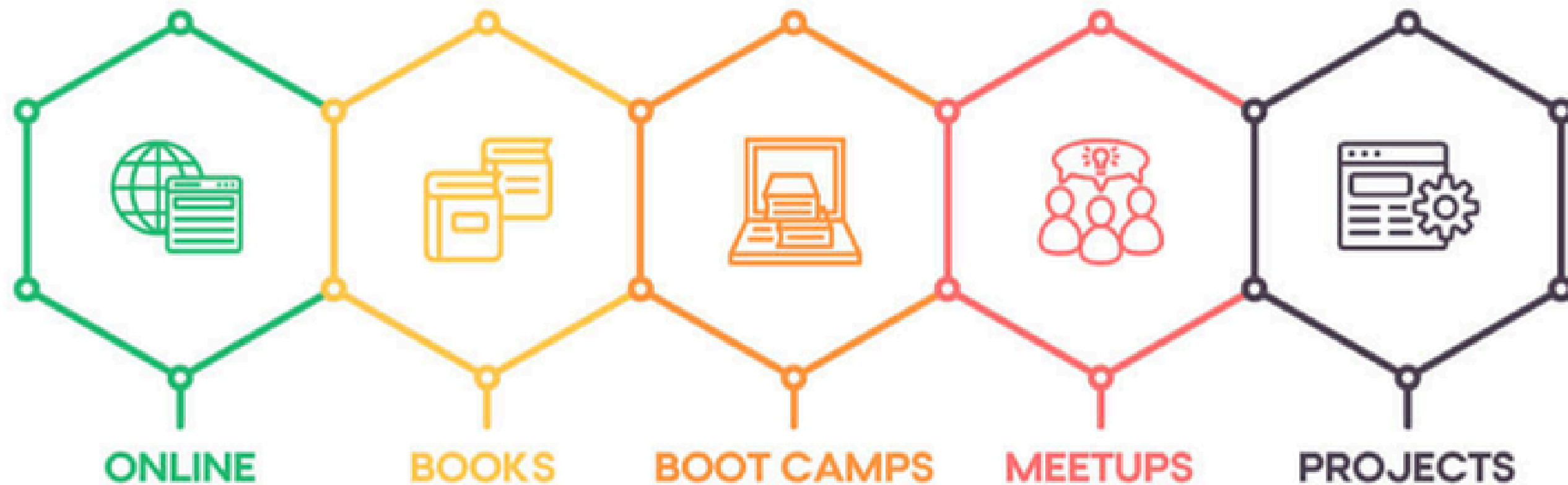
- **Websites:** JavaScript helps us to add behavior of our website. It helps users to interact with the website. For eg. clicking on buttons, saving details, uploading details on the website, etc.
- **Web Servers:** We can make robust server applications using JavaScript. To be precise we use JavaScript frameworks like Node.js and Express.js to build these servers.
- **Game Development:** In Game Development industry, JavaScript is used widely. With the addition of HTML5 Canvas, it's now possible to make 2D and 3D games in JavaScript very efficiently.

# WHAT CAN BUILD USING JAVASCRIPT?

- **3D Drawings:** JavaScript in addition with HTML Canvas is used to make three-dimensional graphics.
- **Mobile Apps:** Mobile applications are the most popular modes of communicating these days. JavaScript also used to design mobile applications. There are many JavaScript frameworks using which we can make android, IOS, and hybrid apps.

# JAVASCRIPT PRACTICAL LEARNING

# WAYS TO LEARN JAVASCRIPT



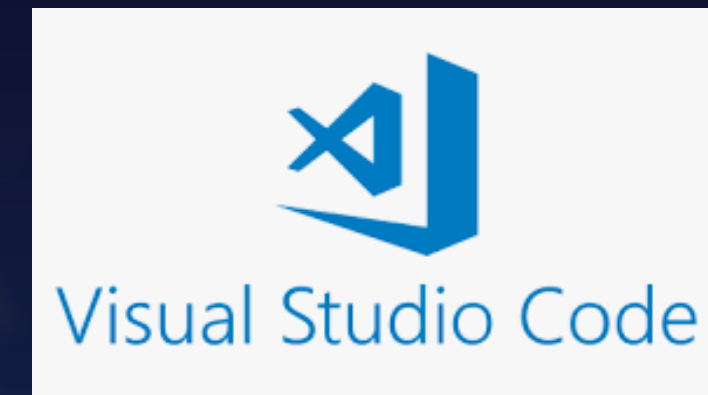
# INSTALLATION AND SETUP

- To work with JavaScript you don't need any software
- You just need to have Browser installed on your machine and you can use any text editor to write code.
- To manage projects and organize files we use IDE
- We will use Microsoft's Visual Studio Code
- To run JavaScript on server side we will use Node.js

# INSTALLATION AND SETUP CODING ENVIRONMENT

- Download and install Visual Studio code

<https://code.visualstudio.com>



- Download install Node.js

<https://nodejs.org/en/>



- Use default setting while installing both tools

# INSTALLATION AND SETUP CODING ENVIRONMENT

DEMO

HOW TO USE

VISUAL STUDIO CODE

# INSTALLATION AND SETUP CODING ENVIRONMENT

Demo

Create First JavaScript Example

# INSTALLATION AND SETUP CODING ENVIRONMENT



# METHODS TO IMPLEMENTS JAVASCRIPT

You can add JavaScript code in an HTML document by **employing the dedicated HTML tag `<script>` that wraps around JavaScript code.**

The `<script>` tag can be placed in the `<head>` section of your HTML or in the `<body>` section, depending on when you want the JavaScript to load.

# METHODS TO IMPLEMENTS JAVASCRIPT

- In page JavaScript
- External JavaScript

# METHODS TO IMPLEMENTS JAVASCRIPT

- **In Page / Internal JS:** We can add JavaScript directly to our HTML file by writing the code inside the `<script>` tag. The `<script>` tag can either be placed inside the `<head>` or the `<body>` tag according to the requirement.
- **External JS:** We can write JavaScript code in other file having an extension `.js` and then link this file inside the `<head>` tag of the HTML file in which we want to add this code.

# METHODS TO IMPLEMENTS JAVASCRIPT

- **Internal JS:**

```
<!DOCTYPE html>
<html>
  <head>
    <script>
    </script>
  </head>
  <body>
    <h1>Pakistan Blockchain Institute</h1>
    <script>
    </script>
  </body>
</html>
```

# METHODS TO IMPLEMENTS JAVASCRIPT

- **Internal JS:**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>
    Basic Example to Describe JavaScript
  </title>
</head>

<body>

  <!-- JavaScript code can be embedded inside
  head section or body section -->
  <script>
    console.log("Welcome to Ethereum 2.0 Course");
  </script>
</body>
</html>
```

# METHODS TO IMPLEMENTS JAVASCRIPT

Open Visual Studio code and create two files

- index.html
- Index.js

# METHODS TO IMPLEMENTS JAVASCRIPT

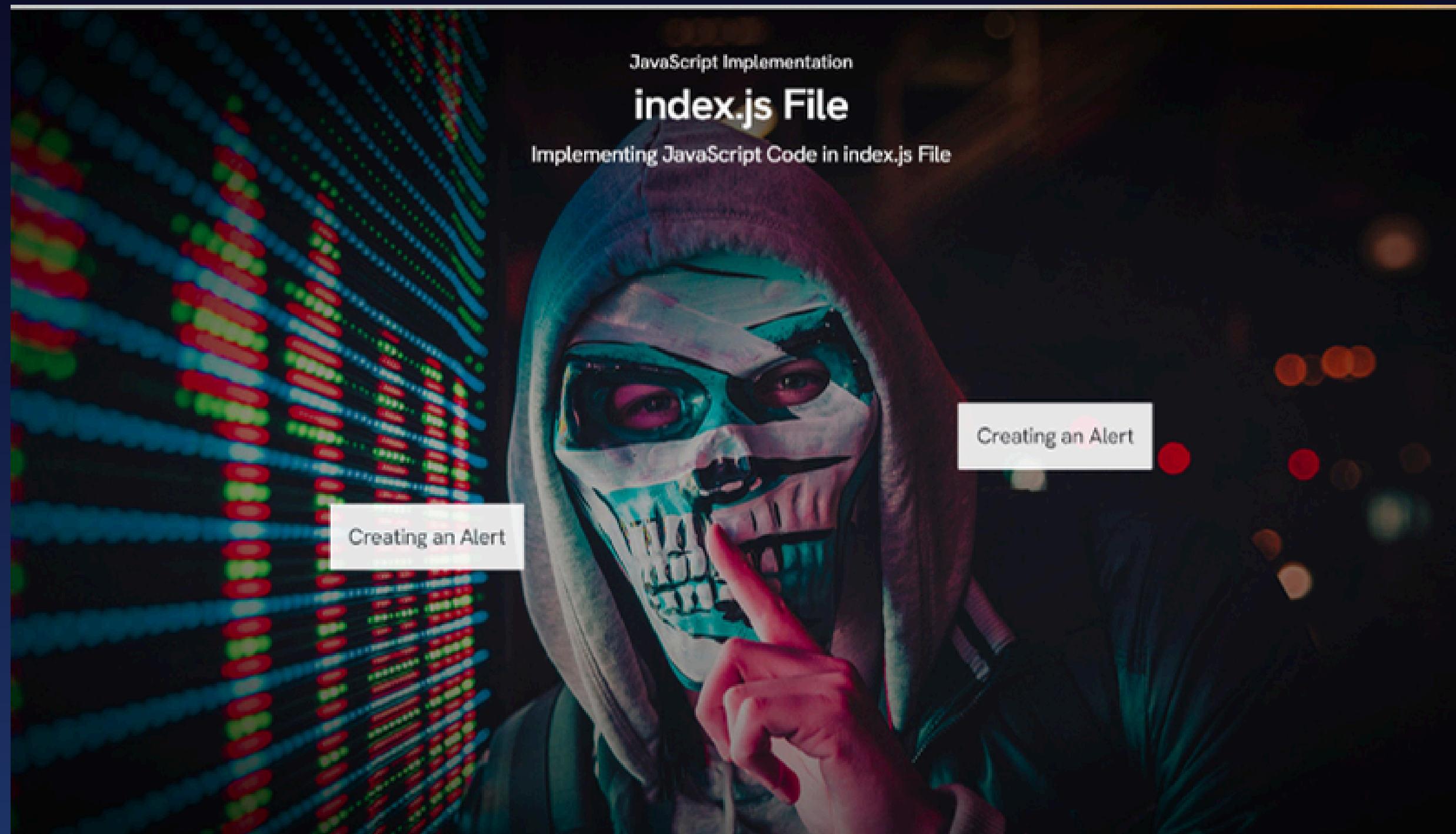
```
<html>  
  <head>  
    <script src="index.js"></script>  
  </head>  
  <body>  
    Hello World  
  </body>  
</html>
```

# METHODS TO IMPLEMENTS JAVASCRIPT

## INDEX.JS FILE

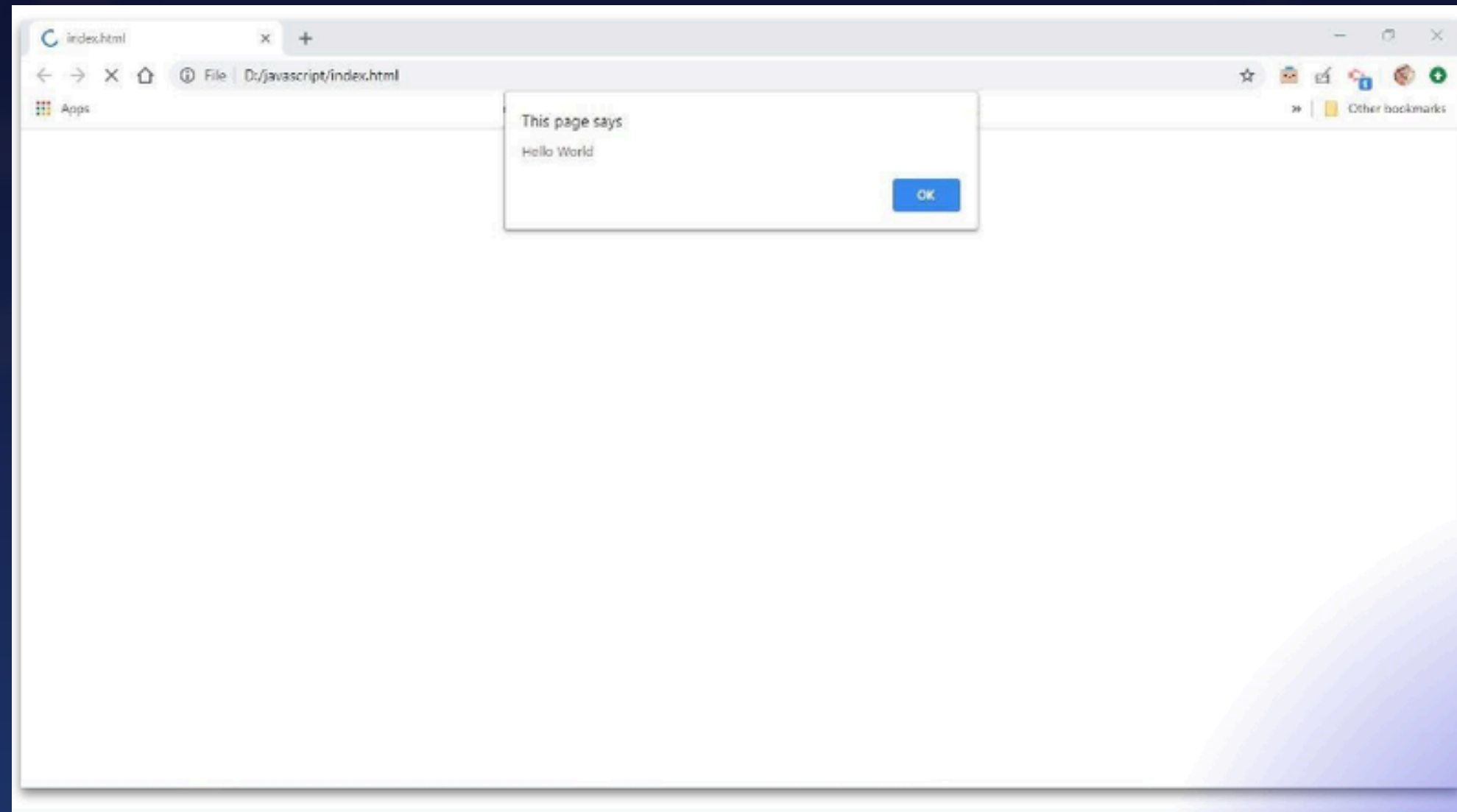
```
alert("Hello World");
```

# METHODS TO IMPLEMENTS JAVASCRIPT



# INITIAL CODE AND SETUP

1. Open file in browser and you will see alert in browser window



# ALERT

- An alert is a box that pops up to give the user a message.
- Here's code for an alert that displays the message  
"Thanks for your input!"  
**alert("Hello World");**
- alert is a keyword
- The quoted text "Thanks for your input!" is called a text string or simply a string.

# ALERT

- `'window.alert'` and `'alert'` are the same
- `window` is object in browser which contains many other objects and properties, and `alert` is one of them.
- `alert` is a function that take any input and display it in popup to user
- Alerts are not available when you are working with server side JavaScript in Node.js

# ALERT EXERCISE

```
alert("JavaScript Alert! \n welcome to JS land \n Happy coding!");
```

# ALERT, CONFIRM AND PROMPT EXERCISE

**alert(), confirm(), and prompt()**

```
<script type="text/javascript">  
alert("This is an Alert method");  
confirm("Are you OK?");  
prompt("What is your name?");  
prompt("How old are you?", "20");  
</script>
```

The image illustrates the execution of JavaScript alert, confirm, and prompt methods in Microsoft Internet Explorer. A central code block shows the following script:

```
<script type="text/javascript">  
alert("This is an Alert method");  
confirm("Are you OK?");  
prompt("What is your name?");  
prompt("How old are you?", "20");  
</script>
```

Four dialog boxes are shown, each linked to a specific line of code by an arrow:

- The top dialog box, titled "Microsoft Internet Explorer", displays a yellow warning icon and the text "This is an Alert method". It has an "OK" button. This corresponds to the `alert()` line.
- The middle dialog box, titled "Explorer User Prompt", displays a question mark icon and the text "Are you OK?". It has "OK" and "Cancel" buttons. This corresponds to the `confirm()` line.
- The bottom-left dialog box, titled "Explorer User Prompt", displays the text "What is your name?" and an input field containing "undefined". It has "OK" and "Cancel" buttons. This corresponds to the first `prompt()` line.
- The bottom-right dialog box, titled "Explorer User Prompt", displays the text "How old are you?" and an input field containing "20". It has "OK" and "Cancel" buttons. This corresponds to the second `prompt()` line.

# ALERT, CONFIRM AND PROMPT EXERCISE

## `alert()` and `confirm()`

```
alert("Text to be displayed");
```

- Display a message in a dialog box.
- The dialog box will block the browser.

```
var answer = confirm("Are you sure?");
```

- Display a message in a dialog box with two buttons: "OK" or "Cancel".
- `confirm()` returns `true` if the user click "OK". Otherwise it returns `false`.

# ALERT, CONFIRM AND PROMPT EXERCISE

## `prompt()`

```
prompt("What is your student id number?");  
prompt("What is your name?", "No name");
```

- Display a message and allow the user to enter a value
- The second argument is the "default value" to be displayed in the input textfield.
- Without the default value, "undefined" is shown in the input textfield.
- If the user click the "OK" button, `prompt()` returns the value in the input textfield as a string.
- If the user click the "Cancel" button, `prompt()` returns null.

# HOW TO OPEN CONSOL.LOG IN CHROME BROWSER

We can open our console in the web browser by using:

**Ctrl + Shift + K** or by **Right-click** on any webpage, click Inspect, and then we can see the innards of that site; its source code, the CSS that form its design, the JavaScript code that powers animations, and more. It has a console option as well, where we can run our JavaScript code.

# CONSOLE.LOG

- console.log is function that write message on console/terminal
- Objective of console.log is to create logs for debugging
- Instead of displaying text to user it shows output in browser's developer tool
- Also when working with server side javascript, we can use console.log for logging and output will be in terminal

# CONSOL.LOG

- This method is used to log(print) the output to the console. We can put anything inside the log(). It can be an array, object, string, boolean, etc.

# DOCUMENT.WRITE

For testing purpose you can use document.write to display message or text in browser window

```
document.write("Hello World");  
document.write(2+8);
```

This will be displayed in browser window

# THANK-YOU

