

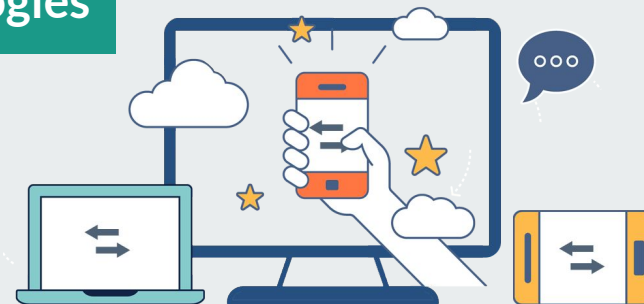
Web Application Design

-Lecture 1-

Chapter 1 – HTML, CSS, Javascript web technologies

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Prerequisites

- ❏ Basic Understanding of Web Technologies.
- ❏ Programming Fundamentals



Introduction to Web Application Design

Part I

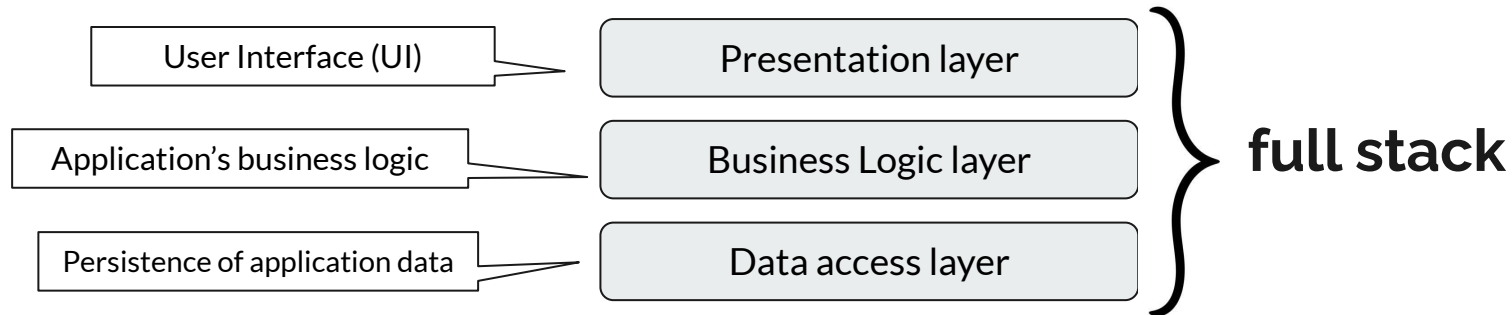
Objectives

- Recall and identify the various layers involved in web development.
- Memorize the specific tools and technologies associated with each layer of web development.
- Propose the integration of JavaScript-based tools to enhance specific aspects of web development.

1. What is full stack web development?

A web application is typically a client-server application developed according to a layered architecture known as n-tier architecture.

The most frequently used of these architectures is the **Three-tier architecture**.



1. What is full stack web development?



A 3-tier application comprises the following layers (from the highest to the lowest level of abstraction)

Presentation layer

: which specializes in the user interface and data presentation to the end user.

Business Logic layer

: concerned with the application's core business core business of the application, including data validation, dynamic content processing, etc.

Data access layer

: concerned with the storage, access and persistence of application data, it uses a DBMS-dependent API.

1. What is full stack web development?

A 3-tier application comprises the following layers (from the highest to the lowest level of abstraction)

Presentation layer

Business Logic layer

Data access layer

These three layers form a stack that represents the web application.

Developing a web application means developing all the layers of this stack: **Full Stack**

1. What is full stack web development?

A 3-tier application comprises the following layers (from the highest to the lowest level of abstraction)

Presentation layer

Business Logic layer

Data access layer



1

FRONT END
DEVELOPMENT



2

BACK END
DEVELOPMENT



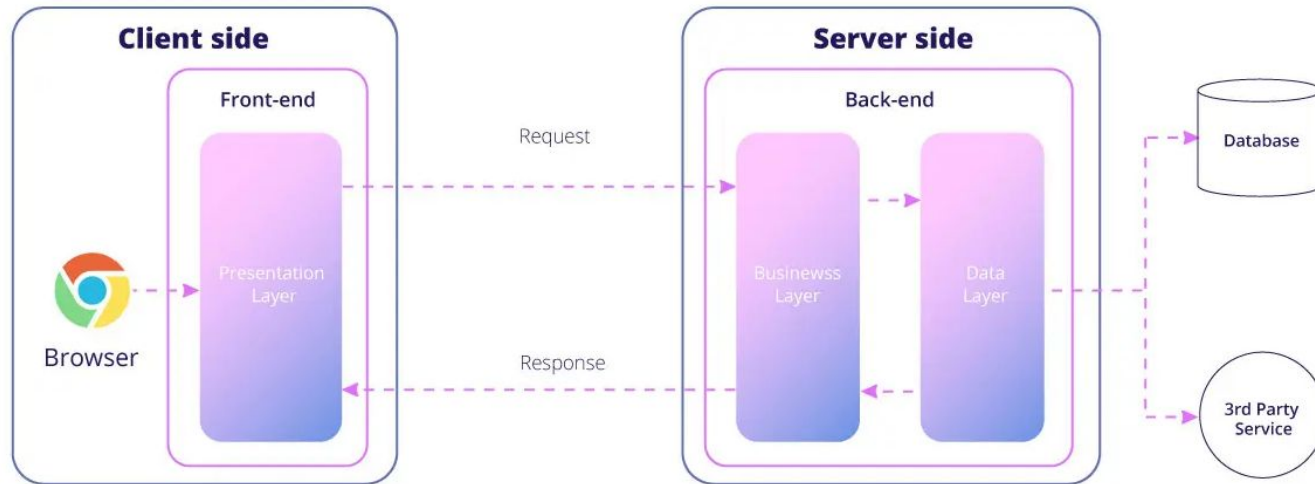
3

DATABASE
MANAGEMENT

1. What is full stack web development?

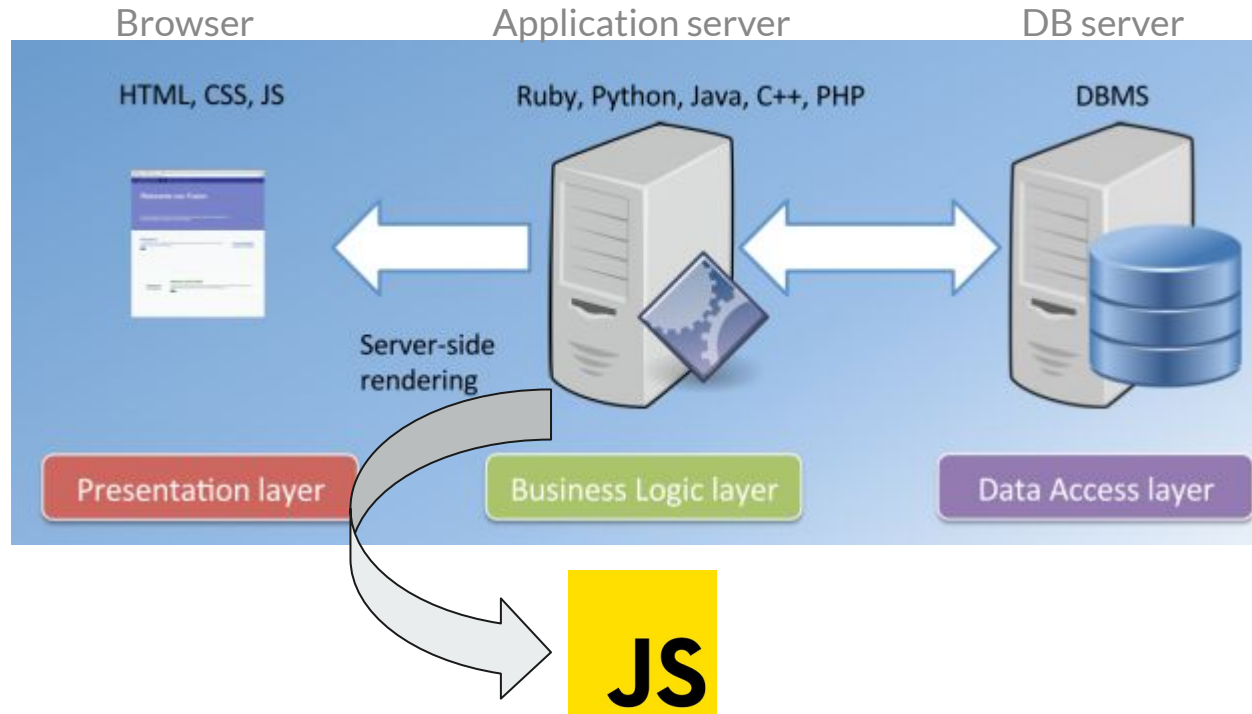
Another way of breaking things down is to consider the client and the server in the development process.

Full-stack development requires mastery of two software parts:



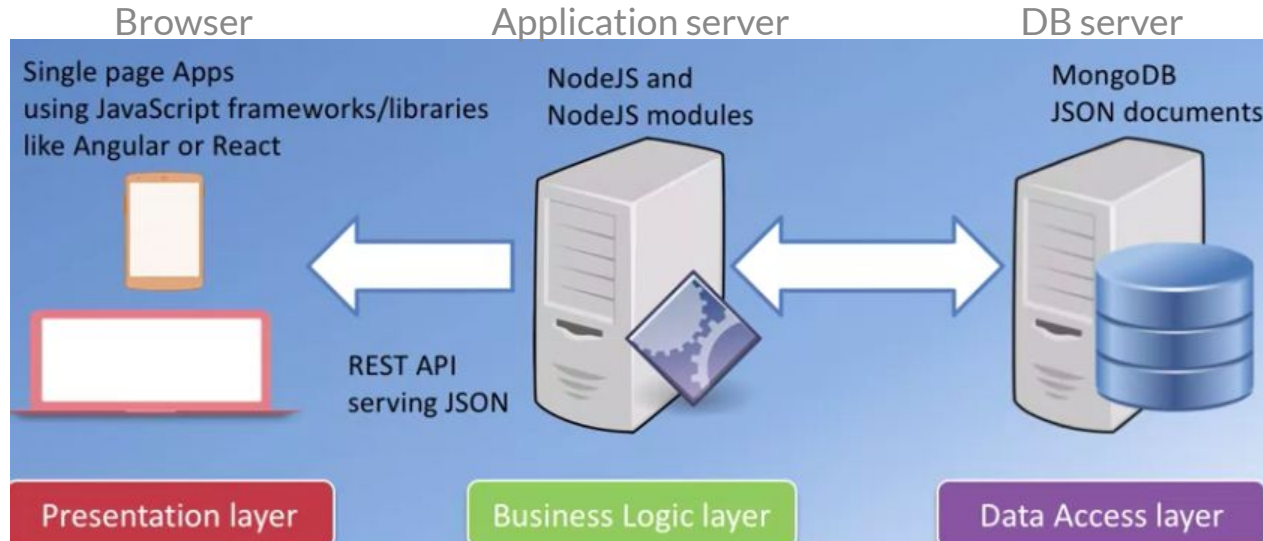
2. Tools for Web development layers

2.1. Classic application



2. Tools for Web development layers

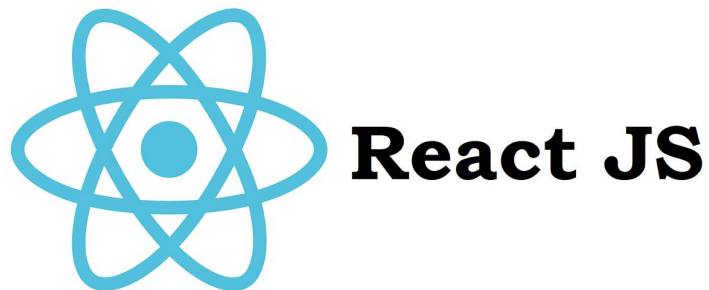
2.2. JavaScript-based tools



2. Tools for Web development layers

2.3. Content of this course

The tools/layers targeted in our course are mainly those of the front end, based on JavaScript, mainly :





HTML, CSS, JavaScript web technologies

Part II

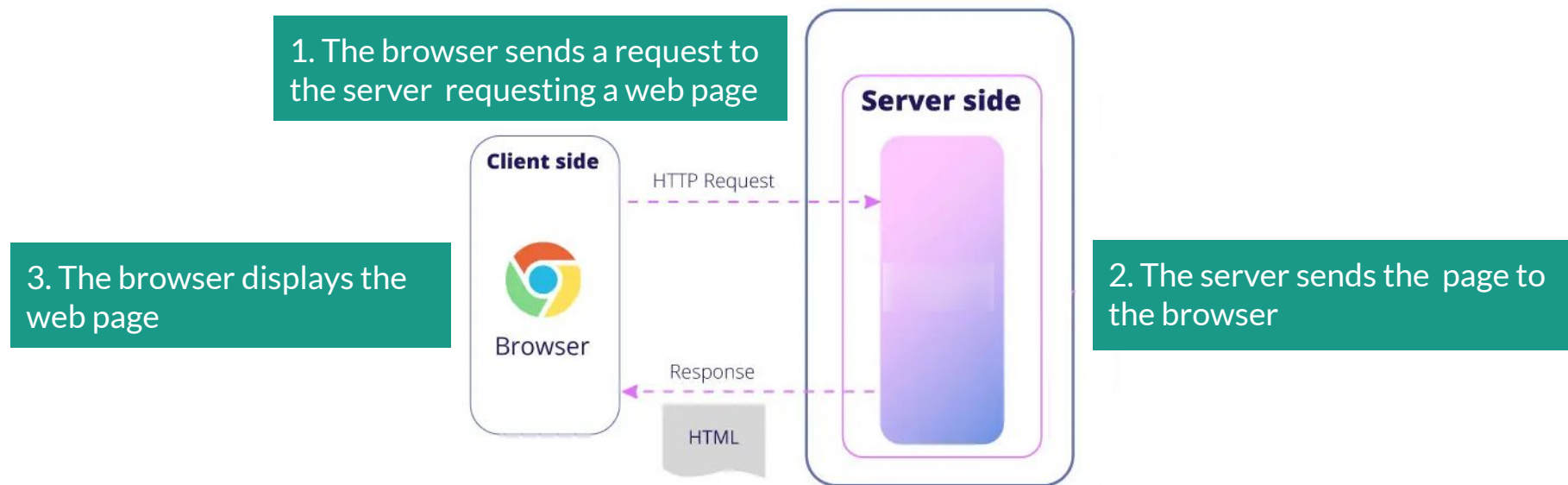
Objectives

- Recall classic web languages, including HTML, CSS, and JavaScript.
- identify the specific role and purpose of each of these classic web languages.
- Learn about JavaScript for basic scripting tasks.

1. Introduction

If we want to compare a web page to a sentence, then we can say that:

“HTML code represents **nouns**, CSS code **adjectives** and JavaScript code **verbs**.”



Classic diagram of how web pages work and displayed

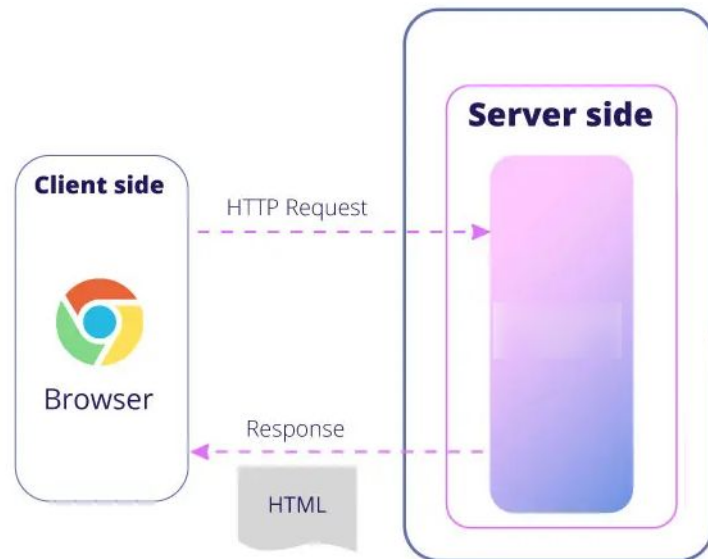
1. Introduction

Each time, a new page is generated and sent by the server to the browser.



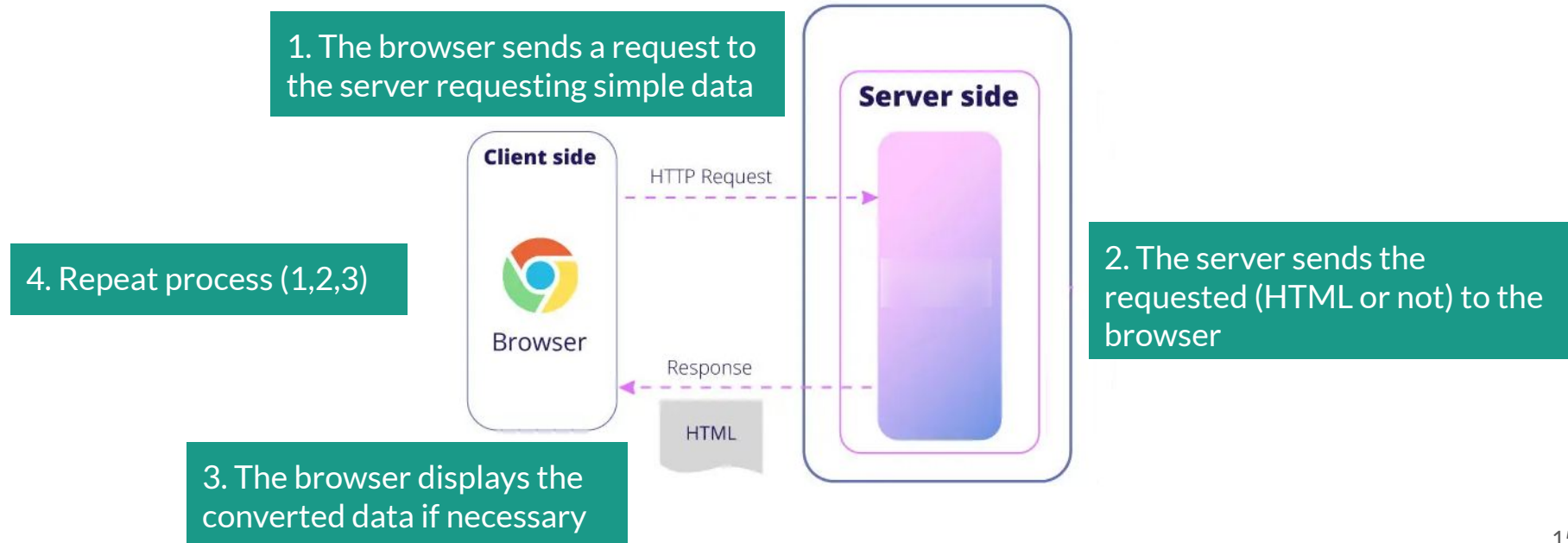
This scheme was applied in the early days of web servers, and it was **quite heavy** as it occupied the bandwidth of the data transmission network (to receive requests and send web pages).

To solve this problem, "smarter" browsers were introduced with new tools and languages designed to lighten server workloads.



1. Introduction

This This led to the emergence of Single Page Applications (SPAs) which operate as illustrated:

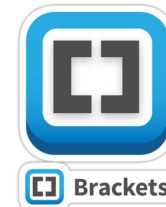
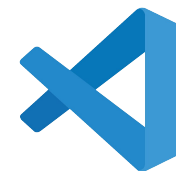


2. HTML

- HTML is the **main language** for building web pages. It has been available since the **1990s**. The latest version is version **5**.
- It mainly uses tags (such as `<h1>`, `<p>`, `<u1>` etc.) to structure and format the various elements of a page.



```
<!DOCTYPE html>  ← Tells the document type
<html>            ← The Root Element
  <head>           ← Contains the header information
    <title>Title of the Page</title> ← Defines Title of the Page
  </head>
  <body>           ← Holds the Content of the Page
    Tags related to layout and formatting
  </body>
</html>
```



2. CSS =Cascading Style Sheet

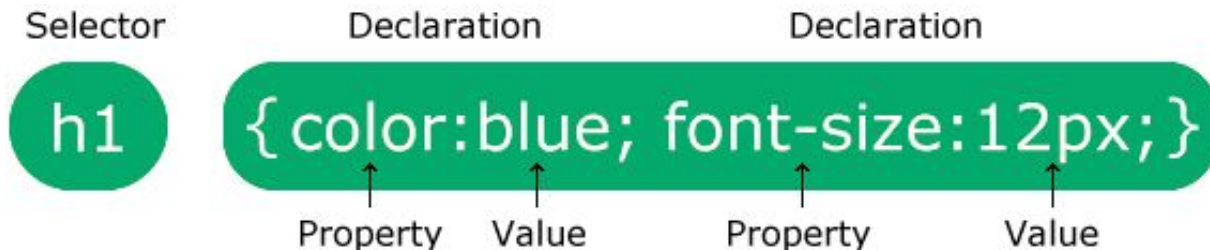


To describe the visual information on a web page to the browser, we need to use styles through the CSS language, which is based on **style rules**.

The display obtained for a web page is the result of applying these style rules:

Information + Style = Visible aspect of the page

A style sheet is a set of style rules with the following format:



2. CSS =Cascading Style Sheet

Styles can be used in 3 ways in an HTML file:

```
<h1 style=
"color:red;">
Heading</h1>
```

Inline: using the style attribute
inside HTML elements

```
<head>
<style>
  h1 {color:red;}
</style>
</head>
```

Internal : by using a <style> element
in the <head> section

```
<head>
  <link rel="stylesheet" href="styles.css">
</head>
```

External : by using a <link> element to link
to an external CSS file



3. JavaScript

In addition to information and style, the content of a web page can be managed and controlled by a program written in a **scripting language**.

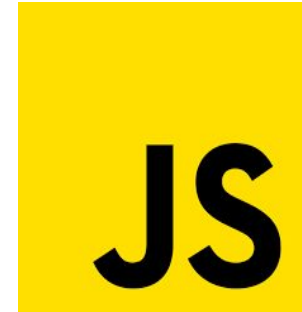
The most widely used of these is **JavaScript**.

JavaScript content can be added anywhere in an HTML page between the tags `<script>.... </script>` tags.

Where does JavaScript fit in?

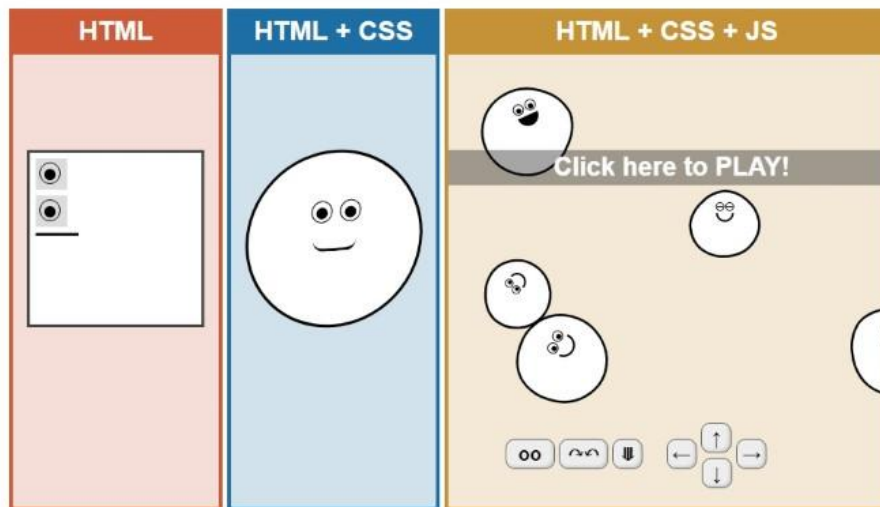
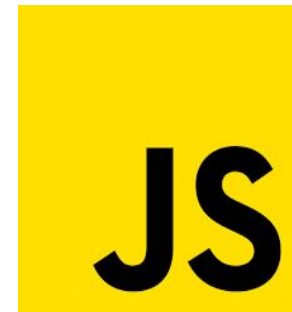
A web application is a client-server application (the client being the browser). **browser**, **server**.

- JavaScript code can be found client-side in browser, and also through JavaScript libraries
- JavaScript is increasingly used on the server side, and even for DB management.



3. JavaScript

- JavaScript can act on the HTML code and also on the style of the web page.
- JavaScript is the language used by the browser to act on the HTML code (content) of the CSS style (appearance) of a web page.



- JavaScript is used to create a web application with an "intelligent" client.
- We use the basic JavaScript code, but also JavaScript libraries such as AngularJS, VueJS and ReactJS, which we'll be looking at in this course.

Lab Exercises Submission Guidelines

- **Deadline:**
At the end of each Lab session (no later than Saturday at 23:59)
To: adil.chekati@univ-constantine2.dz
- **File's Name to be submitted:**
CAW_Lab%_Gr%_NAMEPair1_NAMEPair2.zip
Example : "CAW_Lab1.part1_Gr1_CHEKATI_BOUZENADA.zip"



Textbook

- All academic materials will be available on:
- Google Drive.
E-learning platform of Constantine 2 University.



SCAN ME!



References



Book:

Joe Casabona, *HTML and CSS: Visual QuickStart Guide (9th Edition)*. Peachpit Press, 2020.

Online Resource:

Mozilla Developer Network- HTML, CSS, and JavaScript documentation
(<https://developer.mozilla.org/en-US/docs/Web>)



Next Lecture

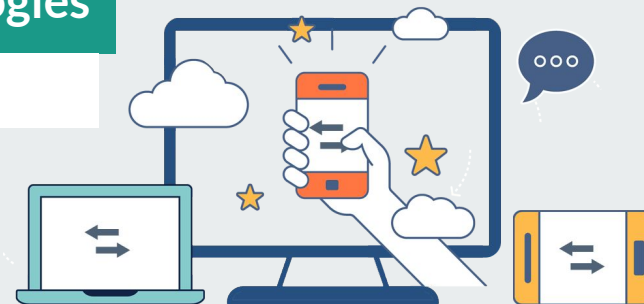
-Lecture 2-

Chapter 1 – HTML, CSS, Javascript web technologies

Part III: JavaScript language - Overview

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Questions, & comments...

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