UFV

UFV.ES

HTML

MODULE 5 / UNIT 4 / 0.5

MOISES M. MARTINEZ

FUNDAMENTALS OF COMPUTER ENGINEERING

2024/25

HTML Fundamentals

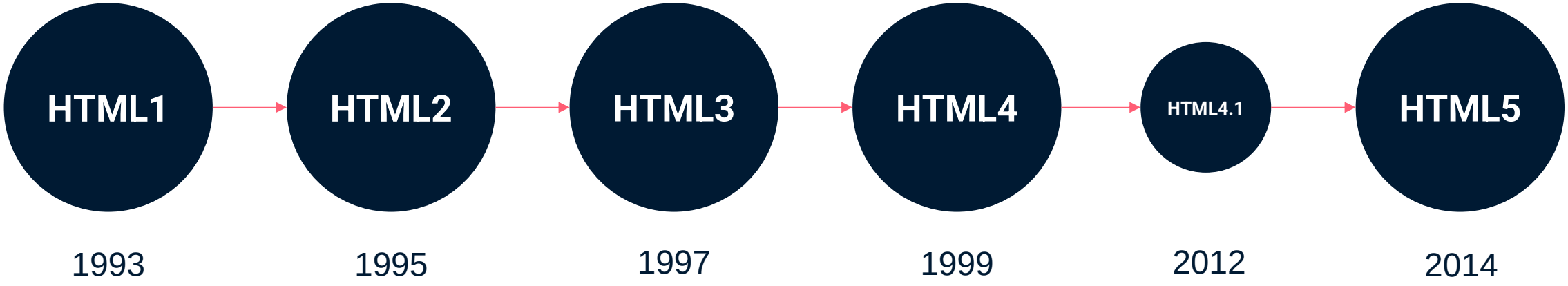
01

HTML Fundamentals

The Hypertext Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript.

- Hypertext: Hypertext simply means "Text within Text." A text has a link within it, is a hypertext. Hypertext is a way to link two or more web pages (HTML documents) with each other.
- Markup Language: A markup language is a computer language that is used to apply layout and formatting conventions to a text document.

HTML is a markup language used by the browser to manipulate text, images, and other content, in order to display it in the required format. HTML was created by Tim Berners-Lee in 1991.

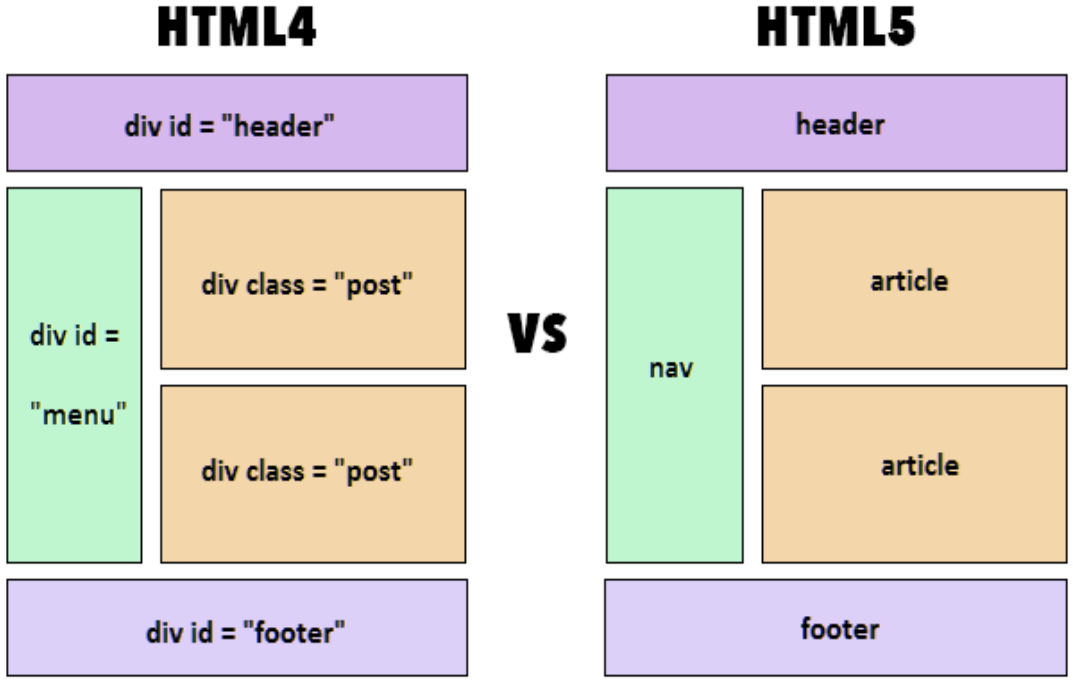


What is the difference between HTML5 and HTML4?

HTML stands for HyperText Markup Language and HTML5 is the latest version of HTML Language.

It is a cleaner markup and improved code for developers.

- New semantic elements: <header>, <footer>, <main>, <section>, <article>, <figure>, <aside>, and <nav> etc.
- New attributes of form elements: number, date, time, calendar and range, etc.
- New form elements: <datalist> and <output>
- New graphic elements: <svg> and <canvas>
- New multimedia elements: <audio>, <source>, <track>, and <video>



HTML Fundamentals

The basic structure of an HTML page is composed of different blocks (i.e. doctype declaration, HTML, head, title, and body elements) which define the structure of the web page.

```
1  <!DOCTYPE html>                          <!— Tells the version of HTML —>
2  <html>                                   <!— HTML Root Element —>
3      <head>                               <!— Head tag is used to contain page HTML metadata —>
4          <title>Page Title</title>        <!— Title of HTML page —>
5      </head>
6      <body>                               <!— body tag is used to hold content of HTML —>
7          <h2>Heading Content</h2>         <!— HTML heading tag —>
8          <p>Paragraph Content</p>         <!— HTML paragraph tag —>
9      </body>
10 </html>
```

HTML Fundamentals

There are four main tags that we should include in any web page:

- DOCTYPE html (optional): This is the document type declaration (not technically a tag). It declares a document as being an HTML document.
- html: This tag is called the HTML root element. All other elements in the webpage are contained within it.
- head: This tag defines the head which contains the “behind the scenes” elements for a webpage. Elements within the head aren’t visible on the front-end of a webpage.
- body: This tag defines the content which is used to enclose all the visible content of a webpage. In other words, the body content is what the browser will show on the front-end.

The <head> element is a container for metadata (data about data) and is placed between the <html> tag and the <body> tag. Metadata is a no displayed data about the HTML document. The following elements can go inside the <head> element:

- <title> (required in every HTML document)
- <style>
- <base>
- <link>
- <meta>
- <script>
- <noscript>

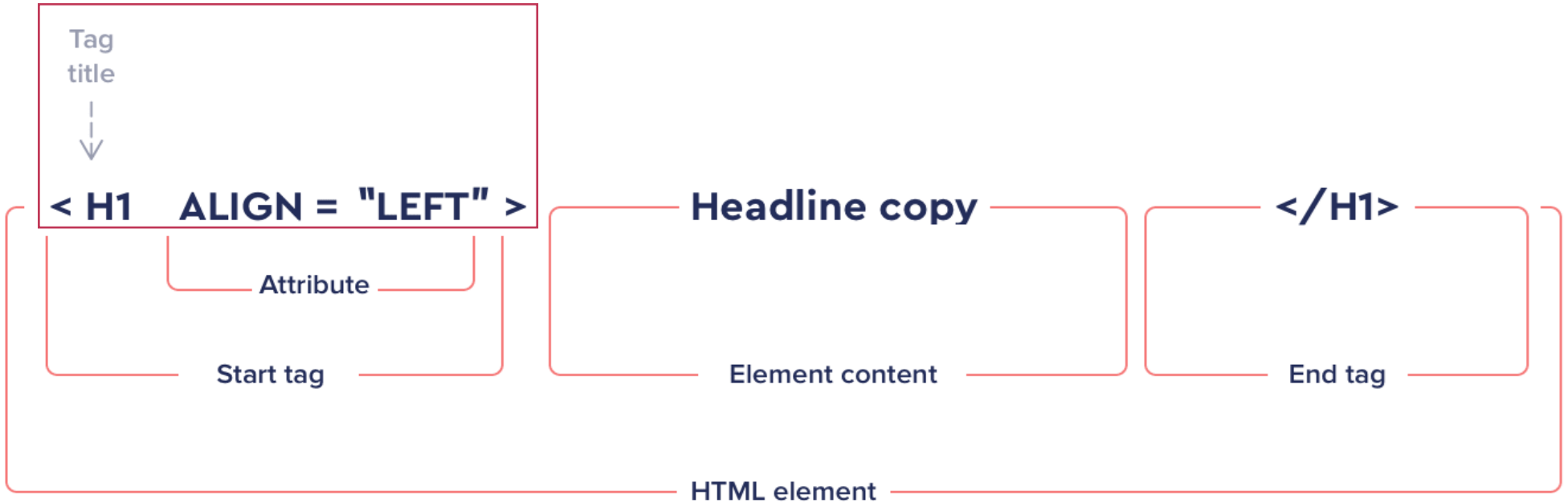
The <body> tag defines the document's body. The body element contains all the contents of an HTML document, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.

```html
<!DOCTYPE html>
<html>

<head>
      <meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1.0">
      <!--The above meta characteristics make a website compatible with different devices.-->
      <title>Demo Web Page</title>
</head>

<body>

    <h1>First title</h1>
    <p>Hello world!!!</p>

</body>
</html>
```

There can only be one <body> element in an HTML document.

HTML tags

HTML tags are like keywords which defines that how web browser will format and display the content. HTML tags contain three main parts: opening tag, content and closing tag. But some HTML tags are unclosed tags.



https://www.w3.org/TR/2012/WD-html-markup-20121025/elements.html

Text tags

There are different tags available to include and manipulate text. These are some of them:

Paragraphs are marked using the <p> tags.

There are also specific tags for modifying the text structure:

- Bold: Use the <b> tag to make text bold.
- Italic: Use the <i> tag to italicize text.
- Underline: Use the <u> tag to underline text.
- Line Breaks: Insert line breaks using the
 tag.

```
1
2 <p>This is some text in a paragraph.</p>
3
4 <b> Bold Tag </b>
5
6 <i> Italic Tag </i>
7
8 <u> Underline Tag </u>
9
10 <p>To force<br> line breaks<br> in a text,<br> use the br</p>
11
```

List tags

HTML lists allow web developers to group a set of related items in lists. There are 2 types of lists: (1) unordered; and (2) ordered.

List tags

HTML lists allow web developers to group a set of related items in lists. There are 2 types of lists: (1) unordered; and (2) ordered.

The <ul> tag is used to define the beginning and end of an unordered list. This tag encapsulates all the list items (<li>) that will be part of the unordered list.

An unordered HTML list:

- Coffee
- Tea
- Milk

```
<p>An unordered HTML list:</p>

<ul>
<li>Coffee</li>
<li>Tea</li>
<li>Milk</li>
</ul>

```

List tags

HTML lists allow web developers to group a set of related items in lists. There are 2 types of lists: (1) unordered; and (2) ordered.

The <ol> tag is used to define the beginning and end of an ordered list. This tag encapsulates all the list items (<li>) that will be part of the ordered list.

An ordered HTML list:

1. Coffee
2. Tea
3. Milk

```
<p>An ordered HTML list:</p>

<ol>
<li>Coffee</li>
<li>Tea</li>
<li>Milk</li>
</ol>

```

Table tags

HTML tables allow web developers to arrange data into rows and columns.

- The <table> tag is used to define the beginning and end of a table.
- The <tr> tag defines a row within the table.
- The <th> tag is used to define a header cell in a table.
- The <td> tag is used to define a standard data cell in a table.

Student	Degree	Country
Diego romero	Computer Science	Germany
Marta Cifuentes	Francisco Chang	Spain

```html
<table>
  <tr>
    <th>Student</th>
    <th>Degree</th>
    <th>Country</th>
  </tr>
  <tr>
    <td>Diego romero</td>
    <td>Computer Science</td>
    <td>Germany</td>
  </tr>
  <tr>
    <td>Marta Cifuentes</td>
    <td>Business and Technology</td>
    <td>Spain</td>
  </tr>
</table>

```

Link tags

The <a> tag defines a hyperlink, which is used to link from one page to another. The most important attribute of the <a> element is the href attribute, which indicates the link's destination. Links has a general style which define how they are show in all browsers:

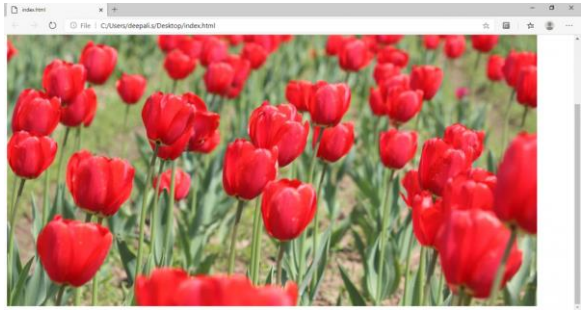
- An unvisited link is underlined and blue
- A visited link is underlined and purple
- An active link is underlined and red

```
1 <a href="https://www.ufv.es">Visit Universidad Francisco de Vitoria</a>
2
```

Image tags

The tag <img> is used to add an image in an HTML page. This tag has a special attribute called src which specifies the image path.

```
<img src="img_tulips.jpg" width="300" height="460" />
```



We can specify the URL in the src attribute in the following two ways:

- Absolute URL: Path of an external image that is hosted on another website.
- Relative URL: Path of the image that is hosted within the website.

The <img> tag also contains the width and height attributes which specify the width and height of the image in pixels.

HTML atributes

HTML attributes are special words which provide additional information about the elements or attributes are the modifier of the HTML element. Each element or tag can have attributes (pair id:value).

HTML atributes

The most commonly used attributes that can be applied to a wide range of HTML tags include:

```html
<div id="message" class="highlight" style="color: green;" title="Welcome message.">
    Welcome to our website! We are glad to have you here.
</div>
```

- The id attribute is used to uniquely identify an element within an HTML document. This unique identifier can be referenced by CSS to apply specific styles, by JavaScript to manipulate the element's behaviour, or by anchors to link directly to a specific section of the page.
- The title attribute provides additional information about an element. This information is often displayed as a tooltip when the user hovers their cursor over the element.
- The class attribute is used to associate an element with one or more class names, which can be targeted by CSS to apply styles or by JavaScript for scripting purposes.
- The style attribute allows you to apply inline CSS directly to an element. This attribute is useful for applying quick, specific styles that don't require a separate stylesheet.

HTML Forms

02

HTML forms

An HTML form (or web form) is an HTML element that allows users to input data or personal information to interact with a website and perform specific actions. Web forms serve various purposes, including:

- Collect user information for registration.
- Gather shipping information like addresses or times.
- Survey your customers.
- Ecommerce checkout.

For example, users can enter their name and email address to sign up for a website and gain access to services.

HTML forms

A HTML form uses the form tags and have some important properties which should be configured:

- The Action attribute defines the action to be performed when the form is submitted.
- The target attribute specifies where to display the response that is received after submitting the form. The most common value is _blank which means that the response is displayed in a new window or tab.
- The method attribute specifies the HTTP method to be used when submitting the form data. There are two options: (1) get; or (2) post.

There are more attributes like enctype or accept-charset. More info in here.

HTML forms

A HTML form uses the form tags and several input tags to define the structure of the form in the web page.

```html
<form>
    <label for="name">Name:</label><br>
    <input type="text" id="name" name="fname"><br>
    <label for="surname">Surname:</label><br>
    <input type="text" id="surname" name="surname">
</form>
```

This basic form is used to collect two data from the user, its name and its surname. Besides, it does not include any attribute in the definition because the form attributes are not mandatory.

HTML forms

There are different types of input controls which can be included in a web from, such us:

Input type	Description
text	A single-line text control for including words or small sentences. This is the default value of input.
radio	A radio button control allowing a single value to be selected out of multiple choices with the same name value.
checkbox	A check box control allowing single values to be selected/deselected.
date	A control for entering a date (year, month, and day, with no time). Opens a date picker or numeric wheels for year, month, day when active in supporting browsers.
file	A file control that lets the user select a file. Use the accept attribute to define the types of files that the control can select.
password	A single-line text control field whose value is obscured. Will alert user if site is not secure.

HTML forms

There are other types of control like buttons which allows us to execute some behaviours into the form.

Input type	Description
submit	A button control for submitting the form according to the value of the attribute action of the form.
reset	A button control for resetting the contents of the form input to default values.
button	A push button control for execute a behaviour using JS or other technology. This control has no default behaviour.

```
1 <form>
2     <button type="button" onclick="alert('Hello World!')">Click Me!</button>
3 </form>
```

HTML forms

Besides, there some special tags to include extra information in the form instead of inputs and buttons:

- textarea: It is a special input control for inserting a multiline input (text area).

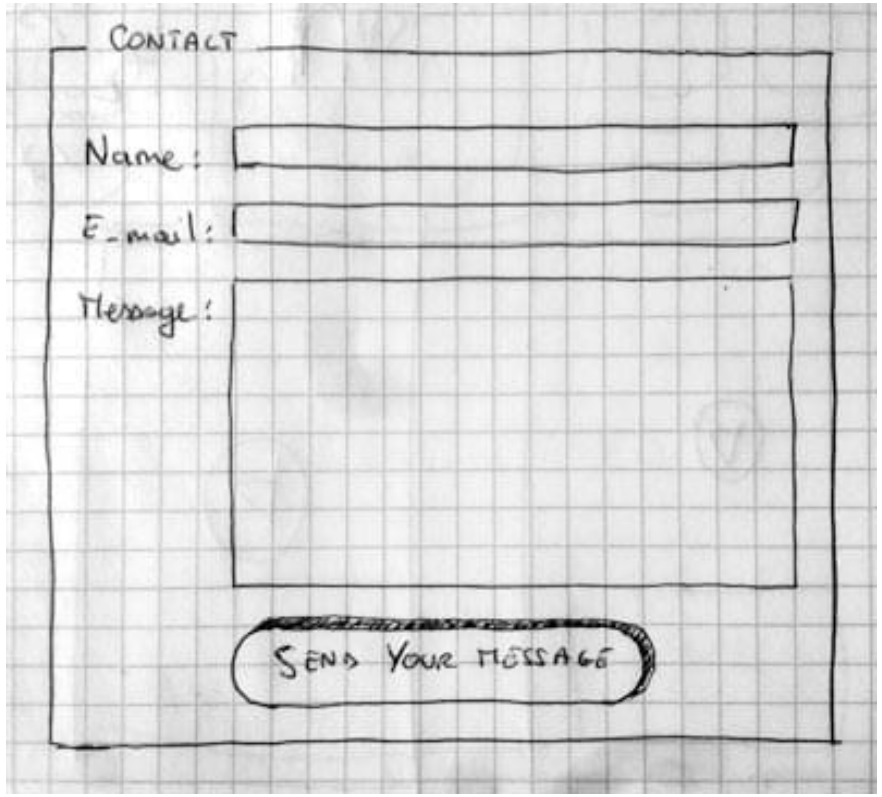
```html
<textarea rows="4" cols="50"></textarea>
```

- select: it is a special input control for defining a drop-down list for individual or multiples selection.

```html
<select name="cars" multiple="true">
  <option value="1">Ferrari</option>
  <option value="2">Lamborghini</option>
</select>
```

HTML forms

The basic structure of an HTML form looks like this:




```html
<form action="./my-handling-form-page" method="post">
  <ul>
    <li>
      <label for="name">Name:</label>
      <input type="text" id="name" name="user_name" />
    </li>
    <li>
      <label for="mail">Email:</label>
      <input type="email" id="mail" name="user_email" />
    </li>
    <li>
      <label for="msg">Message:</label>
      <textarea id="msg" name="user_message"></textarea>
    </li>
    <li>
    <button type="submit">Send your message</button>
    </li>
  </ul>
</form>
```

HTML Containers

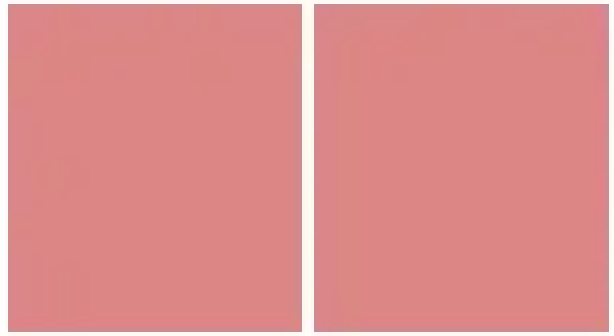
03

HTML containers (div)

The tag is the generic container for flow content. It has no effect on the content or layout until styled in some way using CSS (e.g. styling is directly applied to it, or some kind of layout model like Flexbox is applied to its parent element).

HTML containers (div)

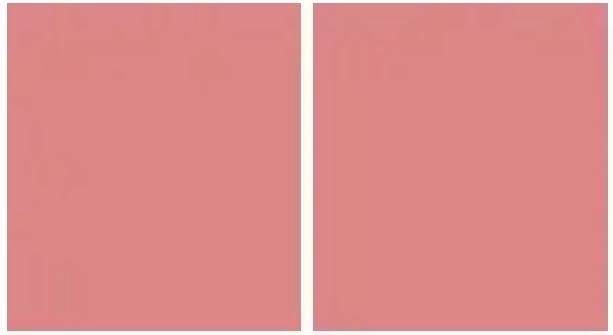
The **inline-block method** is a traditional and widely used technique for displaying multiple containers side by side within a webpage.



```html
<!DOCTYPE html>
<html>
<head>
    <style>
      .container {
        display: inline-block;
        width: 200px;
        height: 100px;
        margin: 5px;
        background-color: #ce8888;
      }
    </style>
</head>
<body>
    <div class="container">Container 1</div>
    <div class="container">Container 2</div>
</body>
</html>
```

HTML containers (div)

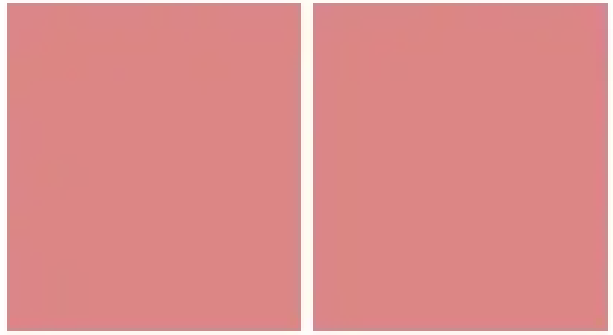
The **Flexbox method** is a modern and powerful approach to designing webpage layouts. Flexbox is not just a single property; it' is a comprehensive layout module that provides a range of features and properties specifically designed to make it easier to create flexible, responsive layouts.



```html
<!DOCTYPE html>
<html>
<head>
    <style>
      .container {
        display: inline-block;
        width: 200px;
        height: 100px;
        margin: 5px;
        background-color: #ce8888;
      }
    </style>
</head>
<body>
    <div style="display: flex;">
        <div class="container">Container 1</div>
        <div class="container">Container 2</div>
    </div>
</body>
</html>
```

HTML containers (div)

The **CSS Grid** method is a highly versatile and powerful layout system that offers a more advanced way to design and structure web pages. The CSS Grid allows you to create complex, two-dimensional layouts with ease, enabling you to position elements both along the rows and columns of a grid.



```html
<!DOCTYPE html>
<html>
<head>
    <style>
      .container-grid {
        display: grid;
        grid-template-columns: 100px 100px;
        grid-template-rows: 100px;
        grid-column-gap: 5px;
        background-color: #ce8888;
      }
    </style>
</head>
<body>
    <div style="container-grid">
        <div style="background: #ce8888;">Container 1</div>
        <div style="background: #ce8888;">Container 2</div>
    </div>
</body>
</html>
```

Folders

04

Folders

A website or web application is typically composed of different files that are organized within different folders. **As a result, it is crucial to define paths correctly to locate and reference these files.**

Types of Paths:

- An absolute path specifies the complete location of a file or resource starting from the root directory of the file system. It provides the full pathway, ensuring that the file can be located regardless of the current working directory.
- A relative path describes the location of a file in relation to the current (working) directory. Relative paths are commonly used because they are more flexible and make it easier to move files or folders without breaking references.

Folders

A website or web application is typically composed of different files that are organized within different folders. **As a result, it is crucial to define paths correctly to locate and reference these files.**

Rules for building paths:

- / (Root): It refers to the root directory of the current drive. It is the topmost directory in the file system hierarchy.
- ./ (Current Directory): It represents the current working directory. If you use ./, you are specifying that the file or resource is located in the same directory as the file that is being referenced.
- ../ (Parent Directory): It represents the parent directory of previous directory. It moves up one level in the directory hierarchy, pointing to the parent directory of the current working directory.

Folders

A website or web application is typically composed of different files that are organized within different folders. **As a result, it is crucial to define paths correctly to locate and reference these files.**

```
/web-project
  /css
    styles.css
  /images
    logo.png
  index.html
```

- Relative path to the styles.css file.

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

- Absolute path to the styles.css file.

```html
<img src="/web-project/css/styles.css" alt="Logo">
```

The example assumes that the web project is located in the root directory of the OOSS.

How to develop my web app?

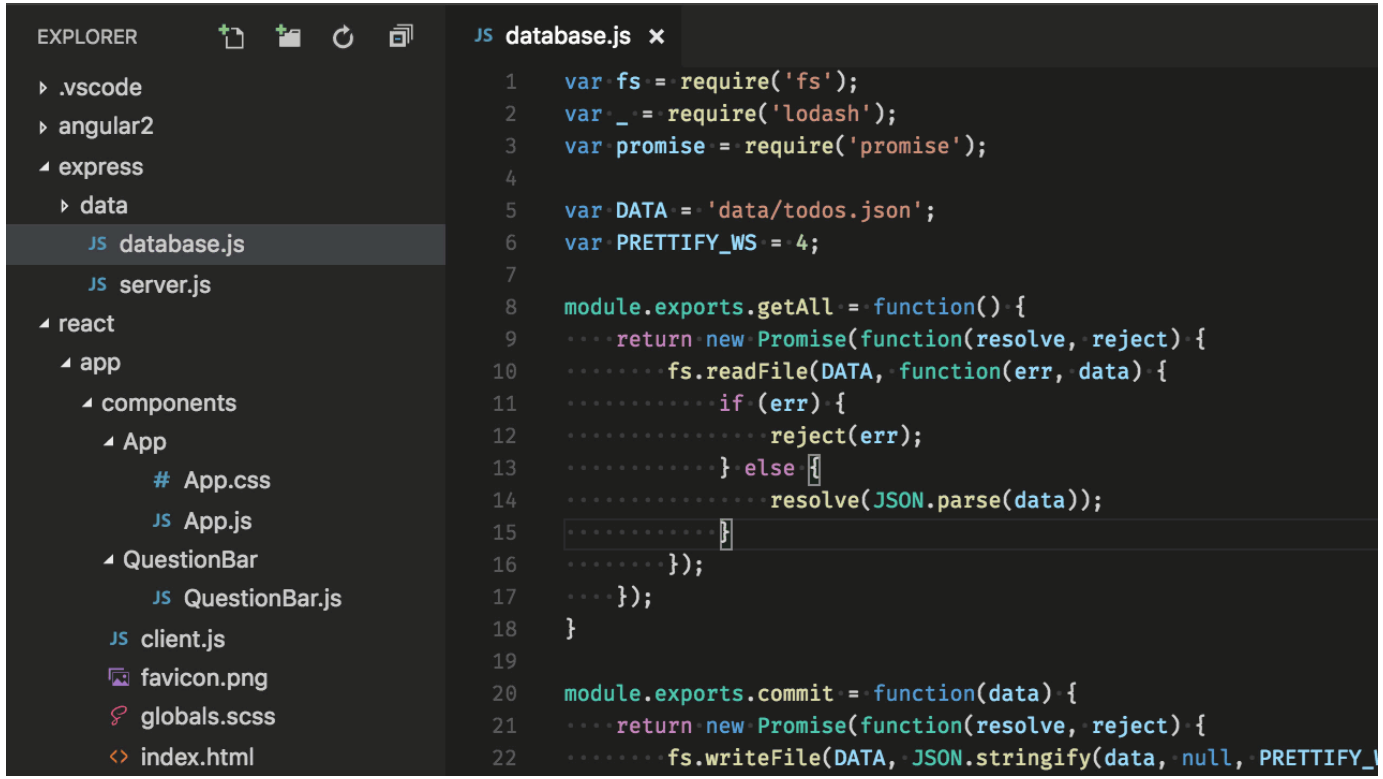
How to develop my web app?

There are many IDEs or web apps to develop web pages.

https://codepen.io

How to develop my web app?

There are many IDEs or web apps to develop web pages.



https://code.visualstudio.com/