



Web开发进阶班第1期

Lesson 2 Web & HTML & CSS

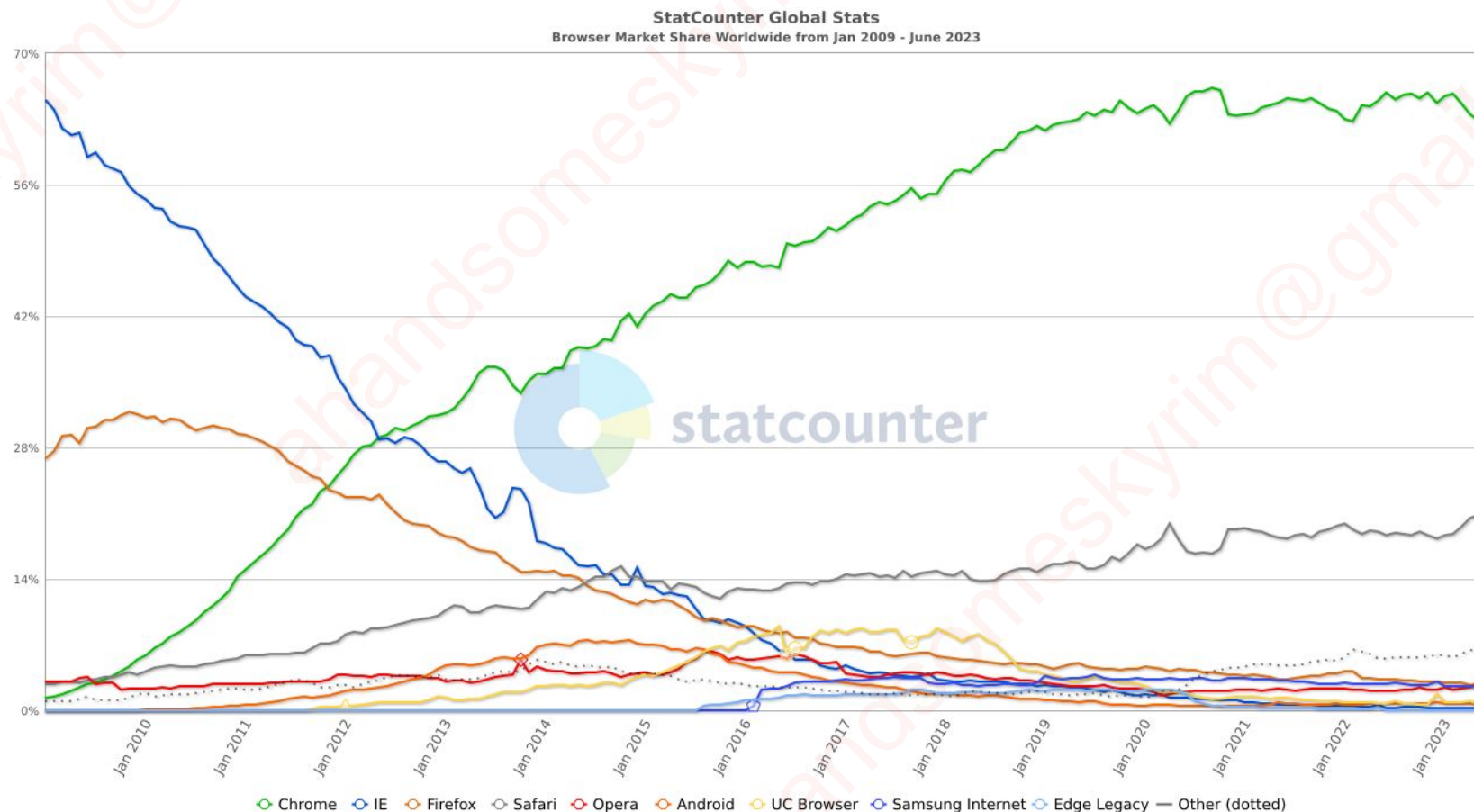
2023.07.18

www.jiangren.com.au

1. Web的访问方式
2. HTML结构和语义化
3. HTML标签和属性
 - (Text, ul, li, img, svg, a, button, table, form, span, video, inline block)
4. Accessibility可访问性 & SEO
5. HTML5 & 低代码平台

1. Web的访问方式

- 电脑、平板、手机及其他设备, 屏幕阅读器
- 浏览器(Chrome, Edge, Firefox, Safari)



1. Web的访问方式

浏览器输入 URL 地址后发生了什么？

- URL 解析:浏览器首先解析输入的 **URL** 地址, 将其分解成几个组成部分, 包括协议、域名、路径、查询参数等。
- DNS 解析:浏览器将解析到的域名(或 IP地址)发送给**DNS**(域名系统)服务器, 以获取与域名相对应的IP地址。
- 建立连接:浏览器使用获取到的**IP**地址与目标服务器建立 **TCP** 连接。这是通过**三次握手**来确保双方建立可靠的连接。
- 发起请求:浏览器向目标服务器发送 **HTTP** 请求, 其中包含请求方法(如**GET**、**POST**)、路径、请求头和请求体等信息。
- 服务器响应:目标服务器接收到请求后, 处理请求并生成相应的**HTTP响应**。响应包括**响应状态码**、**响应头**和**响应体**等信息。
- 响应处理:浏览器接收到服务器的响应后, 根据响应头中的信息判断响应的内容类型, 并将响应体中的数据进行解析和处理。
- 渲染页面:如果响应的内容是HTML, 浏览器会解析**HTML**, 并根据其中的**CSS**和**JavaScript**等资源进行页面的渲染和呈现。
- 下载资源:在解析HTML时, 如果发现页面中引用了其他资源(如CSS、JavaScript、图像等), 浏览器会继续发送请求并下载这些资源。
连接结束时, 通次**四次挥手**结束TCP连接。
- 执行脚本:如果页面中包含**JavaScript**代码, 浏览器会执行这些脚本, 以实现交互、动态效果和数据处理等功能。
- 页面展示:最后, 浏览器将解析后的页面内容进行布局、绘制, 最终展示给用户, 用户可以在浏览器中浏览和与页面进行交互。

1. Web的访问方式

解析组成文件的顺序

- 当浏览器向服务器发送请求获取 HTML 文件时, HTML 文件通常包含 `<link>` 和 `<script>` 元素, 这些元素分别指向了外部的 CSS 样式表文件和 JavaScript 脚本文件。了解这些文件被浏览器解析的顺序是很重要的:
- 浏览器首先解析 HTML 文件, 并从中识别出所有的 `<link>` 和 `<script>` 元素, 获取它们指向的外部文件的链接。
- 继续解析 HTML 文件的同时, 浏览器根据外部文件的链接向服务器发送请求, 获取并解析 CSS 文件和 JavaScript 脚本文件。
- 接着浏览器会给解析后的 HTML 文件生成一个 DOM 树(在内存中), 会给解析后的 CSS 文件生成一个 CSSOM 树(在内存中), 并且会编译和执行解析后的 JavaScript 脚本文件。
- 伴随着构建 DOM 树、应用 CSSOM 树的样式、以及执行 JavaScript 脚本文件, 浏览器会在屏幕上绘制出网页的界面; 用户看到网页界面也就可以跟网页进行交互了。

1. Web的访问方式

HTML + CSS + JS

- HTML : Content Structure
- CSS : Content Presentation
- JS : Content Behaviour?
- JS : Everything!

2. HTML结构和语义化

- HTML (HyperText Markup Language, 超文本标记语言) 是一种用来告知浏览器如何组织页面的标记语言。HTML 可复杂、可简单, 一切取决于 web 开发者。HTML 由一系列的元素组成, 这些元素可以用来包围或标记不同部分的内容, 使其以某种方式呈现或者工作。两端的标签可以使内容变成超链接, 以连接到另一个页面; 使字体表现为斜体等。例如, 考虑如下内容:

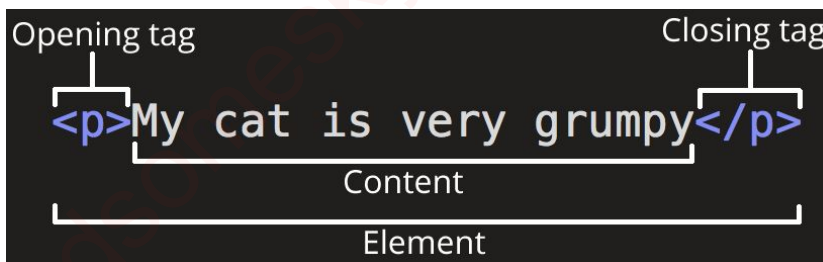
My cat is very cute

如果我们想要将这行文字单独呈现, 可以将这行文字封装成一个段落 (Paragraph) `<p>` 元素:

```
<p>My cat is very cute</p>
```

2. HTML结构和语义化

- 开始标签(Opening tag): 包含元素的名称(本例为 `p`), 被左、右角括号所包围。开头标签标志着元素开始或开始生效的地方。在这个示例中, 它在段落文本的开始之前。
- 内容(Content): 元素的内容, 本例中就是段落的文本。
- 结束标签(Closing tag): 与开始标签相似, 只是其在元素名之前包含了一个斜杠。这标志着该元素的结束。没有包含关闭标签是一个常见的初学者错误, 它可能会产生奇特的结果。



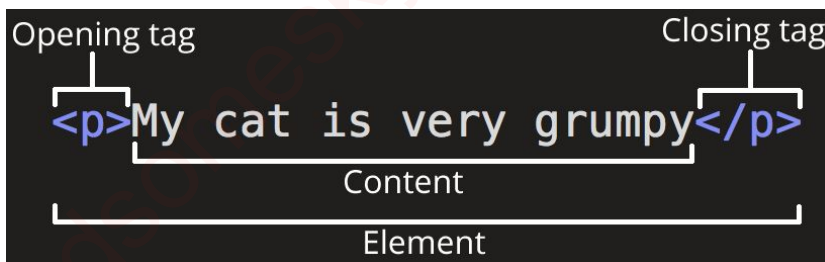
- 属性包含元素的额外信息, 这些信息不会出现在实际的内容中。在上述例子中, 这个 `class` 属性是一个识别名称, 以后为元素设置样式信息时更加方便。
- 属性必须包含:
 - 一个空格, 它在属性和元素名称之间。如果一个元素具有多个属性, 则每个属性之间必须由空格分隔。
 - 属性名称, 后面跟着一个等于号。
 - 一个属性值, 由一对引号(“”)引起来。



The diagram shows an HTML element with an attribute: `<p class="editor-note">My cat is very grumpy</p>`. A bracket labeled 'Attribute' points to the `class="editor-note"` part of the opening tag.

2. HTML结构和语义化

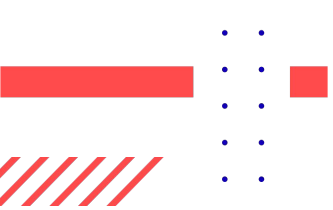
- 开始标签(Opening tag): 包含元素的名称(本例为 `p`), 被左、右角括号所包围。开头标签标志着元素开始或开始生效的地方。在这个示例中, 它在段落文本的开始之前。
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- 属性包含元素的额外信息, 这些信息不会出现在实际的内容中。在上述例子中, 这个 `class` 属性是一个识别名称, 以后为元素设置样式信息时更加方便。
- 属性必须包含:
 - 一个空格, 它在属性和元素名称之间。如果一个元素具有多个属性, 则每个属性之间必须由空格分隔。
 - 属性名称, 后面跟着一个等于号。
 - 一个属性值, 由一对引号(" ")引起来。



```
<p class="editor-note">My cat is very grumpy</p>
```

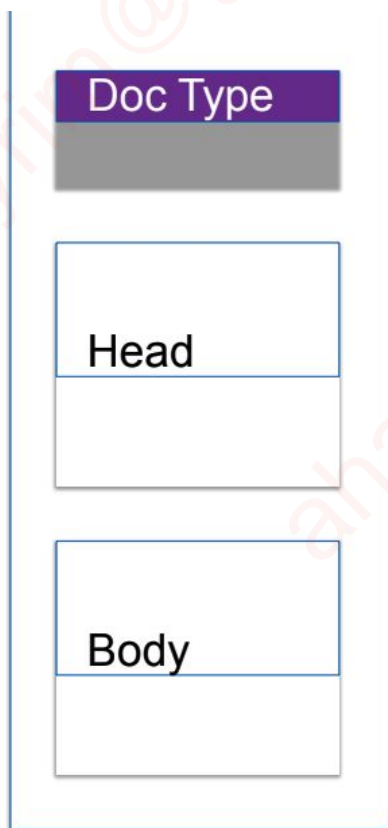


2. HTML结构和语义化

- HTML 结构
- Example: WORD

2. HTML结构和语义化

- HTML 结构



```
<!DOCTYPE html>

<html>

<head>
  <title>Title</title>
</head>

<body>
  <div>Content</div>
</body>

</html>
```

Document Type Declaration

An instruction to the web browser about what version of HTML the page is written in.

Tips: Always on Top

HTML5

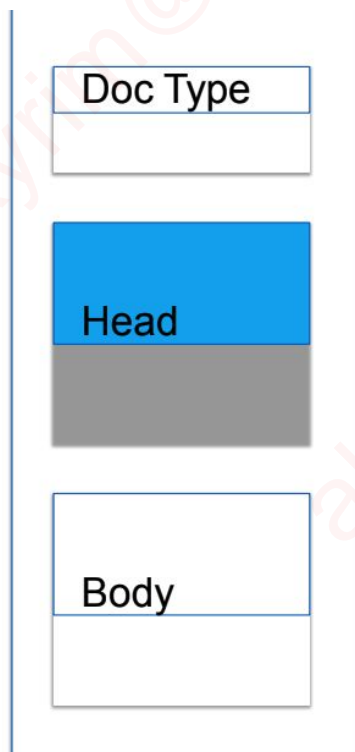
```
<!DOCTYPE html>
```

HTML4

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
```

2. HTML结构和语义化

- HTML 结构



```
<!DOCTYPE html>

<html>

  <head>
    <title>Title</title>
  </head>

  <body>
    <div>Content</div>
  </body>

</html>
```

Head is used for the information about the document but **NOT** showing to user in the content area.

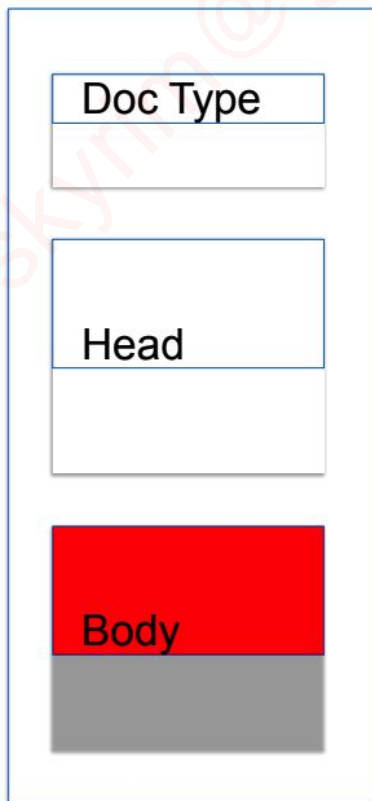
Title , Language, Viewport , Favicon CSS and Javascript etc.

e.g.
<title>title on Browser</title>
<meta charset="utf-8">

For SEO
Meta title
Meta Keywords
Meta Description

2. HTML结构和语义化

- HTML 结构



```
<!DOCTYPE html>

<html>

<head>
  <title>Title</
title>
</head>

<body>
  <div>Content</div>
</body>

</html>
```

Body is the content of the all the elements to show.

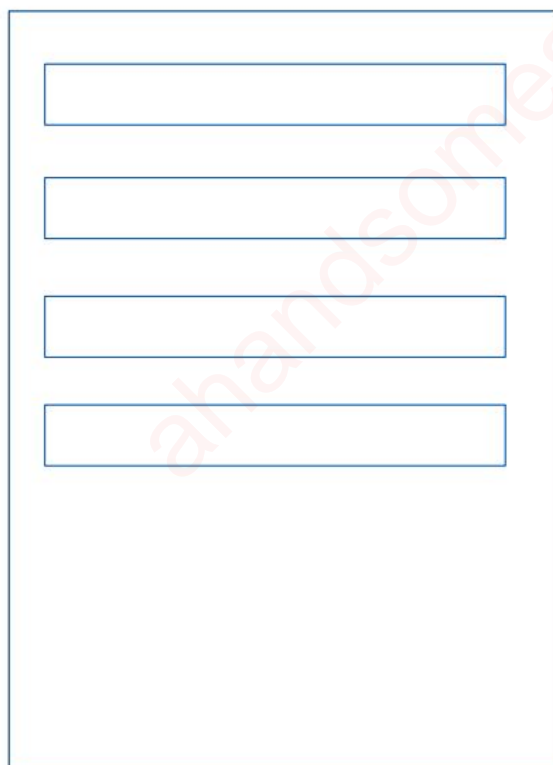
```
<h1> This is Header </h1>
<a href="http://
jiangren.com.au">匠人圈</a>
```

```
<button type="button">Click Me!
</button>
```

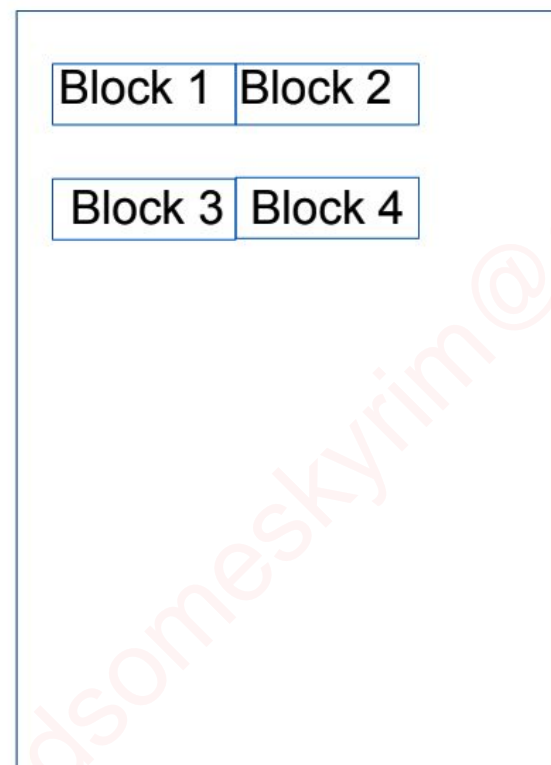
3. HTML标签和属性

- HTML Elements

Block Elements



Inline Elements



3. HTML标签和属性

- HTML Elements

Block elements

```
<div> <header> <main>      <nav>   <section>
<footer>  <h1-6>  <p>   <ul>   <ol>   <li>
<table>   <form>   <hr>

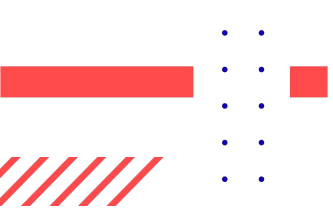
<canvas>  <video>  <output> <pre> <dd>
<dl>   <dt>   <address> <article> <aside>
<blockquote> <figure> <figcaption>
<noscript>   <fieldset>
```

Inline elements

```
<a>  <br>  <button>  <img>  <input>
<label>  <span>  <script>  <select>
<textarea> <b>    <strong>  <em>  <i>

<abbr> <acronym>  <bdo>  <big> <cite>
<code> <dfn>  <kbd>    <map>  <object>
<q>   <samp> <small>    <sub>  <sup>

<time> <tt>    <var>
```



3. HTML标签和属性

Live Demo

https://www.w3schools.com/html/tryit.asp?filename=tryhtml_default_default

3. HTML标签和属性

- HTML Elements

Heading Tags	Description	Syntax
<u><h1></u>	Used for title generally once per page and has a font size of 2em.	<h1>....</h1>
<u><h2></u>	Used for medium sized titles and has a font size of 1.5em.	<h2>....</h2>
<u><h3></u>	Used for subsections and has a font size of 1.17em.	<h3>....</h3>
<u><h4></u>	Used for highlighting text with font size of 1em.	<h4>....</h4>
<u><h5></u>	Fifth level heading with font size of .83em.	<h5>....</h5>
<u><h6></u>	Displays least significant details and has a font size of .67em	<h6>....</h6>

3. HTML标签和属性

- HTML Elements

Tags	Description	Syntax
<u><div></u>	Block element that defines a division in HTML document.	<div>... </div>
<u></u>	Inline element used to mark up a part of a text or document.	...
<u><p></u>	Used to represent a paragraph.	<p>...</p>
<u><pre></u>	Represents pre-formatted text to present exactly as written in the HTML file.	<pre>...</pre>
<u><code></u>	Used to represent source codes	<code>...</code>

3. HTML标签和属性

- HTML Elements

Tags	Description	Syntax
<u><header></u>	Used to give introductory content about the document.	<header>... </header>
<u><main></u>	Represents the main dominant content of a document.	<main>... </main>
<u><section></u>	Structural HTML element used to group together related elements.	<section>... </section>
<u><nav></u>	Represents a section of a page to provide navigation links	<nav>...</nav>
<u><article></u>	Represents a self-contained composition which is independently distributable or reusable.	<article>... </article>
<u><aside></u>	Defines some content aside from the content it is placed in.	<aside>... </aside>
<u><footer></u>	Represents a footer for its sectioning root element	<footer>... </footer>
<u><address></u>	Provides contact information for a person, people, or an organization.	<address>.. </address>

3. HTML标签和属性

- HTML Elements

Tags	Description	Syntax
<u></u>	Used to put stress on some text or show some degree of emphasis.	...
<u></u>	Indicates that the content has strong importance.	...
<u><sub></u>	Writes the text as subscript.	_{...}
<u><sup></u>	Writes the text as superscript.	^{...}
<u><abbr></u>	Represents an abbreviation or acronym.	<abbr>... </abbr>
<u><mark></u>	Highlights important text for reference or notation purposes.	<mark>...</mark>
<u><cite></u>	Describes the title of a creative work.	<cite>...</cite>
<u><time></u>	Used to represent a specific period of time.	<time>...</time>

3. HTML标签和属性

- HTML Elements

Tags	Description	Syntax
<u></u>	Represents an unordered list of items. list.	...
<u></u>	The HTML element represents an ordered list of items.	...
<u></u>	Represents an item in a list.	...
<u><dl></u>	Represents a description list.	<dl>...</dl>
<u><dd></u>	Used to describe a term/name in a description list.	<dd>...</dd>
<u><dt></u>	Specifies a term in a description.	<dt>...</dt>

3. HTML标签和属性

- HTML Elements

Tags	Description	Syntax
<u><caption></u>	Specifies caption of a table.	<caption>...</caption>
<u><table></u>	Represents data in a two-dimensional table.	<table>...</table>
<u><thead></u>	<thead>...</thead>	
<u><tbody></u>	Used to group primary content of an HTML table.	<tbody>...</tbody>
<u><th></u>	Defines a cell as header of a group of cells of the table.	<th>...</th>
<u><td></u>	Defines a cell of a table.	<td>...</td>
<u><tr></u>	Defines a row in an HTML table.	<tr>...</tr>
<u><tfoot></u>	Defines a set of rows summarizing the columns of the table.	<tfoot>...</tfoot>

Tags	Description	Syntax
<u><form></u>	Represents a section containing controls for submitting information.	<form>...</form>
<u><input></u>	Creates interactive controls for forms in order to accept data .	<input>...</input>
<u><textarea></u>	Create a multi-line plain-text editing control	<textarea>...</textarea>
<u><select></u>	Represents a control that provides a menu of options to select from.	<select>...</select>
<u><option></u>	Defines an option in a select list.	<option>...</option>
<u><optgroup></u>	Creates a grouping of options within a <select> element.	<optgroup>...</optgroup>
<u><progress></u>	Displays an indicator showing the degree of completion of a task.	<progress>...</progress>
<u><datalist></u>	Used to give a predefined options for an <input> element and adds an autocomplete feature to it.	<datalist>...</datalist>
<u><button></u>	Represents a clickable button.	<button>...</button>
<u><label></u>	Specifies a label for an <input> element.	<label>...</label>

3. HTML标签和属性

- HTML Elements

Tags	Description	Syntax
<u><form></u>	Represents a section containing controls for submitting information.	<form>...</form>
<u><input></u>	Creates interactive controls for forms in order to accept data .	<input>...</input>
<u><textarea></u>	Create a multi-line plain-text editing control	<textarea>... </textarea>
<u><select></u>	Represents a control that provides a menu of options to select from.	<select>...</select>
<u><option></u>	Defines an option in a select list.	<option>...</option>
<u><optgroup></u>	Creates a grouping of options within a <select> element.	<optgroup>. </optgroup>
<u><progress></u>	Displays an indicator showing the degree of completion of a task.	<progress>... </progress>
<u><datalist></u>	Used to give a predefined options for an <input> element and adds an autocomplete feature to it.	<datalist>... </datalist>
<u><button></u>	Represents a clickable button.	<button>...</button>
<u><label></u>	Specifies a label for an <input> element.	<label>...</label>

3. HTML标签和属性

- HTML Elements

Tags	Description	Syntax
<u></u>	Used to link images to web pages.	
<u><audio></u>	Used to include sound content in documents.	<audio>...</audio>
<u><video></u>	Embeds a media player which supports video files in the document.	<video>...</video>
<u><figure></u>	Groups various diagrams, images, illustrations, and code snippets into the document.	<figure>...</figure>
<u><figcaption></u>	Used to provide the caption of the content.	<figcaption>... </figcaption>
<u><embed></u>	Embeds multimedia in a Web page	<embed>...</embed>
<u><object></u>	Includes objects, such as images, audios, videos, Portable Document Format (PDF) in a Web page.	<object>...</object>

3. HTML标签和属性

- HTML Elements

Attributes	Description	Syntax
<u>alt</u>	Used in the image tag to specify the alternative text of the image	< tag_name alt = "..." >
<u>href</u>	Used to define a hyperlink.	< tag_name href = "..." >
<u>src</u>	Specifies URL of the image to be used.	< tag_name src = "..." >
<u>width</u>	Specifies the width of the image in pixels.	< tag_name width = "..." >
<u>height</u>	Specifies the height of the image in pixels.	< tag_name height = "..." >
<u>style</u>	Helps to change the look and feel of the document.	< tag_name style = "..." >
<u>id</u>	Unique identifier used to specify an area of a webpage.	< tag_name id = "..." >
<u>class</u>	Specifies one or more class names for an element.	< tag_name class = "..." >
<u>title</u>	Specifies extra information about an element.	< tag_name title = "..." >
<u>Placeholder</u>	Specifies a short hint that describes the expected value of an input field/text area	<tag_name placeholder=" ">

3. HTML标签和属性

- HTML Elements

Text Formatting

`<h?> ... </h?>`

Heading (?= 1 for largest to 6 for smallest, eg h1)

` ... `

Bold Text

`<i> ... </i>`

Italic Text

`<u> ... </u>`

Underline Text

`<strike> ... </strike>`

Strikeout

`^{...}`

Superscript – Smaller text placed below normal text

`_{...}`

Subscript – Smaller text placed below normal text

`<small> ... </small>`

Small – Fineprint size text

`<tt> ... </tt>`

Typewriter Text

`<pre> ... </pre>`

Pre-formatted Text

`<blockquote> ... </blockquote>`

Text Block Quote

` ... `

Strong – Shown as Bold in most browsers

` ... `

Emphasis – Shown as Italics in most browsers

` ... `

Font tag obsolete, use [CSS](#). (*)

3. HTML标签和属性

- HTML Elements

Section Divisions

`<div> ... </div>`

Division or Section of Page Content

` ... `

Section of text within other content

`<p> ... </p>`

Paragraph of Text

`
`

Line Break

`<hr>`

Basic Horizontal Line

`<hr>` Tag Attributes:

`size="?"`

Line Thickness in pixels

`width="?"`

Line Width in pixels

`width="??%"`

Line Width as a percentage

`color="#??????"`

Line Colour (*)

`align="?"`

Horizontal Alignment: `left`, `center`, `right` (*)

`noshade`

No 3D cut-out

`<nobr> ... </nobr>`

Line Break

4. Accessibility可访问性 & SEO

- Accessibility

- Accessibility, 通常缩写为 A11Y, 这缩写取的是首字母 + 中间字母长度 + 结尾字母, 译为“可访问性”。这是一种让尽可能多的人访问我们所开发的网站的技术概念, 通过这个概念, 让互联网访问公平变得可能。
- A11Y是一件非常正确的事, 在某些国家与地区, 甚至提供无障碍站点已 经成为了法律的一部分。
- 在MDN上有这么一句话:“Web根本的目的是为了服务于所有人, 而不是受限于 软硬件, 语言, 文化, 位置以及身心状态。”(原文: The Web is fundamentally designed to work for all people, whatever their hardware, software, language, culture, location, or physical or mental ability.)
- Web Accessibility, 译为“网页亲和力(又称网络无障碍、网络可达性、网络可用性、网页可访问性)”。

4. Accessibility可访问性 & SEO

- Accessibility

- Accessibility, 通常缩写为 A11Y, 这缩写取的是首字母 + 中间字母长度 + 结尾字母, 译为“可访问性”。这是一种让尽可能多的人访问我们所开发的网站的技术概念, 通过这个概念, 让互联网访问公平变得可能。
- A11Y是一件非常正确的事, 在某些国家与地区, 甚至提供无障碍站点已 经成为了法律的一部分。
- 在MDN上有这么一句话:“Web根本的目的是为了服务于所有人, 而不是受限于 软硬件, 语言, 文化, 位置以及身心状态。”(原文: The Web is fundamentally designed to work for all people, whatever their hardware, software, language, culture, location, or physical or mental ability.)
- Web Accessibility, 译为“网页亲和力(又称网络无障碍、网络可达性、网络可用性、网页可访问性)”。
- There are three levels in WCAG 2.1, **Level A** (the lowest level), **Level AA**, and **Level AAA** (the highest level). These are usually pronounced as ‘single A’, ‘double A’, and ‘triple A’.

4. Accessibility可访问性 & SEO

WCAG Level A – Basic accessibility

Considered the least strict, Level A success criteria are essential for every website. If your website doesn't conform with WCAG Level A, it may have serious accessibility issues that prevent users with disabilities from using it.

At this level, within the current guidelines (WCAG 2.1) there are 30 criteria that organisations must meet. An example of the criteria includes:

- Non-text content (images and videos) must have a text equivalent.
- Users must be able to access content using a keyboard only.
- Forms must include labels or instructions, so users know what's expected of them.
- Assistive technologies, such as screen readers, must be able to access content.
- Information or instructions must not be conveyed through shape, size or colour alone.

4. Accessibility可访问性 & SEO

WCAG Level AA – Strong accessibility

While WCAG Level A allows organisations to cover the basics, WCAG Level AA goes further toward making web content accessible for users in a wider variety of contexts. It is for this reason that most accessibility experts recommend this conformance level. As a reminder, at this conformance level, the web page and content would satisfy all Level A and Level AA success criteria.

At Level AA, criteria includes all that is outlined at Level A plus an extra 20 requirements. Examples include:

- Text and background must use good colour contrast. For example, have a minimum level of contrast of at least 4.5 to 1.
- Content should be organised under clear headings, using a logical order. For example a H1, followed by H2, H3 etc.
- Elements that affect navigation should be consistent across the site.

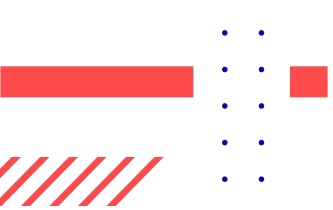
4. Accessibility可访问性 & SEO

WCAG Level AAA – Excellent accessibility

Level AAA is the highest possible conformance level in WCAG, and as a result holds organisations to the highest standard of accessibility. At this level, the web page and content satisfy all Level A, Level AA, and Level AAA success criteria. Although level AAA may not be applicable or realistic for everyone to achieve, organisations should strive to meet as many of its criteria as possible.

Level AAA criteria outlines an extra 28 requirements from those outlined at level AA. Examples include:

- Contrast ratio between text and background is at least 7 to 1.
- Pre-recorded video content must have a sign language translation.
- Extended audio description should be provided for pre-recorded videos



4. Accessibility可访问性 & SEO

- **SEO (search engine optimization)**

HTML elements semantic

H1

Title

Description

use correct context with correct tags

5. HTML5 & 低代码平台

New Media Elements

HTML5 offers new elements for media content compared to HTML, such as:

- `<audio>` - Defines sound content

`<audio src = "simplilearn.mp3" controls autoplay>`

Your browser does not support the `<audio>` element.

`</audio>`

- `<video>` - Defines a video or movie

`<video src = "simplilearn.mp4" width = "300" height = "200" controls>`

Your browser does not support the `<video>` element.

`</video>`

- `<source>` - Defines multiple media resources for `<video>` and `<audio>`

`<source src = "/html5/audio.mp3" type = "audio/mp3" />`

- `<embed>` - Defines a container for an external application or interactive content (a plug-in)

`<embed type="video/webm" src="simplilearn.mp4" width="400" height="300">`

- `<track>` - Defines text tracks for `<audio>` and `<video>`

`<track src="subtitles_en.vtt" kind="subtitles" srclang="en" label="English">`

There are many elements that have been modified or removed from HTML5, including:

- `<frame>` - Removed
- `<noframes>` - Removed
- `<dir>` - Changed to ``
- `` - CSS is used for this

5. HTML5 & 低代码平台

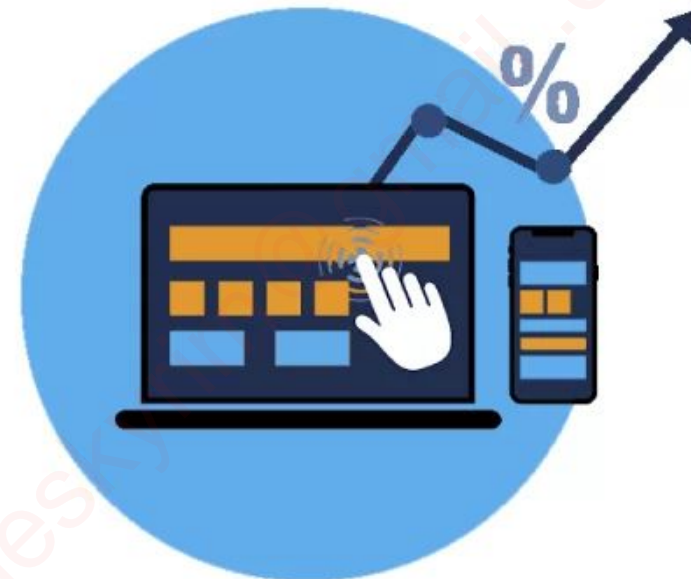
Low-code/No-code vs Custom App Development



Custom-Code



Low-Code



No-Code



Q & A