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Italiadomani
PIANO NAZIONALE DI RIPRESA E RESILIENZA

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Corso	Software Developer
Unità Formativa	Programmazione WEB – Javascript
Argomento	Specificato nel titolo della slide successiva

Intervento realizzato da
ITS
TECNOLOGIE
DELL'INFORMAZIONE
E DELLA COMUNICAZIONE

COESIONE
ITALIA 21-27
PIEMONTE



Cofinanziato
dall'Unione europea



**REGIONE
PIEMONTE**

HTML CSS JS

Introduction

Shadi Lahham - Web development

Structure

Web page Structure

Content

Text, Media

HTML

Structure

CSS

Presentation

Javascript

Logic/Interactivity

Boilerplates

HTML Boilerplate

```
<!doctype html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>Website Title</title>
  <meta name="description" content="My new wonderful website">
  <meta name="author" content="Mister X">
  <link rel="stylesheet" href="./css/styles.css?v=1.0">
</head>

<body>
  <div>My Website</div>
  <!-- end of the body -->
  <script src="./js/scripts.js"></script>
</body>
</html>
```

The Doctype

The first thing on an HTML page is the doctype, which tells the browser which version of the markup language the page is using.

For XHTML 1.0 Strict:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"  
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
```

For HTML4 Transitional:

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

For modern HTML5:

```
<!doctype html>
```

The html Element

```
<!doctype html>  
<html lang="en">  
  
</html>
```

Represents top-level element of an HTML document
Also referred to as the root element

All elements must be descendants of `<html>`

The head Element - character encoding

UTF-8 is a character encoding capable of encoding all possible characters, or code points, defined by Unicode. The encoding is variable-length and uses 8-bit code units.

XHTML and HTML4:

```
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
```

HTML5:

```
<meta charset="utf-8">
```

[Metadata - Wikipedia](#)

The head Element

```
<head>
  <meta charset="utf-8">
  <title>Website Title</title>
  <meta name="description" content="My new wonderful website">
  <meta name="author" content="Mister X">
  <link rel="stylesheet" href="/css/styles.css?v=1.0">
</head>
```

Quick Exercise:

What is this for?

?v=1.0

How does the browser cache work?

The body Element

```
<body>
  <div>My Website</div>
  <!-- end of the body -->
  <script src="./js/scripts.js"></script>
</body>
```

XHTML and older:

```
<script src="./js/scripts.js" type="text/javascript"></script>
```

HTML5:

```
<script src="./js/scripts.js"></script>
```

The `<script>` element

- used to define a client-side script - JavaScript
- either contains Javascript code or points to an external script file via the src attribute

HTML Boilerplate - Complete picture

```
<!doctype html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>Website Title</title>
  <meta name="description" content="My new wonderful website">
  <meta name="author" content="Mister X">
  <link rel="stylesheet" href="./css/styles.css?v=1.0">
</head>

<body>
  <div>My Website</div>
  <!-- end of the body -->
  <script src="./js/scripts.js"></script>
</body>
</html>
```

URL

Uniform Resource Locator

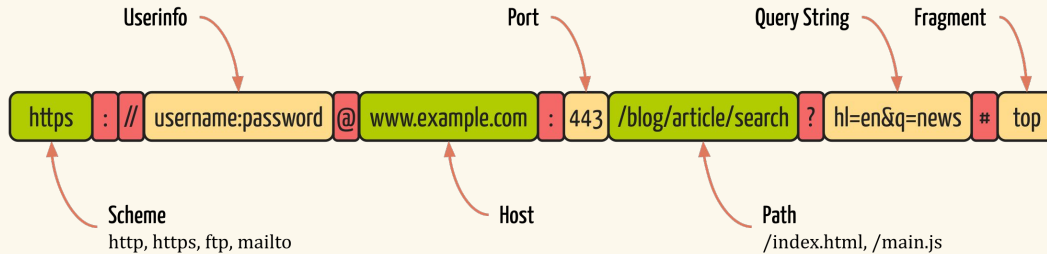
Components of a URL

Uniform Resource Locator: an address for locating a unique resource on the net like a file or an app

The components of a URL

Main components

Some of the components shown here are simplified and some are optional



URL example

`https://www.example.com:8080/path/to/resource?key=value#section`

- **scheme** (e.g., http, https)
- **host** (e.g., www.example.com)
- **port** (optional, e.g., :80, :443)
- **path** (optional, e.g., /path/to/resource)
- **query string** (optional, e.g., ?key=value)
- **fragment** (optional, e.g., #section)

Resources

Inline, embedded & external

Inline CSS

```
<body>  
  <p style="color:red;text-align:center;">Hello</p>  
  <p style="color:orange;text-align:center;">Nice to meet you</p>  
</body>
```

- no separation of concerns
- no reusability since it applies to a single element only
- limited caching, larger HTML file and slower load times
- no selectors or media queries
- hard to read and maintain code

Never use inline CSS

Embedded CSS

```
<head>
  <style>
    p {
      color: red;
      text-align: center;
    }
  </style>
</head>
```

- no separation of concerns
- limited reusability; single HTML file only
- limited caching, larger HTML file and slower load times
- hard to read and maintain code

Never use embedded CSS

External CSS

index.html

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

style.css

```
p {  
  color: red;  
}
```

- good separation of concerns
- reusable and modular
- browser caching benefits and faster load times
- easy to maintain and collaborate

Always use an external CSS

Inline Javascript

```
<body>  
  <button onclick="console.log('Hello, world!')">Click Me</button>  
</body>
```

- no separation of concerns
- no reusability since it applies to a single element only
- limited caching, larger HTML file and slower load times
- hard to read and maintain code

Never use inline Javascript

Embedded Javascript

```
<head>  
  <script>  
    console.log('Hello, World!');  
  </script>  
</head>
```

- no separation of concerns
- limited reusability; single HTML file only
- limited caching, larger HTML file and slower load times
- hard to read and maintain code

Never use embedded Javascript

External Javascript

index.html

```
<body>  
  <!-- end of the body -->  
  <script src="./js/main.js"></script>  
</body>
```

main.js

```
console.log('Hello, World!');
```

- good separation of concerns
- reusable and modular
- can manage script load order and dependencies
- browser caching benefits and faster load times
- easy to maintain and collaborate

Always use an external Javascript

Structure & loading

speed optimization

File and folder structure

```
<body>
  <!-- end of the body -->
  <script src="./js/main.js"></script>
</body>
```



```
<body>
  <!-- end of the body -->
  <script src="./myScripts/file.js"></script>
</body>
```



Local vs remote Javascript

Remote:

```
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/normalize.css">
```

Local:

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

Remote:

```
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
```

Local:

```
<script src="./js/main.js"></script>
```

Script placement

```
<!doctype html>
<html lang="en">
<head>
  <script src="./js/earlyLoadingScript.js"></script>
</head>

<body>
  <h1>Introduction</h1>
  <p>Welcome to our service ... </p>
  <!-- end of the body -->
  <script src="./js/postDOMScript.js"></script>
</body>

</html>
```

note: the `<script>` element blocks the browser from proceeding with reading the remaining HTML content until the JavaScript code has been loaded and executed

Async & defer

```
<script defer src="./js/first.js"></script>  
<script defer src="./js/second.js"></script>
```

defer attribute:

- doesn't block browser
- script loads in background and executes after HTML parsing
- maintains script execution order so **first.js** runs before **second.js**

```
<script async src="./js/big.js"></script>  
<script async src="./js/small.js"></script>
```

async attribute:

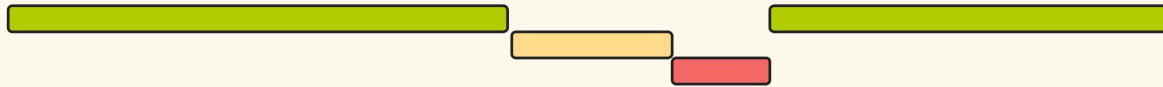
- doesn't block browser
- script loads asynchronously and executes as soon as it's ready
- no guarantee on script execution order so **small.js** might run before **big.js**

Async & defer

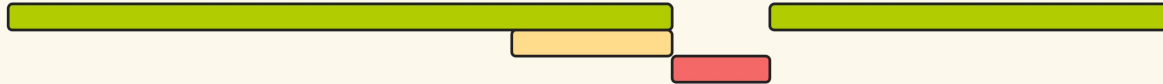
Regular script vs defer vs async

HTML parsing & building the DOM █
js downloading █
js executing █

`<script>`



`<script async>`



`<script defer>`



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Compatibility

for older browsers

HTML5 Shiv and Polyfills

```
<head>
  <!--[if lt IE 9]>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/html5shiv/3.7.3/html5shiv.js"></script>
  <![endif]-->
</head>
```

Polyfill:

fallback code which makes modern functionality available in older browsers for compatibility
Loading Polyfills is no longer a common practice

Specifically, the HTML5 shiv above is for older browsers that don't understand HTML5
You don't need to use this on modern sites and apps

[Polyfill - MDN definition](#)

[What is a Polyfill?](#)

Html Element with conditional comments

```
<!doctype html>
<!--[if lt IE 7]>      <html class="no-js lt-ie9 lt-ie8 lt-ie7"> <![endif]-->
<!--[if IE 7]>        <html class="no-js lt-ie9 lt-ie8"> <![endif]-->
<!--[if IE 8]>        <html class="no-js lt-ie9"> <![endif]-->
<!--[if gt IE 8]><!--> <html class="no-js">
</html>
```

You might see the above example in older code for compatibility reasons
You don't need to use this on modern sites and apps

[Conditional comment - Wikipedia](#)

Your turn

1.Boilerplate

Quickly Read a few of the following pages

- [HTML5 Template](#)
- [Basic HTML5 Template](#)
- [Basic HTML boilerplate](#)

Using the information in this lesson and the pages above, write your own HTML boilerplate that you think is best. Name it index.html

Remember to test your file on the [The W3C Markup Validation Service](#)

Create a folder named **01-boilerplate** with your solution

2.New JS

Build your first Javascript project

- Write your index.html file from scratch
- Add a main.js file that writes your name to the console

Create a folder named **02-new-js** with your solution

Note: all files should be in [kebab-case](#) ([italiano](#))

[JavaScript Debugging](#)

[Console Overview | Tools for Web Developers](#)

3.The cache

Remember the line?

```
<link rel="stylesheet" href="./css/styles.css?v=1.0">
```

- What does `?v=1.0` do?
- How does the browser cache work?

Create a folder named **03-the-cache**

Inside the folder create a **.txt** or **.doc** or **.md** file with your answers

Note: all files should be in kebab-case (italiano)

References

[HTML doctype declaration](#)

[HTML link](#)

[HTML meta](#)

Validate your code:

[The W3C Markup Validation Service](#)

Check browser compatibility:

[Can I use... Support tables for HTML5, CSS3, etc](#)

References

URL components

[URL Syntax](#)

[Understanding the Components of a URL](#)

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