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Web Technologies

Client-side technologies

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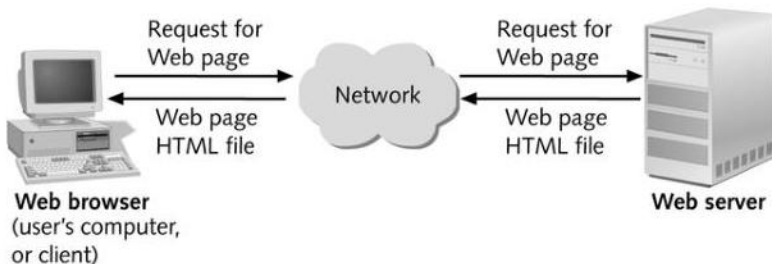
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Basic web architecture

The web is a two-tiered architecture:

- A web browser displays information content,
- A web server that transfers information to the client.



Web browser

- A web browser is a software application for retrieving, presenting, and traversing information resources on the World Wide Web.
- The primary purpose of a web browser is to bring information resources to the user.
- The maior web browsers are Mozilla Firefox, Apple Safari, Google Chrome, Microsoft Edge, and Opera.

Web server

The term **web server** or **webserver** can mean one of two things:

- A computer program that accepts HTTP requests and return HTTP responses with optional data content.
- A computer that runs a computer program as described above.

Introduction to HTML

- HTML stands for **H**yper **T**ext **M**arkup **L**anguage
- HTML is not a programming language, it is a Markup Language
- A markup language is a set of markup tags
- HTML uses markup tags to describe web pages
- HTML is not case sensitive language
- HTML documents contain HTML tags and plain text

HTML elements

- A tag is always enclosed in angle brackets `<>` like `<HTML>`
- HTML tags generally come in opening and closing pairs like `<HTML>` and `</HTML>`

HTML document

- All HTML documents must start with a document type declaration: `<!DOCTYPE html>`
- The HTML document itself begins with `<html>` and ends with `</html>`
- The visible part of the HTML document is between `<body>` and `</body>`

Introduction

A basic example is shown below

HTML Page Example

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title>Page Title</title>
5    </head>
6    <body>
7      Hello World!
8    </body>
9  </html>
```

Page Title

Hello World!

Headings

HTML headings are defined with `<h1> ... <h6>`

Headings Example

```
1 <h1>This is heading 1</h1>
2 <h2>This is heading 2</h2>
3 <h3>This is heading 3</h3>
4 <h4>This is heading 3</h4>
5 <h5>This is heading 3</h5>
6 <h6>This is heading 3</h6>
```

This is heading 1

This is heading 2

This is heading 3

This is heading 4

This is heading 5

This is heading 6

Paragraphs

Paragraphs Example

```
1 <p>This is a paragraph.</p>  
2 <p>This is another paragraph.</p>
```

This is a paragraph.

This is another paragraph.

Links

Link Example

```
1      <a href="https://www.univ-msila.dz">University of Msila
      </a>
```

[University of M'sila](https://www.univ-msila.dz)

Images

Image Example

```
1 
```



Tables

Headings Example

```
1  <table>
2    <tr>
3      <th>Name</th>
4      <th>Age</th>
5    </tr>
6    <tr>
7      <td>Mohamed</td>
8      <td>10</td>
9    </tr>
10   <tr>
11     <td>Ahmed</td>
12     <td>11</td>
13   </tr>
14 </table>
```

Name	Age
Mohamed	10
Ahmed	11

Formatting

Formatting Example

```
1 <b>This text is bold</b><br>
2 <strong>This text is important!</strong><br>
3 <i>This text is italic</i><br>
4 <em>This text is emphasized</em><br>
5 <small>This is some smaller text.</small>
6 <p>The word <mark>Computer</mark> is marked or highlighted.
   </p><br>
```

This text is bold

This text is important!

This text is italic

This text is emphasized

This is some smaller text.

The word **Computer** is marked or highlighted.

Styles

Style Example

```
1 <body style="background-color:powderblue;">
2   <h1>This is a heading</h1>
3   <p>This is a paragraph.</p>
4 </body>
```

This is a heading

This is a paragraph.

Styles

Style Example

```
1 <body>
2   <h1 style="background-color:powderblue;">This is a heading
   </h1>
3   <p style="background-color:tomato;">This is a paragraph.
   </p>
4 </body>
```

This is a heading

This is a paragraph.

Introduction

- The HTML **<script>** tag is used to define a client-side script (JavaScript).
- Common uses for JavaScript are:
 - Dynamic changes of content
 - Image manipulation
 - Form validation
- To select an HTML element, JavaScript allows the use of
 - **document.getElementById()** method.
 - **document.getElementsByClassName()** method.
 - **document.getElementsByName()** method.
 - **document.getElementsByTagName()** method.
 - **document.querySelector(css_selector)** method.
 - **document.querySelectorAll(css_selector)** method.

Example

This JavaScript example writes "Hello JavaScript!" into an HTML element with id="demo":

JavaScript example

```
1  <script>
2    document.getElementById("demo").innerHTML = "Hello
      JavaScript!";
3  </script>
```

Example

This JavaScript example changes the attribute **src** of of an HTML element with **id="image"**:

JavaScript example

```
1 <script>
2   document.getElementById("image").src = "picture.gif";
3 </script>
```

Example

JavaScript example

```
1  <script>
2    var p=document.getElementById('p1');
3    var p=document.getElementsByClassName('a');
4    var p=document.getElementsByTagName('p');
5    var p=document.getElementsByName('N');
6    var ps=document.querySelectorAll('p');
7    var ps=document.querySelectorAll('.a');
8    var ps=document.querySelectorAll('#p2');
9    var ps=document.querySelectorAll('[name="n"]');
10   var ps=document.querySelectorAll('[class="b"]');
11   var ps=document.querySelectorAll('[name]');
12   var ps=document.querySelectorAll('.a.e');
13   var ps=document.querySelectorAll('.a,.e');
14 </script>
```

Introduction

- Cascading Style Sheets (CSS) is used to format the layout of a webpage.
- CSS can control:
 - Color
 - Font
 - Text size
 - Spacing
 - Position
 - Background
 - Different styles for different resolutions
 - ...

Forms of using CSS

- **Inline**, when using the style attribute inside HTML elements

```
1 <h1 style="color:blue;">A Blue Heading</h1>
```

- **Internal**, when using a <style> element in the <head> section

```
1 <style>
2   h1 {color: blue;}
3 </style>
```

- **External**, when using a <link> element to link to an external CSS file

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

CSS Selector

- *
- #id
- .class
- .class1.class2 (elements having class1 and class2)
- .class1 .class2 (elements having class1 and class2 only)
- element
- element.class
- element,element
- element element
- element1>element2 (elements2 that are direct child to element1)
- ...

Questions ?