

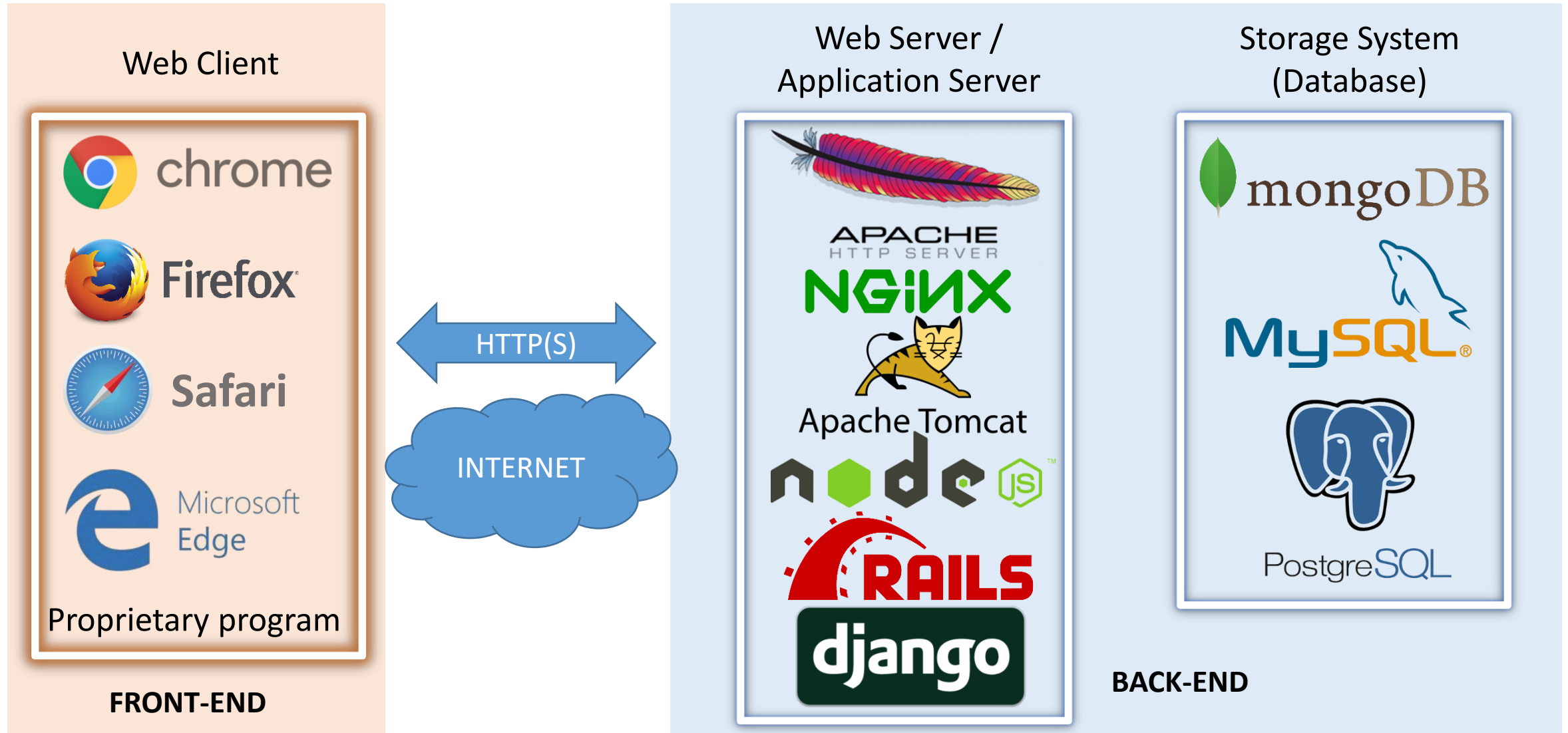
Internet Technologies

Introduction to HTML and CSS – Part 1



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Science

Entities in Web Application Development



HTML



- **HTML** is a hypertext markup language (γλώσσα σημάνσεως υπερκειμένου).
- **Hypertext** means “text with links in it”.
- Any time you click on a word that brings you to a new webpage, you’ve clicked on hypertext.
- **We need to use HTML in order to give the content structure & meaning.**
- A markup language is a programming language used to make text do more than just sit on a page: it can turn the *markup* into images, links, tables, lists, forms and much more.

CSS



- Stands for *Cascading Style Sheets*
- Presentation language created to give the content **style & appearance**.
- CSS is not a part of HTML
- Implemented independently of HTML.

Distinguish between HTML and CSS



- The HTML **p** *element* is used to display a paragraph of text on a web page. It provides the most value for the content.

- Example:

```
<p>Get me Rambo</p>
```

Get me Rambo

- CSS uses a *selector* (discussed later) on the **p** element in order to determine the **color**, font size, **font weight**, and other stylistic properties of the paragraph.

- Example:

```
<p style="color:red;font-size:22pt">Get me Rambo</p>
```

Get me Rambo

Basic HTML page structure



```
<!DOCTYPE html>
<html>
  <head>
    <title>CS 425</title>
  </head>
  <body>
    ... contents of the page...
  </body>
</html>
```

Saved in *filename.html* file

Basic HTML page structure

- `<!DOCTYPE>` declaration must be the very first thing in an HTML document
- Informs the web browser about what version of HTML the page is written in
- `!DOCTYPE html` for HTML5

Metadata that doesn't appear in the viewport of the browser

Contents that render in the viewport of the browser

```
<!DOCTYPE html>
<html>
  <head>
    <title>CS 425</title>
  </head>
  <body>
    ... contents of the page ...
  </body>
</html>
```

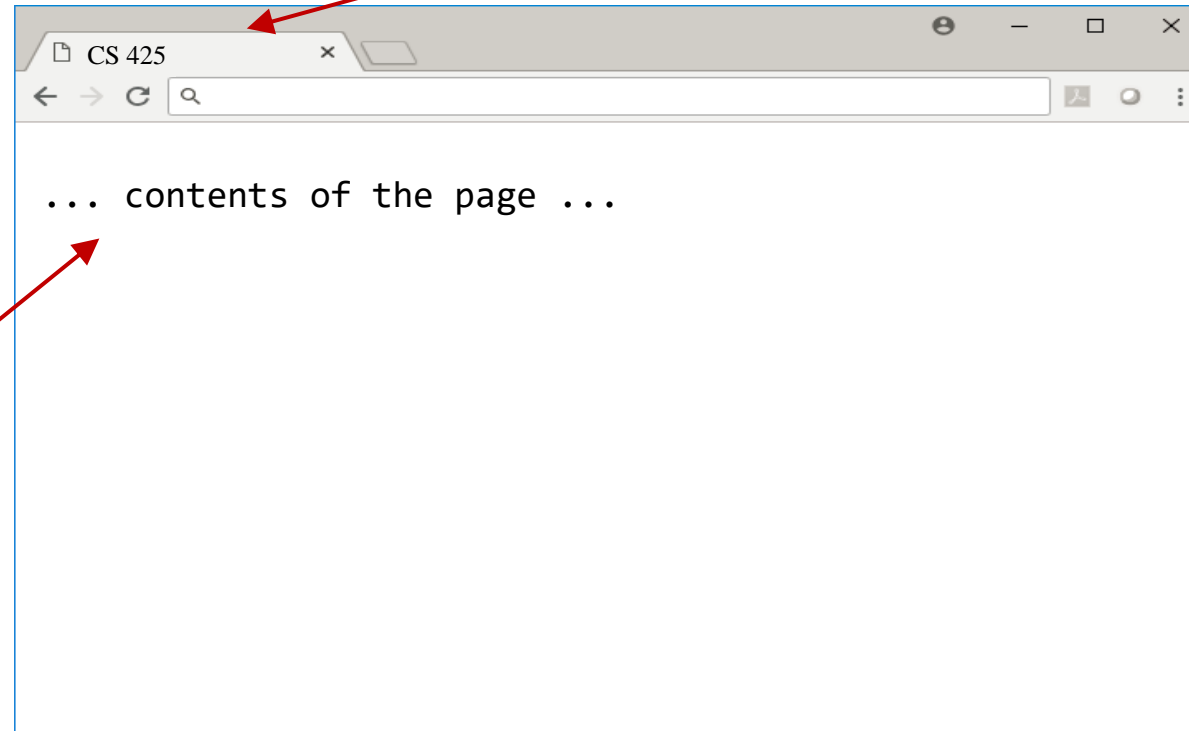
E.g. `<title>` shows up as the name of the tab

Saved in *filename.html* file

Basic HTML page structure



<title>CS 425</title>



<body>

... contents of the page ...

</body>

HTML elements, tags and attributes



```
<p>  
  HTML is <em>awesome!!!</em>  
    
</p>
```

- An element usually has start and ending **tags** (**<p>** and **</p>**)
 - content: stuff in between start and end tags
- An element can be self-closing (**img**)
- A start tag can contain **attributes** (**src="puppy.jpg"**)
- Elements can contain other elements (**p** contains **em** and **img**)

Some HTML elements

(to place within `<body>`)

This is heading 1

This is heading 2

This is heading 3

This is heading 4

This is heading 5



This is heading 6

Top-level heading h1, h2, ... h6	<code><h1>Moby Dick</h1></code>
Paragraph	<code><p>Get me Rambo</p></code>
Line break	This is my first line <code>
</code> and this is my second
Image	<code></code>
Link	<code></code> Click here! <code></code>
Strong (bold)	<code>Be BOLD</code>
Emphasis (italic) em or i	He's my <code></code> brother <code></code> and friend.

Some HTML elements

(to place within `<body>`)




Unordered (bulleted) list	<pre> First bullet Second bullet </pre> <ul style="list-style-type: none">• First bullet• Second bullet
Ordered (bulleted) list	<pre> First bullet Second bullet </pre> <ol style="list-style-type: none">1. First bullet2. Second bullet
 <p>Audio</p>	<pre><audio controls> <source src="..." type="audio/mpeg"/> <source src="..." type="audio/ogg"/> <source src="..." type="audio/wav"/> </audio></pre>
 <p>Video</p>	<pre><video width="..." height="..." controls> <source src="..." type="video/mp4"/> <source src="..." type="video/webm"/> <source src="..." type="video/ogg"/> </video></pre>

Some HTML elements

(to place within `<body>`)



<p>Tables <code><table></code>, <code><tr></code>, <code><td></code></p>	<pre><table> <tr> <td>Jill</td> <td>Smith</td> </tr> </table></pre> 
<p>Grouping related elements, where group occupies entire lines (forces line break before & after)</p>	<pre><div>I will display as a block element on my own line, above the em tag</div><div>I will display beneath the div tag</div></pre>
<p>Grouping related elements, where group is within a single line (no forced line breaks)</p>	<pre>I will display inline next to the em tagI will display next to the span tag</pre>

Some HTML elements

(to place within **<body>**)



Forms where users can input data	<form> , <input> , <select> , <textarea>
Include CSS stylesheets in head section	<link>
Add Javascript to a page in head section (can be used in body as well)	<script>

Some HTML elements

(to place within **<body>**)



Forms where users can input data	<form> , <input> , <select> , <textarea>
Include CSS stylesheets in head section	<link>
Add Javascript to a page in head section (can be used in body as well)	<script>

```
<select>
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
  <option value="opel">Opel</option>
  <option value="audi">Audi</option>
</select>
```

Volvo ▾

Volvo

Saab

Opel

Audi

```
<textarea rows="4" cols="50">
Here you can place multi-line text.
</textarea>
```

Here you can place multi-line text.

Driving problem behind CSS



- What font type and size does `<h1>Introduction</h1>` generate?
 - Answer: Some default from the browser
- Early HTML - Override defaults with attributes in HTML elements
 - `<table border="2" bordercolor="black">`
- Cascading Style Sheets were added to address this:
 - Specify style to use rather than browser default
 - Not have to code styling on every element



What is CSS?

- **CSS (Cascading StyleSheets)**
 - Describes the **style and appearance** of a web page
 - Composed of CSS rules, which define sets of styles

```
selector {  
    property: value;  
}
```




What is CSS?

- A CSS file is composed of **style rules**:

```
selector {  
    property: value;  
}
```

- **selector**: Specifies the HTML element(s) to style.
- **property**: The name of the CSS style.
- **value**: The value for the CSS style.

Saved in *filename.css* file

CSS

```
// NOT REAL CSS  
fork {  
  color: gold;  
}
```

"All forks on the table
should be gold"



CSS



```
p {  
  color: blue;  
  font-weight: bold;  
}
```

"All <p> elements on the page should be blue and bold"

The screenshot shows the Wikipedia page for 'Cupcake'. The browser address bar displays 'https://en.wikipedia.org/wiki/Cupcake'. The page content includes a 'Recipes' section with a paragraph explaining that a standard cupcake uses the same basic ingredients as standard-sized cakes: butter, sugar, eggs, and flour. It also mentions that cupcake batter can be flavored with raisins, berries, nuts, or chocolate chips. The 'Variants' section lists several types: 'cake in a mug', 'cake in a jar', 'butterfly cake', 'cake ball', and 'gourmet cupcake'. The 'Pans and liners' section includes an image of a muffin tin and text explaining that cupcakes were originally baked in heavy pottery cups but are now commonly baked in metal muffin tins. The page also features several small images of different cupcake styles, such as 'Savory Cupcakes', 'A mass-produced Hostess CupCake', 'A butterfly cake', and a collection of various decorated cupcakes.

Linking CSS in HTML



```
<!DOCTYPE html>
<html>
  <head>
    <title>Title here</title>
    <link rel="stylesheet" href="filename.css" />
  </head>
  <body>
    ... contents of the page...
  </body>
</html>
```



Some CSS properties

- There are over [500 CSS properties](#)! Here are a few:

Font face (mdn)	font-family: Helvetica;
Font color (mdn)	color: gray;
Background color (mdn)	background-color: red;
Border (mdn)	border: 3px solid green;
Text alignment (mdn)	text-align: center;

- Aside: [Mozilla Developer Network](#) (MDN) is the best reference for HTML elements and CSS properties
 - The actual W3 spec is very hard to read (meant for browser developers, not web developers)

Some CSS properties

(examples)



- Font face: **font-family**

```
h1 {  
  font-family: Helvetica;  
}
```

Moby Dick

- Font color: **color**

```
h1 {  
  color: green;  
}
```

Moby Dick

- Background color: **background-color**

```
body {  
  background-color: pink;  
}
```

Moby Dick

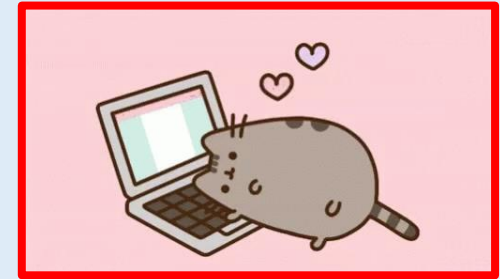
Some CSS properties

(examples)



- Border: **border** ([border shorthand syntax](#))

```
img {  
  border: 3px solid red;  
}
```



- Text alignment: **text-align** (note: don't use **<center>**)

```
p {  
  text-align: center;  
}
```

Welcome to Web Programming and Applications! In this course, you will learn state-of-the-art development techniques.



Main ways to define CSS colors

- 140 pre-defined names ([list](#))

```
color: black;
```

- [Hex values](#)

```
color: #00ff00;
```

```
color: #0f0;
```

```
color: #00ff0080;
```

- `rgb()` and `rgba()`

```
color: rgb(34, 12, 64);
```

```
color: rgba(0, 0, 0, 0.5);
```

- The "a" in rgba stands for alpha channel and is a transparency value
- Prefer more descriptive:
 1. Predefined name
 2. rgb / rgba
 3. Hex

Font-related CSS



Example	Description
<code>text-decoration</code>	Can set <code>underline</code> , <code>line-through</code> (strikethrough) or <code>none</code> (e.g. to unset underline on hyperlinks) (mdn)
<code>text-transform</code>	Can change font case , i.e. <code>uppercase</code> , <code>lowercase</code> , <code>capitalize</code> , <code>none</code> (mdn)
<code>font-style</code>	Can set to <code>italic</code> or <code>normal</code> (e.g. to unset italic on <code></code>) (mdn)
<code>font-weight</code>	Can set to <code>bold</code> or <code>normal</code> (e.g. to unset bold on <code>h1 - h6</code>) (mdn)
<code>letter-spacing</code>	Controls the space between letters (mdn)