CSS
Cascading Style Sheets

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Cascading Style Sheets

Introduction

• CSS (Cascading Style Sheets):
  – A style sheet is a set of instructions each of which tells a browser how to draw a particular element on a page
  – HTML documents are a collection of elements arranged in a hierarchy
Introduction

• Hierarchy → inheritance:
  – If you apply style to an element (*parent*) which contains other elements (*children*) then this will be inherited by the elements inside.
Introduction

• **Rules** have two parts: a selector and a declaration
  – The **selector** tells a browser which elements in a page will be affected by the rule. There are a number of different types of selector.
  – The **declaration** tells the browser which set of **properties** to apply. There are many different properties.

```html
<html>
<head><title>CSS example</title></head>
<body>
<h1>University of Alicante</h1>
<p>
<img src="logo.png" />
<a href="http://www.ua.es/">University of Alicante</a>
</p>
<div>
<h1>Department of Software and Computing Systems</h1>
<p>
The Department of Software and Computing Systems teaches the following courses:
</p>
<h2>Teaching Staff</h2>
</div>
</body>
</html>
```
Cascading Style Sheets

Introduction

<style type="text/css">
h1 {color: blue;}

h2 {color: red;}

p {font-size: 1.4em;}
</style>
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Exercise

• Give color green for the paragraph

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Exercise - Solution

• One solution:
  p {font-size: 1.4em;}
  p {color: green;}

Also (better):
  p {font-size: 1.4em; color: green;}

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Introduction

• Some examples:

body {background: white; color: black; font-size: 15px;}

h1 {background: blue; font-size: 30px;}

p {background: yellow;}

strong {background: red;}

em {background: red; color: yellow;}

• If the value has two or more words:

p {font-family: "Times New Roman", serif}

• Comments (1 or more lines):

/*
... */

• Example:

/* Paragraph */

p {
  text-align: center; /* Center */
  color: black; /* Black */
  font-family: Arial; /* Font face */
}
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Introduction

• Different versions:
  – CSS1: CSS level 1. 1996.
    • http://www.w3.org/TR/REC-CSS1
    • http://www.w3.org/TR/REC-CSS2/
  – CSS3: CSS level 3. (Working draft)

• Problem: incompatibilities between browsers

More information:
  – W3C: http://www.w3.org/
  – W3 Schools: http://www.w3schools.com/
Cascading Style Sheets (CSS) is a simple mechanism for adding style (e.g., lines, colors, spacing) to Web documents. Textbooks, books, making hits of widgets, etc, can be formatted using CSS. For background information on CSS, see the W3C home page. For more information on CSS, see the W3C home page. For more information on CSS, see the W3C home page.
Cascading Style Sheets

**Linking HTML and CSS**

- Three ways of making a style sheet affect the appearance of an HTML document:
  - External (linking):
    
    ```html
    <head>
     <link rel="stylesheet" href="style.css" type="text/css" media="screen" />
    </head>
    ```
  - Internal (embedded):
    
    ```html
    <style type="text/css" media="screen">
    p {text-indent: 10pt}
    </style>
    </head>
    ```
  - Inline:
    
    ```html
    <p style="text-indent: 10pt">Indented paragraph</p>
    ```
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Exercise

• Change the previous example: link the web page to an external style sheet

Cascading Style Sheets

Linking HTML and CSS

• External:
  – Many pages can be linked to a single style sheet
  – Making changes to this style sheet can then change the appearance of all the web pages linked to it

• Internal:
  – When the style sheet is used for only one web page

• Inline:
  – When the style is used for only one HTML element
Cascading Style Sheets

Linking HTML and CSS

• The most popular method is the external style sheet:
  `<link rel="stylesheet" href="style.css" type="text/css" media="screen" />`

• `href:`
  – Tells the browser where to locate the style sheet, with either a relative or absolute URL

• `rel:`
  – Tells the browser what to expect
    • `stylesheet`
    • `alternate stylesheet`

• If you define different alternative style sheets, you have to assign a title to each style sheet
  `<link rel="alternate stylesheet" href="style.css" type="text/css" media="screen" title="Style 1" />`

• Example: webpage of Spanish Social System (Seguridad Social)
Cascading Style Sheets

Linking HTML and CSS

```html
<link rel="stylesheet" href="/ireach/internet/css/estilos_B.css" media="screen" type="text/css">

<link rel="alternate stylesheet" href="/ireach/internet/css/estilosHC_B.css" media="screen" type="text/css" title="2.Alto Contraste">

<link rel="alternate stylesheet" href="/ireach/internet/css/estilosHT_B.css" media="screen" type="text/css" title="3.Texto Grande">

<link rel="stylesheet" href="/ireach/internet/css/estilosP_B.css" media="print" type="text/css">
```
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Linking HTML and CSS

- **type**: Tells the browser the type of document linked
  - Common values:
    - text/css
    - text/javascript
Cascading Style Sheets

Linking HTML and CSS

• media:
  – Tells the browser the type of device the style sheet is for:
  – screen: Computer display
  – print: Printer
  – projection: Projector
  – aural: Speech syntetizer
  – braille: Braille line
  – tty: Console (text) display
  – tv: Television
  – all: All devices (default value)

Cascading Style Sheets

Rules, selectors, and properties

• Rules: the selector, followed by the set of properties, which are surrounded by curly braces (that is { and })

```
h1 {color: #FF0000; background: #00FF00}
```
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Rules, selectors, and properties

• **Selector:**
  – Type: select every instance of the specified type of HTML element
  – Class: class name preceded by “.”
  – ID: identifier name preceded by “#”
  – Pseudo-classes: name of the pseudo-class

Rules, selectors, and properties

• Property and value: the **property name** followed by a **colon**, a **space** and then the **value** (if necessary, with its **unit**, though no **space** before the unit!)

• Advices:
  – Make sure you get the property name exactly right: it's got to be color, not colour or collor
  – All CSS properties can only take a specified range of values: get used to consulting the specification
  – Don't get the punctuation wrong (don't forget the semi-colon between properties)
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Exercise

• Write a new webpage
• Give a background color (light gray) and a color (dark blue) to the whole page
  – Selector: html or body
  – Property: background-color
    • Value: #999999
  – Property: color
    • Value: #0000AA

Cascading Style Sheets

Exercise - Solution

```html
html {
  background-color: #999999;
  color: #0000AA;
}
```

• Tips:
  • The style sheet is easier to read if you put each property on a new line
  • it's very easy to forget semi-colons. Always put that extra one on the last property in a statement. You won't forget to do it when you add a new property later on
What are style sheets?

A style sheet is a set of instructions each of which tells a browser how to draw a particular element on a page. It's very important to grasp this idea of HTML elements when you are working with CSS. Well-formed HTML documents are a collection of elements arranged in a kind of containment hierarchy.

Rules, selectors, and properties

- **Class**: is an attribute we can add to HTML elements so that we can identify them from the style sheet, using a class selector, and give them their own style:

  ```html
  <p class="footer">
  </p>
  ```

- The form of a class selector is very simple, and it would select the specified element with the class attribute class-name:

  ```css
  p.footer {
      color: blue;
  }
  ```
Cascading Style Sheets

Rules, selectors, and properties

• If you don’t specify an element, the class name applies to all the elements:

```css
.important {
  color: red;
}
```

```html
<p class="important">
  Bla, bla, bla.
</p>
<ul class="important">
  <li>Bla, bla.</li>
  <li>Bla, bla.</li>
</ul>
```

Cascading Style Sheets

Exercise

• Write a new webpage with three paragraphs
• Define three classes for the three paragraphs:
  - `<p class="normal">` → Color dark blue
  - `<p class="important">` → Color red, background color yellow
  - `<p class="extra">` → Color green, background color gold
Cascading Style Sheets

Exercise - Solution

<html>
<head><title>Three paragraphs</title>
<style type="text/css">
.normal {color: #0000AA;}
.important {color: red; background-color: yellow;}
.veryimportant {color: yellow; background-color: red;}
</style>
<body>
<p class="normal">This is the first paragraph. Bla, bla, bla, bla.</p>
<p class="important">This is the second paragraph. Bla, bla, bla, bla.</p>
<p class="veryimportant">This is the third paragraph. Bla, bla, bla, bla.</p>
</body></html>
Cascading Style Sheets

Text properties

• `background-color`: background color of element
• `color`: color of text

### Colors:

- Name of color → red
- rgb(x,x,x) → rgb(255,0,0)
- rgb(y%, y%, y%) → rgb(100%,0%,0%)
- #rrggbb → #ff0000
- #rgb = #rrggbb → #f00 = #ff0000
Text properties

- **font-family:** specifies a list of one or more fonts using the family name of each
  - The font names are separated by commas
  - A browser then uses the first font in the list that is installed on its system
  - At the end of that list you should always put one of five generic font names:
    - serif (e.g. Times)
    - sans-serif (e.g. Helvetica)
    - cursive (e.g. Zapf-Chancery)
    - fantasy (e.g. Western)
    - monospace (e.g. Courier)
  - If you want to use a font with more than a single word name make sure you put it between quote marks, like this: "Times New Roman"

- **font-size:** can take what is referred to in CSS as length values
Text properties

• Units:
  – %: percentage
  – in: inches
  – cm: centimeters
  – mm: millimeters
  – em: equal to the current size of text
  – ex: equal to letter “x” height
  – pt: point (1 pt = 1/72 inches)
  – pc: pica (1 pc = 12 points)
  – px: pixels

• Keywords:
  – xx-small, x-small, small, medium, large, x-large, xx-large
  – smaller, larger

• Absolute:
  – in, cm, mm, pt, pc, px

• Relative:
  – %, em, ex
Cascading Style Sheets

Text properties

• Best unit: **em**
  – If you set the font-size using em units, they will always remain relative to the main text on the page, whatever that might be
  – For example, if you set `<h1>` to `2em`, it will be twice as big as the rest of the text on the page

Cascading Style Sheets

Text properties

• **font-style**: sets the style of the font
  – *normal*: default, normal font
  – *italic*: an italic font
  – *oblique*: an oblique font

• **font-variant**: displays text in normal or small-caps font
  – *normal*
  – *small-caps*
Text properties

- **font-weight**: controls the boldness of text
  - normal
  - bold
  - bolder
  - lighter
  - 100, 200, ..., 900

Text properties

- **text-align**: controls the justification of text
  - left
  - right
  - center
  - justify
Text properties

- `text-decoration`: for underlining and striking through text
  - none
  - underline
  - overline
  - line-through
  - blink

Text properties

- `text-transform`: controls the letters in an element
  - none
  - capitalize: each word in a text starts with a capital letter
  - uppercase
  - lowercase
Text properties

- **letter-spacing**: controls the spacing between characters
- **word-spacing**: controls the spacing between words
- **line-height**: sets the distance between lines

Exercise

- Use the different text properties:
  - Add some special styles to make the headings stand out more from the main text
  - Make the text in the paragraphs look more clean and attractive
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Background

- **background-color**: defines the background color
- **background-image**: puts an image in the background
  
  background-image: url(logo.png);
- **background-repeat**: defines how the background image is going to be repeated
- **background-position**: defines the position of the background image

Cascading Style Sheets

Background

- **background-repeat**: 
  - repeat: the image will tile to fill the whole element
  - repeat-x: the image will only repeat horizontally across the element
  - repeat-y: the image will only repeat vertically down the element
  - no-repeat: only a single instance of the element will appear
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Exercise

• Create a new web page
• Put an image as background image
• Try the different “repeat” values

Background

• `background-position`: specify 2 values, the first for where you want the image to be horizontally, the second for where it will be vertically
  – Length values
  – `Keyword values`: top, bottom, left, right, center
Cascading Style Sheets

Background

- Example:
  - `background-position: center center` - places the image right in the center of the element, both horizontally and vertically
  - `background-position: top left` - places the image in the top left corner
  - `background-position: right bottom` - places the image in the bottom right corner

Cascading Style Sheets

Exercise

- Create a new web page
- Put an image as background image in the center of the web page
Links

• Links can have four different states:
  - link: this is the normal state
  - visited: when a browser has visited that destination recently
  - hover: while the cursor is over the link
  - active: while the link is being clicked
• We can create rules that apply to links in any of these states

Links

• Pseudo-classes:
  - a:link {...}
  - a:visited {...}
  - a:hover {...}
  - a:active {...}
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Exercise

• Give links in both their normal and visited state a background-color of #95b7cd and make their text color the same as the regular text on the page → A user can't tell whether a link is to a page they have recently viewed or not.
• Give links in their hover state a background-color of #aaddee
• Give links in their active state a background-color of #3cc7f0

Cascading Style Sheets

Exercise - Solution

```css
a:link {
  color: #666666;
  background-color: #95b7cd;
}
a:visited {
  color: #666666;
  background-color: #95b7cd;
}
a:hover {
  background-color: #aaddee;
}
a:active {
  background-color: #3cc7f0;
}

Roll over and click the links to see the effect of the hover and active states
```
Cascading Style Sheets

Exercise

• Most browsers have a default setting for links, which is to underline them → How can we change this?
• How can we draw a line through the text of visited links?

Cascading Style Sheets

Exercise - Solution

```css
a:link {
    ...
    text-decoration: none;
}

a:visited {
    ...
    text-decoration: line-through;
}
```
Box model

- Boxes: each element of the web page is represented by a “box”

![Box model diagram]

- 

Cascading Style Sheets

Box model

- `margin` is the distance between the edge of an element and its adjacent elements
- `padding` is the distance between the edge of an element and its content
Cascading Style Sheets

Box model

- padding, border and margin are divided into four edges: top, bottom, left y right
- Therefore, we have: border-left, border-right, border-top and border-bottom (and the same for margin and padding)
- padding, border and margin apply the values to all four edges

Cascading Style Sheets

Box model

- Borders can be applied either to all edges of an element, or each edge individually
- There are three characteristics of a border you can control:
  - Its style, using values like
    - solid
    - dotted
    - dashed
    - double
  - Its width, using all the usual length values
  - Its color, using the color values
Cascading Style Sheets

Exercise

• Create a new web page
• Write four paragraphs
• Apply a different border style and background to each paragraph
Cascading Style Sheets

Exercise - Solution

.p1 {
  background-color: #999999;
  border: solid 5px green;
}
.p2 {
  background-color: #aa6666;
  border: dotted 5px green;
}
.p3 {
  background-color: #66aa66;
  border: dashed 5px green;
}
.p4 {
  background-color: #6666aa;
  border: double 5px green;
}

Cascading Style Sheets

Exercise 1

• Read exercise document: Curriculum vitae
Layout

- `<span>` and `<div>` are the main building blocks used in CSS page layouts
- They are simply generic HTML block elements
  - `span`: inline
  - `div`: block
- You can wrap it around the different blocks of content you want to position on your page

Layout

- `<span>` and `<div>` need unique `id` attributes so that we can identify them and give them positioning properties in the style sheet
- `ids` must be unique in any single HTML document, otherwise HTML document is not valid
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Layout

• Example:
  – HTML:
    `<div id="header">
    ...
    </div>`
  – CSS:
    `#header {background-color: gray; color: red}

• Basic three column layout with a navigation bar (navbar) on the left and a sidebar on the right
  – It uses a combination of static, relative and absolute positioning
Layout

• Both #header and #main-text are going to be positioned statically
  – They simply flow down the page, one after the other, in the same order as they occur in the XHTML
Cascading Style Sheets

Layout

body {
  margin: 0;
  background-color: #aaaaaa;
  text-align: center;
}

#header {
  background-color: #0000ff;
  color: #ffffff;
  text-align: center;
  font-size: 2em;
}

#content {
  position: relative;
}
Cascading Style Sheets

Layout

```css
#sidebar {
    position: absolute;
    top: 0;
    right: 0;
    width: 198px;
    background-color: #00ff00;
}
```

This is the header of the web page

This is the main text. This is the main text.

This is the footer. This is the footer.
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Exercise 2

• Read exercise document: 2-columns layout for curriculum vitae