

# HTML

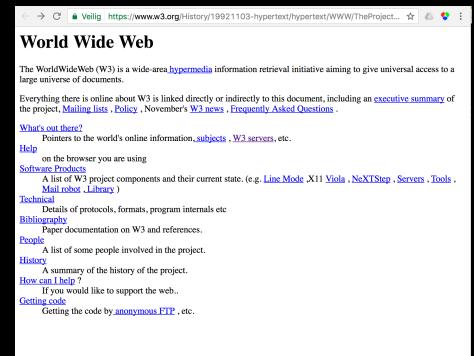
week 1

# Introduction

p. xvi-xxi

# HTML

- HyperText Markup Language
- markup language interpreted by browser
- 1990 CERN
- now: HTML5



<https://www.w3.org/History/19921103-hypertext/hypertext/WWW/TheProject.html>

What is HTML? HTML is markup language (“structuurtaal”), kind of programming language. The browser understands the language and can interpret it.

Short history. Image shows replica of first web site.

# Browser

- “A **web** browser is a software application for retrieving, presenting and traversing information resources on the World Wide Web.”
  - desktop
  - mobile
  - ...

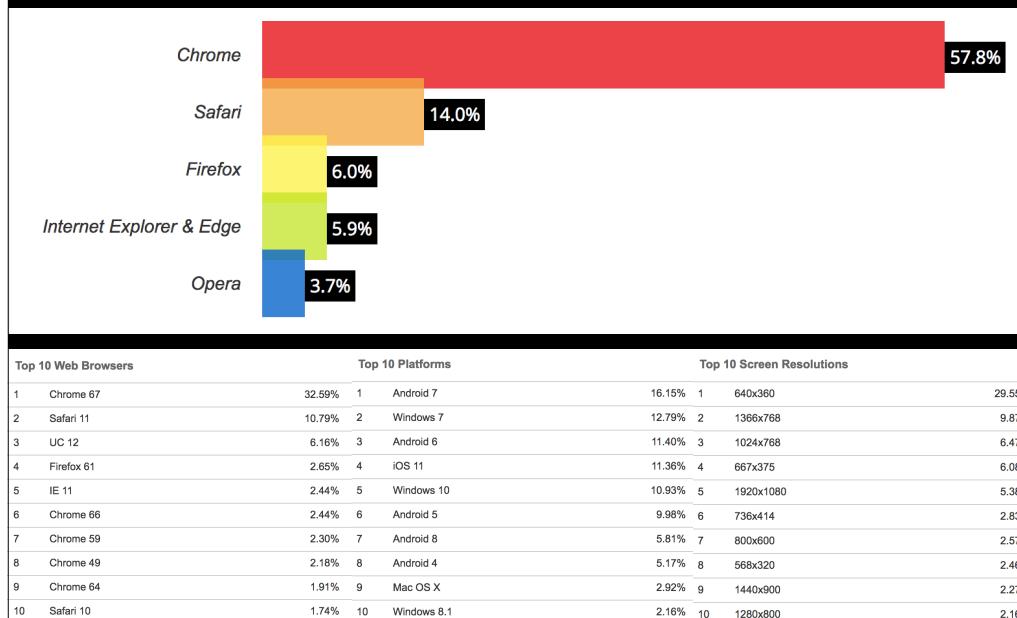


[https://en.wikipedia.org/wiki/Web\\_browser](https://en.wikipedia.org/wiki/Web_browser)

<http://www.junkmail.co.za/blog/wp-content/uploads/2015/07/browser-logos.jpg>

There are several types of browsers. We make websites readable in all browsers, on all devices. You have to install several browsers on your laptop and smartphone/tablet in order to test.

# Statistics



Writing correct html is required to be able to serve a large variety of browsers, platforms and screen resolutions.

Stats & screenshots based on info of 07/2018 ==>

<https://www.w3counter.com/globalstats.php?year=2018&month=7>

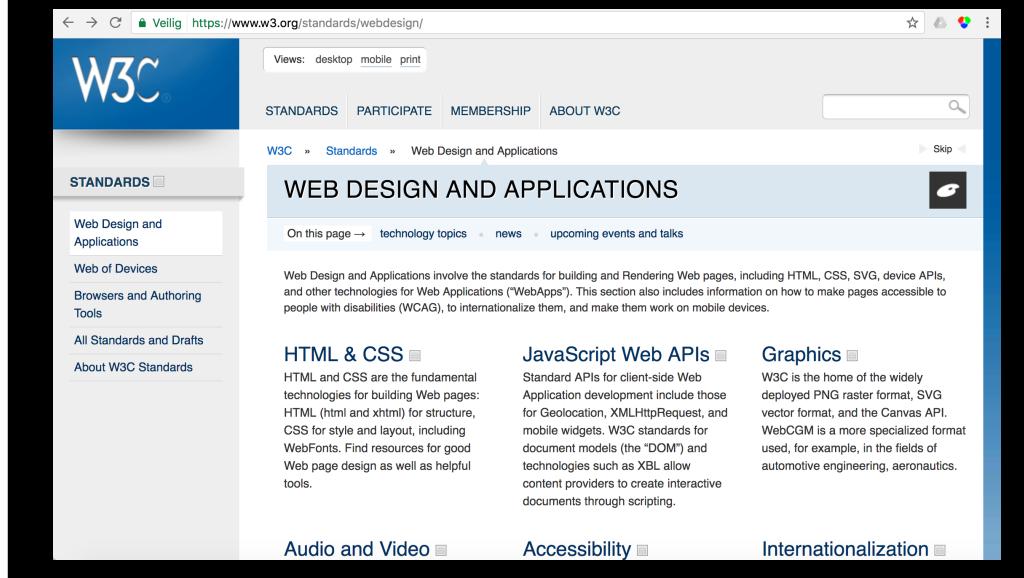
(report generated 07/31/2018 based on the past month's traffic to all websites that use W3Counter's free web stats)

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Extra info and graphics on <http://gs.statcounter.com/>

Stats are based on aggregate data collected by StatCounter on a sample exceeding 10 billion pageviews per month collected from across the StatCounter network of more than 2 million websites. Stats are updated and made available every day, however are subject to quality assurance testing and revision for 45 days from publication.

# Web standards & Specifications



[https://en.wikipedia.org/wiki/World\\_Wide\\_Web\\_Consortium](https://en.wikipedia.org/wiki/World_Wide_Web_Consortium)

In het verleden zetten ontwikkelaars van browsers de HTML naar hun hand. Daardoor kon een website niet op alle browsers weergegeven worden. Om dat tegen te gaan, is het W3C opgericht.

Het W3C is een internationale organisatie die waakt over webstandaarden, maar heeft niet de bevoegdheid om die op te stellen zoals ISO. De HTML-specificaties van het W3C zijn daarom formeel niet meer dan aanbevelingen. In de praktijk worden de W3C-aanbevelingen echter als standaarden gezien, mede omdat alle belangrijke browserfabrikanten in het W3C samenwerken.

<https://www.w3.org/standards/webdesign/>

W3C waakt er dus over dat er maar één universele versie van HTML is.

# Recommendations

The screenshot shows a web browser displaying the W3C Recommendations page for HTML. The URL is https://www.w3.org/TR/2016/REC-html51-20161101/dom.html#kinds-of-content-heading-content. The page is titled "Recommendations" and includes a sidebar labeled "W3C Recommendation". The main content area is divided into several sections:

- § 3.2.4.2.3. SECTIONING CONTENT**:  
Sectioning content is content that defines the scope of [headings](#) and [footers](#).  
⇒ [`<article>`](#), [`<aside>`](#), [`<nav>`](#), [`<section>`](#)  
Each [sectioning content](#) element potentially has a heading and an [outline](#). See the section on [§4.3.10 Headings and sections](#) for further details.  
**NOTE:**  
There are also certain elements that are [sectioning roots](#). These are distinct from [sectioning content](#), but they can also have an [outline](#).
- § 3.2.4.2.4. HEADING CONTENT**:  
Heading content defines the header of a section (whether explicitly marked up using [sectioning content](#) elements, or implied by the heading content itself).  
⇒ [`<h1>`](#), [`<h2>`](#), [`<h3>`](#), [`<h4>`](#), [`<h5>`](#), [`<h6>`](#)
- § 3.2.4.2.5. PHRASING CONTENT**:  
Phrasing content is the text of the document, as well as elements that mark up that text at the intra-paragraph level. Runs of [phrasing content](#) form [paragraphs](#).  
⇒ [`<a>`](#), [`<abbr>`](#), [`<area>`](#) (if it is a descendant of a [`<map>`](#) element), [`<audio>`](#), [`<b>`](#), [`<bdi>`](#), [`<bdo>`](#), [`<br>`](#), [`<button>`](#), [`<canvas>`](#), [`<cite>`](#), [`<code>`](#), [`<data>`](#), [`<datalist>`](#), [`<del>`](#), [`<dfn>`](#), [`<em>`](#), [`<embed>`](#), [`<i>`](#), [`<iframe>`](#),

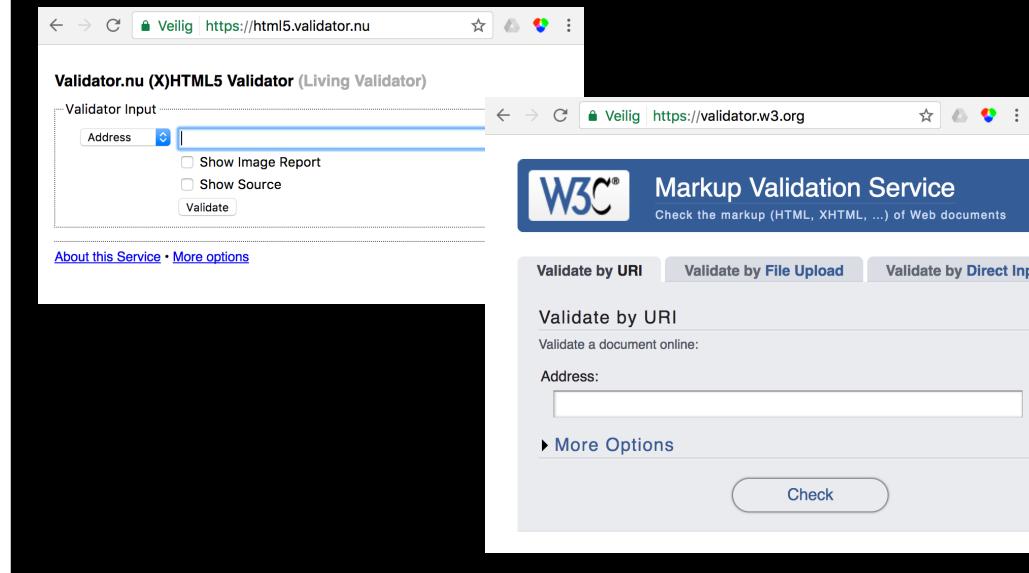
In de recommendations beschrijft het W3 hoe een “user agent”\* een bepaald element moet behandelen, welke content het element kan bevatten enz. Kortom, het definieert de volledige grammatica van HTML.

<https://www.w3.org/TR/2016/REC-html51-20161101/dom.html> of <http://w3c.github.io/html/index.html>

De aanbevelingen zijn geschreven in een behoorlijk leesbare taal. Deze documenten helpen je ook om de betekenis en het gedrag van een element te begrijpen.

\* <https://www.whoishostingthis.com/tools/user-agent/>

# Valid HTML

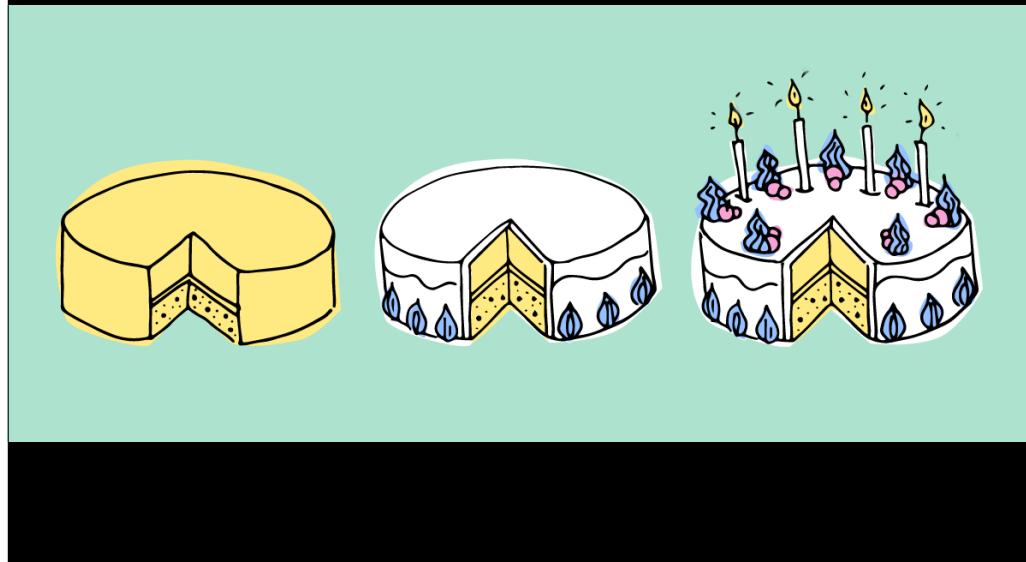


<https://validator.w3.org/>

<https://html5.validator.nu/>

These tools verify if a html-file is correct: does the code comply with the recommendations of the W3C?

# Progressive Enhancement



Gebruikers zijn voorzien van allerlei platformen, software, schermresoluties en kunnen die aanpassen zoals ze willen. HTML is voortdurend in beweging. Als ontwikkelaar heb je dus geen controle over hoe je product weergegeven wordt op dit moment of binnen enkele jaren.

Voorzie bovenal een basisversie die iedereen goed kan gebruiken, ongeacht de user agent. Hierbij is correcte HTML een vereiste. Nadien kan je de basisversie opsmukken met lay-out en extra features.

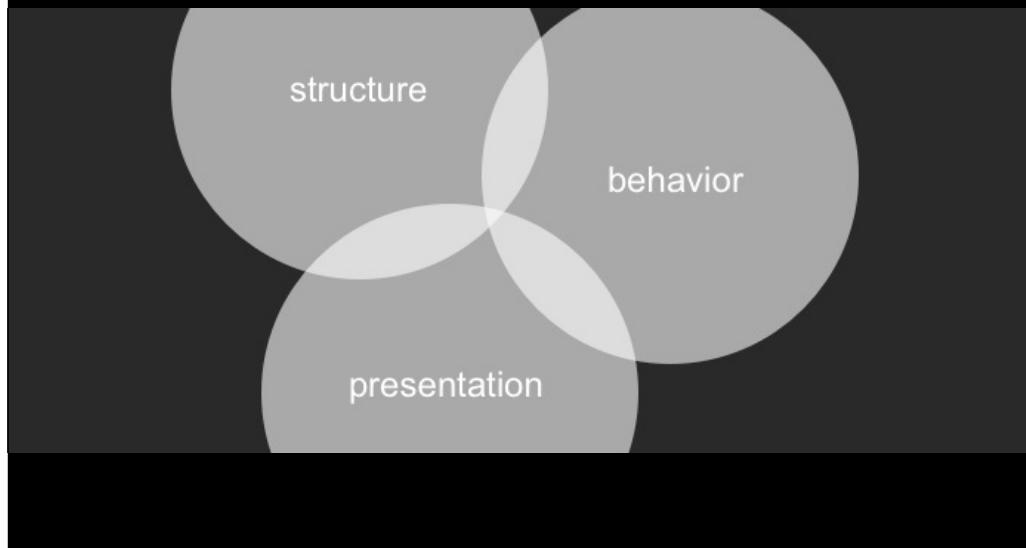
<https://www.shopify.com/partners/blog/what-is-progressive-enhancement-and-why-should-you-care>

# Progressive Enhancement



<https://www.shopify.com/partners/blog/what-is-progressive-enhancement-and-why-should-you-care>

# Separation



Components are kept *separate* but work together, also areas of *divergence*

html: structure

CSS: presentation

JavaScript: behaviour

<http://blog.teamtreehouse.com/the-separation-of-structure-presentation-and-behavior-is-dead>

# Webpage Building blocks

Chapter 1

# Thinking in labels

**Gekaramelliseerde rode kool met warme tutti frutti**

4 personen • 1 u

halve rode kool  
3 eetl balsamico azijn  
1,5 eetl olijfolie  
snufje zout  
2 tl fijne kristalsuiker  
80 gram gedroogde vijgen  
80 gram gedroogde pruimen  
80 gram gedroogde dadels  
60 gram rozijnen  
200 ml verse sinaasappelsap  
75 gram spekblokjes  
30 gram walnoten  
30 gram pecannoten  
1 sinaasappel

**Gekaramelliseerde rode kool  
recept met warme tutti frutti**

½ rode kool  
3 el balsamicoazijn  
1,5 el Boni Selection olijfolie  
1 el suiker  
80 g Spar gedroogde vijgen  
80 g Spar gedroogde pruimen  
80 g Spar gedroogde dadels  
60 g Spar rozijnen  
1 el Spar walnoten  
200 ml vers sinaasappelsap  
verse tijm

Als je html schrijft, moet je denken in labels, niet in kleurtjes. Voorbeeld van blz. 3: als je in het kookboek het recept voor een taart leest, zie je dat je “bloem” nodig hebt, en niet “bloem uit de gele doos van het merk XYZ”.

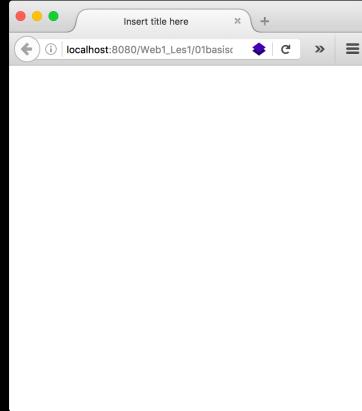
recept links uit kook nr. 3, maart 2017, blz. 42

recept rechts <https://it.pinterest.com/pin/134967320063038284/>

# Basic HTML page

```
<!DOCTYPE html>
<html lang="nl">
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>

</body>
</html>
```



naming the different components p. 4

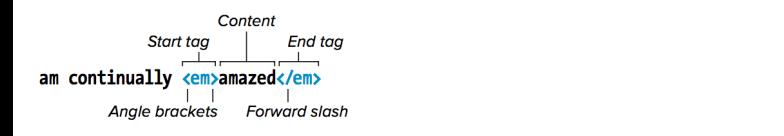
<html>  
<head>  
<body>

# Basic HTML page

```
<!DOCTYPE html>
<html lang="nl">
<head>
<meta charset="UTF-8">
<title>UC Leuven Limburg</title>
</head>
<body>
    <article>
        <h1>Toegepaste Informatica</h1>
        
        <p>Na drie jaar informatica studeren ben jij een gegeerde IT'er. Elk bedrijf heeft een IT-infrastructuur, dus jouw mogelijkheden zijn eindeloos. Een greep uit de jobtitels van onze afgestudeerden: softwareontwikkelaar, netwerkbeheerder, helpdeskmanager, ...
        </p>
        <p>
            <a href="http://ucll.be/verderstuderen">Verder studeren</a> kan natuurlijk ook altijd.
        </p>
    </article>
</body>
</html>
```



# Markup: Elements



```

```

*The optional space and forward slash*

p. 8

opening/closing tag

empty elements with optional space and forward slash

=> use <img ... alt="Blue Flax"> i.s.o. <img ... alt="Blue Flax" />

# Markup: Attributes and Values

```
<label for="email">Email Address</label>  
for is an attribute of label  
The value of the for attribute
```

```
<a href="http://en.wikipedia.org/wiki/Linum_lewisii" rel="external"  
    title="Learn more about Blue Flax">Blue Flax</a>  
href is an attribute of a  
Value for href  
rel is also an attribute of a  
Value for rel  
title is also an attribute of a  
Value for title
```

The value of an attribute can be limited/predefined

# Markup: Parents and Children

```
<article>
  <h1>The Ephemeral Blue Flax</h1>
  
  <p>... continually <em>amazed</em> ... delicate <a ...>Blue Flax</a> ...</p>
</article>
```

Elements must be closed

Elements must be nested correctly

## Used elements:

- article: sectioning content; groups self-containing content (“inhoud die op zichzelf staat”)
- h1: heading (title level 1)
- img: include image; attribute src defines which image
- p: phrasing content (paragraph)
- em: stress emphasis on text (rendering text by default in italic) p. 90
- a: link; can be absolute (new request to a webserver) or relative (request to the same webserver, p. 15-19)

# HTML: Markup with a Meaning

- Accessible web pages
- Search Engine Optimization (SEO)
- Easy maintenance and styling with CSS

# HTML: based on XML

- eXtensible
- Markup: add structure to
- Language: syntax

[https://www.w3schools.com/xml/xml\\_whatis.asp](https://www.w3schools.com/xml/xml_whatis.asp)

X: uitbreidbaar, bvb. met de xml-bestanden van iPhoto kan je applicatie ontwikkelen om site te maken. iPhoto gebruikt de gegevens zelf ook op verschillende manieren: fotoboek maken, diavoorstelling, foto's ordenen op plaats, gebeurtenis, ...

M: alle informatie die de afbeelding met zich draagt systematisch noteren

L: taal die bepaalde regels volgt

# Well formed XML

1. case sensitive
2. start and end tag
3. correctly nested
4. "attributes"
5. just 1 root element

In HTML we follow the principles of “well formed XML”:

- write element names, attributes, ... in lower case
- close all elements
- proper nesting: if you open `<p>` and then `<em>`, you must close `<em>` before you close `<p>` ( example p.11)
- put quotes (“”) around attribute values
- 1 root element = `<html>`

# Website in production

Chapter 2

# Default webpage

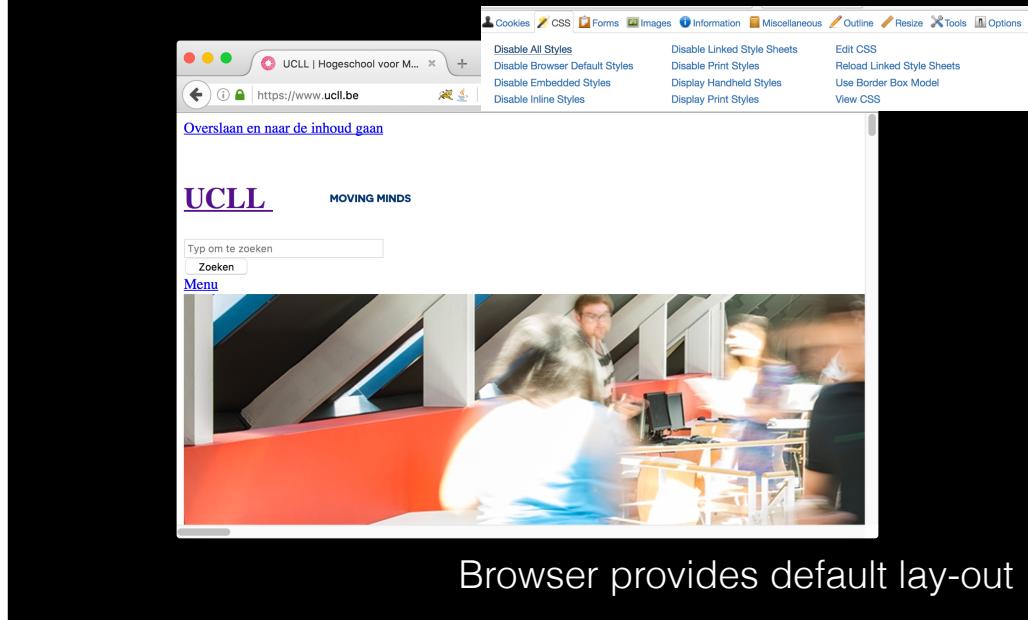
index.html

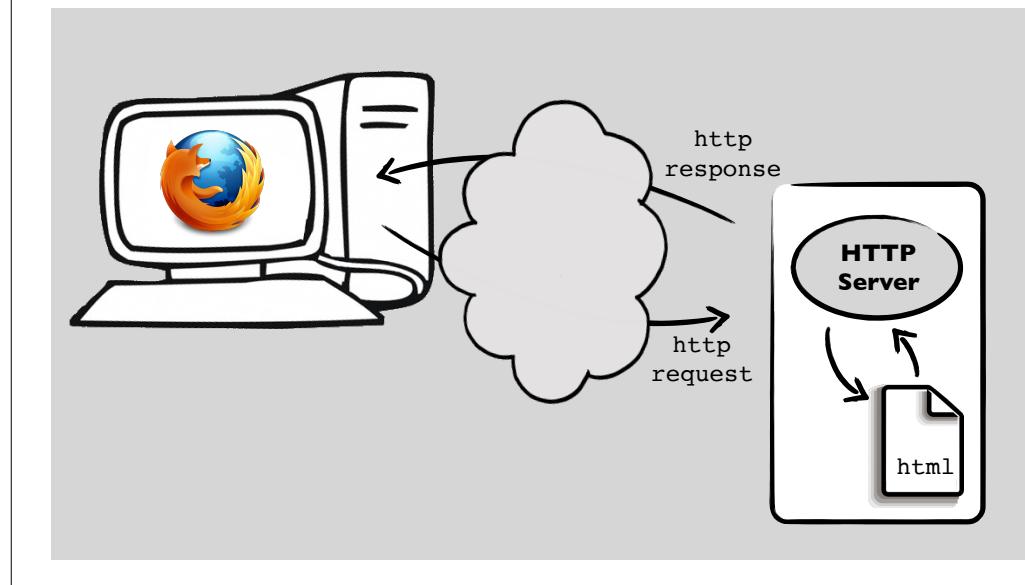


When developer does nothing and user asks just host (here: [ucll.be](https://ucll.be)), then web server shows the file index.html (Beware: no capital! [Index.html](#))

p. 35, 38

# Default page lay-out



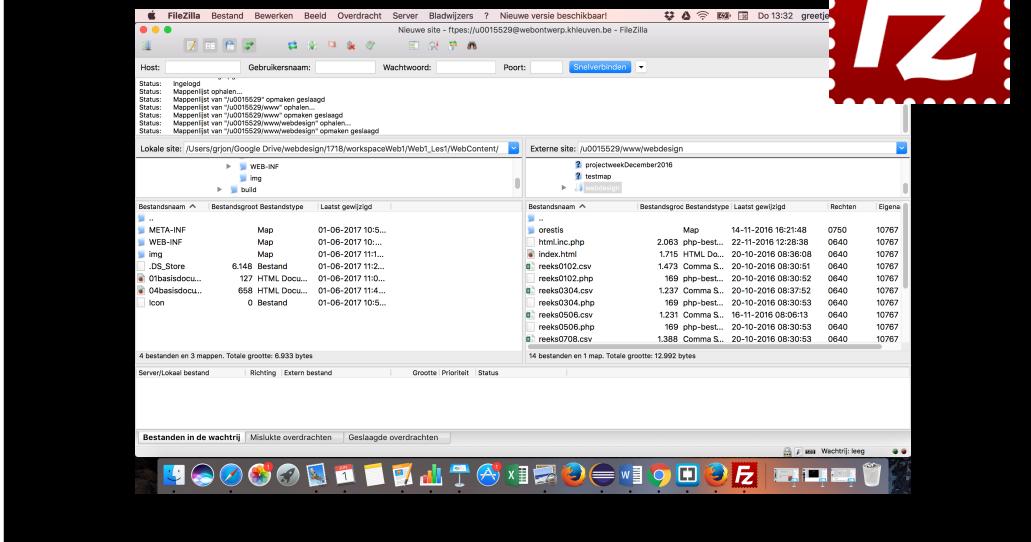


[https://en.wikipedia.org/wiki/Client%E2%80%93server\\_model](https://en.wikipedia.org/wiki/Client%E2%80%93server_model)

Een webpagina kan lokaal ingeladen worden in de browser (bijv. in Firefox File>Open bestand). Om de webpagina toegankelijk te maken voor alle gebruikers, moet hij opgeladen worden op een webserver.

- De gebruiker typt de url in de browser (= client)
- De browser stuurt een http-request naar de gevraagde host
- De webserver zoekt het gevraagde html-bestand (pad) en stelt een http response samen
- De client ontvangt de response en leest de meegeleverde html
- De client toont de webpagina op het scherm

# Loading a Webpage to a server with FileZilla



Wordt uitgebreid behandeld tijdens oefenzitting.

Je kan niet zomaar bestanden op een webserver zetten. Je hebt daarvoor speciale software nodig, bijvoorbeeld Filezilla.

# Basic HTML Structure

chapter 3

# Starting Your Webpage

```
<!DOCTYPE html>

<html lang="nl">

<head>

<meta charset="UTF-8">

<title>Toegepaste Informatica</title>

</head>

<body>

</body>

</html>
```

- doctype: declares the page as an HTML5 document
- html: root element; attribute defines the used language
- head: contains meta information (information about the document)
- body: this is the content you want to show on the screen

# Page Structure

The screenshot shows a website layout with the following sections:

- Masthead/header with navigation:** At the top left, there are three links: "Barcelona's Architect", "La Sagrada Familia", and "Park Guell".
- Main page content:** The main area contains three columns of text and images:
  - BARCELONA'S ARCHITECT**: A section about Antoni Gaudí's architecture.
  - LA SAGRADA FAMILIA**: A section about the Sagrada Família, featuring a small image of the building.
  - PARK GUELL**: A section about Park Guell, featuring a small image of the beach.
- Related, but tangential information:** A sidebar on the right lists other architectural wonders in Barcelona, including the Arc de Triomf, La Sagrada Família, Pavellons Güell, and Santa Maria del Mar.
- Footer:** At the bottom left, it says "© Copyright All About Gaudi".

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Most web pages have similar structure:

- head with navigation
- actual content
- lateral information
- footer with e.g. contact information or copyright

HTML has elements to declare this structure: sectioning content <https://www.w3.org/TR/2016/REC-html51-20161101/dom.html#kinds-of-content-sectioning-content>

# Page Structure

```
<header>
  Page header
</header>

<main>
  <article>
    Main page content (article 1)
  </article>

  <article>
    Main page content (article 2)
  </article>
</main>

<div class="sidebar">
  <aside>
    Related,
    but tangential
    information
  </aside>

  <aside>
    More related,
    but tangential
    information
  </aside>
</div>

<footer>
  Page Footer
</footer>
```

pag 75

The element `<div>` is a generic container: it has no structural/semantic value, but puts blocks together.

# Page Structure



```
<body>
  <header>
    <h1></h1>
    <nav>
      <ul>
        <li></li>
      </ul>
    </nav>
  </header>
  <main>
    <article>
      <h2></h2>
    </article>
  </main>
  <footer></footer>
</body>
```

# <header> and <nav>

Head of the page:

```
<header>
  <h1>Toegepaste Informatica</h1>
  <nav>
    <ul>
      <li><a href="infodagen-openlesdagen">Infomomenten</a></li>
      <li><a href="studeren/inschrijven">Inschrijven</a></li>
      <li><a href=".//verderstuderen">Verder studeren</a></li>
    </ul>
  </nav>
</header>
```

can also belong to part of the page  
(e.g. an article)

<header> on the head of the page gives information about the document: title (<h1>), banner, logo, navigation

# <main> and <article>

```
<main>
<article>
  <h2>Voor wie?</h2>
  
  <p>
    Na drie jaar informatica studeren ben jij een gegeerde
    IT'er. Elk bedrijf heeft een IT-infrastructuur, dus jouw
    mogelijkheden zijn eindeloos. Een greep uit de jobtitels van onze
    afgestudeerden: softwareontwikkelaar, netwerkbeheerder,
    helpdeskmanager, ...
  </p>

  <p>
    <a href="http://ucll.be/verderstuderen">Verder studeren</a> kan
    natuurlijk ook altijd.
  </p>
</article>
</main>
```

## <main>

- main content of the web page (reason of existence of that page)

## <article>

- needs a heading (h2, h3, ...)
- can have a header, footer and aside
- can group section, but can also be grouped in sections

# <section> and <article>

```
...  
<body>  
...  
<main role="main">  
    <h1>Latest World News</h1>  
    <section>  
        <h2>Breaking News</h2>  
        <ul>... [list of headlines] ...</ul>  
    </section>  
  
    <section>  
        <h2>Business</h2>  
        <ul>... [list of headlines] ...</ul>  
    </section>  
  
    <section>  
        <h2>Arts</h2>  
        <ul>... [list of headlines] ...</ul>  
    </section>  
</main>  
...  
</body>  
</html>
```

```
...  
<h1>Graduation Program</h1>  
<section>  
    <h2>Ceremony</h2>  
    <ol>  
        <li>Opening Procession</li>  
        <li>Speech by Valedictorian</li>  
        <li>Speech by Class President</li>  
    ...  
    </ol>  
</section>  
  
<section>  
    <h2>Graduates (alphabetical)</h2>  
    <ol>  
        <li>Molly Carpenter</li>  
    ...  
    </ol>  
</section>  
...
```

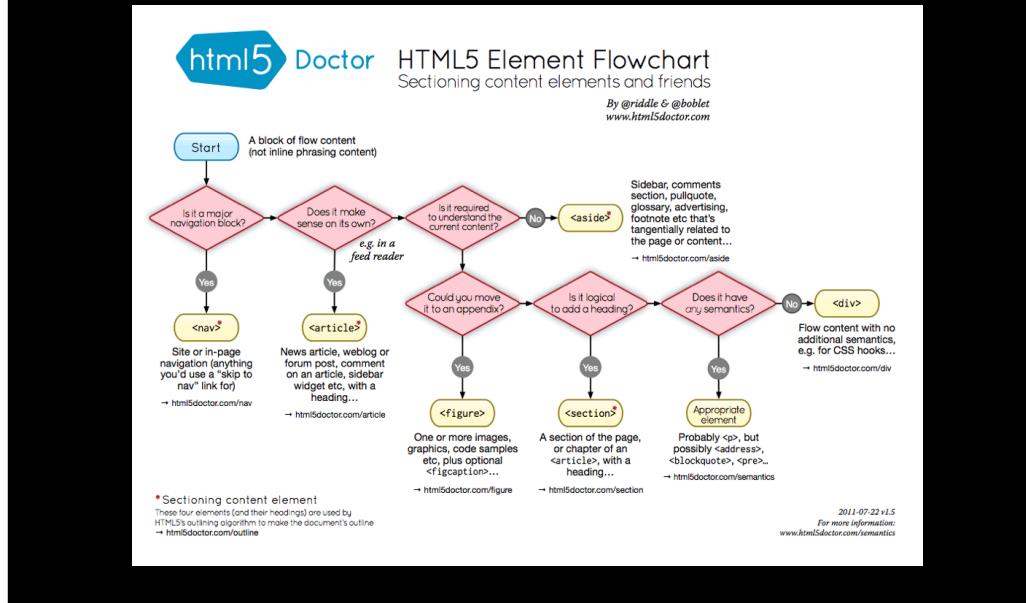
## <article>

- self-containing content (“inhoud die op zichzelf staat”)

## <section>

- groups content

# <article> or <section>?



<http://html5doctor.com/resources/>

# <aside>

```
<body>
<main role="main">
  <article>
    <h1>The Diversity of Papua New Guinea</h1>
    ... [article content] ...
    <aside>
      <h2>Papua New Guinea Quick Facts</h2>
      <ul>
        <li>The country has over 800 languages</li>
        <li>Though quite tropical, it can experience snowfall</li>
        ...
      </ul>
    </aside>
    ... [more article content] ...
  </article>
</main>
</body>
```

```
<body>
<main role="main">
  <article>
    <h1>... [name of project] ...</h1>
    <figure>... [project photo] ...</figure>
    <p>... [project write-up] ...</p>
  </article>
</main>


<aside>
  <h2>Other Projects</h2>
  <nav>
    <ul>
      <li><a href="habitat-for-monkeys-brochure">habitats for monkeys brochure</a></li>
      <li><a href="royal-philharmonic-website">Royal Philharmonic website</a></li>
      ...
    </ul>
  </nav>
</aside>
</body>
```

<aside> can be used:

- as a component of <main>, e.g. nested in an <article>, providing tangentially related information to the article
- as a component of <body>, providing tangentially related *information to the whole webpage/website*

# Text

Chapter 4

# Paragraphs

```
...
<body>

<h1>Antoni Gaudí</h1>
<p>Many tourists are drawn to Barcelona
→ to see Antoni Gaudí's incredible
→ architecture.</p>

<p>Barcelona celebrated the 150th
→ anniversary of Gaudí's birth in
→ 2002.</p>

<h2 lang="es">La Casa Milà</h2>
<p>Gaudí's work was essentially useful.
→ <span lang="es">La Casa Milà</span> is
→ an apartment building and real people
→ live there.</p>

<h2 lang="es">La Sagrada Família</h2>
<p>The complicatedly named and curiously
→ unfinished Expiatory Temple of the
→ Sacred Family is the most visited
→ building in Barcelona.</p>

</body>
</html>
```



<p> for each paragraph (no <br>)

# Marking up tekst

- <address>
- <strong>, <em>
- <i>, <b>, <small>, <u>
- <span>

<address>: contact information p. 106

<strong>: important text <=> <em>: stress emphasis p. 90

<i>, <b>, <small>, <u> p 89, 91, 122-123

<span> no semantic meaning, appropriate for words or a phrase (vs. <div> for blocks) p 120

<p>

  Lorem ipsum dolor sit amet,  
  <em>consectetur adipisciing elit</em>.  
  Error quod adipisci obcaecati explicabo  
  <strong>qibusdam repudiandae dignissimos</strong>?

</p>

<p> Maxime voluptatem magnam sint eos  
  <i>nemo suscipit officia quisquam </i>  
  sed labore delectus iste atque?  
  <b>Dolorem dicta cupiditate esse </b>  
  <small>excepturi voluptates eligendi </small>  
  <u>architecto temporibus commodi eveniet </u>  
</p>

<p>

  Ratione labore debitum repellat  
  <span>nobis dolores libero numquam minima at  
  eum</span>.

</p>

<p>

  Informatie:  
  <address>  
  alles.komt@snel.goed  
  </address>  
</p>

*adipisicing elit.* Error quod adipisci obcaecati explicabo **quibusdam repudiandae dignissimos?**

Maxime voluptatem magnam sint eos *nemo*  
*suscipit officia quisquam* sed labore delectus iste  
atque? **Dolorem dicta cupiditate esse** excepturi  
voluptates eligendi architecto temporibus commodi  
eveniet

Ratione labore debitum repellat nobis dolores  
libero numquam minima at eum.

## Informatie:

[alles.komt@snel.goed](mailto:alles.komt@snel.goed)