Web Programming

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Semantic Web

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1. Web Page

The Elements of a Web Page

A Web page consists of:

- HTML markup
- CSS rules
- JavaScript code

  JavaScript libraries like jQuery, Popper, etc.
- Images
- Other resources: Fonts, audio, video, Flash, Silverlight,...

The Elements of a Web Page

HTML Markup

- The HTML is used to define the **content** of a Web page
  - Not the layout
  - Not the decorations

- HTML's role is to present the information in a **meaningful** manner like a paper document
  - Define headers, paragraphs, text boxes,...
  - Not define size, color and/or positioning

The Elements of a Web Page

CSS Rules

- Cascading Style Sheets (**CSS**) is the way to make a Web page look pretty
  - Define **styling rules**

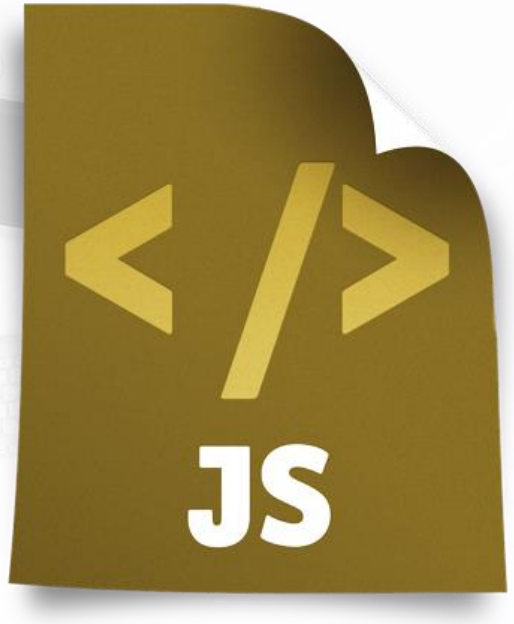
    Fonts, colors, positioning,…
  - Define the layout of the elements
  - Define the presentation

- The CSS files are **attached** to a web page and the browser applies these styles to elements

The Elements of a Web Page

JavaScript Code

- **JavaScript** is the programming language for the Web
  - Makes the Web pages dynamic
  - Dynamically adding / removing HTML elements, applying styles,…
  - Modern JavaScript UI libraries provide UI components like dialog boxes, grids, tabs,…
- Like CSS the JavaScript files are **attached** to a web page

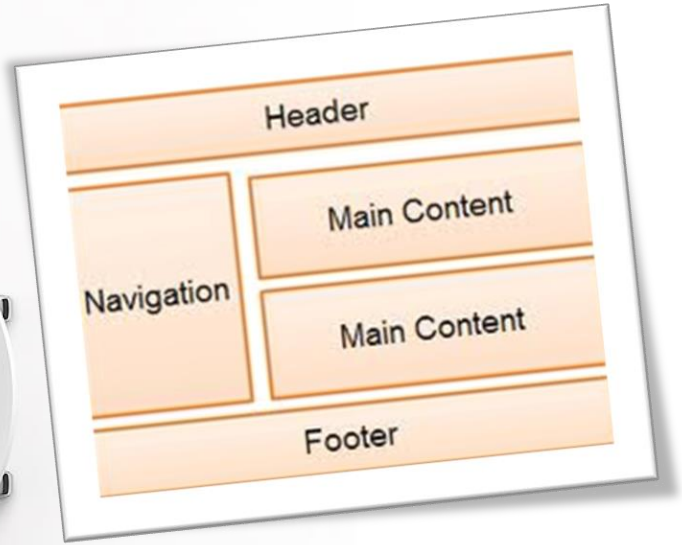


The Elements of a Web Page

Other Resources

Other resources are needed for a Web page to run properly

- Images, fonts (glyph icons), audio, video files
- Flash / Silverlight / ActiveX objects



2. The Semantic HTML

Google

what is html?

All | Images | Videos | Books | News | More | Settings | Tools

About 13,140,000,000 results (1.06 seconds)

www.w3schools.com › html › html_intro

Introduction to HTML - W3Schools

HTML stands for Hyper Text Markup Language. **HTML** is the standard markup language for creating Web pages. **HTML** describes the structure of a Web page. **HTML** consists of a series of elements. **HTML** elements tell the browser how to display the content.

People also ask

- What is HTML simple definition?
- What is HTML and why it is used?
- What is HTML for beginners?
- What is HTML in computer?

Feedback

www.w3schools.com › whatis › whatis_html

What is HTML - W3Schools

Example Explained · The <! · The <**html**> element is the root element of an **HTML** page · The lang attribute defines the language of the document · The <meta> ...

en.wikipedia.org › wiki › HTML

HTML - Wikipedia

HTML

Programming language

Hypertext Markup Language is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript. Wikipedia

Developed by: WHATWG

Type of format: Document file format

Extended from: SGML

Extended to: XHTML

Container for: HTML elements

Contained by: Web browser

Font size

Semantic HTML

- Semantic HTML is:
  - The use of HTML markup to reinforce the semantics of the information in Web pages

    Make the **content understandable** for computers
  - Rather than merely to define its presentation
  - A kind of **metadata** about the HTML content

- Semantic HTML is processed by regular Web browsers and other user agents

  CSS is used to suggest its presentation to human users

Why Use Semantic HTML?

Semantic HTML is:

- Easier to read by developers, parsers, bots, machines, AIs
- A way to the search engines show the correct content

How To Write Semantic HTML?

Just follow some guidelines when creating a Web site:

- Use **HTML5** semantic **tags**

  <header>, <nav>, <main>, <section>, <article>, <aside>, <footer>

- Use **Headings** when you need to structure the content into sub-headings

  In increasing order, staring with <h1>

- Do **not use empty tags**

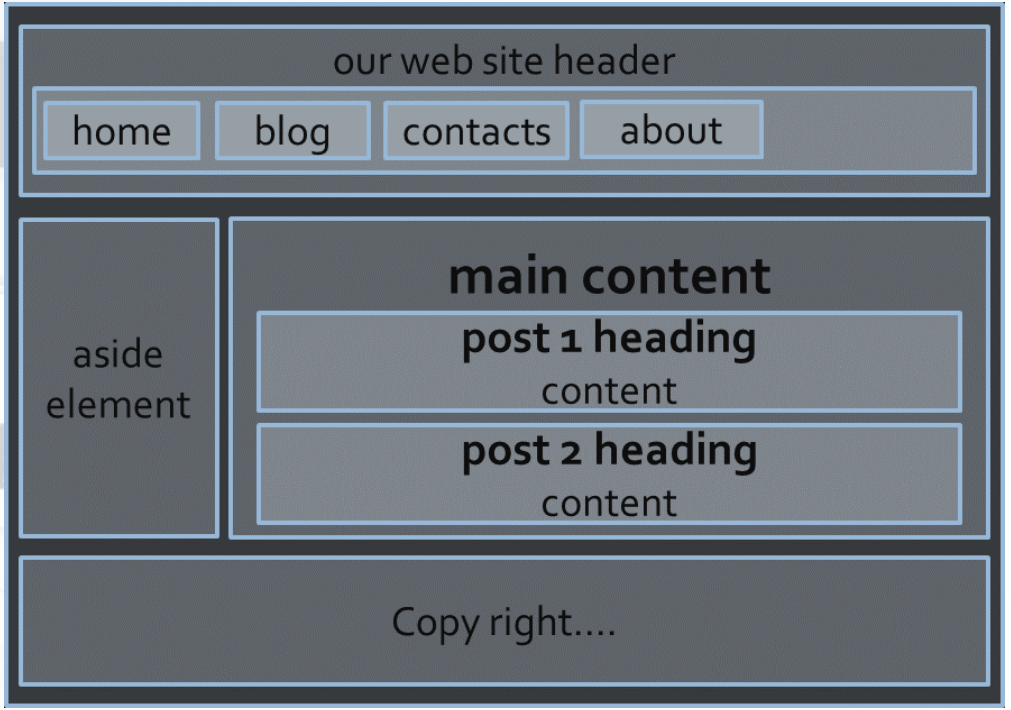
  Like a clearing

3. HTML5 Semantic Tags

HTML5 Semantic Tags

HTML5 introduces semantic structure tags

- Imagine the following site:



- This is a common Web page structure

  Used in 90% of the web sites

HTML5 Semantic Tags

- This can be created using all kind of HTML elements
  - , , even <p>
  - Browsers will render invalid / wrong / valid HTML

- **The correct way:** use the HTML 5 semantic tags:
  - <header> … </header>
  - <nav> … </nav>
  - <main> … </main>
  - <article> … </article>
  - <section> … </section>
  - <aside> … </aside>
  - <footer> … </footer>

HTML5 Structure Tags

- **<main>**
  - Specifies the **main content** of a document
  - There must **not be more than one** <main> element in a document

- **<header>**
  - Site header or section header or article header
  - Could include navigation (<nav>)

- **<footer>**
  - Site footer (sometime can be a section footer)
  - Providing author, copyright data,...

HTML5 Structure Tags

- **<nav>**
  - Defines a set of navigation links
  - E.g. site navigation (usually in the header)

- **<aside>**
  - Content slightly related to primary content
  - E.g. sidebar (usually on the left or on the right)

- **<section>**
  - Grouping of content usually with a heading, similar to chapters
  - Site section (e.g. news, comments, links,…)

HTML5 Structure Tags

- **<article>**
  Independent content such as blog post or an article (e.g. news item)

- **<details> + <summary>**
  Specifies additional details that the user can view or hide on demand (accordion-like widget)

- **<time>**
  Specifies date/time (for a post / article / news)

- **<mark>**
  Defines marked/highlighted text

HTML5 Structure Tags

<details> + <summary>

▶ Copyright 1999-2014.

Note: The summary element is not supported in Edge/Internet Explorer.

▼ Copyright 1999-2014.

- by Refsnes Data. All Rights Reserved.

All content and graphics on this web site are the property of the company Refsnes Data.

Note: The summary element is not supported in Edge/Internet Explorer.

```
<details>
  <summary>Copyright 1999-2014.</summary>
  <p> - by Refsnes Data. All Rights Reserved.</p>
  <p>All content and graphics on this web site are the property of the
company Refsnes Data.</p>
</details>
```

HTML5 Structure Tags

- **<figure>**
  - Grouping stand-alone content (video or image)
  - Figure (a figure, e.g. inside an article)

- **<figcaption>**
  A caption of a figure (inside the <figure> tag)

- **<video>**
  Video element (uses the built-in player)

- **<audio>**
  A standard for playing audio files (built-in player)

- More info

4. Other Semantics

Headings, ems, strongs

Other Semantics

- **Headings**

  Always use headings **(<h1> – <h6>**) when you need a heading or title

  - Like in a MS Word document
  - Google uses it to mark important content

- Strong **** vs. Bold **<b>**
  - <b> does not mean anything

    It just makes the text bolder
  - marks the text is “stronger” than the other, surrounding text

What do we call the lists below?

- Emphasis **** vs. Italic **<i>**
  - Emphasis does not always mean, that the code should be italic

    It could be bolder, italic and underlined
  - The styles for the emphasis text should be set with CSS

    Not by HTML
  - A screen reader will pronounce the words in with an emphasis, using verbal stress.

5. Accessibility

“A person’s a person, no matter how small”

Accessibility

Craft content minding disabled users

- **Blind** - include text equivalents of images, use labels in forms
- **Colorblind** - do not convey information using color only
- **Visually impaired** - avoid small font sizes
- **Epileptic** - avoid flashing content (3Hz or more)
- **Physical disabilities** - avoid functionality that relies only on the mouse or keyboard

Accessibility

Why implement accessibility?

- Some accessibility features are mandatory for government sites in some countries (US, NL, SW)
- “Everyone gets visited by a very important blind user, named Google”
- Some SEO and accessibility considerations overlap

Accessibility

- **Standards**
  - Web Content Accessibility Guidelines (WCAG) - http://www.w3.org/WAI/intro/wcag
  - Section 508 - http://www.section508.gov

- **Tools**
  - Will never replace manual testing, but may help
  - WAVE - http://wave.webaim.org/

6. Search Engine Optimization

Getting ahead in search engines

Search Engine Optimization

- Search engines use so-called **“crawlers”** to get the content of the page and index it

- The crawlers weigh the data on the page
  - **<title>, page URL** and **headings** have great weight
  - Links from highly valued pages to your page increase its value (Google **Page Rank**)
  - Add **alt** text and **loading=“lazy”** attribute to images
  - Use relevant keywords in the content and **<meta>** tags

- **No SEO technique will replace good content**

MICRODATA

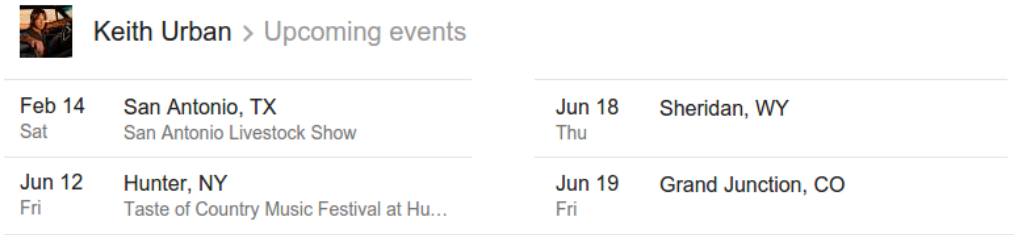
Structured Data Markup

Annotate your content so machines can understand it

Structured Data Markup

- A standard way to annotate your content so machines can understand it
- Google (and other search engines) can
  - use that data to index your content better
  - present it more prominently in search results

- provide answers from the Knowledge Graph



Structured Data Markup

Three alternative formats:

- **Microdata** and **RDFa**
  - Define new HTML attributes
  - More info
- **JSON-LD**
  - Newest and simplest markup format
  - Embed a block of JSON data inside a script tag

    ✓Specification

    ✓Examples


Summary

Exercise

Reformat the HTML tags of the Lani & Dani webpage using sematic tags.


Q&A