

# Laboratory exercises for WEB/HTML

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# 1 World Wide Web - WWW / HTML / CSS

Before the lab, read through section 1.1 - 1.4 and answer the questions in section 1.4.

## 1.1 Objectives

The purpose of this lab exercise is to improve your understanding of the basic architecture of the World Wide Web (WWW). After the exercise you should be able to create Web pages. In this lab you will also learn how to write Web documents in HTML language including hypertext links, create presentation styles using CSS, and make a simple website.

## 1.2 Some useful links

- A basic introduction into the WWW. [http://en.wikipedia.org/wiki/World\\_Wide\\_Web](http://en.wikipedia.org/wiki/World_Wide_Web)
- HTML, XHTML, CSS

HTML: <http://www.w3schools.com/html/default.asp>  
<http://www.htmlcodetutorial.com/>

CSS: *Starting with HTML + CSS*. <http://www.w3.org/Style/Examples/011/firstcss.en.html>  
<http://www.w3schools.com/css/>

XHTML <http://www.w3schools.com/xhtml/>

- HTTP
  - HTTP made really easy: <http://www.jmarshall.com/easy/http/>
  - Uniform Resource Locator - URL: <http://en.wikipedia.org/wiki/URL>

## 1.3 Theory

We will in this section write a short HTML document. Although several of you probably are familiar with HTML code, here is still a small introduction.

### 1.3.1 What is HTML?

HTML (HyperText Markup Language) is a markup language for describing Web pages.

- HTML is not a programming language or protocol, it is a markup language
- A markup language is a set of markup tags
- HTML uses markup tags to describe web pages
- A browser, eg Internet Explorer or Firefox, can interpret the HTML and display a Web page in the desired fashion.

**HTML markup tags are usually called HTML tags**

- HTML tags are keywords surrounded by angle brackets like `<html>`
- HTML tags normally come in matched pairs like `<b>` and `</b>`
- The first tag in a pair is the start tag, the second tag is the end tag
- Start and end tags are also called opening tags and closing tags
- For some special HTML tags, start tag and end tag can be combined, eg `<br />`

## HTML Documents = Web Pages

- HTML documents describe web pages
- HTML documents contain HTML tags and plain text
- HTML documents are also called web pages

### Example:

```
<h1> This is my homepage. </h1>
```

Here is `<h1>` start-tag and `</h1>` end-tag. Tags will in this case mean that the text "This is my homepage." is a heading of type 1. All HTML documents have certain basic standard tags. These are `<html>`, `<head>`, `<title>` and `<body>` and corresponding end tags. A brief HTML document with such standard tags may look like the complete example below.

```
<html>
<head>
  <title>First Web-page</title>
</head>
<body>
  <h1> HTML is simple to learn </h1>
  All new students are welcome to <a href="http://www.lth.se/">LTH</a>
  <br /> Here you will learn a lot!
</body>
</html>
```

Below are the tags used in the document above and a few more tags. It does not matter if you use lowercase or uppercase when writing HTML code. `<h1>` will be interpreted in the same way as `<H1>`. In XHTML all tags should be lower case.

```
<html>
```

This tag tells your browser that the file contains HTML-coded information. Each HTML document begins and ends with this tag.

```
<head>
```

HTML documents can be fundamentally divided into two parts, a head and a body. The `<head>` ... `</head>` contains the title, metadata, and information on style sheets and scripts, while the `<body>` ... `</body>` contains the markup with the visible content.

```
<title>
```

The title is the name of the page and displayed in the browser's window bar, it does not appear inside the window. The tag `<title>` has to be in the head part of an HTML document.

`<body>`

The tag `<body> ... </body>` identifies the body of a HTML document. This part contains the information that the browser will show on the screen.

`<h1>`

HTML has six levels of headings, numbered from 1 to 6, where 1 is the one with the largest font. The text enclosed by `<h1> ... </h1>`, is therefore the biggest heading the browser can display. Headings are shown by a browser bold face with a bigger font.

`<a href="http://www.lth.se/">LTH</a>`

The `<a>` tag is used to create a hypertext link. The example above is displayed as the clickable text LTH. Clicking on it leads to the LTH home page (which has the URL `http://www.lth.se/`).

`<br />`

A browser does not take into account whether you have put carriage returns (CR) in your HTML code. You have to use a tag `<br />` to break a line and get to the next line. `<br />` stands for 'BReak'. If we had not used a `<br />`-tag, the two lines "All new students are welcome to LTH" and "Here you will learn a lot!" would have ended up on the same line, next to each other.

If you want to not only break a line but start a new paragraph use the tag `<p> ... </p>`.

``

With the above command, you can include a picture in your website. Source, 'src', is the path of the source file with the image you want to show. Adding `alt="some text"` in the tag gives the browser a text to display if it can't download your image. Note that the image is not part of the HTML document. Your web browser will download and add the image to the web page built from the code in the HTML document.

Example:

``

If the image is in the same directory as the HTML file, you only write the file-name, otherwise you should also specify a path. Since directory structure in the Web server is not the same as on the computer, it's easiest to store the files that make up a web page in the same directory as the HTML document. You can then use so-called relative addressing, and are not dependent on how the other file structure looks like. Relative addressing is when you enter the path to files starting in the directory where the HTML document is.

## 1.4 Preparing for the lab

Using the lectures, the links provided earlier and other sources (search engines...) find the answer to the following questions:

- What is a URL? Give an example!
- How is an HTML page sectioned?
- What are major elements of the “head” part of a Web page?
- What is metadata?
- What are metatags connected with metadata?
- How can you see metadata in a browser?
- What are the benefits of using XHTML instead of HTML?
- In CSS, what is a ‘selector’, a ‘property’, and a ‘value’?
- How do you add a special style to an element when you ‘mouse’ over it?

## 1.5 Lab assignments

### 1.5.1 Web site creation

Comment all the code (HTML, CSS) you write where appropriate.

you will find a file called `index.html`. That is a very small HTML file that you should use as a starting point when you do the lab. Do the following:

1. Open the file `index.html` by just clicking on it. The default browser should start and show the contents.
2. Edit the file using for example Notepad++, just make a change to the text for example.
3. Find the IP address of your own computer by first starting the command window and give the command `ipconfig`. Then open a new tab in the browser, write the IP address of your computer in the URL field and press enter. What do you see?
4. Ask another group about their IP address, open a new browser tab and write the other group’s IP address in the URL field and then press enter. Can you see the other group’s page?
5. If you have a mobile phone with a browser, try to look at your web page with the phone. Does it work?
6. Create a small Web site consisting of (at least) two different Web pages (linking to each other). The Web site pages should contain at least the following elements:
  - headings
  - paragraphs

- bold-face text
- lists
- internal (inside a Web page) hyperlink with anchor-text
- external hyperlink with anchor-text

### 1.5.2 Metadata

1. What are metadata used for?
2. Add the following metadata elements to a Web page you created: keywords, description, and author.
3. Add a tooltip to a link. Check that it works!

### 1.5.3 Multimedia

Copy some multimedia files to your Web folder, at least one picture and one video.

1. Add an image in one of your pages
2. Add a video in one of your pages.  
(hint: Check out the tags '`<video>`', '`<embed>`', and '`<object>`' at the w3Schools "HTML Videos" page at [http://www.w3schools.com/html/html\\_videos.asp](http://www.w3schools.com/html/html_videos.asp))

### 1.5.4 Cascading Style Sheets - CSS

Review the CSS tutorial *Starting with HTML + CSS* (from the literature list) at <http://www.w3.org/Style/Examples/011/firstcss.en.html> or another introduction to CSS.

If you want to control how a HTML file should be presented when it is displayed in the browser, we often use Cascading Style Sheets (CSS). There you can describe in detail how the page will be presented when it is displayed.

1. Take one of your pages (with bold-face text) and add an inline CSS style sheet (in the `<head>` section) that make bold-face text use a larger font size. The style sheet can look like this

```
<style type="text/css">
b
{
    font-size: 150%;
}
</style>
```

2. Change the style sheet to make the bold-face text red on a blue background.
3. Add another piece of text in bold-face, but make it belong to a different class than your previous bold text. (Example `<b class="another">more text to view</b>`) Make text like that (but not your other bold-face text) use a smaller font than normal and be blue on a red background.

### 1.5.5 External CSS files

Suppose we want the text in the headings that are tagged with `<h1>` to be in a special font and red. Then you can write a CSS file (called e.g. `mystyle.css`) that contains the following line:  
`h1 {color: red; font-family: sans-serif}` Then you add the following tag in the `head`-section of the HTML file:

```
<link rel="stylesheet" href="mystyle.css">
```

1. Do this for your page above. The file `mystyle.css` should be in the same folder as your HTML-file.

### 1.5.6 CSS placement

You can also specify where the text is placed. Study the `css2.html` file (shown in the Appendix 2 below and also available on the ome page of the course in a text editor and see how it looks when you open it in a browser. Here the CSS code is entered directly in the file header. Study the CSS code and try to determine what it is supposed to do. It might help to look up the box model of CSS (see figure 1) in your reference literature.

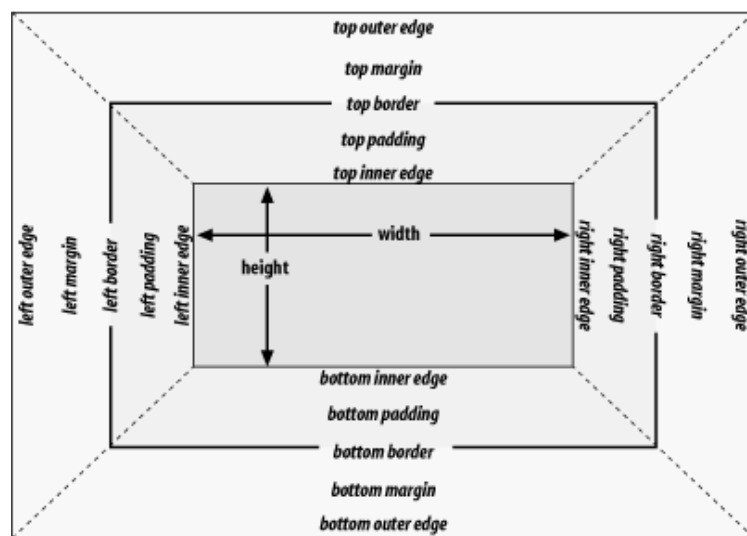


Figure 1: CSS box model. From *Cascading Style Sheets: The Definitive Guide*, 3rd ed by E. Meyer.

1. Try to figure out how to put a yellow bar that will contain a header (made with such `<h1> ... </h1>`) that extends along the entire width of the page, which is located above the two fields that are already.
2. Change to a font without serifs in the blue bar by changing the CSS code!
3. Examine what happens if you change the value of the padding.



### 1.5.7 More CSS

1. Design a presentation style for your Web pages using an *external CSS file*. Use a presentation style with three boxes as suggested in Figure 2. Use `<div>` tags with different classes to implement the boxes.
2. Modify the Web pages to use this presentation style and verify that it works.
3. Change the style so that links gets enhanced (bold, color and/or background) when the mouse pointer hovers above it.
4. Modify your style so that link enhancement only occurs in the navigation box.

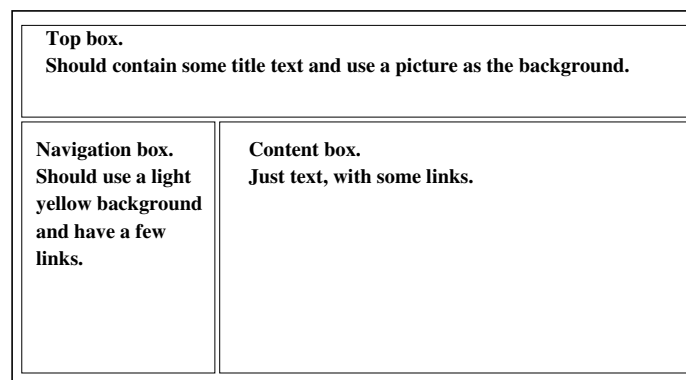


Figure 2: Suggested Web page presentation.

### 1.6 Web-site

Create a Web-site that uses the presentation style developed above for all pages. The site should have a structure according to figure 3.

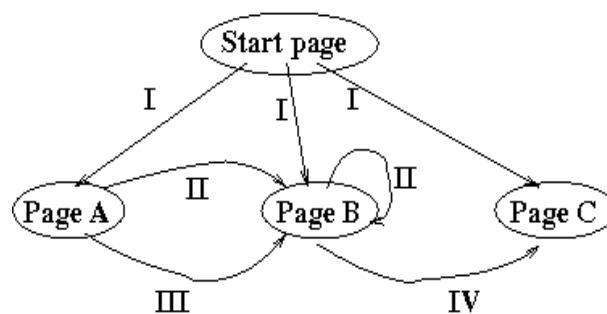


Figure 3: Suggested Web site structure.

Pages A and B should include images. Page B should be fairly big (> 200 lines, use any text) and have a named position in the middle. All pages including the Start page should be part of the navigation box.

Link types:

- I Normal text link
- II Link into the middle of Page B  
(hint: see fragment links at <http://www.simplehtmlguide.com/linking.php>)
- III Image that links to a page
- IV Hotspot image link (hint: see image-map at [http://www.w3schools.com/tags/tag\\_map.asp](http://www.w3schools.com/tags/tag_map.asp))

#### **1.6.1 HTML and CSS validation**

1. Validate your HTML pages. Use the HTML validator at <http://validator.w3.org/>. Here you can upload your page as a file, and automatically get comments and errors, if any. Make sure there are no errors or comments on your pages.
2. Validate your CSS code. Use the CSS validator at <http://jigsaw.w3.org/css-validator/>.

#### **1.6.2 Include links to some of the other lab-groups**

Add a link to at least one of the other lab groups web pages.

## 2 Appendix - css2.html

```
<html>
<head>
<style type="text/css">
.right
{
position:absolute;
top:0px;
left:325px;
width:300px;
background-color:\#b0e0e6;
padding: 10px;
}
.left
{
top:0px;
position:absolute;
left:0px;
width:300px;
background-color:pink;
padding: 10px;
}
</style>
</head>

<body>
<div class="left">
<p>In my younger and more vulnerable years my father gave me some
advice that I've been turning over in my mind ever since.</p>
<p>'Whenever you feel like criticizing anyone,' he told me, just
remember that all the people in this world haven't had the advantages
that you've had.' </p>
<p>This text ought to be placed to the left on the web page,
if not something may be wrong.</p>
</div>

<div class="right">
<p>In my younger and more vulnerable years my father gave me some
advice that I've been turning over in my mind ever since.</p>
<p>'Whenever you feel like criticizing anyone,' he told me, just
remember that all the people in this world haven't had the advantages
that you've had.'</p>
</div>

</body>
</html>
```