

# LECTURE 1

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Web systems fundamentals

# Laboratory work 1

- **Preparations:** read and do the exercises in chapter 1-4 and chapter 6-7 in *Beginning ASP.NET 4 in C# and VB*.
- **Moment:** create a free topic website by using asp.net (C#). Use visual studio and include at least the following:
  - correct formatted xhtml- och asp.net code
  - use external stylesheet to format the entire site
  - three asp.net pages which should be built on masterpage
    - controls for navigation should be included in all asp.net pages (based on sitemap)
  - one xhtml page (no asp.net in this one)
    - one picture
    - format the text using correct element (<p>, <h1>, etc)
    - one list element
    - two div elements (different formatted by the external stylesheet)

# What is HTML?

(Source: w3.org)

HTML is the language for describing the structure of Web pages. HTML gives authors the means to:

- Publish online documents with headings, text, tables, lists, photos, etc.
- Retrieve online information via hypertext links, at the click of a button.
- Design forms for conducting transactions with remote services, for use in searching for information, making reservations, ordering products, etc.
- Include spread-sheets, video clips, sound clips, and other applications directly in their documents.

With HTML, authors describe the structure of pages using *markup*. The *elements* of the language label pieces of content such as “paragraph,” “list,” “table,” and so on.

# What is XHTML?

(Source: w3.org)

- XHTML is a variant of HTML that uses the syntax of [XML](#), the Extensible Markup Language. XHTML has all the same elements (for paragraphs, etc.) as the HTML variant, but the syntax is slightly different.

# What is CSS?

(Source: w3.org)

- [CSS](#) is the language for describing the presentation of Web pages, including colors, layout, and fonts. It allows to adapt the presentation to different types of devices, such as large screens, small screens, or printers. CSS is independent of HTML and can be used with any XML-based markup language. The separation of HTML from CSS makes it easier to maintain sites, share style sheets across pages, and tailor pages to different environments. This is referred to as the *separation of structure (or: content) from presentation*.

# How does a web page work?

- Behind every web page is a source code telling it how to look and behave.
- Right-click any web page in your browser and choose “View source code” to see that code.
- The basic code is called HTML for HyperText Markup Language.
- In the code are references to images and other resources that has to be downloaded separately.
- The code can contain java script code and cascading style sheets as well

# Example code

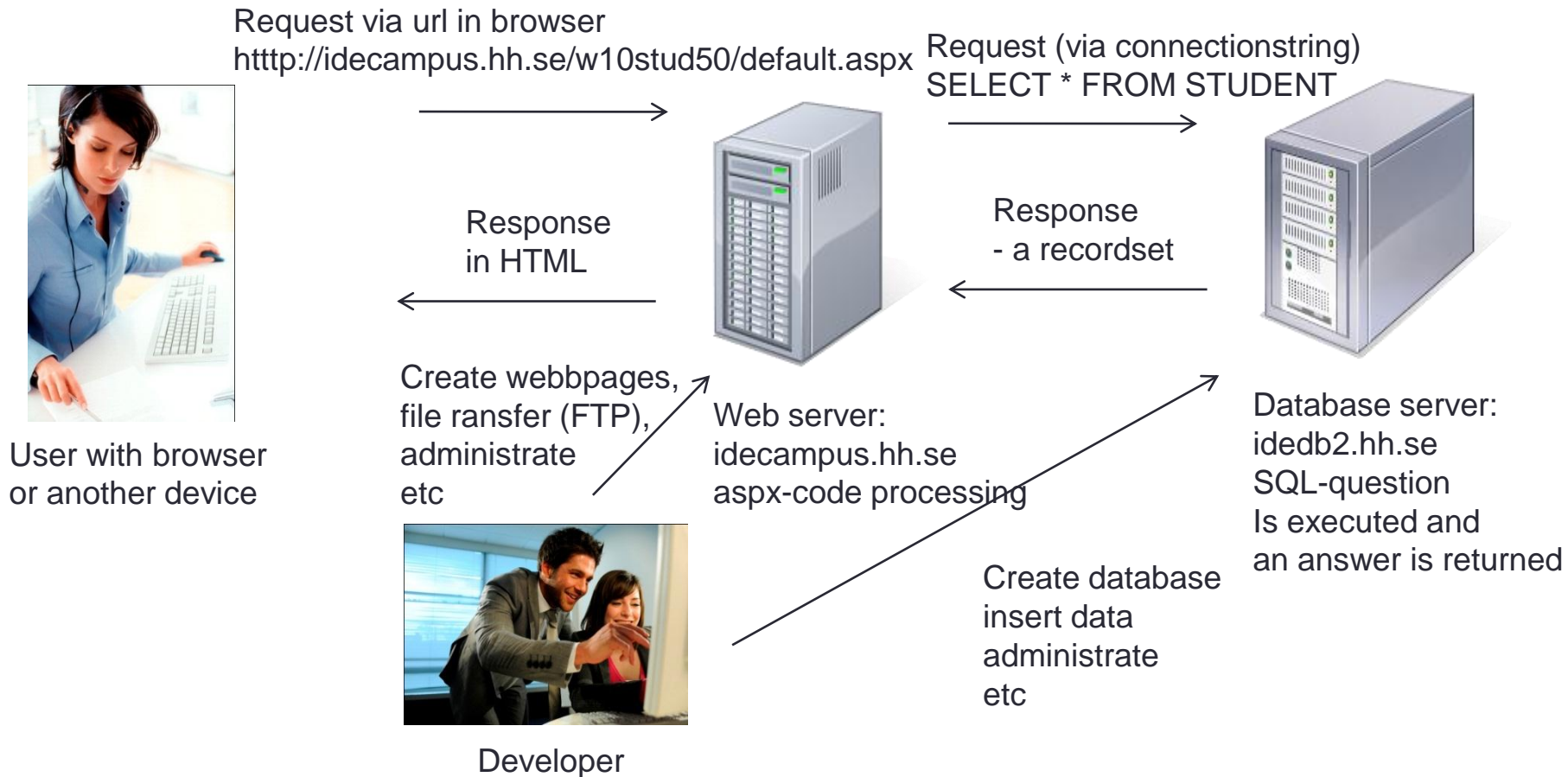
```
<html>
<head>
  <title>Web Systems Fundamentals</title>
</head>
<body>
<h2>Welcome to Web system fundamentals!</h2>
<p>My name is Jesper Hakeröd. To get in touch with me check the <a
  href="contact.php">contact</a> section.</p>
</body>
</html>
```

# What happens when I type a URL into my browser?

1. DNS Lookup
2. HTTP Request
3. Server Processing
4. HTTP Response
5. Client Processing



# How does it work?



# HTTP Overview

- Hypertext transfer protocol
- Runs on TCP/IP.
- Request & Response messages
- Request methods: HEAD, GET, POST, PUT, DELETE, TRACE, OPTIONS, CONNECT
- Version 1.0 and 1.1 available

# HTML

- Different versions.
- Used today: HTML 4.01 and XHTML 1.0
- HTML 5 (used in some places):

# Document types

- HTML Strict, transitional and frameset
- XHTML Strict, transitional and frameset
- Our choice: XHTML Strict. Why?
  - Valid XML code
  - Nice looking syntax
- The `<!DOCTYPE>`
- A full declaration for XHTML 1.0 Strict:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"  
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
```

# Basic document structure

```
<!DOCTYPE ...>  
<html xmlns="http://www.w3.org/1999/xhtml">  
<head>  
...  
</head>  
<body>  
...  
</body>  
</html>
```

# The title tag

- `<title>The title of your page</title>`
- Displayed in the browser window caption
- Search engines read this text very carefully.
- Goes inside `<head> ... </head>`

# The header tags

- `<h1>` through `<h6>`
- Define headers / headlines in your document.
- Eg. `<h1>Hello World</h1>`
- Put inside `<body>` or inside any of the subsections of the body.

# The p tag

- A good way to put text into your document.
- p for paragraph
- `<p>The text goes here</p>`



# Important HTML tags

- !--, a, applet, b, body, br, div, fieldset, form, head, h1-h6, html, iframe, img, input, label, li, link, meta, noscript, object, ol, option, p, param, script, select, span, style, table, td, textarea, tfoot, th, thead, title, tr, ul
- 43 out of many more tags.

# The br tag

- Used to obtain a new line or break line.
- `<br/>`
- Used without a closing tag.
- Make sure to put the closing slash (xhtml only)

# The img tag

- Put an image into your document
- ``
- Could also put width and height in there.
- Also no closing tag.

# The building blocks of a tag

- `<tagname attribute="value" attribute="value">tag content</tagname>`
- Self-closing tag:
  - `<tagname attribute="value" />`

# Example of good code

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
```

```
<head>
  <title>Course home page for Web System Fundamentals</title>
  <link rel="stylesheet" type="text/css" href="layout.css" />
</head>
```

```
<body>
```

```
<div class="grass">
```

```
<div class="top">
```

```
<h1>Web system fundamentals</h1>
```

```
</div>
```

# Example of good code

```
<div class="menu">
```

```
<ul>
```

```
<li><a href="/">Home</a></li>
```

```
<li><a href="contact.php">Contact</a></li>
```

```
<li><a href="lectures.php">Lectures</a></li>
```

```
<li><a href="labs_internal.php">Labs</a></li>
```

```
<li><a href="project.php">Project</a></li>
```

```
</ul>
```

```
</div>
```

# Example of bad code

```
<table width="759" border="0" align="center" cellpadding="0"
  cellspacing="1" bgcolor="#FFFFFF"> <tr> <td> <table width="100%"
  border="0" cellspacing="0" cellpadding="0"> <tr> <td height="5"
  bgcolor="#E9E9E9" style="border-bottom: 1px solid
  rgb(255,255,255)"></td> </tr> <tr> <td
  background="mbimages/topics/left_back2.jpg" bgcolor="#333333"
  style="border-bottom: 1px solid rgb(255,255,255)"> <table width="90%"
  height="150" border="0" align="center" cellpadding="3" cellspacing="0">
  <tr> <!-- EXHIBITION STARTS HERE //--> <td> <div align="center">
  <a href="exhibition.php"></a>
  </div> </td><td> <div align="center"> <a href="exhibition.php"></a>
  </div> </td>
```

# The a tag

- Used to create hyper links to other pages or other sections in the document.
- attribute href – the target URL
- attribute name – Used to mark up a section in the document.
- attribute target – Open a new browser window or stick with the current.



# The a tag

- Example:

```
<a href="contacts.php" target="_blank">View contacts</a>
```

- Must appear inside a containing tag like p, div, h1, h2 etc.

# a tag

- Linking within the document.

- Anchor example:

```
<a name="bottom"></a>
```

- Hyper link to anchor:

```
<a href="#bottom">Go to bottom</a>
```

# The unordered list

```
<ul>
```

```
  <li>First item</li>
```

```
  <li>Second item</li>
```

```
  <li>Third item</li>
```

```
</ul>
```

Also known as the bullet list.

# The ordered list

```
<ol>  
  <li>First item</li>  
  <li>Second item</li>  
  <li>Third item</li>  
</ol>
```

Results in:

1. First item
2. Second item
3. Third item

# The span tag

- A way to control the behavior of text with classes, ids and CSS
- `<span class="myclass">Hello world</span>`

# The div tag

- Default display type: block
- Acts like a rectangle where we can add contents inside.
- `<div>This is inside the div</div>`
- Very important when it comes to adding visual structure to a web site.

# HTML comments

- `<!-- This is a comment -->`
- As with programming in general, it's a good thing to comment your code so that others can read it easier.

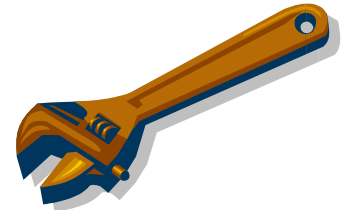
# The link tag

- Use it to link in style sheets (CSS)
- `<link rel="stylesheet" type="text/css" href="layout.css" />`
- The different relations: stylesheet, home, contents, index etc. Used for stylesheets most of the time.



# Web developer tools

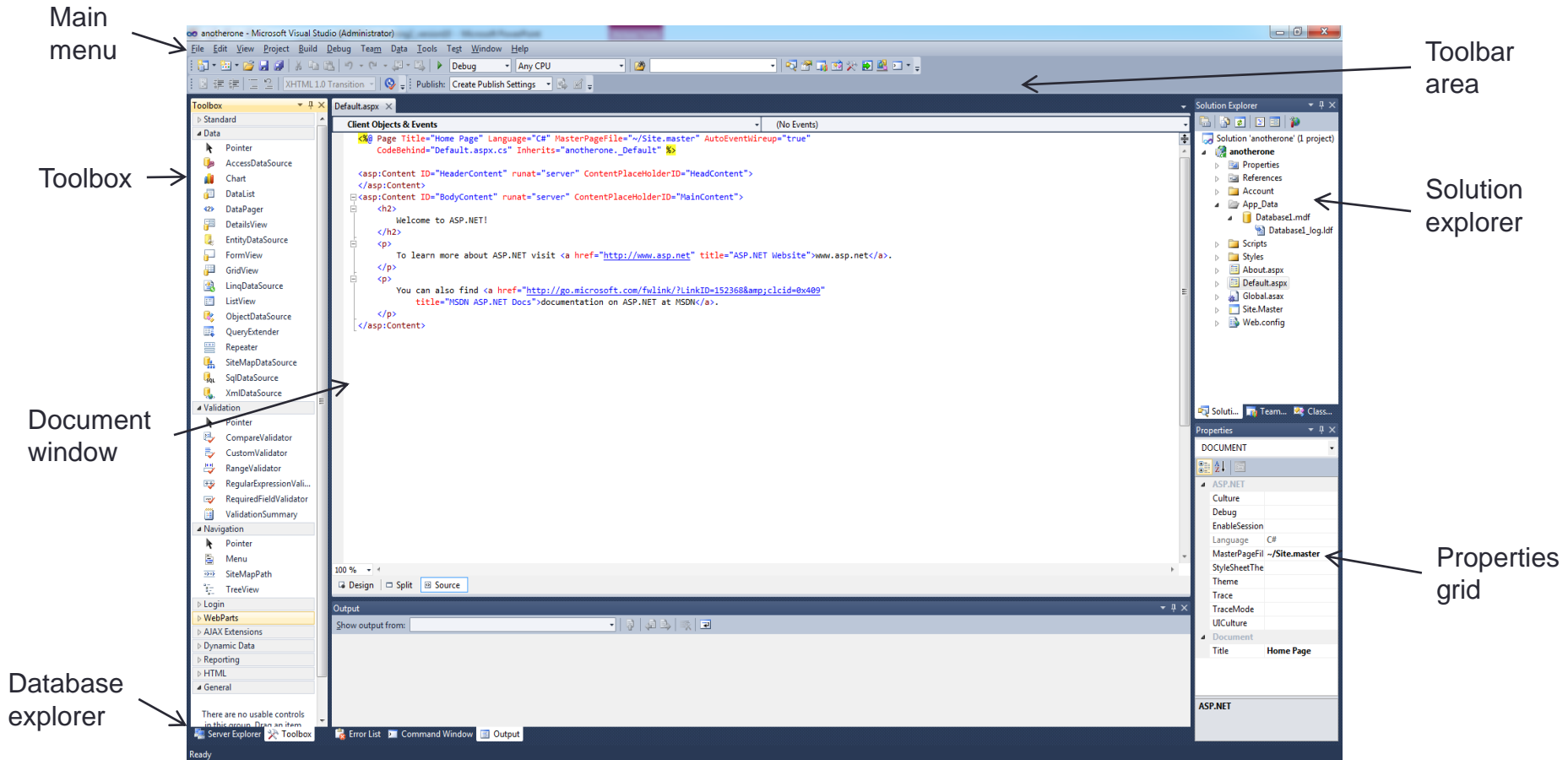
- Visual Web Developer 2010 express (free)  
<http://www.asp.net>
  - Installs also
    - .NET framework 4
    - SQL Server database express
- Visual Studio 2010 (90 dagar) (complete) (free on helpdesk)  
<http://msdn2.microsoft.com/vstudio>
- SQL Server Management Studio express SP4(database tool)  
<http://www.microsoft.com/downloads> (search)  
(its built in inside visual studio)



# Integrated developer environment in Visual Web Developer 2010

VWD2010 includes for instance:

- Database design
- Design of website
- Stylesheets



# Some websites you could visit...

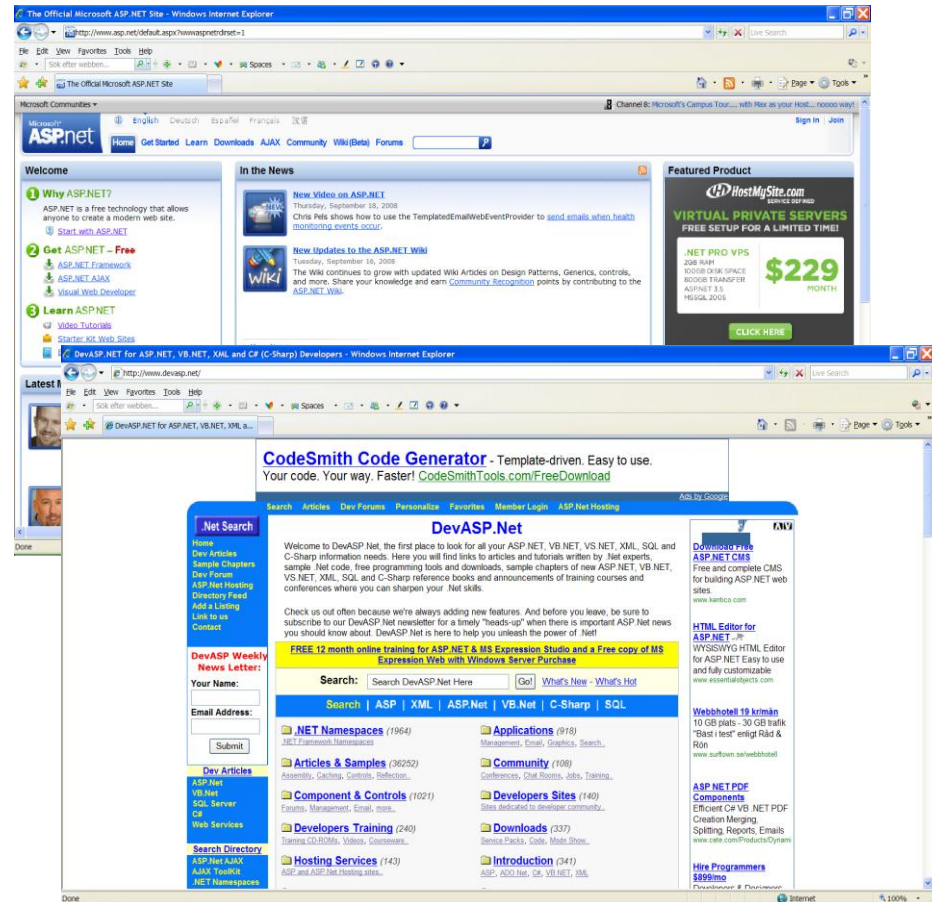
- <http://www.asp.net>  
info about asp.net,
- Download tools, Videos, tutorials, components, etc

- <http://www.devasp.net/>  
code examples, etc

- <http://www.w3.org>  
standard, examples, etc

- <http://www.hh.se/ik2015>

web page for this course (ready in a couple of hours)  
(or search for web systems fundamentals)



# A look at Visual Studio 2010

- We create a basic website and look at the environment