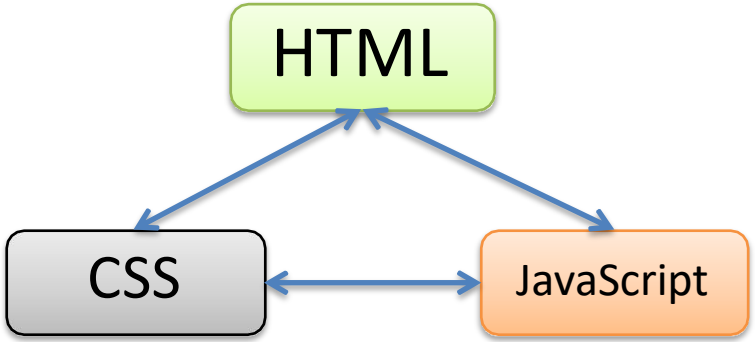
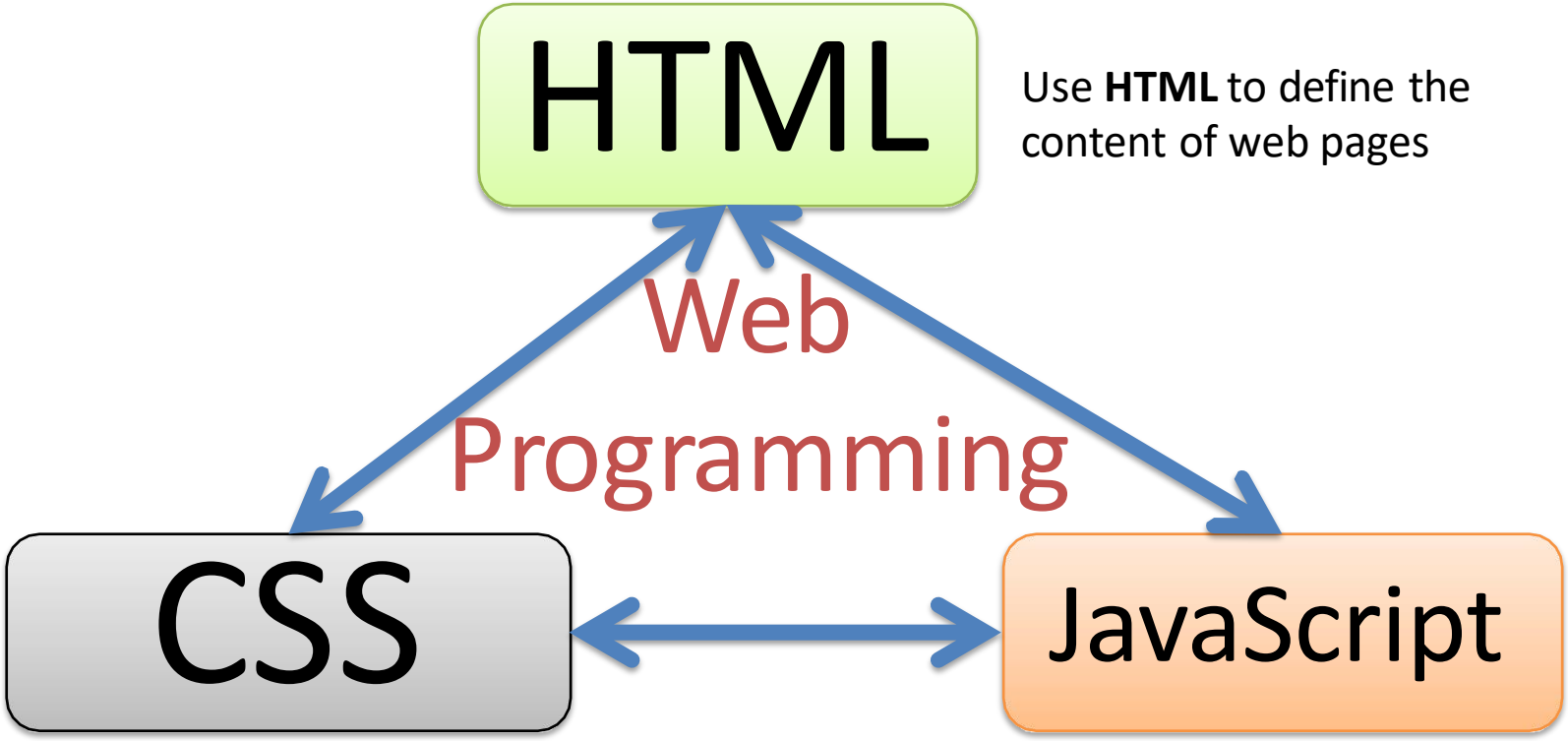
Web Programming



Step by step Exercises

The Web Programming Triangle

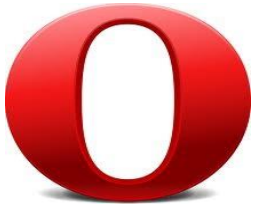


Web Architecture

Internet Explorer

Chrome

Firefox



Opera

Safari

Client

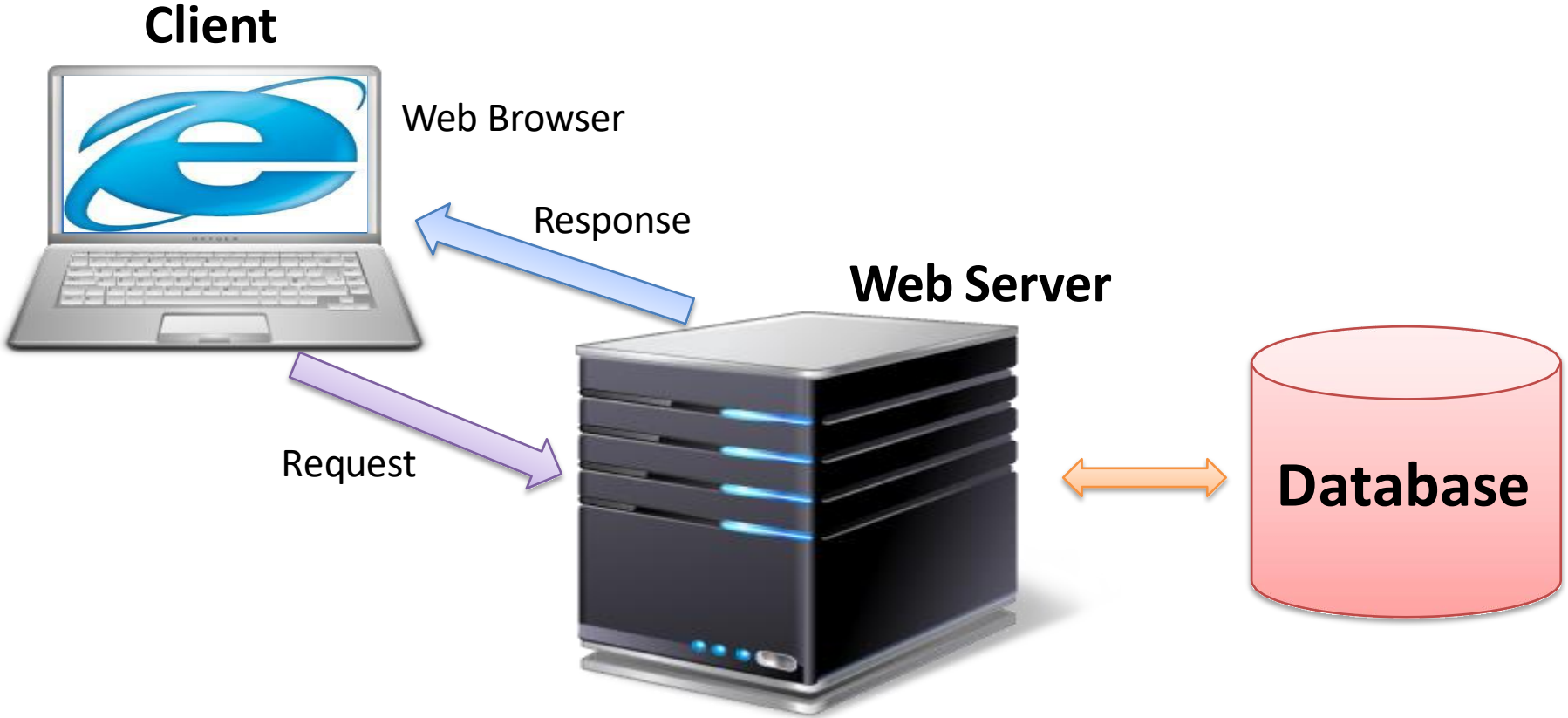
Web Browser

HTML CSS JavaScript

Server-side

Web Server

Client-Server Example



Web Platform

The Web Browser creates the visual web page you see in the browser based on the HTML code

```
<!DOCTYPE html>
<html>
<body>
<h1>My First Heading</h1>
<p>My first paragraph.</p>
</body>
</html>
```

HTML, CSS,
JavaScript Client-side

Web Browser

Web Page (HTML)

The code runs on the server and converted to HTML before sending to client (Web Browser)

ASP.NET, PHP, …

Web Server

Server-side

Internet Information Services (IIS), Apache, etc.

HTML

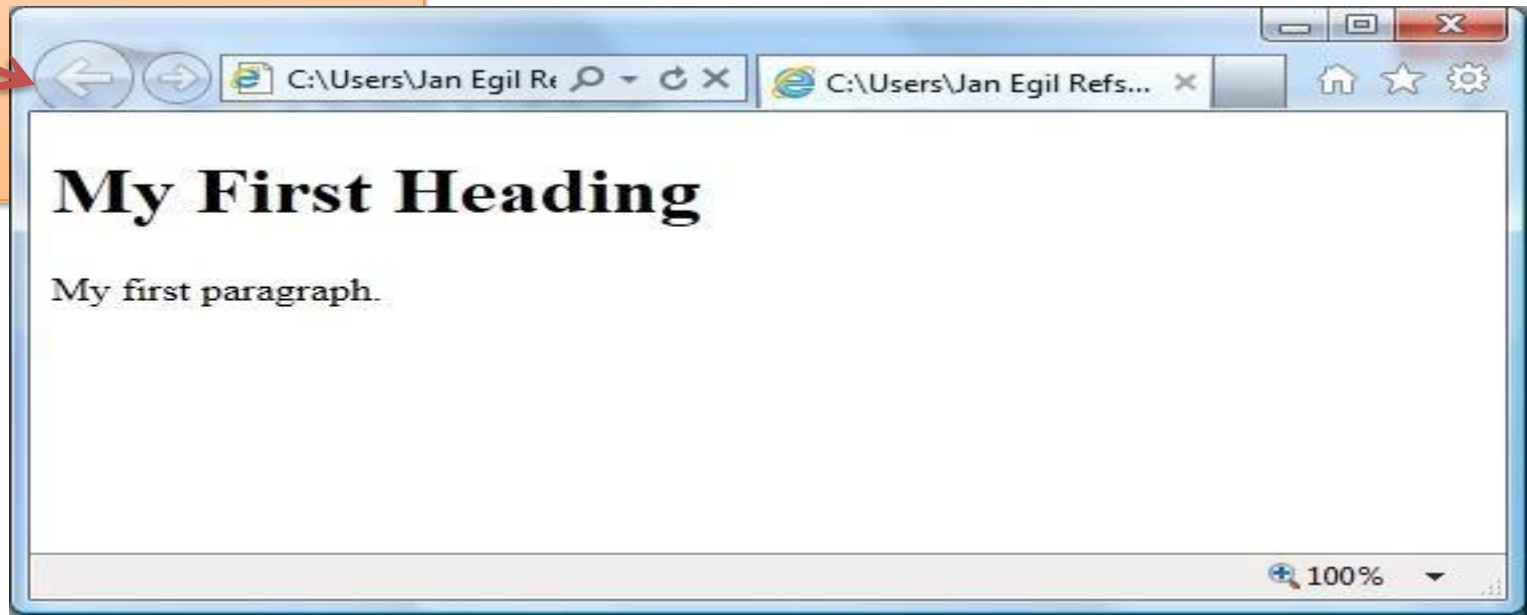
- **H**yper**T**ext **M**arkup **L**anguage (HTML)
- The Visual Appearnce of a Web Site
- “Web Browser Language”: All Web Browser understand HTML
- HTML 5 is the latest
- Maintained by W3C - World Wide Web Consortium

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>Title of the document</title>
  </head>

  <body>
    Content of the document......
  </body>

</html>
```

HTML Code

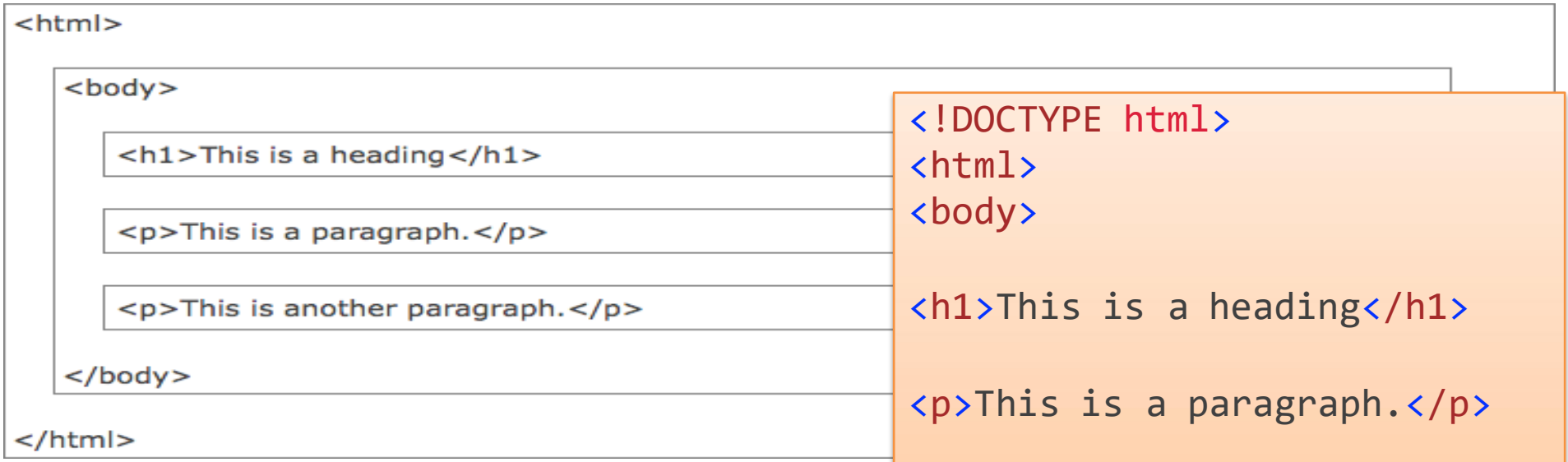
HTML

```
<!DOCTYPE html>
<html>
<body>

<h1>My First Heading</h1>

<p>My first paragraph.</p>

</body>
</html>
```



Web Browser

HTML Page Structure




```
<!DOCTYPE html>
<html>
<body>

<h1>This is a heading</h1>

<p>This is a paragraph.</p>

<p>This is another
paragraph.</p>

</body>
</html>
```

HTML Editors

Professional HTML editors:

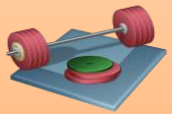
- Adobe Dreamweaver
- CoffeeCup HTML Editor
- …

For the simple examples in this Tutorial we only need Notepad (Windows) or TextEdit (Mac)

My First HTML Web Page

```
<tagname>content</tagname>
```

```
<!DOCTYPE html>
<html>
<body>

<h1>My First Heading</h1>

<p>My first paragraph.</p>

</body>
</html>
```



- The DOCTYPE declaration defines the document type
- The text between <html> and </html> describes the web document
- The text between <body> and </body> describes the visible page content
- The text between <h1> and </h1> describes a heading
- The text between and describes paragraph

Students: Create this HTML Code in e.g., NotePad and Save the File as .htm. Then Open the File in a Web Browser (just double-click on the file).

Hyperlinks

```
<!DOCTYPE html>
<html>
<body>

<h1>This is a heading</h1>

<a href="http://www.google.com">This is a link to Google</a>

</body>
</html>
```

Images

```
<!DOCTYPE html>
<html>
<body>

<h1>This is a heading</h1>

<img src=“myimage.jpg" alt=”blabla" width="104" height="142">

</body>
</html>
```

HTML Tags

Hyperlink:

```
<a href="http://www.google.com">This is a link to Google</a>
```

Bold Text:

```
<b>This is my Text</b>
```

Paragraph:

```
<p>My first paragraph.</p>
```

Headers:

```
<h1>This is my Header</h1>
```

Line Break:

```
This is my Text
<br>
This is also my Text
```

Title:

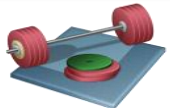
```
<title>This is my Title</title>
```

Comments:

```
<!-- Write your comments here -->
```

Image:

```
<img src="myimage.jpg" alt="blabla" width="104" height="142">
```



Students: Try these Examples

CSS

- CSS – Cascading Style Sheets
- Styles define **how to display** HTML elements
- CSS is used to control the style and layout of multiple Web pages all at once

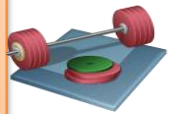
```
body {
    background-color: #d0e4fe;
}
h1 {
    color: orange;
    text-align: center;
}
p {
    font-family: "Times New Roman";
    font-size: 20px;
}
```

Why CSS is needed

- HTML was never intended to contain tags for formatting a document.
- HTML was intended to define the content of a document, like:
- <h1>This is a heading</h1>
- This is a paragraph.
- When tags like <font>, and color attributes were added to the HTML 3.2 specification, it started a nightmare for web developers. Development of large web sites, where fonts and color information were added to every single page, became a long and expensive process.
- To solve this problem, the World Wide Web Consortium (W3C) created CSS.
- In HTML 4.0, all formatting could be removed from the HTML document, and stored in a separate CSS file.
- All browsers support CSS today.

HTML + CSS Example

```
<!DOCTYPE html>
<html>
<head>
<style>
body {
    background-color: #d0e4fe;
}

h1 {
    color: orange;
    text-align: center;
}

p {
    font-family: "Times New Roman";
    font-size: 20px;
}
</style>
</head>
<body>

<h1>My First CSS Example</h1>
<p>This is a paragraph.</p>

</body>
</html>
```



Students: Create this Code in e.g., NotePad and Save the File as .htm.
Then Open the File in a Web Browser (just double-click on the file).
Change color, etc. and see what happens.

CSS Syntax

A CSS declaration always ends with a semicolon, and declaration groups are surrounded by curly braces, e.g.:

```
p {color:red;text-align:center;}
```

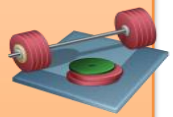
CSS Classes

```
.center {
    text-align: center;
    color: red;
}
```

```
} p.center {
    text-align: center;
    color: red;
}
```

```
<!DOCTYPE html>
<html>
<head>
<style>
.center {
    text-align: center;
    color: blue;
}
p.center {
    text-align: center;
    color: red;
}
</style>
</head>
<body>
<h1 class="center">My Heading</h1>
<p class="center">My Paragraph</p>

</body>
</html>
```

```
<!DOCTYPE  html>
<html>
<head>
<style>
.center  {
    text-align:  center;
    color:  red;
}
</style>
</head>
<body>

<h1  class="center">My  Heading</h1>
<p  class="center">My  Paragraph</p>

</body>
</html>
```



Students: Try these Examples

Three Ways to Insert CSS

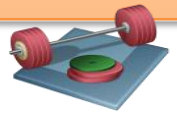
There are three ways of inserting a style sheet:

- **External style sheet** (Recommended!!)
  - An external style sheet is ideal when the style is applied to many pages. With an external style sheet, you can change the look of an entire Web site by changing just one file.
  - An external style sheet can be written in any text editor. The file should not contain any html tags.
  - The style sheet file must be saved with a .css extension
- **Internal style sheet**
  - An internal style sheet should be used when a single document has a unique style.
  - You define internal styles in the head section of an HTML page, inside the <style> tag
- **Inline style**
  - An inline style loses many of the advantages of a style sheet (by mixing content with presentation). Use this method sparingly!

Internal Style Sheet Example

You define internal styles in the head section of an HTML page, inside the <style> tag, like this:

```
<head>
<style>
body {
    background-color: linen;
}
h1 {
    color: maroon;
    margin-left: 40px;
}
</style>
</head>
```



Students: Try this Example

```
<!DOCTYPE html>
<html>
<head>
<style>
body {
    background-color: linen;
}
h1 {
    color: maroon;
    margin-left: 40px;
}
</style>
</head>
<body>

<h1>This is a heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

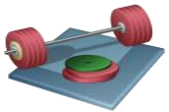
External Style Sheet Example

Each HTML page must include a link to the style sheet with the <link> tag. The <link> tag goes inside the head section:

```
<head>
<link rel="stylesheet" type="text/css" href="mystyle.css">
</head>
```

An example of a style sheet file called “myStyle.css”, is shown below:

```
body {
    background-color: lightblue;
}

h1 {
    color: navy;
    margin-left: 20px;
}
```



Students: Try this Example

CSS Properties

Text Color

```
body {
    color: blue;
}

h1 {
    color: #00ff00;
}

h2 {
    color: rgb(255,0,0);
}
```

Text Alignment

```
h1 {
    text-align: center;
}

p.date {
    text-align: right;
}

p.main {
    text-align: justify;
}
```

Background Color

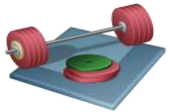
```
body {
    background-color: lightblue;
}
```

Text Size

```
h1 {
    font-size: 40px;
}

h2 {
    font-size: 30px;
}

p {
    font-size: 14px;
}
```

Text Font

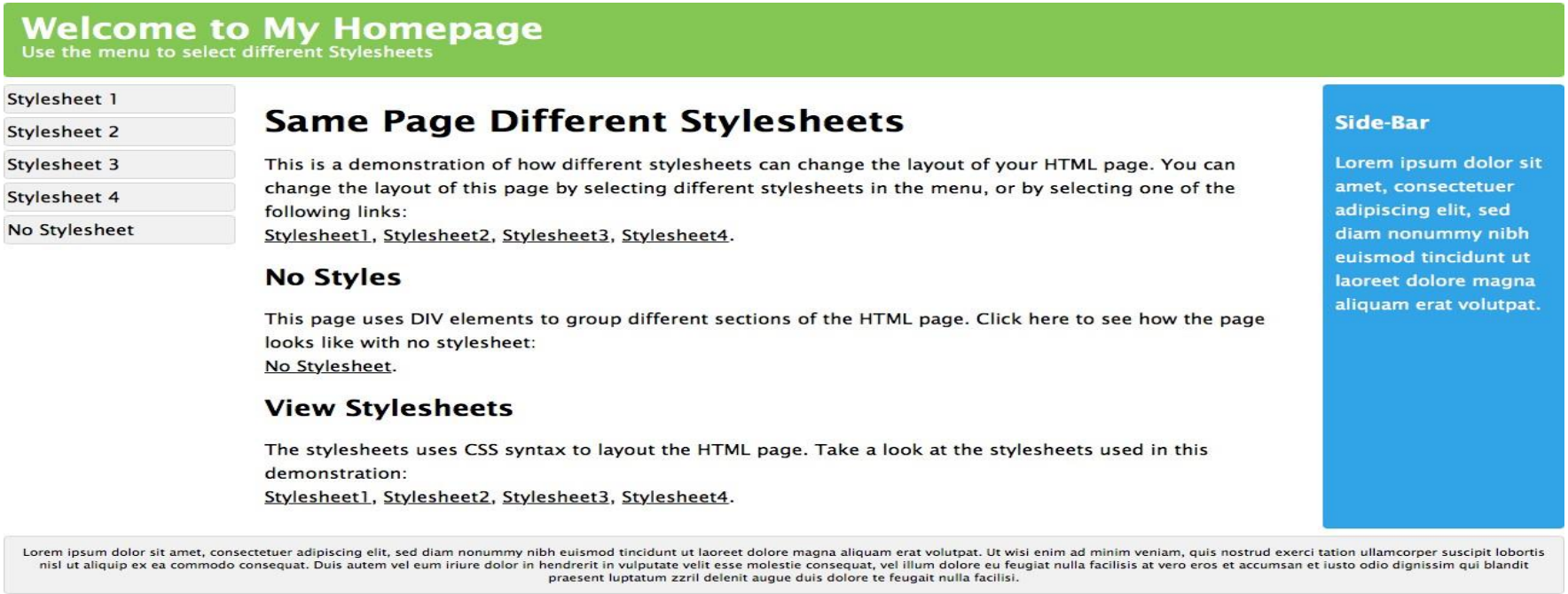
```
p {
    font-family: "Times New Roman", Times, serif;
}
```

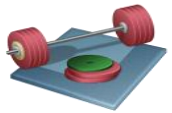


Students: Create a Style Sheet (.CSS) and a HTML page where you use these Properties

CSS Example

http://www.w3schools.com/css/demo_default.htm





Students: Open this Example and see how different styles totally changes the display and layout of a HTML page

JavaScript

- JavaScript is the programming language of the Web.
- All modern HTML pages are using JavaScript.
- JavaScript is the default scripting language in all modern browsers, and in HTML5.
- JavaScript is probably the most popular programming language in the world.
- It is the language for HTML, for the Web, for computers, servers, laptops, tablets, smart phones, and more.
- JavaScript can Change HTML Elements! – which makes it very powerful!

Why JavaScript?

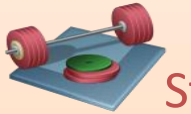
JavaScript is one of **3 languages** all web developers **must** learn:

- 1. **HTML** to define the content of web pages
- 2. **CSS** to specify the layout of web pages
- 3. **JavaScript** to program the behavior of web pages

This tutorial is about JavaScript, and how JavaScript works with HTML and CSS.

JavaScript Example

```
<!DOCTYPE html>
<html>
<body>
<h1>                    </h1>

<p>                                                    </p>

<button type="button"                                  </button>
onclick="myFunction()">

<p id="demo">                          </p>

<script>


</script>

</body>
</html>
```



Students: Try this Example

My First JavaScript

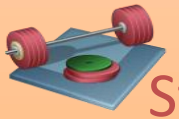
JavaScript can change the content of an HTML element:

Click Me!

Hello JavaScript!

JavaScript Example 2

```
<!DOCTYPE html>
<html>
<body>

<p>Please input a number between 1 and 10:</p>

<input id="numb" type="number">

<button type="button" onclick="myFunction()">Submit</button>

<p id="demo"></p>

<script>
function myFunction() {
    var x, text;

    // Get the value of input field with id="numb"

    x = document.getElementById("numb").value;

    // If x is Not a Number or less than one or greater than 10

    if (isNaN(x) || x < 1 || x > 10) {
        text = "Input not valid";
    } else {
        text = "Input OK";
    }
    document.getElementById("demo").innerHTML = text;
}
</script>

</body>
</html>
```



Students: Try this Example

JavaScript Comments

```
// Change heading:
document.getElementById("myH").innerHTML = "My First
Page";
// Change paragraph:
document.getElementById("myP").innerHTML = "My first paragraph.";
```

```
var x = 5;      // Declare x, give it the value of 5
var y = x + 2;  // Declare y, give it the value of x +
2
```

```
/*
The code below will change the heading with id = "myH" and the paragraph with id = "myP" in my web page:
*/
document.getElementById("myH").innerHTML = "My First Page";
document.getElementById("myP").innerHTML = "My first paragraph.";
```

Using Comments to Prevent Execution:

```
//document.getElementById("myH").innerHTML = "My First Page";
document.getElementById("myP").innerHTML = "My first
paragraph.";
```

```
/*
document.getElementById("myH").innerHTML = "My First Page";
document.getElementById("myP").innerHTML = "My first paragraph.";
*/
```

JavaScript Placement

- You can place any number of scripts in an HTML document. Scripts can be placed in the <body>, or in the <head> section of an HTML page, or in both.
- It is a good idea to place scripts at the bottom of the <body> element. This improves page load, because HTML loading is not blocked by scripts loading.
- Scripts can also be placed in external files. External scripts are practical when the same code is used in many different web pages. JavaScript files have the file extension .js.

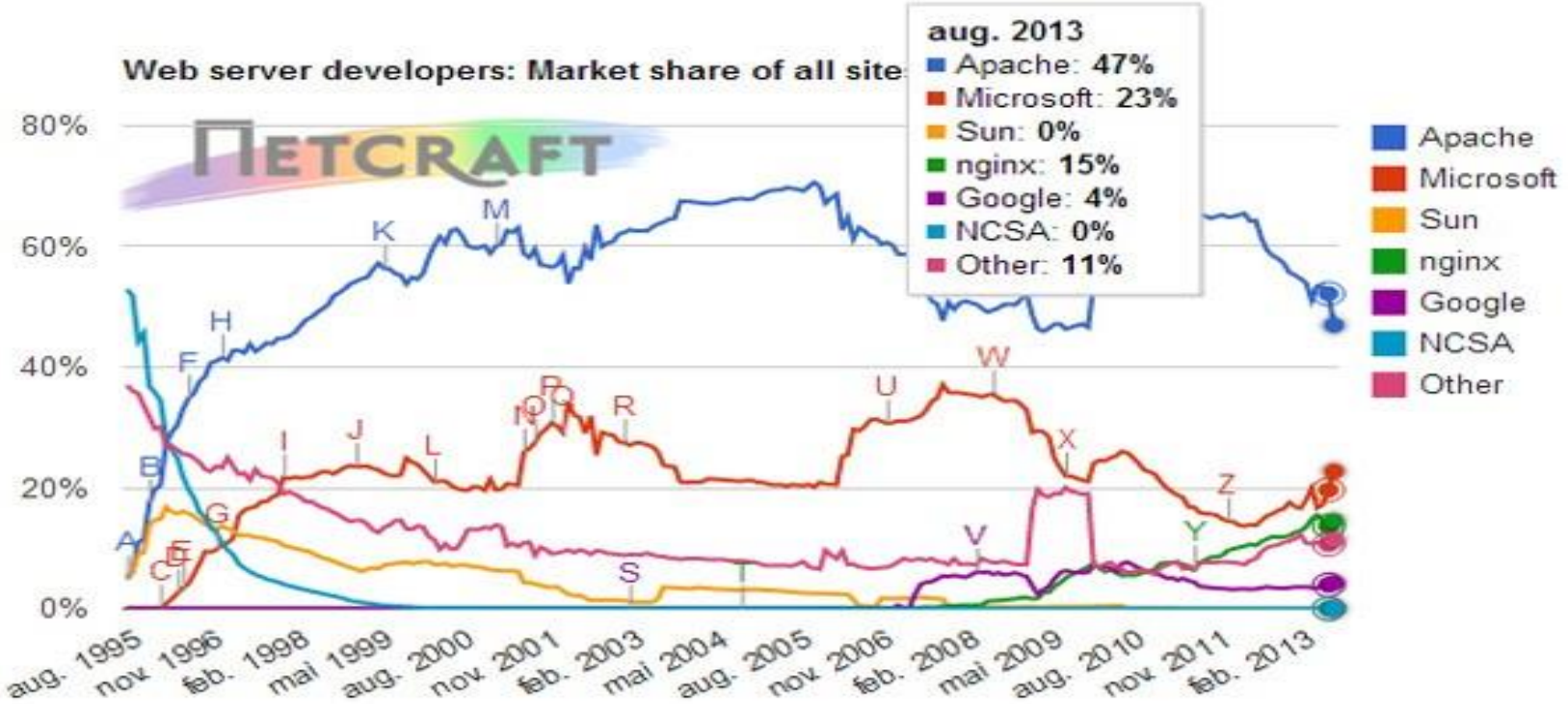
Web Server

The term web server can refer to either the hardware (the computer) or the software (the computer application) that helps to deliver web content that can be accessed through the Internet.

The most common use of web servers is to host websites, but there are other uses such as gaming, data storage or running enterprise applications.

- **IIS** - Internet Information Services
  - Microsoft Windows
- **Apache** Web Server
  - Open Source
  - Cross-platform: UNIX, Linux, OS X, Windows, ...
- **Nginx** (pronounced "engine x") - Has become very popular latly
- GWS (Google Web Server)
- ...

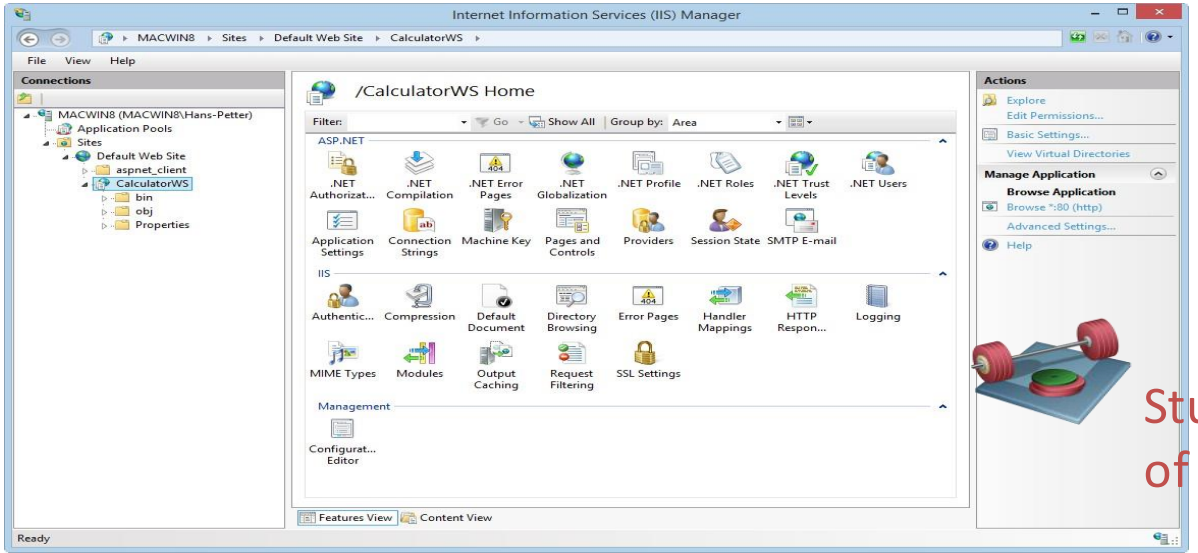
Web Server Popularity



http://www.digi.no/921119/under-halvparten-bruker-apache

Internet Information Services (IIS)

- IIS – Internet Information Services
- Web Server that host the Web Pages/Web Site
- Make sure to have the IIS Role installed with ASP.NET sub components

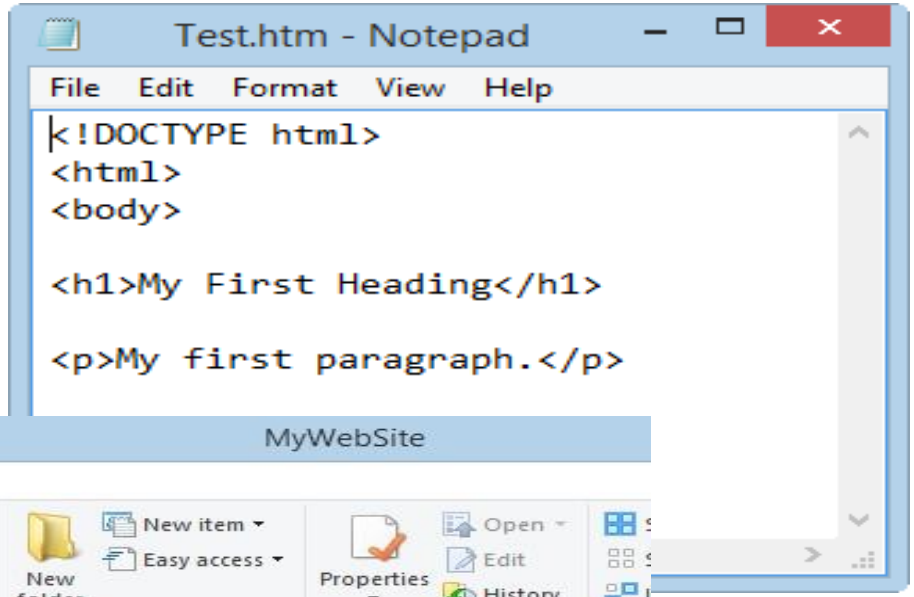


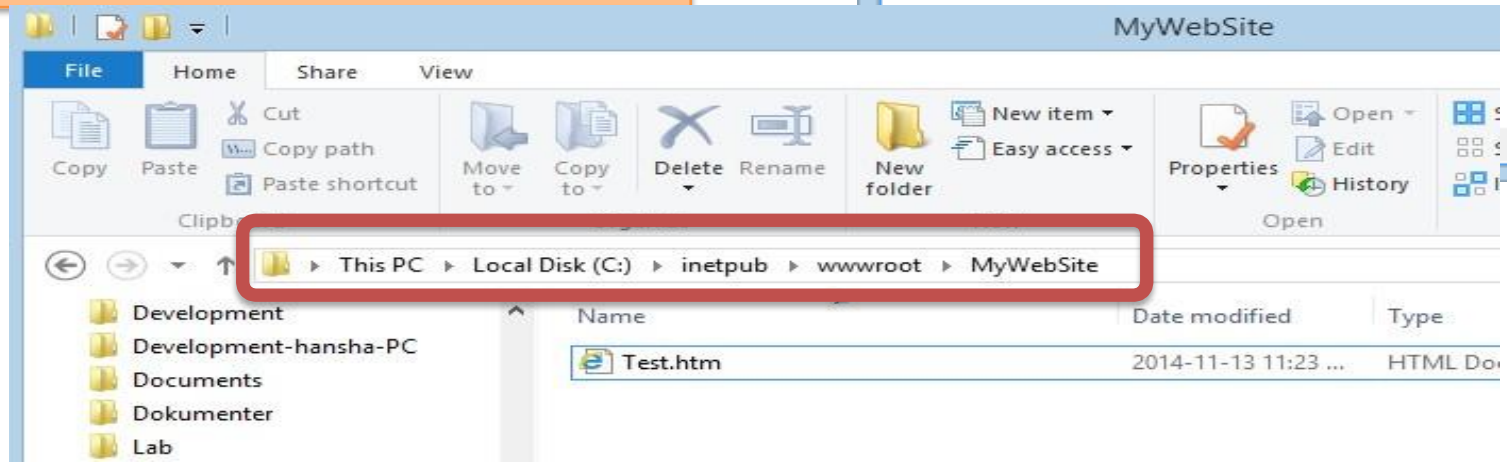
Default IIS Directory:
C:\inetpub\wwwroot

Students: Deploy one (or) more of your Web pages using IIS

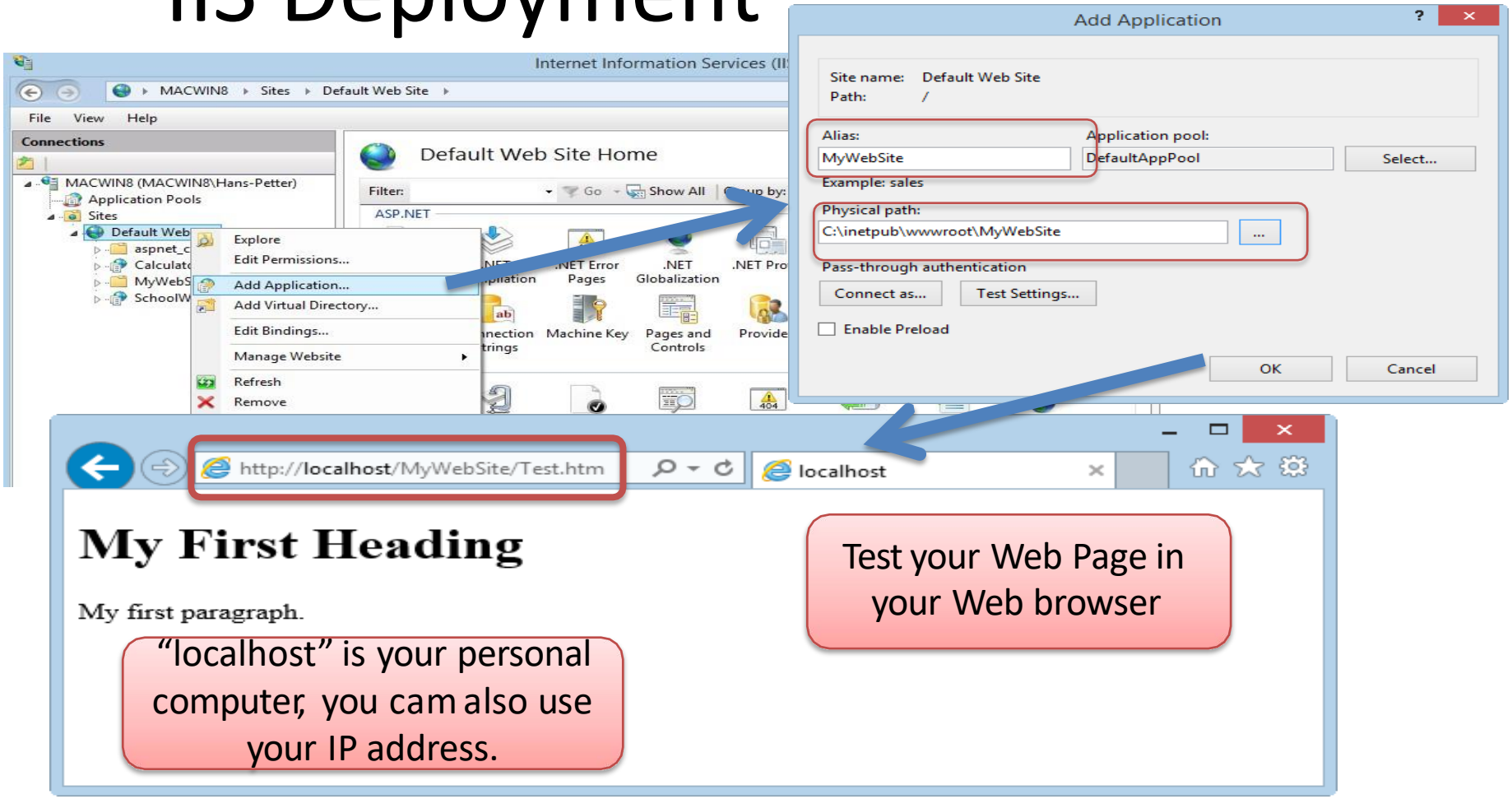
```
<!DOCTYPE html>
<html>
<body>

<h1>My First Heading</h1>

<p>My first paragraph.</p>

</body>
</html>
```

IIS Deployment





IIS Deployment



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- Learn XQuery
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- Learn RSS
- Learn WSDL

WEB Building
- Web Building
- Web Statistics
- Web Validation
- Web Certificates

HTML

HTML Tutorial

HTML Tag Reference

CSS

CSS Tutorial

CSS Reference

JavaScript

JavaScript Tutorial

JavaScript Reference

SQL

SQL Tutorial

SQL Reference

PHP

PHP Tutorial

PHP Reference

JQuery

JQuery Tutorial

JQuery Reference

Learn Web Building

Learn how to create a website on your own computer
Learn the basics of web building in less than a day
Learn how to add a database to your website

Web Building Tutorial

Web Certificates

1000+ Examples

Color Picker

References
- HTML/HTML5 Tags
- HTML Colors
- HTML Characters
- HTML Symbols

- CSS 1,2,3
- CSS3 Support

- JavaScript
- HTML DOM
- jQuery
- jQuery Mobile
- Google Maps

- PHP
- SQL
- ASP.NET

- XML DOM
- XSLT
- XPath
- SVG

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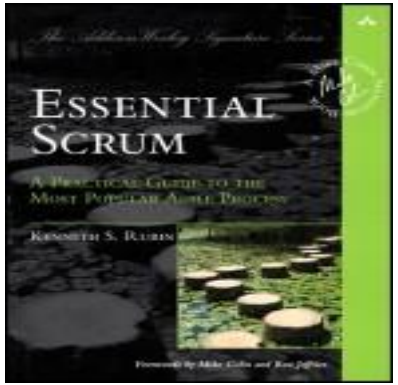

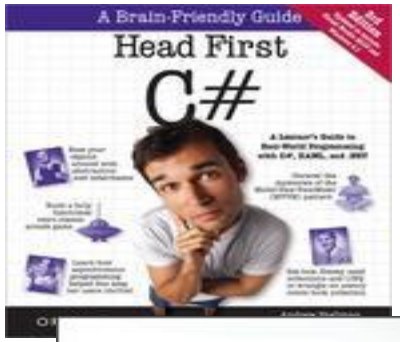

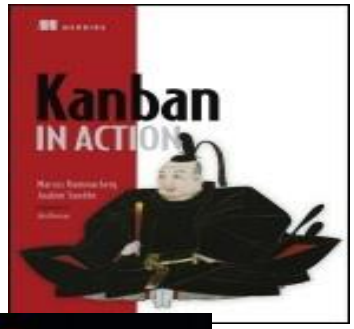

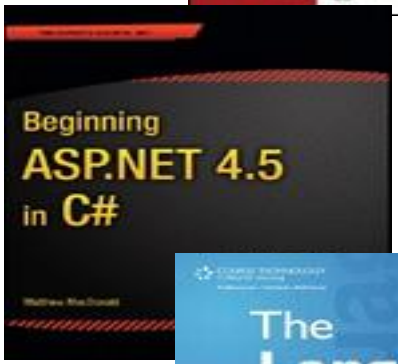

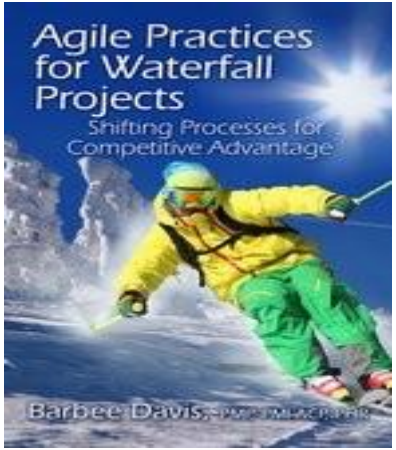

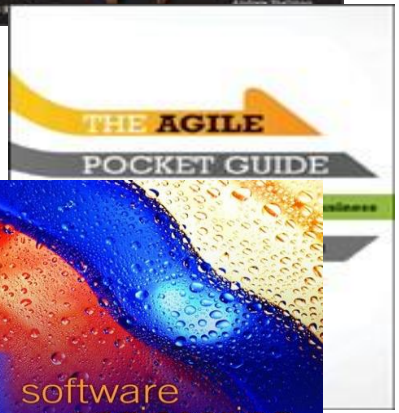

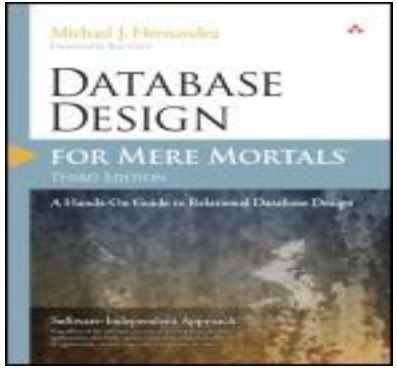

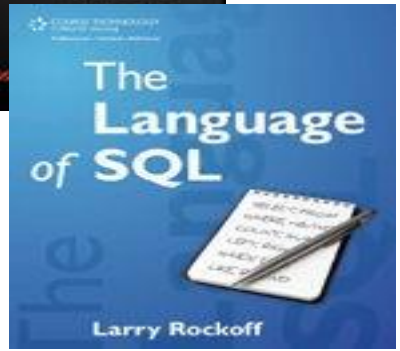

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References

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- CSS Tutorial: http://www.w3schools.com/css
- JavaScript Tutorial: http://www.w3schools.com/js