



C#  
Programming



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## CH 1 | INTRODUCTION TO WEB APPLICATION

At the end of this chapter, students are able to:

- Differentiate between internet and WWW
- Differentiate between static vs dynamic web pages
- Differentiate between client side scripting vs server side scripting



## INTERNET

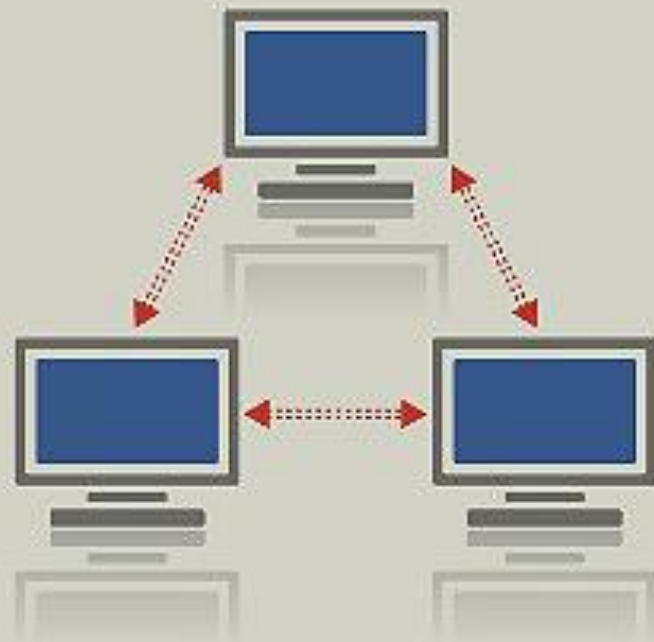
- Network of networks
- It is the infrastructure that connects networks across the world, including hardware (computers, cables, servers) and software

## WWW

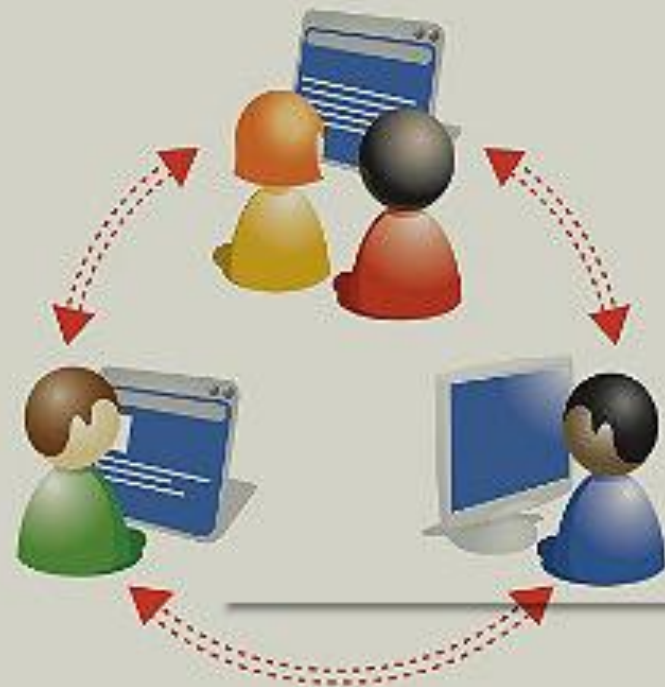
- The system we use to access the internet (transmitting data over the internet)
- In this case by entering a string case calls Uniform Resource Locator (URL) into a browser



The term Internet was first used in 1974 in an article written by Cerf & Kahn about TCP



**The Internet: Connecting Computers**



**The Web: Connecting People**

Features	Internet	WWW
Comprises	Network of computers, copper wires, fiber-optic cables and wireless networks	Files, folders and documents stored in various computers
Governed by	Internet protocol	Hyper text transfer protocol
Dependency	This is the base, independent of the WWW	It Depends on internet to work

- The most attractive part of the Internet is the World Wide Web/the Web/WWW.
- Was invented by Tim Berners-Lee in 1989 when working as a researcher at CERN, the European Particle Physics Laboratory in Geneva, Switzerland.
- Web made the information on the internet much easier to access and cause an explosive growth of internet.
- In 1989, he began to develop a technology for sharing information via hyperlinked text documents, through which scientists could easily “hyperlink” to another research paper and immediately view it.



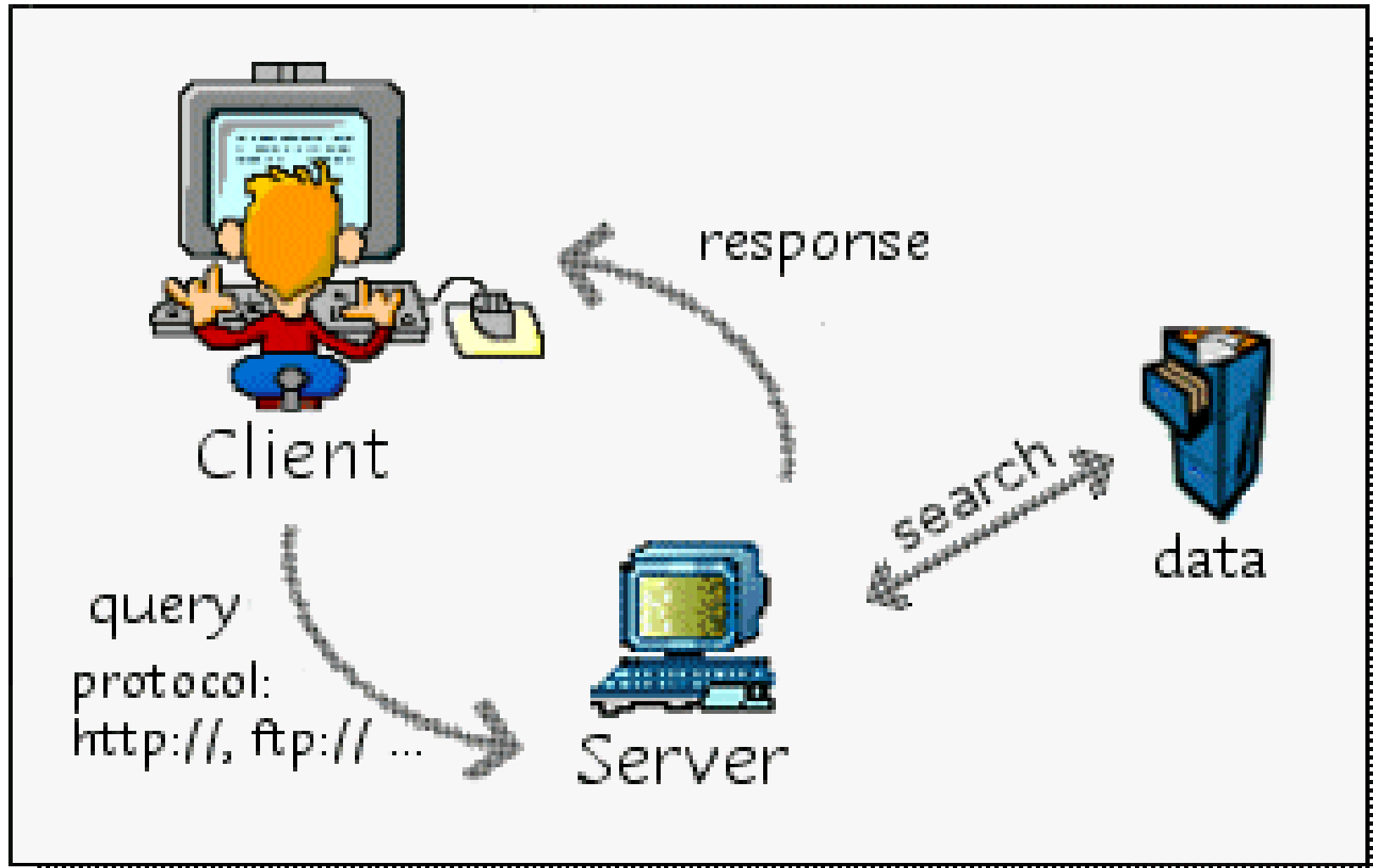
Do you know the first photo uploaded on the web? That was an image of the CERN house band Les Horribles Cernettes.

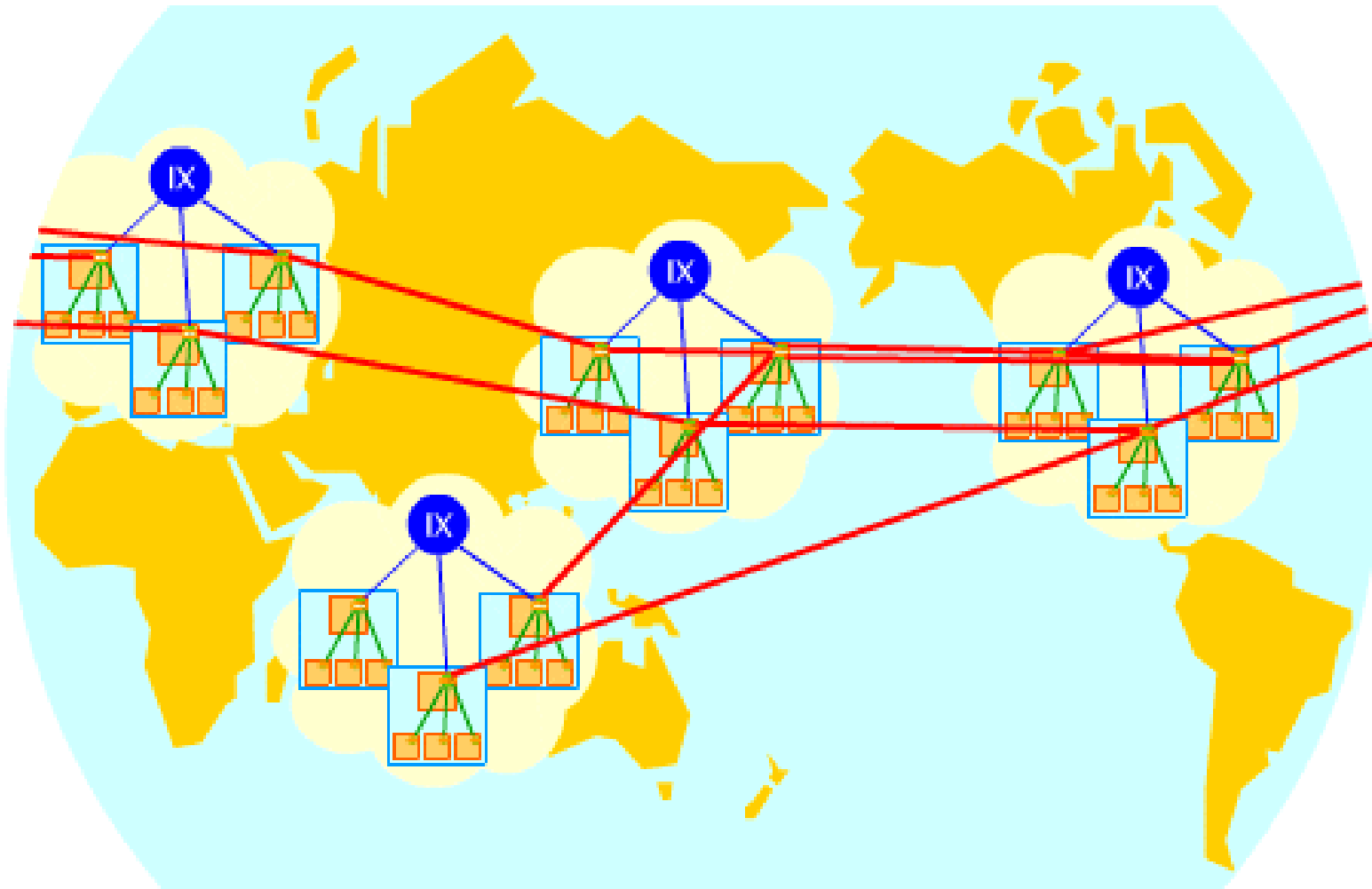
- Tim Berners-Lee proposed the basic elements of web including:

Elements	Description
Client	He created the first client browser “WorldWideWeb”, it was a web editor as well.
URL	Uniform Resource Locator
HTTP	Hypertext Transfer Protocol
HTML	Hypertext Markup Language

- In 1991, he posted the source code on internet; more and more people were attracted to web technology.
- In 1993, the first graphics-based web browser, Mosaic, became available, which made the information on the internet much easier to access.
- In October 1994, Tim Berners-Lee founded an organization- the World Wide Web Consortium (W3C) to take responsibility for developing the various protocols and standards associated with the web.







# WHAT IS WEB APPLICATION

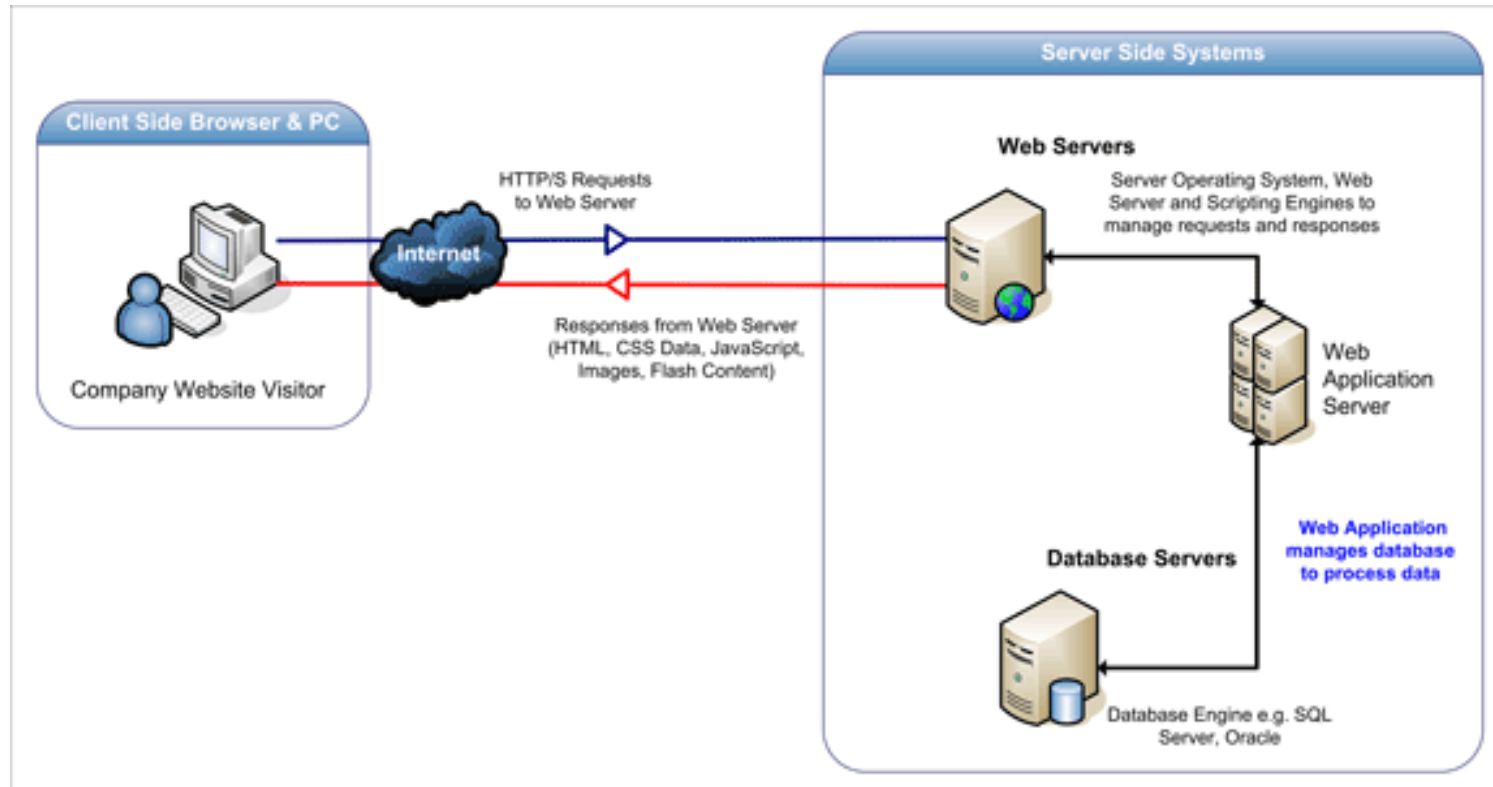
- Is an application that is accessed by users over a network eg: The Internet or an intranet.
- The term may also mean a computer software application that is coded in a browser-supported programming language (such as JavaScript, combined with a browser-rendered markup language like HTML) and reliant on a common web browser to render the application executable.
- Common web applications include webmail, online retail sales, online auctions, wikis and many other functions



*"You should check your e-mails more often. I fired you over three weeks ago."*



# HOW DO WEB APPLICATION WORKS?



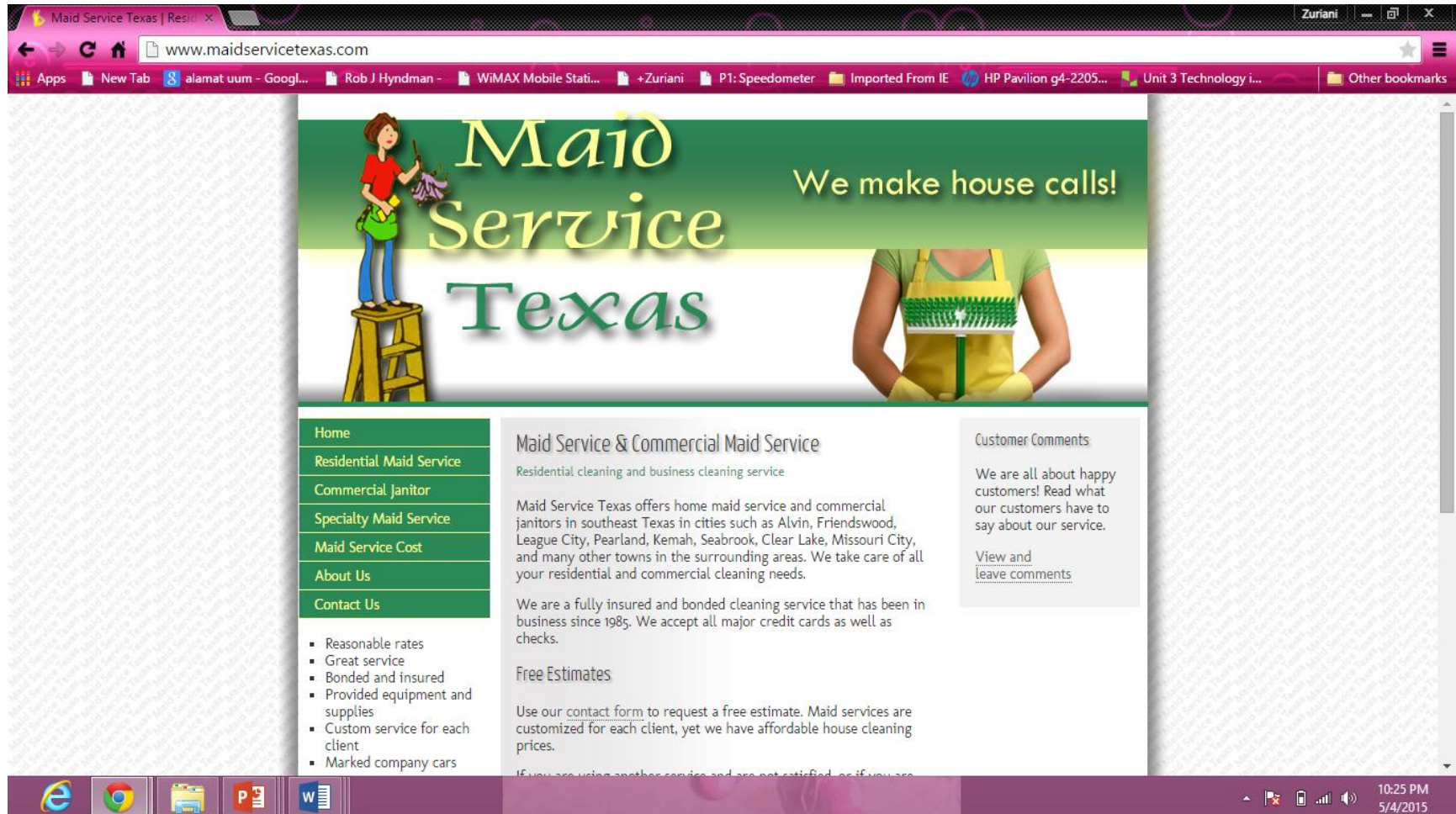
- Example: Three-layered web application model.
- The first layer is normally a web browser or the user interface
- The second layer is the dynamic content generation technology tool such as Java servlets (JSP) or Active Server Pages (ASP)
- The third layer is the database containing content (e.g., news) and customer data (e.g., usernames and passwords, social security numbers and credit card details).

- Static web pages contain content that does not changes based on who visits the page or other external factors
- Static web pages are suitable for the contents that never or rarely need to be updated.
- Two-tier architecture
- Example of static web pages are HTML pages

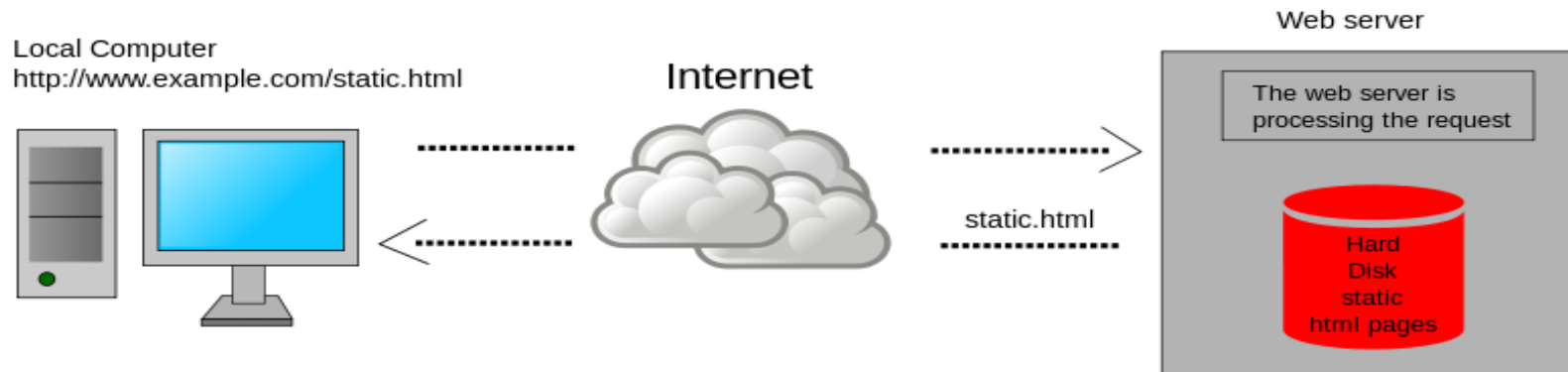


Example of static web pages: <http://www.maidserVICetexas.com/>

# EXAMPLE OF STATIC WEB PAGES



- A website requires a web server
- A web server is a software application that continually waits for incoming web requests, which are request for a particular URL.
- The web server examines the requested URL, locates the appropriate file, and then sends this file back to the client that made the request.



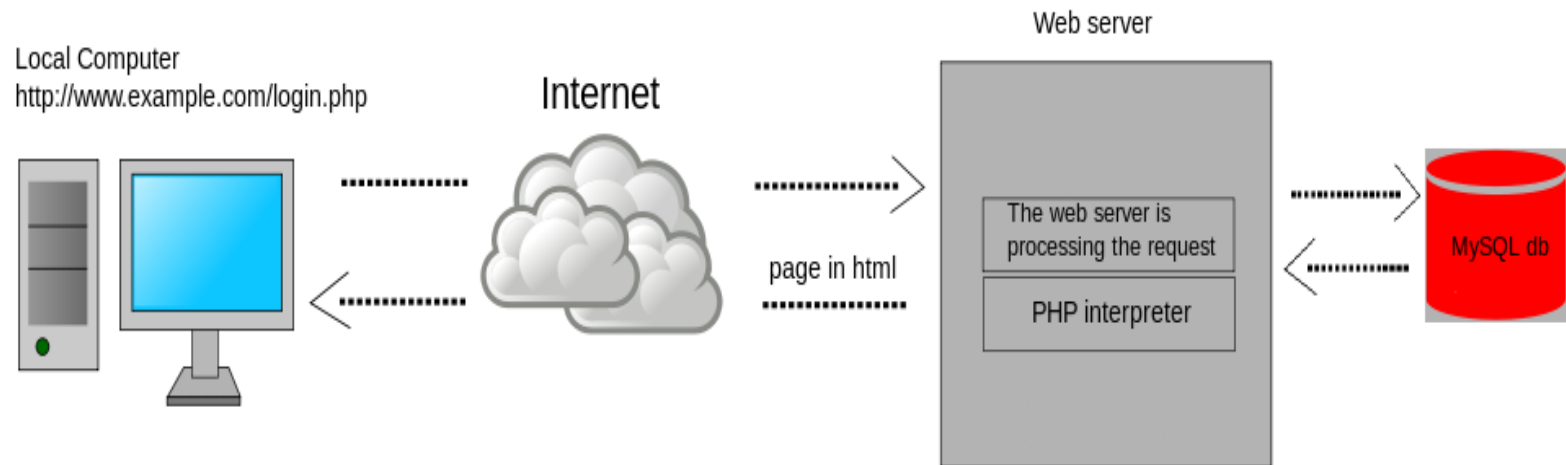


## DYNAMIC WEB PAGES & THREE-TIER /N-TIER ARCHITECTURE

- A dynamic web pages are pages whose content is dynamically regenerated each time the web page is requested
- Any website's search engine page is an example of a dynamic web page because the content of the results page is based on the search criteria the user entered and the searchable documents on the web server.
- Commonly used technologies for developing dynamic web pages include: PHP, JSP, ASP, ASP.net, etc.

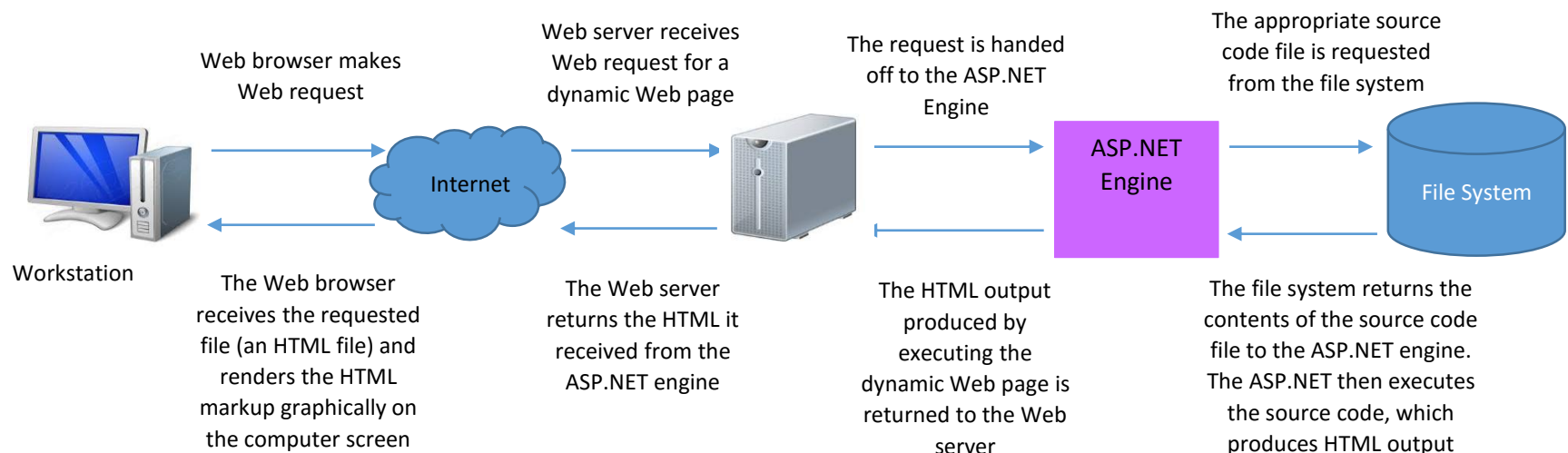


- To accommodate dynamic content, dynamic web pages contain source code that is executed when the page is requested.
- With this model, content isn't actually created until the web page is requested.

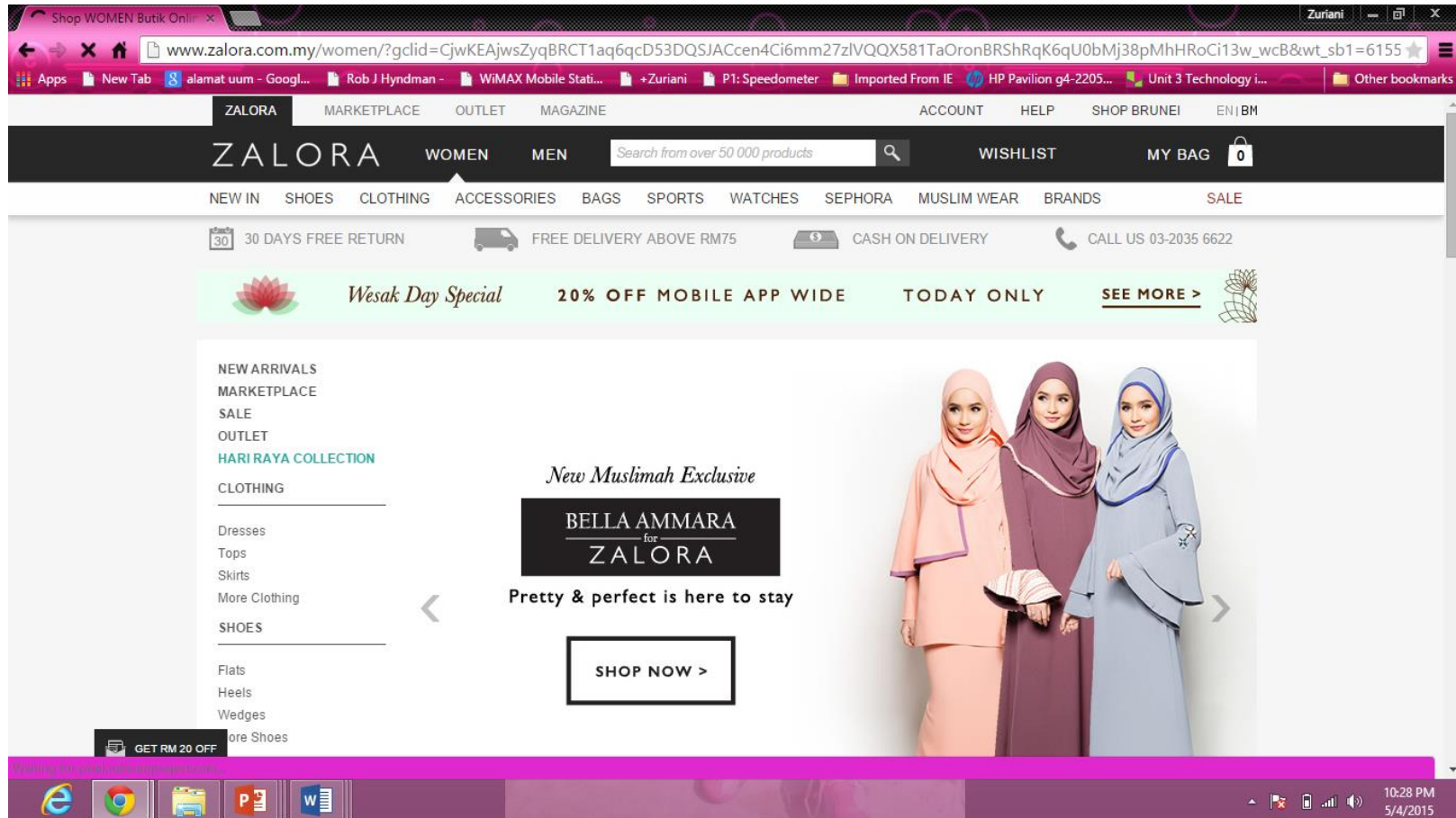


Example of dynamic web pages: <http://www.computerhope.com/>

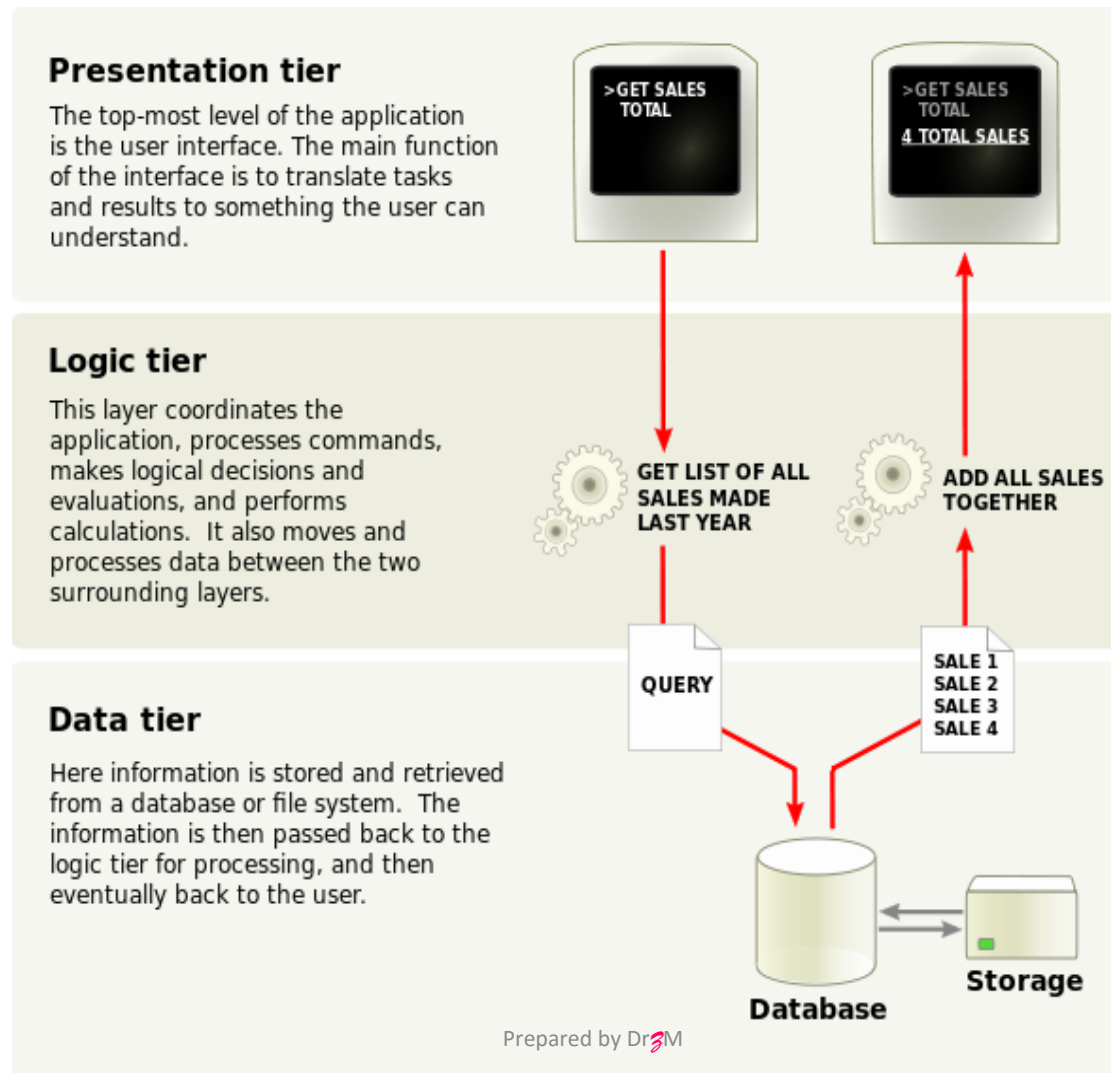
- When a web request arrives, the web server determines whether the requested page is a static web page or dynamic web page.
- If the requested web page is static, its contents are sent directly back to the browser that initiated the request.
- If, however the requested web page is dynamic, example an ASP.NET page, the web server hands off the responsibility of executing the page to the ASP.NET engine.



# EXAMPLE OF DYNAMIC WEB PAGES



- Generally, these three tiers are called: Presentation tier, logic tier (Application tier), and Data tier.

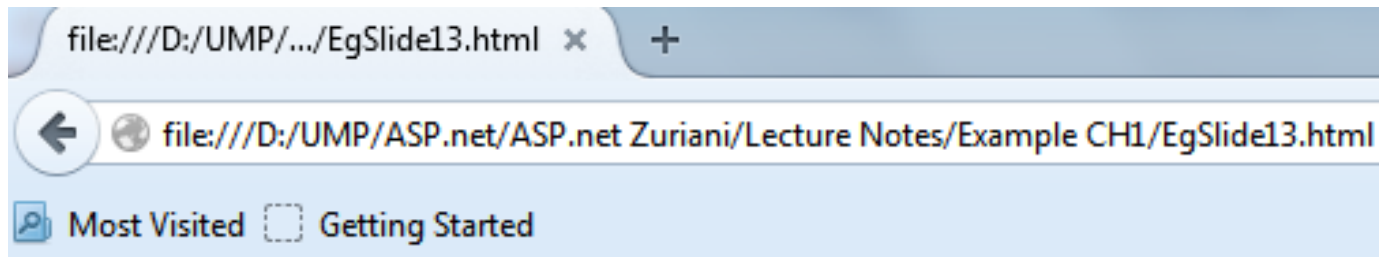


- Website scripts run in one of two places
  - ✓ The client side (also called the front-end)
  - ✓ The server side (also called the back-end).
- The client of a website refers to the web browser that is viewing it.
- The server of a website is, of course, the server that hosts it.
- Example of client-side scripting: HTML, CSS, and JavaScript
- Example of server-side scripting: PHP, JSP, ASP/ASP.net code

- HTML is a language for describing web pages.
- Stands for Hyper Text Markup Language
- It is a markup language
- Consists of a set of markup tags
- The tags describe document content
- HTML documents contain HTML tags and plain text
- HTML documents are also called web pages



```
<!DOCTYPE html>
<html>
<body>
<p>My first web page!</p>
</body>
</html>
```



My first web page!



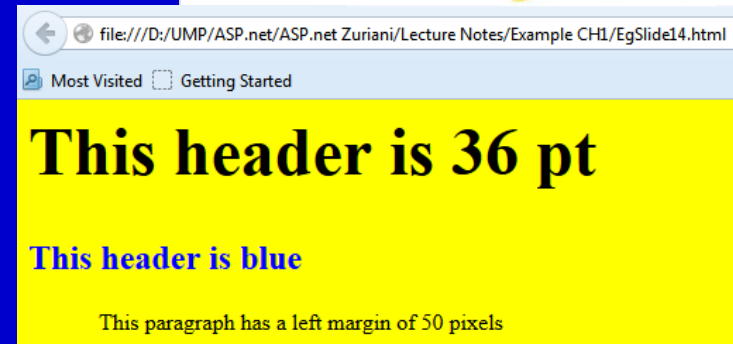
Markup languages are designed for the processing, definition and presentation of text. The language specifies code for formatting, both the layout and style, within a text file. The code used to specify the formatting are called tags. HTML is an example of a widely known and used markup language.



- CSS stands for Cascading Style Sheets
- Styles define how to display HTML elements
- An HTML document can be displayed with different styles

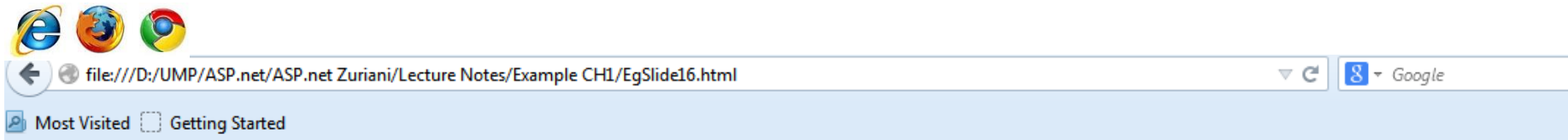


```
<style>
    body {background-color:yellow;}
    h1    {font-size:36pt;}
    h2    {color:blue;}
    p     {margin-left:50px;}
</style>
</head>
<body>
<h1>This header is 36 pt</h1>
<h2>This header is blue</h2>
<p>This paragraph has a left margin of 50
pixels</p>
```





- JavaScript is the scripting language of the Web.
- All modern HTML pages are using JavaScript to add functionality, validate input, communicate with web servers, and much more.
- To insert a JavaScript into an HTML page, use the `<script>` tag.
- Example:



JavaScript can write directly into the HTML output stream:

**This is a heading**

This is a paragraph.

You can only use **document.write** in the HTML output. If you use it after the document has loaded (e.g. in a function), the whole document will be overwritten.

```
<!DOCTYPE html>
<html>
<body>
<p>JavaScript can write directly into the HTML output stream:</p>
<script>
    document.write("<h1>This is a heading</h1>");
    document.write("<p>This is a paragraph.</p>");
</script>
<p>
You can only use <strong>document.write</strong> in the HTML
output.

If you use it after the document has loaded (e.g. in a function),
the whole document will be overwritten.
</p>
</body>
</html>
```



- Originally created by Rasmus Lerdorf in 1995
- PHP is an acronym for PHP: Hypertext Preprocessor
- PHP is a widely-used, open source scripting language
- PHP scripts are executed on the server
- PHP costs nothing, it is free to download and use
- PHP code is usually embedded in an HTML document.

```
<!DOCTYPE html>
<html>
<body>
<?php
echo "My first PHP script!";
?>
</body>
</html>
```

Example Page: <http://php.net/manual/en/tutorial.firstpage.php>



- Released in 1999 by Sun Microsystems
- JSP is similar to PHP, but it uses the Java programming language
- Example:

```
<HTML>
<BODY>
Hello!   The time is now <%= new java.util.Date() %>
</BODY>
</HTML>
```

Example Page (E-comm): <http://community.ump.edu.my/ecomstaff/home.jsp>



## ASP.NET

- Released in 1996 by Microsoft.
- Example

```
<!DOCTYPE html>
<html>
<body>
<%
response.write("My first ASP script!")
%>
</body>
</html>
```

Example Page (W3school): <http://www.w3schools.com/default.asp>

## A QUICK LOOK

- ASP.NET is an exciting web programming technology pioneered by Microsoft that allows developers to create dynamic web pages.
- Microsoft started developing ASP.NET in the late 1990s, at a time when a lot of its customers were developing Windows applications using Visual Basic.
- Microsoft created ASP.NET to bring the Visual Basic programming model to the web development world, including concepts such as drag-and-drop controls, events, and design surfaces.
- ASP.NET version 1.0 was released in January 2002.
- In November 2005, Microsoft released version 2.0.
- In November 2007, Microsoft released version 3.5.
- 2010, ASP.NET 4.
- 2012, Microsoft Visual Studio 2012 with ASP.NET 4.5.



- Software used to create ASP.NET web pages.
- Integrates .NET Framework, Visual Web Developer, and SQL Server
- Also includes a lightweight web server specifically designed for testing ASP.NET pages.
- Lab: Microsoft Visual Studio 2010.
- It is Free to download Microsoft Visual Studio 2012 from [www.asp.net](http://www.asp.net)

- An ASP file is just the same as an HTML file
- An ASP file can contain text, HTML, XML, and scripts
- Scripts in an ASP file are executed on the server
- An ASP file has the file extension ".asp"

- Demo
- When testing an ASP.NET page, Visual Web Developer starts the **ASP.NET Development Web Server** and launches a browser that issues a request of the following form:
- `http://localhost:portNumber/yourPage.aspx`.

ASP.NET	C#
Is a web technology that is used in building web applications and websites	Is a language that is used in writing programs that are utilizing the Asp.NET framework
Is a server side technology that is language independent. Any .NET languages such as C#, VB.NET can be used to develop web applications through ASP.NET	Is a .NET programming language.

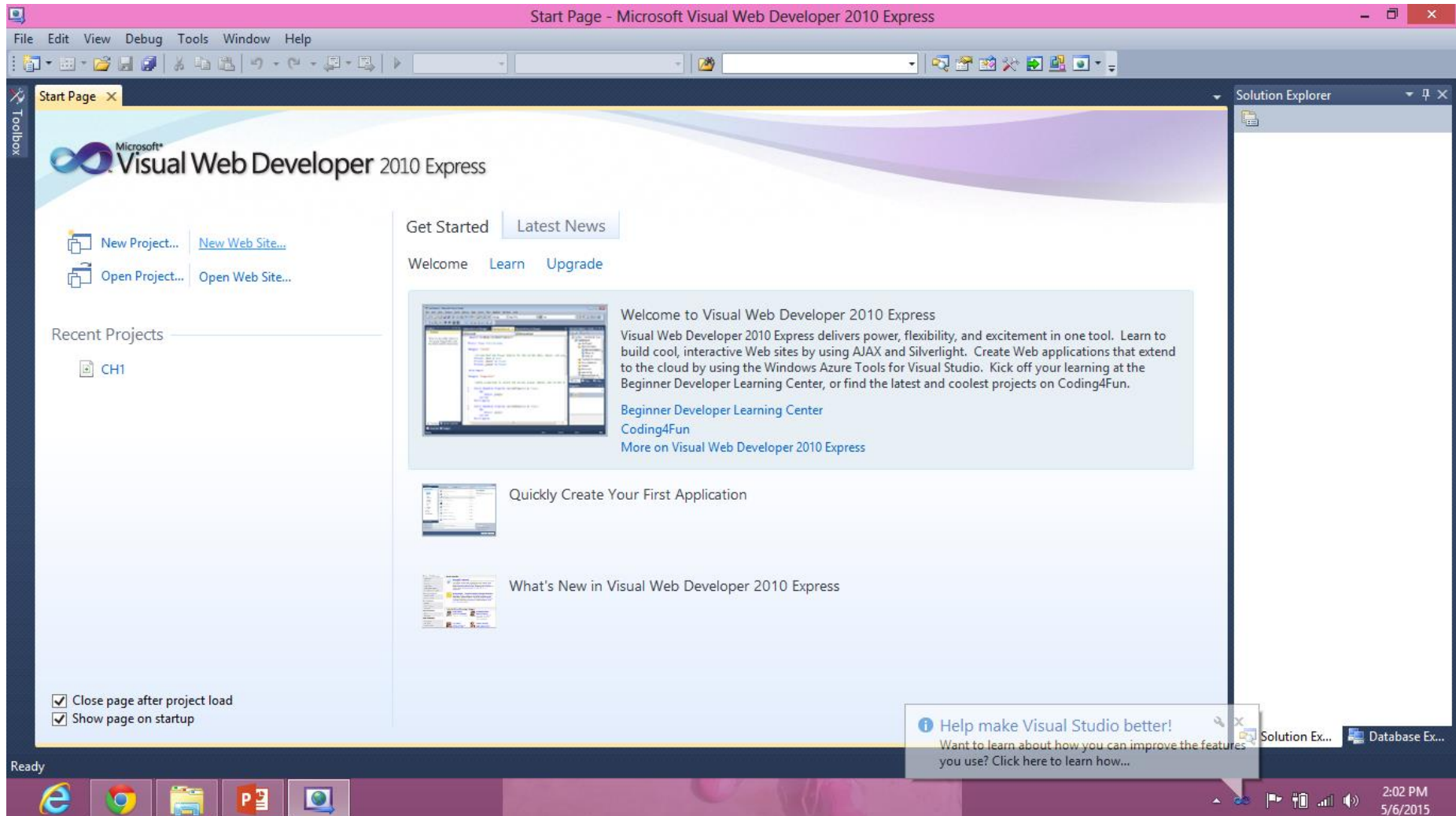
- The .NET Framework
  - Contains the ASP.NET engine, which is used to handle requests for ASP.NET pages.
- Visual Web Developer
  - The tool of choice for creating, editing, and testing ASP.NET pages
- SQL Server
  - A powerful database engine

Hosting ASP.NET pages locally through the ASP.NET Development Web Server has a number of advantages:

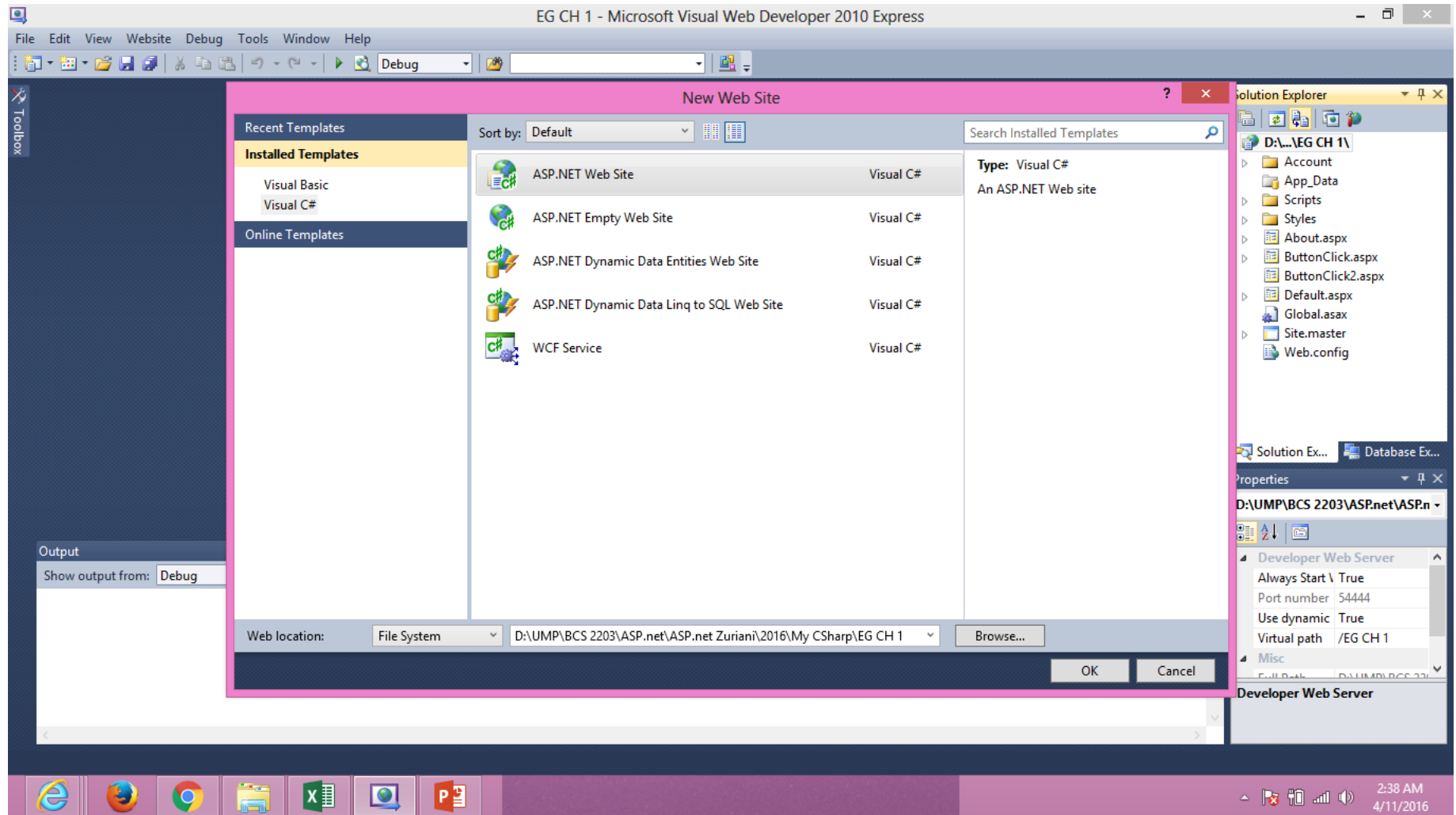
- Testing can be done offline
- It's fast
- It's secure

# TESTING THE ASP.NET PAGE

## Click New Website

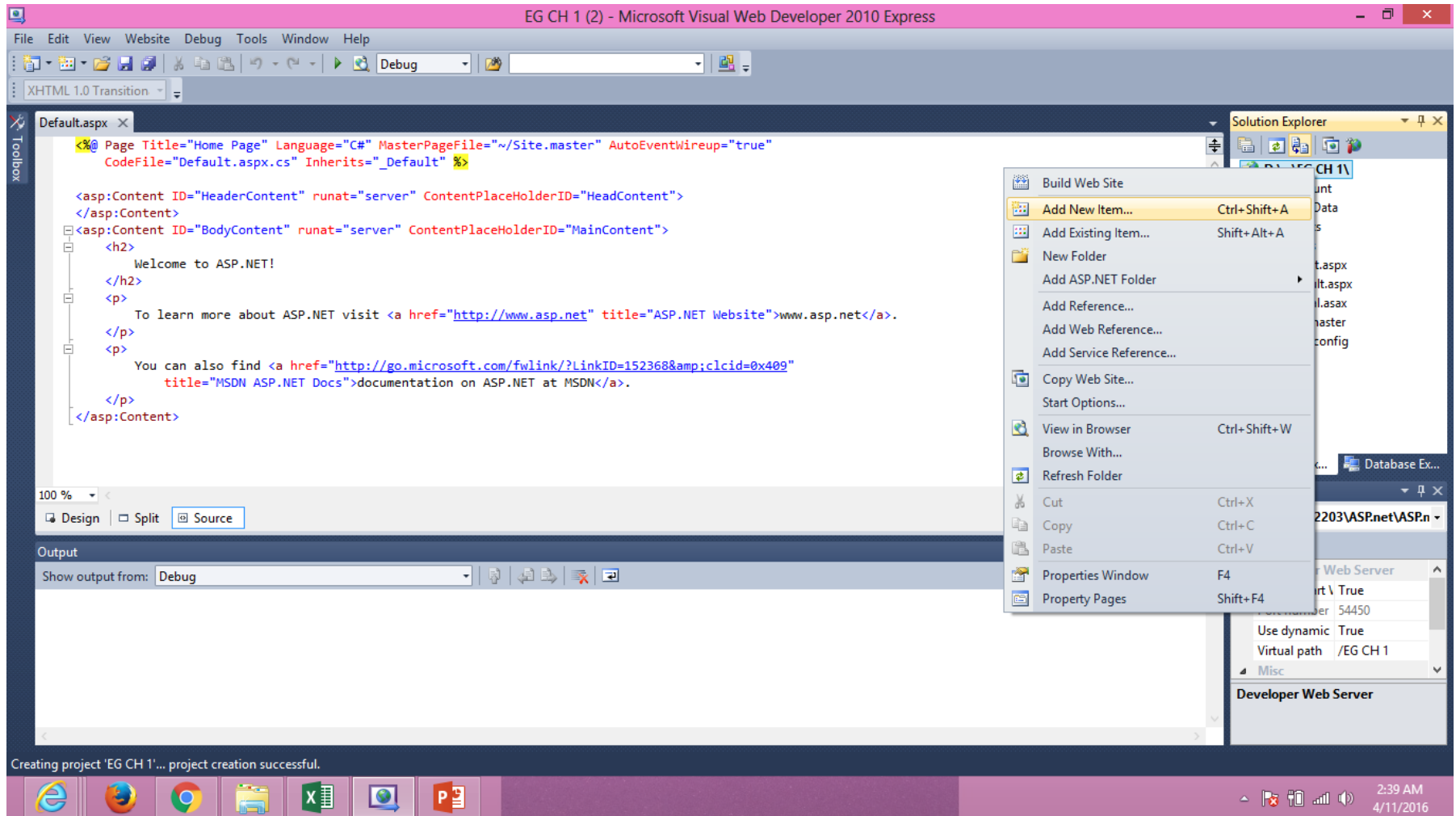


Click ASP.NET Empty Web Site - > Browse (To choose destination to save your file) - OK

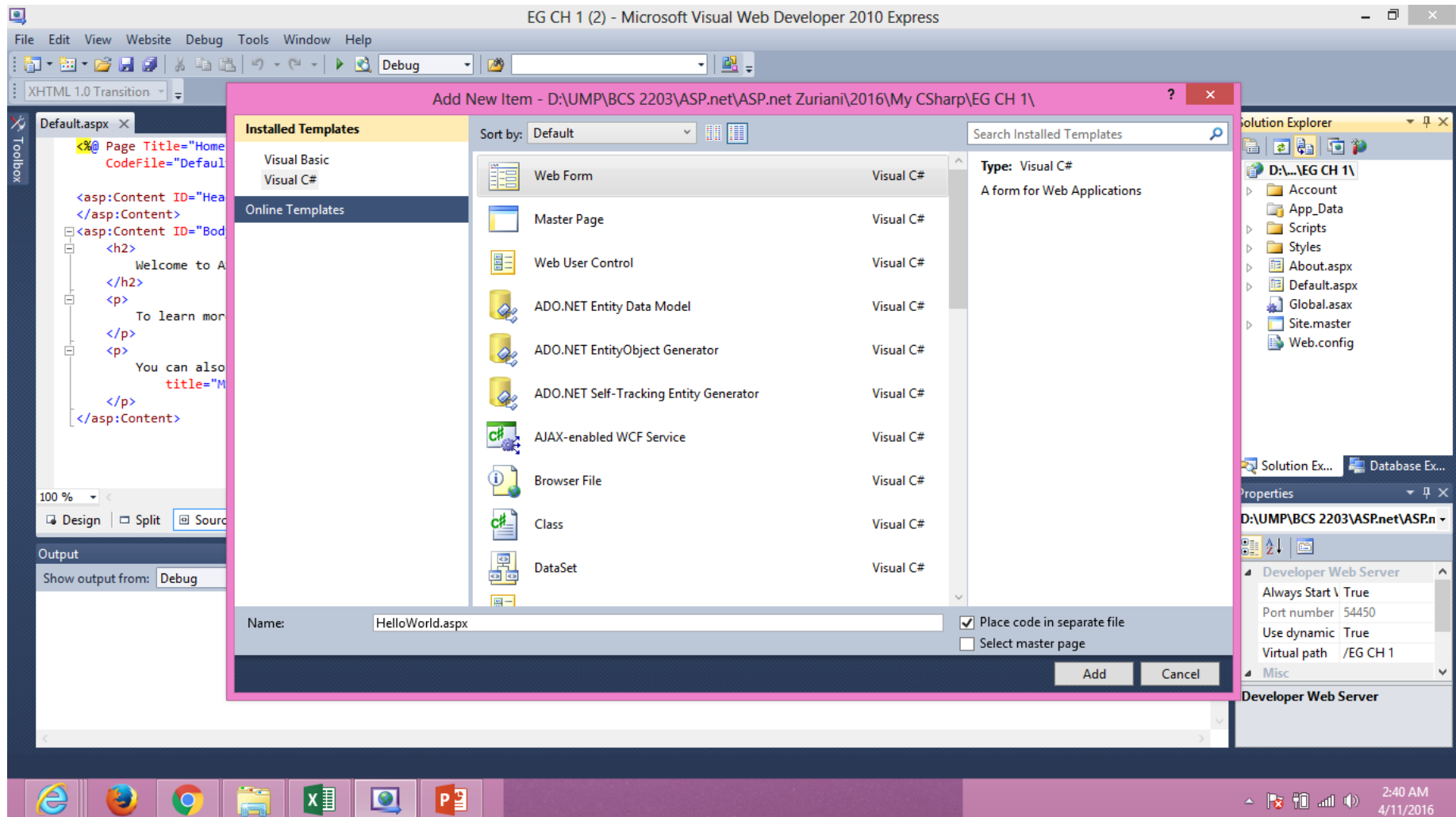




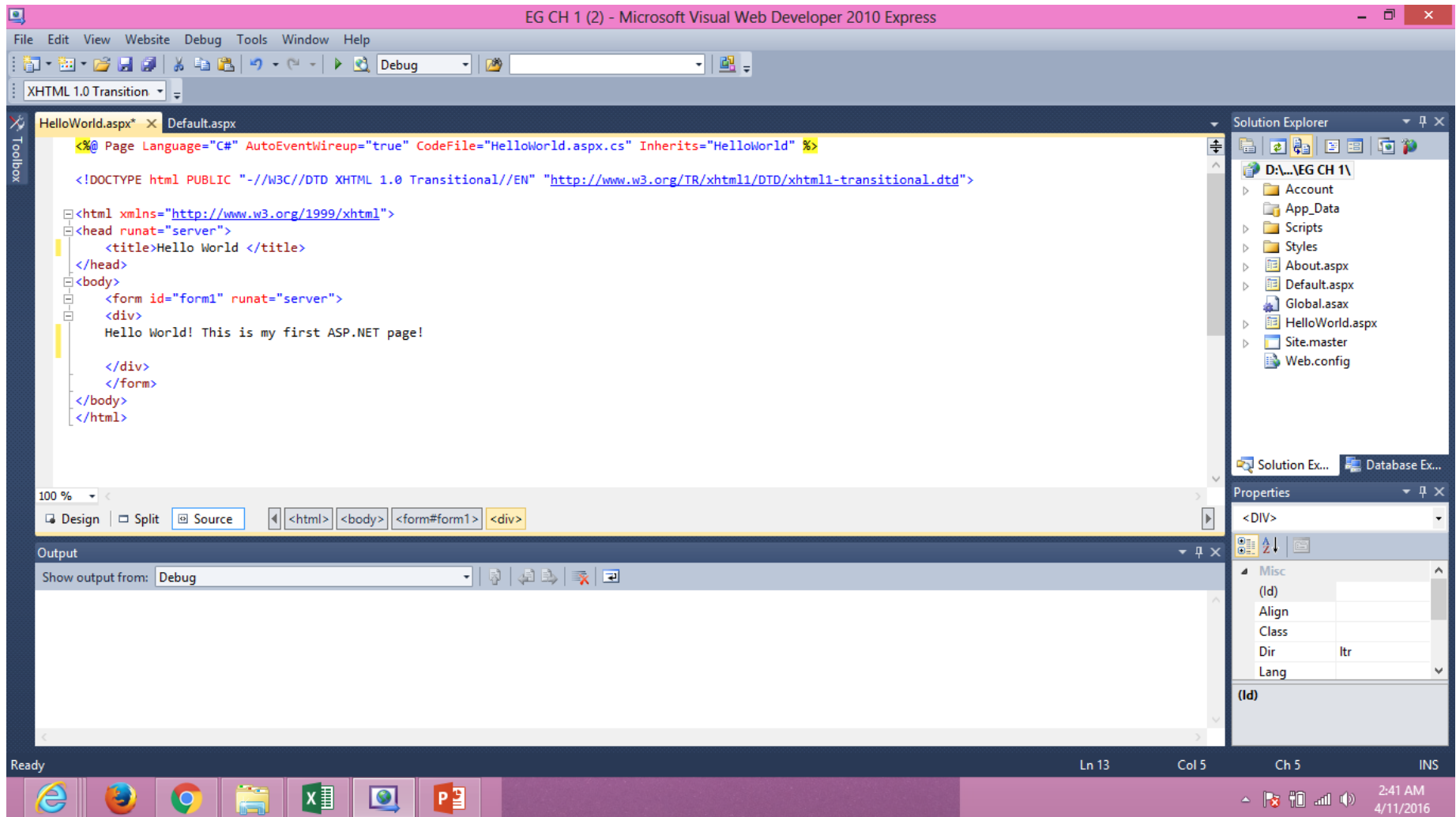
## Right click at the folder – Add New Item



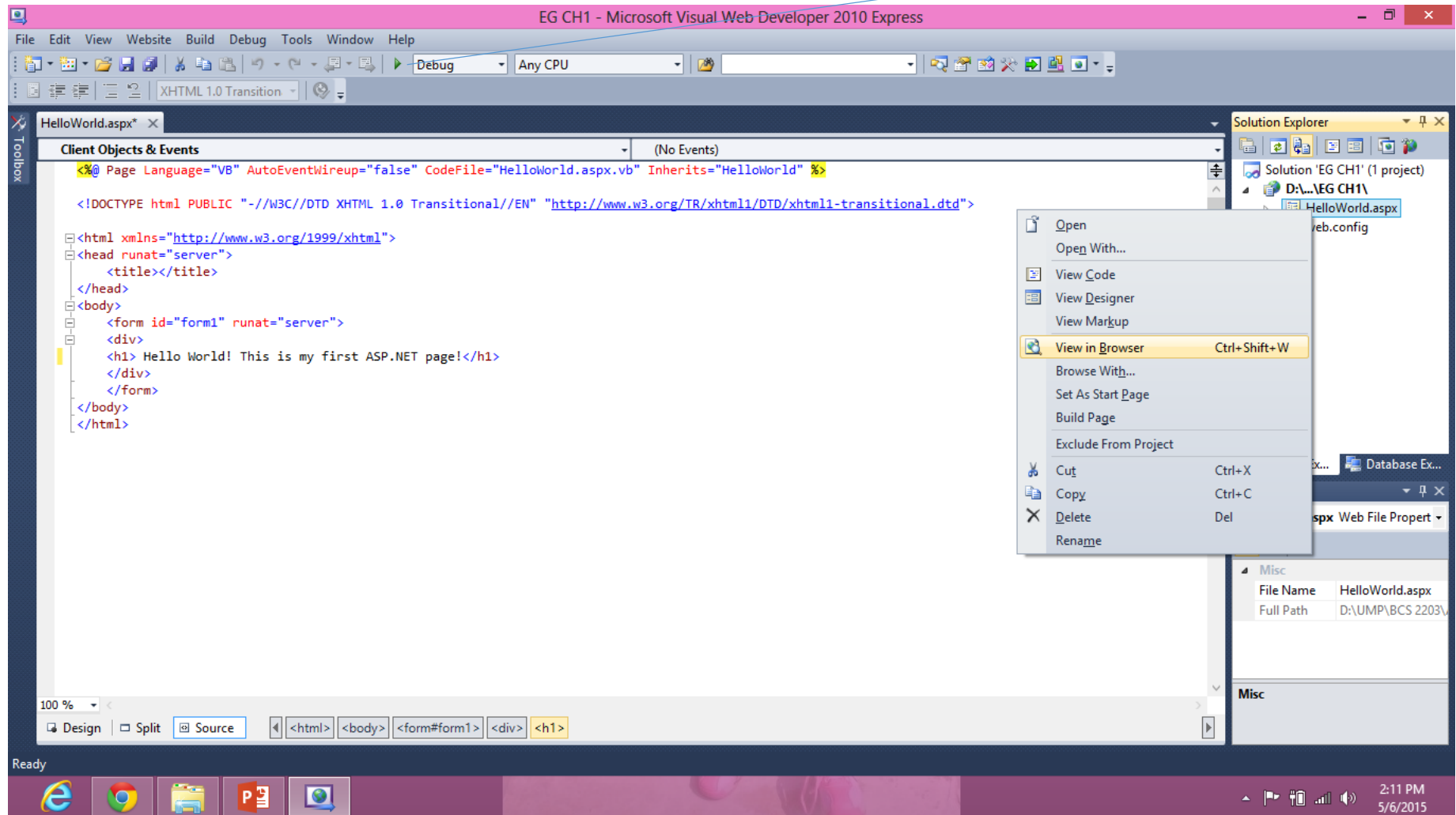
Select Web Form - Give name to your file – Check Place code in separate file - Add

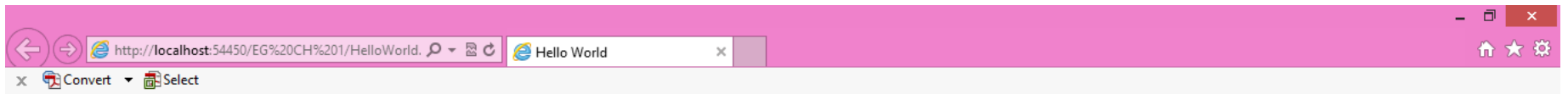


From the Source view, place your cursor between <div> and </div> tags in HelloWorld.aspx and the text. Example: Hello World! This is my first ASP.NET page!

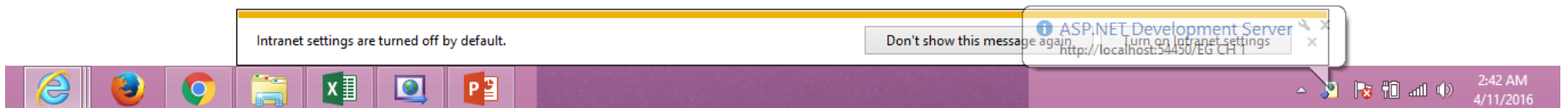


# Solution Explorer – Right click HelloWorld.aspx – Choose View in Browser/click





Hello World! This is my first ASP.NET page!



# TO BE

CONTINUED