CS4032 Web Programming

Hyper Text Markup Language

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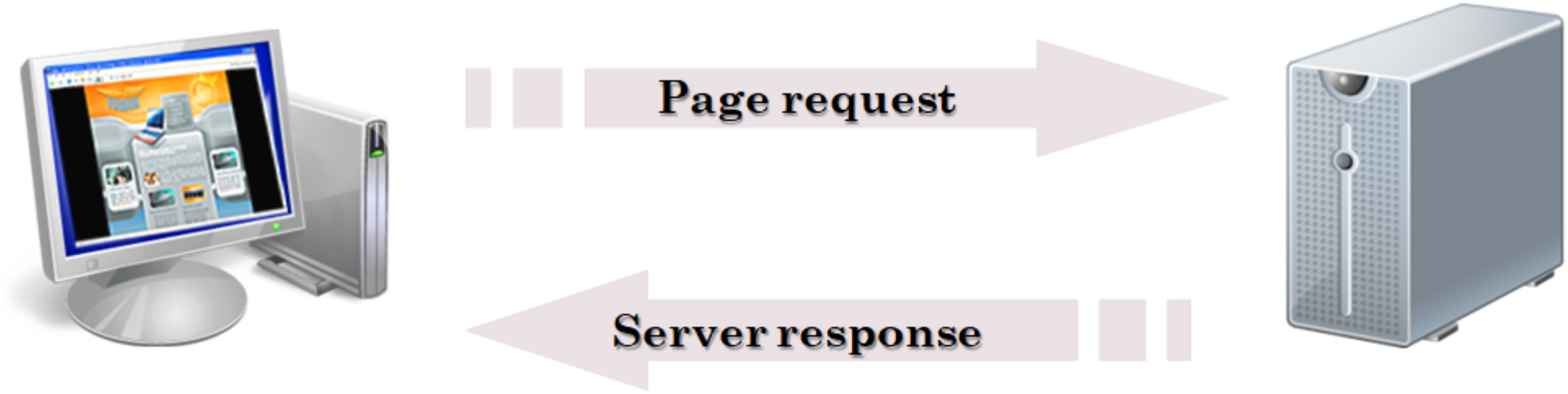
zeshan.khan@nu.edu.pk

World Wide Web



What is a Web Page?

- Web pages are text files containing HTML
- HTML – Hyper Text Markup Language
  - A notation for describing
    - document structure (semantic markup)
    - formatting (presentation markup)
  - Looks (looked?) like:
    - A Microsoft Word document
- The markup tags provide information about the page content structure

Creating HTML Pages

- An HTML file must have an `.htm` or `.html` file extension
- HTML files can be created with text editors:
  - NotePad, NotePad ++, PSPad
- Or HTML editors (WYSIWYG Editors):
  - Microsoft FrontPage
  - Macromedia Dreamweaver
  - Netscape Composer
  - Microsoft Word

HTML Structure

- HTML is comprised of “elements” and “tags”
- Begins with <html> and ends with </html>
- When writing XHTML, must define a namespace
  - <html xmlns="http://www.w3.org/1999/xhtml">
- Elements (tags) are nested one inside another:
  - <html> <head></head> <body></body> </html>
- Tags have attributes:
  - <img src="logo.jpg" alt="logo" />
- HTML describes structure using two main sections: <head> and <body>

HTML Code Formatting

- The HTML source code should be formatted to increase readability and facilitate debugging.
  - Every block element should start on a new line.
  - Every nested (block) element should be indented.
  - Browsers ignore multiple whitespaces in the page source, so formatting is harmless.
- For performance reasons, formatting can be sacrificed.

zeshan.khan@nu.edu.pk

First HTML Page

Opening

```
<!DOCTYPE HTML>
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```

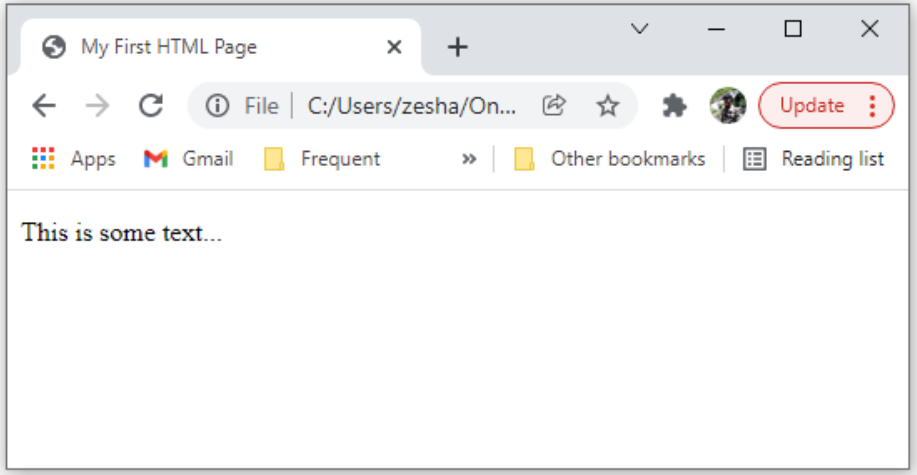
Closing

Opening

Head

Body

Closing



zeshan.khan@nu.edu.pk

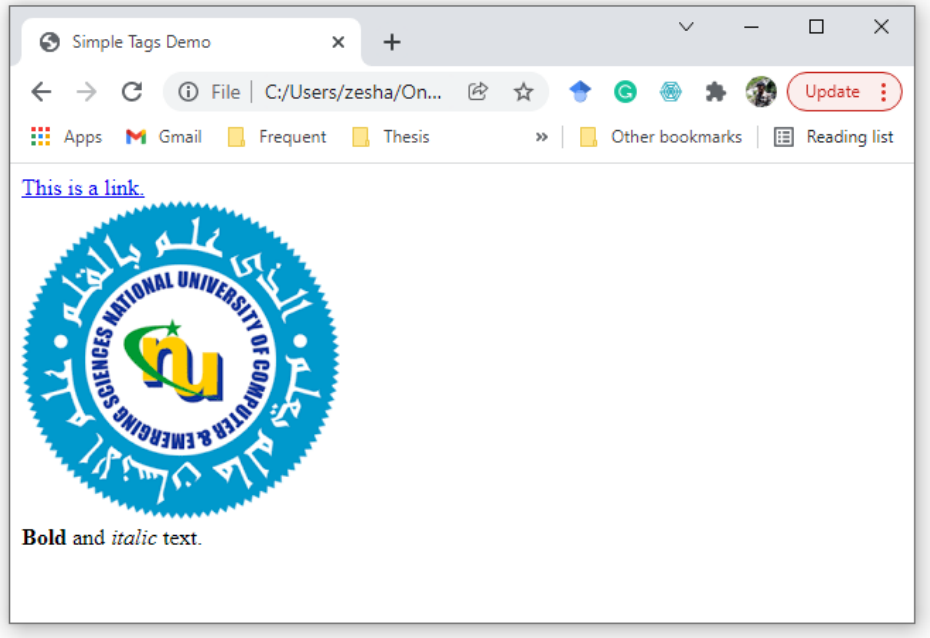
Some Simple Tags

- Hyperlink Tags
  - <a href=http://www.nu.edu.pk.com/ title="NUCES">Link to University Web site</a>
- Image Tags
  - <img src="logo.png" alt="logo" />
- Text formatting tags
- This text is emphasized.
  -
new line
- This one is more emphasized.

zeshan.khan@nu.edu.pk

Some Simple Tags – Example

- <!DOCTYPE HTML>
- <html>
- <head>
  - <title>Simple Tags Demo</title>
- </head>
- <body>
  - <a href="http://www.nu.edu.pk.com/" title="NU Website">This is a link.</a>
  -
  - <img src="logo.png" alt="logo" />
  -
  - Bold and italic text.
- </body>
- </html>



zeshan.khan@nu.edu.pk

Tags Attributes

- Tags can have attributes
  - Attributes specify properties and behavior
  - Example: <img src="logo.png" alt="logo" />
  - Few attributes can apply to every element:
    - id, style, class, title
    - The id is unique in the document
    - Content of title attribute is displayed as hint when the element is hovered with the mouse
    - Some elements have obligatory attributes

zeshan.khan@nu.edu.pk

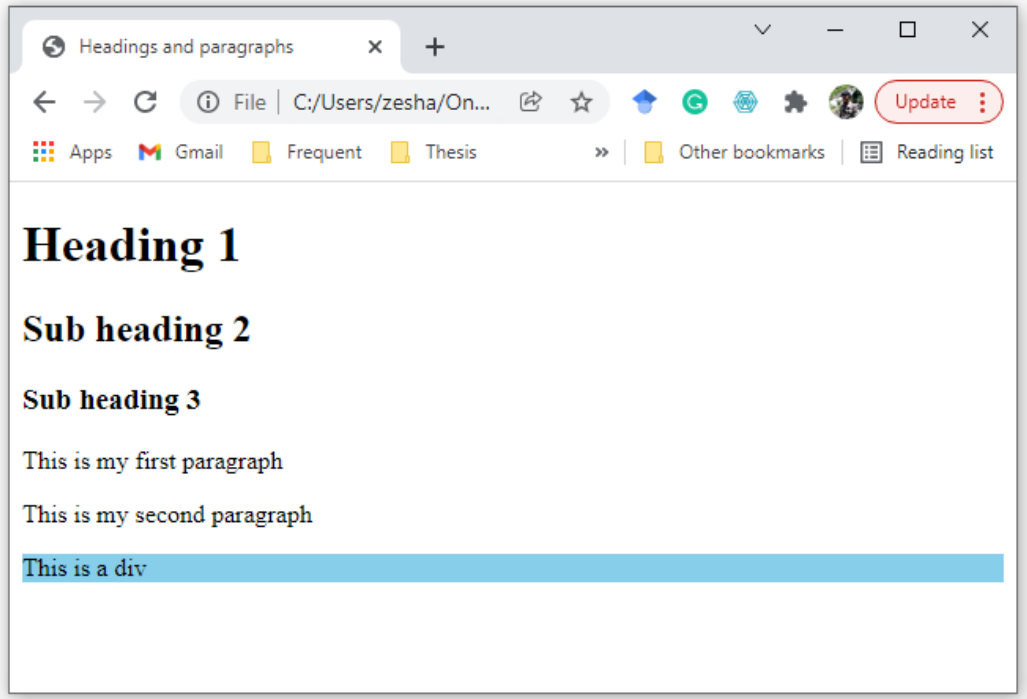
Headings and Paragraphs

- Heading Tags (h1 – h6)
  - <h1>Heading 1</h1>
  - <h2>Sub heading 2</h2>
  - <h3>Sub heading 3</h3>
- Paragraph Tags
  - This is my first paragraph
  - This is my second paragraph
- Sections: div and span
-
  This is a div

zeshan.khan@nu.edu.pk

Headings and Paragraphs

```
<!DOCTYPE HTML>
<html>
 <head><title>Headings and paragraphs</title></head>
 <body>
  <h1>Heading 1</h1>
  <h2>Sub heading 2</h2>
  <h3>Sub heading 3</h3>
  <p>This is my first paragraph</p>
  <p>This is my second paragraph</p>
  <div style="background:skyblue">
   This is a div</div>
 </body>
</html>
```



zeshan.khan@nu.edu.pk

Preface

- It is important to have the correct vision and attitude towards HTML
  - HTML is only about structure, not appearance
  - Browsers tolerate invalid HTML code and parse errors – you should not.

zeshan.khan@nu.edu.pk

The <!DOCTYPE> Declaration

- HTML documents must start with a document type definition (DTD)
  - It tells web browsers what type is the served code
  - Possible versions: HTML 4.01, XHTML 1.0 (Transitional or Strict), XHTML 1.1, HTML 5
- Example:
- <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
  - See http://w3.org/QA/2002/04/valid-dtd-list.html for a list of possible doctypes

HTML vs. XHTML

- XHTML is more strict than HTML
  - Tags and attribute names must be in lowercase
  - All tags must be closed (
, <img/>) while HTML allows <br> and <img> and implies missing closing tags (<p>par1 <p>par2)
  - XHTML allows only one root <html> element (HTML allows more than one)
- Many element attributes are deprecated in XHTML, most are moved to CSS
- Attribute minimization is forbidden, e.g.
  - <input type="checkbox" checked>
  - <input type="checkbox" checked="checked" />
- Note: Web browsers load XHTML faster than HTML and valid code faster than invalid!s

zeshan.khan@nu.edu.pk

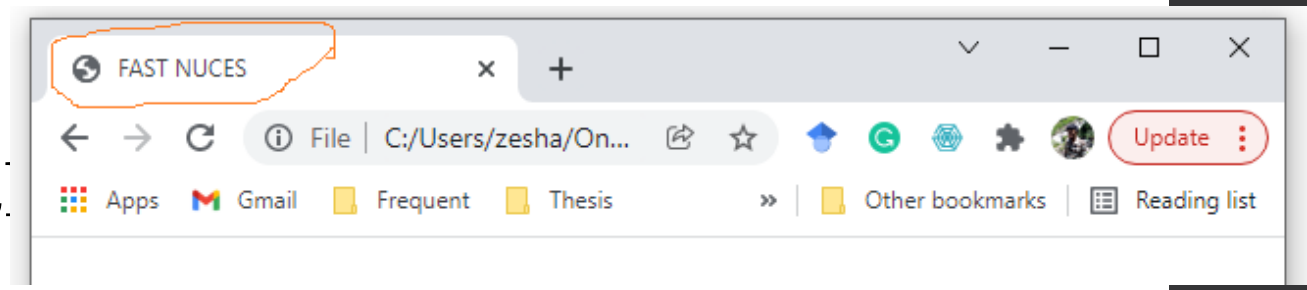
The <head> Section

- Contains information that doesn't show directly on the viewable page
- Starts after the <!doctype> declaration
- Begins with <head> and ends with </head>
- Contains mandatory single <title> tag
- Can contain some other tags, e.g.
  - <meta>
  - <script>
  - <style>
  - <!–- comments -->

zeshan.khan@nu.edu.pk

<head> Section: <title> tag

- Title should be placed between <head> and </head> tags
- <title>FAST NUCES</tit
- Used to specify a title in the window title bar
- Search engines and people rely on titles



<head> Section: <meta>

- Meta tags additionally describe the content contained within the page
- <meta name="description" content="HTML tutorial" />
- <meta name="keywords" content="html, web design, styles" />
- <meta name="author" content="Chris Brewer" />
- <meta http-equiv="refresh" content="5; url=http://www.telerik.com" />

zeshan.khan@nu.edu.pk

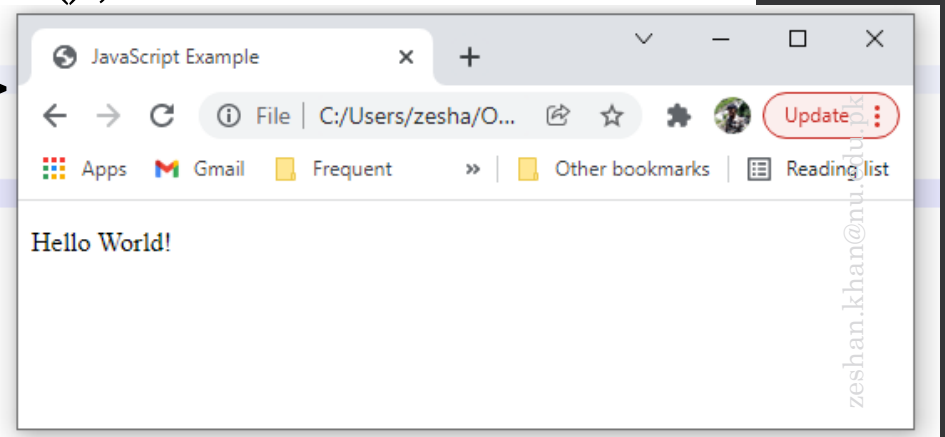
<head> Section: <script>

- The <script> element is used to embed scripts into an HTML document
  - Script are executed in the client's Web browser
  - Scripts can live in the <head> and in the <body> sections
- Supported client-side scripting languages:
  - JavaScript (it is not Java!)
  - VBScript
  - JScript

zeshan.khan@nu.edu.pk

The <script> Tag – Example

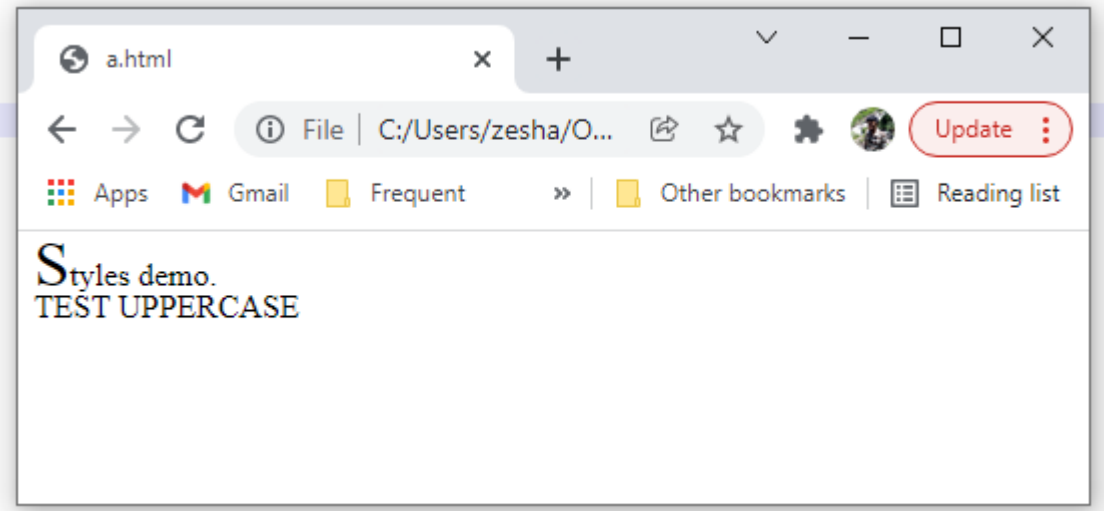
```
<!DOCTYPE HTML>
<html>
 <head>
  <title>JavaScript Example</title>
  <script type="text/javascript">
   function sayHello() {
    document.write("<p>Hello World!<\/p>");
   }
  </script>
 </head>
 <body>
  <script type=
   "text/javascript">
   sayHello();
  </script>
 </body>
</html>
```



zeshan.khan@nu.edu.pk

<head> Section: <style>

- The <style> element embeds formatting information (CSS styles) into an HTML page
- <html>
  - <head>
    - <style type="text/css">
      - p { font-size: 12pt; line-height: 12pt; }
      - p:first-letter { font-size: 200%;}
      - span { text-transform: uppercase; }
    - </style>
  - </head>
  - <body>
    - Styles demo.
      - Test uppercase
    -
  - </body>
  - </html>



zeshan.khan@nu.edu.pk

Comments: <!-- --> Tag

- Comments can exist anywhere between the <html></html> tags
- Comments start with <!-- and end with -->
- <!–- Telerik Logo (a JPG file) -->
- <img src="logo.jpg" alt="Telerik Logo">
- <!–- Hyperlink to the web site -->
- <a href="http://telerik.com/">Telerik</a>
- <!–- Show the news table -->
- <table class="newstable">
- …

zeshan.khan@nu.edu.pk

<body> Section: Introduction

- The <body> section describes the viewable portion of the page
- Starts after the <head> </head> section
- Begins with <body> and ends with </body>

```
<html>
  <head><title>Test page</title></head>
  <body>
    <!-- This is the Web page body -->
  </body>
</html>
```

zeshan.khan@nu.edu.pk

Text Formatting

- Text formatting tags modify the text between the opening tag and the closing tag
  - Ex. Hello makes “Hello” bold

	bold
	italicized
<u></u>	underlined
	Samplesuperscript
	Samplesubscript
	strong
	emphasized
<pre></pre>	Preformatted text
<blockquote></blockquote>	Quoted text block
<del></del>	Deleted text – strike through

zeshan.khan@nu.edu.pk

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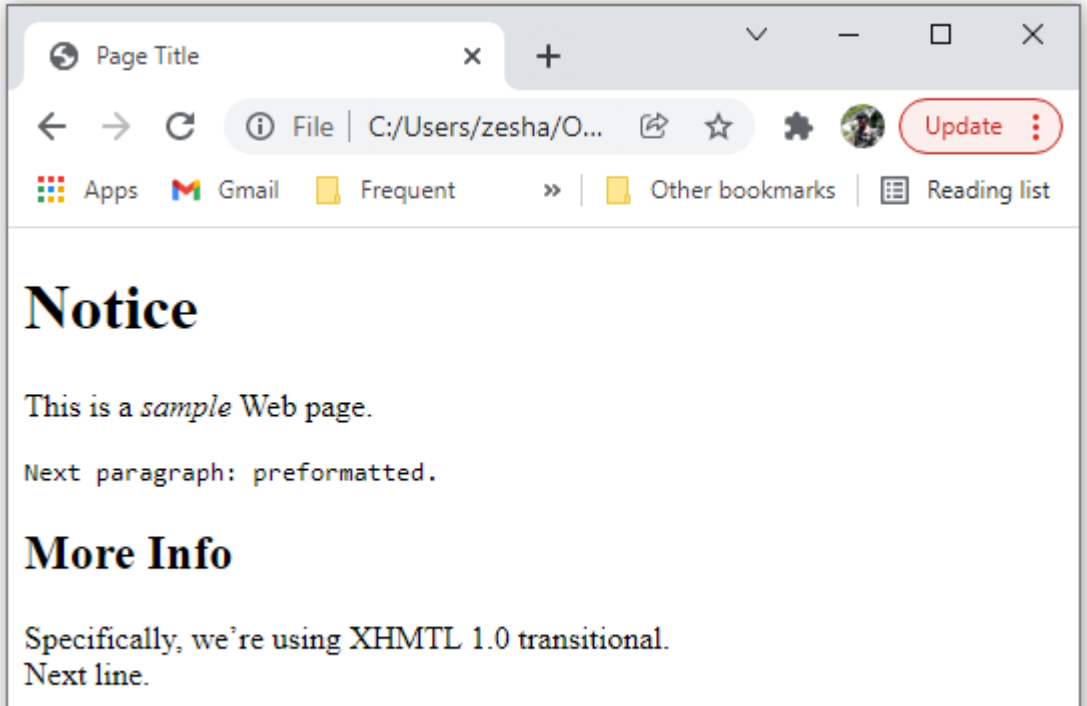
Text Formatting – Example

- <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
- "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
- <html>
- <head>
- <title>Page Title</title>
- </head>



<body>

- <h1>Notice</h1>
- This is a sample Web page.
- <pre>Next paragraph: preformatted.</pre>
- <h2>More Info</h2>
- Specifically, we're using XHMTL 1.0 transitional.
- Next line.

</body>

</html>

zeshan.khan@nu.edu.pk

Hyperlinks: <a> Tag

- Link to a document called form.html on the same server in the same directory:
  <a href="form.html">Fill Our Form</a>
- Link to a document called parent.html on the same server in the parent directory:
  <a href="../parent.html">Parent</a>
- Link to a document called cat.html on the same server in the subdirectory stuff:
- <a href="stuff/cat.html">Catalog</a>
- Link to an external Web site:
  - <a href="http://www.google.com" target="_blank">Google</a>
  - Always use a full URL, including "http://", not just www.somesite.com Using the target="_blank" attribute opens the link in a new window
- Link to an e-mail address:
- <a href="mailto:bugs@example.com?subject=Bug+Report"> Please report bugs here (by e-mail only)</a>

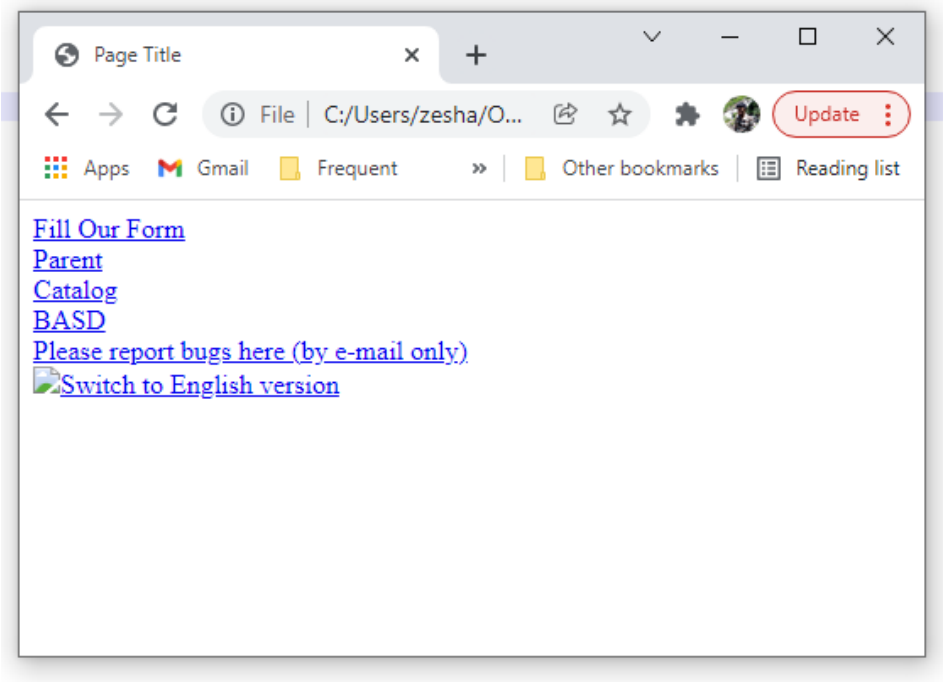
Hyperlinks: <a> Tag continue…

- Link to a document called apply-now.html
  - On the same server, in same directory
  - Using an image as a link button:
- <a href="apply-now.html"><img src="apply-now-button.jpg" /></a>
- Link to a document called index.html
  - On the same server, in the subdirectory english of the parent directory:
  - <a href="../english/index.html">Switch to English version</a>
- Link to another location in the same document:
- <a href="#section1">Go to Introduction</a>
- <h2 id="section1">Introduction</h2>
- Link to a specific location in another document:
- <a href="chapter3.html#section3.1.1">Go to Section 3.1.1</a>
- <!–- In chapter3.html -->
-
- <h3>3.1.1. Technical Background</h3>
-

zeshan.khan@nu.edu.pk

Hyperlinks – Example

- <a href="form.html">Fill Our Form</a>
- <a href="../parent.html">Parent</a>
- <a href="stuff/cat.html">Catalog</a>
- <a href="http://www.devbg.org" target="_blank">BASD</a>
- <a href="mailto:bugs@example.com?subject=Bug Report">Please report bugs here (by e-mail only)</a>
-
- <a href="apply-now.html"><img src="apply-now-button.jpg" /></a>
- <a href="../english/index.html">Switch to English version</a>



Link to Same Document

- <h1>Table of Contents</h1>
- <p><a href="#section1">Introduction</a>
- <a href="#section2">Some background</A>
- <a href="#section2.1">Project History</a>
- ...the rest of the table of contents...
- <!-- The document text follows here -->
- <h2 id="section1">Introduction</h2>
- ... Section 1 follows here ...
- <h2 id="section2">Some background</h2>
- ... Section 2 follows here ...
- <h3 id="section2.1">Project History</h3>
- ... Section 2.1 follows here ...

zeshan.khan@nu.edu.pk

Images: <img> tag

Tag

- Inserting an image with <img> tag:
- <img src="/img/basd-logo.png">
- Example:
- <img src="./php.png" alt="PHP Logo" />

Image attributes

src	Location of image file (relative or absolute)
alt	Substitute text for display (e.g. in text mode)
height	Number of pixels of the height
width	Number of pixels of the width
border	Size of border, 0 for no border

zeshan.khan@nu.edu.pk

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Miscellaneous Tags

- <hr />: Draws a horizontal rule (line):
  - <hr size="5" width="70%" />
- : Deprecated!
  - Hello World!
- <font></font>: Deprecated!
  - <font size="3" color="blue">Font3</font>
  - <font size="+4" color="blue">Font+4</font>

zeshan.khan@nu.edu.pk

Ordered Lists: <ol> Tag

- Create an Ordered List using <ol></ol>:
- <ol type="1">
- <li>Apple</li>
- <li>Orange</li>
- <li>Grapefruit</li>
- </ol>

Attribute values for type are 1, A, a, I, or i

Type="1"

1. Apple
2. Orange
3. Grapefruit

Type="A"

A. Apple
B. Orange
C. Grapefruit

Type="i"

i. Apple
ii. Orange
iii. Grapefruit

zeshan.khan@nu.edu.pk

Unordered Lists: <ul> Tag

- Create an Unordered List using <ul></ul>:
- <ul type='disc'>
- <li>Apple</li>
- <li>Orange</li>
- <li>Grapefruit</li>
- </ul>

Attribute values for type are disc, circle or square

Type="disc"

- Apple
- Orange
- Grapefruit

Type="circle"

- Apple
- Orange
- Grapefruit

Type="circle"

- Apple
- Orange
- Grapefruit

zeshan.khan@nu.edu.pk

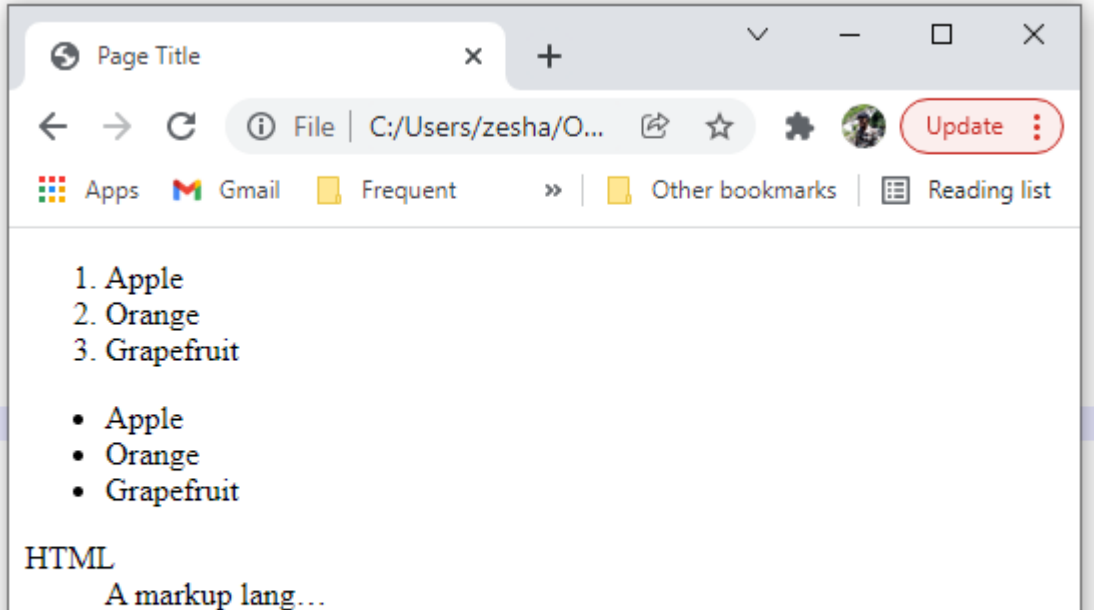
Definition lists: <dl> tag

- Create definition lists using <dl>
  - Pairs of text and associated definition; text is in <dt> tag, definition in <dd> tag
- <dl>
  - <dt>HTML</dt>
  - <dd>A markup language …</dd>
  - <dt>CSS</dt>
  - <dd>Language used to …</dd>
- </dl>
  - Renders without bullets
  - Definition is indented

zeshan.khan@nu.edu.pk

Example

```
<ol type="1">
    <li>Apple</li>
    <li>Orange</li>
    <li>Grapefruit</li>
</ol>
```




```
<ul type="disc">
    <li>Apple</li>
    <li>Orange</li>
    <li>Grapefruit</li>
</ul>
<dl>
    <dt>HTML</dt>
    <dd>A markup lang…</dd>
</dl>
```

zeshan.khan@nu.edu.pk

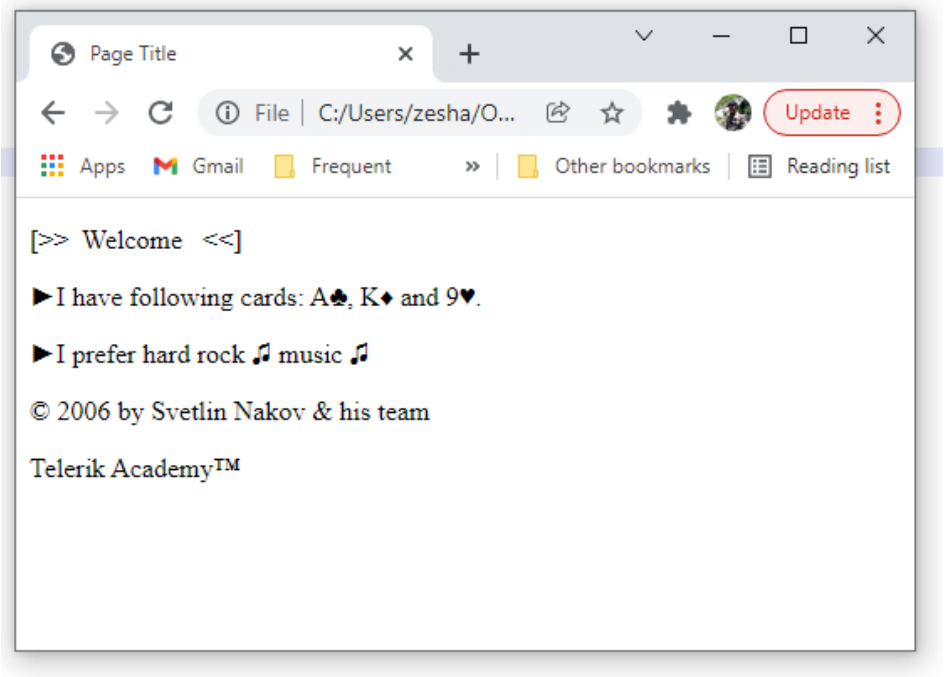
HTML Special Characters

Symbol Name	HTML Entity	Symbol
Copyright Sign	©	©
Registered Trademark Sign	®	®
Trademark Sign	™	™
Less Than	<	<
Greater Than	>	>
Ampersand	&	&
Non-breaking Space		
Em Dash	—	-
Quotation Mark	"	“
Euro	€	€
British Pound	£	£
Japanese Yen	¥	¥

zeshan.khan@nu.edu.pk

Special Characters – Example

- [>> Welcome
-   <<]
- ►I have following cards:
- A♣, K♦ and 9♥.
- ►I prefer hard rock ♫
- music ♫
- © 2006 by Svetlin Nakov & his team
- Telerik Academy™



Block and Inline Elements

- Block elements add a line break before and after them
  - is a block element
  - Other block elements are <table>, <hr>, headings, lists, <p> and etc.
- Inline elements don't break the text before and after them
  - is an inline element
  - Most HTML elements are inline, e.g. <a>

zeshan.khan@nu.edu.pk

The Tag

- creates logical divisions within a page
- Block style element
- Used with CSS
- Example:
- DIV example
- This one is only a test.

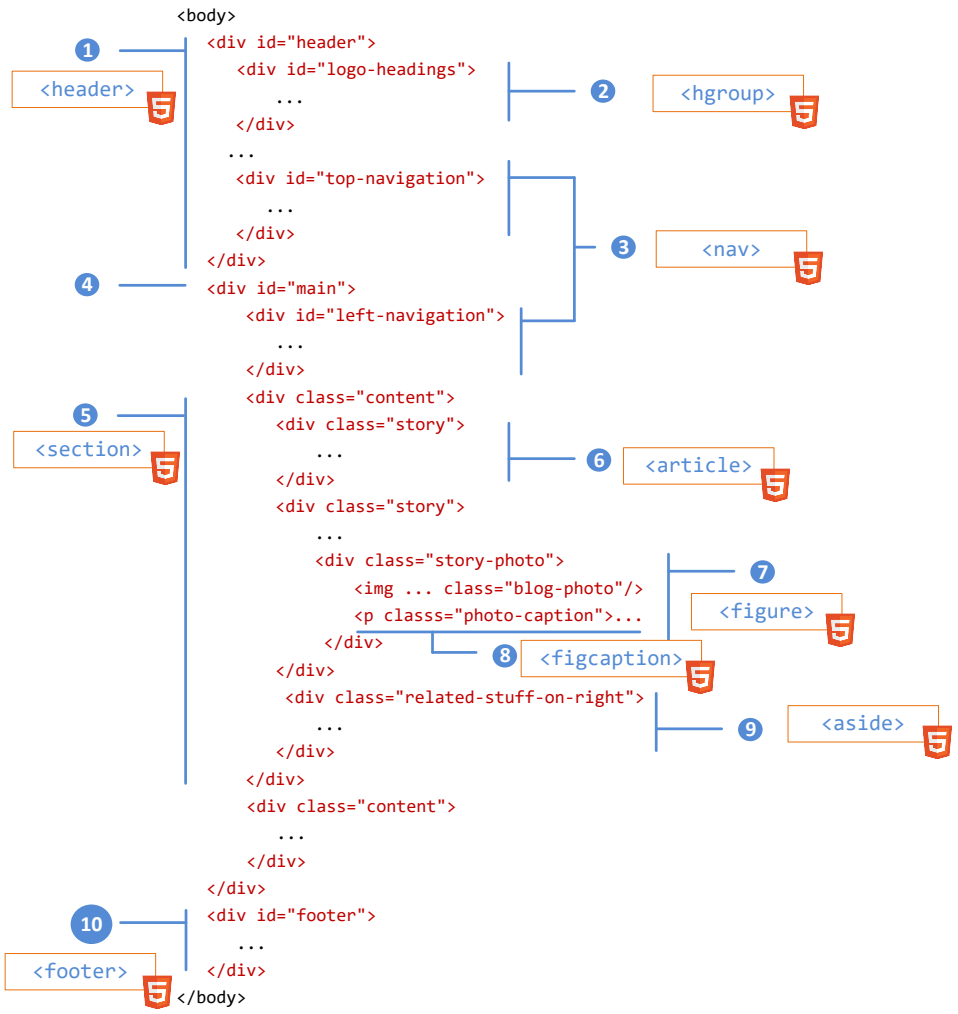
zeshan.khan@nu.edu.pk

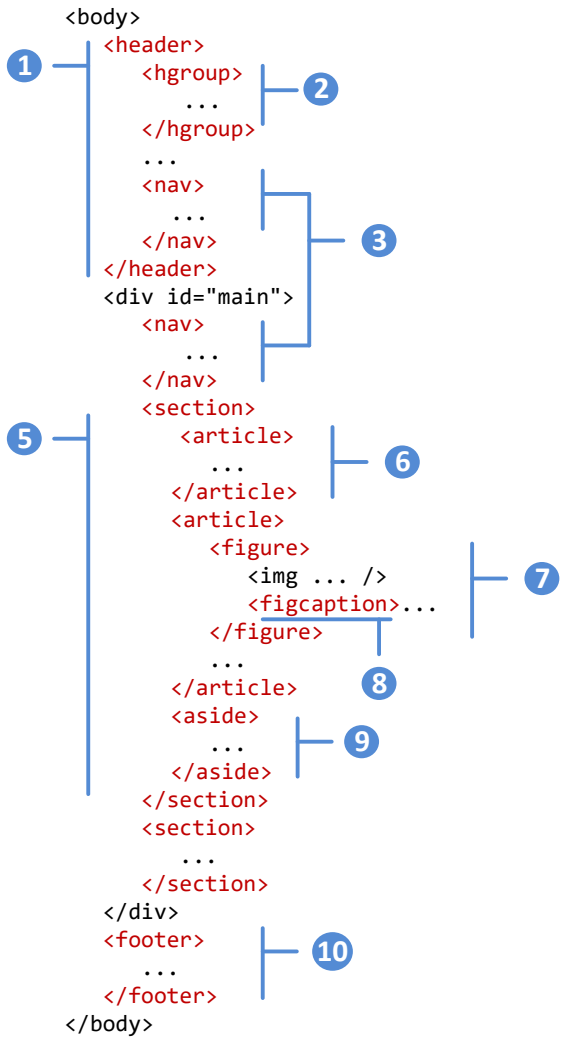
The Tag

- Inline style element
- Useful for modifying a specific portion of text
  - Don't create a separate area (paragraph) in the document
- Very useful with CSS
  - This one is only a test.
  - This one is another TEST.

zeshan.khan@nu.edu.pk

XHTML versus HTML5





zeshan.khan@nu.edu.pk

Header and Footer

- <header> <footer>
- Most web site pages have a recognizable header and footer section.
- Typically the **header** contains
- the site logo
- title (and perhaps additional subtitles or taglines)
- horizontal navigation links, and
- perhaps one or two horizontal banners.

zeshan.khan@nu.edu.pk

Header and Footer

- The typical footer contains less important material, such as
- smaller text versions of the navigation,
- copyright notices,
- information about the site's privacy policy, and
- perhaps twitter feeds or links to other social sites.

zeshan.khan@nu.edu.pk

Header and Footer

- Both the HTML5 <header> and <footer> element can be used not only for *page* headers and footers, they can also be used for header and footer elements within other HTML5 containers, such as <article> or <section>.

```
<header>
   <img src="logo.gif" alt="logo" />
   <h1>Fundamentals of Web Development</h1>
   ...
</header>
<article>
   <header>
       <h2>HTML5 Semantic Structure Elements </h2>
        <p>By <em>Randy Connolly</em></p>
        <p><time>September 30, 2012</time></p>
   </header>
   ...
</article>
```

Heading Groups

The <hgroup> element can be used to group related headings together within one container.

```
<header>
   <hgroup>
       <h1>Chapter Two: HTML 1</h1>
       <h2>An Introduction</h2>
   </hgroup>
</header>
<article>
   <hgroup>
      <h2>HTML5 Semantic Structure Elements </h2>
      <h3>Overview</h3>
   </hgroup>
</article>
```

Navigation

- The **<nav>** element represents a section of a page that contains links to other pages or to other parts within the same page.
- Like the other new HTML5 semantic elements, the browser does not apply any special presentation to the <nav> element.
- The <nav> element was intended to be used for major navigation blocks, presumably the global and secondary navigation systems.

```
<header>
     <img src="logo.gif" alt="logo" />
     <h1>Fundamentals of Web Development</h1>
     <nav role="navigation">
          <ul>
               <li><a href="index.html">Home</a></li>
               <li><a href="about.html">About Us</a></li>
               <li><a href="browse.html">Browse</a></li>
          </ul>
     </nav>
</header>
```

zeshan.khan@nu.edu.pk

Articles and Sections

- The **<article>** element represents a section of content that forms an independent part of a document or site; for example, a magazine or newspaper article, or a blog entry.
- The **<section>** element represents a section of a document, typically with a title or heading.
- According to the W3C, **<section>** is a much broader element, while the **<article>** element is to be used for blocks of content that could potentially be read or consumed independently of the other content on the page.

zeshan.khan@nu.edu.pk

Sections versus Divs

- The WHATWG specification warns readers that the <section> element is **not** a generic container element. HTML already has the element for such uses.
- When an element is needed only for styling purposes or as a convenience for scripting, it makes sense to use the element instead.
- Another way to help you decide whether or not to use the <section> element is to ask yourself if it is appropriate for the element's contents to be listed explicitly in the document's outline.
  - If so, then use a <section>; otherwise use a .

zeshan.khan@nu.edu.pk

Figure and Figure Captions

The W3C Recommendation indicates that the <figure> element can be used not just for images but for any type of *essential* content that could be moved to a different location in the page or document and the rest of the document would still make sense.

The **<figure>** element should **not** be used to wrap every image.

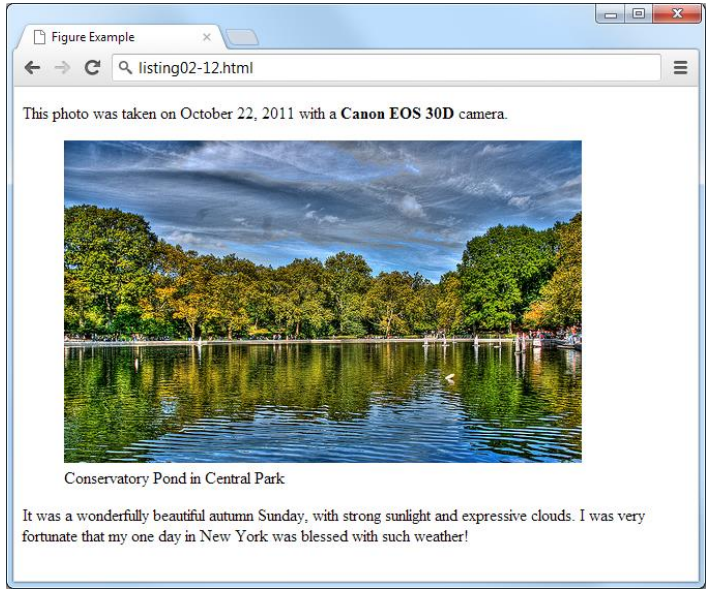
For instance, it makes no sense to wrap the site logo or non-essential images such as banner ads and graphical embellishments within <figure> elements.

Instead, only use the <figure> element for circumstances where the image (or other content) has a caption and where the figure is essential to the content but its position on the page is relatively unimportant.

Figure and Figure Captions Continue…

Figure could be moved to a different location in document …
But it has to exist in the document (i.e., the figure isn't optional)

```
<p>This photo was taken on October 22, 2011 with a Canon EOS 30D camera.</p>
<figure>
  <img src="images/central-park.jpg" alt="Central Park" /><br/>
  <figcaption>Conservatory Pond in Central Park</figcaption>
</figure>
<p>
It was a wonderfully beautiful autumn Sunday, with strong sunlight and
expressive clouds. I was very fortunate that my one day in New York was
blessed with such weather!
</p>
```



zeshan.khan@nu.edu.pk

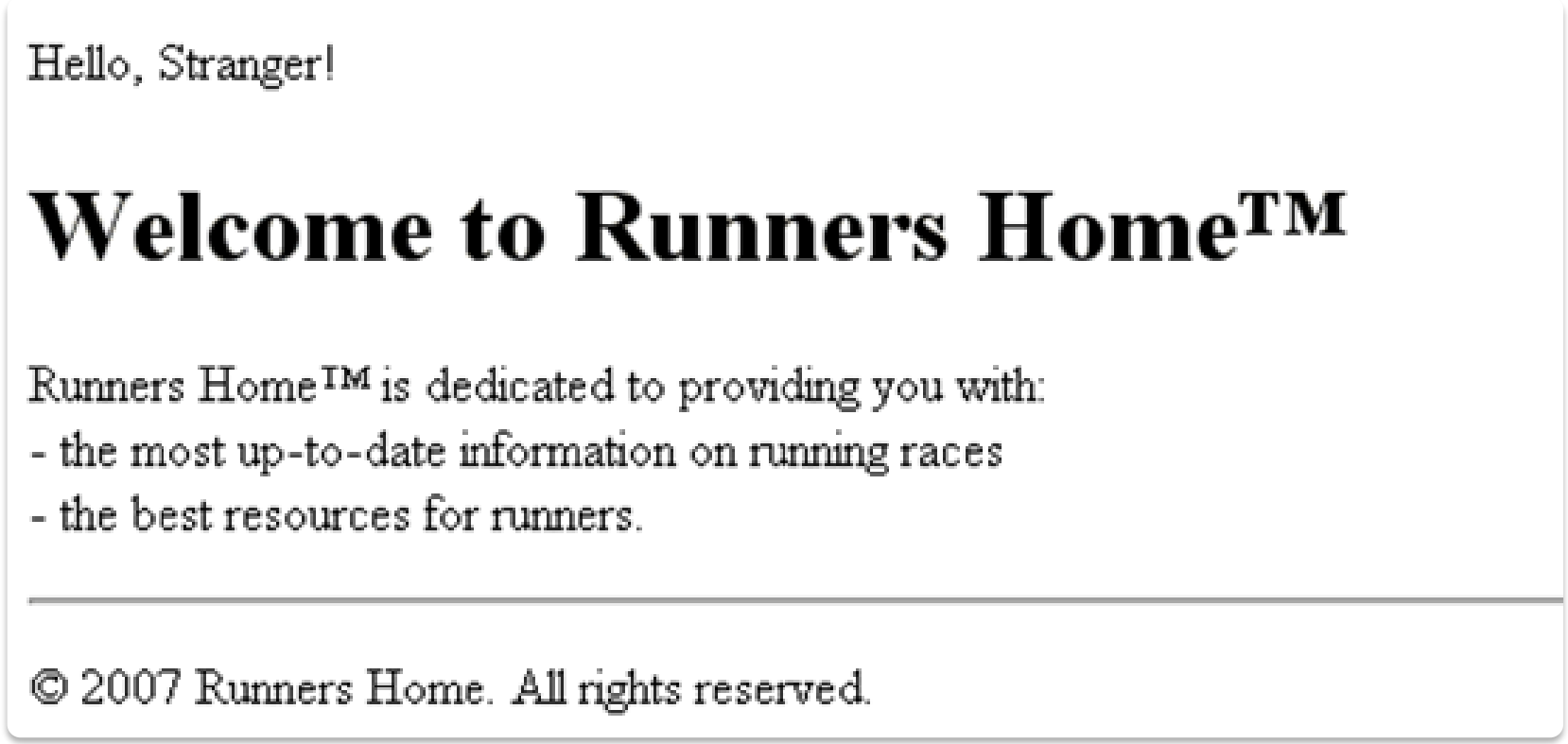
Aside

- The **<aside>** element is similar to the **<figure>** element in that it is used for marking up content that is separate from the main content on the page.
- But while the **<figure>** element was used to indicate important information whose location on the page is somewhat unimportant, the **<aside>** element "represents a section of a page that consists of content that is tangentially related to the content around the aside element."
- The **<aside>** element could thus be used for sidebars, pull quotes, groups of advertising images, or any other grouping of non-essential elements.

zeshan.khan@nu.edu.pk

Assignment # 1 : Q1

Write an HTML page like the following Using headings and divs:



zeshan.khan@nu.edu.pk

Assignment # 1 : Q2

Write an HTML page like the following using ol and ul:

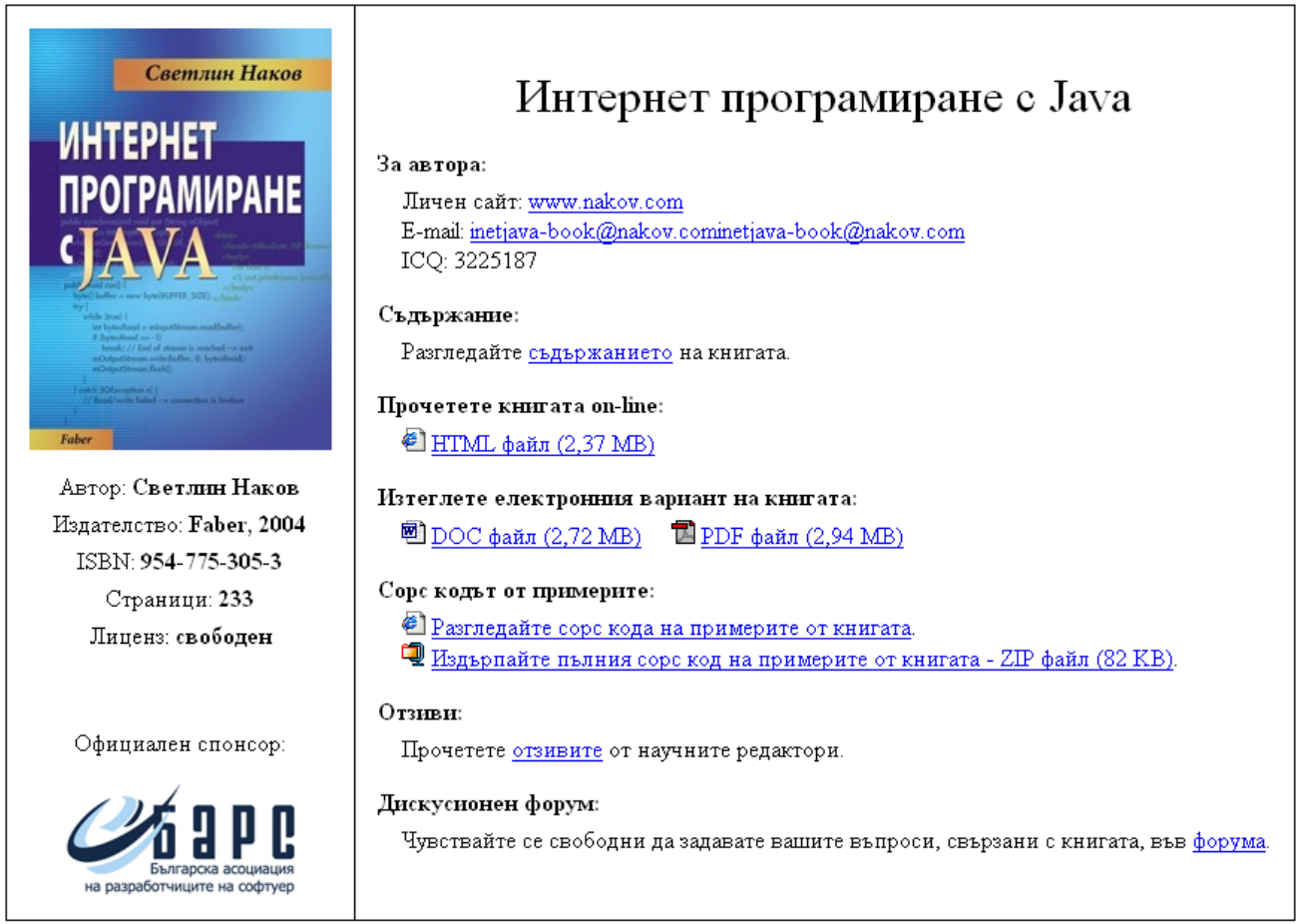
Preceding Text

I. List Item 1
   a. Nested Item 1.1
   b. Nested Item 1.2
II. List Item 2
   1. Nested Item 2.1
   2. Nested Item 2.2
      - Nested Item 2.2.1
      - Nested Item 2.2.2
        - Nested Item 2.2.2.1
        - Nested Item 2.2.2.2
      - Nested Item 2.2.3
   3. Nested Item 2.3
III. List Item 3
   - Nested Item 3.1
   - Nested Item 3.1
   - Nested Item 3.1

zeshan.khan@nu.edu.pk

Assignment # 1 : Q3

Write an HTML page like the following:

Assignment # 1 : Q4

Write an HTML page like the following: