ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ ΔΙΑΔΙΚΤΥΟΥ

HTLM – CSS
LECTURE 1

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Μεταπτυχιακό Τμήμα

What is HTML?

- HTML is a language for describing web pages.
- HTML stands for **H**yper **T**ext **M**arkup **L**anguage
- HTML is not a programming language, it is a **markup language**
- A markup language is a set of **markup tags**
- HTML uses **markup tags** to describe web pages

HTML Tags

- HTML markup tags are usually called HTML tags
- HTML tags are keywords surrounded by **angle brackets** like <html>
- HTML tags normally **come in pairs** like and
- 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**

HTML Documents = Web Pages

- HTML documents **describe web pages**
- HTML documents **contain HTML tags** and plain text
- HTML documents are also **called web pages**
- The purpose of a web browser (like Internet Explorer or Firefox) is to read HTML documents and display them as web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page:

Example -1

```
<html>
<body>

<h1>My First Heading</h1>

<p>My first paragraph.</p>

</body>
</html>
```

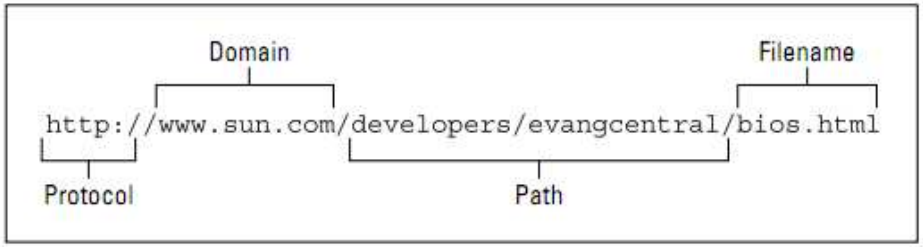
Browsers

- Web browsers read instructions written in HTML and use those instructions to display a Web page's content on your screen. Each Web browser interprets HTML in its own way.
- The same HTML doesn't look exactly the same from one browser to the next. When you work with basic HTML, variances aren't significant, but as you integrate other elements (such as scripting and multimedia), rendering the markup can get complicated.

Anatomy of a URL

- The Web is made up of millions of resources, each of them linkable. A resource's exact location is the key to linking to it.
- Without an exact address (a Uniform Resource Locator, or URL), you can't use the Address bar in a Web browser to visit a Web page directly.
- URLs are the standard addressing system for resources on the Web. Each resource (Web page, site, or individual file) has a unique URL. URLs work a lot like your postal address.

Anatomy of a URL



• Protocol: Specifies the protocol the browser follows to request the file. The Web page protocol is http:// (the usual start to most URLs).
• Domain: Points to the general Web site (such as www.sun.com) where the file resides. A domain may host a few files (like a personal Web site) or millions of files (like a corporate site, such as www.sun.com).
• Path: Names the sequence of folders through which you must navigate to get to a specific file.
•Filename: Specifies which file in a directory path the browser accesses.

Syntax and rules

- HTML is a straightforward language for describing Web page contents. Their components are easy to use — when you know how to use a little bit of HTML. HTML markup have three types of components:
- Elements: Identify different parts of an HTML page by using tags
- Attributes: Information about an instance of an element
- Entities: Non-ASCII text characters, such as copyright symbols (©) and accented letters (É)

Elements

- Elements are the building blocks of HTML. You use them to describe every piece of text on your page. Elements are made up of tags and the content within those tags. There are two main types of elements:
  - Elements with content made up of a tag pair and whatever content sits between the opening and closing tag in the pair
  - Elements that insert something into the page using a single tag

Tag pairs

- Elements that describe content use a tag pair to mark the beginning and the end of the element. Start and end tag pairs look like this:
  - <tag>...</tag>
- Content — such as paragraphs, headings, tables, and lists — always uses a tag pair:
  - The start tag (<tag>) tells the browser, “The element begins here.”
  - The end tag (</tag>) tells the browser, “The element ends here.”

Single tags

Elements that insert something into the page are called empty elements (because they enclose no content) and use just a single tag, like this:

- <tag />

- Images and line breaks insert something into the HTML file, so they use one tag.
  -

HTML Element Syntax

- An HTML element starts with a **start tag / opening tag**
- An HTML element ends with an **end tag / closing tag**
- The **element content** is everything between the start and the end tag
- Some HTML elements have **empty content**
- Empty elements are **closed in the start tag**
- Most HTML elements can have **attributes**

Example

```
<html>

    <body>
    <p>This is my first paragraph.</p>
    <br>
    </body>

    </html>
```

Example - explanation

- The <html> element defines the whole HTML document.The element has a start tag <html> and an end tag </html>.The element content is another HTML element (the body element).
- The <body> element defines the body of the HTML document.The element has a start tag <body> and an end tag </body>.The element content is another HTML element (a p element).
- The element defines a paragraph in the HTML document. The element has a start tag and an end tag . The element content is: This is my first paragraph.
- HTML elements with no content are called empty elements.
 is an empty element without a closing tag (the
 tag defines a line break).

Attributes

- Attributes allow variety in how an element describes content or works. Attributes let you use elements differently depending on the circumstances. For example, the <img /> element uses the src attribute to specify the location of the image you want to include at a specific spot on your page:

  -

Comments

- Comments include text in HTML files that isn’t displayed in the final page. Each comment is identified with two special sequences of markup characters:
  - Begin each comment with the string <!--
  - End each comment with the string -->

HTML Headings

- Headings are defined with the <h1> to <h6> tags.
- <h1> defines the most important heading. <h6> defines the least important heading.

Example

- <h1>This is a heading</h1>
  <h2>This is a heading</h2>
  <h3>This is a heading</h3>
- Browsers automatically add some empty space (a margin) before and after each heading.

Headings Are Important

- Use HTML headings for headings only. Don't use headings to make text **BIG** or **bold**. Search engines use your headings to index the structure and content of your web pages.
- Since users may skim your pages by its headings, it is important to use headings to show the document structure.
- H1 headings should be used as main headings, followed by H2 headings, then the less important H3 headings, and so on.

HTML Lines

- The <hr /> tag creates a horizontal line in an HTML page. The hr element can be used to separate content:

```
<p>This is a paragraph 1</p>
   <hr />
   <p>This is a paragraph 2</p>
   <hr />
   <p>This is a paragraph 3</p>
```

HTML Paragraphs - HTML Line Breaks

- Paragraphs are defined with the tag.
- Use the
 tag if you want a line break (a new line) without starting a new paragraph:
  - This is
a para
graph with line breaks

HTML Formatting Tags

- HTML uses tags like <b> and <i> for formatting output, like **bold** or *italic* text.

HTML Text Formatting Tags

Tag	Description
<b>	Defines bold text
<big>	Defines big text
	Defines emphasized text
<i>	Defines italic text
<small>	Defines small text
	Defines strong text
<sub>	Defines subscripted text
<sup>	Defines superscripted text
<ins>	Defines inserted text
<del>	Defines deleted text

More HTML Formatting Tags

HTML Citations, Quotations, and Definition Tags

Tag	Description
<abbr>	Defines an abbreviation
<acronym>	Defines an acronym
<address>	Defines contact information for the author/owner of a document
<bdo>	Defines the text direction
<blockquote>	Defines a long quotation
<q>	Defines a short quotation
<cite>	Defines a citation
<dfn>	Defines a definition term

HTML "Computer Output" Tags

Tag	Description
<code>	Defines computer code text
<kbd>	Defines keyboard text
<samp>	Defines sample computer code
<tt>	Defines teletype text
<var>	Defines a variable
<pre>	Defines preformatted text

HTML Hyperlinks (Links)

- A hyperlink (or link) is a word, group of words, or image that you can click on to jump to a new document or a new section within the current document.
- When you move the cursor over a link in a Web page, the arrow will turn into a little hand.
- Links are specified in HTML using the <a> tag.
- The <a> tag can be used in two ways:
  - To create a link to another document, by using the href attribute
  - To create a bookmark inside a document, by using the name attribute

HTML Link Syntax

- The HTML code for a link is simple. It looks like this:

  Link text The href attribute specifies the destination of a link.

Example

  - Visit UBUNTU site

HTML Links - The target Attribute

- The target attribute specifies where to open the linked document. The example below will open the linked document in a new browser window:

Example

- Visit UBUNTU site

HTML Links - The name Attribute

- The name attribute specifies the name of an anchor. The name attribute is used to create a bookmark inside an HTML document. Bookmarks are not displayed in any special way. They are invisible to the reader.

Example

- A named anchor inside an HTML document:
  - Useful Tips Section Create a link to the "Useful Tips Section" inside the same document:
  - Visit the Useful Tips Section Or, create a link to the "Useful Tips Section" from another page:
  - Visit the Useful Tips Section

Useful Tips for Linking

- Always add a trailing slash to subfolder references. If you link like this: href="http://www.mypage.com/html", you will generate two requests to the server, the server will first add a slash to the address, and then create a new request like this: href="http://www. mypage.com/html/".
- Named anchors are often used to create "table of contents" at the beginning of a large document. Each chapter within the document is given a named anchor, and links to each of these anchors are put at the top of the document.
- If a browser does not find the named anchor specified, it goes to the top of the document. No error occurs.

HTML Images

- In HTML, images are defined with the <img> tag. The <img> tag is empty, which means that it contains attributes only, and has no closing tag.
- To display an image on a page, you need to use the src attribute. Src stands for "source". The value of the src attribute is the URL of the image you want to display.

Syntax for defining an image:

-

HTML Images

- The URL points to the location where the image is stored. An image named "boat.gif", located in the "images" directory on "www.mypage.com" has the URL: http://www.mypage.com/images/boat.gif.
- The browser displays the image where the <img> tag occurs in the document. If you put an image tag between two paragraphs, the browser shows the first paragraph, then the image, and then the second paragraph.

HTML Images - The Alt Attribute

- The required alt attribute specifies an alternate text for an image, if the image cannot be displayed.
- The value of the alt attribute is an author-defined text:
  -

The alt attribute provides alternative information for an image if a user for some reason cannot view it (because of slow connection, or an error in the src attribute).

HTML Images - Set Height and Width

- The height and width attributes are used to specify the height and width of an image.The attribute values are specified in pixels by default:
  -
- It is a good practice to specify both the height and width attributes for an image. If these attributes are set, the space required for the image is reserved when the page is loaded. However, without these attributes, the browser does not know the size of the image. The effect will be that the page layout will change during loading (while the images load).

Useful Tips for Images

- If an HTML file contains ten images - eleven files are required to display the page right. Loading images take time, so my best advice is: Use images carefully.
- When a web page is loaded, it is the browser, at that moment, that actually gets the image from a web server and inserts it into the page. Therefore, make sure that the images actually stay in the same spot in relation to the web page, otherwise your visitors will get a broken link icon. The broken link icon is shown if the browser cannot find the image.

HTML Image Tags

Tag	Description
<img />	Defines an image
<map>	Defines an image-map
<area />	Defines a clickable area inside an image-map

Example

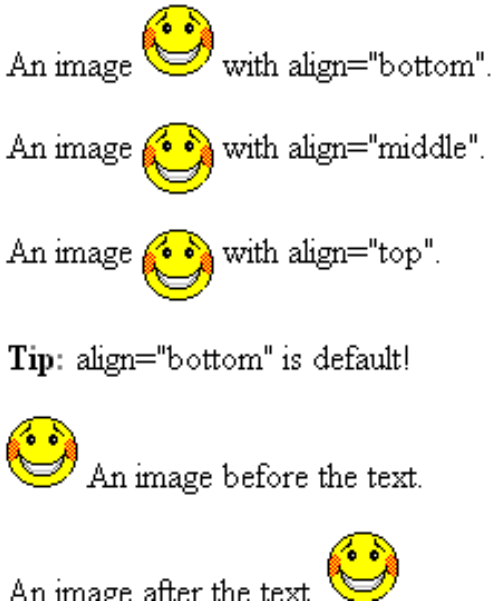
```
<html>
<body>

<p>
An image:
<img src="smiley.gif" alt="Smiley face" width="32" height="32" />
</p>

<p>
A moving image:
<img src="hackanm.gif" alt="Computer man" width="48" height="48" />
</p>

<p>
Note that the syntax of inserting a moving image is no different from a non-moving image.
</p>

</body>
</html>
```

Example- Using an image as a link

```
<html>
<body>

<p>Create a link of an image:
<a href=" www.teikoz.gr ">
<img src="smiley.gif" alt="HTML tutorial" width="32" height="32" />
</a></p>

<p>No border around the image, but still a link:
<a href="www.teikoz.gr">
<img border="0" src="smiley.gif" alt="HTML tutorial" width="32" height="32" />
</a></p>

</body>
</html>
```

Example- Aligning Images

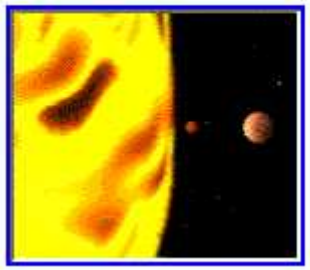
```
<html>
<body>
<p>An image
<img src="smiley.gif" alt="Smiley face" align="bottom" width="32"
      height="32" />
with align="bottom".</p>
<p>An image
<img src="smiley.gif" alt="Smiley face" align="middle" width="32"
      height="32" />
with align="middle".</p>
<p>An image
<img src="smiley.gif" alt="Smiley face" align="top" width="32"
      height="32" />
with align="top".</p>
<p><b>Tip:</b> align="bottom" is default!</p>
<p><img src="smiley.gif" alt="Smiley face" width="32" height="32"
      />
An image before the text.</p>
<p>An image after the text.
<img src="smiley.gif" alt="Smiley face" width="32" height="32"
      /></p>
</body>
</html>
```



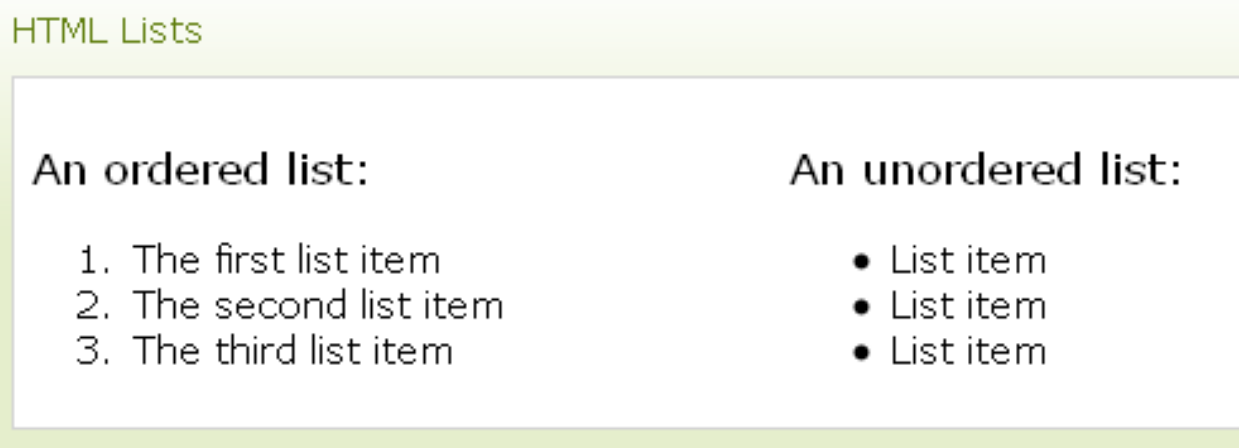
Example : Image maps

```
<html>
<body>

<p>Click on the sun or on one of the planets to watch it
      closer:</p>
<img src="planets.gif" width="145" height="126" alt="Planets"
      usemap="#planetmap" />
<map name="planetmap">
  <area shape="rect" coords="0,0,82,126" alt="Sun"
      href="sun.htm" />
  <area shape="circle" coords="90,58,3" alt="Mercury"
      href="mercur.htm" />
  <area shape="circle" coords="124,58,8" alt="Venus"
      href="venus.htm" />
</map>
</body>
</html>
```

Click on the sun or on one of the planets to watch it closer:



HTML Lists


HTML Lists
An ordered list:
1. The first list item
2. The second list item
3. The third list item
An unordered list:
• List item
• List item
• List item

HTML Unordered Lists

- An unordered list starts with the <ul> tag. Each list item starts with the <li> tag.

- The list items are marked with bullets (typically small black circles).

```
<ul>
<li>Coffee</li>
<li>Milk</li>
</ul>
```

Output

- Coffee
- Milk

HTML Ordered Lists

- An ordered list starts with the <ol> tag. Each list item starts with the <li> tag.
- The list items are marked with numbers.

```
<ol>
    <li>Coffee</li>
    <li>Milk</li>
    </ol>
```

Output

1. Coffee
2. Milk

HTML Definition Lists

- A definition list is a list of items, with a description of each item.
- The <dl> tag defines a definition list.
- The <dl> tag is used in conjunction with <dt> (defines the item in the list) and <dd> (describes the item in the list):

```
<dl>
<dt>Coffee</dt>
<dd>- black hot drink</dd>
<dt>Milk</dt>
<dd>- white cold drink</dd>
</dl>
```

Output

Coffee
- black hot drink

Milk
- white cold drink

HTML List Tags

HTML List Tags

Tag	Description
	Defines an ordered list
	Defines an unordered list
	Defines a list item
<dl>	Defines a definition list
<dt>	Defines an item in a definition list
<dd>	Defines a description of an item in a definition list

HTML Tables

HTML Tables

Apples	44%
Bananas	23%
Oranges	13%
Other	10%

- Tables are defined with the <table> tag.
- A table is divided into rows (with the <tr> tag), and each row is divided into data cells (with the <td> tag). td stands for "table data," and holds the content of a data cell.
- A <td> tag can contain text, links, images, lists, forms, other tables, etc.

Table Example

```
<table border="1">
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td>
</tr>
<tr>
<td>row 2, cell 1</td>
<td>row 2, cell 2</td>
</tr>
</table>
```

row 1, cell 1	row 1, cell 2
row 2, cell 1	row 2, cell 2

HTML Tables and the Border Attribute

- If you do not specify a border attribute, the table will be displayed without borders. Sometimes this can be useful, but most of the time, we want the borders to show.
- To display a table with borders, specify the border attribute:

```
<table border="1">
<tr>
<td>Row 1, cell 1</td>
<td>Row 1, cell 2</td>
</tr>
</table>
```

HTML Table Headers

- Header information in a table are defined with the <th> tag.
- All major browsers will display the text in the <th> element as bold and centered.

Header 1	Header 2
row 1, cell 1	row 1, cell 2
row 2, cell 1	row 2, cell 2

```
<table border="1">
<tr>
<th>Header 1</th>
<th>Header 2</th>
</tr>
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td>
</tr>
<tr>
<td>row 2, cell 1</td>
<td>row 2, cell 2</td>
</tr>
</table>
```

HTML Table Tags

HTML Table Tags

Tag	Description
<table>	Defines a table
<th>	Defines a table header
<tr>	Defines a table row
<td>	Defines a table cell
<caption>	Defines a table caption
<colgroup>	Defines a group of columns in a table, for formatting
<col />	Defines attribute values for one or more columns in a table
<thead>	Groups the header content in a table
<tbody>	Groups the body content in a table
<tfoot>	Groups the footer content in a table

HTML Frames

- With frames, you can display more than one HTML document in the same browser window. Each HTML document is called a frame, and each frame is independent of the others.
- The disadvantages of using frames are:
  - Frames are not expected to be supported in future versions of HTML
  - Frames are difficult to use. (Printing the entire page is difficult).
  - The web developer must keep track of more HTML documents

The HTML frameset Element

- The frameset element holds one or more frame elements. Each frame element can hold a separate document.
- The frameset element states HOW MANY columns or rows there will be in the frameset, and HOW MUCH percentage/pixels of space will occupy each of them.

The HTML frame Element

- The <frame> tag defines one particular window (frame) within a frameset.
- In the example below we have a frameset with two columns. The first column is set to 25% of the width of the browser window. The second column is set to 75% of the width of the browser window. The document "frame_a.htm" is put into the first column, and the document "frame_b.htm" is put into the second column:

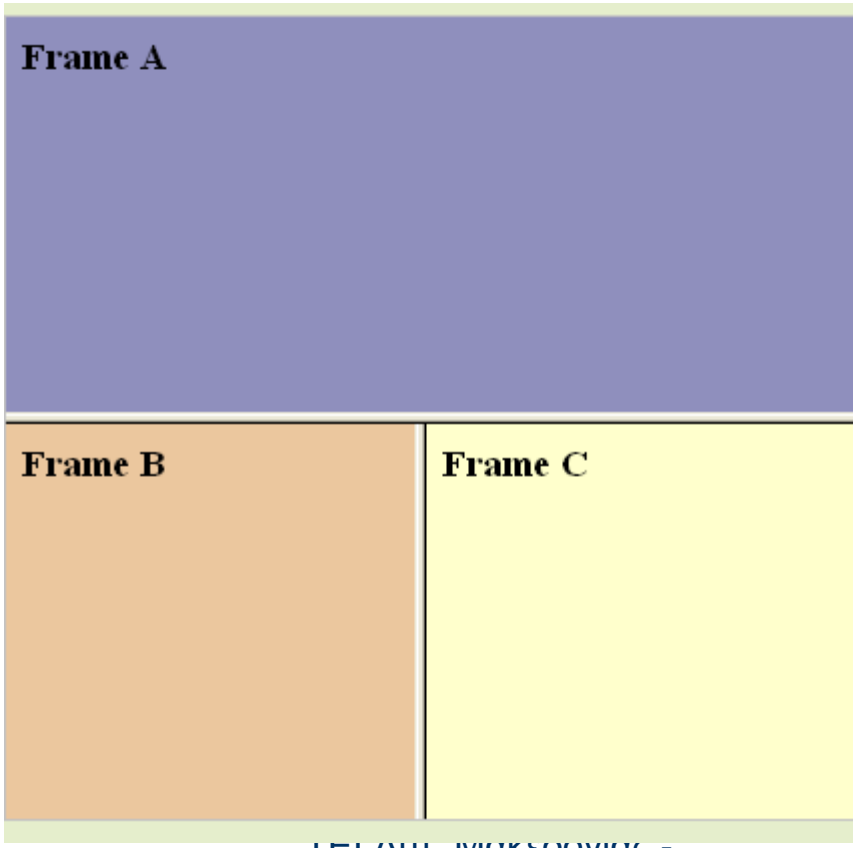
The HTML frame Element

```
<frameset cols="25%,75%">
   <frame src="frame_a.htm" />
   <frame src="frame_b.htm" />
</frameset>
```

- The frameset column size can also be set in pixels (cols="200,500"), and one of the columns can be set to use the remaining space, with an asterisk (cols="25%,*")

Example: Nested Frames

```
<html>

<frameset rows="50%,50%">

  <frame src="frame_a.htm" />
  <frameset cols="25%,75%">
    <frame src="frame_b.htm" />
    <frame src="frame_c.htm" />
  </frameset>

</frameset>

</html>
```



Example:Navigation Frames

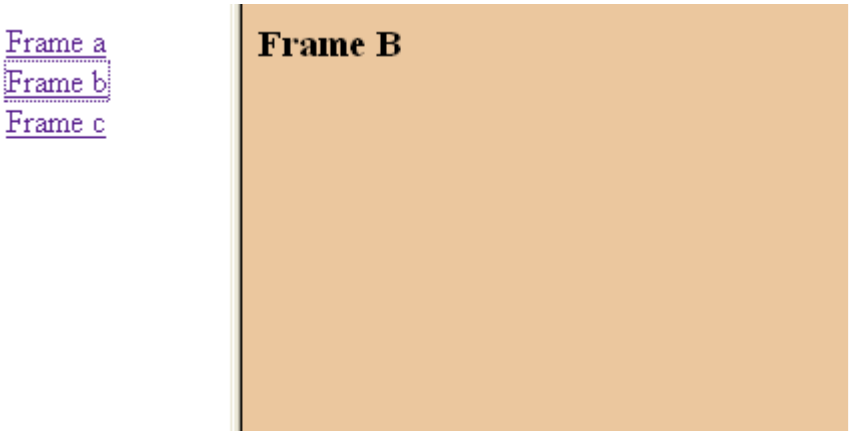
The second frame will show the linked document. The navigation frame contains a list of links with the second frame as the target. The file called "tryhtml_contents.htm" contains three links.

The source code of the links:

```
<a href ="frame_a.htm" target ="showframe">Frame a</a><br>
<a href ="frame_b.htm" target ="showframe">Frame b</a><br>
<a href ="frame_c.htm" target ="showframe">Frame c</a>
```

Example:Navigation Frames

```
<html>

<frameset cols="120,*">

  <frame
     src="tryhtml_contents.htm" />
  <frame src="frame_a.htm"
     name="showframe" />

</frameset>

</html>
```



HTML Frame Tags

Tag	Description
<frameset>	Defines a set of frames
<frame />	Defines a sub window (a frame)
<noframes>	Defines a noframe section for browsers that do not handle frames

HTML Forms

- HTML forms are used to pass data to a server.
- A form can contain input elements like text fields, checkboxes, radio-buttons, submit buttons and more. A form can also contain select lists, textarea, fieldset, legend, and label elements.
- The <form> tag is used to create an HTML form:

```
<form>
.
input elements
.
</form>
```

HTML Forms - The Input Element

- The most important form element is the input element.
- The input element is used to select user information.
- An input element can vary in many ways, depending on the type attribute. An input element can be of type text field, checkbox, password, radio button, submit button, and more.

Text Fields

<input type="text" /> defines a one-line input field that a user can enter text into:

```
<form>
First name: <input type="text“ name="firstname" /><br />
Last name: <input type="text" name="lastname" />
</form>
```

How the HTML code above looks in a browser:

First name:

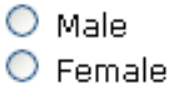
Last name:

Radio Buttons

<input type="radio" /> defines a radio button. Radio buttons let a user select ONLY ONE one of a limited number of choices:

```
<form>
<input type="radio" name="sex" value="male" /> Male<br />
<input type="radio" name="sex" value="female" /> Female
</form>
```

How the HTML code above looks in a browser:



Checkboxes

<input type="checkbox" /> defines a checkbox. Checkboxes let a user select ONE or MORE options of a limited number of choices.

```
<form>
<input type="checkbox" name="vehicle" value="Bike" /> I have a bike<br />
<input type="checkbox" name="vehicle" value="Car" /> I have a car
</form>
```

How the HTML code above looks in a browser:

☐ I have a bike
☐ I have a car

Submit Button

<input type="submit" /> defines a submit button.

A submit button is used to send form data to a server. The data is sent to the page specified in the form's action attribute. The file defined in the action attribute usually does something with the received input:

```
<form name="input" action="html_form_action.asp“ method=“post">
    Username: <input type="text" name="user" />
    <input type="submit" value="Submit" />
    </form>
```

Submit Button

Username: Submit

- If you type some characters in the text field above, and click the "Submit" button, the browser will send your input to a page called "html_form_action.asp". The page will show you the received input.

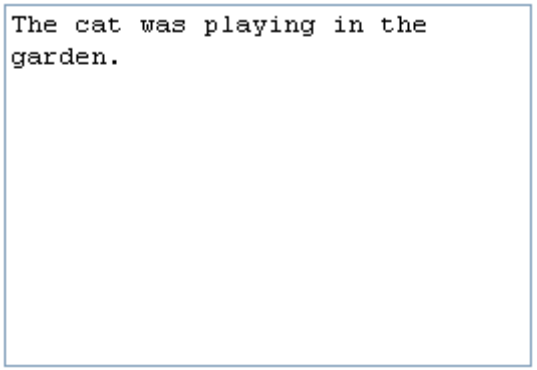
Example: Drop-Down menus

```
<html>
<body>

<form action="">
<select name="cars">
<option value="volvo">Volvo</option>
<option value="saab">Saab</option>
<option value="fiat">Fiat</option>
<option value="audi">Audi</option>
</select>
</form>

</body>
</html>
```

Example: Textarea

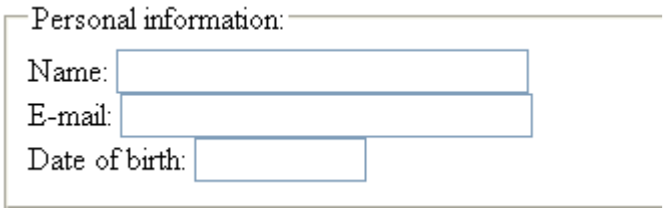
```
<html>
<body>
 <p> This example cannot be edited
      because our editor uses a textarea for
      input, and your browser does not allow
      a textarea inside a textarea. </p>
 <textarea rows="10" cols="30"> The cat
      was playing in the garden.
</textarea>
</body>
</html>
```

This example cannot be edited because our editor uses a textarea for input, and your browser does not allow a textarea inside a textarea.



Example:Border around form-data

```
<html>
<body>

<form action="">
<fieldset>
<legend>Personal information:</legend>
Name: <input type="text" size="30" /><br />
E-mail: <input type="text" size="30" /><br />
Date of birth: <input type="text" size="10" />
</fieldset>
</form>

</body>
</html>
```



Example: Send e-mail using a form

```
<html>
<body>

<h3>Send e-mail to someone@example.com:</h3>

<form action="MAILTO:someone@example.com"
      method="post" enctype="text/plain">
Name:<br />
<input type="text" name="name" value="your name" /><br />
E-mail:<br />
<input type="text" name="mail" value="your email" /><br />
Comment:<br />
<input type="text" name="comment" value="your comment"
      size="50" />
<br /><br />
<input type="submit" value="Send">
<input type="reset" value="Reset">

</form>
</body>
</html>
```

HTML Form Tags

Tag	Description
<form>	Defines an HTML form for user input
<input />	Defines an input control
<textarea>	Defines a multi-line text input control
<label>	Defines a label for an input element
<fieldset>	Defines a border around elements in a form
<legend>	Defines a caption for a fieldset element
<select>	Defines a select list (drop-down list)
<optgroup>	Defines a group of related options in a select list
<option>	Defines an option in a select list
<button>	Defines a push button