CENG420

Web Programming and Technologies

Course Administration

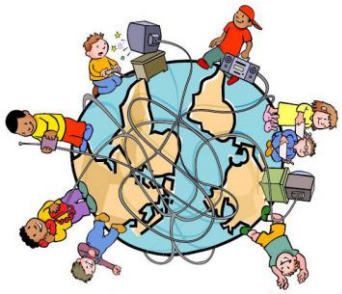
- **Textbook:**
- Nixon:Learning PHP, MySQL, JavaScript, and CSS
- Sebesta: Programming the world wide web
- REFERENCES
- JQuery Cookbook by O Reilly ISBN: 978-0-596-15977-1 (free PDF available)
- **Prerequisites:**
  - CSCI300: Intermediate programming
  - CENG375: Introduction to Database
- **Grading:**
  - Test 15
  - Midterm 20
  - Final 30
  - Project 20
  - Assignments 10
  - Attendance 5

Course Content

- Introduction to HTML and HTTP protocol.
- Introduction to Cascaded Style Sheet (CSS) and bootstrap
- Client-side scripting using JavaScript and Document Object Model, [Jquery and Ajax]
- Server-side scripting with PHP
- Handling user form data and requests
- Session Tracking
- Database connectivity
- Outline security and privacy risks associated with web applications.

CENG420
Chapter1

Fundamentals



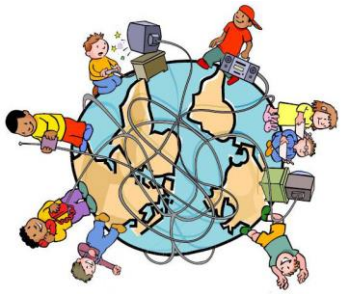
Web or Internet?

- **Internet:** is a massive network of networks with their networking infrastructure. It connects millions of computers to communicate with each others as long as they are on the internet.

- Information that travels over the Internet does so via a variety of languages known as:

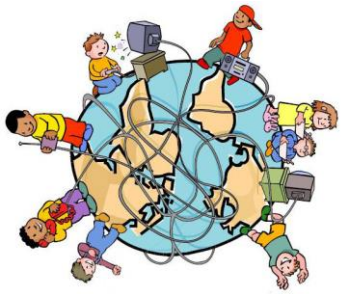
Network protocols

e.g. HTTP, SMTP, DNS, FTP, etc (to be seen in **CENG415**)



Web or Internet?

- **World Wide Web (simply Web):** a way of accessing and sharing information over the Internet.
- Web uses the HTTP protocol, *only one of the protocols used over Internet*, to transmit data.
- Some computers run *Web servers* and provide services to the majority of computers that run *Web clients* or browsers (*Internet Explorer, Firefox, google chrome*)



Web or Internet?

Conclusion:

- Internet is NOT the Web, web is only a portion of the Internet (a huge portion as well ☺)

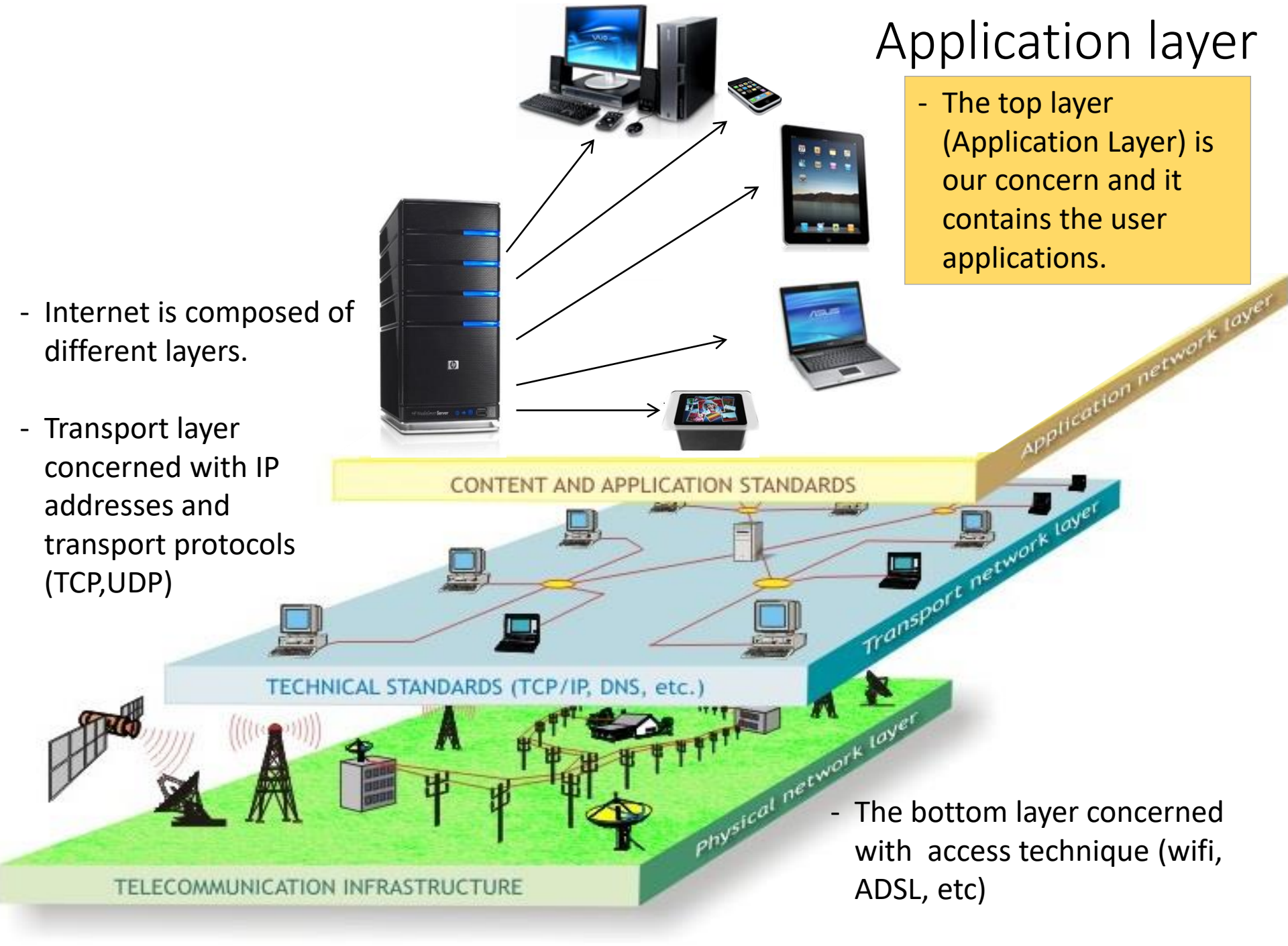
- Internet is also used for e-mail (SMTP), file sharing (FTP, Bittorrent), media communications, etc.

Application layer

- The top layer (Application Layer) is our concern and it contains the user applications.

- Internet is composed of different layers.

- Transport layer concerned with IP addresses and transport protocols (TCP,UDP)



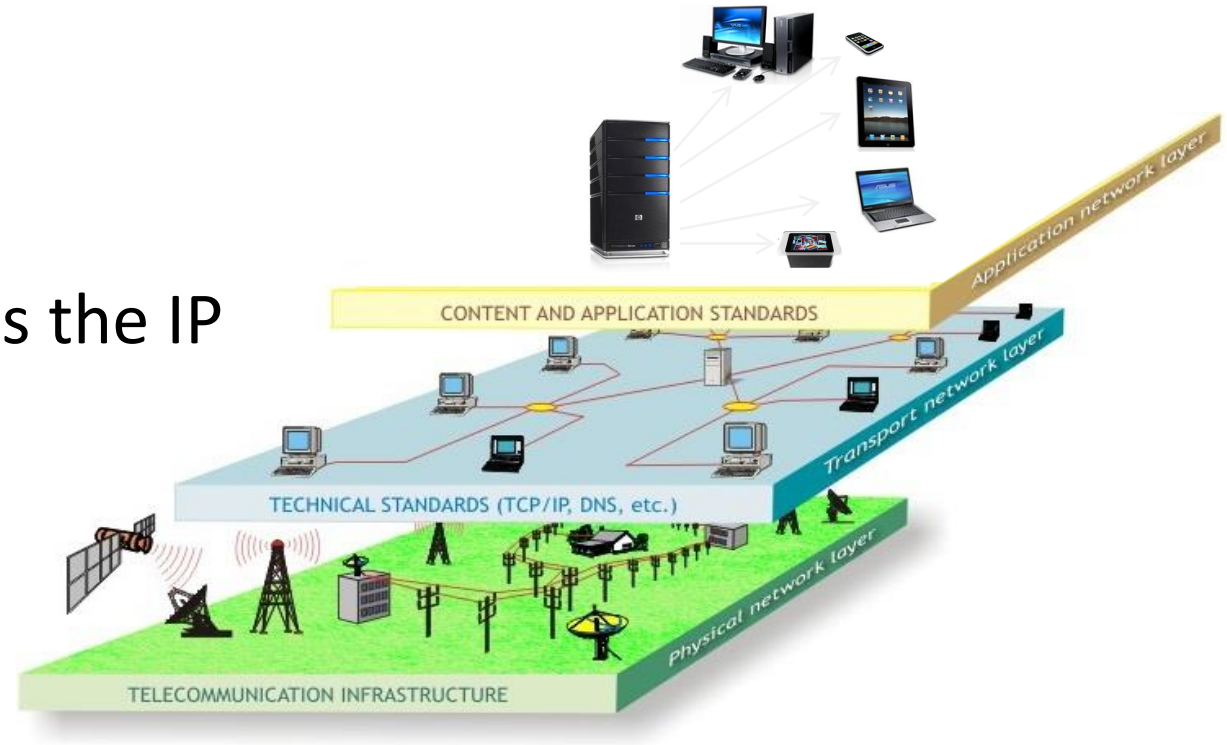
- The bottom layer concerned with access technique (wifi, ADSL, etc)

IP and DNS

- Each component on the Internet has an IP address to be recognized with
  - IP (V4) addresses consist in 32 bit written in groups of three digits from 0 to 254, e.g. 192.144.200.01 (refer to CENG415)

- IP addresses are so hard to memorize! Names are generally easier (hotmail, google, facebook,etc).
  - DNS (Domin Name System) is used to translate between IPs and names

For example www.google.com has the IP 216.58.208.238



IP and DNS

But what network protocol to get data from server to client!!

Any web browser on the client side will show the content

It is 69.63.176.0

OK, here you are the components to show

Get the main webpage of facebook

What is the IP for the website: Facebook.com

CONTENT AND APPLICATION STANDARDS

HTTP Protocol @ Application layer

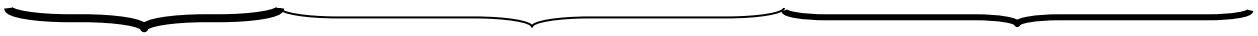
HTTP: hypertext transfer protocol

- Web's application layer protocol
- client/server model
  - *client:* browser that requests, receives, "displays" Web objects
  - *server:* Web server sends objects in response to requests

HTTP and Web objects

- HTTP is used to transfer web objects
- Each web page consists of several objects
- objects can be HTML file, JPEG image, Java applet, audio file, video file, …
- web page consists of base HTML-file which includes several referenced objects
- each object is addressable by a URL
- **Example URL:**

```
http://www.someschool.edu/someDept/pic.gif
```



protocol

host + network name
("www" is host name)

path (full file) name
(or directory name, or "")

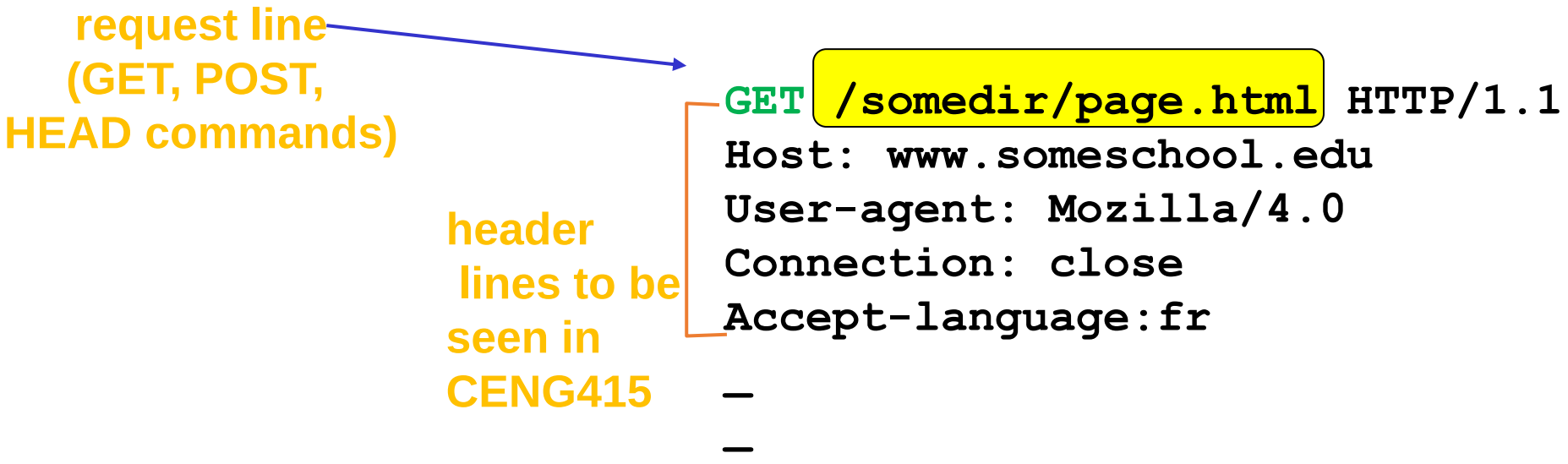
Web servers

- Web servers also support `ftp, news and mailto`

- URLs:

HTTP *request* message

- two types of HTTP messages: *request, response*
- HTTP request message:
  - ASCII (human-readable format)



HTTP *response* message

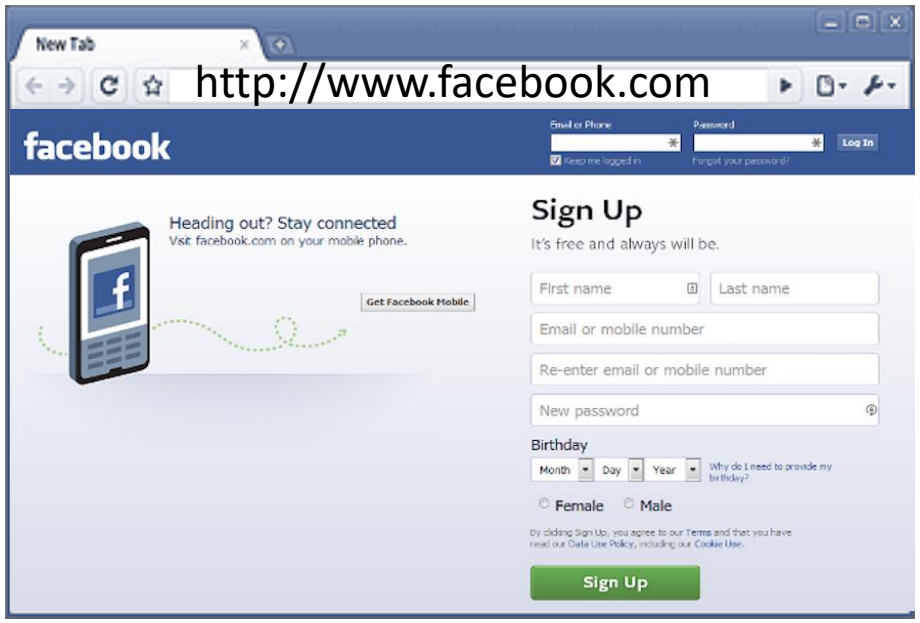
status line (protocol status code status phrase)

header lines

data, e.g., requested HTML file

```
HTTP/1.1 200 OK
Connection close
Date: Thu, 06 Aug 1998 12:00:15 GMT
Server: Apache/1.3.0 (Unix)
Last-Modified: Mon, 22 Jun 1998 …...
Content-Length: 6821
Content-Type: text/html

data data data data data ...
```

Example



1 request facebook.com using the http protocol

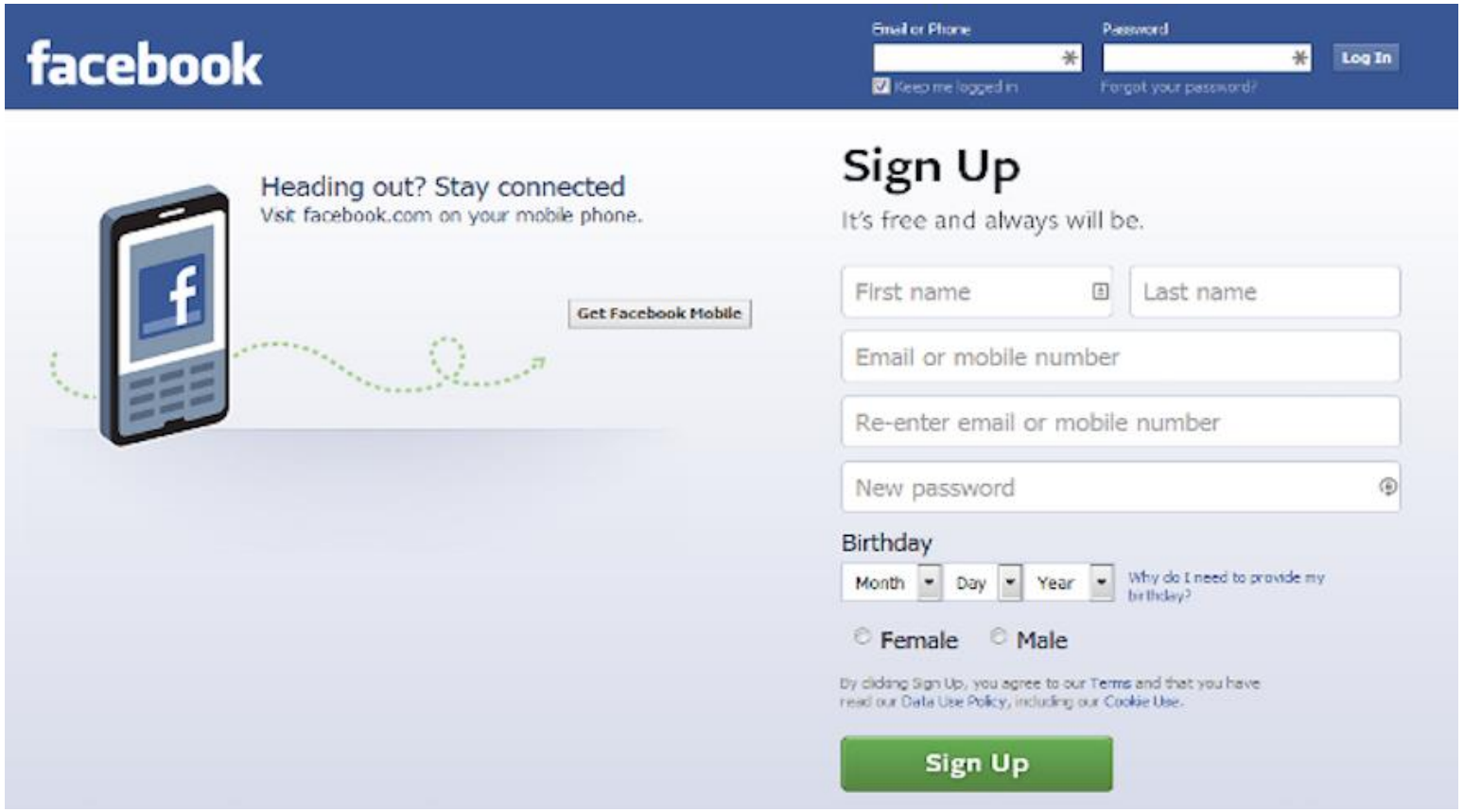
2 Request arrives at facebook servers in Europe or USA

3 Server responds by sending the facebook page to the client

4 Client displays the page in the browser

But what did the server send?

What is actually this?
And how did the browser displayed these components: input fields, blue navigation bar, gray backgrounds, images, etc…



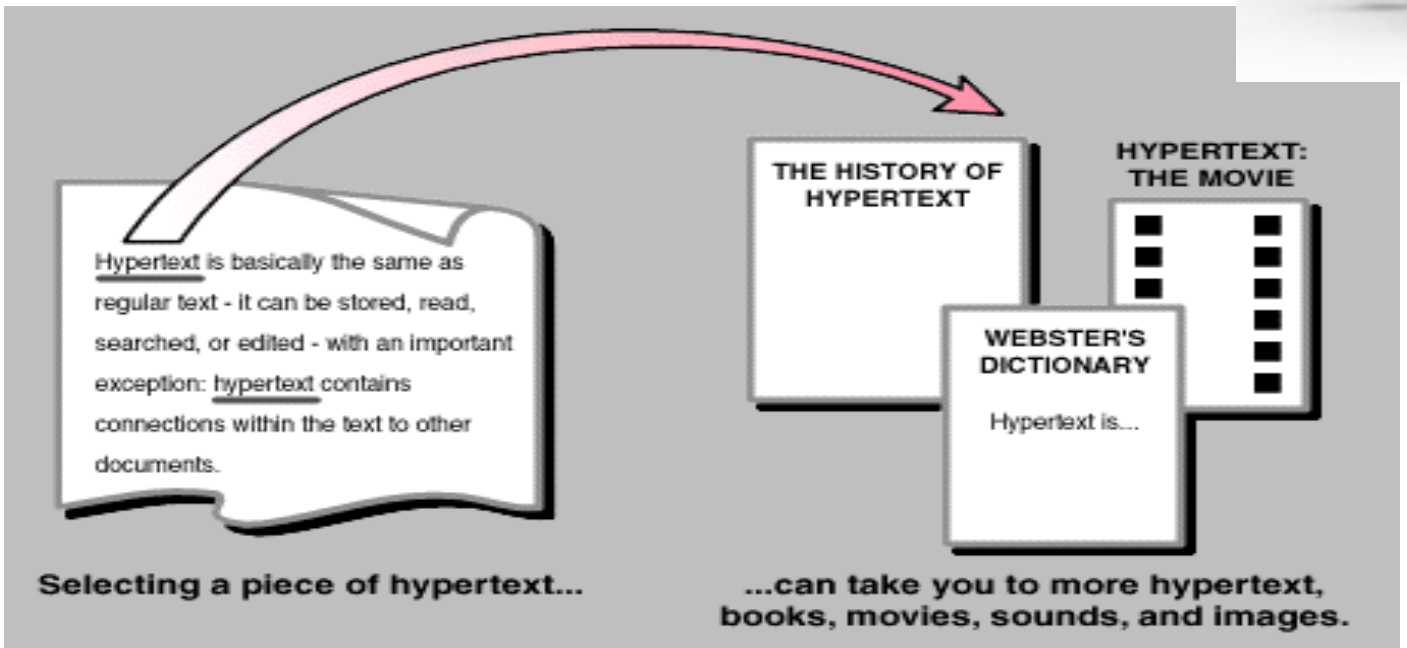
It's **HTML**!

- and other things too (but let's stick now to HTML)
- The browser receives something like this:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Example<title>
        <link rel="stylesheet" href="sty
    </head>
    <body>
        <h1>
            <a href="/">Header</a>
        </h1>
        <nav>
            <a href="one/">One</a>
            <a href="two/">Two</a>
            <a href="three/">Three</a>
        </nav>
```

HTTP vs HTML

- HTTP: hypertext transfer protocol
  - The rules governing the conversation between a Web client and a Web server
- HTML: hypertext markup language
  - Definitions of tags that are added to Web documents to control their appearance.



Besides HTML:

a style sheet language used for describing the look and formatting of a document written in a markup language such as HTML

a server scripting language, and a powerful tool for making dynamic and interactive Web pages quickly. PHP files can contain text, HTML, CSS, JavaScript, and PHP code. These codes are executed on the server, and the result is returned to the browser as plain HTML

a dynamic computer programming language to implement client-side scripts

CENG420

Chapter 2 HTML

Basics

Basic Syntax

- Tags are the fundamental syntactic units of HTML
  - A pair of tags defines a *container*
  - *Content is what's between the tags*
  - Container and its content defines an *element*
- All elements must have closing tags
  - This is a paragraph
  - This is another paragraph
  - <!-- This is a comment -->
  -
 (*Empty content tag)*

Some notes

Basic Syntax

- Tags are case sensitive (lower case)
  - <a>Illegal</A>
  - <a>Correct
- Elements must be properly nested
  - <a>Illegal
  - <a>Correct
- Attribute values must always be quoted
  - <h2 id=illegal>
  - <h2 id="correct">

Each page should have the following structure

```
<!DOCTYPE html PUBLIC "-//w3c//DTD XHTML
1.0 Strict//EN“ "http://www.w3.org/TR/xhtml1/DTD/xhtml1-
   strict.dtd">
<html >
<head>
<title>Information about the document</title>
</head>
<body>
Content of the document …
</body>
</html>
```

XHTML basics

```
1   <?xml version="1.0" encoding="UTF-8"?>
2   <!--
3   To change this template, choose Tools | Templates
4   and open the template in the editor.
5   -->
6   <!DOCTYPE html>
7   <html xmlns="http://www.w3.org/1999/xhtml">
8       <head>
9           <title>TODO supply a title</title>
10      </head>
11      <body>
12          <div>TODO write content</div>
13      </body>
14  </html>
15
```

The <p> tag

- Paragraph tag.
- Used to write text.

basics

- Lin … in xht…

```
<p>
    Mary
a
    litt…
```

html body p

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <!--
3  To change this template, choose Tools | Templates
4  and open the template in the editor.
5  -->
6  <!DOCTYPE html>
7  <html xmlns="http://w… …/1999/xhtml">
8      <head>
9          <title>FirstTrial</title>
10     </head>
11     <body>
12         <p>I want      to learn
13         web
14         programming
15         </p>
16     </body>
17 </html>
18
```

Misspelled Word

Java E… loc…

Job Opportunities | Khalifa University Ap… | Adobe - Flash Player | A First Course in Dat… | TV Tues | Search Res…

I want to learn web programming

basics

- If a <p> is not found at the beginning of the line, XHTML treats it as it was and inserts a line.

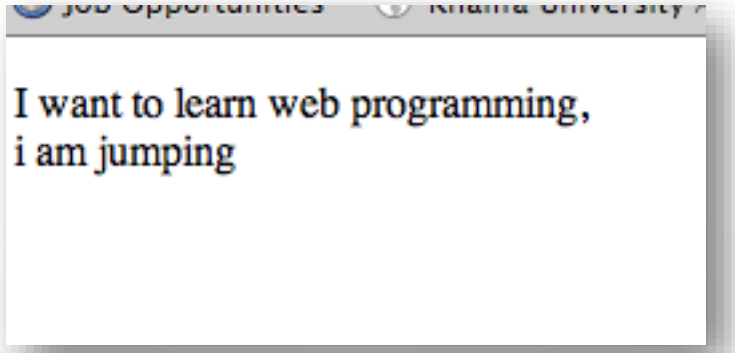
```
html  body  p
1   <?xml version="1.0" encoding="UTF-8"?>
2   <!--
3   To change this template, choose Tools | Templates
4   and open the template in the editor.
5   -->
6   <!DOCTYPE html>
7   <html xmlns="http://www.w3.org/1999/xhtml">
8       <head>
9           <title>FirstTrial</title>
10      </head>
11      <body>
12          <p>I want      to learn web programming</p> <p> i am still at the same line </p>
13      </body>
14  </html>
15
```

I want to learn web programming

i am still at the same line

We can insert a break

```
html  body  p
1   <?xml version="1.0" encoding="UTF-8"?>
2   <!--
3   To change this template, choose Tools | Templates
4   and open the template in the editor.
5   -->
6   <!DOCTYPE html>
7   <html xmlns="http://www.w3.org/1999/xhtml">
8       <head>
9           <title>FirstTrial</title>
10      </head>
11      <body>
12          <p>I want to learn web programming, <br /> i am jumping </p>
13      </body>
14  </html>
15
```



Adding <pre> will tell the browser to write as is!

```
6   <!DOCTYPE html>
7   <html xmlns="http://www.w3.org/1999/xhtml">
8       <head>
9           <title>FirstTrial</title>
10      </head>
11      <body>
            <p><pre>
                    I want
14                      to learn web
15                          programming </pre></p>
16      </body>
17  </html>
18
```

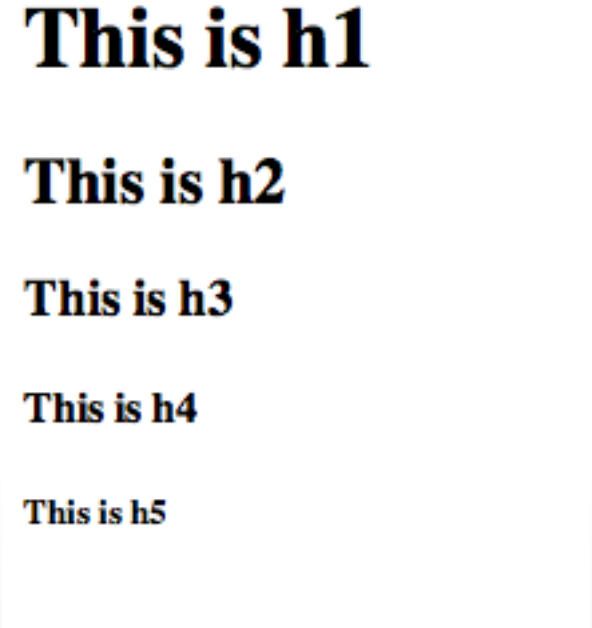
```
I want
    to learn web
        programming
```

Headings

- Use of heading to denote several sections of a paragraph. <h1> up to <h6>
- Usually <h1,2 and 3> use font sizes larger than default size. Where <h4> is the default size, <h5> and <h6> are smaller.
- Headings always break the line

Headings

```
6   <!DOCTYPE html>
7   <html xmlns="http://www.w3.org/1999/xhtml">
8       <head>
9           <title>FirstTrial</title>
10      </head>
11      <body>
12          <h1>This is h1 </h1>
13          <h2>    This is h2</h2> <h3>This is h3</h3> <h4>This is h4</h4>
14          <h5>This       is
15              h5</h5>
16      </body>
17  </html>
18
```



Font styles and sizes

- <i> and <b> are not used anymore. Cascaded style sheets replaced them. We will see this later.

- Content based tags: → emphasis tag, content is special
- → strong tag, like emphasis but stronger , usually bold
- <code> → code tag to display programming code text

Example for content based tags and for sub and superscript

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <title>FirstTrial</title>
    </head>
    <body>
        <code> this is a code </code>
        <blockquote>
            <em>"someone said something in some reference. i should
                be inside a blockquote</em>
        </blockquote>
        <p>x<sub>2</sub><sup>3</sup>+y<sub>3</sub><sup>2</sup></p>
    </body>
</html>
```

this is a code

"someone said something in some reference. i should be inside a blockquote

$x_2^3+y_3^2$

 overpowers blockquote

Common entities

```
-->
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <title>FirstTrial</title>
    </head>
    <body>
        <p> 4 &lt; 5 </p>


    </body>
</html>

```

4 < 5

Character		
&		
<		
>		
"	&quot;	Double quote
'	&apos;	le quote (apostrophe)
1/4	&frac14;	quarter
1/2	&frac12;	One half
3/4	&frac34;	Three quarters
°	&deg;	Degree
(space)		Nonbreaking space

The horizontal rule <hr />

- Line across the screen to separate sections
- Note that there is no closing tag since there is no content, the / within closes it.

```
    </head>
    <body>
        <p> 4 &lt; 5 </p>
        <hr />
        <p> i am another line</p>


    </body>
</html>
```

Meta element

- It is used to characterize a document/webpage
- IT IS USED BY WEB SEARCH ENGINES TO FIND THOSE DOCUMENTS.
- EXAMPLE:

Closing slash

```
<meta name = "Title" content = "Don Quixote" />
<meta name = "Author"  content = "Miguel Cervantes" />
<meta  name = "keywords"  content = "novel,
 Spanish literature, groundbreaking work" />
```

```
<head>
    <meta name="mydocument" content="student learning" />
    <title>FirstTrial</title>
</head>
<body>
```

and

- Offer a generic mechanism for adding structure to documents
  - Used for style purposes
  - Attributes
    - **class**
    - **id**
-
  - Define a generic block element
-
  - Define a generic inline element

Images <img />

- **JPEG or GIF**
- **JPEG better compression and colors but no transparency**
- **PNG joins advantages of both at the expense of increased size.**

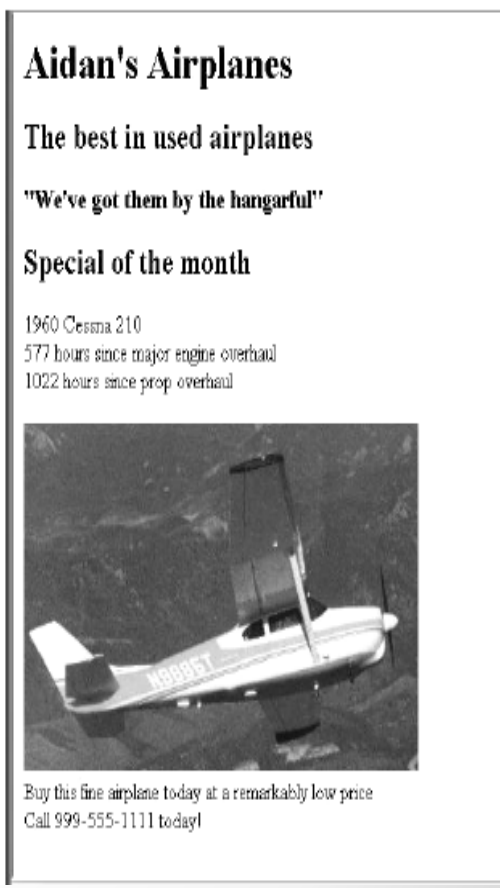
Images <img />

- **<img> tag has usually 2 attributes:**
  - **`src`** for the image name/location
  - **`alt`** is text to be displayed in case picture cant be displayed
- If the image is in the same folder as the XHTML file, then `src` is just the name of the image, if subfolder, then `[folderName]/[imageName]`
- Optional attributes: `height` and `width`
- `Many other attributes to img tag. Google them.`

Image example

```
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head> <title> Images </title>
  </head>
  <body>
    <h1> Aidan's Airplanes </h1>
    <h2> The best in used airplanes </h2>
    <h3> "We've got them by the hangarful" </h3>
    <h2> Special of the month </h2>
    <p>
      1960 Cessna 210 <br />
      577 hours since major engine overhaul<br />
      1022 hours since prop overhaul <br /><br />
      <img src = "c210new.jpg"  alt = "Picture of a Cessna 210" />
      <br />
      Buy this fine airplane today at a remarkably low price
      <br />
      Call 999-555-1111 today!
    </p>
  </body>
</html>
```

Inline tag



Images (example 2)

```
<body>

    <p> I will show a picture of newyork <br /><br/>
    <img src="images/newyork.png" alt="new york city" /> <br/><br/>
    This is new york city

    </p>
```

Hypertext links <a>

 Link text

```
<head>
    <meta name="mydocument" content="student learning" />
    <title>FirstTrial</title>
</head>
<body>

    <p> I will show a picture of newyork <br /><br/>
    <img src="images/newyork.png" alt="new york city" /> <br/><br/>
    This is new york city

    </p>

    <a href="anotherfile.xhtml"> click here to go to my other html </a><br/>
    <a href="http://www.google.com">click here to go to google </a>
```

I will show a picture of newyork

This is new york city

click here to go to my other html
click here to go to google

Hypertext links as images

```
<body>
    <p>click on the image below to go to google</p> <br/>

    <a href="http://www.google.com">
        <img src="images/google.jpg" width="200" height="140" />

    </a>



</body>
```

click on the image below to go to google

Targets within documents

- Sometimes we need to jump to a specific element inside the same page *or* to some other page but also to a specific element in that page
- When you are developing the html file, set the attribute `id` to each element.
- We can jump to it using `#[id]`
- Examples next page

Try this

```
<head>
    <meta name="mydocument" content="student learning" />
    <title>FirstTrial</title>
</head>
<body>
    <p id="one">one</p> <br/><br/>
    <p id="two">two</p> <br/><br/>
    <p id="three">three</p> <br/><br/>
    <p id="four">four</p> <br/><br/>
    <p id="five">five</p> <br/><br/>
    <p id="six">six</p> <br/><br/>
    <p id="seven">seven</p> <br/><br/>
    <p id="eight">eight</p> <br/><br/>

    <a href="#one">click here to know info about ONE</a>
```

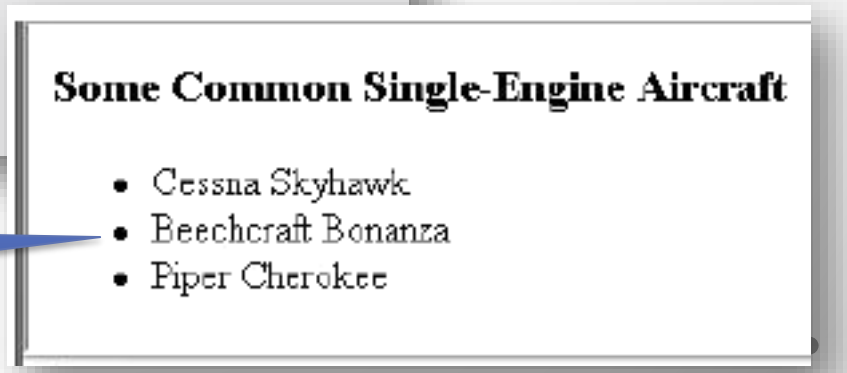
If the element we want to jump to is in another file:

```
<a href = "AIDAN1.html#avionics"> Avionics </a>
```

Lists: unordered, ordered and definition lists

- Unordered lists → `<ul>` and inside each item is labeled with `<li>` that stands for list item.

```
<html xmlns = "http://www.w3.org/1999/xhtml">
  <head> <title> Unordered list </title>
  </head>
  <body>
    <h3> Some Common Single-Engine Aircraft </h3>
    <ul>
      <li> Cessna Skyhawk </li>
      <li> Beechcraft Bonanza </li>
      <li> Piper Cherokee </li>
    </ul>
  </body>
</html>
```



Bullets automatically generated

Lists: unordered, ordered and definition lists

- ordered lists → `<ol>` and inside each item is labeled with `<li>` that stands for list item.

```
<body>
  <h3> Cessna 210 Engine Starting Instructions </h3>
  <ol>
    <li> Set mixture to rich </li>
    <li> Set propeller to high RPM </li>
    <li> Set ignition switch to "BOTH" </li>
    <li> Set auxiliary fuel pump switch to "LOW PRIME" </li>
    <li> When fuel pressure reaches 2 to 2.5 PSI, push
         starter button
    </li>
  </ol>
</body>
```

Cessna 210 Engine Starting Instructions

1. Set mixture to rich
2. Set propeller to high RPM
3. Set ignition switch to "BOTH"
4. Set auxiliary fuel pump switch to "LOW PRIME"
5. When fuel pressure reaches 2 to 2.5 PSI, push starter button

Numbers automatically generated

Nested lists

```
<body>
  <h3> Aircraft Types </h3>
  <ol>
    <li> General Aviation (piston-driven engi
      <ol>
        <li> Single-Engine Aircraft
          <ol>
            <li> Tail wheel </li>
            <li> Tricycle </li>
          </ol> <br />
        </li>
        <li> Dual-Engine Aircraft
          <ol>
            <li> Wing-mounted engines </li>
            <li> Push-pull fuselage-mounted e
          </ol>
        </li>
      </ol> <br />
    </li>
    <li> Commercial Aviation (jet engines)
      <ol>
        <li> Dual-Engine
          <ol>
            <li> Wing-mounted engines </li>
            <li> Fuselage-mounted engines </l
          </ol> <br />
        </li>
        <li> Tri-Engine
          <ol>
            <li> Third engine in vertical stabilizer </li>
            <li> Third engine in fuselage </li>
          </ol>
```

Aircraft Types

1. General Aviation (piston-driven engines)
    1. Single-Engine Aircraft
        1. Tail wheel
        2. Tricycle
    2. Dual-Engine Aircraft
        1. Wing-mounted engines
        2. Push-pull fuselage-mounted engines
2. Commercial Aviation (jet engines)
    1. Dual-Engine
        1. Wing-mounted engines
        2. Fuselage-mounted engines

Definition lists

```
<body>
  <h3> Single-Engine Cessna Airplanes </h3>
  <dl>
    <dt> 152 </dt>
    <dd> Two-place trainer </dd>
    <dt> 172 </dt>
    <dd> Smaller four-place airplane </dd>
    <dt> 182 </dt>
    <dd> Larger four-place airplane </dd>
    <dt> 210 </dt>
    <dd> Six-place airplane - high performance </dd>
  </dl>
</body>
```

<dl> to define a definition list

<dt> title

<dd> content

Single-Engine Cessna Airplanes

152
: Two-place trainer

172
: Smaller four-place airplane

182
: Larger four-place airplane

210
: Six-place airplane - high performance

Table tag <table>

- Each table has `border` line and internal lines called `rules`.
- If `border` is not specified, then table has no borders and NO rules.
- If border is assigned "border" then browser chooses a default, otherwise it can be assigned a value.
- A value of 0 is like no border at all, and hence no rules.
- Rules are set to 1 pixel when border is assigned a value

How to build a table

- Start with table tag `<table>`
- Include a caption tag `<caption>`
- Cells are specified one row at a time with tag `<tr>`
- Now you should decide if it is a heading row (first row of table containing labels and not values), or a regular row holding data.
- For label row (very 1st row), that contains the labels of the columns of the table, use `<th>`
- Usually when using <th>, content usually becomes bold.
- For data content, use <td>

Table example

- To generate something like this, we need to write what?

My first table

	col1	col2
row1	data11	data12
row2	data21	data22

To do this:

My first table

	col1	col2
row1	data11	data12
row2	data21	data22

```
<body>
    <table border="border">
        <caption>My first table</caption> <br/>
        <tr>
            <th></th>
            <th>col1</th>
            <th>col2</th>
        </tr>

        <tr>
            <th>row1</th>
            <td>data11</td>
            <td>data12</td>
        </tr>

        <tr>
            <th>row2</th>
            <td>data21</td>
            <td>data22</td>
        </tr>

    </table>
```

All th

th and td

th and td

- Change border value to 5 for example

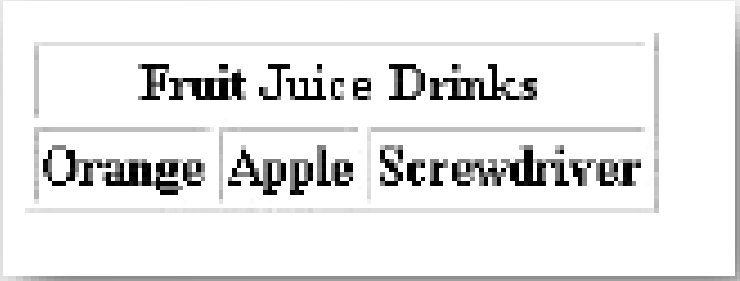
If we add more columns in 1 row

```
<table border="5">
    <caption>My first table</caption>
    <tr>
        <th></th>
        <th>col1</th>
        <th>col2</th>
        <th>col3</th>

    </tr>

    <tr>
        <th>row1</th>
        <td>data11</td>
        <td>data12</td>
    </tr>

    <tr>
        <th>row2</th>
        <td>data21</td>
        <td>data22</td>
    </tr>

</table>
```

My first table

	col1	col2	col3
row1	data11	data12	
row2	data21	data22	

What if we need to do this?



- Use colspan and rowspan

- `Colspan` tells the browser to make the cell as wide as the specified number of rows below it .
- `Rowspan` does for rows what `colspan` does for columns.

- The code below will do the above.

```
<tr>
  <th colspan = "3"> Fruit Juice Drinks </th>
</tr>
```

Let's code this

Fruit Juice Drinks and Meals

	Fruit Juice Drinks		
	Apple	Orange	Screwdriver
Breakfast	0	1	0
Lunch	1	0	0
Dinner	0	0	1

```
<table border="1">
    <caption>Fruit Juice Drinks and Meals</caption>
    <tr>
        <td rowspan="2"></td>
        <th colspan="3"> fruit juice drinks</th>
    </tr>

    <tr>
        <th>Apple</th>
        <th>Orange</th>
        <th>Screwdriver</th>
    </tr>

    <tr>
        <th>Breakfast</th>
        <td>0</td>
        <td>1</td>
        <td>0</td>
    </tr>
    <tr>
        <th>Lunch</th>
        <td>1</td>
        <td>0</td>
        <td>0</td>
    </tr>
    <tr>
        <th>Dinner</th>
        <td>0</td>
        <td>0</td>
        <td>1</td>
    </tr>

</table>
```

How to align text in cells

- Use `align` with `left, right` and `center`
- Can be applied to <tr>, so all cells inside follow the same adjustment
- If applied to <td> or <th> then the adjustment is applied to that cell only.

- `Valign` with <td> and <th> only. Can have `bottom` or `top`. `Center` if default.

Example

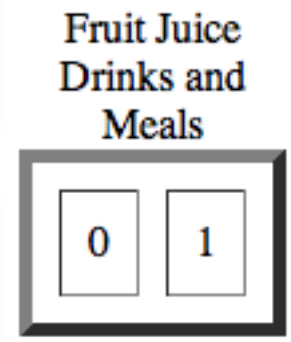
Fruit Juice Drinks and Meals

	fruit juice drinks		
	Apple	**Orange**	**Screwdriver**
Breakfast	0	1	0
Lunch	default	top	bottom
Dinner	0	0	1

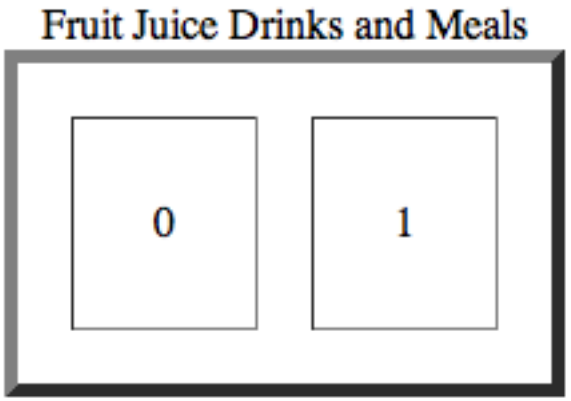
```
    <tr>
        <th>Apple</th>
        <th>Orange</th>
        <th>Screwdriver</th>
    </tr>

    <tr>
        <th>Breakfast</th>
        <td align="left">0</td>
        <td align="center">1</td>
        <td align="right">0</td>
    </tr>
    <tr>
        <th><br/>Lunch<br/></th>
        <td>default</td>
        <td valign="top">top</td>
        <td valign="bottom">bottom</td>
    </tr>
    <tr align="right">
        <th>Dinner</th>
        <td>0</td>
        <td>0</td>
        <td>1</td>
    </tr>

/table>
```

Cellpadding and cellspacing

- Cellpadding → spacing between the content of a cell and the inner walls of that cell.
- Cellspacing → spacing between cells in a table




```
<table border="5" cellpadding="10" cellspacing="10">
    <caption>Fruit Juice Drinks and Meals</caption>
    <tr>
        <td>0</td>
        <td>1</td>
    </tr>

</table>
```




```
<table border="5" cellpadding="30" cellspacing="20">
    <caption>Fruit Juice Drinks and Meals</caption>
    <tr>
        <td>0</td>
        <td>1</td>
    </tr>

</table>
```

Tables (cont.)

- Also we can specify `thead`, `tbody` and `tfoot`.

Forms

- Forms that users can fill and send to the server via web.
- It contains controls, radio buttons, select lists, text boxes, and submit buttons.
- Tags to create a form: <form>, <input>, <label>, <select>, <textarea>

<form> tag

- Can have attributes
- Only one required is `action` → holds the URL of the application on the web server to be called when the submit button is clicked

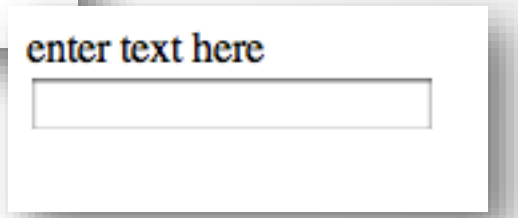
- [Optional] attribute: method
- It specified one of 2 techniques: get and post
- Get will encode the form into a query string and add it to the URL and send all of them to server. A ? Is inserted to differentiate between url and form.
- Limitation of Get → only a specific length of a query is allowed.
- This limitation is overcome with post
- When no method is specified, get is default

<input> tag

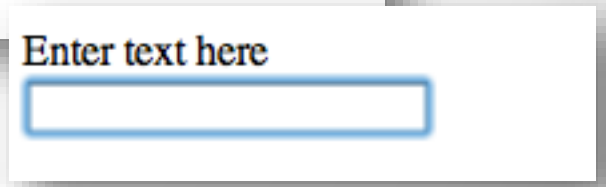
- Includes controls like text, password, checkboxes, radio buttons, and action buttons like reset, submit and plain. <input> tag is inline
- Text, password, checkboxes and radio controls:
  - Only required attribute is `type`
  - Some need `name` attribute, and others also need `value` attribute.
  - Text boxes need `size`. Default on some browsers is 20, so good idea to specify a size.
  - `Maxlength` can be used to limit number of characters in a box so no scroll shows
  - `Placeholder` acts like a hint that appears inside the input and disappears when the user starts typing

Textbox example

```
<body>
    <form action="">
        <p> Enter text here <br/>
            <input type="text" name="textname" size="25" />
        </p>
    </form>
```



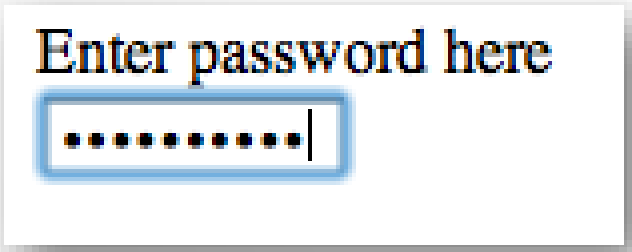

```
<body>
    <form action="">
        <p> Enter text here <br/>
            <input type="text" name="textname" size="25" maxlength="25"/>
        </p>
    </form>
```



- What is the difference?

passwords

```
<form action="">
    <p> Enter password here <br/>
        <input type="password" name="mypass" size="10" maxlength="10"/>
    </p>
</form>
```



Labels

- Not necessary but controls should be labeled

```
<form action="">
    <p> Enter password here <br/>
        <label> password: <input type="password" name="mypass" size="10" maxlength="10"/>
        </label>
    </p>
</form>
```

- Several benefits:
  - Browsers render labeled texts in a special way to stand out
  - Cursor is automatically passed when the label element is selected
  - Label can be rendered by a speech synthesizer

checkboxes

```
<form action="">
<p>
<label> <input type="checkbox" name="groceries"  value="milk"/>
    Milk </label>
<label> <input type="checkbox" name="groceries" checked="checked" value="bread"/>
    Bread </label>
<label> <input type="checkbox" name="groceries" checked="checked" value="eggs"/>
    Eggs </label>
</p>

</form>
```

When the form is sent to the server, the value for groceries will be whatever is checked.
Name is common for ALL

Radio buttons

```
<form action="">
<p>
<label> <input type="radio" name="age"  value="under20"/>
    0-19 </label>
<label> <input type="radio" name="age" checked="checked" value="above20"/>
    20-100 </label>

</p>

</form>
```

Notice that if they are not the same “name”, you can click on both of them as if they were checkboxes

The select tag

- When we have a lot to select, radio and checkboxes are not efficient
- Drop down menus are better
- One choice at a time → similar to radio
- Multiple choices → similar to checkboxes
- Can be differentiated with the `multiple` attribute set to multiple.
- Size attribute → number of menu items to be displayed.
- Combinations of multiple and size values result in different shapes.

<select> tag

<option> tag

```
<p> let's try size=1(default), no multiple
/Users/mghantous/NetBeansProjects/WebApplication1/web/newxhtml.xhtml (modified)
        <option>milk</option>
        <option>eggs</option>
        <option>cheese</option>
        <option>meat</option>
        <option>chicken</option>
    </select>
<br/>
</p>

<p> let's try size=8, no multiple
    <select name="groceries2" size="8">
        <option>milk</option>
        <option>eggs</option>
        <option>cheese</option>
        <option>meat</option>
        <option>chicken</option>
    </select>
<br/>
</p>

    <p> let's try size=1, with multiple
        <select name="groceries3" multiple="multiple" >
        <option>milk</option>
        <option>eggs</option>
        <option>cheese</option>
        <option>meat</option>
        <option>chicken</option>
    </select>
<br/>
</p>

    <p> let's try size=2, with multiple
        <select name="groceries4" multiple="multiple" size="2">
        <option>milk</option>
        <option>eggs</option>
        <option>cheese</option>
        <option>meat</option>
```

let's try size=1(default), no multiple milk

let's try size=2, no multiple
milk
eggs
cheese
meat
chicken

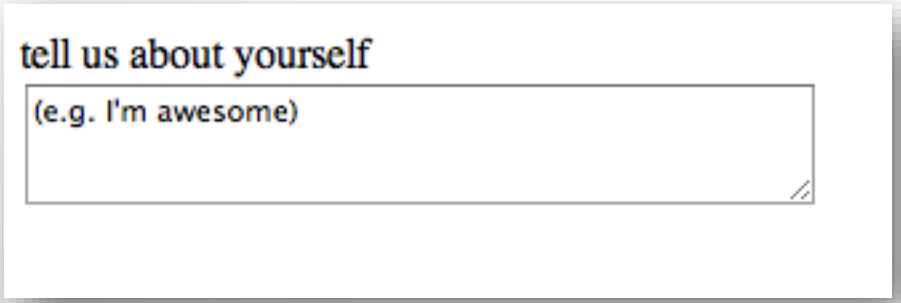
let's try size=1, with multiple
milk
eggs
cheese
meat

let's try size=2, with multiple
milk
eggs
cheese
meat

<textarea>

- Has rows and cols attribute to specify the size
- Implicit scrolling

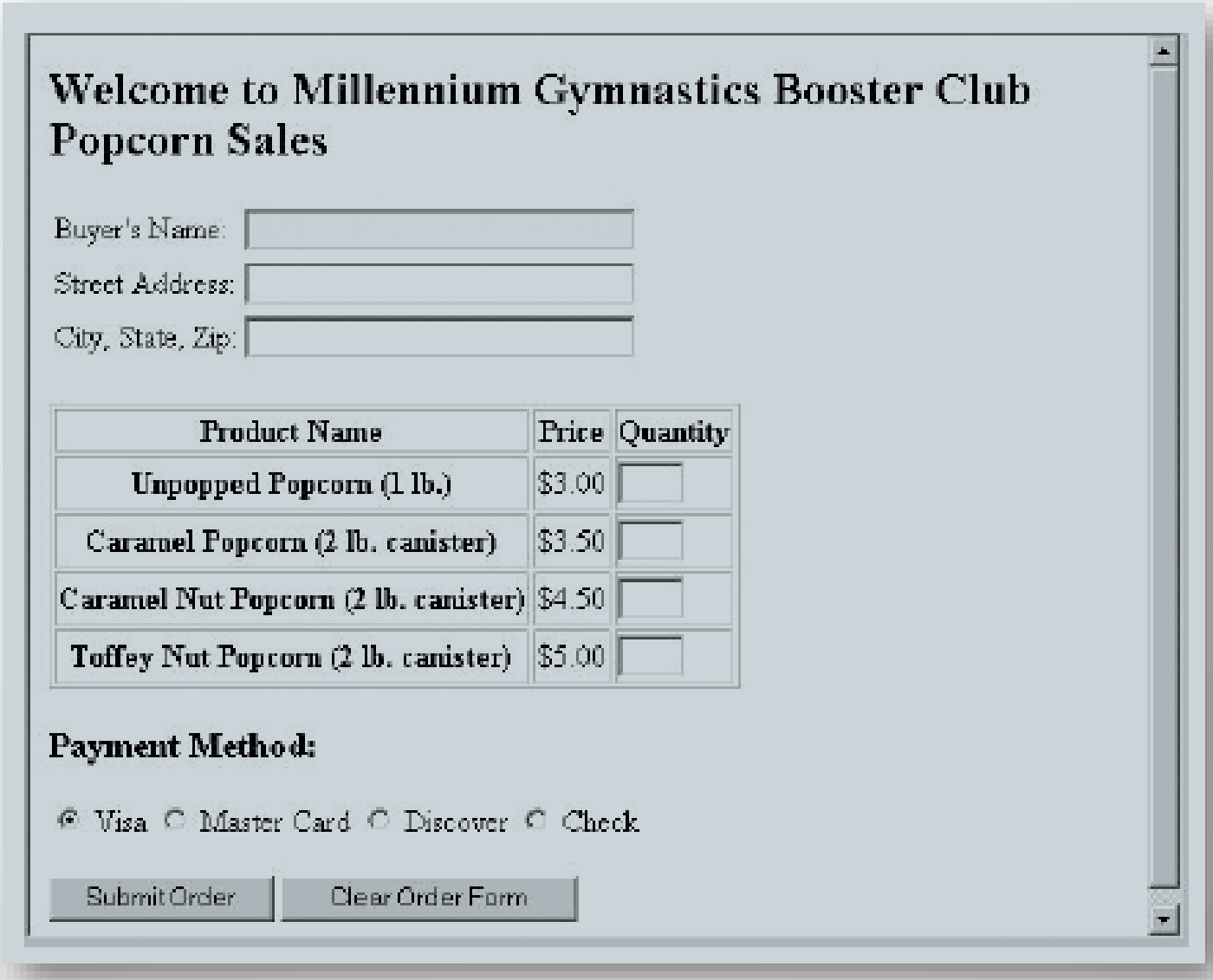
```
<form action="">
<p> tell us about yourself <br/>
    <textarea cols="40" rows="3" name="resume">(e.g. I'm awesome)
    </textarea>
</p>
```



Action buttons

```
<form action = "">
  <p>
    <input type = "submit"  value = "Submit Form" />
    <input type = "reset"  value = "Reset Form" />
  </p>
</form>
```

Class Exercise: write an XHTML file to generate this form



Welcome to Millennium Gymnastics Booster Club Popcorn Sales

Buyer's Name:

Street Address:

City, State, Zip:

Product Name	Price	Quantity
Unpopped Popcorn (1 lb.)	$3.00	
Caramel Popcorn (2 lb. canister)	$3.50	
Caramel Nut Popcorn (2 lb. canister)	$4.50	
Toffey Nut Popcorn (2 lb. canister)	$5.00	

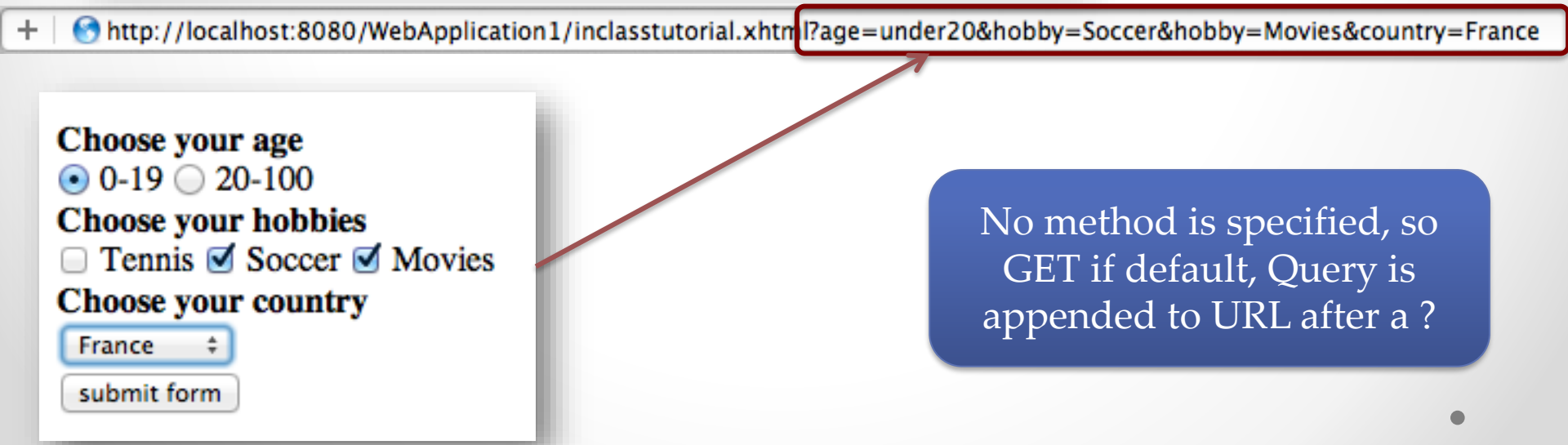
Payment Method:

Visa Master Card Discover Check

Submit Order Clear Order Form

Examples for Get and post and Submit form

```
<form action="">
    <p>
    <strong>Choose your age</strong> <br/>
    <input type="radio" name="age" value="under20" /> 0-19
    <input type="radio" name="age" value="above20" /> 20-100<br/>

    <strong>Choose your hobbies</strong> <br/>
    <input type="checkbox" name="hobby" value="tennis" /> Tennis
    <input type="checkbox" name="hobby" value="Soccer" /> Soccer
    <input type="checkbox" name="hobby" value="Movies" /> Movies<br/>

    <strong>Choose your country</strong> <br/>
    <select name="country" size="1">
        <option>Lebanon</option>
        <option>USA</option>
        <option>France</option>
        <option>Australia</option>
    </select>
    <br/>
    <input type="submit" value="submit form"/>
    </p>


</form>
```



Examples for Get and post and Submit form

```
<form action="" method="post">
    <p>
    <strong>Choose your age</strong> <br/>
    <input type="radio" name="age" value="under20" /> 0-19
    <input type="radio" name="age" value="above20" /> 20-100<br/>

    <strong>Choose your hobbies</strong> <br/>
    <input type="checkbox" name="hobby" value="tennis" /> Tennis
    <input type="checkbox" name="hobby" value="Soccer" /> Soccer
    <input type="checkbox" name="hobby" value="Movies" /> Movies<br/>

    <strong>Choose your country</strong> <br/>
    <select name="country" size="1">
        <option>Lebanon</option>
        <option>USA</option>
        <option>France</option>
        <option>Australia</option>
    </select>
    <br/>
    <input type="submit" value="submit form"/>
    </p>


</form>
```

When post it used, the query is not added to URL anymore but it will be in the HTTP body request

GET is usually used when the form will not change the state of any database while POST when the form will change the state.

HTML5

Declaration and encoding:

```
<!DOCTYPE html>
<meta charset="UTF-8">
```

HTML5 Example:

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

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

</html>
```

New HTML5 features

- **The most interesting new HTML5 elements are:**
- New **semantic elements** like <header>, <footer>, <article>, and <section>.
- New **attributes of form elements** like number, date, time, and range.
- New **graphic elements**: <svg> and <canvas>.
- New **multimedia elements**: <audio> and <video>.

New input types

- HTML5 added several new input types:
- color
- date
- datetime
- datetime-local
- email
- month
- number
- range
- search
- tel
- time
- url
- week

APIs

- **New HTML5 API's (Application Programming Interfaces)**
- HTML Geolocation
- HTML Drag and Drop
- HTML Local Storage
- HTML Application Cache
- HTML Web Workers
- HTML SSE

A server-sent event is when a web page automatically gets updates from a server. This was also possible before, but the web page would have to ask if any updates were available. With server-sent events, the updates come automatically.

Examples: Facebook/Twitter updates, stock price updates, news feeds, sport results, etc.

<video>

- Before HTML5, a video could only be played in a browser with a plug-in (like flash).
- The HTML5 <video> element specifies a standard way to embed a video in a web page.

```
<video width="320" height="240" controls>
  <source src="movie.mp4" type="video/mp4">
  <source src="movie.ogg" type="video/ogg">
</video>
```

- **Controls** can be replaced with **autoplay**
- HTML5 defines DOM methods, properties, and events for the <video> element.
- This allows you to load, play, and pause videos, as well as setting duration and volume.
- There are also DOM events that can notify you when a video begins to play, is paused, etc.

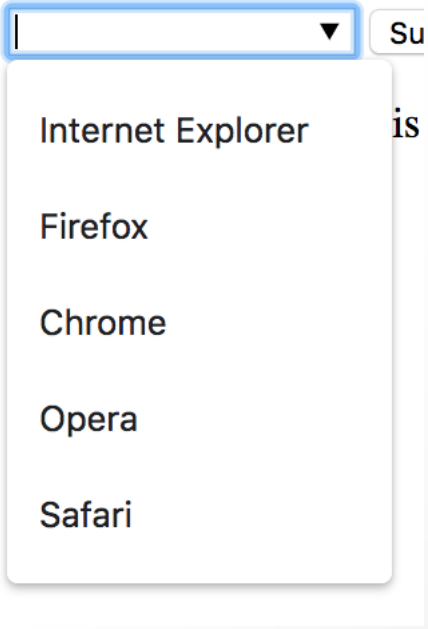
<audio>

```
<audio controls>
  <source src="horse.ogg" type="audio/ogg">
  <source src="horse.mp3" type="audio/mpeg">
</audio>
```

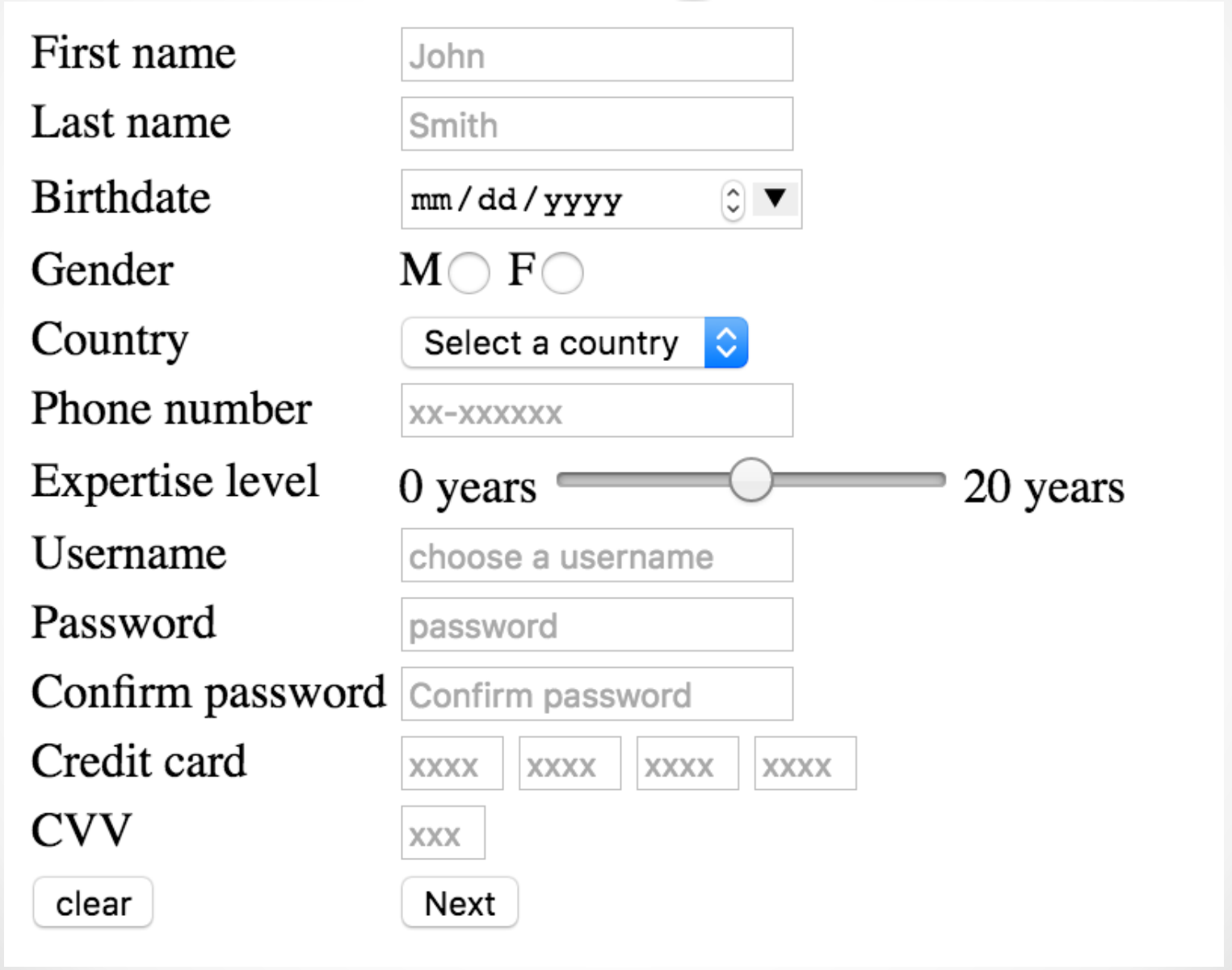
Autocomplete input (kind of like a select)

keywords: `input`, `datalist`

```
<input list="browsers">

<datalist id="browsers">
  <option value="Internet Explorer">
  <option value="Firefox">
  <option value="Chrome">
  <option value="Opera">
  <option value="Safari">
</datalist>
```



example


First name
John
Last name
Smith
Birthdate
mm / dd / yyyy
Gender
M
F
Country
Select a country
Phone number
xx-xxxxxx
Expertise level
0 years
20 years
Username
choose a username
Password
password
Confirm password
Confirm password
Credit card
xxxx
xxxx
xxxx
xxxx
CVV
xxx
clear
Next

html preview in netbeans

- tools → plugins → search for html preview and download it