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Principles of Internet Technologies

Lecture 4:

Applications of the Internet (Web Technology)

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Network Components

1. ***The Network Hardware Devices.***
2. ***Network Media: Wired:*** *Twisted Pair cables, Co-axial, fiber Optic,* ***Wireless:*** *Microwave, Satellite*
3. ***Network Types: we can classify networks in different ways:***
    1. ***Based on the network's Geographical Area and network size: (****LAN,WAN, MAN, etc)*
    2. ***Based on Physical Topologies (connectivity):*** *(Bus, Ring, Star, Mesh, Hybrid Topologies)*
    3. ***Based on Architecture method:*** *(Peer-to-Peer, Client/Server)*
4. ***Network Protocols:*** *(TCP/IP).*
5. ***Applications of the Internet (Web technology).***

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Internet Applications

- *The internet has gained popularity rapidly as it is used for various purposes. Few of the main applications of internet are listed below:*

1. ***World Wide Web (Web technology)***
2. ***E- mail (Electronic mail):***
2. ***FTP (File transfer protocol).***
3. ***E- Commerce.***
4. ***Video Conferencing.***

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Web

The Web is an Internet-based distributed information system.

1. *Anyone with a computer connected to the Internet can easily **retrieve information** by giving a **Web address** or by simply clicking a mouse button.*
2. *The **Web** is a great way to disseminate information and making it available 24/7.*
3. *There is no **central control** or administration for the **Web**.*
4. ***Maintainers** and **administrators** can control and update Web content from anywhere on the Web. All these make the Web a powerful tool for **mass communication**, **e-business** and **e-commerce**.*

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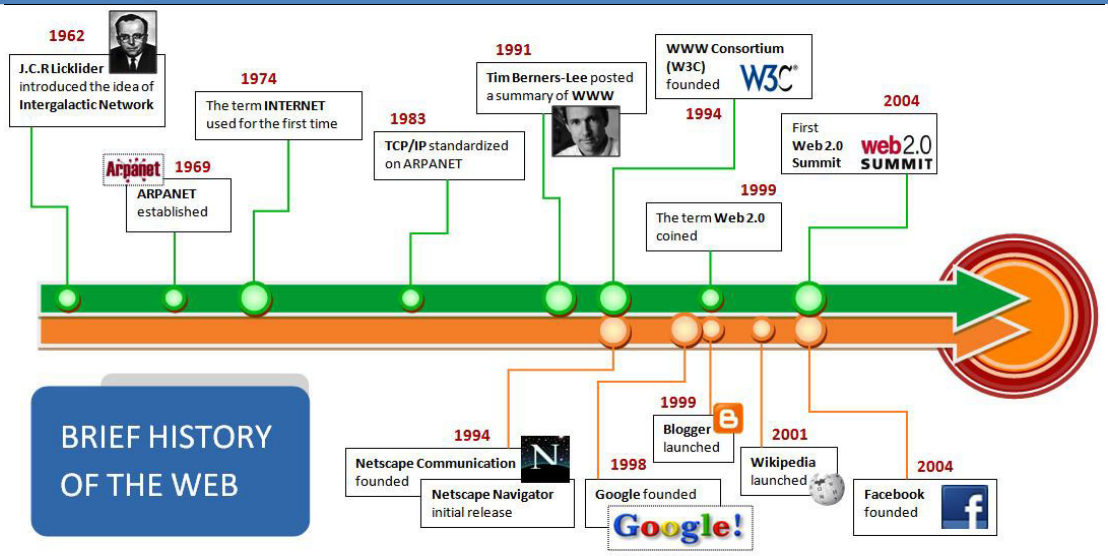

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Web ≠ Internet

- *The terms **Internet** and **World Wide Web** are often used in everyday speech without much distinction. However, the **Internet** and the **World Wide Web** are **not one and the same**.*
- ***Internet:** a **physical network** connecting millions of computers using the **same protocols** for sharing/transmitting information (TCP/IP).*
- ***World Wide Web:** a collection of interlinked multimedia documents that are stored on the Internet and accessed using a **common protocol (HTTP)**.*
- *Key distinction: **Internet is hardware**; **Web is software**.*

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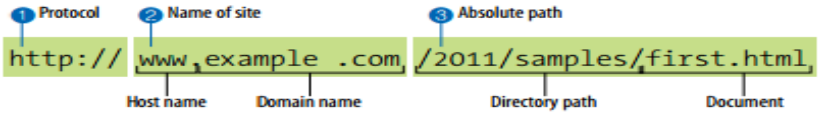
URL

- *Every **page** and **resource** on the Web has its own special address called a **URL**, which stands for **Uniform Resource Locator**. Some URLs are short. Others may look like crazy strings of characters separated by **dots** (periods) and **slashes**, **but each part has a specific purpose.***
- *A complete URL is generally made up of **three components**: the **protocol**, the **site name**, and the **absolute path** to the document or resource, as shown below*



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Web Browsers

- *A **web browser** or **Internet browser** is a **software application** for **retrieving** and **presenting** information resources on the World Wide Web.*
- ***Primary function** of a browser is to identify the **URI** and brings the information resource to user.*
- *All major browsers allow users to access multiple information resources at the same time in **different windows** or in **tabs**. Major browsers include **pop up blockers** to prevent windows to open without users consent.*
- *Some special web browsers are **Internet Explorer**, **Mozilla**, **Firefox**, **Google Chrome**, **Safari**, **Opera**, **Mobile browsers, etc**.*

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Main Elements of Web Browsers

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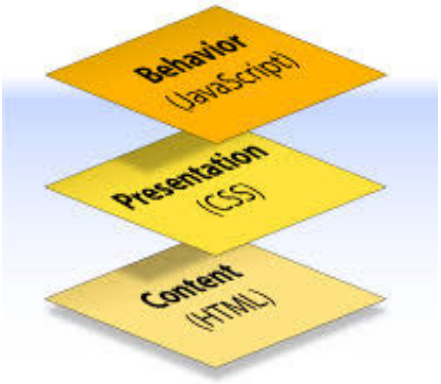
Web-related Technologies

- *The following is a list of technologies associated with* ***web development****.*
  1. ***Hypertext Markup Language (HTML)***
  2. ***Cascading Style Sheets (CSS)***
  3. ***JavaScript***
  4. ***Server-side programming and DB management****.*



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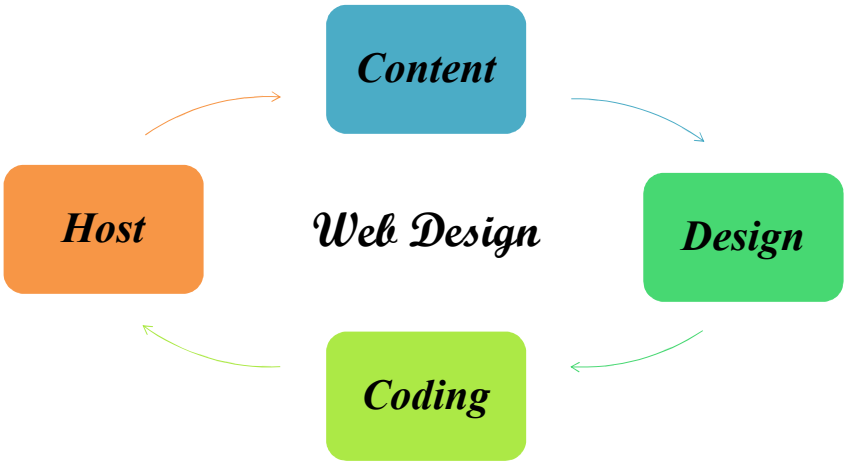

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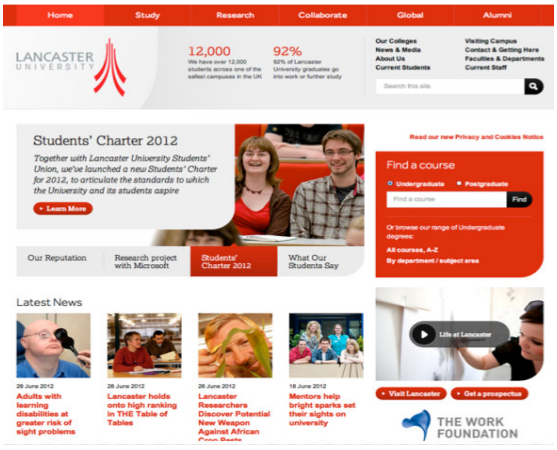
Good vs. Bad Design



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Good vs. Bad Design

- *Most successful web designs have a few things in common:*
  1. ***They are accessible.***
  2. ***Most users have little problem finding the information they need.***
  3. ***They are easy to read.***
  4. ***There are good clean fonts laid out appropriately.***
  5. ***They are visually-appealing.***

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HTML

- ***HTML*** *stands for* ***Hyper Text Markup Language****. HTML is not a programming language; it is a* ***markup language****, which means it is a system for identifying and describing the various components of a document such as* ***headings****,* ***paragraphs****, and* ***lists****.*
- ***HTML command:*** *all* ***HTML commands*** *are contained within* ***angle brackets (< >).*** *The angle brackets simply tell browsers that the text between them is a* ***HTML command****. A tag with its angle brackets looks like this:* ***<tag_name>***
- *Most tags are* ***paired****, with an* ***opening tag (<TAG>) and a closing tag (</TAG>)****. Both tags look alike, except the closing tag also includes a forward* ***slash (/)****.*

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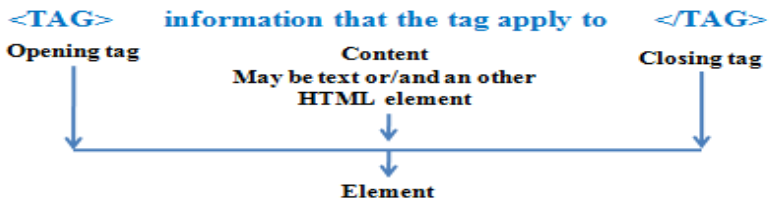
HTML Tags

- *To apply tags to information in the document, place the **opening tag** before the information, and place the **closing tag** after the information, like this:*



- ***For Example:*** * Learning HTML *

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Basic Structure of HTML Document

- *Well structured HTML documents come in these three parts:*
  1. ***A head that identifies a document as HTML and establishes its title.***
  2. ***A body that contains the content for a Web page. This part holds all displayed text on a page, as well as most links to graphics, multimedia, locations inside the same file, and to other Web documents.***
  3. ***A footer that labels a page by identifying its author, date of creation, and version number.***

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HTML Page Structure

```
<html >
<head>
<title> Title here </title>
</head>
<body>
Page content goes here.
</body>
</html>
```


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Tag Attributes

- *Some tags work in conjunction with **attributes**. Attributes live on the **opening tag** of an element and provide extra information about the element that carries them.*
- *All attributes consist of a **name** and a **value**; the name reflects a **property** of the element the attribute is describing, and the **value** is a value for that property.*
- *There are **three groups** of attributes that many of the **HTML** elements can carry:*
  1. ***Core attributes.***
  2. ***Internationalization attributes.***
  3. ***UI events.***

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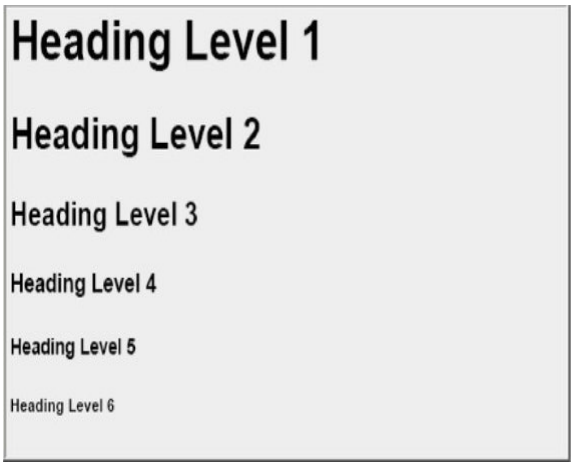
Basic Text Formatting

1. ***Creating Headings Using <hn> Elements***

- *Most documents have headings in some form or other. headings can help to structure a document. HTML offers six levels of headings, which use the elements* ***<h1>, <h2>, <h3>, <h4>, <h5>, and <h6>.*** *The* ***<h1>*** *element as the* ***largest*** *of the six and* ***<h6>*** *as the* ***smallest****.*



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Basic Text Formatting

2. ***Creating Paragraphs Using the Element:*** *Each paragraph of text should go in between an opening* *** *** *and closing* *** *** *tag, as in this example*

*** Here is a paragraph of text. ***

3. ***Creating Line Breaks Using the
 Element:*** *Whenever you use the* ***
*** *tag, anything following it starts on the next line.*
4. ***Creating Preformatted Text Using the <pre> Element:*** *Any text between the opening* ***<pre>*** *tag and the closing* ***</pre>*** *tag will* ***preserve the formatting of the source document****.*

- *Two of the most common uses of the* ***<pre>*** *element are to* ***display tabular data without the use of a table*** *and to* ***represent computer source code****.*

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Presentational Elements

1. ***The Element:*** *Anything that appears in a* ****** *element is displayed in* ***bold****, for Ex:* **bold** → bold
2. ***The Element:*** *The content of an* ****** *element is displayed in italicized text, for Ex:* *italic* → italic
3. ***The <u> Element :*** *The content of a* ***<u>*** *element is underlined with a simple line:* underlined → <u> underlined</u>
4. ***The <hr /> tag:*** *The* ***<hr />*** *tag creates a* ***horizontal rule*** *across the page.*
5. ***The <s> and <strike> Elements:*** *The content of an* ***<s>*** *or* ***<strike>*** *element is displayed with a strikethrough, Ex:* ~~Strikethrough~~ → <s> strikethrough</s>

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Presentational Elements

6. ***The <sup> Element:*** *The content of a* ***<sup>*** *element is written in superscript, Ex.* ***31st*** → ***31st.*** *The* ***<sup>*** *element is especially helpful in adding exponential values to equations, and adding the* ***st, nd, rd****, and* ***th*** *suffixes to numbers such as dates.*
7. ***The <sub> Element:*** *The content of a* ***<sub>*** *element is written in subscript, Ex.* ***Log_2*** → ***log₂***
8. ***The <big> Element:*** *The content of the* ***<big>*** *element is displayed one font size larger than the rest of the text surrounding it.* HTML → H<big> TM</big>L
9. ***The <small> Element:*** *The content of the* ***<small>*** *element is displayed one font size smaller than the rest of the text surrounding it.* HTML → H<small> TM</small>L

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HTML : Lists

- *We can create three types of lists in HTML:*

1. ***Unordered lists**, which are like lists of bullet points.*
2. ***Ordered lists**, which use a sequence of numbers or letters instead of bullet points.*
3. ***Definition lists**, which allow you to specify a term and its definition.*

- ***Using the <ul> Element to Create Unordered Lists:***
- *If we want to make a list of bullet points, we write the list within the **
** element **(which stands for unordered list).** Each bullet point or line we want to write should then be contained between opening **
** tags and closing **
** tags **(the li stands for list item).***

*** Bullet point number ***

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HTML : Lists

2. ***Using the <ol> Element to Create ordered Lists***

- *Sometimes, we want our lists to be ordered. In an ordered list, rather than prefixing each point with a bullet point, we can use either **numbers (1, 2, 3)**, **letters (A, B, C),** or **Roman numerals (i, ii, iii)** to prefix the list item.*
- *An ordered list is contained inside the **
** element. Each item in the list should then be nested inside the **
** element and contained between opening **
** and closing **
** tags.*

*** Point number ***

- *If we would rather have letters or Roman numerals than Arabic numbers, we must use the **type** attribute on the **<ol>** element.*

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HTML : Lists

- *Using the type Attribute to Select **Numbers**, **Letters**, or **Roman Numerals** in **Ordered Lists**, by giving the type attribute the corresponding character.*

Value for type	*Attribute Description*	*Examples*
1	*Arabic numerals (the default)*	*1, 2, 3, 4, 5*
A	*Capital letters*	*A, B, C, D, E*
a	*Small letters*	*a, b, c, d, e*
I	*Large Roman numerals*	*I, II, III, IV, V*
i	*Small Roman numerals*	*i, ii, iii, iv, v*

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HTML : Lists

- *All of the universal attributes and UI event attributes can be used with the **<ol>** elements, and also a **special attribute start**, to **control the number a list starts at**.*
- *If we want to specify the number that a numbered list should start at, we can use the **start** attribute on the **<ol>** element. The value of this attribute should be the numeric representation of that point in the list, so a **D** in a list that is ordered with capital letters would be represented by the value **4**:*

```
<ol type="A" start="4">
<li>Point number one</li> <li>Point number two</li> <li>Point number three</li>
</ol>
```

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Special Characters

- *We can use most alphanumeric characters in our document and they will be displayed without a problem. However, there are some characters that have* ***special meaning in HTML, For example****, we cannot use the* ***angle brackets*** *that start and end tags. To sove this problem, We can use a set of different characters known as a* ***character entity*** *to represent these special characters.*

Special Character	*HTML Code*	*Displays As*
Blank Space	* *	
Open or Close Quote	*"*	"
Ampersand	*&*	&
Less Than	*<*	<
Greater Than	*>*	>

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Comments

- *We can leave notes in the source document for yourself and others by marking them up as* ***comments****. Anything we put between comment tags* ***(<!-- -->) will not display in the browser and will not have any effect on the rest of the source.***

```
<!-- This is a comment -->
<!-- This is a multiple-
line comment
that ends here. -->
```

- *Comments are useful for* ***labeling*** *and* ***organizing long documents****, particularly when they are shared by a team of developers.*

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The End

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