HNDIT1022 – Web Design

Week 1: Introduction

Module Code	HNDIT1022	Module Title	Web Design	
Credit	4	Hours/ Week		Per week(hours)
			Lectures	02
GPA/NGPA	GPA(Compulsory)		Lab/Tutorial	04
			Student Activities	07
Semester	1 (15 Weeks)		Notional hours	13

Module Aims

- The module focuses on the fundamentals of web internet and develop web site using HTML, CSS, JavaScript and the current developments in Web Design theory and the practice.

Learning Outcomes

- Design , development and deploy a simple website using HTML,CSS and Java Scripts
- Design and develop interactive visually appealing client-side programs
- Describe HTML5 and web design tools

Outline of Details Syllabus

1. Introduction to web Design
2. Understanding HTML and XHTML
3. Define and plan the information hierarchy
4. Understanding Cascading Style sheet
5. Understanding CSS Box Model and Positioning
6. Understanding dynamic web sites and introduction to photoshop
7. Understanding Java Script programming
8. Working with web-based forms
9. Introduction to Dream viewer
10. Introduction to web servers and hosting

Assessment Weights

Type	Activity	Weighting
Continuous Assessmen t	Online quizzes, Labs, Individual Assignment , Group Assignment , Tutorial	40%
End of semester examination	Structured question paper	60%

Prescribed Textbook and Resources

- Sam's Teach Yourself HTML, CSS, and JavaScript All in One, Sam's Publishing; 1 edition
- Internet & World Wide Web, How to Programme (5th edition) Dietel&Dietel
- Online materials
- https://www.w3schools.com/
- https://www.tutorialspoint.com/index.htm

Week 1 - Introduction to web design

Subtopics

- History of HTML and WWW.
- Describe the compatibility of web browsers
- How to select web hosting provider
- How to transfer files to your web server using FTP
- How to distribute web content and web publishing

Internet vs. WWW

- Most people use the two terms interchangeably but they are in fact different.
- The Internet is a vast, international network, made up of computers and the physical connections (wires, routers, etc.) allowing them to communicate.
- The World Wide Web (WWW or just the Web) is a collection of software that spans the Internet and enables the interlinking of hypertext documents and resources.
- Hyperlink (or link)- is a reference to a document that the reader can directly follow, or that is followed automatically

History of World Wide Web

- Tim Berners-Lee invented the World Wide Web while working at CERN in 1989, applying the concept of hyperlinking that had by then existed for some decades.
- He developed the first web server, the first web browser, and a document formatting protocol, called Hypertext Markup Language (HTML).
- After publishing the markup language in 1991, and releasing the browser source code for public use in 1993, many other web browsers were soon developed

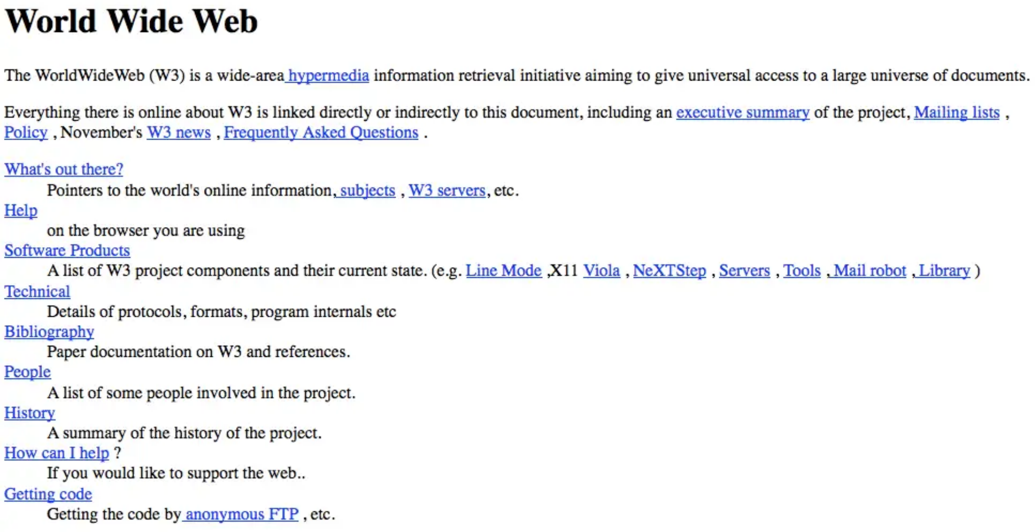
When was the first web page created ?

- The first webpage was discovered by **Tim Berners-Lee** who was researcher at **CERN** (the European Organization for Nuclear Research).
- The first webpage went live on **August 6, 1991.**
- The first webpage is used for sharing the documents through the internet by using limited simple text and FTP (File Transfer Protocol). It is convenient for the workspace and acceptable in browsers.

Cont..

- HTML is derived from SGML **(Standard Generalized Markup Language).**
- The term **SGML** denotes that it is a markup language document and set of tags, it is based on DTD (document type definition).
- SGML is not a document language, but it is used to define the specific part, it is consider as a metadata.
- HTML is the standard markup language for Web pages.
- HTML stands for Hyper Text Markup Language

First webpage



World Wide Web

The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary of the project, Mailing lists , Policy , November's W3 news , Frequently Asked Questions .

What's out there?
    Pointers to the world's online information, subjects , W3 servers, etc.
Help
    on the browser you are using
Software Products
    A list of W3 project components and their current state. (e.g. Line Mode ,X11 Viola , NeXTStep , Servers , Tools , Mail robot , Library)
Technical
    Details of protocols, formats, program internals etc
Bibliography
    Paper documentation on W3 and references.
People
    A list of some people involved in the project.
History
    A summary of the history of the project.
How can I help ?
    If you would like to support the web..
Getting code
    Getting the code by anonymous FTP , etc.

What is World Wide Web ?

The **World Wide Web (Web)** is a network of information resources. The Web relies on three mechanisms to make these resources readily available to the widest possible audience

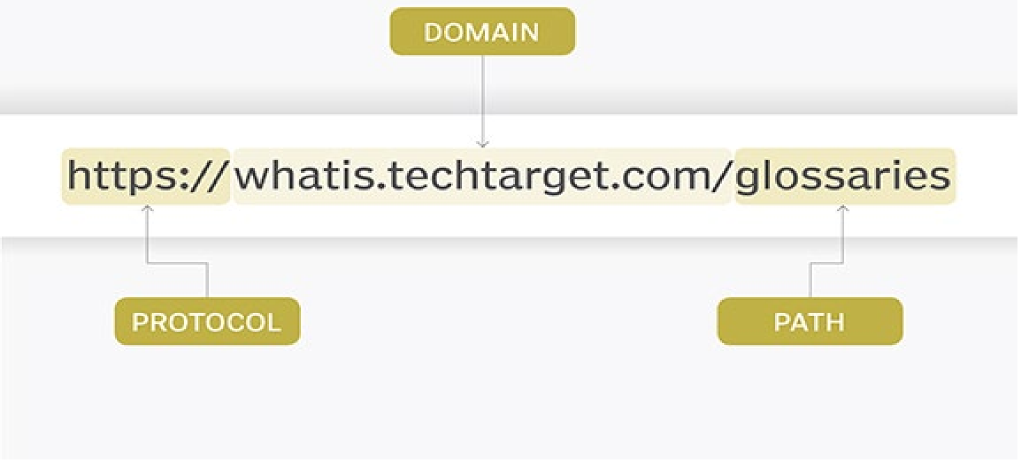
1. A **uniform naming** scheme for locating resources on the Web (e.g., URIs)
2. **Protocols,** for access to named resources over the Web (e.g., HTTP).
3. **Hypertext,** for easy navigation among resources (e.g., HTML).

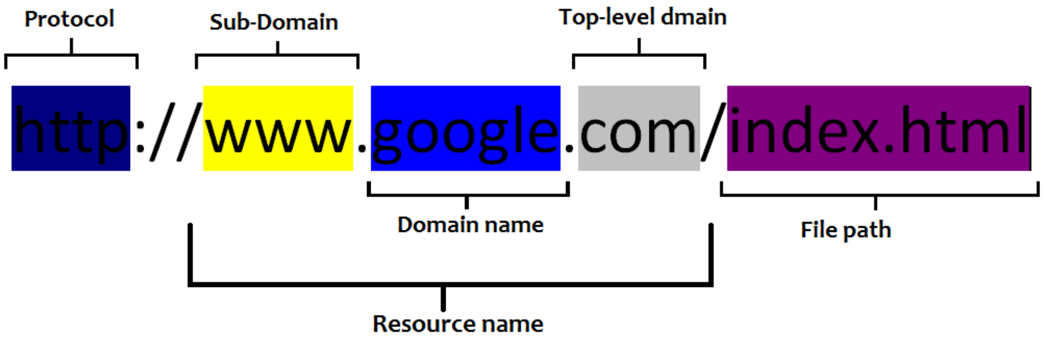
URL

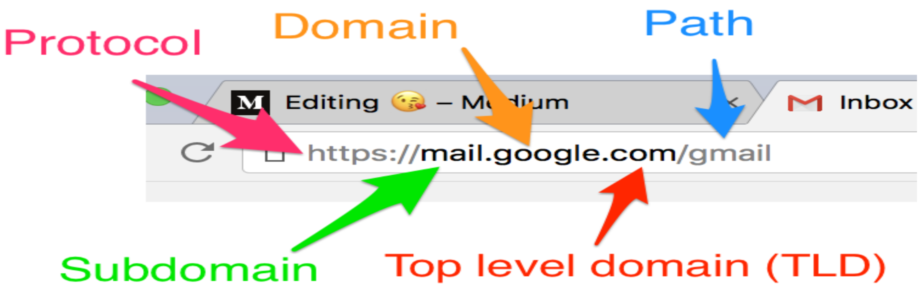
Every resource available on the Web -- HTML document, image, video clip, program, etc. .. has an address that may be encoded by a **Uniform Resource Locator, or "URL".** URLs typically consist of three parts are

- The **naming scheme** of the mechanism used to access the resource(Protocol)
- The **name of the machine** hosting the resource(Domain)
- The **name of the resource** itself, given as a path

Basic URL structure







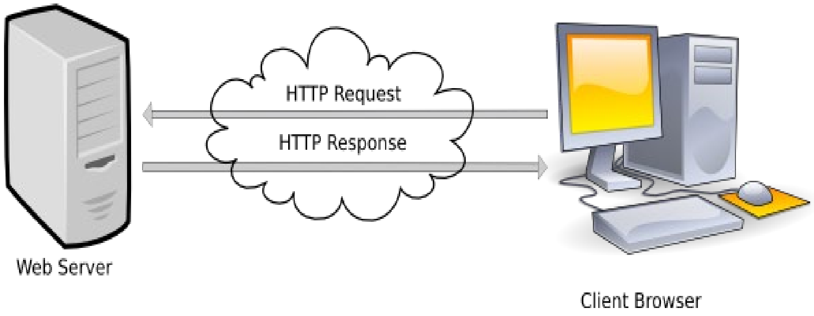
- ## HTTP

HTTP (Hypertext Transfer Protocol) is the set of rules for transferring files (text, graphic images, sound, video, and other multimedia files) on the World Wide Web. HTTP is a very simple client-server request/response communication protocol. Development of HTTP was coordinated by the W3C (World Wide Web Consortium) and the IETF (Internet Engineering Task Force)

- ## HTTPS

URLs of websites that handle private information, such as credit card numbers, often begin with https://, the abbreviation for Hypertext Transfer Protocol Secure (HTTPS). HTTPS is the standard for transferring encrypted data on the web.

Web Server-Client Diagram



W3C (World Wide Web Consortium)

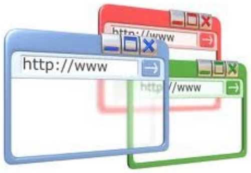
- The Global terms and international standards of HTML was maintained by **W3C** (World Wide Web Consortium) and the **WHATWG** (Web Hypertext Application Technology Working Group).
- To develop the Web standards member of the organizations and the full time staff are working together for W3C.
- **Tim Berners-Lee** who was the web inventor led the W3C and the current CEO of W3C is **Jeffrey Jaffe.**
- The main motto of the W3C is to lead the World Wide Web for developing the guideline and the protocols to certify the long term growth of the Web.

Web page

- A document or information resource that is suitable for the World Wide Web
- Can be accessed through a web browser
- Displayed on a monitor or mobile device
- This information is usually in HTML or XHTML format.
- Use other resources such as style sheets, scripts and images into their final presentation
- retrieved from a local computer or from a remote web server

Web Site

- A collection of related web pages containing images, videos or other digital assets
- Hosted on at least one web server
- Accessible via a network such as the Internet or a private local area network through an Internet address known as a Uniform Resource Locator



Web Server

- Web server is a software on a server machine that can be run to answer requests from Web clients using the Hypertext Transfer Protocol (HTTP).
- This can also be defined as a network server that manages access to files, folders and other resources over the Internet or local intranet via HTTP.
- Web servers handle access permission, execute programs, keep track of directories and files and communicate with client computers.

Web browsers

- A software application for retrieving, presenting, and traversing information resources on the World Wide Web.
- Major web browsers are Internet Explorer, Firefox, Google Chrome, Apple Safari, and Opera.

Versions of HTML

YEAR	VERSION
1989	Tim Berners Lee Invented WWW
1991	Time Berners Lee invented HTML
1993	Dave Raggett drafted HTML+
1995	HTML working Group defined HTML2.0
1997	W3C recommendations HTML 3.2
1999	W3C recommendations HTML 4.01
2000	W3C recommendations XHTML 1.0
2008	WHATWG HTML5 First Public Draft
2012	WHATWG HTML5 Living Standard
2014	W3C Recommmendations:HTML5
2016	W3C Candidate Recommendation:HTML5.1

Browser Compatibility

- The term browser compatibility refers to the ability of a certain website to appear fully functional on different browsers that are available in the market.
- This means that the website's HTML coding, as well as the scripts on that website, should be compatible to run on the browsers.
- This is of immense importance, especially today when there is a large variety of web browsers available.

Why Is It Important?

- A website's compatibility plays a huge role in the success of an e-commerce business.
- The reason being that incompatibility with certain browsers limits the audience of that website.
- This leads to the limited traffic on that particular website which can bring down its conversion.
- This means that browser compatibility is among the prime aspects to cater to while a website is in the development phase.

How It Works?

- The difference between different browsers is that the mode of translation of the text is different in every web browser.
- This mode of translation is used to translate the HTML coding of a website.
- Although the standard of rules remains, the difference tends to occur with the interpretation of the coding.
- The modern browsers in the market tend to be able to easily decode most modern HTML coding far better than older browsers do.

What is web hosting?

A key element of all websites is that they require hosting services. This generally means they rely on a web hosting provider to give them space on a server.

Types of Web hosting

- Shared Hosting
- Virtual Private Server(VPS)
- Dedicated Hosting
- Cloud Hosting
- WordPress Hosting
- Managed Hosting
- Reseller Hosting

How to select a web hosting provider

- Choosing the hosting company and plan that are right for your site can take some careful consideration.
- Not all hosts are created equal, and you’ll want to make sure you’re getting all the features you’ll need.

Cont..

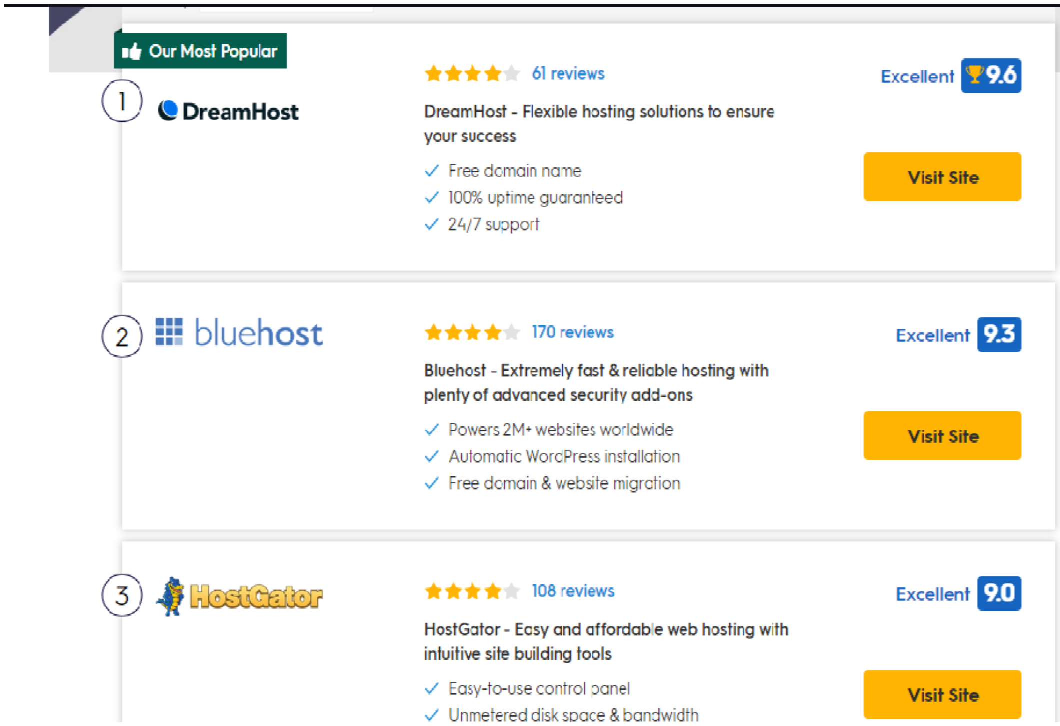
- Know What Your Website's Needs Are.
- Confirm the Subscription Period for Hosting Contracts.
- Check for Server Reliability and Uptime Guarantees.
- Confirm the Host's Refund Policy and Guarantees.
- Understand What Your Upgrade Options Are.
- Verify the Host's Primary Features and etc..

Hosting Services

The best web hosting services will give you plenty of options when it comes to plans and features. That way, you have flexibility when it comes to getting the resources you need for growing your website.

So which web hosting options are best for you?

If this is your first time building a website, shared hosting is usually a safe , and you can only move upwards from there. On the other hand, if you're a more experienced user and need full control over your configuration, a VPS can be a more fitting option.



1 DreamHost

★★★★☆ 61 reviews

DreamHost - Flexible hosting solutions to ensure your success

- ✓ Free domain name
- ✓ 100% uptime guaranteed
- ✓ 24/7 support

Excellent 9.6

2 bluehost

★★★★☆ 170 reviews

Bluehost - Extremely fast & reliable hosting with plenty of advanced security add-ons

- ✓ Powers 2M+ websites worldwide
- ✓ Automatic WordPress installation
- ✓ Free domain & website migration

Excellent 9.3

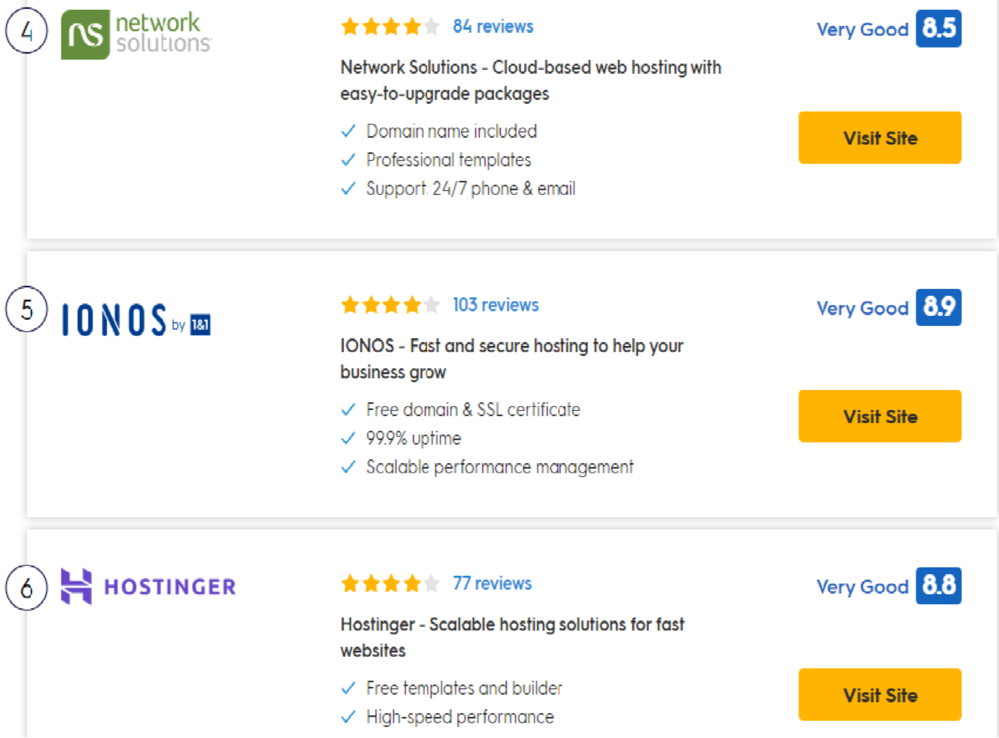
3 HostGator

★★★★☆ 108 reviews

HostGator - Easy and affordable web hosting with intuitive site building tools

- ✓ Easy-to-use control panel
- ✓ Unmetered disk space & bandwidth

Excellent 9.0



4 network solutions

★★★★☆ 84 reviews

Network Solutions - Cloud-based web hosting with easy-to-upgrade packages

- ✓ Domain name included
- ✓ Professional templates
- ✓ Support 24/7 phone & email

Very Good 8.5

5 IONOS by 1&1

★★★★☆ 103 reviews

IONOS - Fast and secure hosting to help your business grow

- ✓ Free domain & SSL certificate
- ✓ 99.9% uptime
- ✓ Scalable performance management

Very Good 8.9

6 HOSTINGER

★★★★☆ 77 reviews

Hostinger - Scalable hosting solutions for fast websites

- ✓ Free templates and builder
- ✓ High-speed performance

Very Good 8.8

What Is FTP(File Transfer Protocol)?

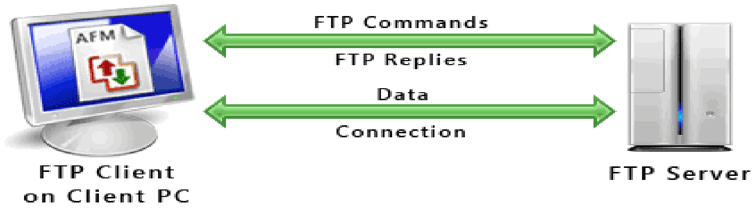
FTP (File Transfer Protocol) is a network protocol for transmitting files between computers over Transmission Control Protocol/Internet Protocol (TCP/IP) connections.

Why is FTP important?

- FTP is a standard network protocol that can enable expansive file transfer capabilities across IP networks.
- Without FTP, file and data transfer can be managed with other mechanisms such as email or an HTTP web service
- But those other options lack the clarity of focus, precision and control that FTP enables.

How does FTP work?

- FTP is a client-server protocol that relies on two communications channels between the client and server
- One computer acts as the server to store information and the other acts as the client to send or request files from the server.
- The FTP protocol typically uses port 21 as its main means of communication.
- An FTP server will listen for client connections on port 21.
- Using FTP, a client can upload, download, delete, rename, move and copy files on a server.



How to transfer files to your web server using FTP

Understand the parts of an FTP address :

When you come across FTP addresses on a webpage, they are usually denoted in the same way as a usual webpage address

Determine how you prefer to connect:

There are three main ways to connect to FTP servers: via visual clients, via browser-based clients, or through the command line.

Downloading and installing a visual client is the most widely used and easiest way to connect to an FTP, and also affords you the most power and control over the process.

Cont..

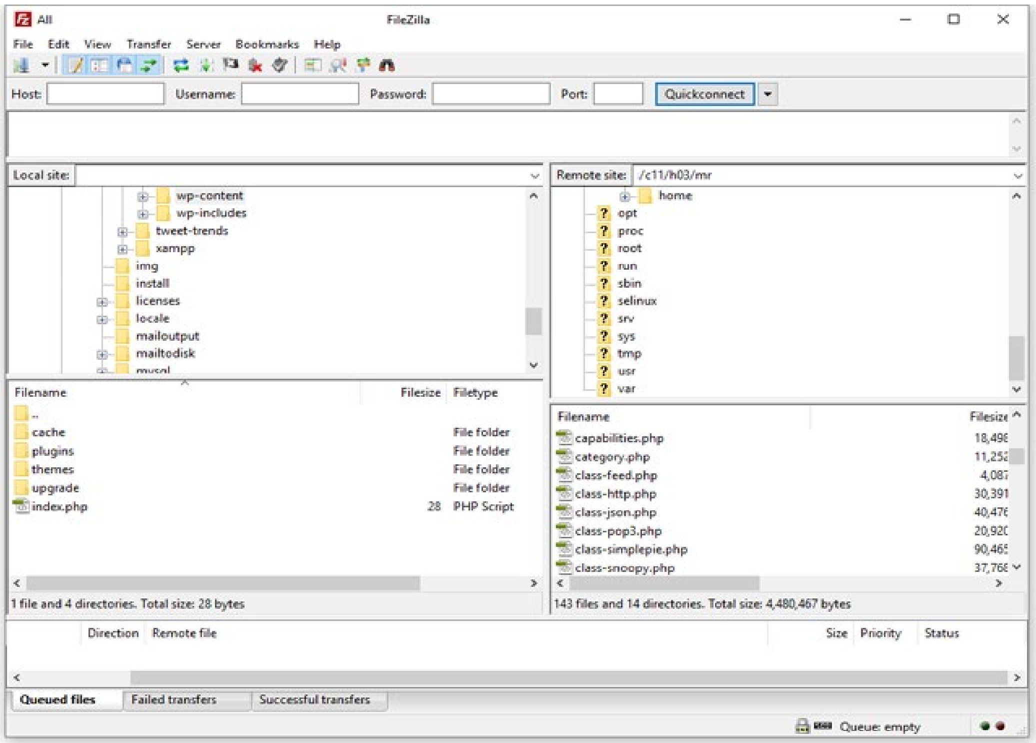
Examples of Visual clients :

- FileZilla
- Cyberduck
- FireFTP
- Classic FTP
- WinSCP
- Free FTP by CoffeeCup

Cont..

Let’s use the FileZilla

- FileZilla is a free, downloadable FTP client. Type in the address of the server you wish to access, the port, and the password for accessing the server.
- Once access has been granted, the user's files on their local system as well as the accessed server will be visible.
- The user can download files from the server to the local system, or upload files from the local system to the server.
- They can also make changes to files on the server, as long as they have the proper authorization to do so.



Remote site: /c11/h03/mr

Local site tree:

- wp-content
- wp-includes
- tweet-trends
- xampp
- img
- install
- licenses
- locale
- mailoutput
- mailtodisk
- mysql

Remote site tree:

- home
- opt
- proc
- root
- run
- sbin
- selinux
- srv
- sys
- tmp
- usr
- var

Filename	Filesize	Filetype
..		
cache		File folder
plugins		File folder
themes		File folder
upgrade		File folder
index.php	28	PHP Script

1 file and 4 directories. Total size: 28 bytes

Filename	Filesize
capabilities.php	18,498
category.php	11,252
class-feed.php	4,087
class-http.php	30,391
class-json.php	40,476
class-pop3.php	20,920
class-simplepie.php	90,465
class-snoopy.php	37,768

143 files and 14 directories. Total size: 4,480,467 bytes

Content distribution in website

- Content distribution is the process of promoting your content to your audience in a variety of formats across multiple channels and media platforms.
- Content distribution falls into three categories:

  owned, earned, and paid distribution.

Why is it Important to Distribute Your Content?

- Content distribution is an essential part of any digital marketing strategy
- Distributing your content properly can lead to more social shares, drive traffic to your website, and create more conversations across your social networks.

How to distribute web content?

- Content distribution channels are the online places where you can share and promote the content you’ve created.
- Nowadays, content can be shared in many different ways, from blogs and social media networks to emails and e-books.
- Also, you can distribute content yourself or through another content publisher, or use a paid content-sharing platform.
- With so many options available, it can be difficult to know which methods best suit your needs and purposes.

Cont..

- However, some content promotion tactics are generally more effective than others.
- Here are a few that can help you reach a larger audience and boost your website traffic.
  - Leverage Influencers
  - Use Social Media
  - Convert Your Content into Different Media
  - Promote Your Content on Content Communities

Cont..

- Some examples of Content Types to Add to Your Website
  - Blog posts
  - Video
  - Infographics
  - Case Studies
  - Ebooks
  - Webinars
  - Podcasts

Web publishing

- Web publishing is the process of publishing original content on the Internet.

- The process includes building and uploading websites, updating the associated webpages, and posting content to these webpages online. Web publishing comprises of personal, business, and community websites in addition to e-books and blogs.
- Publishers must possess a web server, a web publishing software, and an Internet connection to carry out web publishing

What are the options available to publish the website?

- Publishing a website is a complex topic because there are many ways to go about it.
- Such as
  - Getting hosting and a domain name
  - Using an online tool like GitHub or Google App Engine
  - Using a web-based IDE such as CodePen

Questions…?

HNDIT1022 – Web Design

Week 2: Understanding HTML and XHTML

- Create a folder in the documents
- Name:IT20210001_Nisha
- Save the html file : first.html

Subtopics

- Structure of simple web page Including all basic HTML tags
- How to organize your content with headings
- How to validate your web content
- How to differentiate HTML, XML, XHTML and HTML5.

Structure of simple web page Including all basic HTML tags

- **HTML** stands for **HyperText Markup Language**. It is used to design web pages using the **markup language**.
- HTML is the combination of **Hypertext** and **Markup language**.
- Hypertext defines the link between the web pages and markup language defines the text document within the tag that define the structure of web pages.

What is HTML used for ?

- HTML is used to create the structure of web pages that are displayed on the World Wide Web (www).
- It contains Tags and Attributes that are used to design the web pages. Also, we can link multiple pages using Hyperlinks.

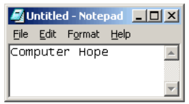
Creating HTML Pages

- Web pages can be created and modified by using professional HTML editors.
- However, for learning HTML we recommend a simple text editor like Notepad (PC) or Notepad++ (PC) or TextEdit (Mac)
- An HTML file must have an .htm or .html file extension.
- You can use either .htm or .html as file extension. There is no difference, it is up to you

- Follow the steps below to create your first web page with Notepad or TextEdit.
  - **Step 1: Open Notepad (PC) or Open TextEdit (Mac)**
  - **Step 2: Write Some HTML**
  - **Step 3: Save the HTML Page**
  - **Step 4: View the HTML Page in Your Browser**

Contd..

Microsoft Notepad text editor



Computer Hope

Step 1: Open Notepad (PC) or Notepad++(PC)

Windows 8 or later:

Open the Start Screen (the window symbol at the bottom left on your screen). Type Notepad or Notepad++

Windows 7 or earlier:

Open Start > Programs > Accessories > Notepad or Notepad++

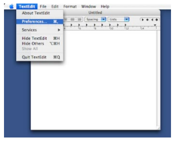
Open TextEdit (Mac)

Open Finder > Applications > TextEdit

Also change some preferences to get the application to save files correctly. In Preferences > Format > choose "Plain Text"

Then under "Open and Save", check the box that says "Display HTML files as HTML code instead of formatted text".

Then open a new document to place the code.



Contd..

Step 2: Write Some HTML

Write or copy the HTML code in the text editor.

Step 3: Save the HTML Page

Save the file on your computer. Select **File > Save as** in the Notepad menu.

or

Save the file in a folder with **.html** extension. We can easily save the html file by clicking on the **File** menu and then click on **Save As** option. After that, type the file name with .html extension.

Step 4: View the HTML Page in Your Browser

Open the saved HTML file in your favorite browser (double click on the file, or right-click - and choose "Open with").

Contd..

- You can also use HTML editors (WYSIWYG Editors) to create your web page
- A WYSIWYG editor — short for "What You See Is What You Get" editor is a major asset when building or making changes to a website.
- It enables you to make changes and immediately see how they would be displayed on your live website.

Contd..

List of best WYSIWYG HTML editors

Premium editors(commercial/paid)

- Adobe Dreamweaver CC
- Froala
- Setka Editor
- CoffeeCup HTML Editor

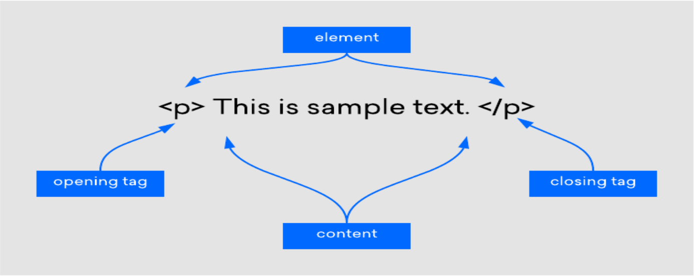
List of Free WYSIWYG HTML editors

Free editors(open source)

- CKEditor 4
- Editor.js
- TinyMCE
- Quill
- Summernote
- Visual Studio Code
- ContentTools

HTML tags

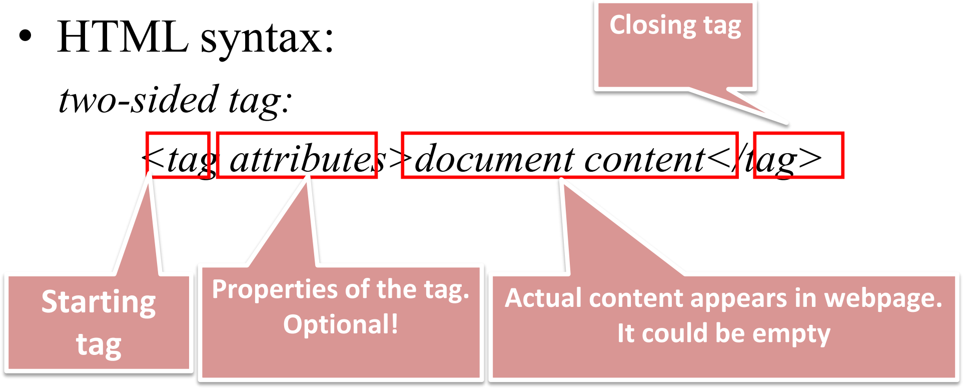
- HTML tags are the hidden keywords and used to create web pages in different format.
- Most of the tags contain two parts, opening tags and closing tags. The text of opening and closing tags are the same but the closing tags contains forward slash (/) character.
- There are some tags which do not require closing tags.
- HTML tags are not case sensitive, <b> means the same as <B>



HTML Syntax

- HTML syntax:

two-sided tag:



Closing tag

<tag attributes>document content</tag>

Starting tag

Properties of the tag. Optional!

Actual content appears in webpage. It could be empty

***Examples:** <p> Welcome To Web Designing </p>*

<body bgcolor = "red">Happiness lies in the joy of achievement and the thrill of creative effort. </body>

HTML element

- HTML documents are defined by HTML elements.
- An HTML element is everything from the start tag to the end tag.
  - Example

Start tag	Element content	End tag
<p>	This is a paragraph	</p>

Syntax of HTML element

- An HTML element starts with a start tag
- An HTML element ends with an end 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

Nested HTML elements

- Most HTML elements can be nested
- HTML documents consist of nested HTML elements.

Example for HTML element

```
<html>
<body>
<p>This is my first web page</p>
</body>
</html>
```

- Contains 3 HTML elements.

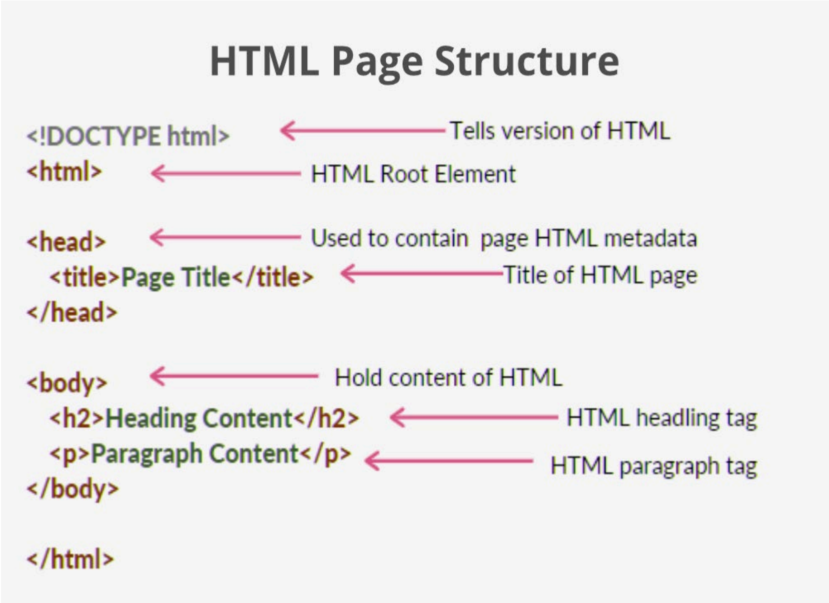
Empty HTML elements

- HTML elements with no content are called empty elements.
- <br> is an empty element without a closing tag (the <br> tag defines a line break).
- Empty elements can be "closed" in the opening tag like this: <br />.
- HTML5 does not require empty elements to be closed. But if you want stricter validation, or you need to make your document readable by XML parsers, you should close all HTML elements.

HTML attributes

- HTML elements can have attributes
- Attributes provide additional information about the element
- Attributes are always specified in the start tag
- Attributes come in name/value pairs like: name="value"

Structure of simple web page Including all basic HTML tags



HTML Page Structure

```
<!DOCTYPE html>
<html>

<head>
  <title>Page Title</title>
</head>

<body>
  <h2>Heading Content</h2>
  <p>Paragraph Content</p>
</body>

</html>
```

Contd..

•**<!DOCTYPE html> –** A doctype or document type declaration is an instruction that tells the web browser about the markup language in which the current page is written. It is not an element or tag. The doctype declaration is not case-sensitive.

•**<html> –** This tag is used to define the root element of HTML document. This tag tells the browser that it is an HTML document. It is the second outer container element that contains all other elements within it.

Contd..

•**<head> –** This tag is used to define the head portion of the HTML document that contains information related to the document. Elements within the head tag are not visible on the front-end of a webpage.

•**<body> –** The body tag is used to enclose all the visible content of a webpage. In other words, the body content is what the browser will show on the front end.

Contd..

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A Basic HTML Document Example

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>My Heading</h1>
<p>My Paragraph.</p>

</body>
</html>
```

Example Explained

•The <!DOCTYPE html> declaration defines that this document is an HTML5 document
•The <html> element is the root element of an HTML page
•The <head> element contains meta information about the HTML page
•The <title> element specifies a title for the HTML page (which is shown in the browser's title bar or in the page's tab)
•The <body> element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.
•The <h1> element defines a large heading
•The <p> element defines a paragraph

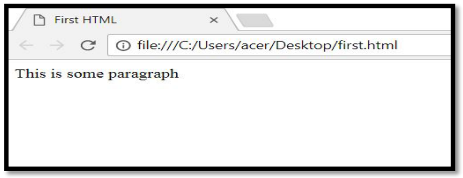
First HTML Page

first.html

Opening tag

Closing tag

```
<html>
  <head>
    <title>First HTML</title>
  </head>
  <body>
     <p>This is some paragraph</p>
  </body>
</html>
```



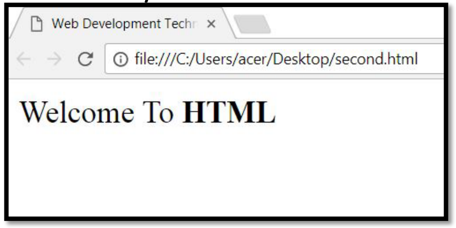
This is some paragraph

An HTML element consists of an opening tag, a closing tag and the content inside

Example

second.html

```
<html>
        <head>
                <title>Web Development Technology
</title>
        </head>
        <body>
                Welcome To <b> HTML </b>
        </body>
</html>
```



Welcome To **HTML**

Example explained

- The first tag in your HTML document is <html>.
  - It tells your browser that this is the start of an HTML document
- The last tag in your document is </html>.
  - It tells your browser that this is the end of the HTML document.
- The text between the <head> tag and the </head> tag is header information.
  - Header information is not displayed in the browser window.

Example explained (contd..)

- The text between the <title> tags is the title of your document.
  - The title is displayed in your browser's caption.
- The text between the <body> tags is the text that will be displayed in your browser.
  - is the visible page content
- The text between the <b> and </b> tags will be displayed in a bold font.

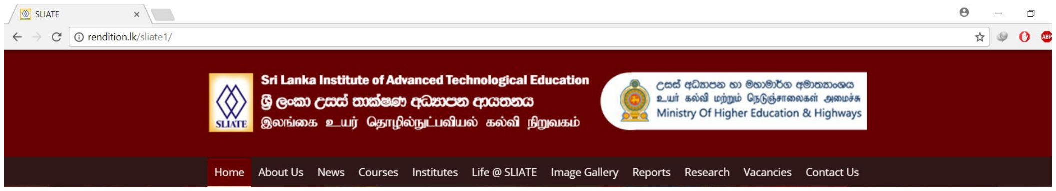
The <head> Section

- 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 -->

<head> Section: <title> tag

- Title should be placed between <head> and </head> tags

```
<title>SLIATE</title>
```



SLIATE

rendition.lk/sliate1/

Sri Lanka Institute of Advanced Technological Education
ශ්‍රී ලංකා උසස් තාක්ෂණ අධ්‍යාපන ආයතනය
இலங்கை உயர் தொழில்நுட்பவியல் கல்வி நிறுவகம்

උසස් අධ්‍යාපන හා මහාමාර්ග අමාත්‍යාංශය
உயர் கல்வி மற்றும் நெடுஞ்சாலைகள் அமைச்சு
Ministry Of Higher Education & Highways

- Used to specify a title in the window title bar
- Search engines and people rely on titles

Setting Document Properties

- Document properties are controlled by attributes of the BODY element.
- For example,

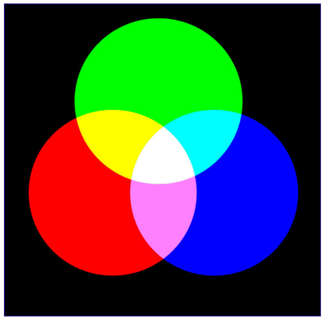
  there are color settings for the background color of the page, the document's text and different states of links.

Color Codes

- Colors are set using "RGB" color codes, which are, represented as hexadecimal values.
- Each 2-digit section of the code represents the amount, in sequence, of red, green or blue that forms the color.

  E.g. A RGB value with 00 as the first two digits has no red in the color.

Main Colours



The Body Element

- The BODY element of a web page is an important element in regards to the page's appearance.
- This element contains information about the page's background color, the background image, as well as the text and link colors.

  E.g.

  TEXT="#RRGGBB"

  to change the color of **all the text** on the page (**full page text color**)
- Here are the attributes of the **BODY** tag to control all the levels:
  - ➢bgcolor
  - ➢Background
  - ➢text

Background Color

- It is very common to see web pages with their background color set to white or some other colors.
- To set your document's background color, you need to edit the <BODY> element by adding the BGCOLOR attribute.

E.g.

```
<BODY BGCOLOR="#           "></BODY>
```

TEXT Color

- The TEXT attribute is used to control the color of all the normal text in the document.
- The default color for text is black.

E.g.

The TEXT attribute would be added as follows:

<BODY BGCOLOR="#FFFFFF"TEXT="#FF0000"> Document's content.

</BODY>

In this example the document's page color is white and the text would be red.

Using Image Background

- The BODY element also gives you ability of setting an image as the document's background.
- An example of a background image's HTML code is as follows:

```
<BODY  BACKGROUND="hi.gif" BGCOLOR="#FFFFFF">
     Document's content.
   </BODY>
```

HTML headings

- HTML headings are defined with the <h1> to <h6> tags.
  - <h1> defines the largest heading.
  - <h6> defines the smallest heading.
- Example

```
<h1>This       is    a  heading</h1>
<h2>This       is    a  heading</h2>
<h3>This       is    a  heading</h3>
```

- Browsers automatically adds an empty line before and after headings.

HTML paragraphs

- HTML paragraphs are defined with the <p> tag
- Example

```
<html>
<body>
 <p>This   is   a  paragraph.</p>
 <p>This   is   a  paragraph.</p>
 <p>This   Is   a  paragraph.</p>
 </body>
 </html>
```

- HTML automatically adds an extra blank line before and after a paragraph

Line breaks

- The <br> tag is used when you want to end a line, but don't want to start a new paragraph.
- The <br> tag forces a line break wherever you place it.
- Example
  - <p>This <br> is a para<br>graph with line breaks</p>
  - The <br> tag is an empty tag. It has no closing tag.

Comments in HTML

Comments are written like this:

```
<!-- This is a comment -->
```

HTML Rules (Lines)

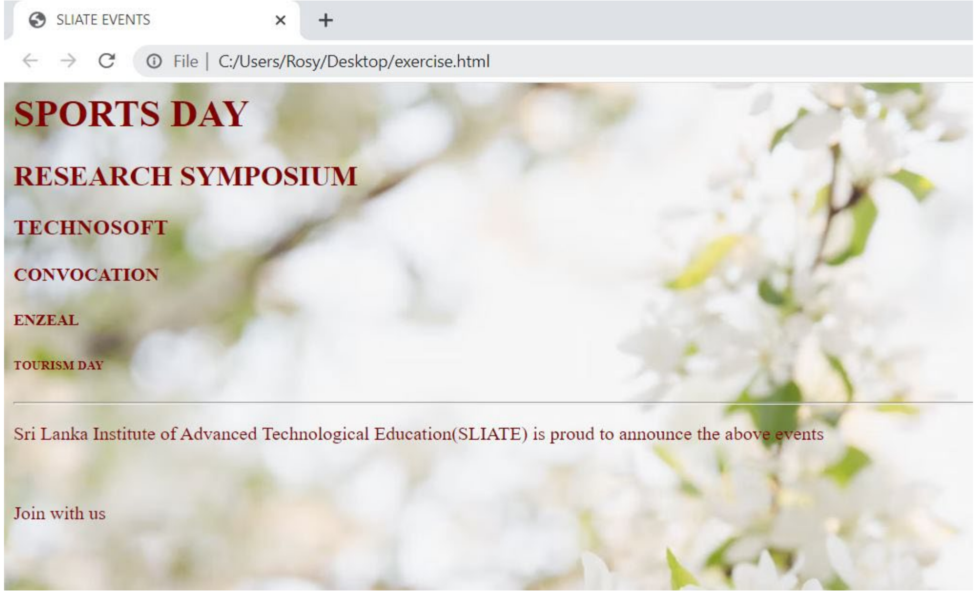
- The <hr> or <hr /> tag is used to create an horizontal rule (line).
- Example

```
<p>This is a paragraph</p>
<hr />
<p>This is a paragraph</p>
<hr />
<p>This is a paragraph</p>
```

Exercise

```
<html>
          <head>
                    <title>SLIATE EVENTS</title>
          </head>
          <body background="backgroundpic. avif" text="#800000">
                    <h1>SPORTS DAY</h1>
                    <h2>RESEARCH SYMPOSIUM</h2>
                    <h3>TECHNOSOFT</h3>
                    <h4>CONVOCATION</h4>
                    <h5>ENZEAL</h5>
                    <h6>TOURISM DAY</h6>
                    <hr/>
                    <p>Sri Lanka Institute of Advanced Technological
                    Education(SLIATE) is proud to announce the above events</p>
                    <br>
                    <p>Join with us</p>
          </body>
</html>
```

Exercise: Output



SPORTS DAY

RESEARCH SYMPOSIUM

TECHNOSOFT

CONVOCATION

ENZEAL

TOURISM DAY

Sri Lanka Institute of Advanced Technological Education(SLIATE) is proud to announce the above events

Join with us

The output of the HTML

- Will create different results.
- With HTML, you cannot change the output by adding extra spaces or extra lines in your HTML code.
- The browser will remove extra spaces and extra lines when the page is displayed.
- Any number of lines count as one space, and any number of spaces count as one space.

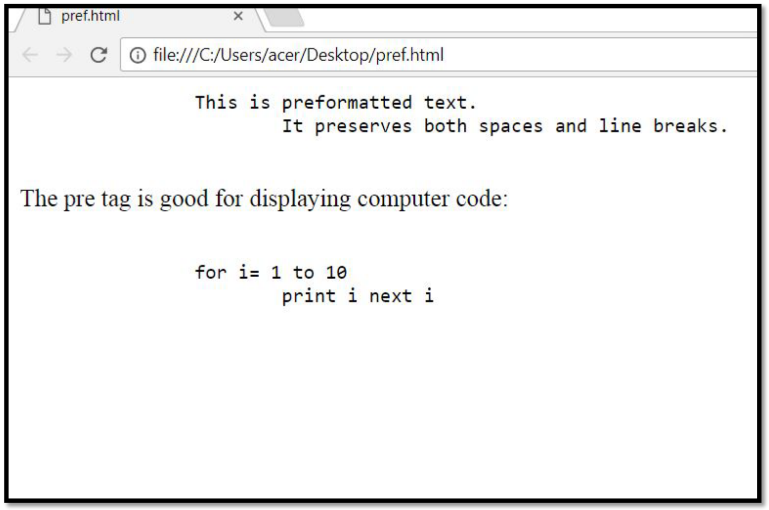
Text Formatting

Tag	**Description**
<b>	bold text
<big>	big text
<em>	emphasized text
<i>	italic text
<u>	Underlined text
<small>	small text
<strong>	strong text
<sub>	subscripted text
<sup>	superscripted text

Pre formatted text - Example

```
<html>
        <body>
                <pre>
                This is preformatted text.
                        It preserves both spaces and line breaks.
                </pre>
                <p>The pre tag is good for displaying computer code:</p>
                <pre>
                for i= 1 to 10
                        print i next i
                </pre>
        </body>
</html>
```

Pre formatted text – Cont.



```
                This is preformatted text.
                        It preserves both spaces and line breaks.
```

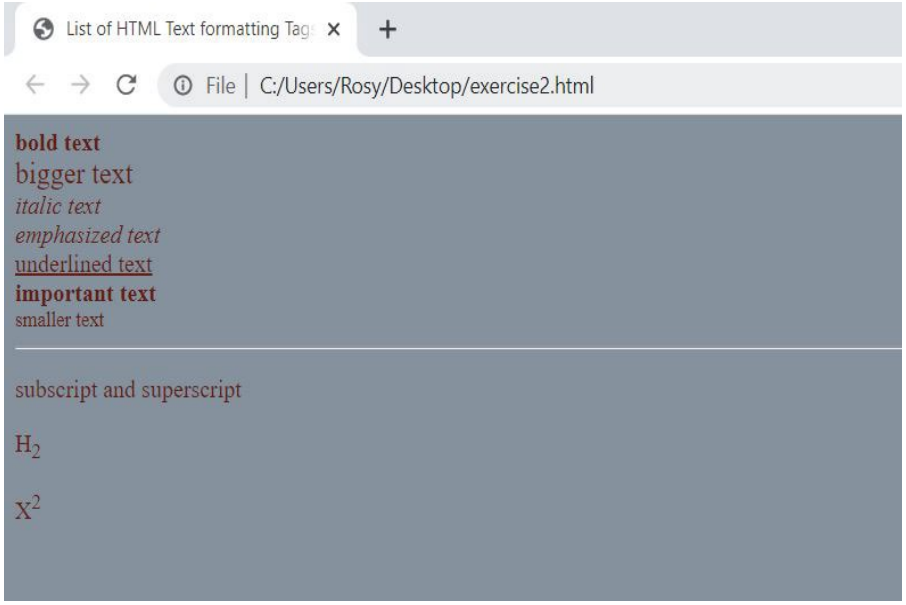
The pre tag is good for displaying computer code:

```
                for i= 1 to 10
                        print i next i
```

Exercise

```
<html>
        <head>
                <title>List of HTML Text formatting Tags</title>
        </head>
        <body bgcolor=" #85929e" text="#641e16">
                <!-- Text formatting in html -->
                <b>bold text</b><br>
                <big>bigger text</big><br>
                <i>italic text</i><br>
                <em>emphasized text </em><br>
                <u>underlined text</u><br>
                <strong>important text</strong><br>
                <small>smaller text</small><br>
                <hr/>
                <p>subscript  and superscript</p>
                <p>H<sub>2</sub></p>
                <p>X<sup>2</sup></p>
        </body>
</html>
```

Exercise: Output


List of HTML Text formatting Tag
File | C:/Users/Rosy/Desktop/exercise2.html

bold text
bigger text
italic text
emphasized text
underlined text
important text
smaller text

---

subscript and superscript

H_2

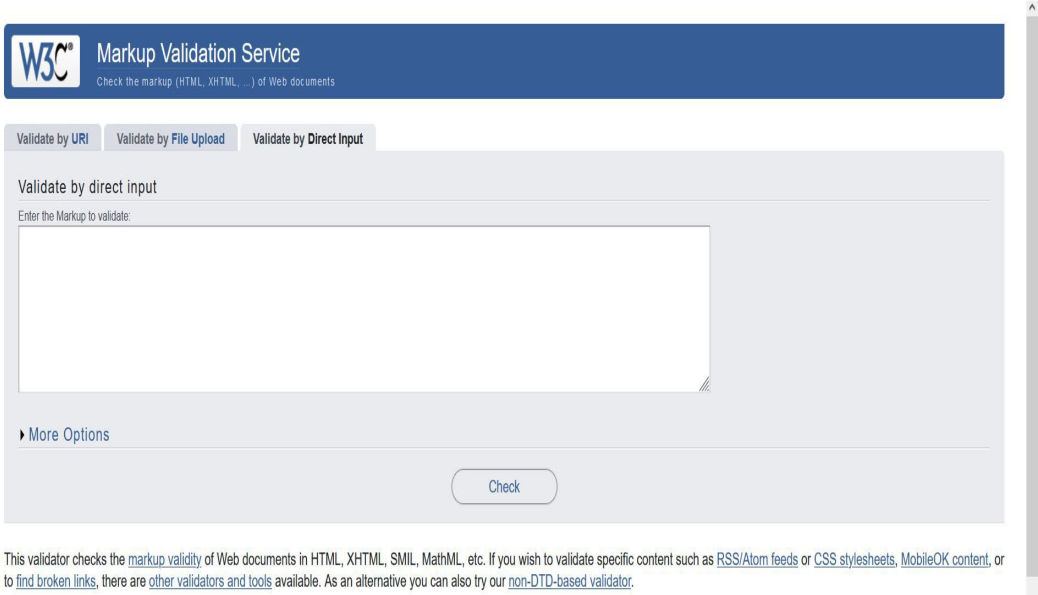
X^2

How to validate your web content

Why we need to validate the HTML Code?

- As a beginner it is very common that you will make mistake in writing your HTML code. Incorrect or non-standard code may cause unexpected results in how your page displayed or function in browsers.
- To prevent this you can test or validate your HTML code against the formal guidelines and standards set by the Wide Web Consortium (W3C) for HTML/XHTML web pages.
- The World Wide Web Consortium provide a simple online tool (https://validator.w3.org/) that automatically check your HTML code and point out any problems/errors your code might have, such as missing closing tags or missing quotes around attributes.

Contd..



Markup Validation Service

Check the markup (HTML, XHTML, ...) of Web documents

Validate by direct input

Enter the Markup to validate:

This validator checks the markup validity of Web documents in HTML, XHTML, SMIL, MathML, etc. If you wish to validate specific content such as RSS/Atom feeds or CSS stylesheets, MobileOK content, or to find broken links, there are other validators and tools available. As an alternative you can also try our non-DTD-based validator.

Difference between HTML and XHTML

S.No.	HTML	XHTML
1.	HTML stands for Hypertext Markup Language.	XHTML stands for Extensible Hypertext Markup Language.
2.	It was developed by Tim Berners-Lee.	It was developed by W3C i.e World Wide Web Consortium.
3.	It was developed in 1991.	It was released in 2000.
4.	It is extended from SGML.	It is extended from XML and HTML.
5.	The format is a document file format.	The format is a markup language.
6.	All tags and attributes are not necessarily to be in lower or upper case.	In this, every tag and attribute should be in lower case.
7.	Doctype is not necessary to write at the top.	Doctype is very necessary to write at the top of the file.
8.	It is not necessary to close the tags in the order they are opened.	It is necessary to close the tags in the order they are opened.
9.	While using the attributes it is not necessary to mention quotes. For e.g. <SRC>.	While using the attributes it is mandatory to mention quotes. For e.g. <SRC="Infotec">.
10.	Filename extension used are .html, .htm.	Filename extension are .xhtml, .xht, .xml.

Difference between XML and XHTML

Parameters of Comparison	XML	XHTML
Full-Form	XML represents Extensive Markup Language.	XHTML represents Extensible Hypertext Markup Language.
Definition	XML refers to a simple text-based format that is used for representing structured information like data, transactions, configuration, documents, invoices, books, and so on.	XHTML refers to a cross between XML and HTML that is used for transiting from HTML to XML.
Release	XML was first published in 1998.	XHTML was initially released in 2000.
Structure	XML has a hierarchical tree-shaped structure which is called XML tree.	XHTML is developed based on three main components- declaration, head, and body.
Components	XML is composed of Unicode.	XHTML comprises three versions- XHTML Transitional, XHTML 1.0 Frameset, and XHTML 1.0 Strict.

Difference between HTML and HTML5

HTML	HTML5
It didn't support audio and video without the use of flash player support.	It supports audio and video controls with the use of <audio> and <video> tags.
It uses cookies to store temporary data.	It uses SQL databases and application cache to store offline data.
Does not allow JavaScript to run in browser.	Allows JavaScript to run in background. This is possible due to JS Web worker API in HTML5.
Vector graphics is possible in HTML with the help of various technologies such as VML, Silver-light, Flash, etc.	Vector graphics is additionally an integral a part of HTML5 like SVG and canvas.
It does not allow drag and drop effects.	It allows drag and drop effects.
Not possible to draw shapes like circle, rectangle, triangle etc.	HTML5 allows to draw shapes like circle, rectangle, triangle etc.
It works with all old browsers.	It supported by all new browser like Firefox, Mozilla, Chrome, Safari, etc.
<HTML>,<Body> , and <Head> tags are mandatory while writing a HTML code.	These tags can be omitted while writing HTML code.
Older version of HTML are less mobile-friendly.	HTML5 language is more mobile-friendly.
Doctype declaration is too long and complicated.	Doctype declaration is quite simple and easy.
Elements like nav, header were not present.	New element for web structure like nav, header, footer etc.
Character encoding is long and complicated.	Character encoding is simple and easy.
It is almost impossible to get true GeoLocation of user with the help of browser.	One can track the GeoLocation of a user easily by using JS GeoLocation API.
It can not handle inaccurate syntax.	It is capable of handling inaccurate syntax.
Being an older version , it is not fast , flexible , and efficient as compared to HTML5.	It is efficient, flexible and more fast in comparison to HTML.
Attributes like charset, async and ping are absent in HTML.	Attributes of charset, async and ping are a part of HTML 5.

Questions…?

HNDIT1022 – Web Design

Week 3 Part 1: Understanding more HTML tags

Subtopics

- Insert HTML link
- Insert images into web page
- HTML List
- Insert tables into web page

HTML – links and images

Linking

- Most important feature is the hyperlink
  - Which references other resources, such as HTML documents and images.
- Both text and images can act as hyperlinks
- Web browsers underline text hyperlinks and colour their text blue by default.
  - User can distinguish hyperlinks from plain text
- Placing the mouse over this region and clicking the mouse button causes the client to access the indicated document or other Internet resource.

Anchors

- The element marking a hypertext link is called an anchor element, and the marked text is referred to as a hypertext anchor.
- The area between beginning <a> and ending </a> tags becomes a hot part of text.

HTML Link

- Link syntax:

```
<a href="url">Link text</a>
```

- The start tag contains attributes about the link.
- The element content (Link text) defines the part to be displayed.
- The element content doesn't have to be text.You can link from an image or any other HTML element.

The href attribute

- The href attribute defines the link "address".
- This <a> element defines a link to google:

```
<a href="http://www.google.com/">Visit Google!</a>
```

- The code above will display like this in a browser:

Visit Google!

The target attribute

- The target attribute specifies where to open the linked document.
- Syntax:

  <a target="*value*">

Attribute values

Value	**Description**
_blank	Open the linked document in a new window
_self	Open the linked document in the same frame as it was clicked **(this is default)**
_parent	Open the linked document in the parent frameset
_top	Open the linked document in the full body of the window

The target attribute-example

— The code below will open the document in a new browser window with no name:

```
<a href="http://www.google.com/"
target="_blank">Visit Google!</a>
```

The name Attribute

- The name attribute is used to mark a place as a specific destination of a hypertext link.
- syntax:

  <a name="label">Any content</a>

  — The value “label” identifies this destination

- When using named anchors we can create links that can jump directly into a specific section on a page, instead of letting the user scroll around to find what he is looking for.

- The link syntax to a named anchor:

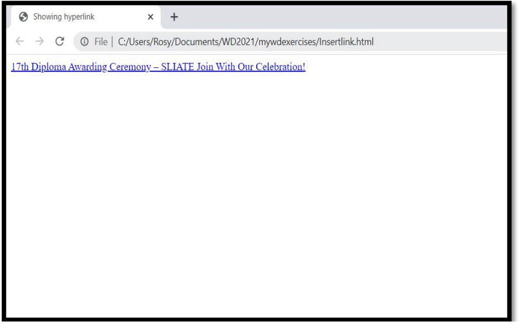
  <a href="#label">Any content</a>

- The # in the href attribute defines a link to a named anchor.

Exercise

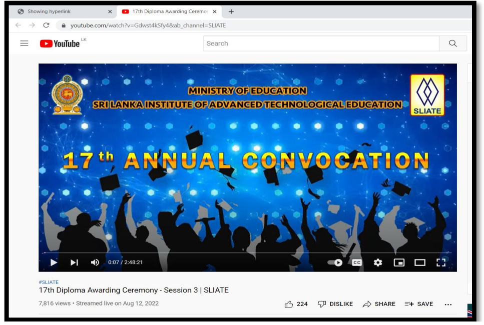
```
<html>
            <head>
            <title> Showing hyperlink </title>
            </head>
            <body>
            <a href=https://www.youtube.com/watch?v=Gdwst4kSfy4”  target="_blank">
            17th Diploma Awarding Ceremony – SLIATE  Join With Our Celebration!
            </a>
            </body>
</html>
```

Output: linked page will be open in new window



C:/Users/Rosy/Documents/WD2021/mywdexercises/Insertlink.html

17th Diploma Awarding Ceremony – SLIATE Join With Our Celebration!



youtube.com/watch?v=Gdwst4kSfy4&ab_channel=SLIATE

#SLIATE
17th Diploma Awarding Ceremony - Session 3 | SLIATE
7,816 views • Streamed live on Aug 12, 2022

Images

- Web pages contain both text and images
- Images are an equal part of web page design
- The three most popular image formats used by Web developers
  - Graphics Interchange Format (gif)
  - Joint Photographic Experts Group (jpeg)
  - Portable Network Graphics (png)
- Users can
  - Create images using software (Adobe Photoshop)
  - Acquire from web sites (Yahoo picture gallery)

img Element

- Use an img element to insert an image in the document
- The <img> tag is empty, which means that it contains attributes only and it has no closing tag.
- The image file’s location is specified with the src attribute.
  - src stands for “source”
- The value of the src attribute is the URL of the image you want to display on your page.
- The syntax of defining an image:

  <img src="url">

img Element (contd..)

- The browser puts the image where the image 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.

The alt attribute

- The alt attribute is used to define an "alternate text" for an image.
- The value of the alt attribute is an author defined text:

  <img src="boat.gif" alt="Big Boat">
- The "alt" attribute tells the reader what he or she is missing on a page if the browser can't load images.
- The browser will then display the alternate text instead of the image.
- It is a good practice to include the "alt“ attribute for each image on a page, to improve the display and usefulness of your document for people who have text-only browsers.

Size of the image

- The optional attributes width and height specify the width and height of the image respectively.
- Can scale an image by increasing or decreasing the values of the width and height
- If these are omitted, the browser uses the actual width and height attributes.
- Images are measured in pixels
- **Example**
  - An image with a height and a width of 100 pixels:

    <img src "ati.jpg" alt=“Institute" height="100" width="100" >

Size of the image (contd..)

- Syntax:

  <img height="*value*" >
- Attribute Values

Value	Description
pixels	The height in pixels
percent	(like "100px" or just "100") The height in percent of the containing element (like"20%")

Example- image

```
<html>
<head>
<title> Showing IMG </title>
</head>
<body>
<h1> Image inclusion and hypertext links </h1>
<p> Greetings!</p>
 <img src = "ATI.jpg" >
 </body>
 </html>
```

Images as link anchors

- Can create graphical web pages that link to other resources.
- Can turn an image into a hyperlink by putting it inside an anchor element

  <a href = https://www.gov.lk/welcome.html>

  <img src="image.gif">

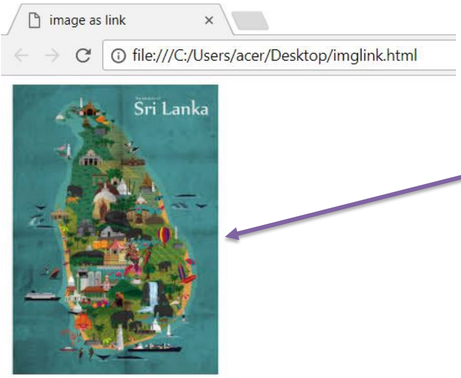
  </a>

— When you click on the image, you are linked to the indicated document.

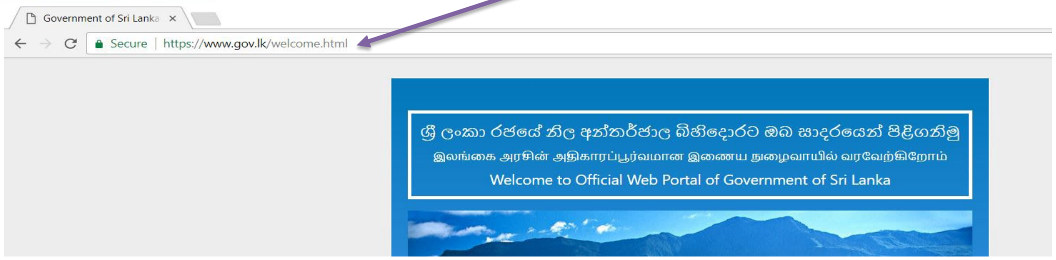
Exercise

```
<html>
          <head>
          <title>image as link</title>
          </head>
          <body>
          <a href = "https://www.gov.lk/welcome.html">
          <img src="srilanka.jpg">
          </a>
          </body>
</html>
```

Exercise: Output



This image has link.
When you click on the image, you are linked to the indicated website.



ශ්‍රී ලංකා රජයේ නිල අන්තර්ජාල බිහිදොරට ඔබ සාදරයෙන් පිළිගනිමු

இலங்கை அரசின் அதிகாரப்பூர்வமான இணைய நுழைவாயில் வரவேற்கிறோம்

Welcome to Official Web Portal of Government of Sri Lanka

The align attribute

- The align attribute specifies the horizontal and vertical alignment of an image according to the surrounding element.
- There are five alignment options.
- Syntax:

  <img align="*value*" >

The align attribute(contd..)

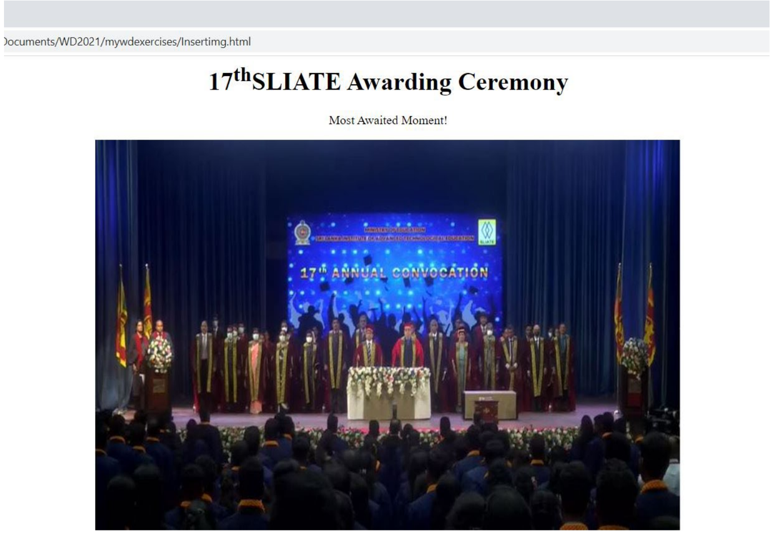
- Values:
  - top – aligns the top of the image with the text
  - middle – aligns the middle of the image with the text
  - bottom – aligns the bottom of the image with the text
  - left – aligns the image to the left of text
  - right – aligns the image to the right of the text

    <img src="ati.jpg" alt="Institute" width="65" height ="50" align="top">

Exercise

```
<html>
        <head>
        <title> Showing Image </title>
        </head>
        <body>
        <h1 align="center"> 17<sup>th</sup>SLIATE Awarding
Ceremony</h1>
        <p><center>Most Awaited Moment!</center></p>
        <center><img src = "convocation.jpg" alt="SLIATE 2022 Convocation"
                height="500" width="750"></center>
        </body>
</html>
```

Exercise: Output

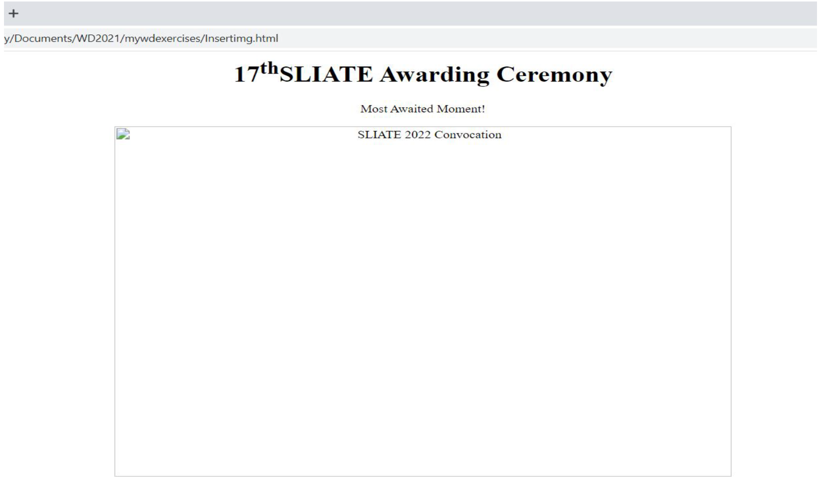


ocuments/WD2021/mywdexercises/Insertimg.html

17thSLIATE Awarding Ceremony

Most Awaited Moment!

Exercise: Output With alt attribute



+

y/Documents/WD2021/mywdexercises/Insertimg.html

17thSLIATE Awarding Ceremony

Most Awaited Moment!

SLIATE 2022 Convocation

HTML- character entities, styles, lists and tables

Character entities

- Certain character or symbols may be difficult to embed directly into a HTML document.
  - Some keyboards do not provide these symbols
  - Some characters like the < character, have a special meaning in HTML.
- Presence of these symbols may cause syntax errors
- Example:

  <p> if x<10 then increment x by 1</p>

Character entities (contd..)

- HTML provides character entities for representing special characters.
- A character entity has three parts:
  - an ampersand (&)
  - an entity name or # and an entity number
  - a semicolon (;)
- The corrected line:

  <p> if x &lt;10 then increment x by 1
  </p> for the less than symbol

  — Uses the character entity &lt;

Character entities (contd..)

— Can write it as

<p> if x &#60; 10 then increment x by 1
</p>

- advantage of using a name instead of a number is that a name is easier to remember.
- The disadvantage is that not all browsers support the newest entity names, while the support for entity numbers is very good in almost all browsers.
- Note that the entities are case sensitive.

Non breaking space

- The most common character entity in HTML is the non-breaking space.
- Normally HTML will truncate spaces in your text.
  — If you write 10 spaces in your text HTML will remove 9 of them.
- To add spaces to your text, use the &nbsp; character entity.

The most common character entities

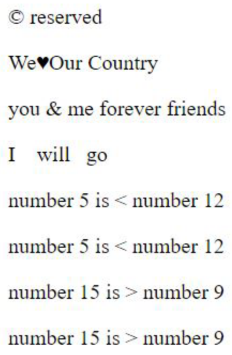
Result	Description	Entity Name	Entity Number
	non-breaking space	&nbsp;	&#160;
<	less than	&lt;	&#60;
>	greater than	&gt;	&#62;
&	ampersand	&amp;	&#38;
"	quotation mark	&quot;	&#34;
‘	apostrophe		&#39;

Some other commonly used Character entities

Result	Description	Entity Name	Entity Number
¢	cent	&cent;	&#162;
£	pound	&pound;	&#163;
¥	yen	&yen;	&#165;
§	section	&sect;	&#167;
©	copyright	&copy;	&#169;
®	registered trademark	&reg;	&#174;
×	multiplication	&times;	&#215;
÷	division	&divide;	&#247;

Example

```
<html>
<body>
<p>&copy; reserved</p>
<p>We&hearts;Our Country</p>
<p>you&nbsp;&amp;&nbsp;me forever friends</p>
<p>I&nbsp;&nbsp;&nbsp; will &nbsp;&nbsp;go</p>
<p>number 5 is &#60; number 12</p>
<p>number 5 is &lt; number 12</p>
<p>number 15 is &#62; number 9</p>
<p>number 15 is &gt; number 9</p>
</body>
</html>
```



```
© reserved

We♥Our Country

you & me forever friends

I   will  go

number 5 is < number 12

number 5 is < number 12

number 15 is > number 9

number 15 is > number 9
```

Tabs in HTML

- White space characters
  - The space
  - The tab
  - The carriage return
- In print they act differently
- In HTML they act exactly the same
  - If you place 1 space or 100 or mix it up with tabs and carriage returns, they will all be condensed down to 1 space when the page is rendered by the browser.

Using the Tab Character

- Tab markers along the horizontal axis
  - You can’t
- HTML can handle
  - Tabs for layout
  - to get the text to move over a certain amount

Moving text more than one space

- To move more than one space away from the preceding item, you can use the non-breaking space.
- To use the non-breaking space, you simply type &nbsp; as many times as you need it.

Styles attribute

- The style attribute is a new HTML attribute.
- It introduces CSS to HTML.
- The purpose of the style attribute is:
- To provide a common way to style all HTML elements.

- The style attribute specifies an inline style for an element.
- The style attribute will override any style set globally, e.g. styles specified in the <style> tag or in an external style sheet.
- Syntax

  <element style="value">
- Attribute Values
  - One or more CSS properties and values separated by semicolons

HTML Style Examples

- style="background-color:yellow"
- style="font-size:10px"
- style="font-family:Times"
- style="text-align:center"

Example

— Use of the style attribute in an HTML document:

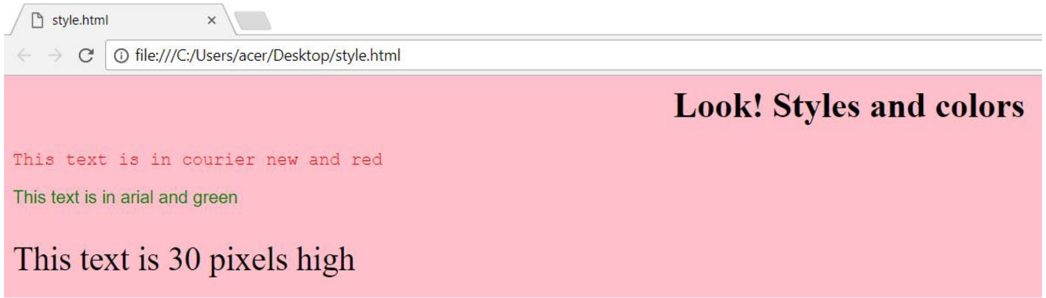
<h1 style="color: blue; text-align: center">This is a header</h1>
<p style="color:green">This is a paragraph.</p>

Style Examples:

- Background Color
  - <body style="background-color:yellow">
  - The style attribute defines a style for the <body> element.
- Font Family, Color and Size
  - <p style="font-family:courier new; color:red; font-size:20px">
  - The style attribute defines a style for the <p> element.
- Text Alignment
  - <h1 style="text-align:center">
  - The style attribute defines a style for the <h1> element.

Style Examples (contd.)

```
<html>
  <body style="background-color:pink;">
            <h1 style="text-align:center">Look! Styles and colors</h1>
           <p style="font-family:courier new;color:red">This text is in courier new and
red</p>
           <p style="font-family:arial;color:green"> This text is in arial and green</p>
           <p style="font-size:30px">This text is 30 pixels high</p>
  </body>
</html>
```



Look! Styles and colors

This text is in courier new and red

This text is in arial and green

This text is 30 pixels high

List Elements

- HTML has several elements for defining different types of lists.
- Can be divided into two types
  - Regular lists (the elements OL, and UL)
  - Definition lists (the element DL)
- List of the same or different types can be nested.

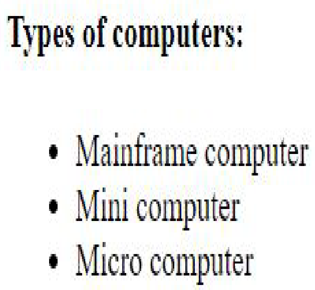
Unordered lists(UL)

- The ul element defines an unordered list.
  - A list that does not order its elements by letter or number
- Each list item is indicated by a special symbol
  - Bullet or asterisk
- Each item in an un ordered list is contained within an li(list item) element
  - List element is the only thing that can appear inside an un ordered list .
- Rendered with a line break and a bullet symbol indented from the beginning of the new line

Value	Description
disc	Sets the list item marker to a bullet (default)
circle	Sets the list item marker to a circle
square	Sets the list item marker to a square
none	The list items will not be marked

Example 1

```
<html>
<body>
<h4>Types of computers:</h4>
        <ul>
          <li>Mainframe computer</li>
          <li>Mini computer</li>
          <li>Micro computer</li>
        </ul>
</body>
</html>
```

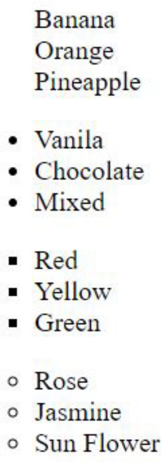


Types of computers:

- Mainframe computer
- Mini computer
- Micro computer

Example 2

```
<html>
<body>
<ul type="none">
  <li>Banana</li>
  <li>Orange</li>
  <li>Pineapple</li>
</ul>
<ul type="disc">
  <li>Vanila</li>
  <li>Chocolate</li>
  <li>Mixed</li>
</ul>
<ul type="square">
  <li>Red</li>
  <li>Yellow</li>
  <li>Green</li>
</ul>
<ul type="circle">
  <li>Rose</li>
  <li>Jasmine</li>
  <li>Sun Flower</li>
</ul>
</body>
</html>
```



Banana
Orange
Pineapple

- Vanila
- Chocolate
- Mixed

▪ Red
▪ Yellow
▪ Green

○ Rose
○ Jasmine
○ Sun Flower

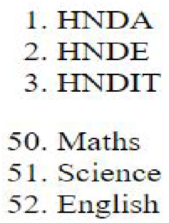
Ordered lists(OL)

- The ol defines an ordered list
- A browser indicates ordering by numbering the items
  - Assigning them ascending numbers, letters, etc.
- Each item in an ordered list is contained within an li(list item) element
  - List element is the only thing that can appear inside an ordered list.
- Items are enumerated 1, 2,3 and so on

Type	Description
type="A"	The list items will be numbered with uppercase letters
type="a"	The list items will be numbered with lowercase letters
type="I"	The list items will be numbered with uppercase roman numbers
type="i"	The list items will be numbered with lowercase roman numbers
type=“1"	The list items will be numbered with numbers (default)

Example 1

```
<html>
<body>
<ol>
  <li>HNDA</li>
  <li>HNDE</li>
  <li>HNDIT</li>
</ol>
<ol start="50">
  <li>Maths</li>
  <li>Science</li>
  <li>English</li>
</ol>
</body>
</html>
```

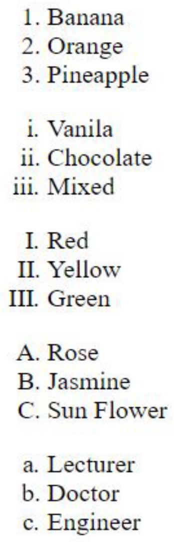


1. HNDA
2. HNDE
3. HNDIT

50. Maths
51. Science
52. English

Example 2

```
<html>
<body>
<ol type="1">
  <li>Banana</li>
  <li>Orange</li>
  <li>Pineapple</li>
</ol>
<ol type="i">
  <li>Vanila</li>
  <li>Chocolate</li>
  <li>Mixed</li>
</ol>
<ol type="I">
  <li>Red</li>
  <li>Yellow</li>
  <li>Green</li>
</ol>
<ol type="A">
  <li>Rose</li>
  <li>Jasmine</li>
  <li>Sun Flower</li>
</ol>
<ol type="a">
  <li>Lecturer</li>
  <li>Doctor</li>
  <li>Engineer</li>
</ol>
</body>
</html>
```



1. Banana
2. Orange
3. Pineapple

i. Vanila
ii. Chocolate
iii. Mixed

I. Red
II. Yellow
III. Green

A. Rose
B. Jasmine
C. Sun Flower

a. Lecturer
b. Doctor
c. Engineer

Definition lists

- Presents a list of items, each with a descriptive paragraph of each item.
  - — Can be used for traditional glossaries
- A definition list starts with a <dl> tag (**d**efinition **l**ist).
- Each term starts with a <dt> tag (**d**efinition **t**erm).
- Each description starts with a <dd> tag (**d**efinition **d**escription).
- DT and DD elements should appear in pairs.

DT element

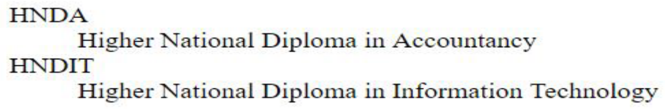
- The DT element contains the term part of the description list
- The contents should be short
  - A few words
  - Shorter than a line

DD element

- Gives the description corresponding to the previous DT element.
- Can be a long description
  - Broken into paragraphs
  - Lists
  - Forms
  - Etc
- A DD element must always follow a DT element.
  - Cannot occur alone.

Example 1: definition list

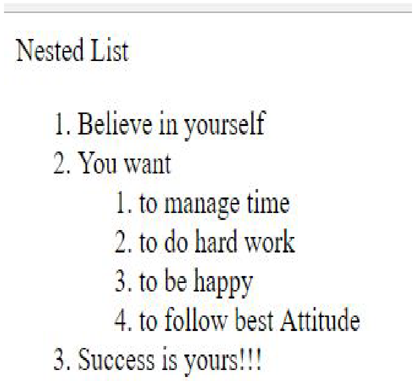
```
<html>
<body>
<dl>
  <dt>HNDA</dt>
              <dd>Higher National Diploma in Accountancy</dd>
  <dt>HNDIT</dt>
              <dd>Higher National Diploma in Information Technology</dd>
</dl>
</body>
</html>
```



```
HNDA
        Higher National Diploma in Accountancy
HNDIT
        Higher National Diploma in Information Technology
```

Example 1: Nested List

```
<html>
<head>
Nested List
</head>
<body>
<ol>
  <li>Believe in yourself</li>
  <li>You want
    <!-- Start nested list -->
    <ol>
      <li>to manage time</li>
      <li>to do hard work</li>
      <li>to be happy</li>
      <li>to follow best Attitude</li>
    </ol>
   <!-- end nested list -->
  </li><!-- close list item containing nested list -->
  <li>Success is yours!!!</li>
</ol>
</body>
</html>
```



```
Nested List

  1. Believe in yourself
  2. You want
        1. to manage time
        2. to do hard work
        3. to be happy
        4. to follow best Attitude
  3. Success is yours!!!
```

Tables

- Used to organize data into rows and columns.
- Defined with the table element.
- Has three sections
  - Head
    - Contains header information – column names
  - Body
    - Contains primary data
  - Foot
    - Commonly includes calculation results and footnotes

Table tag

- 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).
  - — The letters td stands for "table data," which is the content of a data cell.
- A data cell can contain text, images, lists, paragraphs, forms, horizontal rules, tables, etc.

Border Attribute

- Specifies the width (in pixels) of the borders around a table.
- The border attribute applies a border to each cell, and around the table.
- If you do not specify a border attribute the table will be displayed without any borders.
  - —Sometimes this can be useful, but most of the time, you want the borders to show.
- Syntax

  <table border= "*value*">

Width attribute

- The width attribute specifies the width of a table.
- If the width attribute is not set, a table takes up the space it needs to display the table data.
- Syntax

  <table width="*value*">
- Attribute Values
  - *Pixels:* Sets the width in pixels (example: width="50")
  - *%* : Sets the width in percent of the surrounding element (example: width="50%")

Table description elements

The structure and contents of the table are defined by additional elements that can appear inside the table.

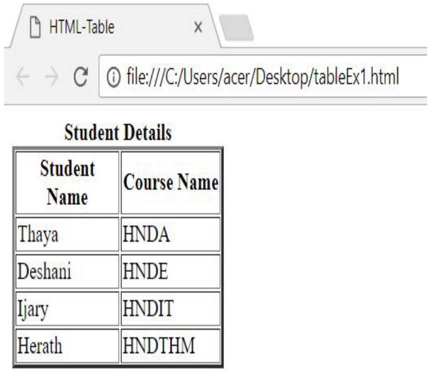
Tag	Description
<table>	Defines a table
<th>	Defines a table header
<tr>	Defines a table row
<td>	Defines a table cell
<caption>	Defines a table caption
<rowspan>	Defines the number of rows a cell should span/merge.
<colspan>	Defines the number of columns a cell should span.
<colgroup>	Defines groups of table columns
<col>	Defines the attribute values for one or more columns in a table
<thead>	Defines a table head
<tbody>	Defines a table body
<tfoot>	Defines a table footer

Example 1 - Table

```
<html>
        <head>
        <title>HTML-Table</title>
        </head>
        <body>
        <table border="2">
        <caption>
        <b>Student Details</b>
        </caption>
        <tr>
                <th>Student Name</th>
                <th>Course Name</th>
        </tr>
        <tr>
                <td>Thaya</td>
                <td>HNDA</td>
        </tr>
```

```
<tr>
                <td>Deshani</td>
                <td>HNDE</td>
        </tr>
        <tr>
                <td>Ijary</td>
                <td>HNDIT</td>
        </tr>
        <tr>
                <td>Herath</td>
                <td>HNDTHM</td>
        </tr>
        </table>
        </body>
</html>
```

Example 1 – Table: Output



Student Details

Student Name	Course Name
Thaya	HNDA
Deshani	HNDE
Ijary	HNDIT
Herath	HNDTHM

Example 2 - Table

```
<html>
        <head>
        <title>Table with colspan</title>
        </head>
        <body>
        <table border="1">
        <tr>
                <td colspan="3" align="center">Subject Details</td>
        </tr>
        <tr>
                <th>Code No</th>
                <th>Subject</th>
                <th>No Of Credits</th>
        </tr>
        <tr>
                <td>HNDIT 1012</td>
                <td>Visual Application Programming</td>
                <td>04</td>
        </tr>
```

```
        <tr>
                <td>HNDIT 1022</td>
                <td>Web Design</td>
                <td>04</td>
        </tr>
        <tr>
                <td>HNDIT 1032</td>
                <td>Computer and Network Systems</td>
                <td>03</td>
        </tr>
        <tr>
                <td colspan ="2" align="center">Total Credits</td>
                <td>07</td>
        </tr>
        </table>
        </body>
</html>
```

Example 2 - Table: Output

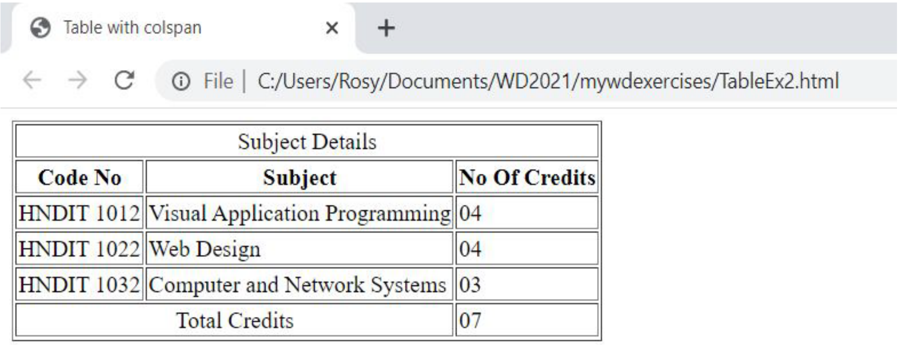


Table with colspan
×
+
File | C:/Users/Rosy/Documents/WD2021/mywdexercises/TableEx2.html

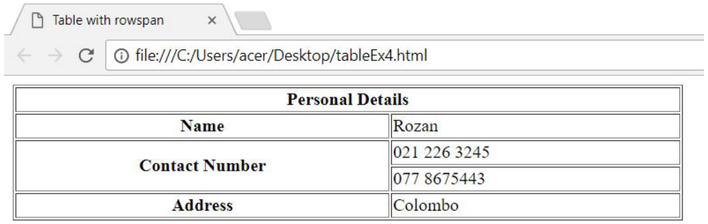
Subject Details		
Code No	**Subject**	**No Of Credits**
HNDIT 1012	Visual Application Programming	04
HNDIT 1022	Web Design	04
HNDIT 1032	Computer and Network Systems	03
Total Credits		07

Example 3 - Table

```
<html>
        <head>
        <title>Table with rowspan</title>
        </head>
        <body>
        <table border="1" width="40%">
        <tr>
                <th colspan="2" align="center">Personal Details</th>
        </tr>
        <tr>
                <th>Name</th>
                <td>Rozan</td>
        </tr>
        <tr>
                <th rowspan="2">Contact Number</th>
                <td>021 226 3245</td>
        </tr>
```

```
<tr>
                <td>077 8675443</td>
        </tr>
        <tr>
                <th>Address</th>
                <td>Colombo</td>
        </tr>
        </table>
        </body>
</html>
```

Example 3 - Table: Output



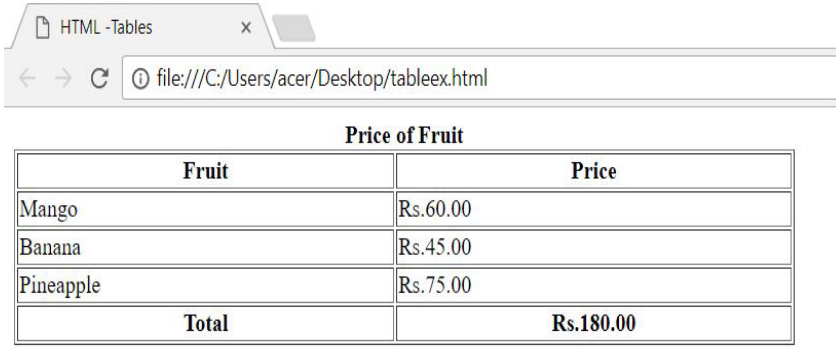
Personal Details	
Name	Rozan
Contact Number	021 226 3245
	077 8675443
Address	Colombo

Example 4 - Table

```
<html>
<head>
<title>HTML -Tables</title>
</head>
<body>
<table border =      "1"        width =    "40%">
<caption><strong>Price of Fruit</strong></caption>
        <thead>
        <tr>
        <th>Fruit</th>
        <th>Price</th>
        </tr>
        </thead>
        <tfoot>
        <tr>
        <th>Total</th>
        <th>Rs.180.00</th>
        </tr>
        </tfoot>
```

Example 4(contd..)

```
<tbody>
        <tr>
        <td>Mango</td>
        <td>Rs.60.00</td>
        </tr>
        <tr>
        <td>Banana</td>
        <td>Rs.45.00</td>
        </tr>
        <tr>
        <td>Pineapple</td>
        <td>Rs.75.00</td>
        </tr>
        </tbody>
</table>
</body>
</html>
```



Price of Fruit

Fruit	Price
Mango	Rs.60.00
Banana	Rs.45.00
Pineapple	Rs.75.00
Total	**Rs.180.00**

Questions…?

HNDIT1022 – Web Design

Week 3 Part 2: HTML Forms

Forms

Forms add the ability to web pages to not only provide the person viewing the document with dynamic information but also to obtain information from the person viewing it, and process the information.

- Forms work in all browsers.
- Forms are Platform Independent.

Objectives:

Upon completing this section, you should be able to

1. Create a FORM.
2. Add elements to a FORM.
3. Specify an action for the FORM.

FORMS

- To insert a form we use the <FORM></FORM> tags. The rest of the form elements must be inserted in between the form tags.

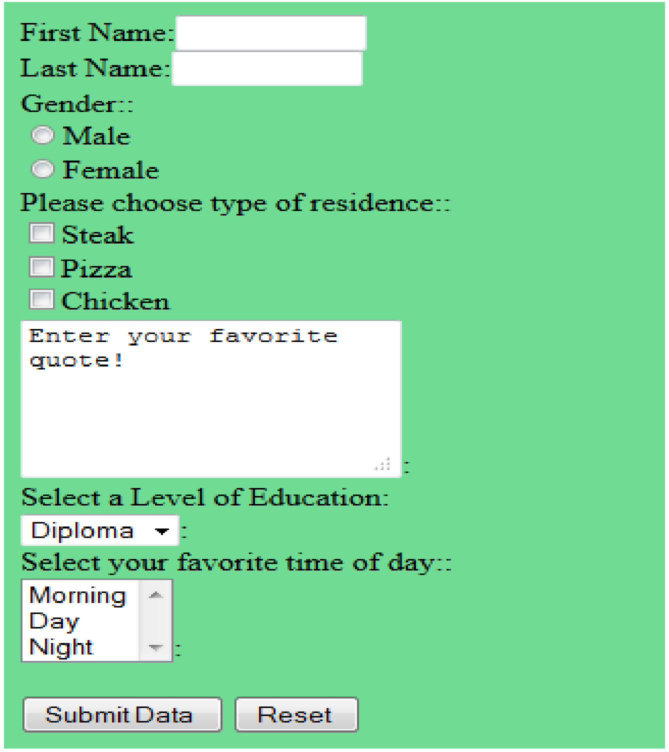
```
<HTML>
    <HEAD>
    <TITLE> Sample Form</TITLE>
    </HEAD>
    <BODY BGCOLOR="FFFFFF">
    <FORM   ACTION = http://www.xyz.com/formtest.php>
    <P> First Name: <INPUT TYPE="TEXT" NAME="fname" MAXLENGTH="50"> </P>
    <P> <INPUT TYPE="SUBMIT" NAME="fsubmit" VALUE="Send Info"> </P>
    </FORM>
    </BODY>
</HTML>
```

<FORM> element attributes

- **ACTION**: is the **URL** of the **CGI** (Common Gateway Interface) program that is going to accept the data from the form, process it, and send a response back to the browser.
- **METHOD**: **GET** (default) or **POST** specifies which **HTTP** method will be used to send the form's contents to the web server. The CGI application should be written to accept the data from either method.
- **NAME**: is a form name used by VBScript or JavaScripts.
- **TARGET**: is the target frame where the response page will show up.

Form Elements

- **Form elements have properties: Text boxes, Password boxes, Checkboxes, Option(Radio) buttons, Submit, Reset, File, Hidden and Image.**
- **The properties are specified in the TYPE Attribute of the HTML element <INPUT></INPUT>**



First Name:

Last Name:

Gender::

○ Male

○ Female

Please choose type of residence::

□ Steak

□ Pizza

□ Chicken

```
Enter your favorite
quote!
```

Select a Level of Education:

Diploma ▾ :

Select your favorite time of day::

Morning
Day
Night

Form Elements

<INPUT> Element's Properties
TYPE = Type of INPUT entry field.
NAME = Variable name passed to CGI application
VALUE = The data associated with the variable name to be passed to the CGI application
CHECKED = Button/box checked
SIZE = Number of visible characters in text field
MAXLENGHT = Maximum number of characters accepted

Text Box

Text boxes*:* Used to provide input fields for text, phone numbers, dates, etc.

<INPUT TYPE= " TEXT " >

Browser will display

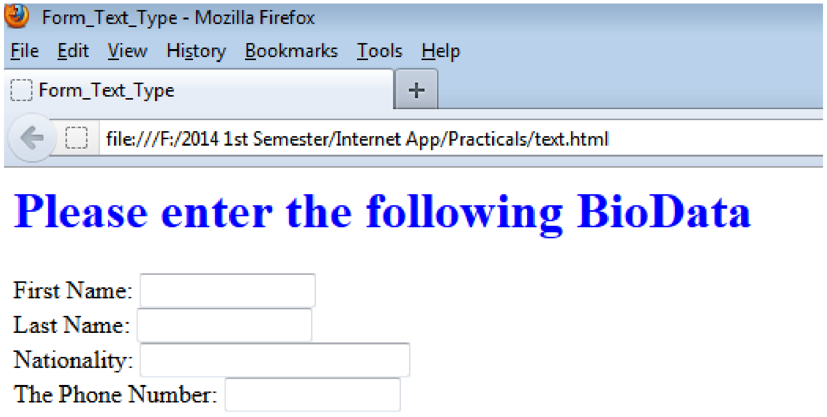
Textboxes use the following attributes:

- **TYPE:** text.
- **SIZE:** determines the size of the textbox in characters. **Default=20** characters.
- **MAXLENGHT** ***:*** determines the maximum number of characters that the field will accept.
- **NAME:** is the name of the variable to be sent to the CGI application.
- **VALUE:** will display its contents as the default value.

Example on Text Box

```
<TITLE>Form_Text_Type</TITLE>
</HEAD> <BODY>
<h1> <font color=blue> Please enter the following
   BioData</font></h1>
<FORM name="form1"  Method= " get " Action= " URL " >
First Name: <INPUT TYPE="TEXT" NAME="FName"
SIZE="15" MAXLENGTH="25"><BR>
Last Name: <INPUT TYPE="TEXT" NAME="LName"
SIZE="15" MAXLENGTH="25"><BR>
Nationality: <INPUT TYPE="TEXT" NAME="Country"
SIZE="25" MAXLENGTH="25"><BR>
The Phone Number: <INPUT TYPE="TEXT" NAME="Phone"
SIZE="15" MAXLENGTH="12"><BR>
</FORM> </BODY> </HTML>
```

Output


Form_Text_Type - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Form_Text_Type
+

file:///F:/2014 1st Semester/Internet App/Practicals/text.html

Please enter the following BioData

First Name:

Last Name:

Nationality:

The Phone Number:

Password

Password: Used to allow entry of passwords.

<INPUT TYPE= " PASSWORD " >

Browser will display •••••••

Text typed in a password box is starred out in the browser display.

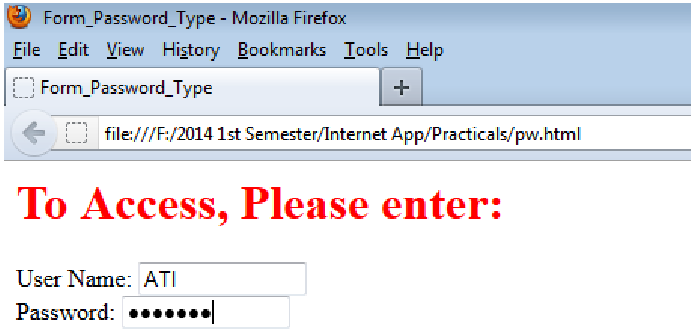
Password boxes use the following attributes:

- **TYPE:** password.
- **SIZE:** determines the size of the textbox in characters.
- **MAXLENGHT:** determines the maximum size of the password in characters.
- **NAME:** is the name of the variable to be sent to the CGI application.
- **VALUE:** is usually blank.

Example on Password Box

```
<HTML><HEAD>
<TITLE>Form_Password_Type</TITLE></HEAD>
<BODY>
<h1> <font color=red>To Access, Please
enter:</font></h1>
<FORM name="form2"  Action="url"  method="get">
User Name: <INPUT TYPE="TEXT" Name="FName"
SIZE="15" MAXLENGTH="25"><BR>
Password: <INPUT TYPE="PASSWORD"
NAME="PWord"   value="" SIZE="15”
MAXLENGTH="25"><BR>
</FORM></BODY> </HTML>
```

Output


Form_Password_Type - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Form_Password_Type
+

file:///F:/2014 1st Semester/Internet App/Practicals/pw.html

To Access, Please enter:

User Name: ATI

Password: •••••••

Hidden

Hidden: Used to send data to the CGI application that you don’t want the web surfer to see, change or have to enter but is necessary for the application to process the form correctly.

<INPUT TYPE=“HIDDEN”>

Nothing is displayed in the browser.

Hidden inputs have the following attributes:

- **TYPE:** hidden.
- **NAME:** is the name of the variable to be sent to the CGI application.
- **VALUE:** is usually set a value expected by the CGI application.

Check Box

Check Box: Check boxes allow the users to select more than one option.

<INPUT TYPE=“CHECKBOX”>

Browser will display ☐

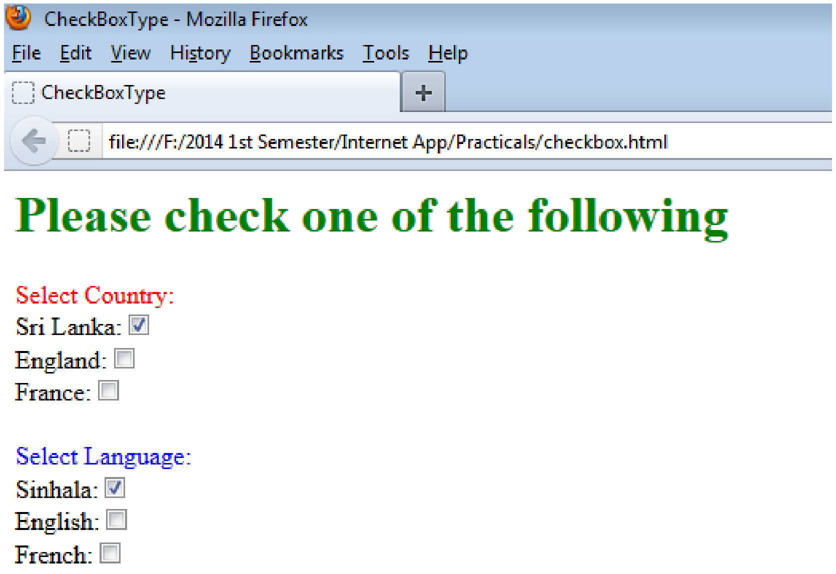
Checkboxes have the following attributes:

- **TYPE:** checkbox.
- **CHECKED:** is blank or CHECKED as the initial status.
- **NAME*:*** is the name of the variable to be sent to the CGI application.
- **VALUE:** is usually set to a value.

Example on Check Box

```
<HTML> <HEAD><TITLE>CheckBoxType</TITLE> </HEAD>
<BODY>
<h1> <font color=green>Please check one of the
following</font></h1>
<FORM name="form3"  Action="url"  method="get">
<font color=red> Select Country: </font><BR>
Sri Lanka:<INPUT TYPE="CheckBox" Name="country"  CHECKED><BR>
England<INPUT TYPE="CheckBox"  Name="country"><BR>
France<INPUT TYPE="CheckBox" Name="country"><BR> <BR>
<font color=blue>Select Language:</font><BR>
Sinhala<INPUT TYPE="CheckBox" Name="language"  CHECKED><BR>
English<INPUT TYPE="CheckBox" Name="language"><BR>
French<INPUT TYPE="CheckBox" Name="language"> <BR></FORM>
</BODY></HTML>
```

Output



CheckBoxType - Mozilla Firefox
File Edit View History Bookmarks Tools Help
CheckBoxType
+
file:///F:/2014 1st Semester/Internet App/Practicals/checkbox.html

Please check one of the following

Select Country:

Sri Lanka: ☑

England: ☐

France: ☐

Select Language:

Sinhala: ☑

English: ☐

French: ☐

Radio Button

Radio Button: Radio buttons allow the users to select only one option.

<INPUT TYPE="RADIO">

Browser will display ○

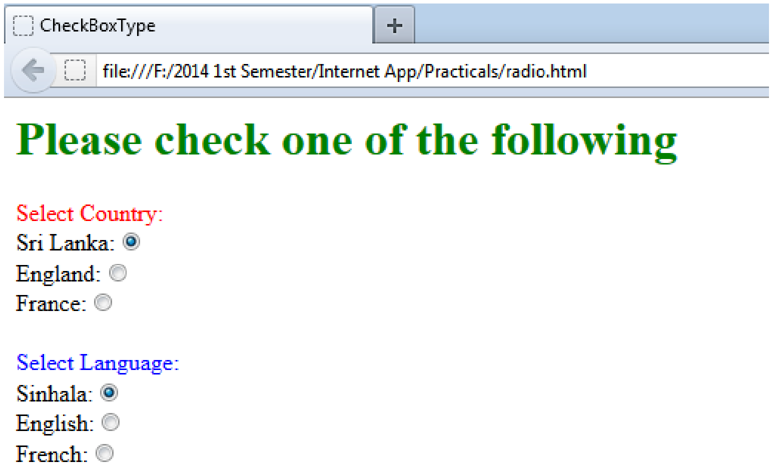
Radio buttons have the following attributes:

- **TYPE:** radio.
- **CHECKED:** is blank or CHECKED as the initial status. Only one radio button can be checked
- **NAME:** is the name of the variable to be sent to the CGI application.
- **VALUE:** usually has a set value.

Example on Radio Button

```
<HTML> <HEAD><TITLE>CheckBoxType</TITLE> </HEAD>
<BODY>
<h1> <font color=green>Please check one of the
following</font></h1>
<FORM name="form3"  Action="url"  method="get">
<font color=red> Select Country: </font><BR>
jordan:<INPUT TYPE= "RADIO"  Name="country"  CHECKED><BR>
Yemen<INPUT TYPE="RADIO "  Name="country"><BR>
Qatar:<INPUT TYPE="RADIO"  Name="country"><BR> <BR>
<font color=blue>Select Language:</font><BR>
Arabic:<INPUT TYPE="RADIO"  Name="language"  CHECKED><BR>
English:<INPUT TYPE=" RADIO " Name="language"><BR>
French:<INPUT TYPE=" RADIO "  Name="language"> <BR></FORM>
</BODY></HTML>
```

Output


CheckBoxType
+
file:///F:/2014 1st Semester/Internet App/Practicals/radio.html

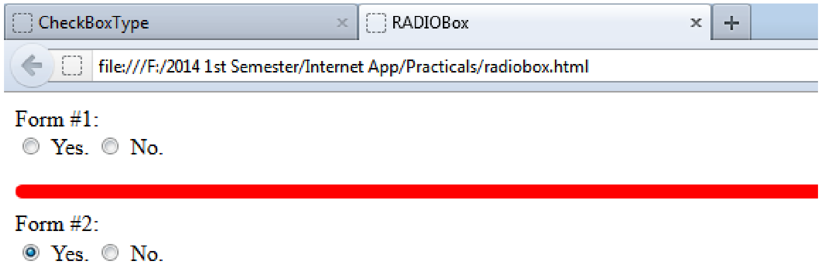
Please check one of the following

Select Country:
Sri Lanka: ●
England: ○
France: ○

Select Language:
Sinhala: ●
English: ○
French: ○

```
<HTML><HEAD>
<TITLE>RADIOBox</TITLE> </HEAD>
<BODY>
Form #1:
<FORM>
  <INPUT TYPE="radio" NAME="choice" VALUE="one"> Yes.
   <INPUT TYPE="radio" NAME="choice" VALUE="two"> No.
</FORM>
<HR color=red size="10" >
Form #2:
<FORM>
     <INPUT TYPE="radio" NAME="choice" VALUE="three" CHECKED>
Yes.
   <INPUT TYPE="radio" NAME="choice" VALUE="four"> No.
</FORM>
</BODY></HTML>
```

Output



CheckBoxType × | RADIOBox × | +

file:///F:/2014 1st Semester/Internet App/Practicals/radiobox.html

Form #1:
○ Yes. ○ No.

Form #2:
● Yes. ○ No.

Push Button

Push Button: This element would be used with JavaScript to cause an action to take place.

<INPUT TYPE=“BUTTON”>

Browser will display BUTTON

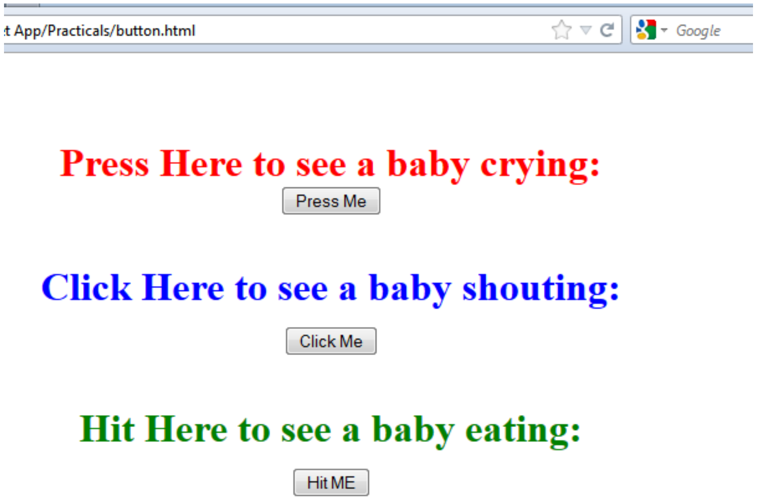
Push Button has the following attributes:

- **TYPE:** button.
- **NAME:** is the name of the button to be used in scripting.
- **VALUE:** determines the text label on the button.

Example on Push Button

```
<DIV align=center><BR><BR>
<FORM>
<FONT Color=red>
<h1>Press Here to see a baby crying:<BR>
<INPUT TYPE="button" VALUE="Press Me"><BR><BR>
<FONT Color=blue>
Click Here to see a baby shouting:<BR>
<INPUT TYPE="button" VALUE="Click Me" > <BR><BR>
<FONT Color=green>
Hit Here to see a baby eating:<BR>
<INPUT TYPE="button" VALUE="Hit ME" > <BR><BR>
<FONT Color=yellow>
</FORM></DIV>
```

Output



t App/Practicals/button.html

Press Here to see a baby crying:

Click Here to see a baby shouting:

Hit Here to see a baby eating:

Submit Button

Submit: Every set of Form tags requires a Submit button. This is the element causes the browser to send the names and values of the other elements to the CGI Application specified by the ACTION attribute of the FORM element.

<INPUT TYPE=“SUBMIT”>

The browser will display

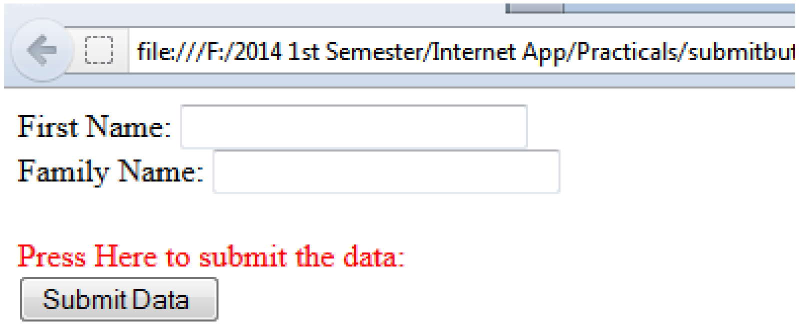
Submit has the following attributes:

- **TYPE:** submit.
- **NAME**: value used by the CGI script for processing.
- **VALUE:** determines the text label on the button, usually Submit Query.

Example on Submit Button

```
<FORM    Action="URL"      method="get">
First Name: <INPUT TYPE="TEXT" Size=25
name="firstName"><BR>
Family Name: <INPUT TYPE="TEXT" Size=25
name="LastName"><BR>
<BR>
<FONT Color=red>
Press Here to submit the data:<BR>
<INPUT TYPE="submit" VALUE="Submit Data " >
</FORM>
```

Output



file:///F:/2014 1st Semester/Internet App/Practicals/submitbut

First Name:

Family Name:

Press Here to submit the data:

Reset Button

Reset: It is a good idea to include one of these for each form where users are entering data. It allows the surfer to clear all the input in the form.

- **<INPUT TYPE=“RESET”>**
- Browser will display

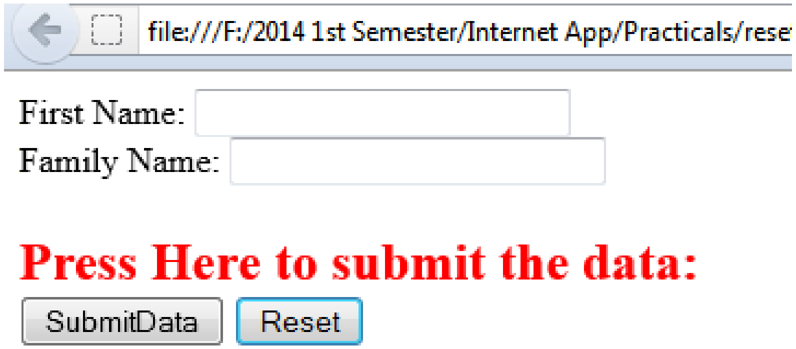
Reset buttons have the following attributes:

- **TYPE**: reset.
- **VALUE**: determines the text label on the button, usually Reset.

Example on Reset Button

```
<FORM    Action="URL"      method="get">
First Name: <INPUT TYPE="TEXT" Size=25
name="firstName"> <BR>
Family Name: <INPUT TYPE="TEXT" Size=25
name="LastName"><BR>
<BR>
<FONT Color = red>
<STRONG><font size=5>Press Here to submit the
data:</font></STRONG><BR>
<INPUT TYPE="submit" VALUE="SubmitData">
<INPUT TYPE="RESET" VALUE="Reset">
</FORM>
```

Output



file:///F:/2014 1st Semester/Internet App/Practicals/rese

First Name:

Family Name:

Press Here to submit the data:

Image Submit Button

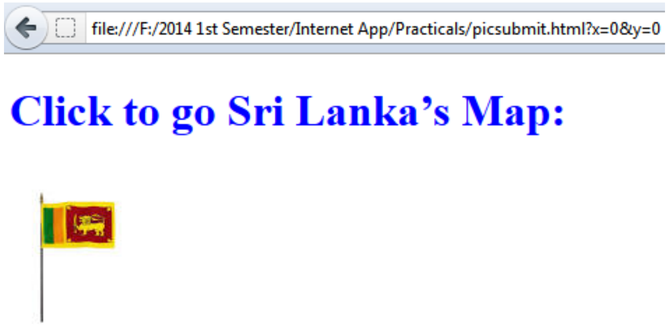
Image Submit Button: Allows you to substitute an image for the standard submit button.

<INPUT TYPE=“IMAGE” SRC=“image1.gif”>

Image submit button has the following attributes:

- **TYPE:** Image.
- **NAME:** is the name of the button to be used in scripting.
- **SRC:** URL of the Image file.

```
<form>
<H1><font color=blue>
Click to go Sri Lanka’s Map:
<INPUT  TYPE="IMAGE"  SRC=“srilanka.jpg”>
</form>
```



file:///F:/2014 1st Semester/Internet App/Practicals/picsubmit.html?x=0&y=0

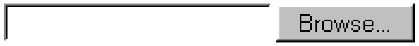
Click to go Sri Lanka’s Map:

File

File Upload: You can use a file upload to allow surfers to upload files to your web server.

<INPUT TYPE=“FILE”>

Browser will display



File Upload has the following attributes:

- **TYPE**: file.
- **SIZE**: is the size of the text box in characters.
- **NAME**: is the name of the variable to be sent to the CGI application.
- **MAXLENGHT**: is the maximum size of the input in the textbox in characters.

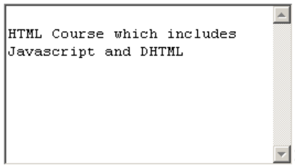
Example on File

```
<BODY bgcolor=lightblue>
<form>
<H3><font color=forestgreen>
Please attach your file here to for uploading to
My <font color =red>SERVER...<BR>

<INPUT  TYPE="File"  name="myFile"  size="30">

<INPUT  TYPE="Submit"  value="Submit File">
</form>
</BODY>
```

Other Elements used in Forms

<TEXTAREA></TEXTAREA>: is an element that allows for free form text entry.

Browser will display



```
HTML Course which includes
Javascript and DHTML
```

:

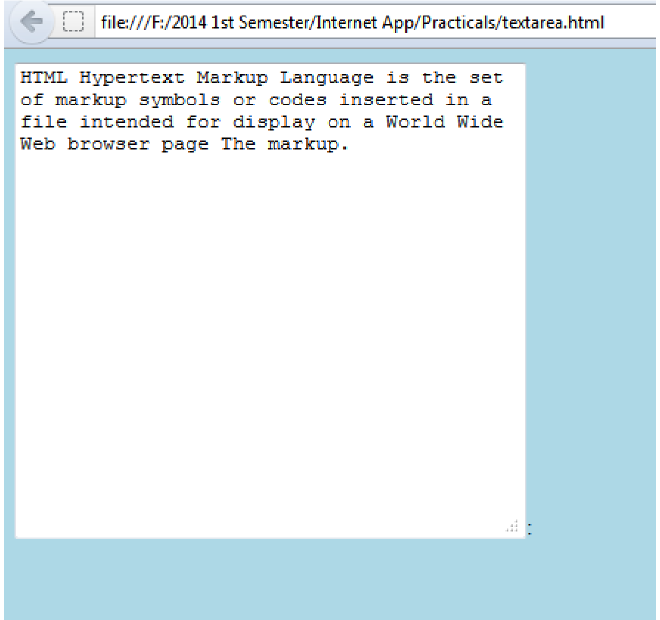
Textarea has the following attributes:

- **NAME:** is the name of the variable to be sent to the CGI application.
- **ROWS:** the number of rows to the textbox.
- **COLS:** the number of columns to the textbox.

Example on <TEXTAREA>

```
<BODY bgcolor=lightblue>
<form>
<TEXTAREA  COLS=40  ROWS=20  Name="comments"  >
HTML Hypertext Markup Language is the set of markup symbols or
codes inserted in a file intended for display on a World Wide Web
browser page The markup.
</TEXTAREA>:
</form>
</BODY>
```

Output



file:///F:/2014 1st Semester/Internet App/Practicals/textarea.html

```
HTML Hypertext Markup Language is the set
of markup symbols or codes inserted in a
file intended for display on a World Wide
Web browser page The markup.
```

Other Elements used in Forms

- The two following examples are **<SELECT></SELECT>** elements, where the attributes are set differently.

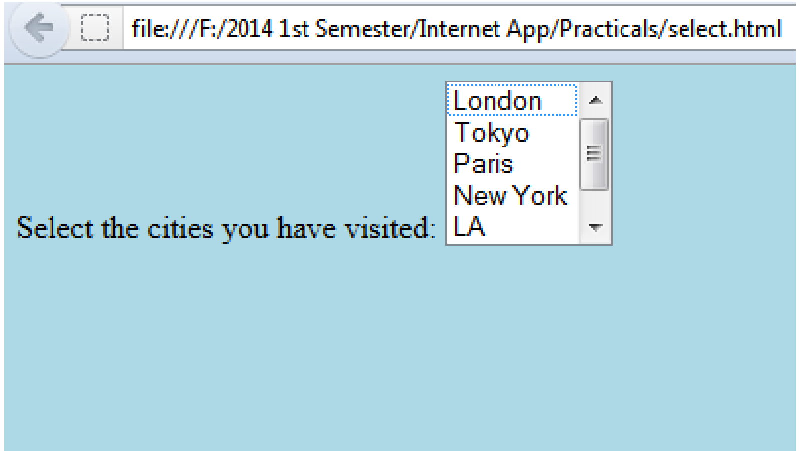
The Select elements attributes are:

- **NAME:** is the name of the variable to be sent to the CGI application.
- **SIZE:** this sets the number of **visible** choices.
- **MULTIPLE:** the presence of this attribute signifies that the user can make multiple selections. By default only one selection is allowed.

Example on <SELECT>

```
<BODY bgcolor=lightblue>
<form>
Select the cities you have visited:
<SELECT name=“list”  size=5>
<option> London</option>
<option> Tokyo</option>
<option> Paris</option>
<option> New York</option>
<option> LA</option>
<option> KL</option>
</SELECT>
</form>
</BODY>
```

Output



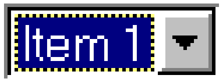
file:///F:/2014 1st Semester/Internet App/Practicals/select.html

Select the cities you have visited:

London
Tokyo
Paris
New York
LA

Other Elements used in Forms

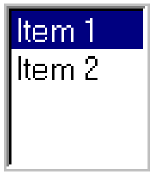
Drop Down List:



- **Name:** is the name of the variable to be sent to the CGI application.
- **Size:** 1

Other Elements used in Forms

List Box:



- **Name: is the name of the variable to be sent to the CGI application.**
- **SIZE: is greater than one.**

Other Elements used in Forms

Option

The list items are added to the **<SELECT>** element by inserting **<OPTION></OPTION>** elements.

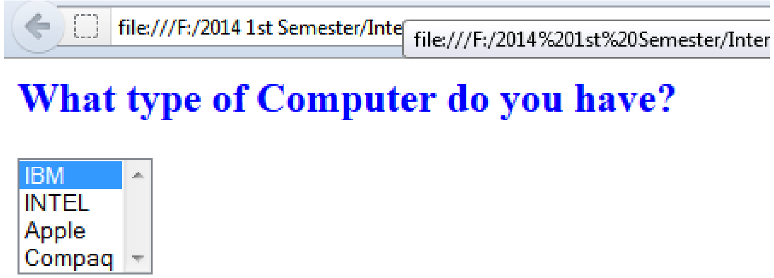
The Option Element’s attributes are:

- **SELECTED:** When this attribute is present, the option is selected when the document is initially loaded. **It is an error for more than one option to be selected.**
- **VALUE:** Specifies the value the variable named in the select element.

Example

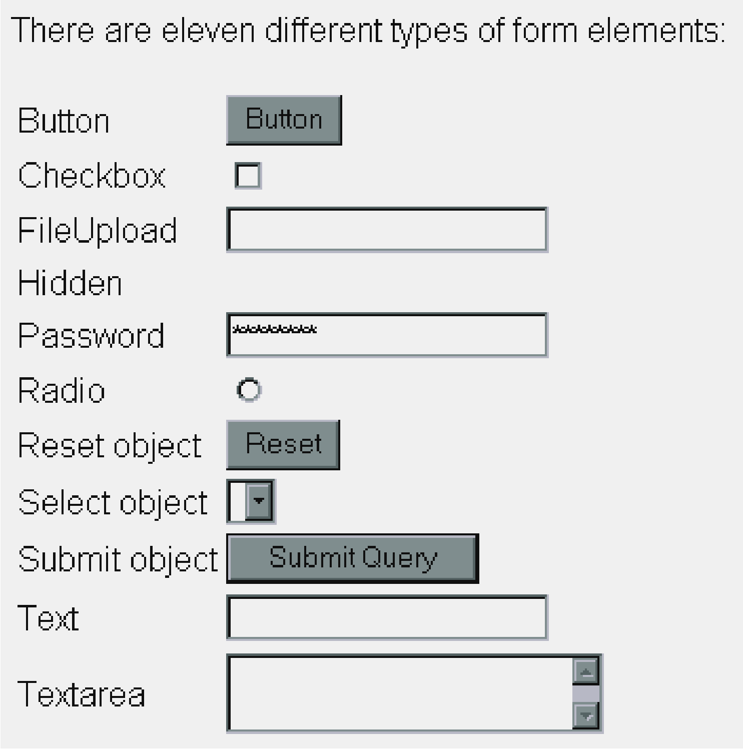
```
<HTML>
<HEAD></HEAD>
<BODY>
<h2><font color=blue>What type of Computer do you
   have?</font><h2>
<FORM>
<SELECT NAME="ComputerType" size=4>
   <OPTION  value="IBM" SELECTED> IBM</OPTION>
   <OPTION  value="INTEL"> INTEL</OPTION>
   <OPTION value=" Apple"> Apple</OPTION>
   <OPTION value="Compaq"> Compaq</OPTION>
</SELECT>
</FORM></BODY></HTML>
```

Output


file:///F:/2014 1st Semester/Inte
file:///F:/2014%201st%20Semester/Inter

What type of Computer do you have?

IBM
INTEL
Apple
Compaq



There are eleven different types of form elements:

Button	Button
Checkbox	□
FileUpload	
Hidden	
Password	*********
Radio	○
Reset object	Reset
Select object	
Submit object	Submit Query
Text	
Textarea	

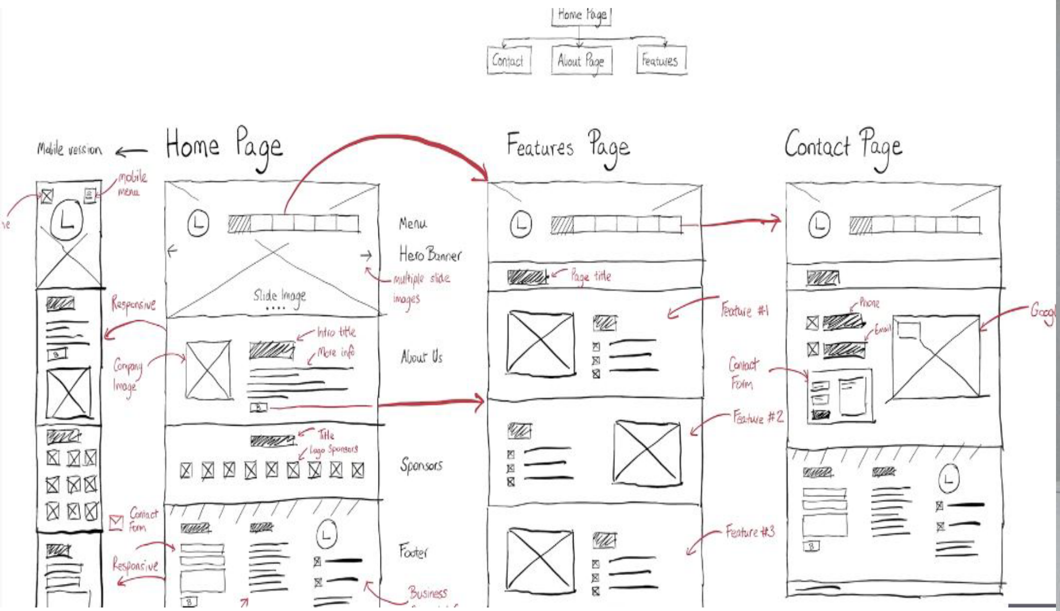
HNDIT1022 – Web Design

Week 4: Define and plan the information hierarchy

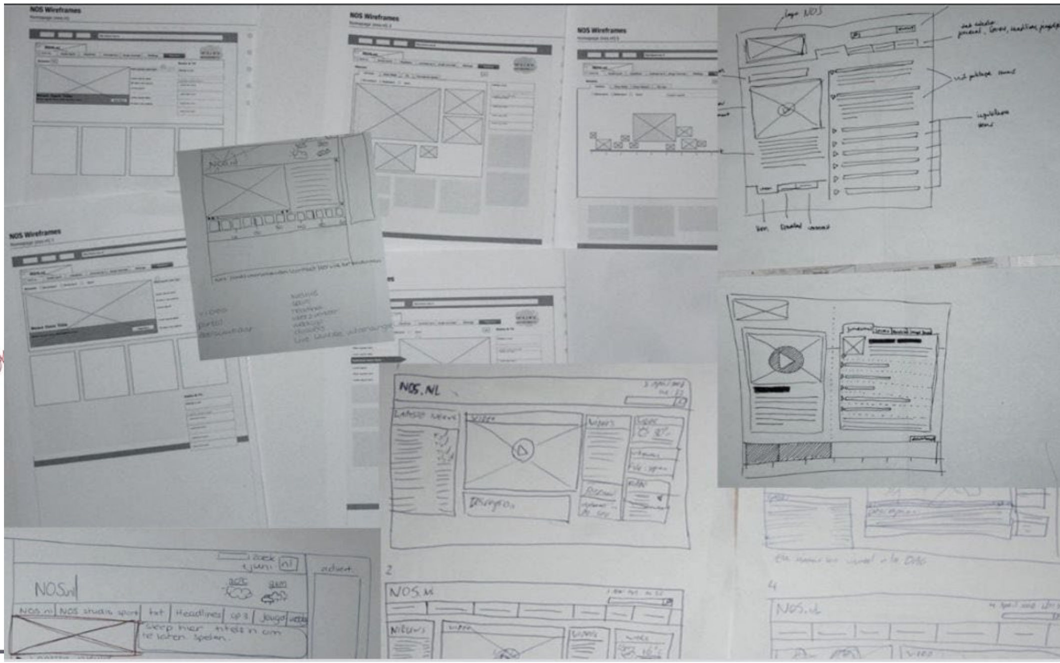
Subtopics

- Why designer use wireframes
- Design wireframe

Wireframe?



Wireframe?



What is Wireframe?

Basically wireframe is a sketch of your website, before any kind of design elements or development even takes place.

It is a visual representation of elements on a website.

It usually doesn't include any styling, color, or graphics.

A wireframe is constructed using basic boxes, lines, and other shapes to create an outline of the functional parts of a web page without wasting time creating an intricate, polished design.

It's often the first step in the website design and web development process.

Contd..

Definition in detail : A visual representation of an interface , used to communicate the structure, content, information hierarchy, functionality and behavior of an interface

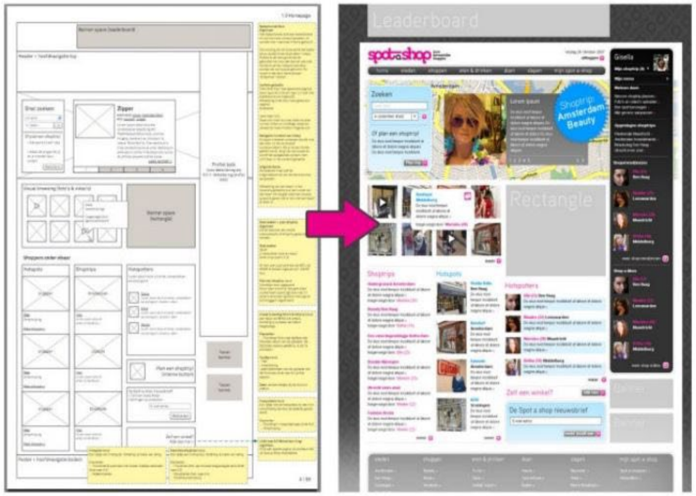
Structure
How will the pieces of this site be put together?

Content
What will be displayed on this site?

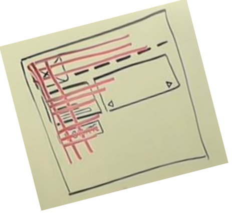
Information Hierarchy
How is this information organized and displayed?

Functionality
How will this interface work?

Behavior
How does it interact with the user? How does it behave?



Why designer use wireframe? / Why is a wireframe important?



- Establish hierarchy of information

  You want to follow that F-Shape pattern that users are looking for the information in. And it lets you understand what are the most important parts of your web site. What do you need people to click on first?

- Simplifies communication

  It simplifies the communication between developer and your client, which is always good for everyone involved.

- Blueprint for the design

  it means an outline.

Type of wireframes

- Sketches
  - Quick/experiment
  - Good for feedback
- Low fidelity
  - Block diagrams
  - Good for flows
- High fidelity
  - Detailed wireframes
  - Including comments
  - Describe content & behavior
  - Should be understood without explanation

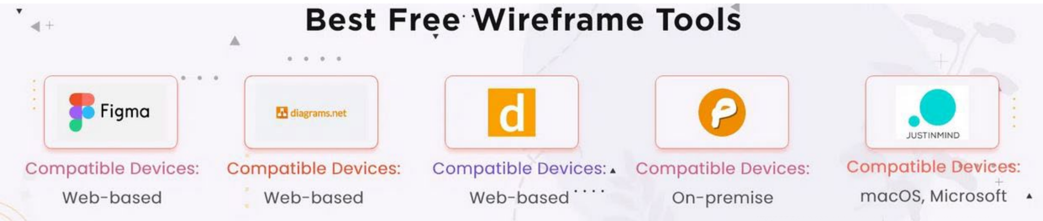
How to design wireframes

Simply there are two types of designing

- **Physical hand-drawn Sketches** can be made with paper, pens and markers
- **Digital wireframe** can be made using a variety of tools

Digital Wireframe Tools : Free and Paid Wireframe Tools

You can find a range of great tools for wireframing with a quick Google search, many of which are free to use and often browser-based!

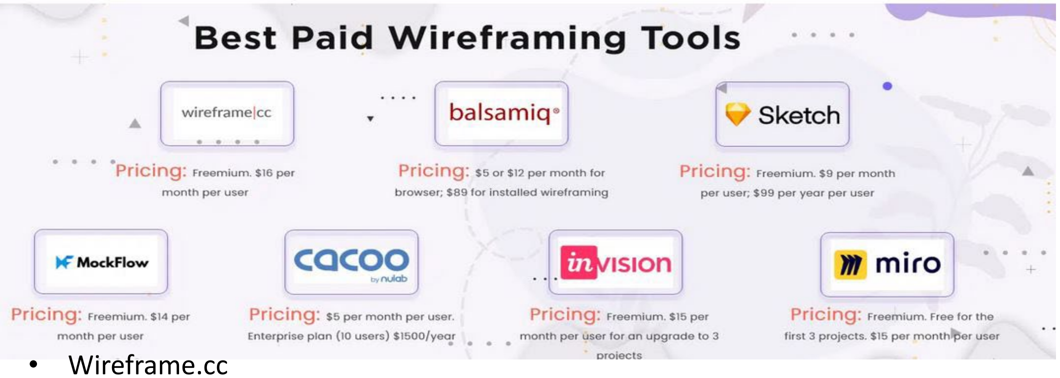


Best Free Wireframe Tools

Figma	diagrams.net	d	P	JUSTINMIND
Compatible Devices: Web-based	Compatible Devices: Web-based	Compatible Devices: Web-based	Compatible Devices: On-premise	Compatible Devices: macOS, Microsoft

- Figma
- Diagrams.net
- Mydraft.cc
- Pencil Project
- Justinmind
- Wirefy

Contd..



Best Paid Wireframing Tools

wireframe|cc — Pricing: Freemium. $16 per month per user

balsamiq — Pricing: $5 or $12 per month for browser; $89 for installed wireframing

Sketch — Pricing: Freemium. $9 per month per user; $99 per year per user

MockFlow — Pricing: Freemium. $14 per month per user

cacoo — Pricing: $5 per month per user. Enterprise plan (10 users) $1500/year

invision — Pricing: Freemium. $15 per month per user for an upgrade to 3 projects

miro — Pricing: Freemium. Free for the first 3 projects. $15 per month per user

- Wireframe.cc
- Balsamiq Moqups
- Sketch
- MockFlow
- Cacoo
- InVision
- Miro
- Adobe XD
- Marvel

How to design wireframes

- Whether the hand-drawn sketch wireframe or digital wireframe they're both made up of the same things basic fundamental shapes to represent the key elements that would you see on a screen in their simplest form and they're usually in black white and sometimes some gray

- The important thing about wireframes is to keep it simple more detail can be distracting and it's important to keep things to their most basic fundamental forms.

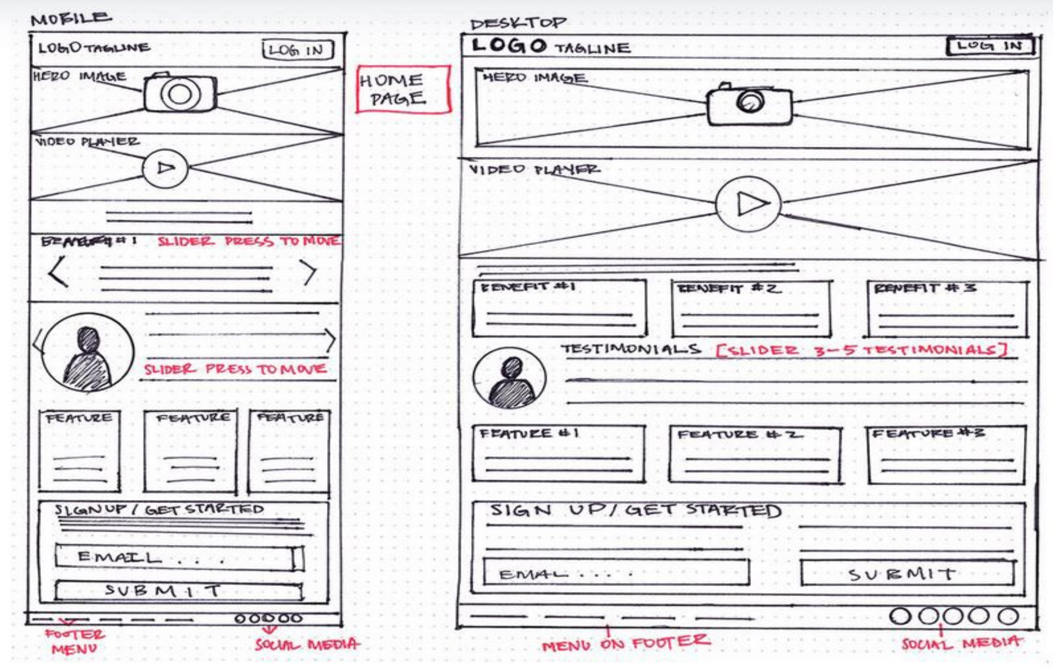
- Once you've got some initial ideas down on paper you might notice that not everything fits quite as you envisaged.

How to design wireframes Contd..

- Take the time to do a quick second sketch and refine key elements if they don't fit quite right.

- Digital wireframes are a great step after hand-drawn sketches because they're easy to share with colleagues and the rest of the design team who can continue to add layers of complexity and polish.

How to design wireframes Contd..



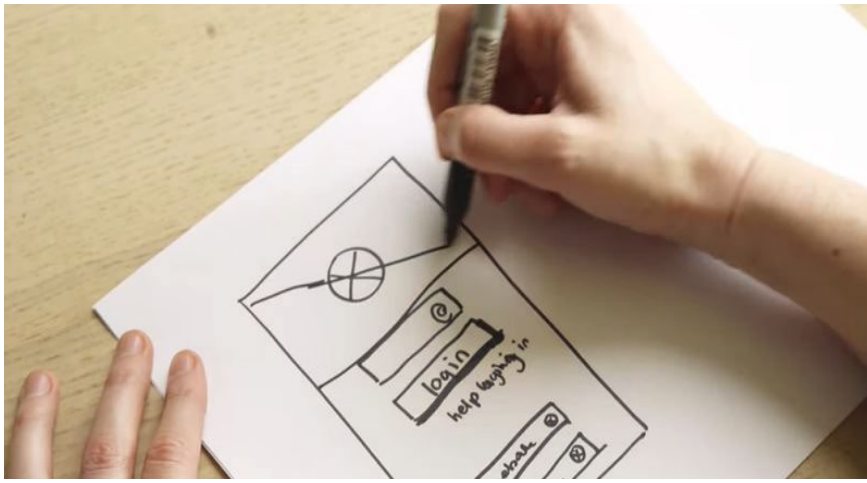
Standard Elements on Wireframe

A wireframe usually includes the following standard elements.

1.Logo
2.Search field
3.Breadcrumb
4.Headers, including page title as the H1 and subheads H2-Hx
5.Navigation systems, including global navigation and local navigation
6.Body content
7.Share buttons
8.Contact information
9.Footer

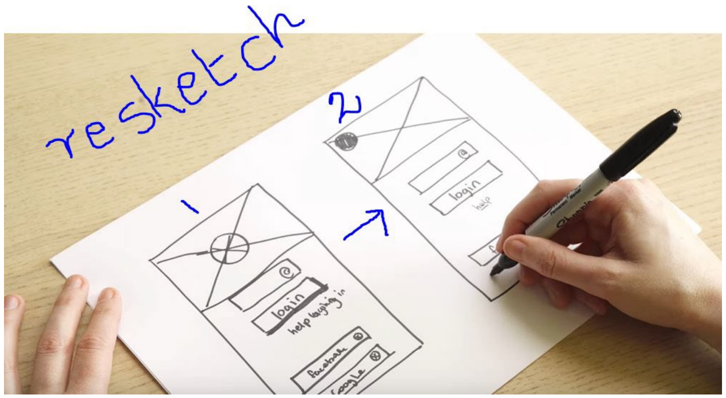
Let’s build your first wireframe

- Let’s get started with the login frame
- Login frame elements : image, logo, text field to enter user id or email id, login button, forgot password link, alternative login options such as Facebook , Google
- Step 1: Sketching the login frame elements



Let’s build your first wireframe

- Step 2 : re-sketch the wireframe and place the elements in right place

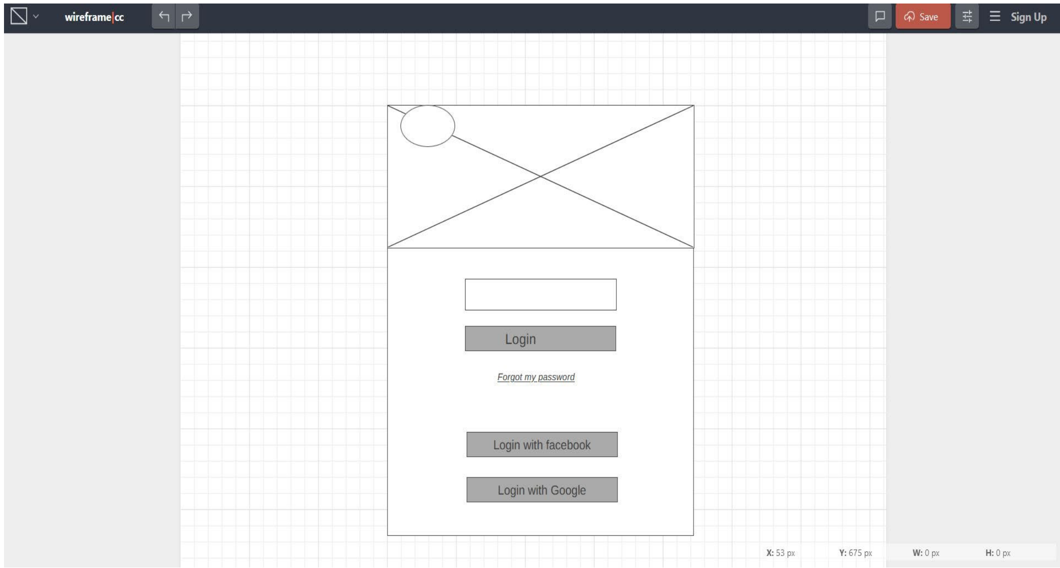


- Step 3 : After that you need to digitizing the wireframe using any tool

Contd..

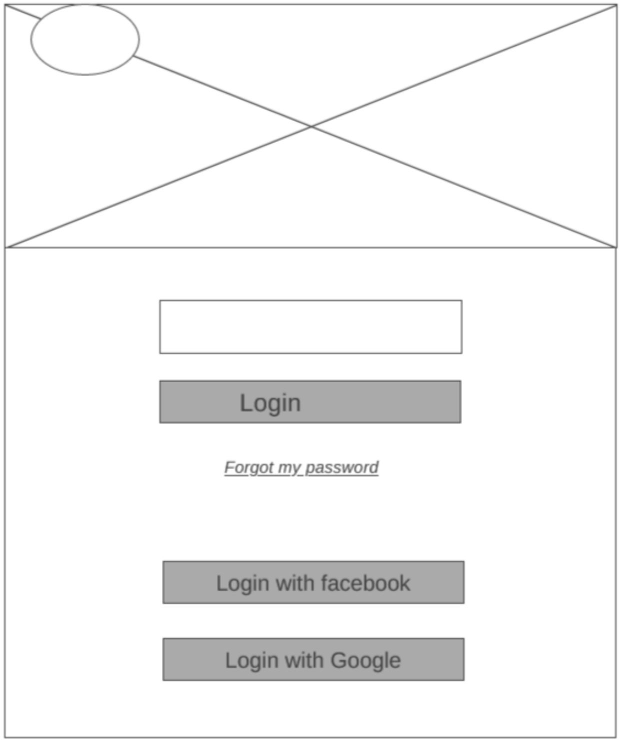
- let’s use 7 days free trial online tool wireframe.cc to draw the digital format.

  Note: you can use any wireframing tool



Contd..

Digital wireframe



Bad wireframe vs Good design wireframe

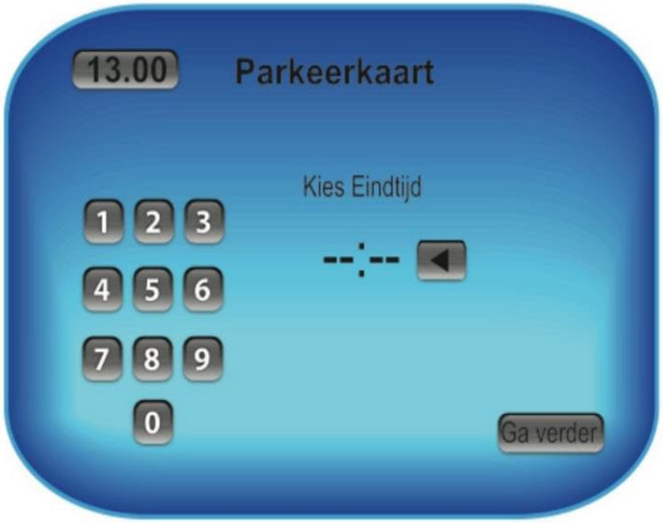
This is a bad wireframe!

Forget visual design

Avoid using color / gradients

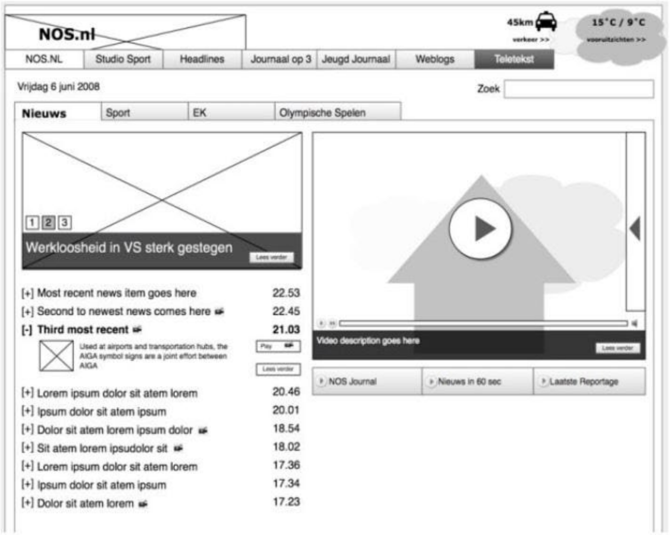
Adding unnecessary elements makes the wireframe less powerful, remember:

Wireframes focus only on the content and interaction of the interface!



Contd..

Looks good, right?


NOS.nl
45km
verkeer >>
15°C / 9°C
vooruitzichten >>
NOS.NL
Studio Sport
Headlines
Journaal op 3
Jeugd Journaal
Weblogs
Teletekst
Vrijdag 6 juni 2008
Zoek
Nieuws
Sport
EK
Olympische Spelen
1 2 3
Werkloosheid in VS sterk gestegen
Lees verder
[+] Most recent news item goes here 22.53
[+] Second to newest news comes here 22.45
[-] Third most recent 21.03
Used at airports and transportation hubs, the AIGA symbol signs are a joint effort between AIGA
Play
Lees verder
[+] Lorem ipsum dolor sit atem lorem 20.46
[+] Ipsum dolor sit atem ipsum 20.01
[+] Dolor sit atem lorem ipsum dolor 18.54
[+] Sit atem lorem ipsudolor sit 18.02
[+] Lorem ipsum dolor sit atem lorem 17.36
[+] Ipsum dolor sit atem ipsum 17.34
[+] Dolor sit atem lorem 17.23
Video description goes here
Lees verder
NOS Journal
Nieuws in 60 sec
Laatste Reportage

Let's Start.....

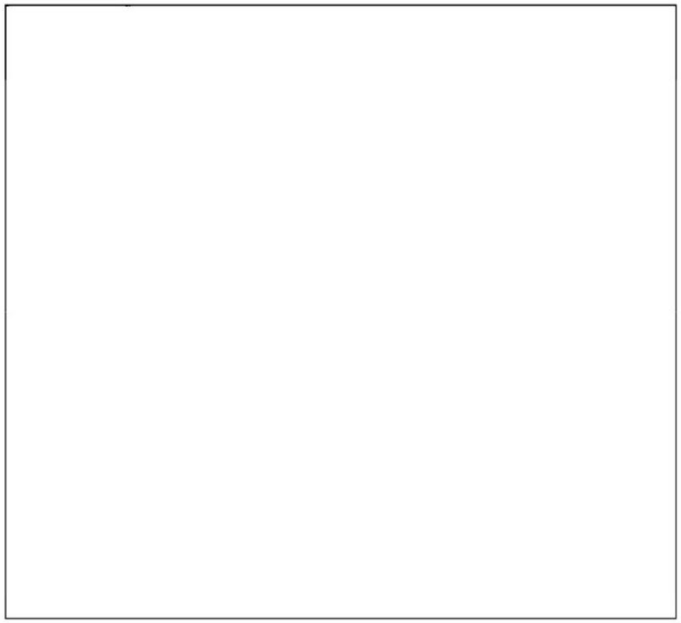
Start big! Start with the largest parts of the interface, the frame, header, footer, etc. Then work you way through the smaller elements of the interface. The following slides will show a quick wireframe build-up.

Final tip!
Remember, your wireframe will be used by lots of different people for different purposes:

Designers
Developers
Project leaders
Usability testers
Clients

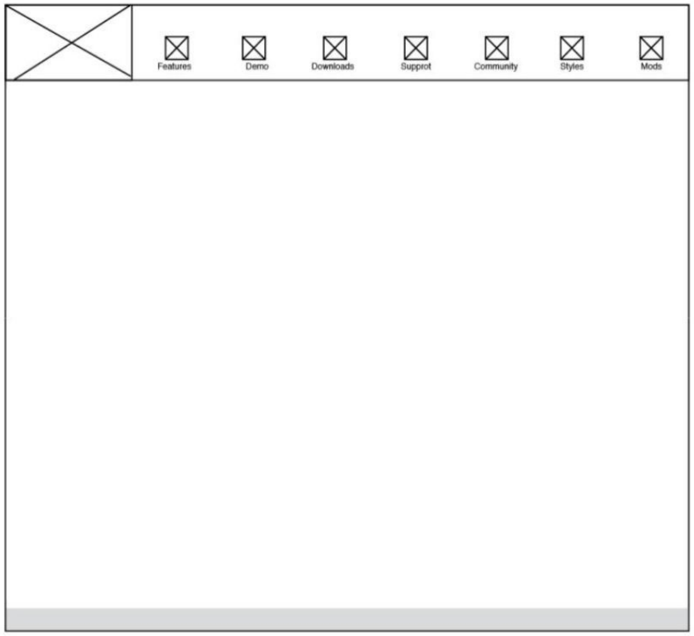
So be as clear as you can!

Contd..

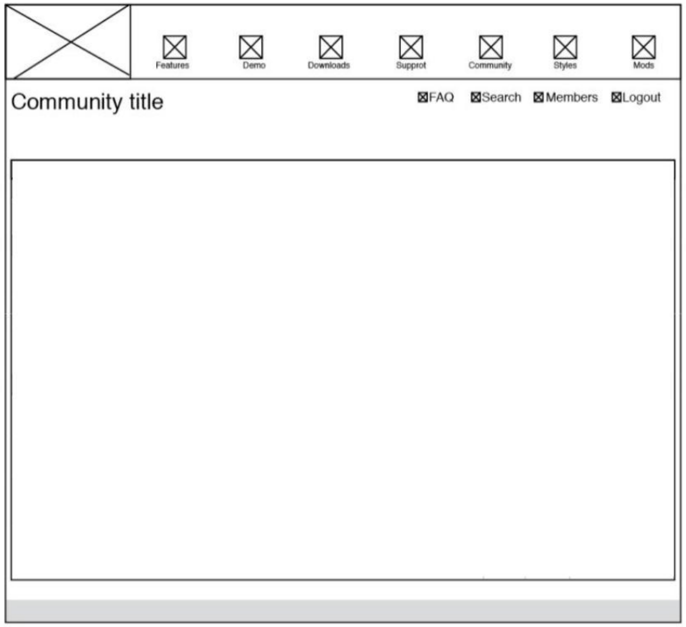


Contd..

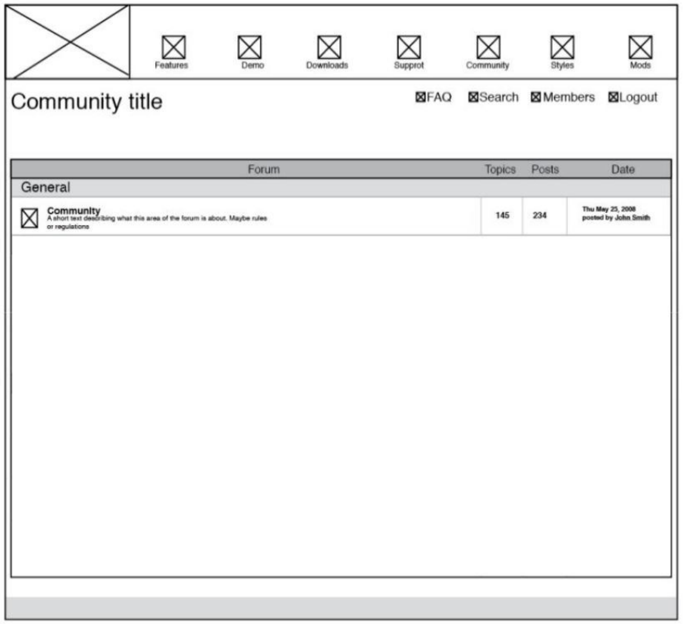
Contd..



Contd..



Contd..

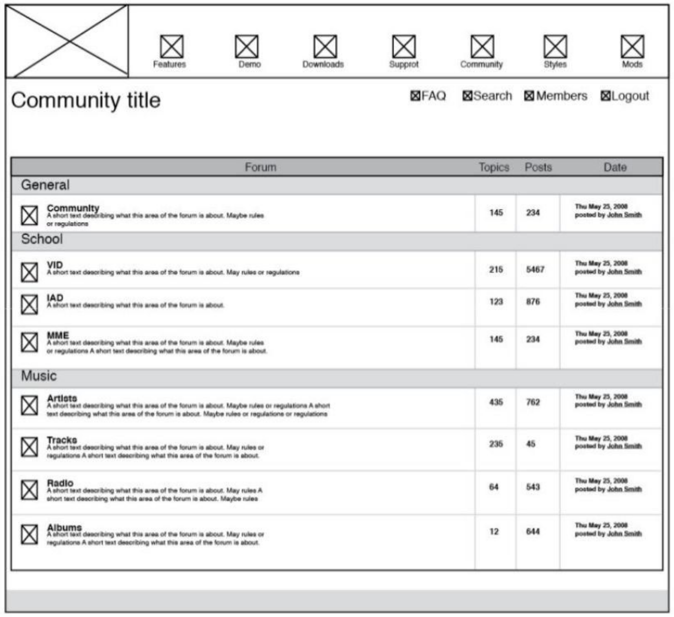


Community title

☒FAQ ☒Search ☒Members ☒Logout

Forum	Topics	Posts	Date
General			
☒ **Community** A short text describing what this area of the forum is about. Maybe rules or regulations	145	234	Thu May 25, 2008 posted by John Smith

Contd..

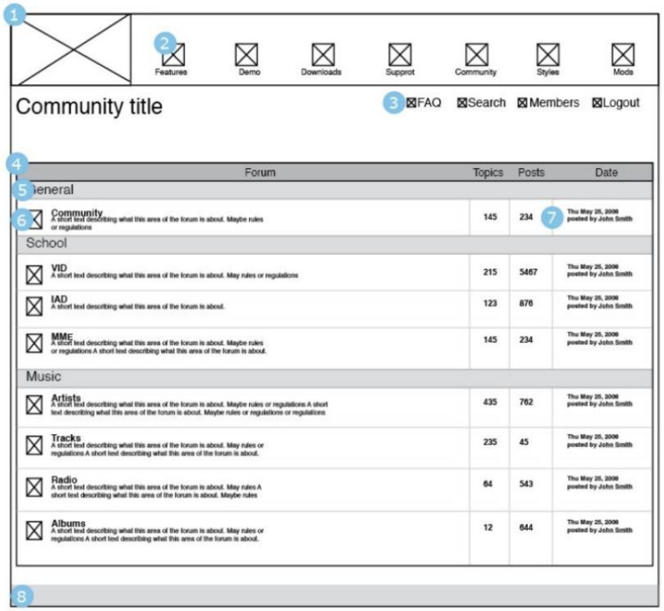


Community title

☒FAQ ☒Search ☒Members ☒Logout

Forum	Topics	Posts	Date
General			
☒ **Community** A short text describing what this area of the forum is about. Maybe rules or regulations	145	234	Thu May 25, 2008 posted by John Smith
School			
☒ **VID** A short text describing what this area of the forum is about. May rules or regulations	215	5467	Thu May 25, 2008 posted by John Smith
☒ **IAD** A short text describing what this area of the forum is about.	123	876	Thu May 25, 2008 posted by John Smith
☒ **MME** A short text describing what this area of the forum is about. Maybe rules or regulations A short text describing what this area of the forum is about.	145	234	Thu May 25, 2008 posted by John Smith
Music			
☒ **Artists** A short text describing what this area of the forum is about. Maybe rules or regulations A short text describing what this area of the forum is about. Maybe rules or regulations or regulations	435	762	Thu May 25, 2008 posted by John Smith
☒ **Tracks** A short text describing what this area of the forum is about. May rules or regulations A short text describing what this area of the forum is about.	235	45	Thu May 25, 2008 posted by John Smith
☒ **Radio** A short text describing what this area of the forum is about. May rules A short text describing what this area of the forum is about. Maybe rules	64	543	Thu May 25, 2008 posted by John Smith
☒ **Albums** A short text describing what this area of the forum is about. May rules or regulations A short text describing what this area of the forum is about.	12	644	Thu May 25, 2008 posted by John Smith

Contd..



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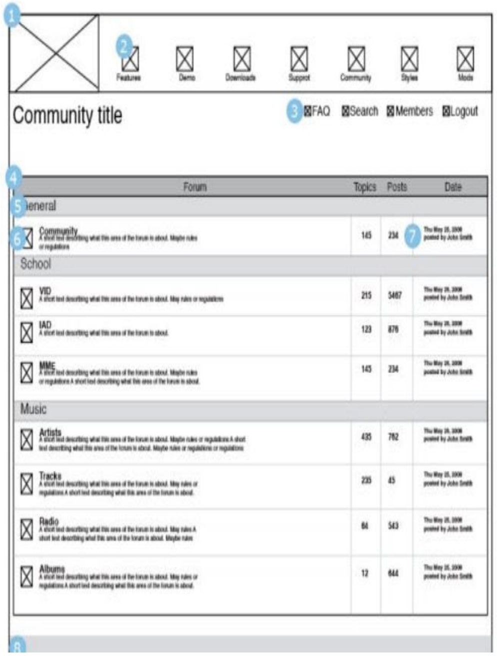
Contd..



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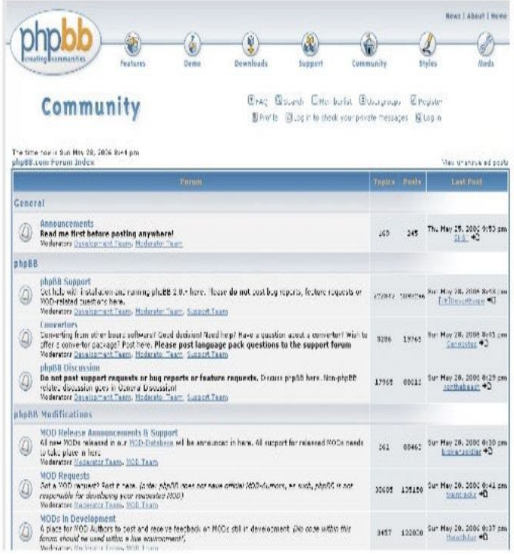


Community

FAQ Search Memberlist Usergroups Register
Profile Log in to check your private messages Log in

The time now is Sun May 28, 2006 8:44 pm
phpBB.com Forum Index

View unanswered posts

Forum	Topics	Posts	Last Post
General			
Announcements **Read me first before posting anywhere!** Moderators Development Team, Moderator Team	105	245	Thu May 25, 2006 9:53 pm [illegible]
phpBB			
phpBB Support Get help with installation and running phpBB 2.0.x here. Please **do not** post bug reports, feature requests or MOD-related questions here. Moderators Development Team, Moderator Team, Support Team	272842	1094796	Sun May 28, 2006 8:48 pm [illegible]
Converters Converting from other board software? Good decision! Need help? Have a question about a convertor? Wish to offer a converter package? Post here. **Please post language pack questions to the support forum** Moderators Development Team, Moderator Team, Support Team	3286	19765	Sun May 28, 2006 8:43 pm [illegible]
phpBB Discussion **Do not post support requests or bug reports or feature requests.** Discuss phpBB here. Non-phpBB related discussion goes in General Discussion! Moderators Development Team, Moderator Team, Support Team	17968	90012	Sun May 28, 2006 8:29 pm [illegible]
phpBB Modifications			
MOD Release Announcements & Support All new MODs released in our MOD-Database will be announced in here. All support for released MODs needs to take place in here Moderators Moderator Team, MOD Team	361	80462	Sun May 28, 2006 8:30 pm [illegible]
MOD Requests Got a MOD request? Post it here. *(note: phpBB does not have official MOD-authors, as such, phpBB is not responsible for developing your requested MOD)* Moderators Moderator Team, MOD Team	30605	135150	Sun May 28, 2006 8:41 pm [illegible]
MODs in Development A place for MOD Authors to post and receive feedback on MODs still in development. *(No code within this forum should be used within a live environment!)* Moderators Moderator Team, MOD Team	3457	132020	Sun May 28, 2006 8:37 pm [illegible]

Questions…?

Week 5 - Cascading Style Sheet (CSS)

Aim/ Objectives

- To build student awareness of style sheet mechanism available to web programmers seeking to develop and interactive web sites.
- At the same time students will develop practical expertise in CSS providing them with a solid foundation from which to develop a mastery of web programming techniques

Learning Outcome

- Use style sheets to enhance the user interface of a web site.

Cascading Style Sheet

- Cascading Style Sheet (CSS) is a style sheet language used to describe the presentation of a document written in a markup language (e.g. HTML and XHTML).
- CSS is a list of statements (rules) that define colors, fonts, layout, and other aspects to HTML elements.

Why Use Style Sheets?

- It allows much greater degree of layout and display control.
- The amount of format coding necessary to control display characteristics can be greatly reduced.
- It allows multiple styles to be attached to a document at once.
- It also allows for all the style formatting in a document to be changed at once, thus a document can be easily formatted for different purposes (online, brochures, printing, etc.).

Three ways to insert CSS

- External style sheets, i.e. a separate CSS-file referenced from the document
- Embedded style (internal), blocks of CSS information inside the HTML document itself
- Inline style, attaches a style definition within the HTML element it is modifying

Inline Style

- To use inline styles you use the style attribute in the relevant tag. The style attribute can contain any CSS property.

```
<html>
<head>
</head>
<body>
<img src="images\dog1.jpg" style="border-bottom-width:thick;
border-bottom-style:solid;border-color:red;" >
</body>
</html>
```

Embedded / internal Style Sheet

- An internal style sheet should be used when a single document has a unique style. You define internal styles in the head section of an HTML page, by using the <style> tag

```
<html><head>
<style type="text/css">
.border{
border-bottom-width:thick;
border-bottom-style:double;
border-bottom-color:red;
}
</style></head>
```

```
<body>
<img src="images\dog1.jpg"
class="border" >
</body>
</html>
```

External Style Sheet

- An external style sheet is ideal when the style is applied to many pages. With an external style sheet, you can change the look of an entire Web site by changing one file. Each page must link to the style sheet using the <link> tag. The <link> tag goes inside the head section

```
<html>
<head>
<link rel="stylesheet" type="text/css"
href="externalstyle.css"/>
</head>
<body>
<img src="images\dog1.jpg" class="border" >
</body>
</html>
```

```
.border{
border-bottom-width:thick;
border-bottom-style:double;
border-bottom-color:red;
}
```

Externalstyle.css

Cascading order

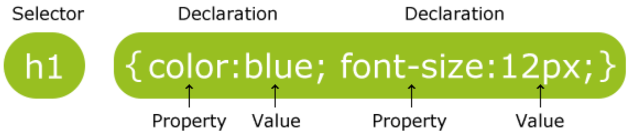
- What style will be used when there is more than one style specified for an HTML element? (multiple style sheets)

1. Inline style (inside an HTML element)
2. Internal style sheet (in the head section)
3. External style sheet
4. Browser default

Defining a Style

- CSS style definitions follow the format given below:

selector_expression {
element_property: property_value(s);
element_property: property_value(s);
…
}

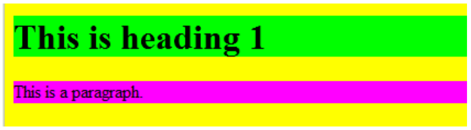


- The ***selector_expression*** is an expression that can be used to match specific elements (HTML elements/tags) in the document; the ***element_property*** specifies which properties of the element the definition will affect, and each property can take a value. The property and value are separated by a colon, and surrounded by curly braces.

Example Code

```
<html>
<head>
<style type="text/css">
body
{
background-color:yellow;
}
h1
{
background-color:#00ff00;
}
p
{
background-
color:rgb(255,0,255);
}
</style>
</head>

<body>
<h1>This is heading 1</h1>
<p>This is a paragraph.</p>
</body>
</html>
```

Example -view



This is heading 1

This is a paragraph.

Property Values and Units

CSS supports the following metrics for property values :

- CSS keywords and other properties, such as thin, thick, transparent, ridge, and etc.
- Real-world measures
  - Inches (in)
  - Centimeters (cm)
  - Millimeters (mm)
  - Points (pt) – The points used by CSS2 are equal to 1/72 of an inch
  - Picas (pc) – 1 pica is equal to 12 points
- Screen measures in pixels (px)
- Relational to font size (font size (em) or x-height size (ex))
- Percentages (%)
- Color codes (#rrggbb or rgb(r,g,b))

Property Values and Units

- Angles
  - Degrees (deg)
  - Radians (rad)
- Time values (seconds (s) and milliseconds (ms)) – Used with aural style sheets
- Frequencies (hertz (Hz) and kilohertz (kHz))
  - Used with aural style sheets

Selectors

- Selectors are essentially patterns that enable a user agent to identify what elements get what styles.
  - E.g. “If it is a paragraph tag, give it this style”:

    p { text-indent: 2em; }
- The ways of matching:
  - Matching elements by name
  - Matching using the universal selector
  - Matching elements by class
  - Matching elements by identifier
  - Matching elements by specific attributes

Matching Elements by Name

- Example:
- **h1 { color: green; }**
  - Causes all occurrences of the selector tags (h1) to be formatted with the property/value section of the definition (color: green)
- Multiple selectors
  - Example
  - **h1, h2, h3, h4 { color: green; }**

Matching Using the Universal Selector

- The universal selector (*) can be used to match any element in the document.
- E.g.
  - Match every tag and apply the color red:

    *** { color: red; }**
  - Match any **<ol>** tag that is a descendant of a **<td>** tag, which is a descendant of a **<tr>** tag: **tr td ol { color: red; }**

Matching Elements by Class

- With the class selector you can define different styles for the same type of HTML element.
- Say that you would like to have two types of paragraphs in your document: one right-aligned paragraph, and one center-aligned paragraph. Here is how you can do it with styles:
  - **p.right {text-align: right}**
  - **p.center {text-align: center}**
- You have to use the class attribute in your HTML document:

<p class="right">This paragraph will be rightaligned.</p>

<p class="center">This paragraph will be centeraligned.</p>

Matching Elements by Class

- To apply more than one class per given element, the syntax is:

<p class="center bold"> This is a paragraph. </p>

The paragraph above will be styled by the class "center" AND the class "bold".

- You can also omit the tag name in the selector to define a style that will be used by all HTML elements that have a certain class. In the example below, all HTML elements with class="center" will be center-aligned:

.center {text-align: center}

<h1 class="center">This heading will be center-aligned. </h1>

<p class="center">This paragraph will be centeraligned.</ p>

Matching Elements by Identifier

- You can also match element identifiers (the id attribute).To match identifiers, you use the pound sign (#) in the selector as a prefix for the id. E.g.

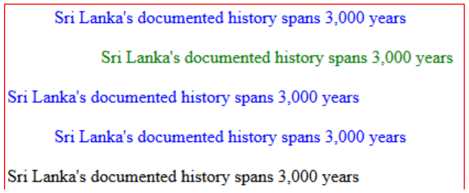
#comment {background-color: green}

…

<p id="comment">This paragraph is a comment.</p>

Example

```
<html>
<head>
<style type="text/css">
p{
color:blue;
text-align:center;
}
#para1
{
text-align:left;
color:green;
}

p.left{text-align:left;}
.center{text-align:center;}
</style>
</head>
<body>
<p>
Sri Lanka's documented history spans 3,000 years
</p>
<p id="para1">
Sri Lanka's documented history spans 3,000 years
<p class="left">
Sri Lanka's documented history spans 3,000 years
</p>
<p class="center">
Sri Lanka's documented history spans 3,000 years
</p>

Sri Lanka's documented history spans 3,000 years
</body> </html>
```



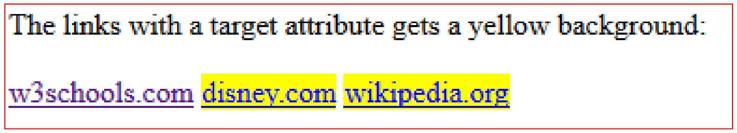
```
          Sri Lanka's documented history spans 3,000 years
                    Sri Lanka's documented history spans 3,000 years
Sri Lanka's documented history spans 3,000 years
          Sri Lanka's documented history spans 3,000 years
Sri Lanka's documented history spans 3,000 years
```

Matching elements by Specific Attributes

- To match any attribute in elements, not just class and id, the attribute and the value(s) have to be specified at the end of the selector, offset in square brackets. E.g.
  - Match any table with a border attribute set to 3, **table[border="3"]**
  - Match any table with a border attribute, **table[border]**
  - Match any table elements with a class value of *datalist* and *border* value of *3*, **table.datalist[border="3"]**

Example

```
<html>
<head>
<style>
a[target] {
  background-color: yellow;
}
</style></head>
<body>
<p>The links with a target attribute gets a yellow background:</p>
<a href="http://www.w3schools.com">w3schools.com</a>
<a href="http://www.disney.com" target="_blank">disney.com</a>
<a href="http://www.wikipedia.org" target="_top">wikipedia.org</a>
</body>
</html>
```



The links with a target attribute gets a yellow background:

w3schools.com disney.com wikipedia.org

Pseudo-classes

- Pseudo classes are identifiers that are understood by user agents and apply to elements of certain types without the elements having to be explicitly styled. E.g. Anchor styles

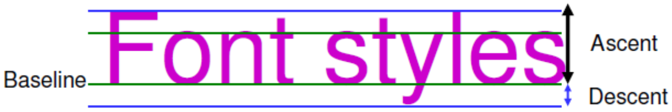
```
<html>
<head>
<style type="text/css">
:link{color:#FF00FF}
:visited{color:#FF00FF}
:active{color:#FF00FF}
</style>
</head>
<body>
<a href="http://www.sliate.ac.lk/"> Visit SLIATE Web </a>
</body>
</html>
```

Fonts

- Fonts are styled collection of letters and symbols. Different fonts can be used to convey different information.
- CSS supports five different font family types:
  - **Serif fonts** They are used in body text; the finishing strokes, flared or tapering ends, or serifed endings, make the lines of characters flow and tend to be easier on the eyes.
  - **Sans serif fonts** They are used for headings or other large areas of emphasis.
  - **Cursive fonts** They are used in extreme cases where emphasis is on ornamentation rather than legibility.
  - **Fantasy fonts** They are used for logos and other ornamentation purposes where legibility is secondary.
  - **Monospace fonts** They are used in code listings and other approximating terminal output.

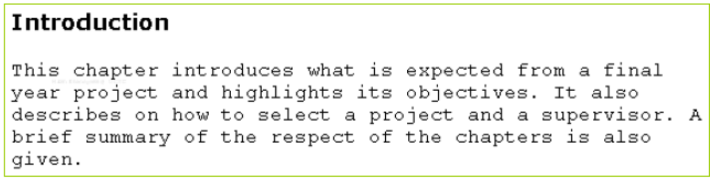
Font Characteristics

- Fonts are mapped according to a system similar to ruled paper.
  - The line that the characters or symbols sit on is called the **baseline**.
  - The distance between the baseline and the top of the highest characters (usually capital letters and lowercase letters such as l, f or t) is known as the **ascension**.
  - The distance between the baseline and the lowest point of characters that dip below it (such as p, g or q) is known as the **descension**.



Defining a Font Family

- The font-family property defines the font or fonts should be used for elements in the document.
- More than one font family names is defined with a generic family name for versatility.



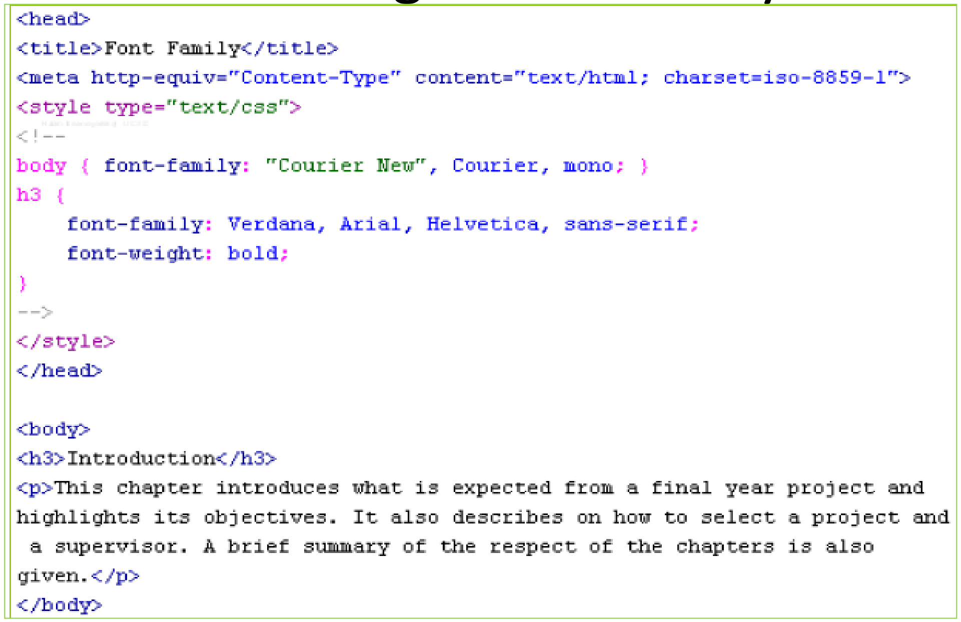
Introduction

This chapter introduces what is expected from a final year project and highlights its objectives. It also describes on how to select a project and a supervisor. A brief summary of the respect of the chapters is also given.

CSS font

- p{font-family:"Times New Roman", Times, serif;}
- p.normal {font-style:normal;}
- p.italic {font-style:italic;}
- p.oblique {font-style:oblique;}
- h1 {font-size:40px;}
  h2 {font-size:30px;}
  p {font-size:14px;}
- h1 {font-size:2.5em;} /* 40px/16=2.5em */
  h2 {font-size:1.875em;} /* 30px/16=1.875em */
  p {font-size:0.875em;} /* 14px/16=0.875em */
- H1{font-weight:normal;}
- H1{font-weight: bold ;}
- H1{font-weight:lighter;}

Defining a Font Family

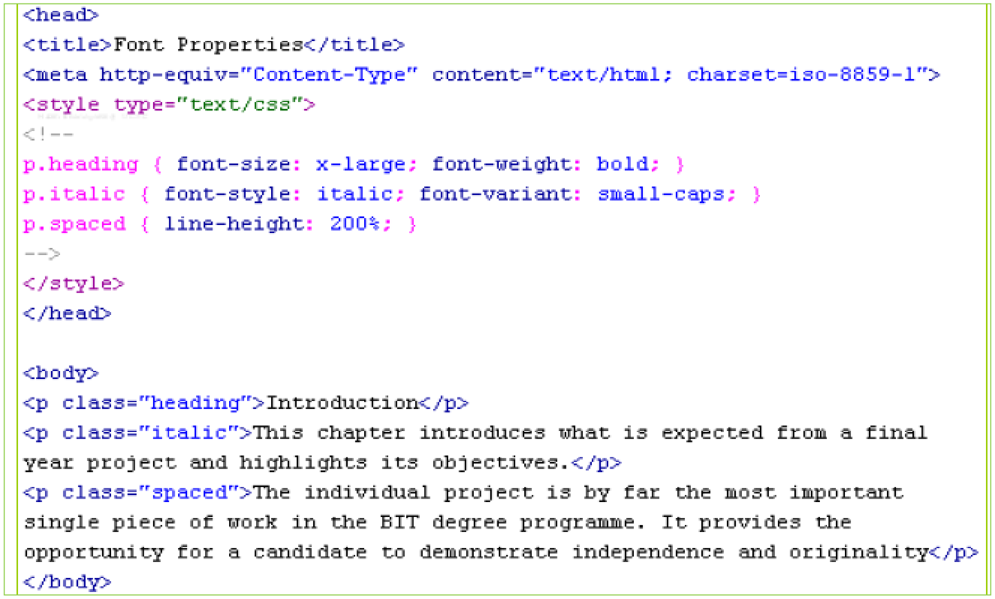


```
<head>
<title>Font Family</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<style type="text/css">
<!--
body { font-family: "Courier New", Courier, mono; }
h3 {
    font-family: Verdana, Arial, Helvetica, sans-serif;
    font-weight: bold;
}
-->
</style>
</head>

<body>
<h3>Introduction</h3>
<p>This chapter introduces what is expected from a final year project and
highlights its objectives. It also describes on how to select a project and
 a supervisor. A brief summary of the respect of the chapters is also
given.</p>
</body>
```

Some Other Font Properties

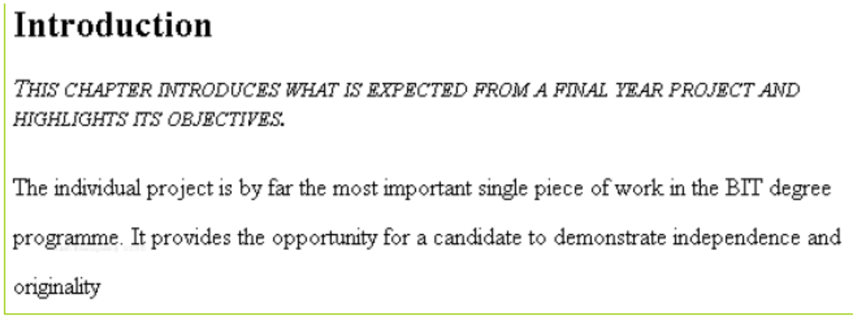
- Font sizing
  - – Two properties can be used to control font sizing: **font-size** and **font-size-adjust**. Both properties can adjust a font absolutely or relative to the current font size.
- Font styling
  - Four properties can be used to affect font styling: **font-style**, **font-variant**, **font-weight**, and **font-stretch.**
- Line spacing
  - The **line-height** property controls the line height of text, i.e. the distance between the baseline of two vertically stacked lines of text.

Example -Code



```
<head>
<title>Font Properties</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<style type="text/css">
<!--
p.heading { font-size: x-large; font-weight: bold; }
p.italic { font-style: italic; font-variant: small-caps; }
p.spaced { line-height: 200%; }
-->
</style>
</head>

<body>
<p class="heading">Introduction</p>
<p class="italic">This chapter introduces what is expected from a final
year project and highlights its objectives.</p>
<p class="spaced">The individual project is by far the most important
single piece of work in the BIT degree programme. It provides the
opportunity for a candidate to demonstrate independence and originality</p>
</body>
```

Example - View



Introduction

THIS CHAPTER INTRODUCES WHAT IS EXPECTED FROM A FINAL YEAR PROJECT AND HIGHLIGHTS ITS OBJECTIVES.

The individual project is by far the most important single piece of work in the BIT degree programme. It provides the opportunity for a candidate to demonstrate independence and originality

Colors

- CSS options for defining colors can entirely replace the color attributes in plain HTML. In addition CSS has the following advantages:
  - In plain HTML, when you wanted to create an area with a specified color, you were forced to create a table. However, with CSS, you can define an area to have a specific color without that area being part of a table.
  - In plain HTML, specially when working with tables, you had to specify font attributes and colors etc. for each and every table cell. However, with CSS you can simply refer to a certain class.

Specifying a Color

- The color value can be expressed using one of three methods:
  - Color keywords
    - blue, black, green, and so on
  - Color hexadecimal values
    - values specified in the form #rrggbb
    - •E.g. #FF0000 for red, #000000 for black
  - – Color decimal or percentage values
    - Values specified using the rgb() function. The value can be an integer between 0 and 255 or a percentage.
    - E.g. rgb(100, 0, 100), rgb(50%, 0, 50%)

Specifying a Color

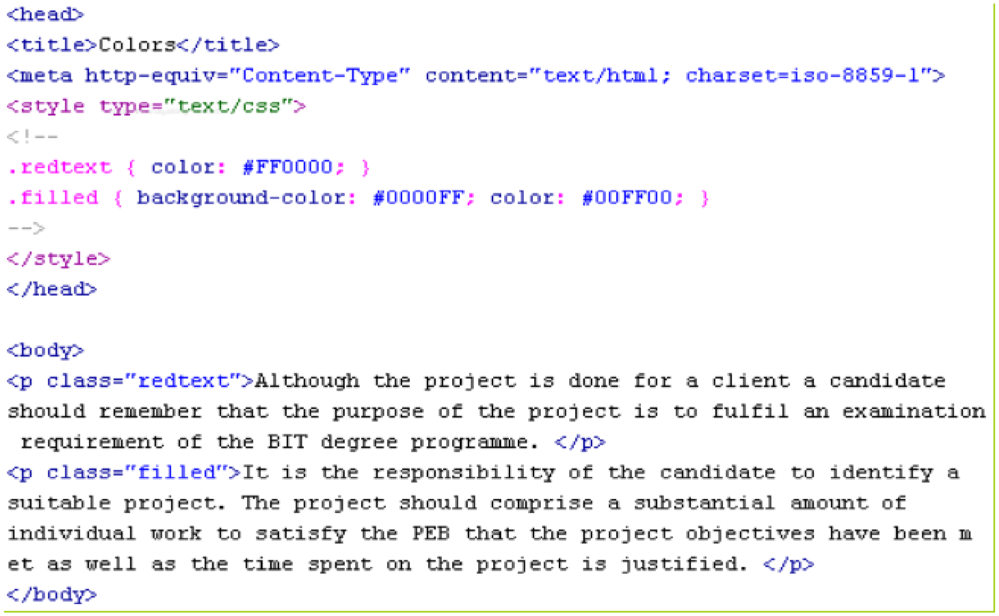
- Most elements in a HTML document have two color properties: a foreground color and a background color.
  - Setting the foreground color for contents

    color: <color_value>;
  - Setting the background color for an area

    background-color: <color_value>;
  - Setting a background image to fill out an area

    background-image: url("<url_to_image>");

Example- Code



```
<head>
<title>Colors</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<style type="text/css">
<!--
.redtext { color: #FF0000; }
.filled { background-color: #0000FF; color: #00FF00; }
-->
</style>
</head>

<body>
<p class="redtext">Although the project is done for a client a candidate
should remember that the purpose of the project is to fulfil an examination
 requirement of the BIT degree programme. </p>
<p class="filled">It is the responsibility of the candidate to identify a
suitable project. The project should comprise a substantial amount of
individual work to satisfy the PEB that the project objectives have been m
et as well as the time spent on the project is justified. </p>
</body>
```

CSS Background image -Example

- Body { background-image:url('paper.gif');}
- Body { background-image:url('paper.gif');

  background-repeat:repeat-x;

  }
- Body { background-image:url('paper.gif');

  background-repeat:no-repeat;

  background-position:right top;

  }

CSS Background color-Example

- Body { background-color:#b0c4de;}
- h1 { background-color:red;}
- div { background-color:rgb(255,255,0);}

Text color- Example

- body {color:blue;}
- h1 {color:#00ff00;}
- h2 {color:rgb(255,0,0);}

Text alignment- Example

- h1 {text-align:center;}
  p.date {text-align:right;}
  p.main {text-align:justify;}

Text decoration -Example

- h1 {text-decoration:overline;}
- h2 {text-decoration:line-through;}
- h3 {text-decoration:underline;}
- h4 {text-decoration:blink;}
- a{text-decoration:none;}

Text Transformation

- p.uppercase {text-transform:uppercase;}
- p.lowercase {text-transform:lowercase;}
- p.capitalize {text-transform:capitalize;}

Text Indentation

- P{text-indent:50px;}

CSS Lists -Example

- ul.a {list-style-type: circle;}
- ul.b {list-style-type: square;}
- ol.c {list-style-type: upper-roman;}
- ol.d {list-style-type: lower-alpha;}
- ul
  {
  list-style-image: url('sqpurple.gif');
  }

Values for Unordered Lists

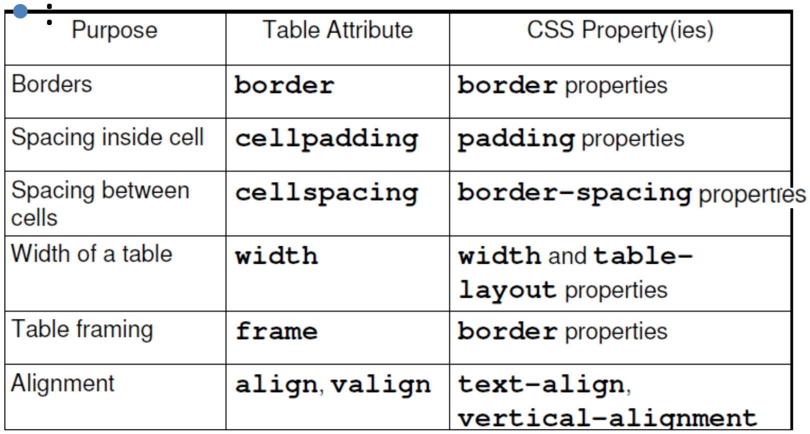
Value	Description
none	No marker
disc	Default. The marker is a filled circle
circle	The marker is a circle
square	The marker is a square

Values for Ordered Lists

Value	Description
armenian	The marker is traditional Armenian numbering
decimal	The marker is a number
decimal-leading-zero	The marker is a number padded by initial zeros (01, 02, 03, etc.)
georgian	The marker is traditional Georgian numbering (an, ban, gan, etc.)
lower-alpha	The marker is lower-alpha (a, b, c, d, e, etc.)
lower-greek	The marker is lower-greek (alpha, beta, gamma, etc.)
lower-latin	The marker is lower-latin (a, b, c, d, e, etc.)
lower-roman	The marker is lower-roman (i, ii, iii, iv, v, etc.)
upper-alpha	The marker is upper-alpha (A, B, C, D, E, etc.)
upper-latin	The marker is upper-latin (A, B, C, D, E, etc.)
upper-roman	The marker is upper-roman (I, II, III, IV, V, etc.)

Tables

CSS properties available for table attributes:



Purpose	Table Attribute	CSS Property(ies)
Borders	`border`	`border` properties
Spacing inside cell	`cellpadding`	`padding` properties
Spacing between cells	`cellspacing`	`border-spacing` properties
Width of a table	`width`	`width` and `table-layout` properties
Table framing	`frame`	`border` properties
Alignment	`align`, `valign`	`text-align`, `vertical-alignment`

Table-Examples

-
  ```
  table, th, td
  {
  border: 1px solid black;
  }
  ```

-
  ```
  td
  {
  text-align:right;
  }
  ```

-
  ```
  td
  {
  height:50px;
  vertical-align:bottom;
  }
  ```

-
  ```
  td
  {
  padding:15px;
  }
  ```

-
  ```
  th
  {
  background-color:green;
  color:white;
  }
  ```

CSS Border- Example

-
  ```
  p.one
  {
  border-style:solid;
  border-width:5px;
  }
  ```

-
  ```
  p.two
  {
  border-style:solid;
  border-width:medium;
  }
  ```

-
  ```
  p.one
  {
  border-style:solid;
  border-color:red;
  }
  ```

-
  ```
  p.two
  {
  border-style:solid;
  border-color:#98bf21;
  }
  ```

-
  ```
  p
  {
  border-top-style:dotted;
  border-right-style:solid;
  border-bottom-style:dotted;
  border-left-style:solid;
  }
  ```

CSS Margin- Examples

-
  ```
  margin-top:100px;
  margin-bottom:100px;
  margin-right:50px;
  margin-left:50px;
  ```

CSS Margin- Examples

- The margin property can have from one to four values.
- **margin:25px 50px 75px 100px;**
  - top margin is 25px
  - right margin is 50px
  - bottom margin is 75px
  - left margin is 100px
- **margin:25px 50px 75px;**
  - top margin is 25px
  - right and left margins are 50px
  - bottom margin is 75px
- **margin:25px 50px;**
  - top and bottom margins are 25px
  - right and left margins are 50px
- **margin:25px;**
  - all four margins are 25px

CSS Padding - Examples

- padding-top:25px;
- padding-bottom:25px;
- padding-right:50px;
- padding-left:50px;

CSS Padding - Examples

- The padding property can have from one to four values.
- **padding:25px 50px 75px 100px;**
  - top padding is 25px
  - right padding is 50px
  - bottom padding is 75px
  - left padding is 100px
- **padding:25px 50px 75px;**
  - top padding is 25px
  - right and left paddings are 50px
  - bottom padding is 75px
- **padding:25px 50px;**
  - top and bottom paddings are 25px
  - right and left paddings are 50px
- **padding:25px;**
  - all four paddings are 25px

HNDIT1022 – Web Design

Week 6: Understanding the CSS Box Model and Positioning

Subtopics

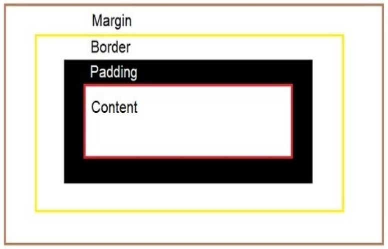
- Conceptualize CSS box model
- How to position elements
- Use CSS to do more with lists, text and navigations

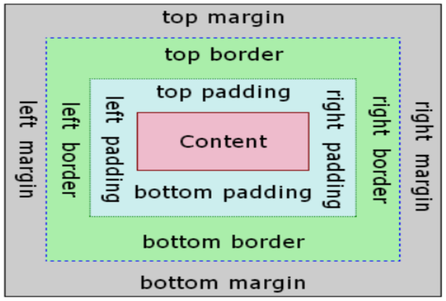
What is CSS Box Model?

All HTML elements can be considered as boxes. In CSS, the term “box model” is used when talking about design and layout.

The CSS box model is essentially a box that wraps around every HTML element. It consists of margins, borders, padding, and the actual content.

The image below illustrates the box model:





Contd..

- ➢ The CSS Box Model defines the layout of HTML block elements such as divisions (<div>s) and paragraphs (<p>s). It does not apply to inline elements (<span>s, anchors (<a>s), and a bunch of others).

- ➢ Every block element is laid out (by the browser) as a rectangular box with four parts (boxes). The innermost part (box) is the content (or content box) which is surrounded by padding (or padding box). The border (or border box) encloses the padding; the outermost part is the margin (margin box).
- ➢ The padding is used to specify the amount of spacing surrounding the content within the border box, while the margin is used to specify the spacing separating the element from its surroundings.
- ➢ For screen display, padding and margin are normally specified in pixels.

Contd..

Explanation of the different parts:

Content - The content of the box, where text and images appear
Padding - Clears an area around the content. The padding is transparent
Border - A border that goes around the padding and content
Margin - Clears an area outside the border. The margin is transparent

Width and Height of an Element

When you set the width and height properties of an element with CSS, you just set the width and height of the **content area**.
To calculate the full size of an element, you must also add padding, borders and margins.

Contd..

The total width of an element should be calculated like this:

Total element width = width + left padding + right padding + left border + right border + left margin + right margin

The total height of an element should be calculated like this:

Total element height = height + top padding + bottom padding + top border + bottom border + top margin + bottom margin

By default (if no width is set), a block element takes up the whole width of the browser window and is resized when the browser window is resized. The element's height (if no height is set) adjusts to accommodate its content (the user may have to scroll).

Contd..

Example :

This <div> element will have a total width of 350px:

```
div {
  width: 300px;
  padding: 20px;
  border: 5px solid gray;
  margin: 0;
}
```

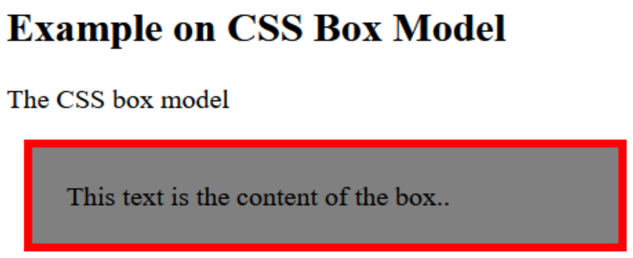
Here is the calculation:

300px (width)
+ 40px (left + right padding)
+ 10px (left + right border)
+ 0px (left + right margin)
= 350px

Exercise 1

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  background-color: grey;
  width: 300px;
  border: 5px solid red;
  padding: 20px;
  margin: 10px;
}
</style>
</head>
<body>
<h2>Example on CSS Box Model</h2>
<p>The CSS box model</p>
<div>This text is the content of the box..</div>
</body>
</html>
```

Output



Example on CSS Box Model

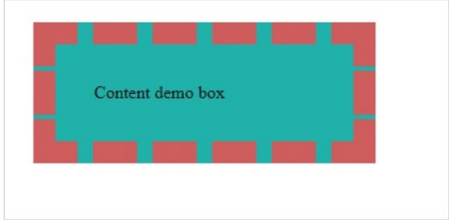
The CSS box model

This text is the content of the box..

Exercise 2

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  margin: 25px;
  padding: 35px;
  width: 200px;
  background-color:
lightseagreen;
  border: 20px dashed
indianred;
}
</style>
</head>
```

```
<body>
<div>
Content box<br/>
</div>
</body>
</html>
```



Content demo box

CSS Layout - The position Property

The position property specifies the type of positioning method used for an element

There are five different position values:

- static
- relative
- fixed
- absolute
- sticky

Elements are then positioned using the top, bottom, left, and right properties. However, these properties will not work unless the position property is set first. They also work differently depending on the position value.

Position : static

HTML elements are positioned static by default.

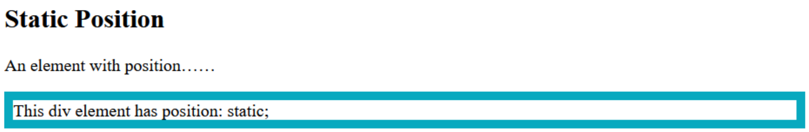
Static positioned elements are not affected by the top, bottom, left, and right properties.

An element with position static is not positioned in any special way, it is always positioned according to the normal flow of the page

Exercise 3

```
<!DOCTYPE html>
<html>
<head>
<style>
div.static {
  position: static;
  border: 8px solid #08a9bf;
}
</style>
</head>
```

```
<body>
<h2>Static Position</h2>
<p>An element with
position……</p>
<div class="static">
This div element has position:
static;
</div>
</body>
</html>
```



Static Position

An element with position……

This div element has position: static;

Position : relative

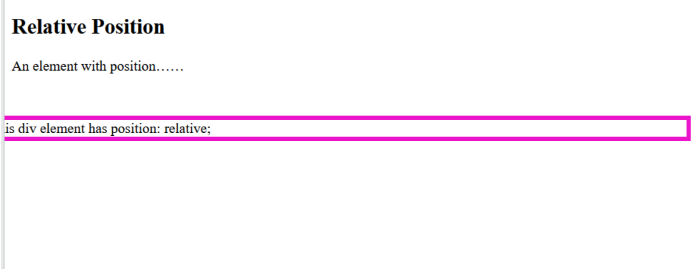
An element with position relative is positioned relative to its normal position.

Setting the top, right, bottom, and left properties of a relatively-positioned element will cause it to be adjusted away from its normal position. Other content will not be adjusted to fit into any gap left by the element.

Exercise 4

```
<!DOCTYPE html>
<html>
<head>
<style>
div.relative {
  position: relative;
 top: 30px;
 right: 50px;
  border: 5px solid #eb14ca;
}
</style>
</head>
```

```
<body>
<h2>Relative Position</h2>
<p>An element with
position……</p>
<div class=“relative">
This div element has position:
relative;
</div>
</body>
</html>
```



Relative Position

An element with position……

is div element has position: relative;

Position : fixed

An element with position fixed is positioned relative to the viewport, which means it always stays in the same place even if the page is scrolled. The top, right, bottom, and left properties are used to position the element.

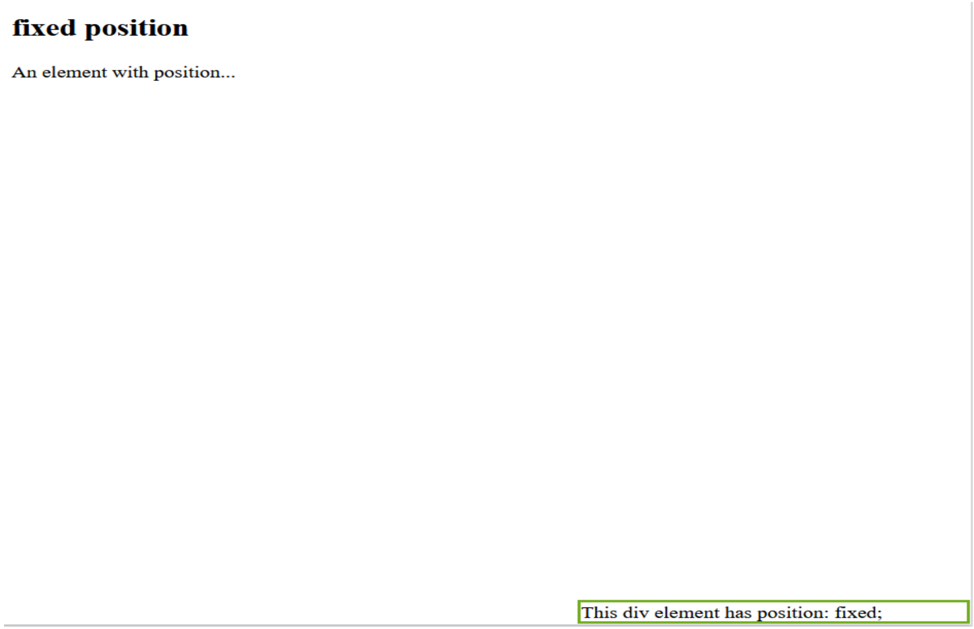
A fixed element does not leave a gap in the page where it would normally have been located.

Exercise 5

```
<!DOCTYPE html>
<html>
<head>
<style>
div.fixed {
  position: fixed;
  bottom: 0;
  right: 0;
  width: 300px;
  border: 3px solid #73AD21;
}
</style>
</head>
```

```
<body>
<h2>fixed position</h2>
<p>An element with
position...</p>
<div class="fixed">
This div element has position:
fixed;
</div></body>
</html>
```

Contd…



fixed position

An element with position...

This div element has position: fixed;

Position : absolute

An element with position: absolute; is positioned relative to the nearest positioned ancestor (instead of positioned relative to the viewport, like fixed).

However; if an absolute positioned element has no positioned ancestors, it uses the document body, and moves along with page scrolling.

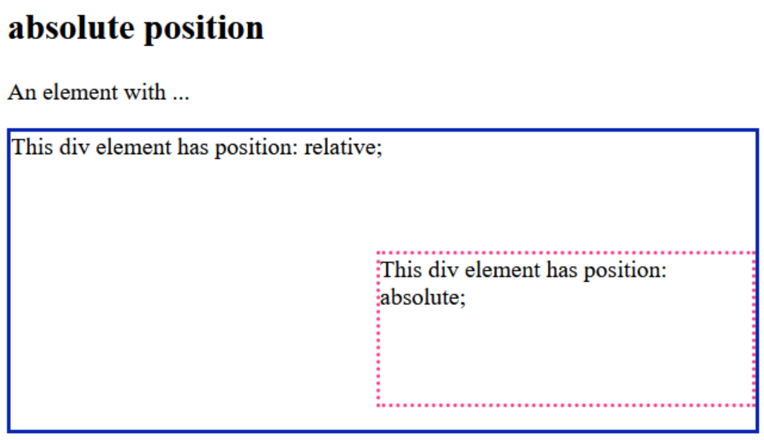
Note: Absolute positioned elements are removed from the normal flow, and can overlap elements.

Exercise 6

```
<!DOCTYPE html>
<html>
<head>
<style>
div.relative {
  position: relative;
  width: 500px;
  height: 200px;
  border: 3px solid #0a27b3;
}
div.absolute {
  position: absolute;
  top: 80px;
  right: 0;
  width: 250px;
  height: 100px;
  border: 3px dotted #f83e90;
}
</style>
</head>
```

```
<body>

<h2>absolute position</h2>

<p>An element with ...</p>

<div class="relative">This div element
has position: relative;
  <div class="absolute">This div
element has position: absolute;</div>
</div>

</body>
</html>
```

Contd…



absolute position

An element with ...

This div element has position: relative;

This div element has position: absolute;

Position : sticky

An element with position sticky is positioned based on the user's scroll position.

A sticky element toggles between relative and fixed, depending on the scroll position. It is positioned relative until a given offset position is met in the viewport - then it "sticks" in place (like position : fixed).

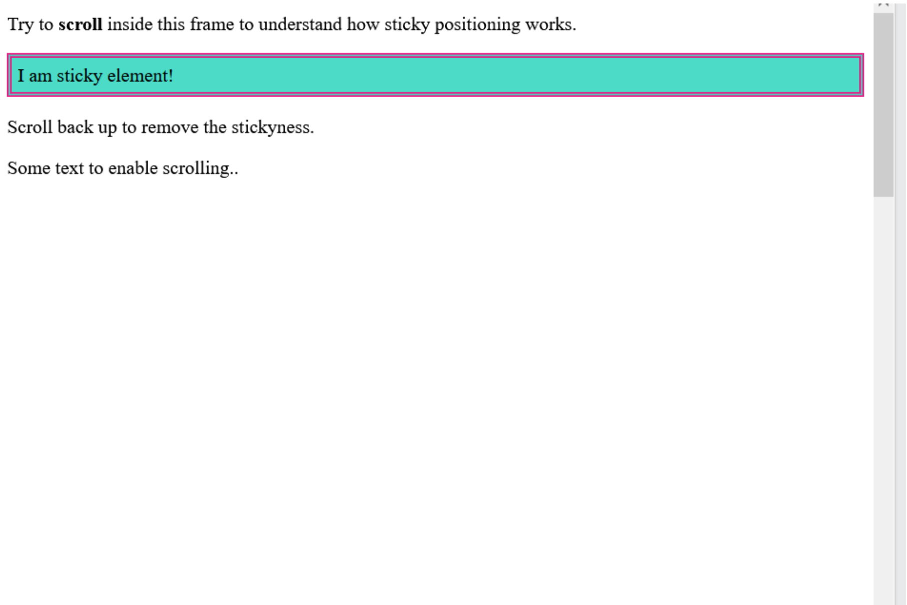
Note: *Internet Explorer does not support sticky positioning. Safari requires a -webkit- prefix (see example below). You must also specify at least one of top, right, bottom or left for sticky positioning to work.*

Exercise 7

```
<!DOCTYPE html>
<html>
<head>
<style>
div.sticky {
  position: -webkit-sticky;
  position: sticky;
  top: 0;
  padding: 5px;
  background-color: #4bdbc7;
  border: 4px double #f10d7f;
}
</style>
</head>
```

```
<body>

<p>Try to <b>scroll</b> inside this
frame to understand how sticky
positioning works.</p>

<div class="sticky">I am sticky
element!</div>

<div style="padding-bottom:2000px">
  <p></p>
  <p>Scroll back up to remove the
stickyness.</p>
  <p>Some text to enable
scrolling..</p>

</div>

</body>
</html>
```

Contd…



Try to **scroll** inside this frame to understand how sticky positioning works.

I am sticky element!

Scroll back up to remove the stickyness.

Some text to enable scrolling..

HNDIT1022 – Web Design

Week 7: understanding dynamic web sites and introduction to photoshop

Subtopics

- What are dynamic web sites
- Introduction to the photoshop

Resizing &cropping image Photo retouching

What is a STATIC WEBSITE ?

- Any Site that has fixed content usually written in html code.
- Every page will have the Code written separately, just as you see it on the web.
- Every page has to be saved separately on the server.
- Changes have to be made manually every time, and you need coding knowledge to make any and all changes.

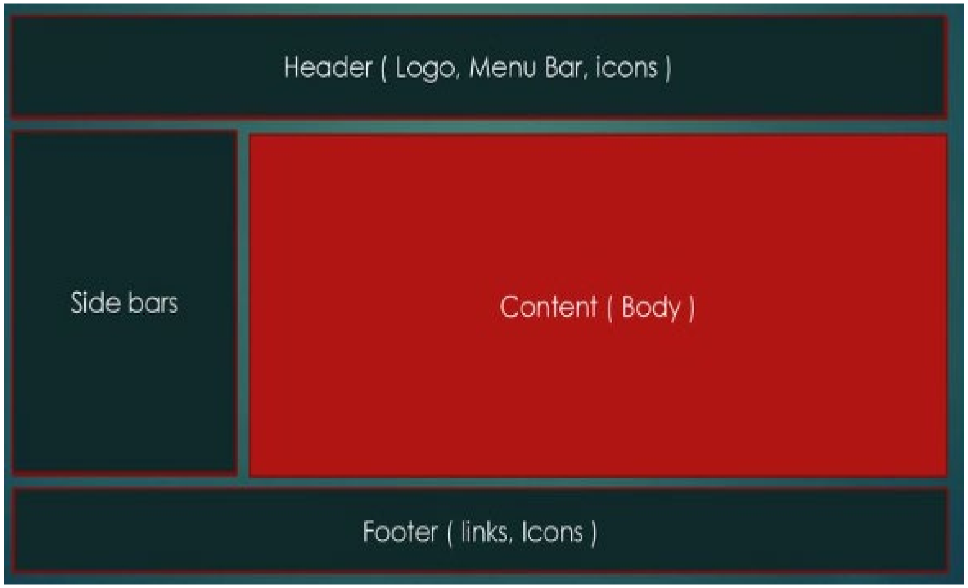
Advantages & Disadvantages of STATIC Websites

Advantages	Disadvantages (Cons)
Easy to develop	Requires web development expertise to update site
Cheap to develop	Changes and updates are very time consuming
Cheap to host	Site not as useful for the user
	Content can get stagnant
	OUT OF DATE!!

DYNAMIC WEBSITE

- A site whose construction is controlled by an application server processed by server-side scripts. Pages of the website are not coded and saved separately.
- The design/template (look and feel) is saved separately.
- Corresponding content are saved separately.
- The pages are dynamically populated every time.

Website Structure



Header (Logo, Menu Bar, icons)

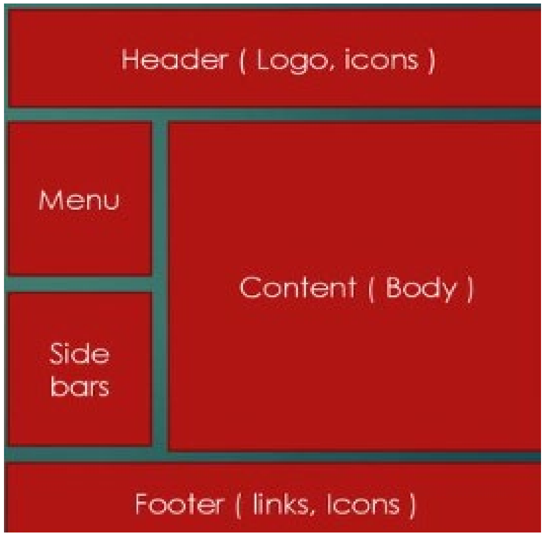
Side bars

Content (Body)

Footer (links, Icons)

A DYNAMIC Website Structure

A request to view a page will Dynamically populate the different sections of the site according to a template file
Header
Menu
Content
Side bars
Footer



Header (Logo, icons)

Menu

Side bars

Content (Body)

Footer (links, Icons)

Advantages & Disadvantages of DYNAMIC websites

Advantages

- Much more functional website
- Much easier to update
- Much Easier to add new content/pages
- New content brings people back to the site and helps in the search engines
- Can work as a system to allow staff or users to collaborate
- It provides the attractive look.
- It is useful for E-commerce sites.
- It provide a clear and the well-organized look.

Disadvantages

- More expensive to develop
- Slower to develop
- Hosting costs a little more (This might not be true now, because of great shared web hosting plans these days)

Static Website Vs Dynamic Website

Static Website

- It is used the HTML code to develop a website.
- Flexibility is the important in the static website.
- The same content webpage load in the website .

Dynamic Website

- It is used the sever side Scripting language .
- CMS is the important in the dynamic website.
- The content is generate quickly.
- CMS-**content management system**

HNDIT1022 – Web Design

Week 8 & 9: understanding Java Scripts programming

Subtopics

- What is scripting
- How scripting and programming are differing
- How to include java script commands into web page

  Functions and build in functions
- How objects use in java scripts Responding to events
- Conditional statements and looping
- Syntax rules avoid errors
- Adding comments

Contd…

- What is scripting
- Name and declare variables
- Assign variable
- Use variables and literal expressions
- Create arrays of numbers and strings
- How event handlers related to objects

Characteristics of Client-side Scripting

- Client-side scripts can modify the pages at runtime, and therefore, they also falls under the heading of DHTML (dynamic HTML).
- Client-side scripts have greater access to the information and functions available on the user's computer, whereas for server-side scripts its for the server.
- Client-side scripts require that the user's web browser understand the scripting language in which they are written.

Some Uses of Client-side Scripting

- **Form verification**
  - Client-side scripts can parse form data prior to the data being submitted to a handler on the server, ensuring that there are no obvious errors (missing or improperly formatted data).
- **Document animation and automation**
  - Accessing element data and properties via the DOM, client-side scripts can affect changes in elements' content, appearance, size, position, and so forth.
- **Basic document intelligence**
  - Client-side scripts can embed a base level of intelligence to the document by linking elements to scripts via events (mouse clicks, key presses, and so on).

Client-side Scripting Languages

- JavaScript
- JScript
- VBScript
- ActionScript
- AJAX

JavaScript

- JavaScript was created in 1996 by the Netscape team and released with Netscape 2.0.
- The parsing of a document is available through Document Object Model (DOM), a method to access document links, anchors, forms and form objects, and other objects.

Browser Compatibility

- When creating a web page, it is required to account for the possibility that viewers will be using browsers of various versions from various vendors, for instance,
  - Navigator 2, 3, 4, 6 and above
  - Internet Explorer 3, 4, 5, 5.5, 6 and above
  - Opera 3, 4, 5 and above
  - Platforms, such as, Windows 98, Windows NT, the Macintosh, RedHat Linux and SunOS5
- Typically JavaScript is used to handle complex browser incompatibilities with subtle differences in rendering code

Incorporating JavaScript into a Document

- There are two main methods for inserting scripts into a HTML document:
  - Enclosing the script within script **(<script>)** tags

    <script language="JavaScript" type="text/JavaScript">

    //Script code here

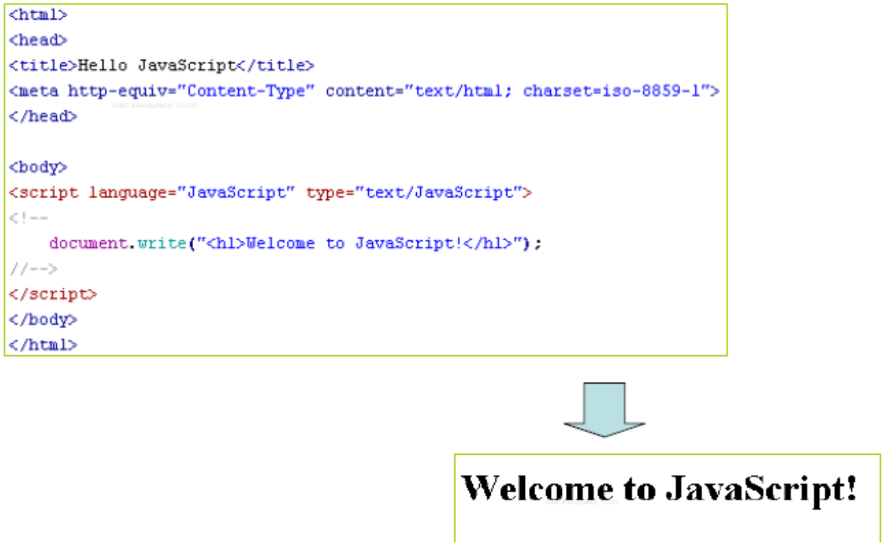
    </script>
  - Use an external script file

    <script language="JavaScript" src="simple.js" type="text/javascript"></script>

Some Notes on JavaScript Incorporation

- Usually the script tag is placed within the **<head>** section.
  - –The browser which interprets the document executes the **<head>** section before displaying the **<body>** section. Therefore, it ensure that the script is loaded before anyone uses it.
- Practically the script tag can be placed anywhere within the document
  - By placing the script tag within the **<body>** section, the script can write directly to the web page.

Example



```
<html>
<head>
<title>Hello JavaScript</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

<body>
<script language="JavaScript" type="text/JavaScript">
<!--
    document.write("<h1>Welcome to JavaScript!</h1>");
//-->
</script>
</body>
</html>
```

Welcome to JavaScript!

Basic JavaScript Syntax

- All code should appear within appropriate constructs, namely between <script> tags or within event attributes.
- With few exceptions, code lines should end with a semicolon (;). Notable exceptions to this rule are lines that end in a block delimiter ({ or }).
- Blocks of code (usually under control structures such as functions, if statements, and so on) are enclosed in braces ({ and }).
- Although it is not absolutely necessary, explicit declaration of all variables is a good idea.
- The use of functions to delimit code fragments is recommended; it increases the ability to execute those fragments independently from one another and encourages reuse of code.
- Comments can be inserted in JavaScript code by prefixing the comment with a double-slash (/ /) for single line or surrounding the comment with / * and * / pairs for multiline.

Data Types and Variables

- JavaScript is a loosely typed language
  - It is not needed to specify the data type of a variable when you declare it, and data types are converted automatically as needed during script execution.
- Declaring a variable
  - Explicitly declare using the var statement

    E.g. **var a;**

    var x = 20, name = “ATIKU”;
  - Implicit declaration without using var statement

    E.g. **x = 20, name = “ATIKU”;**

Data Types and Variables

- JavaScript variables are case sensitive

  E.g. name = “Nimal”;

  Name = “Saman”;

  // two different variables
- JavaScript variables have global scope unless they are declared within a function to have local scope.

Data Types and Variables

- JavaScript supports the following data types:
  - Integers: decimal, hexadecimal or octal

    E.g. **x = 23; // decimal**

    y = 04; // octal

    z = 0xAF; // hexadecimal
  - Floating-point numbers

    E.g. **x = 2.314; y = 3.4e-2;**
  - Booleans: true or false

    E.g. **x = true; y = 10 < 9;**

Data Types and Variables

- Strings

E.g

```
x = “This is a message”;
y = “The answer is \n 34”;
```

- Special characters

(see the table)

Character	Meaning
\b	Backspace
\n	Line space
\t	Horizontal Tab
\v	Vertical Tab
\’	Single Quote
\”	Double Quote
\\	Backslash

Data Types and Variables

- Arrays

E.g.

```
Months = new Array(“Jan”, “Feb”, “Mar”, “Apr”);
Days = new Array(2);
Days[0]=12; Days[1]=23;
```

- Objects

E.g. `today = new Date;`

Expressions

- An expression is any valid set of literals, variables, operators, and expressions that evaluates to a single value.
- The value may be a number, a string, or a logical value.
- There are two types of expressions:
  - those that assign a value to a variable

    E.g. **x = 3;**
  - those that simply have a value

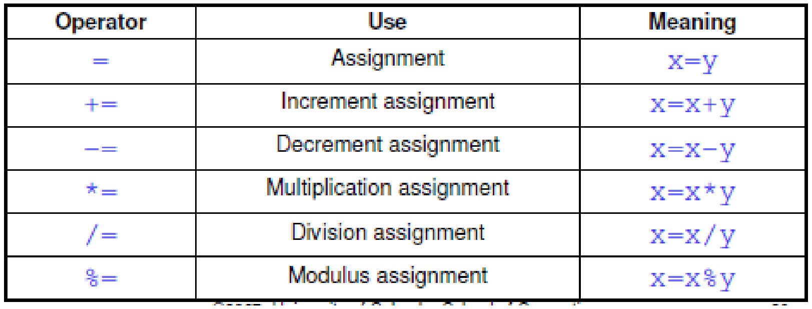
    E.g. **3 + 8;**

Operators

- JavaScript supports the standard operators for numbers and strings. The following is an outline of JavaScript operators:
  - Assignment operators
  - Arithmetic operators
  - Comparison operators
  - Logical operators
  - Bitwise operators
  - String operators

Assignment Operators

- An assignment operator assigns a value to its left operand based on the value of its right operand.
- E.g. `x = 23;`



Operator	Use	Meaning
=	Assignment	x=y
+=	Increment assignment	x=x+y
-=	Decrement assignment	x=x-y
*=	Multiplication assignment	x=x*y
/=	Division assignment	x=x/y
%=	Modulus assignment	x=x%y

Arithmetic Operators

- Arithmetic operators take numerical values (either literals or variables) as their operands and return a single numerical value.

Operator	Description	Example
+	Addition	4+5 returns 9
-	Subtraction	5-2 returns 3
*	Multiplication	5*4 returns 20
/	Division	5/2 returns 2.5
%	Modulus (division remainder)	5%2 returns 1 10%2 returns 0
++	Increment	x++ means x = x + 1
--	Decrement	x-- means x = x - 1

Comparison Operators

- A comparison operator compares its operands and returns a logical value based on whether the comparison is true or not.

Operator	Description	Example
==	Is equal to	5==8 returns false
===	Exactly equal to (checks for both value and type)	If x=5 and y="5“, x==y returns true x===y returns false
!=	Is not equal to	5!=8 returns true
>	Is greater than	5>8 returns false
<	Is less than	5<8 returns true
>=	Is greater than or equal to	5>=8 returns false
<=	Is less than or equal to	5<=8 returns true

Logical operators

- Logical operators return a Boolean value.
- Let x = 6 and y = 3,

Operator	Description	Example
&&	And	(x < 10 && y > 1) returns true
||	Or	(x==5 || y==5) returns false (x==5 || y==3) returns true
!	Not	!(x==y) returns true

Bitwise Operators

- Bitwise operators treat their operands as a set of bits (zeros and ones), rather than as decimal, hexadecimal, or octal numbers.

Operator	Use	Example
&	Bitwise AND	9&5 returns 1 (1001 AND 0101 = 0001)
|	Bitwise OR	9|5 returns 13 (1001 OR 0101 = 1101)
^	Bitwise XOR	9^5 returns 12 (1001 XOR 0101 = 1100)
~	Bitwise NOT	~4294967295 returns 0 (32 zeros)
<<	Left shift	5<<2 returns 20 (00101 becomes 10100)
>>	Right shift	13>>2 returns 3 (1101 becomes 0011)
>>>	Zero fill right shift	Similar to >>, but does not reverse the sign.

String Operators

- In addition to the comparison operators, which may be used on string values, the concatenation operator (+) concatenates two string values together, returning another string that is the union of the two operand strings.
- `E.g. “Today is a” + “ nice day”` return `“Today is a nice day”`
- The shorthand assignment operator += can also be used to concatenate strings.
- E.g `message = “Click”;`

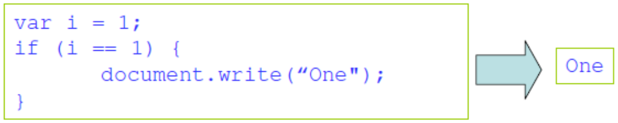
```
message+=“ A”; message+=“ B”;
now message is “Click A B”
```

Control Structures

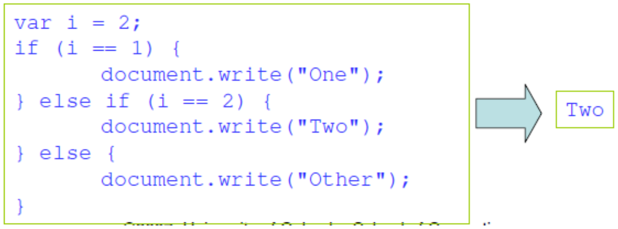
- JavaScript supports the following control structures,
  - If…Else
  - Switch
  - Do…While
  - While
  - For and For…In

If…Else

- The if and if…else constructs execute a block of code depending on the evaluation (true or false) of an expression.
- E.g.



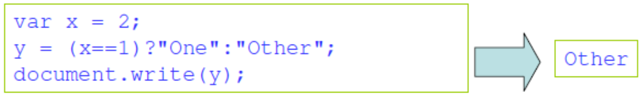
```
var i = 1;
if (i == 1) {
        document.write(“One");
}
```



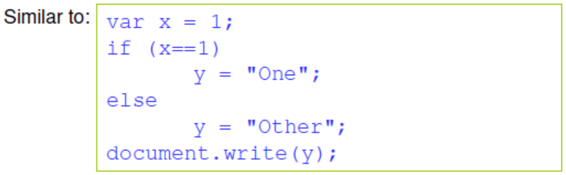
```
var i = 2;
if (i == 1) {
        document.write("One");
} else if (i == 2) {
        document.write("Two");
} else {
        document.write("Other");
}
```

Conditional Operator

- JavaScript also contains a conditional operator that assigns a value to a variable based on some condition.
- E.g.



```
var x = 2;
y = (x==1)?"One":"Other";
document.write(y);
```



Similar to:

```
var x = 1;
if (x==1)
        y = "One";
else
        y = "Other";
document.write(y);
```

Switch

- The switch construct executes specific block(s) of code based on the value of a particular expression.
  - Note: Use break statement to prevent the code from running into the next case automatically.
- E.g.

```
switch (day) {
        case "Mon": {
                document.write("Mon");
                break; }
        case "Tue": {
                document.write("Tue");
                break; }
        default: {
                document.write("Other");     }
}
```

→

```
Tue
```

Do...While

- The do...while loop executes one or more lines of code as long as a specified condition remains true.
- E.g.

```
var i = 0;
do {
        document.write(i);
        i++;
} while (i < 10);
```

→

```
0123456789
```

- Note: Due to the expression being evaluated at the end of the structure, statement(s) in the do...while loop are executed at least once, even if the condition is false.

While

- The while loop executes one or more lines of code while specified expression remains true.
- E.g.

```
var i = 0;
while (i < 10) {
        document.write(i);
        i++;
};
```

→

```
0123456789
```

- Note: Because the expression is evaluated at the beginning of the loop, the statement(s) will not be executed if the expression is false at the beginning.

For and For...In

- The for loop executes statement(s) a specified number of times governed by two expressions and a condition.
- E.g.

```
for (i=1; i<10; i++) {
        document.write(i);
}
```

→

```
123456789
```

- The for...in loop executes statement(s) while assigning a variable to the properties of an object or elements of an array.
- E.g.

```
days = new Array("M","T","W");
for (i in days) {
        document.write(i);
}
```

Break and Continue

- The break command will break the loop and continue executing the code that follows after the loop (if any).
- E.g.

```
for (i=1; i<10; i++) {
        if (i==3) break;
        document.write(i);
}
```

```
12
```

- The continue command will break the current loop and continue with the next value.
- E.g

```
for (i=1; i<10; i++) {
        if (i==3) continue;
        document.write(i);
}
```

```
12456789
```

Labels

- Labels are used to mark statements for reference by other statements in other sections of a script.
- Labels can solve the problem of breaking from a loop that is nested inside another loop.
- E.g.

```
top:
for (i=0; i<5; i++) {
        for (j=0; j<5; j++) {
                if (j==3) break top;
                document.write(j);
        }
}
```

```
012
```

Without the label

```
012012012012012
```

Functions and Procedures

- A function in a JavaScript is a set of statements that performs a specific task (a procedure).
- A function will be executed by an event or by a call to that function.
- Functions can be defined both in the <head> and in the <body> section of a document. However, to assure that the function is read/loaded by the browser before it is called, it could be wise to put it in the <head> section.
- A function can be called from anywhere within the page (or even from other pages if the function is embedded in an external .js file).

Defining and Calling a Function

- A user-defined function has the following syntax:

```
function <function_name> (<list_of_arguments>) {
        …code of the function…
        return <value_to_return>; //optional
}
```

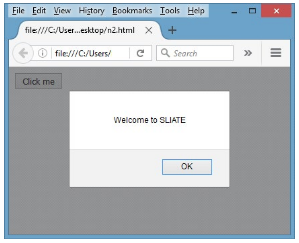
- When calling a function, the argument list should be supplied correctly (should match with the definition):

```
function checklen(text, maxlen) {
      return (text.length<maxlen)?"Ok":"NotOk";
}
document.write(checklen("Hello",4)); //calling
```

```
NotOk
```

Example

```
<html>
<head>
<script language="javascript" type="text/javascript">
function msg()
{
alert("Welcome to SLIATE");
}
</script>
</head>
<body>
<input type="button" onClick="javascript:msg()" value="Click me">
</body>
</html>
```


File Edit View History Bookmarks Tools Help
file:///C:/User...esktop/n2.html
file:///C:/Users/
Search
Click me
OK

Welcome to SLIATE

Built-in Functions

- JavaScript provides few built-in functions for data manipulation. The following table gives some of them:

Function	Use
`alert`	Display a message box to the user, e.g. `alert("Hello")`
`parseInt`	Parses the given argument for a integer number, e.g. `parseInt("23")` returns integer `23`
`String`	Converts the argument to a string, e.g. `String(12)` returns `"12"`
`isFinite`	Test an expression or variable to see if it is a valid number, e.g. `isFinite(1/0)` returns `false`, `isFinite("a"*4)` returns `false`, `isFinite(3*4)` returns `true`

JavaScript Objects

- JavaScript is an object-driven language (not fully object oriented, such as Java).
- JavaScript has several built-in objects.
  - E.g. two specific objects exists for manipulate data: one for performing math operations (Math) on numeric data and another for performing operations on string values (String)
- An object is a collection of properties and methods (functions).
  - Properties are values associated with an object
  - Methods are the actions that can be performed on objects

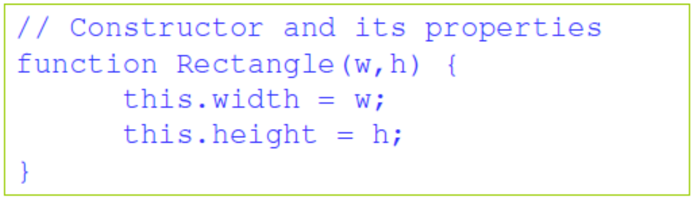
Example

```
<script language="JavaScript" type="text/JavaScript">
<!--
var s = new String("Hello JavaScript"); // String object
document.write(s.length); // length property
document.write("<br>");
document.write(s.toUpperCase()); // toUpperCase() method
//-->
</script>
```

```
16
HELLO JAVASCRIPT
```

User-Defined Objects

- Creation of new, custom objects requires the existence of an object constructor.
- The keyword **this** refers to the current object that called the constructor function.
- E.g. the following function can be used to construct totally new objects of a Rectangle class



```
// Constructor and its properties
function Rectangle(w,h) {
      this.width = w;
      this.height = h;
}
```

Example

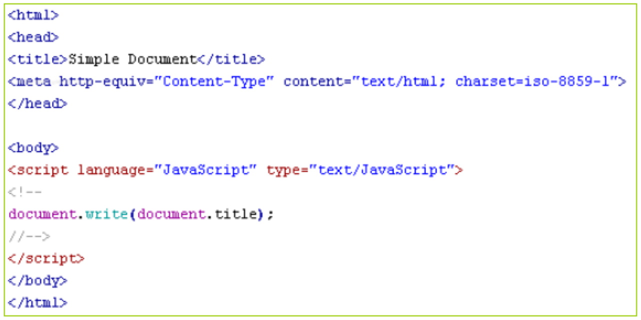
```
<html>
<head>
<script language="JavaScript"
type="text/JavaScript">
function Rect_Area() {
return this.width*this.height; }

function Rect_Perimeter() {
return 2*(this.width+this.height); }

function Rectangle(w,h)
{
this.width=w;
this.height=h;
this.area=Rect_Area;
this.perimeter=Rect_Perimeter;
}
rect=new Rectangle(4,3);
document.write(rect.width);
document.write("<br>");
document.write(rect.area());
</script>
</head>
<body>
</body>
</html>
```

```
4
12
```

Document Object Model

- The DOM is a type of application program interface (API) allowing programming language access to the structure of a web document.
- The HTML DOM is a W3C standard.
  - However, Netscape and Microsoft IE have their own proprietary DOM specifications in addition to W3C DOM.
- Using the DOM interface, all HTML elements, along with their containing text and attributes, can be accessed for modification, deletion or to add new elements.
- The HTML DOM is platform and language independent.
  - It can be used by any programming language like Java, JavaScript, and VBScript.

Example – Retrieving the Title

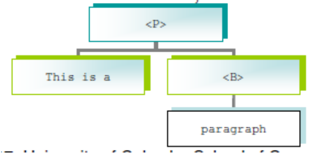


```
<html>
<head>
<title>Simple Document</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

<body>
<script language="JavaScript" type="text/JavaScript">
<!--
document.write(document.title);
//-->
</script>
</body>
</html>
```

```
Simple Document
```

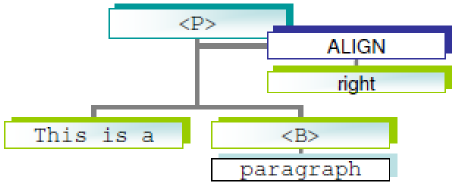
DOM Nodes

- The latest DOM specification (Level 1) is supported by Mozilla and Microsoft IE 5 onwards.
- According to Level 1 DOM, each object, whatever it may be exactly, is a **Node**.
  - E.g. 1. <P>This is a paragraph</P> will create two nodes: an element P and a text node with content 'This is a paragraph'
  - E.g. 2. In <P>This is a <B>paragraph</B></P> the element node P has two children, one of which has a child of its own



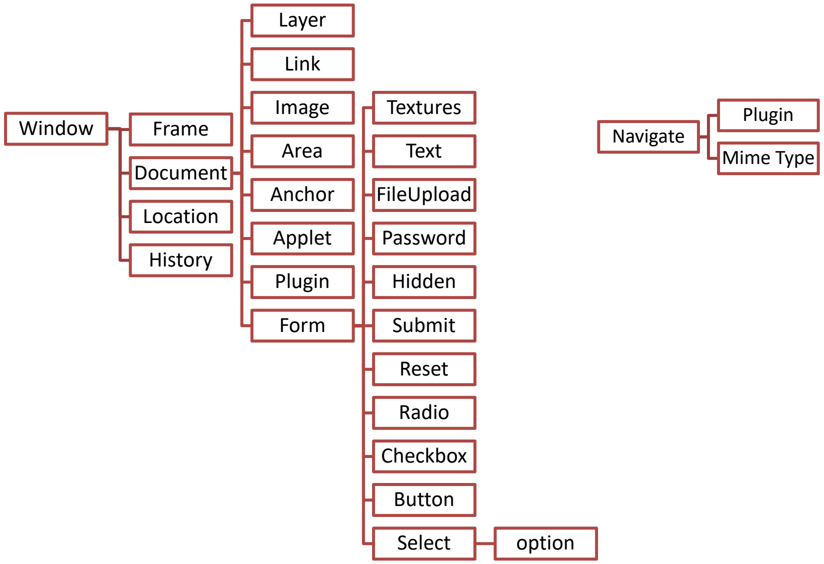
DOM Nodes

- E.g. 3. In <P ALIGN="right">This is a <B>paragraph</B></P> the element node P has an attribute node of ALIGN="right”

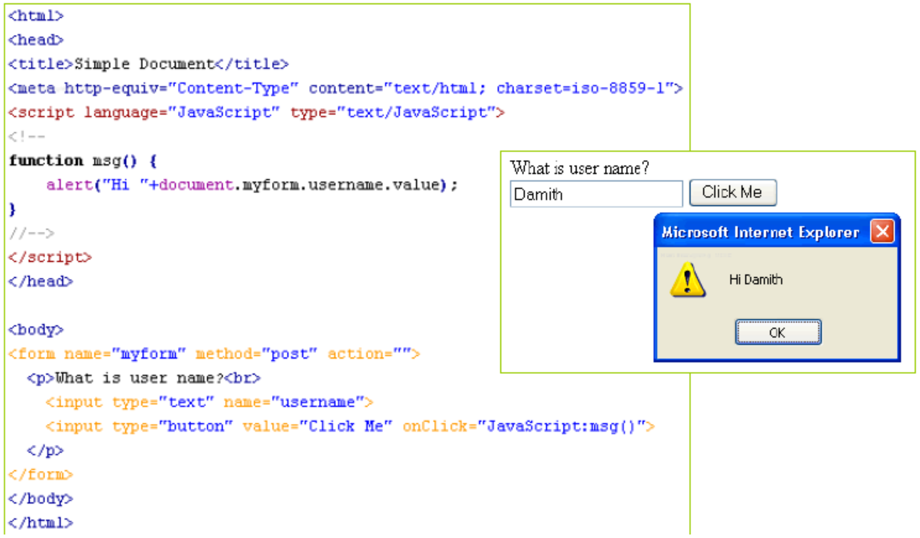


- The element node P also has its own parent, this is usually the document

Netscape DOM



Traversing the DOM



```
<html>
<head>
<title>Simple Document</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<script language="JavaScript" type="text/JavaScript">
<!--
function msg() {
    alert("Hi "+document.myform.username.value);
}
//-->
</script>
</head>

<body>
<form name="myform" method="post" action="">
  <p>What is user name?<br>
    <input type="text" name="username">
    <input type="button" value="Click Me" onClick="JavaScript:msg()">
  </p>
</form>
</body>
</html>
```

What is user name?

Damith

Hi Damith

Some Important Objects

Object	Description
Window	The top level object in the JavaScript hierarchy. The Window object represents a browser window. A Window object is created automatically with every instance of a <body> or <frameset> tag
Navigator	Contains information about the client's browser
Screen	Contains information about the client's display screen
History	Contains the visited URLs in the browser window
Location	Contains information about the current URL

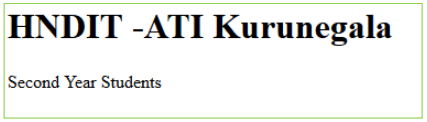
Event Handling

- Events make a web document interactive by responding to user’s actions.
  - E.g. Display a message when you press a button
- JavaScript supports various events, such as, onClick , onKeyPress , and so forth
- Some examples for events:
  - A mouse click
    - A web page or an image loading
    - Moussing over a hot spot on the web page
    - Selecting an input box in an HTML form
    - Submitting an HTML form

Example

```
<html><head>
<script language="JavaScript" type="text/JavaScript">
function highlight(obj) {
obj.style.border="solid blue 4px"
obj.style.backgroundColor="yellow"; }
function normal(obj){
obj.style.border="none none none"
obj.style.backgroundColor="white";  }
</script></head><body>
<h1 onMouseOver="style.color='red'"
onMouseOut="style.color='black'">HNDIT -ATI Kurunegala </h1>
<p id="p1" onMouseOver="JavaScript:highlight(p1)"
onMouseOut="JavaScript:normal(p1)"> Second Year Students</p>
</body></html>
```

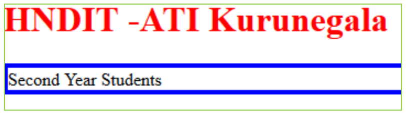
Example



HNDIT -ATI Kurunegala

Second Year Students

Mouse Over Event



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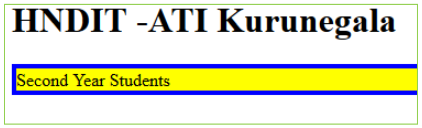
Mouse Over Event



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Second Year Students

Some JavaScript Events

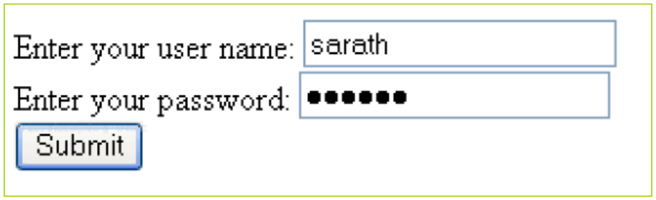
Event	Trigger
onClick	When the object is clicked
onBlur	When the object loses focus
onMouseOver	When the mouse pointer moves within the boundary of an object
onMouseOut	When the mouse pointer moves outside the boundary of an object
onFocus	When an object receives focus
onKeyPress	When the user presses and/or holds down a key
onLoad	When the object is loaded into the user agent
onSubmit	When the user selects a submit button
onReset	When the user selects a reset button

Using JavaScript for Form Validation

- JavaScript can be used to validate input data in HTML forms before sending off the content to a server.
- Form data that typically are checked by a JavaScript could be:
  - has the user left required fields empty?
  - has the user entered a valid e-mail address?
  - has the user entered a valid date?
  - has the user entered text in a numeric field?

Form Validation Example

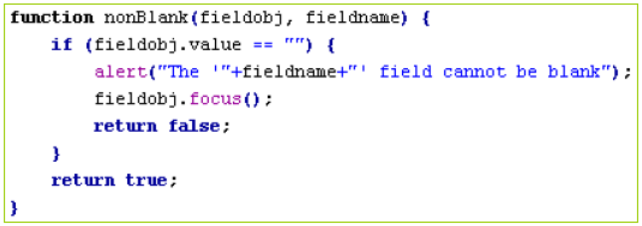
- A form to get user name and password. Validation required to check
  - has the user left required fields empty
  - has the user entered text in correct length



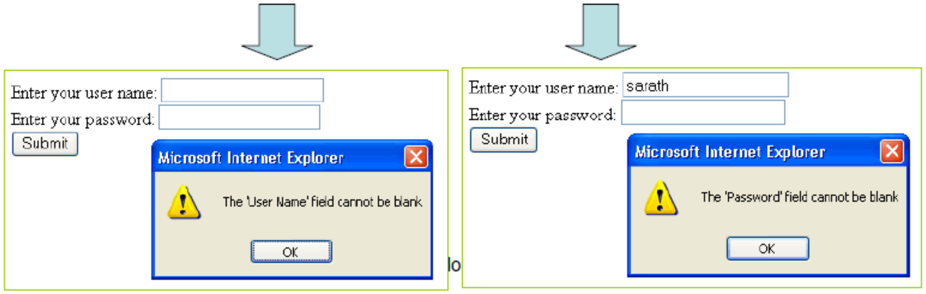
Enter your user name: sarath

Enter your password: ●●●●●●

Checking the Field is Not Blank



```
function nonBlank(fieldobj, fieldname) {
    if (fieldobj.value == "") {
        alert("The '"+fieldname+"' field cannot be blank");
        fieldobj.focus();
        return false;
    }
    return true;
}
```



Enter your user name:

Enter your password:

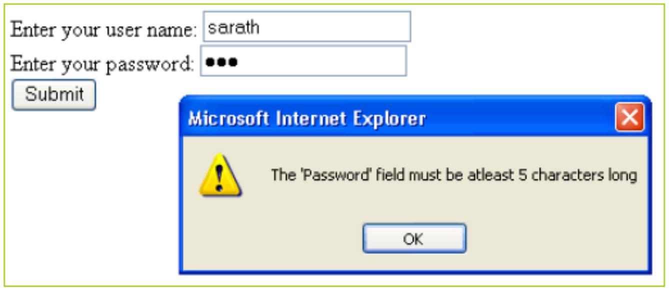
The 'User Name' field cannot be blank

Enter your user name: sarath

Enter your password:

The 'Password' field cannot be blank

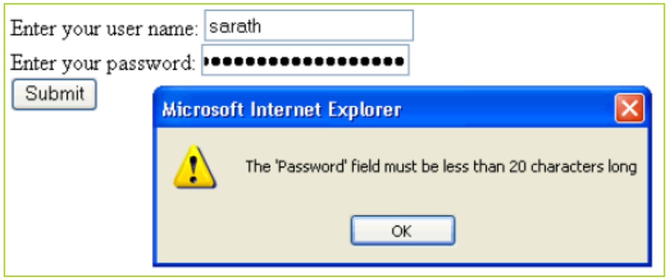
Checking the Field is in Correct Length



Enter your user name: sarath

Enter your password: ●●●

The 'Password' field must be atleast 5 characters long

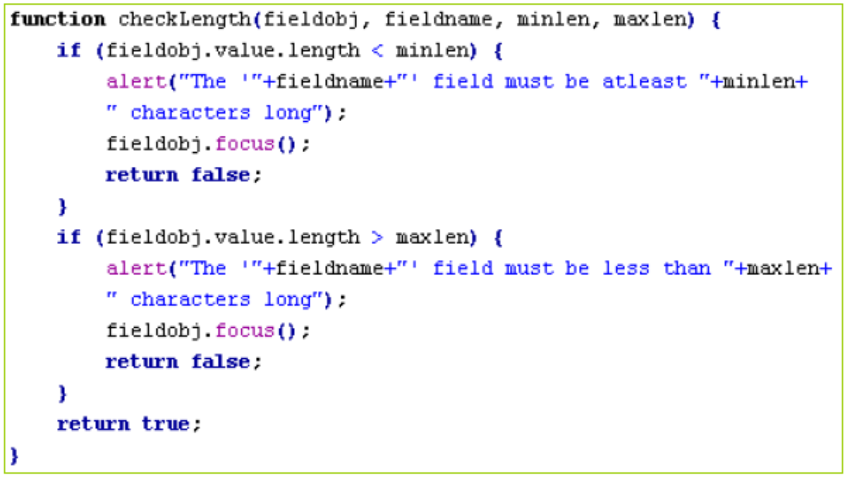


Enter your user name: sarath

Enter your password: ●●●●●●●●●●●●●●●●●●●●

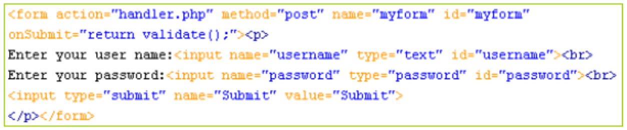
The 'Password' field must be less than 20 characters long

Checking the Field is in Correct Length

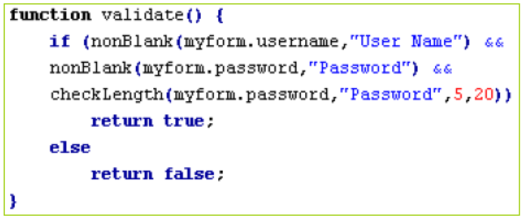


```
function checkLength(fieldobj, fieldname, minlen, maxlen) {
    if (fieldobj.value.length < minlen) {
        alert("The '"+fieldname+"' field must be atleast "+minlen+
        " characters long");
        fieldobj.focus();
        return false;
    }
    if (fieldobj.value.length > maxlen) {
        alert("The '"+fieldname+"' field must be less than "+maxlen+
        " characters long");
        fieldobj.focus();
        return false;
    }
    return true;
}
```

Main Form Handler



```
<form action="handler.php" method="post" name="myform" id="myform"
onSubmit="return validate();"><p>
Enter your user name:<input name="username" type="text" id="username"><br>
Enter your password:<input name="password" type="password" id="password"><br>
<input type="submit" name="Submit" value="Submit">
</p></form>
```



```
function validate() {
    if (nonBlank(myform.username,"User Name") &&
    nonBlank(myform.password,"Password") &&
    checkLength(myform.password,"Password",5,20))
        return true;
    else
        return false;
}
```

HNDIT1022 – Web Design

Week 8, 9 & 10: understanding JavaScript Programming

Subtopics

- What is scripting
- How scripting and programming are different
- How to include java script commands into web page

  Functions and build in functions
- How objects use in java scripts Responding to events
- Conditional statements and looping
- Syntax rules avoid errors
- Adding comments

Contd…

- Name and declare variables
- Assign variable
- Use variables and literal expressions
- Create arrays of numbers and strings
- How event handlers related to objects
- Create new window with java script
- How to build frameset
- Link between frames and windows
- Use JavaScript to work with frames

What is scripting?

- As the name suggest, it’s all about giving the script to perform some certain task.
- Scripting languages are basically the subcategory of programming languages which is used to give guidance to another program or we can say to control another program, so it also involves instructions.
- It basically connects one language to one another languages and doesn’t work standalone.
- Scripting languages need to be interpreted (Scanning the code line by line, not like compiler in one go) instead of compiled.

Contd…

- When it comes to making a website or application coding involves basically three types of languages i.e the programming language, Scripting Language and Markup Language.

Programming VS Scripting

A programming language is a computer language that is used to communicate with computers using a set of instructions.	A scripting language is a type of programming language designed for a runtime system to automate the execution of tasks.
It is compiled language or compiler-based language.	It is interpreted language or interpreter-based language
It is used to develop an application or software from scratch.	It is used to combine existing components and automate a specific task.
It runs or executes independently and does not depend on the parent (exterior) program.	It runs or executes inside another program.
It uses a compiler to convert source code into machine code.	It uses an interpreter to convert source code into machine code.
As it uses a compiler, hence the complete program is converted into machine code in one shot.	As it uses an interpreter, hence the program is converted into machine code line by line.
These languages are required to be compiled.	There is no need for compilation.
It is comparatively difficult to write code in a programming language, and it requires numerous lines of code for each task.	It is comparatively easy to write code in the scripting language, and it requires few lines of code for each task.
The development time in programming languages is high as more lines are required.	The development time in a scripting language as a smaller number of lines are required.
There is the high maintenance cost.	There is less maintenance cost.
All programming languages are not scripting languages	All scripting languages are programming languages
It generates a .exe file.	It does not create a .exe file.
Usually, programming languages do not support or provide very little support for user interface designing, data types, and graphic designing.	Scripting languages provide great support to user interface design, data types, and graphic design.
Some popular examples are C, C++, Java, Scala, COBOL, etc.	Some popular examples are Perl, Python, JavaScript, etc.

Characteristics of Client-side Scripting

Client-side scripts can modify the pages at runtime, and therefore, they also falls under the heading of DHTML (dynamic HTML).
Client-side scripts have greater access to the information and functions available on the user's computer, whereas for server-side scripts its for the server.
Client-side scripts require that the user's web browser understand the scripting language in which they are written.

Some Uses of Client-side Scripting

Form verification

Client-side scripts can parse form data prior to the data being submitted to a handler on the server, ensuring that there are no obvious errors (missing or improperly formatted data).

Document animation and automation

Accessing element data and properties via the DOM, client-side scripts can affect changes in elements’ content, appearance, size, position, and so forth.

Basic document intelligence

Client-side scripts can embed a base level of intelligence to the document by linking elements to scripts via events (mouse clicks, key presses, and so on).

Client-side Scripting Languages

- JavaScript
- JScript
- VBScript
- ActionScript
- AJAX

JAVA SCRIPT

Introduction

JavaScript is a object-based scripting language and it is light weighted.

It is first implemented by Netscape (with help from Sun Microsystems).

JavaScript was created by **Brendan Eich** at Netscape in 1995 for the purpose of allowing code in web-pages (performing logical operation on client side).

It is not compiled but translated. JavaScript Translator is responsible to translate the JavaScript code which is embedded in browser.

Where it is used?

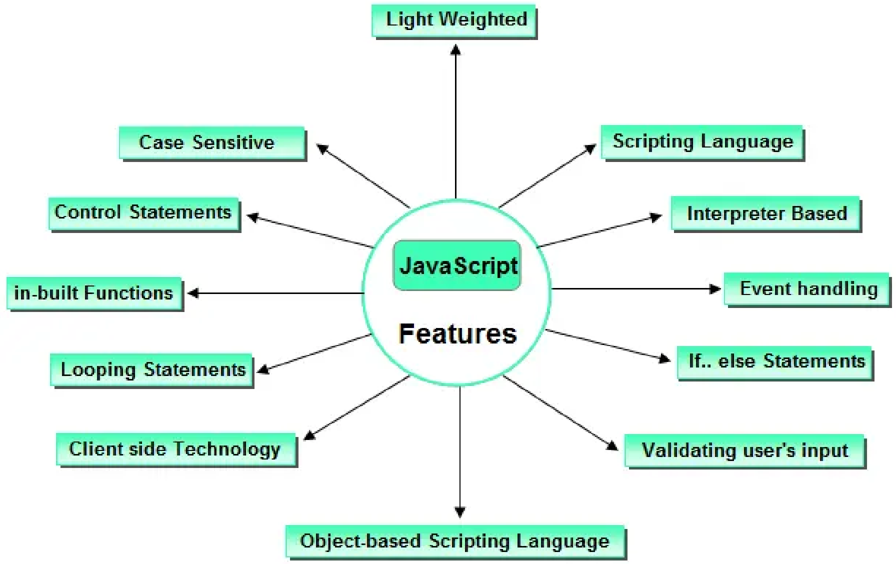
It is used to create interactive websites.

It is mainly used for:

- Client-side validation
- Dynamic drop-down menus
- Displaying date and time
- Build small but complete client side programs .
- Displaying popup windows and dialog boxes (like alert dialog box, confirm dialog box and prompt dialog box)
- Displaying clocks etc.

Features of JavaScript

JavaScript is a client side technology, it is mainly used for gives client side validation, but it have lot of features which are given below;



JavaScript Features

Light Weighted

Scripting Language

Interpreter Based

Event handling

If.. else Statements

Validating user's input

Object-based Scripting Language

Client side Technology

Looping Statements

in-built Functions

Control Statements

Case Sensitive

Way of Using JavaScript

There are three places to put the JavaScript code.

- Between the <body> </body> tag of html (Inline JavaScript)
- Between the <head> </head> tag of html (Internal JavaScript)
- In .js file (External JavaScript)

How to Put a JavaScript Into an HTML Page?

```
<html>
<body>
<script type="text/javascript">
document.write("Hello World!")
</script>
</body>
</html>
```

- Inline JavaScript
- When java script was written within the html element using attributes related to events of the element then it is called as inline java script.
- Example of Inline JavaScript
- **Example How to use JavaScript**

```
<html> <form> <input type="button"
value="Click" onclick="alert('Button Clicked')"/>
</form> </html>
```

- Output: Click

Internal JavaScript

- When java script was written within the section using element then it is called as internal java script.
- **Example of Internal JavaScript**

```
<html>
 <head>
<script>
function msg()
{ alert("Welcome in JavaScript"); }
 </script>
</head>
 <form>
<input type="button" value="Click" onclick="msg()"/>
</form>
 </html>
```

- Output: click

External JavaScript

- Writing java script in a separate file with extension .js is called as external java script. For adding the reference of an external java script file to your html page, use tag with src attribute as follows
- **Example**

```
<script type="text/javascript" src="filename.js"/>
```

- Create a file with name functions.js and write the following java script functions in it.
- **message.js**
- **Example**

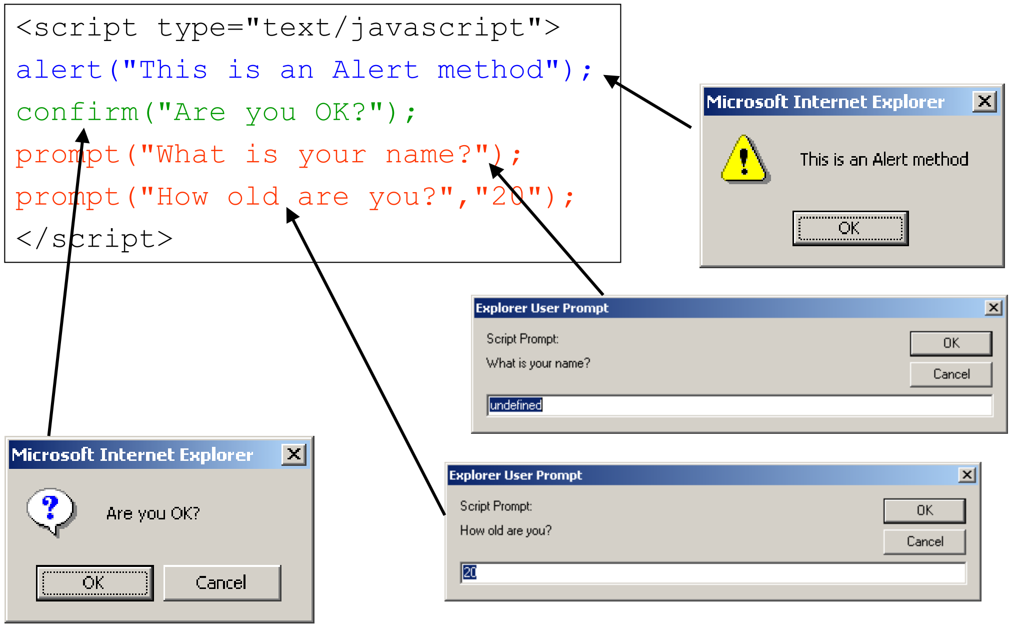
```
function msg() { alert("Welcome in JavaScript"); }
```

- Example

```
<html>
<head>
<script type="text/javascript" src="message.js">
</script>
 </head>
<body>
<form>
<input type="button" value="click" onclick="msg()"/>
 </form>
</body>
 </html>
```

- output:

alert(), confirm(), and prompt()



```
<script type="text/javascript">
alert("This is an Alert method");
confirm("Are you OK?");
prompt("What is your name?");
prompt("How old are you?","20");
</script>
```

alert() and confirm()

```
alert("Text to be displayed");
```

- Display a message in a dialog box.
- The dialog box will block the browser.

```
var answer = confirm("Are you sure?");
```

- Display a message in a dialog box with two buttons: "OK" or "Cancel".
- `confirm()` returns `true` if the user click "OK". Otherwise it returns `false`.

prompt()

```
prompt("What is your student id number?");
prompt("What is your name?”, "No name");
```

- Display a message and allow the user to enter a value
- The second argument is the "default value" to be displayed in the input textfield.
- Without the default value, "undefined" is shown in the input textfield.

- If the user click the "OK" button, **`prompt()`** returns the value in the input textfield as a string.
- If the user click the "Cancel" button, **`prompt()`** returns null.

Identifier

- Same as Java/C++ except that it allows an additional character – '$'.

- Contains only 'A' – 'Z', 'a' – 'z', '0' – '9', '_', '$'
- First character cannot be a digit
- Case-sensitive
- Cannot be reserved words or keywords

Variable and Variable Declaration

```
<head><script type="text/javascript">
  // We are in the default scope – the "window" object.
  x = 3;      // same as "window.x = 3"
  var y = 4;  // same as "y = 4" or "window.y = 4"

  {  // Introduce a block to creat a local scope
     x = 0;       // Same as "window.x = 0"
     var y = 1;   // This is a local variable y
  }

  alert("x=" + x + ", y=" + y);  // Print x=0, y=4

</script></head>
```

- Local variable is declared using the keyword 'var'.
- Dynamic binding – a variable can hold any type of value
- If a variable is used without being declared, the variable is created automatically.
  - If you misspell a variable name, program will still run (but works incorrectly)

Data Types

- Primitive data types
  - Number: integer & floating-point numbers
  - Boolean: true or false
  - String: a sequence of alphanumeric characters

- Composite data types (or Complex data types)
  - Object: a named collection of data
  - Array: a sequence of values (an array is actually a predefined object)

- Special data types
  - Null: the only value is "null" – to represent nothing.
  - Undefined: the only value is "undefined" – to represent the value of an unintialized variable

Strings

- A string variable can store a sequence of alphanumeric characters, spaces and special characters.

- Each character is represented using 16 bit
  - You can store Chinese characters in a string.

- A string can be enclosed by a pair of single quotes (') or double quote (").

- Use escaped character sequence to represent special character (e.g.: `\"`, `\n`, `\t`)

typeof operator

```
var x = "hello", y;
alert("Variable x value is " + typeof x );
alert("Variable y value is " + typeof y );
alert("Variable x value is " + typeof z );
```

- An unary operator that tells the type of its operand.
  - Returns a string which can be "number", "string", "boolean", "object", "function", "undefined", and "null"
  - An array is internally represented as an object.

Operators

- Arithmetic operators
  - +, -, *, /, %
- Post/pre increment/decrement
  - ++, --
- Comparison operators
  - ==, !=, >, >=, <, <=
  - ===, !== (Strictly equals and strictly not equals)
    - i.e., Type and value of operand must match / must not match

== vs ===

```
// Type conversion is performed before comparison
var v1 = ("5" == 5);    // true

// No implicit type conversion.
// True if only if both types and values are equal
var v2 = ("5" === 5);   // false

var v3 = (5 === 5.0); // true

var v4 = (true == 1); // true (true is converted to 1)

var v5 = (true == 2); // false (true is converted to 1)

var v6 = (true == "1") // true
```

Logical Operators

- **!** – Logical NOT
- **&&** – Logical AND
  - **`OP1 && OP2`**
  - If OP1 is true, expression evaluates to the value of OP2. Otherwise the expression evaluates to the value of OP1.
  - Results may not be a boolean value.
- **||** – Logical OR
  - **`OP1 || OP2`**
  - If OP1 is true, expression evaluates to the value of OP1. Otherwise the expression evaluates to the value of OP2.

```
var tmp1 = null && 1000;        // tmp1 is null

var tmp2 = 1000 && 500;         // tmp2 is 500

var tmp3 = false || 500;        // tmp3 is 500

var tmp4 = "" || null;          // tmp4 is null

var tmp5 = 1000 || false;       // tmp5 is 1000


// If foo is null, undefined, false, zero, NaN,
// or an empty string, then set foo to 100.
foo = foo || 100;
```

Operators Contd …

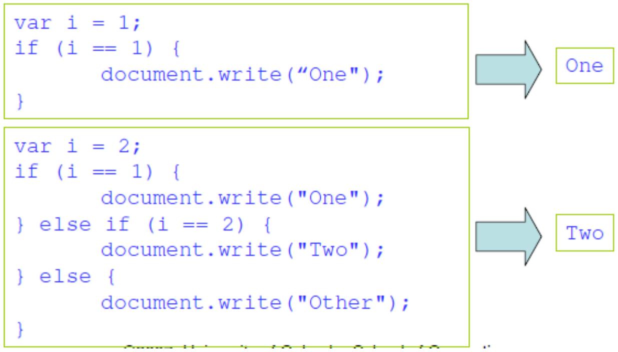
- String concatenation operator
  - **+**
  - If one of the operand is a string, the other operand is automatically converted to its equivalent string value.
- Assignment operators
  - **=, +=, -=, *=, /=, %=**
- Bitwise operators
  - **&, |, ^, >>, <<, >>>**

Control Structures

- JavaScript supports the following control structures,
  - If…Else
  - Switch
  - Do…While
  - While
  - For and For…In

If…Else

- The if and if…else constructs execute a block of code depending on the evaluation (true or false) of an expression.
- E.g.

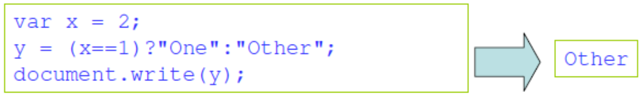


```
var i = 1;
if (i == 1) {
        document.write(“One");
}
```

```
var i = 2;
if (i == 1) {
        document.write("One");
} else if (i == 2) {
        document.write("Two");
} else {
        document.write("Other");
}
```

Conditional Operator

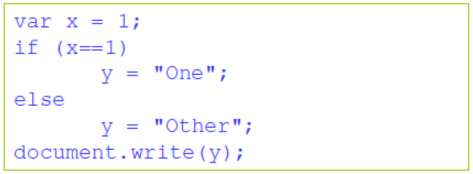
- JavaScript also contains a conditional operator that assigns a value to a variable based on some condition.
- E.g.



```
var x = 2;
y = (x==1)?"One":"Other";
document.write(y);
```

```
Other
```

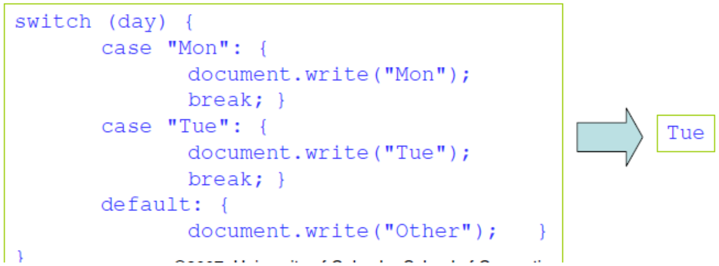
Similar to:



```
var x = 1;
if (x==1)
        y = "One";
else
        y = "Other";
document.write(y);
```

Switch

- The switch construct executes specific block(s) of code based on the value of a particular expression.
  - Note: Use break statement to prevent the code from running into the next case automatically.
- E.g.

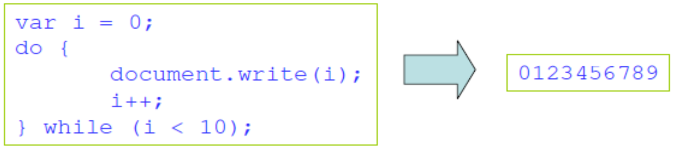


```
switch (day) {
      case "Mon": {
            document.write("Mon");
            break; }
      case "Tue": {
            document.write("Tue");
            break; }
      default: {
            document.write("Other");    }
}
```

```
Tue
```

Do…While

- The do…while loop executes one or more lines of code as long as a specified condition remains true.
- E.g.



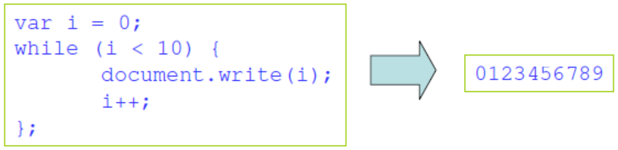
```
var i = 0;
do {
        document.write(i);
        i++;
} while (i < 10);
```

```
0123456789
```

- Note: Due to the expression being evaluated at the end of the structure, statement(s) in the do…while loop are executed at least once, even if the condition is false.

While

- The while loop executes one or more lines of code while specified expression remains true.
- E.g.



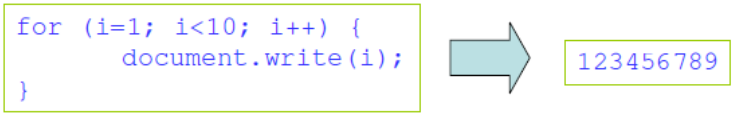
```
var i = 0;
while (i < 10) {
        document.write(i);
        i++;
};
```

```
0123456789
```

- Note: Because the expression is evaluated at the beginning of the loop, the statement(s) will not be executed if the expression is false at the beginning.

For and For...In

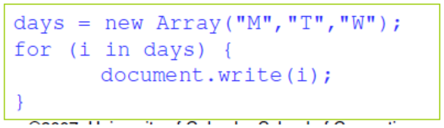
- The for loop executes statement(s) a specified number of times governed by two expressions and a condition.
- E.g.



```
for (i=1; i<10; i++) {
        document.write(i);
}
```

```
123456789
```

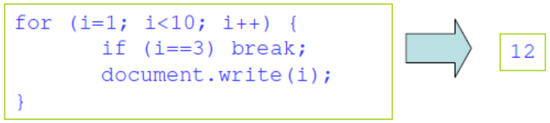
- The for...in loop executes statement(s) while assigning a variable to the properties of an object or elements of an array.
- E.g.



```
days = new Array("M","T","W");
for (i in days) {
        document.write(i);
}
```

Break and Continue

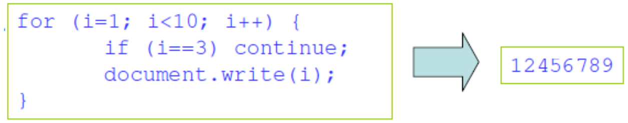
- The break command will break the loop and continue executing the code that follows after the loop (if any).
- E.g.



```
for (i=1; i<10; i++) {
        if (i==3) break;
        document.write(i);
}
```

```
12
```

- The continue command will break the current loop and continue with the next value.
- E.g

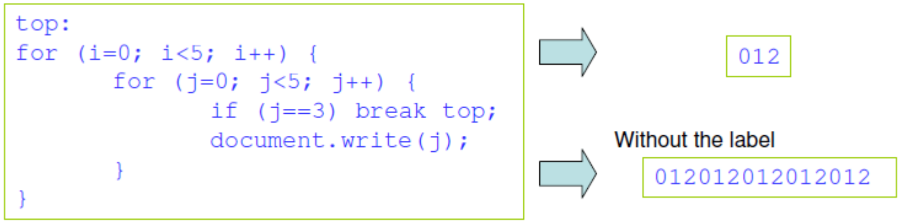


```
for (i=1; i<10; i++) {
        if (i==3) continue;
        document.write(i);
}
```

```
12456789
```

Labels

- Labels are used to mark statements for reference by other statements in other sections of a script.
- Labels can solve the problem of breaking from a loop that is nested inside another loop.
- E.g.



```
top:
for (i=0; i<5; i++) {
        for (j=0; j<5; j++) {
                if (j==3) break top;
                document.write(j);
        }
}
```

```
012
```

Without the label

```
012012012012012
```

Conditional Statements Examples

```
<script>
x=3
if(x<0)
{
alert (“negative”)
}
else
{
alert (“positive”)
}
</script>
```

Conditional Statements Examples Contd…

```
<script>
c=confirm(“Do you read books?”)
if(c)
{
alert (“Good. Keep it up”)
}
else
{
alert (“Shame on you”)
}
</script>
```

Conditional Statements Examples Contd …

```
<script>
p=prompt(“Enter your lucky number?", " ")
if(p=="08")
{
alert(“True")
}
else
{
alert(“False")
}
</script>
```

Functions and Procedures

- A function in a JavaScript is a set of statements that performs a specific task (a procedure).
- A function will be executed by an event or by a call to that function.
- Functions can be defined both in the <head> and in the <body> section of a document. However, to assure that the function is read/loaded by the browser before it is called, it could be wise to put it in the <head> section.
- A function can be called from anywhere within the page (or even from other pages if the function is embedded in an external .js file).

Contd…

```
function name() {
statement ;
statement ;
...
statement ;
}                                                    JS
```

```
function myFunction() {
       alert("Hello!");
       alert("How are you?");
}                                                    JS
```

□ the above could be the contents of example.js linked to our HTML page

□ statements placed into functions can be evaluated in response to user events

Built-In Functions

- **`eval(expr)`**
  - evaluates an expression or statement
    - eval("3 + 4"); // Returns 7 (Number)
    - eval("alert('Hello')"); // Calls the function alert('Hello')

- **`isFinite(x)`**
  - Determines if a number is finite

- **`isNaN(x)`**
  - Determines whether a value is "Not a Number"

Built-In Functions

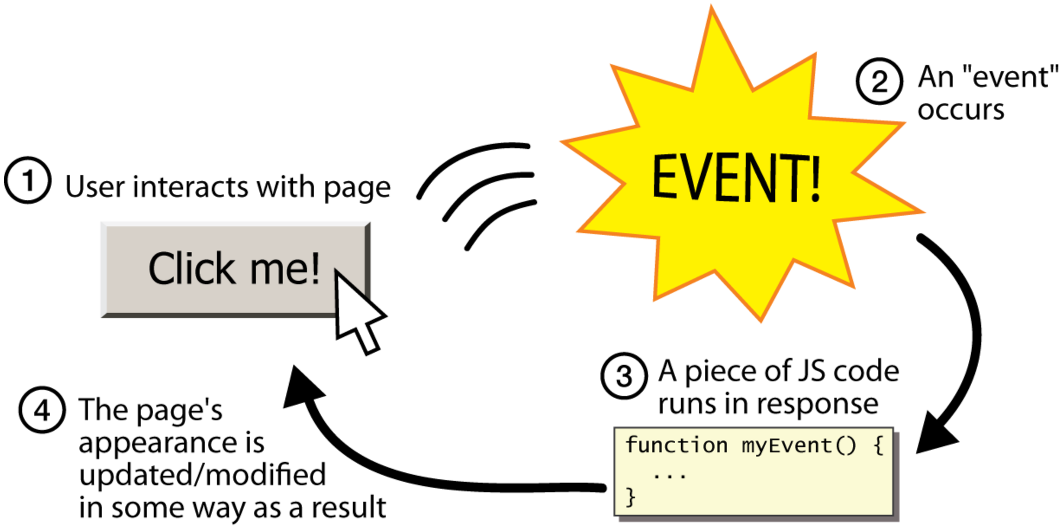
- **`parseInt(s)`**
- **`parseInt(s, radix)`**
  - Converts string literals to integers
  - Parses up to any character that is not part of a valid integer
    - `parseInt("3 chances")          // returns 3`
    - `parseInt("   5 alive")         // returns 5`
    - `parseInt("How are you")        // returns NaN`
    - `parseInt("17", 8)              // returns 15`

- **`parseFloat(s)`**
  - Finds a floating-point value at the beginning of a string.
    - `parseFloat("3e-1 xyz")         // returns 0.3`
    - `parseFloat("13.5 abc")         // returns 13.5`

Events

- An event occurs as a result of some activity
  - e.g.:
    - A user clicks on a link in a page
    - Page finished loaded
    - Mouse cursor enter an area
    - A preset amount of time elapses
    - A form is being submitted

Event-driven programming


① User interacts with page
Click me!
EVENT!
② An "event" occurs
③ A piece of JS code runs in response
④ The page's appearance is updated/modified in some way as a result

```
function myEvent() {
  ...
}
```

Event Handlers

- Event Handler – a segment of codes (usually a function) to be executed when an event occurs
- We can specify event handlers as attributes in the HTML tags.
- The attribute names typically take the form "**onXXX**" where **XXX** is the event name.
  - e.g.:

```
<a href="…" onClick="alert('Bye')">Other
Website</a>
```

Event Handlers

Event Handlers	**Triggered when**
onChange	The value of the text field, textarea, or a drop down list is modified
onClick	A link, an image or a form element is clicked once
onDblClick	The element is double-clicked
onMouseDown	The user presses the mouse button
onLoad	A document or an image is loaded
onSubmit	A user submits a form
onReset	The form is reset
onUnLoad	The user closes a document or a frame
onResize	A form is resized by the user

For a complete list, see http://www.w3schools.com/htmldom/dom_obj_event.asp

onClick Event Handler Example

```
<html>
<head>
<title>onClick Event Handler Example</title>
<script type="text/javascript">
function warnUser() {
      return confirm("Are you a student?”);
}
</script>
</head>
<body>
<a href="ref.html" onClick="return warnUser()">
<!--
  If onClick event handler returns false, the link
  is not followed.
-->
Students access only</a>
</body>
</html>
```

onLoad Event Handler Example

```
<html><head>
<title>onLoad and onUnload Event Handler Example</title>
</head>
<body
  onLoad="alert('Welcome to this page')"
  onUnload="alert('Thanks for visiting this page')"
>
Load and UnLoad event test.
</body>
</html>
```

onMouseOver & **onMouseOut** Event Handler

```
<html>
<head>
<title>onMouseOver / onMouseOut Event Handler Demo</title>
</head>
<body>
<a href="http://www.cuhk.edu.hk"
   onMouseOver="window.status='CUHK Home'; return true;"
   onMouseOut="status=''"
>CUHK</a>
</body>
</html>
```

- When the mouse cursor is over the link, the browser displays the text "CUHK Home" instead of the URL.
- The "return true;" of `onMouseOver` forces browser not to display the URL.
- window.status and window.defaultStatus are disabled in Firefox.

onSubmit Event Handler Example

```
<html><head>
<title>onSubmit Event Handler Example</title>
<script type="text/javascript">
  function validate() {
    // If everything is ok, return true
    // Otherwise return false
  }
</script>
</head>
<body>
<form action="MessageBoard" method="POST"
 onSubmit="return validate();"
>
…
</form></body></html>
```

- If `onSubmit` event handler returns false, data is not submitted.
- If `onReset` event handler returns false, form is not reset

Build-In JavaScript Objects

Object	**Description**
Array	Creates new array objects
Boolean	Creates new Boolean objects
Date	Retrieves and manipulates dates and times
Error	Returns run-time error information
Function	Creates new function objects
Math	Contains methods and properties for performing mathematical calculations
Number	Contains methods and properties for manipulating numbers.
String	Contains methods and properties for manipulating text strings

- See online references for complete list of available methods in these objects: http://javascript-reference.info/

String Object (Some useful methods)

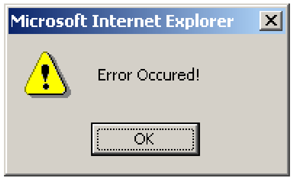
- length
  - A string property that tells the number of character in the string
- charAt(idx)
  - Returns the character at location "idx"
- toUpperCase(), toLowerCase()
  - Returns the same string with all uppercase/lowercase letters
- substring(beginIdx)
  - Returns a substring started at location "beginIdx"
- substring(beginIdx, endIdx)
  - Returns a substring started at "beginIdx" until "endIdx" (but not including "endIdx"
- indexOf(str)
  - Returns the position where "str" first occurs in the string

Error and Exception Handling in JavaScript

- Javascript makes no distinction between Error and Exception (Unlike Java)
- Handling Exceptions
  - The onError event handler
    - A method associated with the window object.
    - It is called whenever an exception occurs
  - The try … catch … finally block
    - Similar to Java try … catch … finally block
    - For handling exceptions in a code segment
  - Use throw statement to throw an exception
    - You can throw value of any type
  - The Error object
    - Default object for representing an exception
    - Each Error object has a name and message properties

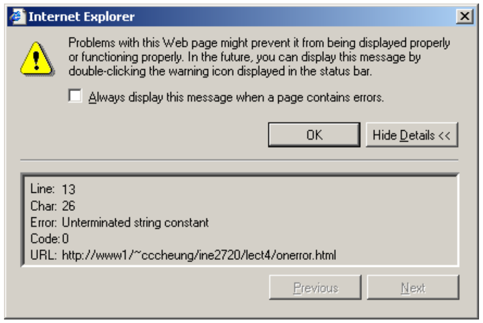
How to use “onError” event handler?

```
<html>
<head>
<title>onerror event handler example</title>
<script type="text/javascript">
function errorHandler(){
  alert("Error Ourred!");
}
// JavaScript is casesensitive
// Don't write onerror!
window.onError = errorHandler;
</script>
</head>
<body>
<script type="text/javascript">
  document.write("Hello there;
</script>
</body>
</html>
```



Microsoft Internet Explorer

Error Occured!



Internet Explorer

Problems with this Web page might prevent it from being displayed properly or functioning properly. In the future, you can display this message by double-clicking the warning icon displayed in the status bar.

□ Always display this message when a page contains errors.

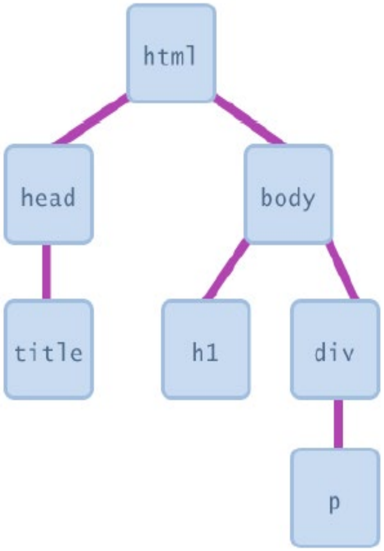
```
Line:  13
Char:  26
Error: Unterminated string constant
Code: 0
URL:  http://www1/~cccheung/ine2720/lect4/onerror.html
```

Document Object Model (DOM)

- When a web page is loaded, the browser creates a **D**ocument **O**bject **M**odel of the page.
- Representation of the current web page as a tree of Javascript objects
- allows you to view/modify page elements in script code after page has loaded
- client side = highly responsive interactions
- browser-independent
- allows progressive enhancement.

Contd…

- most JS code manipulates elements on an HTML page
- we can examine elements' state
  - e.g. see whether a box is checked
- we can change state
  - e.g. insert some new text into a div
- we can change styles
  - e.g. make a paragraph red



What is the DOM?

- The DOM is a W3C (World Wide Web Consortium) standard.
- The DOM defines a standard for accessing documents:
- *"The W3C Document Object Model (DOM) is a platform and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document."*
- The W3C DOM standard is separated into 3 different parts:
- Core DOM - standard model for all document types
- XML DOM - standard model for XML documents
- HTML DOM - standard model for HTML documents

What is the HTML DOM?

- The HTML DOM is a standard **object** model and **programming interface** for HTML. It defines:
- The HTML elements as **objects**
- The **properties** of all HTML elements
- The **methods** to access all HTML elements
- The **events** for all HTML elements

JavaScript - HTML DOM Methods

- HTML DOM methods are **actions** you can perform (on HTML Elements).
- HTML DOM properties are **values** (of HTML Elements) that you can set or change.

The DOM Programming Interface

- The HTML DOM can be accessed with JavaScript (and with other programming languages).
- In the DOM, all HTML elements are defined as **objects**.
- The programming interface is the properties and methods of each object.
- A **property** is a value that you can get or set (like changing the content of an HTML element).
- A **method** is an action you can do (like add or deleting an HTML element).

The getElementById Method

- The most common way to access an HTML element is to use the id of the element.
- In the example above the getElementById method used id="demo" to find the element.

The innerHTML Property

- The easiest way to get the content of an element is by using the **innerHTML** property.
- The innerHTML property is useful for getting or replacing the content of HTML elements.
- The innerHTML property can be used to get or change any HTML element, including <html> and <body>.

Accessing elements:

document.getElementById

```
var name = document.getElementById("id");
                                                            JS
```

```
<button onclick="changeText();">Click me!</button>
<span id="output">replace me</span>
<input id="textbox" type="text" />                        HTML
```

```
function changeText() {
       var span = document.getElementById("output");
       var textBox = document.getElementById("textbox");

        textbox.style.color = "red";

}                                                           JS
```

Contd…

□ document.getElementById returns the DOM object for an element with a given id

□ can change the text inside most elements by setting the innerHTML property

□ can change the text in form controls by setting the value property

Example

- The following example changes the content (the innerHTML) of the <p> element with id="demo":

```
<html>
<body>
<p id="demo"></p>
<script>
document.getElementById("demo").innerHTML =
"Hello World!";
</script>
</body>
</html>
```

The HTML DOM Document Object

- The document object represents your web page.
- If you want to access any element in an HTML page, you always start with accessing the document object.
- Below are some examples of how you can use the document object to access and manipulate HTML.

JavaScript Objects

- Real Life Objects, Properties, and Methods
- In real life, a car is an **object**.
- A car has **properties** like weight and color, and **methods** like start and stop:

- **ObjectProperties**
  1.car.name = Celerio 2.car.model = 2018
  3.car.weight = 850kg 4.car.color = silky silver

- **Methods**

1.car.start() 2.car.drive()
3.car.brake() 4.car.stop()

- All cars have the same **properties**, but the property values differ from car to car.
- All cars have the same **methods**, but the methods are performed at different times.
- JavaScript Objects
- You have already learned that JavaScript variables are containers for data values.
- This code assigns a **simple value** (Celerio) to a **variable** named car:

```
<!DOCTYPE html>
<html>
<body>
<p>Creating a JavaScript Variable.</p>
<p id="demo"></p>
<script>
var car = “Celerio";
document.getElementById("demo").innerHTML =
car;
</script>
</body>
</html>
```

- Objects are variables too. But objects can contain many values.
- This code assigns **many values** (Celerio, 2018, silky silver) to a **variable** named car:

```
<!DOCTYPE html>
<html>
<body>
<p>Creating a JavaScript Object.</p>
<p id="demo"></p>
<script>
var car = {type:“Celerio", model:“2018", color:“silky silver"};
document.getElementById("demo").innerHTML = car.type;
</script>
</body>
</html>
```

- The values are written as **name:value** pairs (name and value separated by a colon).

Object Properties

- The name:values pairs (in JavaScript objects) are called **properties**.
- var person = {firstName:"John", lastName:"Doe", age:50, eyeColor:"blue"};
- **Object Methods:**
- Methods are **actions** that can be performed on objects.
- Methods are stored in properties as **function definitions**.

Object Definition

- You define (and create) a JavaScript object with an object literal:
- Example

var person = {firstName:"John", lastName:"Doe", age:50, eyeColor:"blue"};

```
var person = {
  firstName:"John",
  lastName:"Doe",
  age:50,
  eyeColor:"blue"
};
```

Accessing Object Properties

- You can access object properties in two ways:
- *objectName.propertyName*

Or

objectName["propertyName"]

- Example1
  - person.lastName;
- Example2
  - person["lastName"];

```
<!DOCTYPE html>
<html>
<body>
<p>
There are two different ways to access an object property:
</p>
<p>You can use person.property or person["property"].</p>

<p id="demo"></p>

<script>
var person = {
   firstName: "John",
   lastName : "Doe",
   id     :  5566
};
document.getElementById("demo").innerHTML =
person.firstName + " " + person.lastName;
</script>

</body>
</html>
```

```
<!DOCTYPE html>
<html>
<body>

<p>
There are two different ways to access an object property:
</p>
<p>You can use person.property or person["property"].</p>

<p id="demo"></p>

<script>
var person = {
   firstName: "John",
   lastName : "Doe",
   id     :  5566
};
document.getElementById("demo").innerHTML =
person["firstName"] + " " + person["lastName"];
</script>

</body>
</html>
```

Accessing Object Methods

- You access an object method with the following syntax:
  - *objectName.methodName()*
- Example
  - name = person.fullName();

```
<!DOCTYPE html>
<html>
<body>

<p>Creating and using an object method.</p>

<p>An object method is a function definition, stored as a property value.</p>

<p id="demo"></p>

<script>
var person = {
   firstName: "John",
   lastName : "Doe",
   id     : 5566,
   fullName : function() {
     return this.firstName + " " + this.lastName;
   }
};

document.getElementById("demo").innerHTML = person.fullName();
</script>
</body>
</html>
```

The Document Object

- A document is a web page that is being either displayed or created. The document has a number of properties that can be accessed by JavaScript programs and used to manipulate
- the content of the page.
  - **write or writeln**
- Html pages can be created on the fly using JavaScript. This is done by using the write or writeln methods of the document object.
- Syntax:document.write (“String”); document.writeln (“String”);
- In this document is object name and write () or writeln () are methods. Symbol period is used as connector between object name and method name. The difference between these two methods is carriage form feed character that is new line character automatically added into the document.
- Exmaple: document.write(“<body>”); document.write(“<h1> Hello </h1>”);

- **bgcolor and fgcolor**

  These are used to set background and foreground(text) color to webpage. The methods accept either hexadecimal values or common names for colors.

  Syntax: **document.bgcolor=”#1f9de1”; document.fgcolor=“silver”;**
- **anchors**

  The anchors property is an array of anchor names in the order in which they appear in the HTML Document. Anchors can be accessed like this:
- Syntax:
  - **document.anchors[0];**
  - **document.anchors[n-1];**
- **Links**

  Another array holding all links in the order in which they were appeared on the Webpage
- **Forms**

  Another array, this one contains all of the HTML forms. By combining this array with the individual form objects each form item can be accessed.

The Window Object

- The window object is used to create a new window and to control the properties of window.
- Methods:
  - *open(“URL”,”name”) :* This method opens a new window which contains the document specified by URL and the new window is identified by its name.
  - *close():* this shutdowns the current window.
- *Properties:*
- toolbar = [1|0] location= [1|0] menubar = [1|0] scrollbars = [1|0] status = [1|0] resizable = [1|0]
- where as 1 means *on* and 0 means *off*
- *height=pixels, width=pixels :* These properties can be used to set the window size.
- The following code shows how to open a new window
- *newWin = open(“first.html”,”newWin”,”status=0,toolbar=0,width=100,height=100”);*

- Window object supports three types of message boxes.
- Alert box Confirm box Prompt box
- **Alert box** is used to display warning/error messages to user. It displays a text string with *OK* button.
- Syntax: window. Alert (“Message”);

- **Confirm Box** is useful when submitting form data. This displays a window containing message with two buttons: *OK* and *Cancel.* Selecting *Cancel* will abort the any pending action, while *OK* will let the action proceed.
- Syntax
- window.confirm(“String”);

- **Prompt box** used for accepting data from user through keyboard. This displays simple window that contains a prompt and a text field in which user can enter data. This method has two parameters: a text string to be used as a prompt and a string to use as the default value. If you don‟t want to display a default then simply use an empty string. Syntax
- Variable=window.prompt(“string”,”default value”);

The Form Object

- Two aspects of the form can be manipulated through JavaScript. First, most commonly and probably most usefully, the data that is entered onto your form can be checked at submission. Second you can actually build forms through JavaScript.
- Form object supports three events to validate the form

onClick = “method()”

- This can be applied to all form elements. This event is triggered when the user clicks on the element.

onSubmit = “method()”

- This event can only be triggered by form itself and occurs when a form is submitted.

onReset = “method()”

- This event can only be triggered by form itself and occurs when a form is reset.

The browser Object

- The browser is JavaScript object that can be used to know the details of browser. Some of the properties of the browser object is as follows:

Property	Description
navigator.appCodeName	It returns the internal name for the browser. For major browsers it is Mozilla
navigator.appName	It returns the public name of the browser – navigator or Internet Explorer
navigator.appVersion	It returns the version number, platform on which the browser is running.
navigator.userAgent	The strings appCodeName and appVersion concatenated together
navigator.plugins	An array containing details of all installed plug-ins
Navigator.mimeTypes	An array of all supported MIME Types

The Math Object

- The *Math* object holds all mathematical functions and values. All the functions and attributes used in complex mathematics must be accessed via this object.
- Syntax:
- Math.methodname();
- Math.value;

Method	Description	Example
Math.abs(x)	Returns the absolute value	Math.abs(-20) is 20
Math.ceil(x)	Returns the ceil value	Math.ceil(5.8) is 6 Math.ceil(2.2) is 3
Math.floor(x)	Returns the floor value	Math.floor(5.8) is 5 Math.floor(2.2) is 2
Math.round(x)	Returns the round value, nearest integer value	Math.round(5.8) is 6 Math.round(2.2) is 2
Math.trunc(x)	Removes the decimal places it returns only integer value	Math.trunc(5.8) is 5 Math.trunc(2.2) is 2
Math.max(x,y)	Returns the maximum value	Math.max(2,3) is 3 Math.max(5,2) is 5
Math.min(x,y)	Returns the minimum value	Math.min(2,3) is 2 Math.min(5,2) is 2
Math.sqrt(x)	Returns the square root of x	Math.sqrt(4) is 2

Math.pow(a,b)	This method will compute the a^b	Math.pow(2,4) is 16
Math.sin(x)	Returns the sine value of x	Math.sin(0.0) is 0.0
Math.cos(x)	Returns cosine value of x	Math.cos(0.0) is 1.0
Math.tan(x)	Returns tangent value of x	Math.tan(0.0) is 0
Math.exp(x)	Returns exponential value i.e e^x	Math.exp(0) is 1
Math.random(x)	Generates a random number in between 0 and 1	Math.random()
Math.log(x)	Display logarithmic value	Math.log(2.7) is 1

Math.PI	Returns a ∏ value	a = Math.PI;
		a = 3.141592653589793

The Date Object

- This object is used for obtaining the date and time. In JavaScript, dates and times represent in milliseconds since 1st January 1970 UTC. JavaScript supports two time zones: UTC and local. UTC is Universal Time, also known as Greenwich Mean Time(GMT), which is standard time throughout the world. Local time is the time on your System. A JavaScript *Date* represents date from -1,000,000,000 to -1,000,000,000 days relative to 01/01/1970.
- Date Object Constructors:
- *new Date();* Constructs an empty date object.
- *new Date("String");* Creates a Date object based upon the contents of a text string.
- *new Date(year, month, day[,hour, minute, second]);* Creates a Date object based upon the numerical values for the year, month and day.

```
var dt=new Date();
document.write(dt);  // Fri Nov 11 2022 01:47:11 GMT+0530 (Sri Lanka Standard Time)
```

```
<!DOCTYPE html>
<html>
<body>
<p id="demo"></p>
<script>
document.getElementById("demo").innerHTML =
Date();
</script>
</body>
</html>
output:
Fri Nov 11 2022 01:48:40 GMT+0530 (Sri Lanka
   Standard Time)
```

JavaScript Date Methods

- Date methods let you get and set date values (years, months, days, hours, minutes, seconds, milliseconds)

Method	Description
getDate()	Get the day as a number (1-31)
getDay()	Get the weekday as a number (0-6)
getFullYear()	Get the four digit year (yyyy)
getHours()	Get the hour (0-23)
getMilliseconds()	Get the milliseconds (0-999)
getMinutes()	Get the minutes (0-59)
getMonth()	Get the month (0-11)

JavaScript Arrays

JavaScript arrays are used to store multiple values in a single variable.

Displaying Arrays

```
<!DOCTYPE html>
<html>
<body>

<p id="demo"></p>

<script>
var cars = ["Saab", "Volvo", "BMW"];
document.getElementById("demo").innerHTML = cars[0];
</script>

</body>
</html>
```

Creating an Array

Using an array literal is the easiest way to create a JavaScript Array.

Syntax:

var *array-name* = [*item1*, *item2*, ...];

Using the JavaScript Keyword new

The following example also creates an Array, and assigns values to it:

```
var cars = new Array("Saab", "Volvo", "BMW");
```

Access the Elements of an Array

You refer to an array element by referring to the **index number**.

```
var name = cars[0];
```

This statement modifies the first element in cars:

```
cars[0] = "Opel";
```

Can Have Different Objects in One Array

- JavaScript variables can be objects. Arrays are special kinds of objects.
- Because of this, you can have variables of different types in the same Array.

Example:

```
myArray[0] = Date.now;
myArray[1] = myFunction;
myArray[2] = myCars;
```

Arrays are Objects

- Arrays are a special type of objects. The **typeof** operator in JavaScript returns "object" for arrays.
- But, JavaScript arrays are best described as arrays.

Arrays use **numbers** to access its "elements". In this example, person[0] returns John:

Array: var person = ["John", "Doe", 46];

Objects use **names** to access its "members". In this example, person.firstName returns John:

Object: var person = {firstName:"John", lastName:"Doe“,
age:46};

Array Properties and Methods

The real strength of JavaScript arrays are the built-in array properties and methods:

Examples

var x = cars.length; // The length property returns the number of elements in cars

var y = cars.sort(); // The sort() method sort cars in alphabetical order

Note:

- ❖ var points = new Array(); // Bad
- ❖ var points = []; // Good

When to Use Arrays? When to use Objects?

- JavaScript does not support associative arrays.
- You should use objects when you want the element names to be strings.
- You should use arrays when you want the element names to be sequential numbers.

Array Object Methods

Method	Description
concat()	Joins two or more arrays, and returns a copy of the joined arrays
indexOf()	Search the array for an element and returns its position
join()	Joins all elements of an array into a string
lastIndexOf()	Search the array for an element, starting at the end, and returns its position
pop()	Removes the last element of an array, and returns that element
push()	Adds new elements to the end of an array, and returns the new length
reverse()	Reverses the order of the elements in an array
shift()	Removes the first element of an array, and returns that element
slice()	Selects a part of an array, and returns the new array
sort()	Sorts the elements of an array
splice()	Adds/Removes elements from an array
toString()	Converts an array to a string, and returns the result
unshift()	Adds new elements to the beginning of an array, and returns the new length
valueOf()	Returns the primitive value of an array

Concat(): Joins two or more arrays, and returns a copy of the joined arrays.

Syntax: array.concat(array1,array2…..);

Ex:

var hege = ["Cecilie", "Lone"];

var stale = ["Emil", "Tobias", "Linus"];

var kai = ["Robin"];

var children = hege.concat(stale,kai);

indexOf():this method searches the array for the specified item, and returns its position.

- The search will start at the specified position, or at the beginning if no start position is specified, and end the search at the end of the array.

Returns -1 if the item is not found.

If the item is present more than once, the indexOf method returns the position of the first occurrence.

Syntax: array.indexOf(item);

Ex: var fruits=[“Banana”,Orange”,”Apple”,”Mango”];
var x=fruits.indexOf(“Apple”);

Here the value of x is:2 i.e. Apple is at position 2.

Join(): The join() method joins the elements of an array into a string, and returns the string. The elements will be separated by a specified separator. The default separator is comma (,).

Syntax: array.join();

Ex: var fruits=[“Banana” Orange”,”Apple”,”Mango”];
var x=fruits.join();

the result of x will be Banana,Orange,Apple,Mango.

Slice(): The slice() method returns the selected elements in an array, as a new array object. The slice() method selects the elements starting at the given *start* argument, and ends at, *but does not include*, the given *end* argument.

Syntax: array.slice (start, end);

Ex: var fruits=[“Banana”,Orange”,”Apple”,”Mango”];
var x=fruits.slice(1,3);

the result of x will be [Orange,Apple];

Splice(): The splice() method adds/removes items to/from an array, and returns the removed item(s).

Syntax: array.splice(index,howmany,item1,item2….);

Ex: var fruits=[“Banana”,Orange”,”Apple”,”Mango”];
fruits.splice(2,1,”Lemon”,”Kiwi”);

the result of fruits will be [Banana,Orange,Lemon,Kiwi,Mango]

Arrays Operations and Properties

- Declaring new empty array:

```
var arr = new Array();
```

- Declaring an array holding few elements:

```
var arr = [1, 2, 3, 4, 5];
```

- Appending an element / getting the last element:

```
arr.push(3);
var element = arr.pop();
```

- Reading the number of elements (array length):

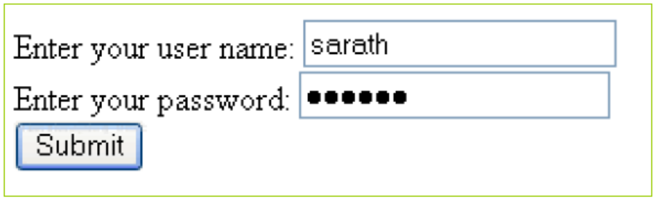
```
arr.length;
```

- Finding element's index in the array:

```
arr.indexOf(1);
```

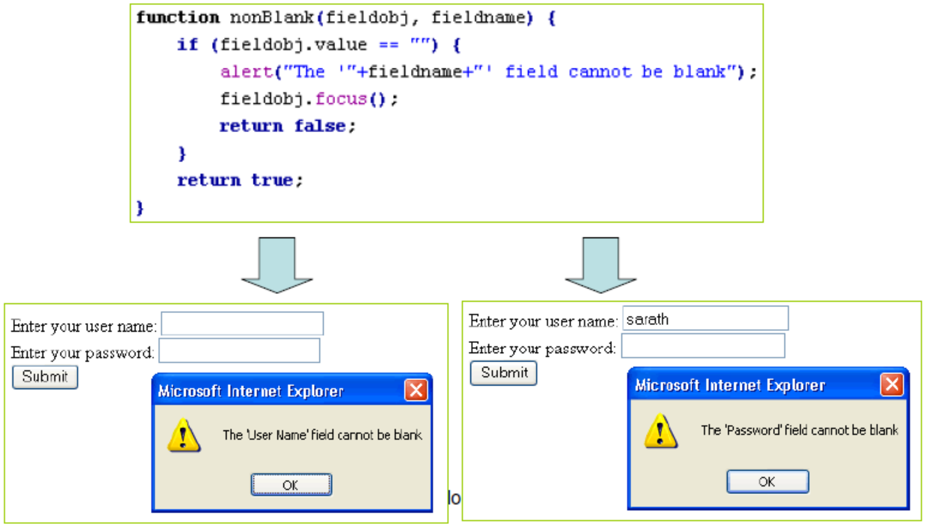
Form Validation Example

- A form to get user name and password. Validation required to check
  - has the user left required fields empty
  - has the user entered text in correct length



Enter your user name: sarath
Enter your password: ●●●●●●

Checking the Field is Not Blank



```
function nonBlank(fieldobj, fieldname) {
    if (fieldobj.value == "") {
        alert("The '"+fieldname+"' field cannot be blank");
        fieldobj.focus();
        return false;
    }
    return true;
}
```

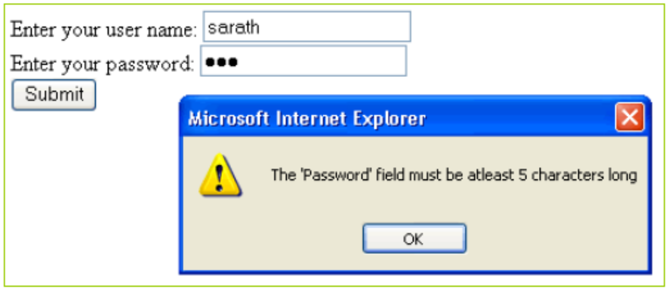
Enter your user name:
Enter your password:

The 'User Name' field cannot be blank

Enter your user name: sarath
Enter your password:

The 'Password' field cannot be blank

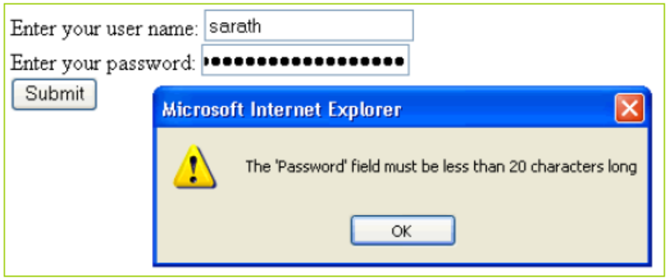
Checking the Field is in Correct Length



Enter your user name: sarath

Enter your password: •••

The 'Password' field must be atleast 5 characters long

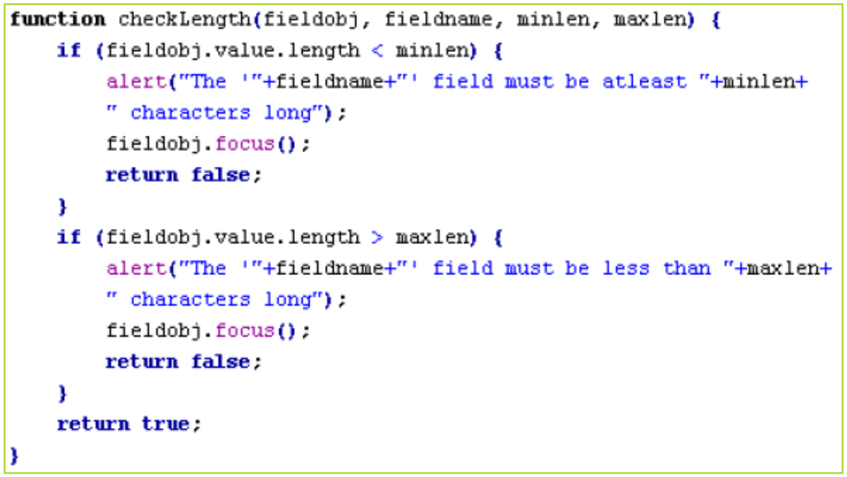


Enter your user name: sarath

Enter your password: ••••••••••••••••••••

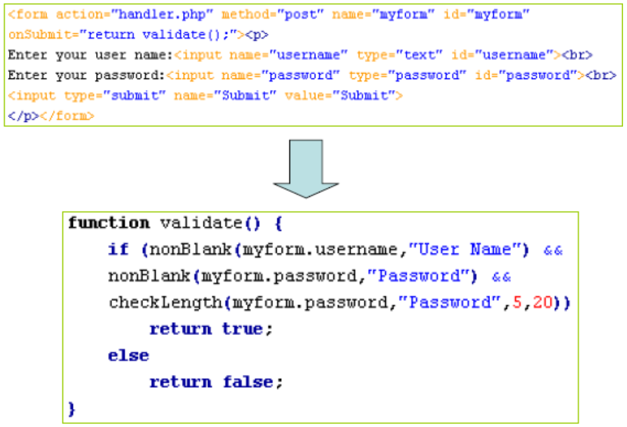
The 'Password' field must be less than 20 characters long

Checking the Field is in Correct Length



```
function checkLength(fieldobj, fieldname, minlen, maxlen) {
    if (fieldobj.value.length < minlen) {
        alert("The '"+fieldname+"' field must be atleast "+minlen+
        " characters long");
        fieldobj.focus();
        return false;
    }
    if (fieldobj.value.length > maxlen) {
        alert("The '"+fieldname+"' field must be less than "+maxlen+
        " characters long");
        fieldobj.focus();
        return false;
    }
    return true;
}
```

Main Form Handler



```
<form action="handler.php" method="post" name="myform" id="myform"
onSubmit="return validate();"><p>
Enter your user name:<input name="username" type="text" id="username"><br>
Enter your password:<input name="password" type="password" id="password"><br>
<input type="submit" name="Submit" value="Submit">
</p></form>
```

```
function validate() {
    if (nonBlank(myform.username,"User Name") &&
    nonBlank(myform.password,"Password") &&
    checkLength(myform.password,"Password",5,20))
        return true;
    else
        return false;
}
```

Form validation example contd…

```
<html>
<head>
<script language="javascript">
function validate()
{


 var x=f1.t1.value;
 var y=f1.t2.value;
 var re=/\d|\W|_/g;

 if(x==''||y=='')
    window.alert("Enter both user id and password");
  else if(x.length<6||y.length<6)
    window.alert("both user id and password should greater than or equal to 6");
  else if((re.test(x)))
     window.alert("user name show3uld be alphabets");
  else
    window.alert("welcome"+" Mr."+x);
}
```

```
</script>
</head>
<body bgcolor="green">
<form name="f1">
<center>
User Name<input type="text" name="t1"><br><br>
Password <input type="password" name="t2"><br><br>
<input type="submit" value="submit" onClick=validate()>
<input type="reset" value="reset">
</center>
</form>
</body>

</html>
```

DYNAMIC HTML

- **DHTML** is combination of HTML, CSS and JavaScript. It gives pleasant appearance to web page.
- Difference between HTML and DHTML

HTML	DHTML
HTML is used to create static web pages.	DHTML is used to create dynamic web pages.
HTML is consists of simple html tags.	DHTML is made up of HTML tags+cascading style sheets+javascript.
Creation of html web pages is simplest but less interactive.	Creation of DHTML is complex but more interactive.

Contd…

Dynamic HTML, or DHTML, is for a collection of technologies used together to create

interactive and animated by using a combination of a static markup language (such as HTML), a client-side scripting language (such as JavaScript), a presentation definition language (such as CSS), and the Document Object Model.

Uses

- DHTML allows authors to add effects to their pages that are otherwise difficult to achieve.
- For example, DHTML allows the page author to:
- Animate text and images in their document, independently moving each element from any starting point to any ending point, following a predetermined path or one chosen by the user.
- · Embed a ticker that automatically refreshes its content with the latest news, stock quotes, or other data.
- · Use a form to capture user input, and then process and respond to that data without having to send data back to the server.
- · Include rollover buttons or drop-down menus.

HNDIT1022 – Web Design

Week 13: introduction to web servers and hosting

Subtopics

- What is domain name
- DNS
- What is hosting space
- What is email service

What is domain name

A domain name is a string of text that maps to a numeric IP address, used to access a website from client software.

In plain English, a domain name is the text that a user types into a browser window to reach a particular website.

The actual address of a website is a complex numerical IP address (e.g. 103.21.244.0), but thanks to Domain Name System (DNS), users are able to enter human-friendly domain names and be routed to the websites they are looking for. This process is known as a DNS lookup.

Who manages domain names?

Domain names are all managed by domain registries, which delegate the reservation of domain names to registrars. Anyone who wants to create a website can register a domain name with a registrar, and there are currently over 300 million registered domain names.

What is DNS

The Domain Name System (DNS) is the phonebook of the Internet. Humans access information online through domain names, like nytimes.com or espn.com. Web browsers interact through Internet Protocol (IP) addresses. DNS translates domain names to IP addresses so browsers can load Internet resources.

Each device connected to the Internet has a unique IP address which other machines use to find the device. DNS servers eliminate the need for humans to memorize IP addresses such as 192.168.1.1 (in IPv4), or more complex newer alphanumeric IP addresses such as 2400:cb00:2048:1::c629:d7a2 (in IPv6).

What is hosting space

The web hosting space, also known as web space, storage space or disk space, generally refers to the amount of space on a web server that is allocated to website owners by the web hosting companies.
It is made up of the total quantity of all text files, images, scripts, databases, emails and other files related to your website.

Contd…

Web hosting is the process of storing all the files that make up your website on a server.
Think of it as your digital office. Like you need a physical space for a physical office, you need a digital space for your digital office. A web host rents out that digital space on servers for your website files.
It helps you establish your website on the internet.

Features To look When Choosing A Reliable Web Hosting Provider

- Look for reliability
- customer service
- web space and bandwidth
- domain name service
- site management extras
- price

What is email service

An email service is a company that provides businesses with tools to send bulk emails and implement email marketing.
Email services offer user-friendly features to manage mailing lists, email design, and metrics to monitor your success.

Why is email service important?

- Fits any business
- Provides useful tools for creating emails
- Gathers a lot of data
- Results in high Return On Investment(ROI)
- Offers an inexpensive or free trial
- Simplifies sending emails