Session: 1

Introduction to the Web

Objectives

- Explain the evolution of HTML

- Explain the page structure used by HTML

- List the new features of HTML 5

- Explain CSS

- Explain JavaScript

- Explain jQuery

- Explain browser support for HTML 5

Introduction

- Hypertext Markup Language was introduced in 1990.

- HTML 5 was recommended as a standard by W3C in 1997.

- Majority of the browsers support HTML 5 element and Application Programming Interface (API).

Evolution of Computing

- Computing started by using stand-alone computers to perform different computing operations.

- Later organizations began to connect their computers to share data.

- Different types of networks are as follows:
  - Local Area Network (LAN)

  - Metropolitan Area Network (MAN)
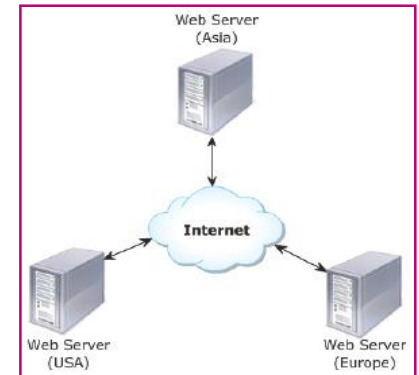
  - Wide Area Network (WAN)
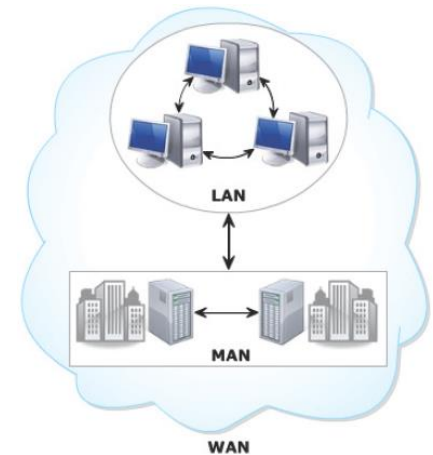
The Internet vs. the Web

The Internet

- is a network of connected computers in the world
- no company owns the Internet
- governed by a system of standards and rules for transferring data or documents over a network are known as protocols

The Web

- is just one of the ways information can be shared over the Internet:
  - ➢ Web page is a file are stored on a Web server to make them available for the users.
  - ➢ Web server is a computer with high processing speed and connected to the Internet.
- uses HTTP protocol to specifies how a Web page will be retrieved from the Web server

A Brief History of the Web

- The Web was born in a particle physics laboratory (CERN) in Geneva,

- For the fi[...] .

- The real [...] 2 when the first grap[...]ed,

- The ongo[...] is overse[...] V3C).

Web Communication

Steps to view a Web page in a browser are as follows:

1. User specifies the Uniform Resource Locator (URL) of Web page in browser

2. The client browser sends the URL request to the appropriate Web server

3. Web server processes the request and sends the Web page as a response to the browser
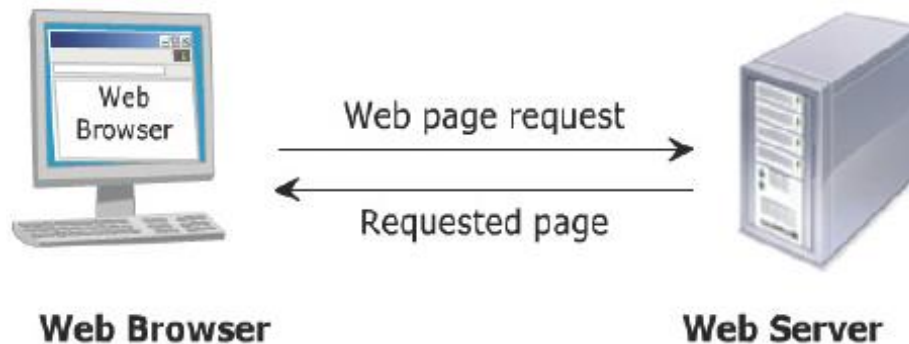
Static Page vs. Dynamic Page

STATIC WEB PAGES

- Consists of content such as text, images, videos and so on...

- Simple to design as it provides no interactivity

- Focuses on content presentation

- Contents remain unchanged

DYNAMIC WEB PAGES

- Data is always up-to-date and reliable

- Allows user interaction

- Generates content on-demand when user provides input

- Allows customization of content and its appearance in browser

Technologies

Technologies used for creating dynamic Web sites are as follows:

- **JavaScript**, a scripting language.

- **CSS** specifies the formatting of a Web page for both static and dynamic Web pages.

- **Extensible HTML** when used with JavaScript, displays the required user-defined data each time the Web page is loaded in the browser.

- **Dynamic HTML** uses JavaScript and CSS to make dynamic Web pages and transform the look and feel of the Web pages.

History

- HTML has evolved over the years with the introduction of improved set of standards and specifications.

- Basic rules for HTML5 are as follows:
  - Introduction to new features should be based on HTML, CSS, DOM, and JavaScript.
  - More markups to be used to replace scripting.
  - Must be device independent.
  - Need for external plug-in to be reduced.
  - Better error handling capabilities.

HTML 3.0

HTML 3.2

HTML 4.0
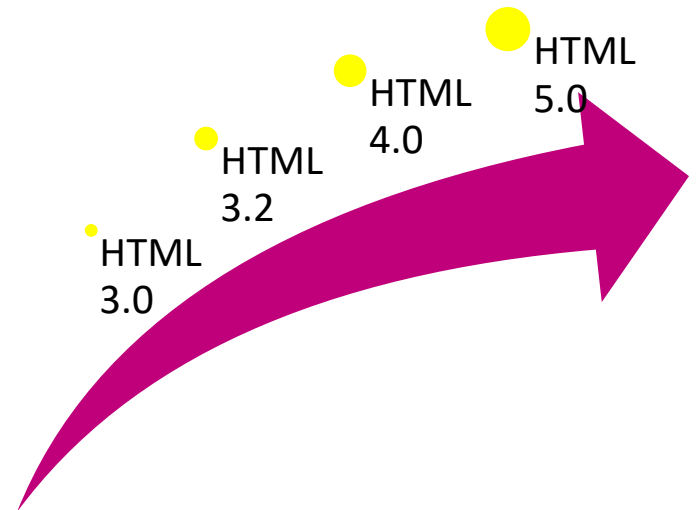
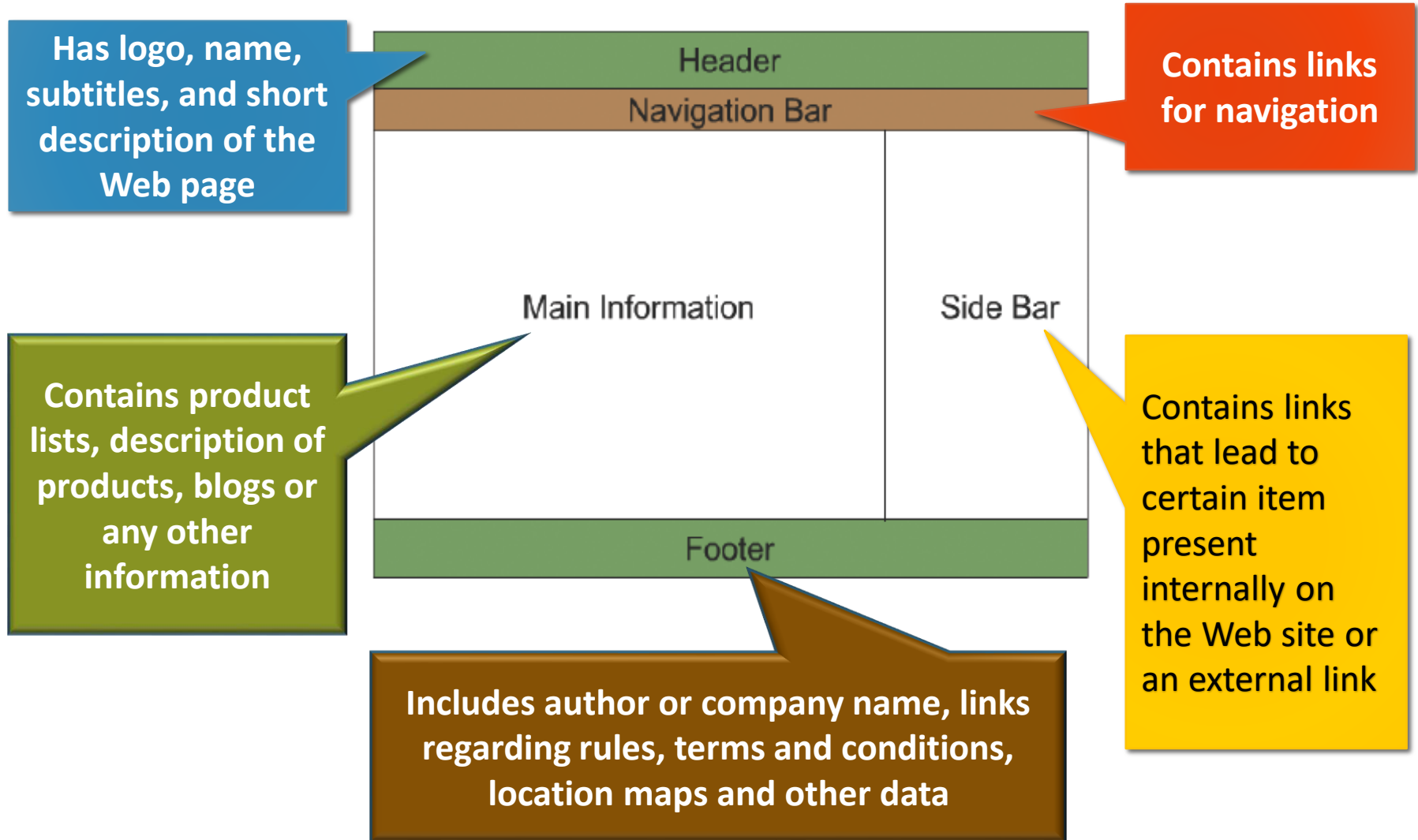HTML 5.0

Layout of a Page in HTML 5   1-2

- HTML 5 contains a **head section** containing the unseen elements and the **body section** containing the visible elements of the document.

- Earlier HTML provided different tags to build and organize the content in the body of the document. Example:

  o The **\<table\>** tag was used to present the data in an organized manner.

  o The **\<div\>** tag was used to display contents such as images, links, text, menus, forms, and so on.

- HTML 5 includes new elements that identify and organize each part of the document body.

Layout of a Page in HTML 5   2-2

Has logo, name, subtitles, and short description of the Web page

Contains links for navigation

| Header |
| Navigation Bar |

Main Information

Side Bar

| Footer |

Contains product lists, description of products, blogs or any other information

Contains links that lead to certain item present internally on the Web site or an external link

Includes author or company name, links regarding rules, terms and conditions, location maps and other data

Working of HTML 5

- Browser loads the document which includes HTML markup and CSS style

- Browser creates an internal model of the document containing HTML elements after page load

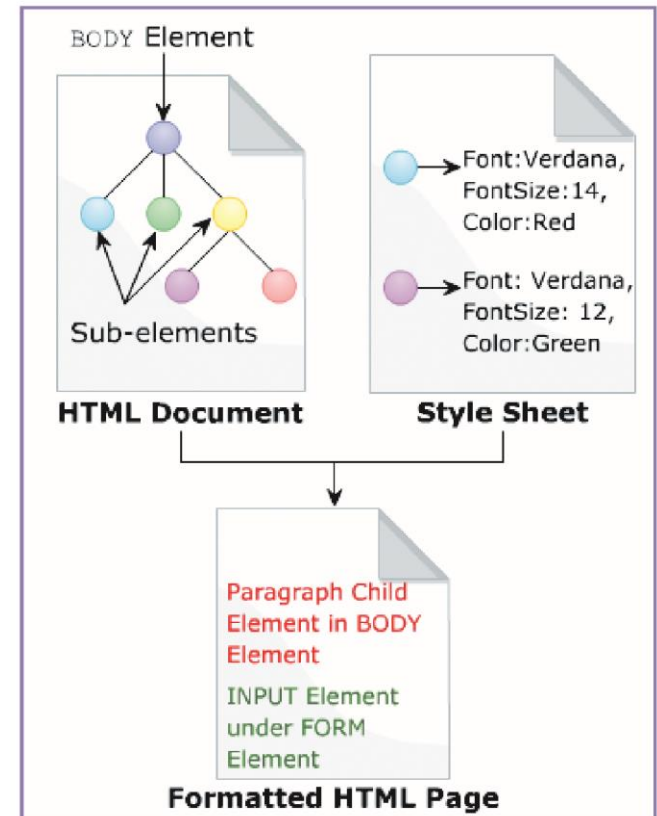- Browser loads the JavaScript code which executes after page loads

New and Flexible Approach of HTML5

- Gets rid of plug-in and uses native support for audio and video:
  - **<audio>** and **<video>** element available for media playback
  - **<canvas>** element used for drawing

- Provides descriptive semantics

- Helps to create rich Internet clients using plug-ins such as Flash

- Uses the Web worker API to make JavaScript efficient

- Provides client-side storage and caching functionality

- Provides new features in CSS such as advanced selectors, drop-shadows and so on

- Provides new form controls

- Provides new features for mobile applications
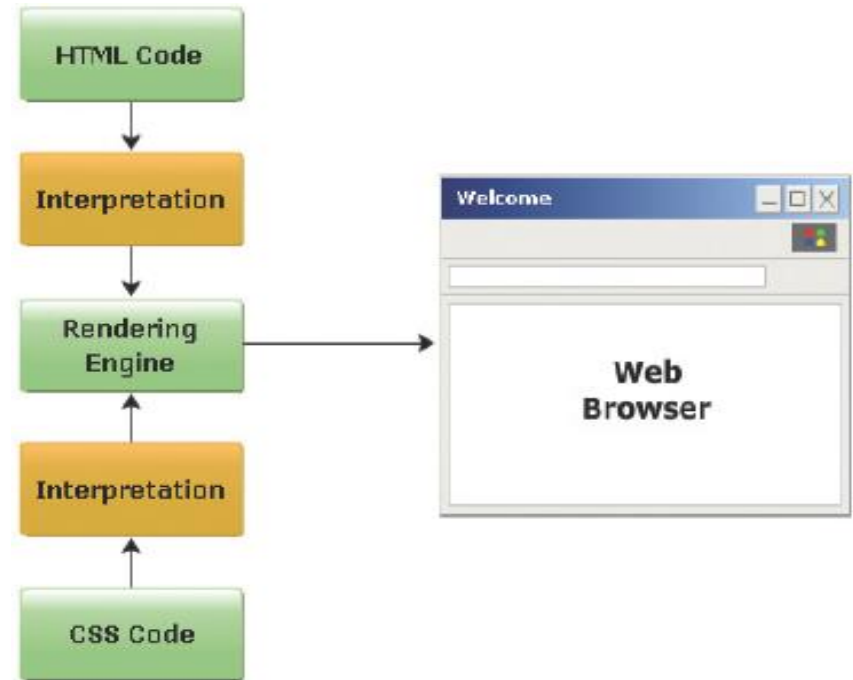
Cascading Style Sheets (CSS)

- CSS works along with HTML to provide visual styles to document elements.

- CSS is a rule-based language that specifies the formatting instructions for content in an HTML document.

- Purpose is to separate content from its formatting.

- CSS can define the layout and formatting of content in a separate file with a **.css** extension.

- CSS allows rules from different **.css** files to be merged or edited.

- This task of combining and matching rules from different files is referred to as cascading.

BODY Element

Sub-elements

HTML Document

Font:Verdana, FontSize:14, Color:Red

Font: Verdana, FontSize: 12, Color:Green

Style Sheet

Paragraph Child Element in BODY Element

INPUT Element under FORM Element

Formatted HTML Page

Benefits of CSS

- Code Re-usability

- Less HTML code

- Device Independence

Functionality of JavaScript

- Allows to create 2D drawable surface in web page without using plug-ins.

- Use Web Workers to turbo charge the JavaScript code to perform advanced computation.

- Does not require any special plug-ins to play video.

- Allows to create own playback controls using JavaScript and HTML.

- Can perform full video processing in the browser.

- Can be used to execute events on certain user actions.

- Can manipulate HTML elements

- Can collect browser information of a Web site visitor.

- Uses browser local storage and does not require browser cookies.

- Accesses any Web Service and brings back the data to the application in real time.

jQuery

- Is a JavaScript library supported on multiple browsers

- Simplifies the designing of client-side scripting on HTML pages.

- Library is based on modular approach that allows creation of powerful and dynamic Web applications.

- **Features of jQuery:**

  - Easy to understand syntax that helps to navigate the document.

  - Event handling.

  - Advanced effects and animation

  - Develop AJAX-based Web applications

Summary

- HTML5 is cooperative project between (W3C) and the Web Hypertext Application Technology Working Group (WHATWG).

- New features of HTML5 would include tags such as <canvas>, <article>, <nav>, <header>, <footer>, <section>, <audio>, <video> and so on.

- Some of the technologies used for creating dynamic Web sites JavaScript, CSS, XHTML, and DHTML.

- A Cascading Style Sheet (CSS) is a rule based language, which specifies the formatting instructions for the content specified in an HTML page.

- JavaScript is a scripting language that allows you to build dynamic Web pages by ensuring maximum user interactivity.

- jQuery is a JavaScript library that simplifies the design of client-side scripting on HTML pages.

- The major browsers, such as Chrome, Firefox, Opera, Safari, Internet Explorer, and so on, are trying to add the new HTML5 features to the latest version of the browsers.