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Web Design and Programming

Lecture 1:

An Introduction

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Course Objectives

1. *To get introduced with the history of web.*
2. *To learn how to create web pages using HTML.*
3. *To learn how to construct style documents for web pages using CSS .*
4. *To learn how to create dynamic web pages using JavaScript which is a client-side script language.*

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Lectures will be interactive. This means:

1. You will need to study the new material before every lecture (**slides**, **book**, and **online material**).
2. We will have a lab on every lecture, so you will need to code in almost every lecture.
3. You will post your questions on the board before each lecture. If you do not post any questions, I assume you have understood everything. Therefore…
4. You may be called in class to explain the material to your classmates.

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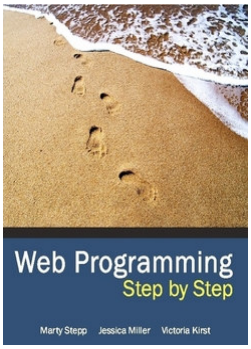
Recommended book

- *"Web Programming Step by Step" by Marty Stepp, Jessica Miller, Victoria Kirst.*
- *A useful web site for learning more about web development: http://www.w3schools.com*



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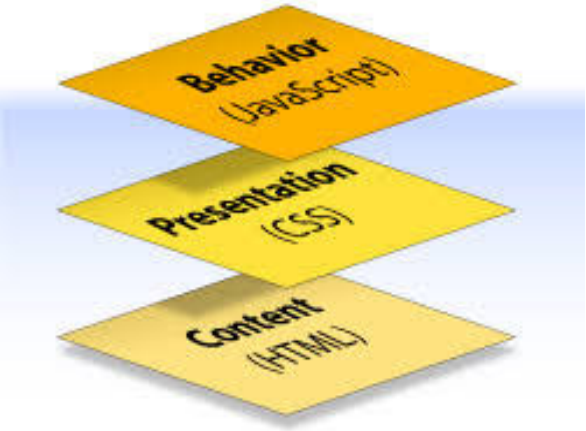
Web Document

- *When we examine the elements of the web document construction, it can consist of up to three layers content, presentation, and behavior as illustrated below*



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Internet an Overview

- *The Internet is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide.*
- *It is a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies.*
- *The term Internet actually refers to the combined collection of academic, commercial, and government networks connected over international telecommunication backbones and routed using IP addressing.*

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Internet Applications

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

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

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IP

- *Every computer and device (modem, router, Smartphone, cars, etc.) connected to the Internet is assigned a unique numeric IP address (IP stands for Internet Protocol) that identifies the host for communication purposes*
- *The designers of the Internet Protocol defined an IP address as a 32-bit number and this system, known as Internet Protocol Version 4 (IPv4), is still in use today. However, due to the enormous growth of the Internet and the predicted depletion of available addresses, a new addressing system (IPv6), using 128 bits for the address, was developed in 1995, and is being deployed worldwide since the mid-2000s.*

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IP

- *For example, the computer that hosts test.com has the IP address 208.201.239.100. All those numbers can be dizzying, so fortunately, the **Domain Name System (DNS)** was developed to allow us to refer to that server by its domain name, "test.com", as well. The numeric IP address is useful for computer software, while the domain name is more accessible to humans.*
- *Matching the text domain names to their respective numeric IP addresses is the job of a separate **DNS server**.*

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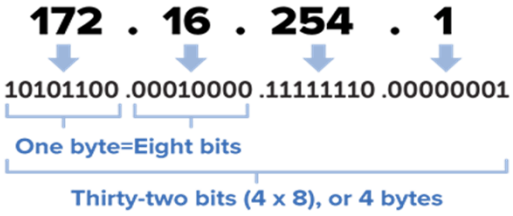
Internet an Overview

- *IPV4 address is a 32 bit number, which uses the decimal doted notation consisting of 4 decimal numbers each ranging from 0 to 255 separated by dots. Network administration divides the IP address into two parts. – the most significant 8 bits are called network address portion the remaining bits are known as rest bits or host bits or identifiers and they are used for host numbering in a network.*



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URL

- *Every page and resource on the Web has its own special address called a URL, which stands for Uniform Resource Locator. It's nearly impossible to get through a day without seeing a URL plastered on the side of a bus, printed on a business card, or broadcast on a television commercial.*
- *Some URLs are short and sweet. Others may look like crazy strings of characters separated by dots (periods) and slashes, but each part has a specific purpose.*

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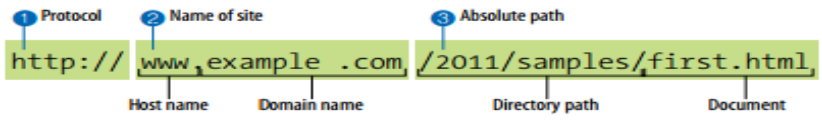
The parts of a URL

- *A complete URL is generally made up of three components: the protocol, the site name, and the absolute path to the document or resource, as shown below*



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Browsers

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

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Main Elements of Web Browsers

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Search Engine

- *A web search engine is designed to search for information on the World Wide Web and FTP servers. The search results are generally presented in a list of results and are often called hits. The information may consist of web pages, images, information and other types of files. Some search engines also mine data available in databases or open directories.*
- *Web search engines work by storing information about many web pages, which they retrieve from the html itself. These pages are retrieved by a Web crawler (sometimes also known as a spider) — an automated Web browser which follows every link on the site.*

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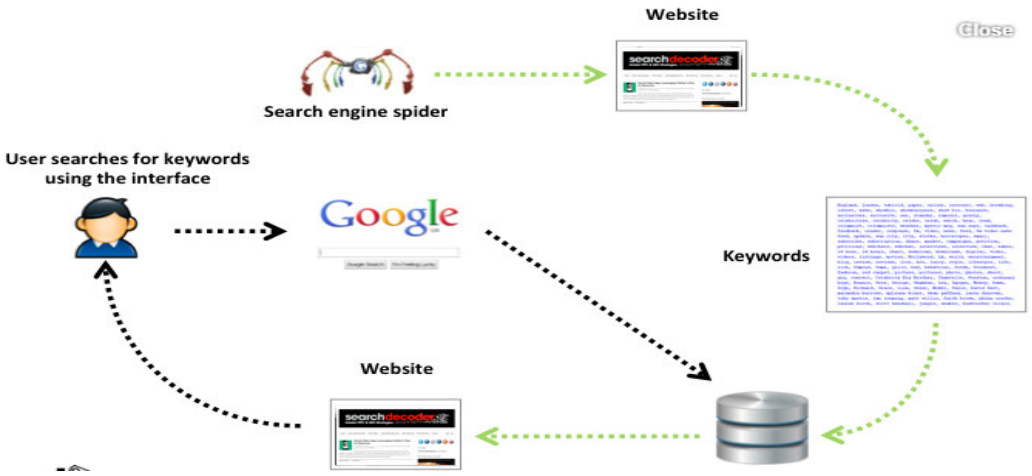
Search Engine



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Web

The Web is an Internet-based distributed information system.

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

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Web ≠ Internet

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

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History of the Web

- *In 1989, Tim Berners-Lee at the European Particle Physics Laboratory (CERN) designed a hypertext system for linking documents over the Internet.*
  - *Designed a (Non-WYSIWYG "What You See Is What You Get") language for specifying document content, which evolved into HyperText Markup Language (HTML)*
  - *Designed a protocol for downloading documents and interpreting the content, which evolved into HyperText Transfer Protocol (HTTP)*
  - *Implemented the first browser -- text-based, no embedded media*

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W3C

- *The World Wide Web Consortium (called the W3C for short) is the organization that oversees the development of web technologies. The group was founded in 1994 by Tim Berners-Lee, the inventor of the Web.*
- *In the beginning, the W3C concerned itself mainly with the HTTP protocol and the development of the HTML. Now, the W3C is laying a foundation for the future of the Web by developing dozens of technologies and protocols that must work together in a solid infrastructure..*

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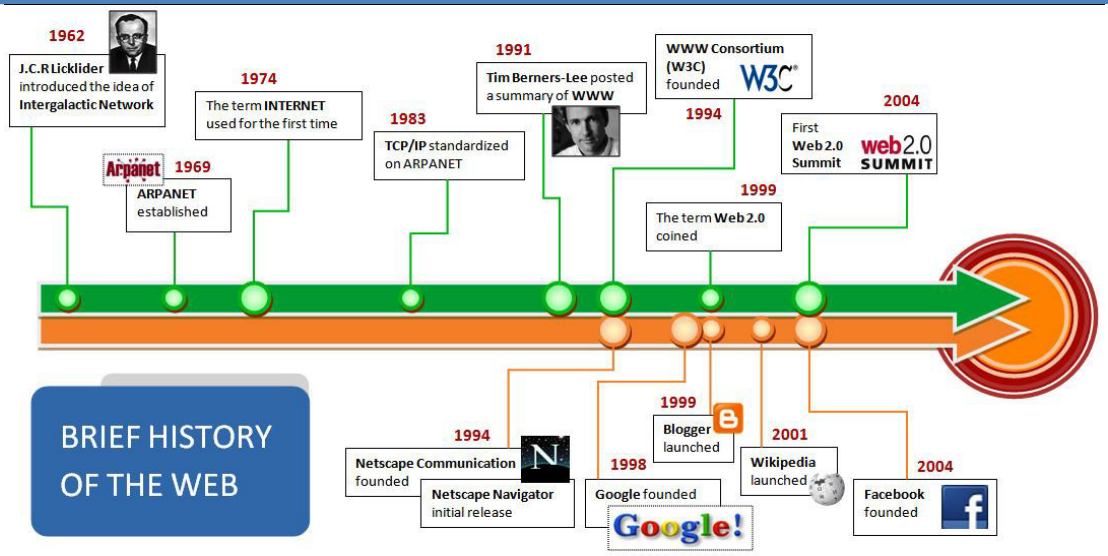

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