Overview

Readings

Text Books

- Elisabeth Roboson , and Eric Freeman. Head First HTML and CSS. Canada,O'Reilly,2012,Print.
- Jennifer Niederst Robbins. Learning Web Design. Canada,2012,Print.
- Luke Welling, and Laura Thomson, PHP and MySQL Web Development. USA, Addison-Wesley, 2008.

Reference Books

- Shelley Powers. JavaScript Cookbook.O'Reilly. Print
- Tom Negrino and Dori Smith. Styling Web Pages with CSS. USA,Peachpit Press. Print

Course Goal

- To prepare students with web technologies to advance their skills in front-end web application development
- To expose to backend web application development

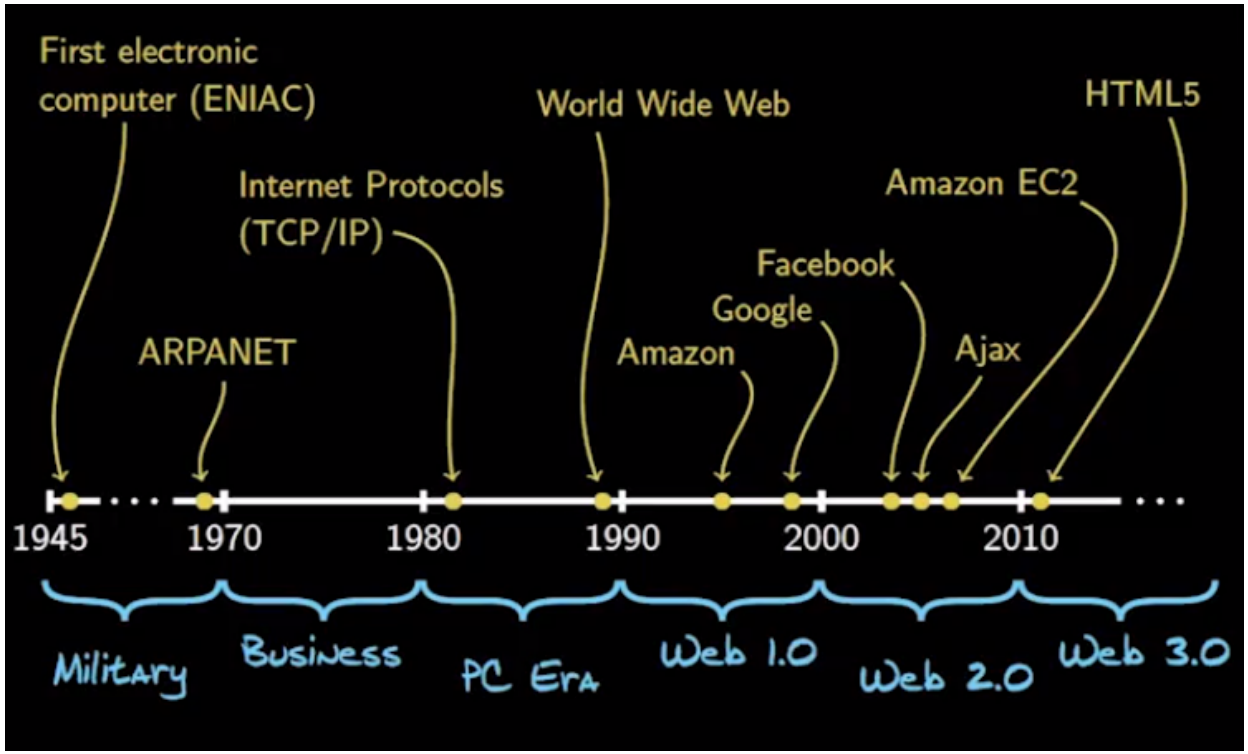
Course Objectives

- Introducing to the concepts, terms and technologies used in web site design
- Ability to design and implement web sites from basic informative pages to mid-complexity web application

Course Objectives

- Become proficient in Front-end interactivity via Javascript as well as familiarity with different popular libraries and frameworks
- Providing with the necessary knowledge and skills in using the various technologies and tools for developing web sites.
- Display your cultivated skills with real-world projects

Historical Timeline



Internet

- What is internet ?

Internet

- is a network of connected computers

Web

- What is web ?

Web

- The Web (originally called the World Wide Web, thus the “www” in site addresses) is just one of the ways information can be shared over the Internet
- The World Wide Web is a vast network of http servers sending files across the internet.
- The internet is the infrastructure, or the network where you can send or receive many different types of information.

Web(continued)

- A global hypertext system that uses the Internet as its transport mechanism.
- The total set of interlinked hypertext documents residing on HTTP servers all around the world.
- Documents on the world wide web, called pages or web pages, are written in HTML (Hypertext markup language), identified by URLs (uniform Resource Locators) that specifies the particular machine and pathname by which a file can be accessed, and transmitted from server to end user under HTTP.

Web browsers

- What is web browser ?

Web browsers

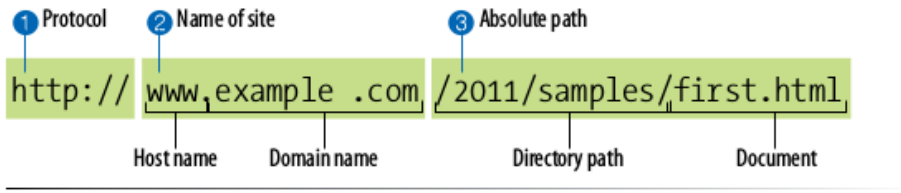
- Software that lets a user view HTML documents and access files and software related to those documents. (Helper Application)
- Web browser also known as user agent or client

Web Page Addresses(URLs)

- Every page and resource on the Web has its own special address called a URL, which stands for Uniform Resource Locator
- It is a means of locating information on the Internet
- It is a uniform way to refer to objects and services on the Internet

Web Page Addresses(URLs)

The parts of a URL



General Philosophy

- Worldwide information sharing
- **Simplicity of use**: at last, an internet tool for non-computer scientists!
- Interoperability: All machines must be able to communicate
  - Different machine architectures
  - Different operating systems
  - Different servers and browsers
  - There is strong need for standards!
- General model:**Client-Server architecture**

Main Actors

- **CERN**
  - Invented the Web: Tim Berners-Lee and Robert Caillaux,1990
- **NCSA** (National Center for Super-computing Applications)
  - Mosaic,1993
- **W3C** (WWW Consortium)
  - 383 members (September 2013)
  - Issues protocol "recommendations": HTML,XML,CSS,RDF,SMIL,PICS
  - Unifies development(e.g., by reference implementations, etc.)

Main Actors

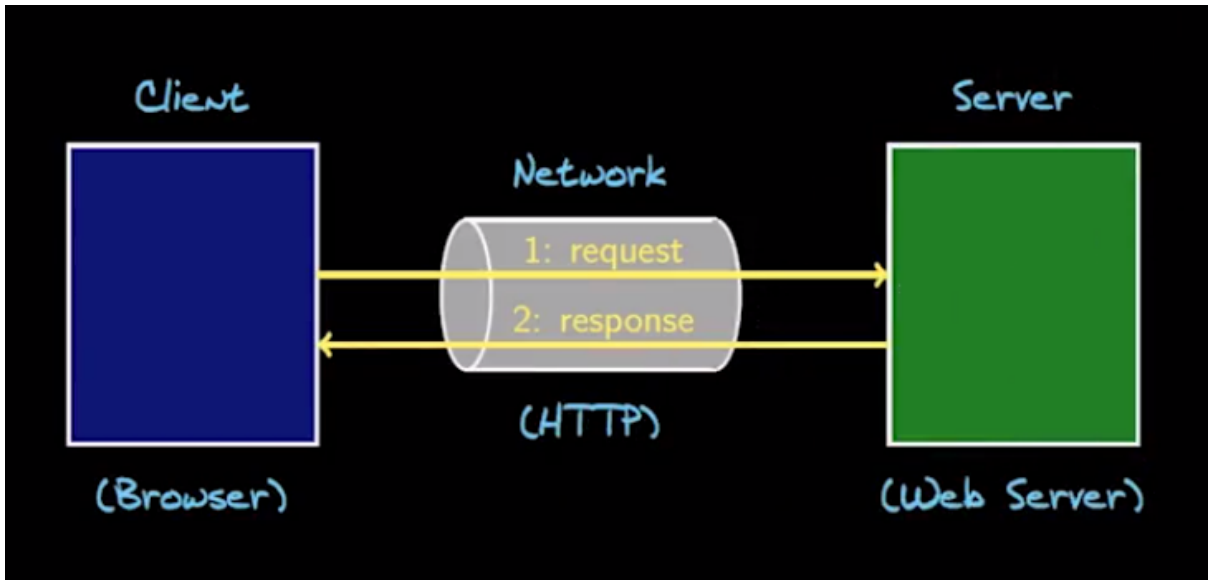
- **IETF** (Internet Engineering Task Force)
  - Defines standards: HTTP/1.1, MIME
- Google,Apple,Microsoft, Sun, Netscape,IBM, etc
  - de-facto standards!
  - Interoperability problems

Request Model

- Major functionality of the web
  - "Give me the content of this document"
- The retrieval unit is the document
  - Retrieving an HTML page containing n images requires n+1 requests to the web server
  - The documents are then assembled to form a page
- Each document is designated by a URL (Universal Resource Locator)

Client Server Model

- There is a request/response protocol associated with any client-server architecture



Execution at the Server

- When the server receives certain requests, it does not deliver a file
  - Serveral mechanisms are used to dynamically generate pages
- Scripting languages, e.g., PHP, Python, Perl, etc
  - The web server contains a language interpreter
  - It interprets a document/program, the result is the response sent to the client

Execution at the Client

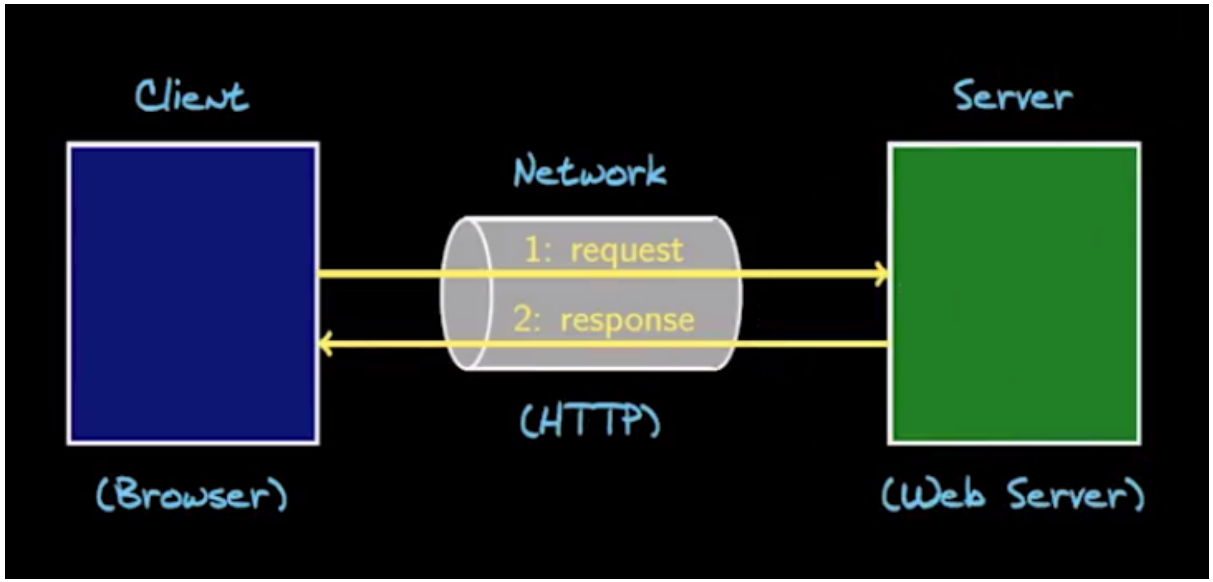
- Clients download a document which is a **program**, and execute it locally
- The program must be executable on any machine and any operating system
  - Applets: Program compiles (in advance) in a bytecode language
- Scripting languages (usually Javascript)
  - Javascript instructions are written in the HTML document
  - **Executed locally by the browser**
- **Do not confuse server-side and client-side scripting languages!**

Web 1.0,2.0,3.0

- Web 1.0-Creation of static web sites, the first web business models.
- Web 2.0-Interactivity(Ajax),social networking, mash-ups,media sharing, online commerce, lightweight collaboration, wikis.
- Web 3.0 - The "inteligent web", i.e., machine-facilitated understanding of information. E.g., semantic web, NLP, machine learning/reasoning, recommender systems.
- Enablers of Web 2.0 and 3.0
  - JavaScript,XML, JSON(Ajax).
  - Web services interoperability
  - infrastructure, platform and software-as-a-service capabilities, i.e., cloud computing
  - Mobile platforms and apps leading to ubiquitous computing

Web 1.0 Application

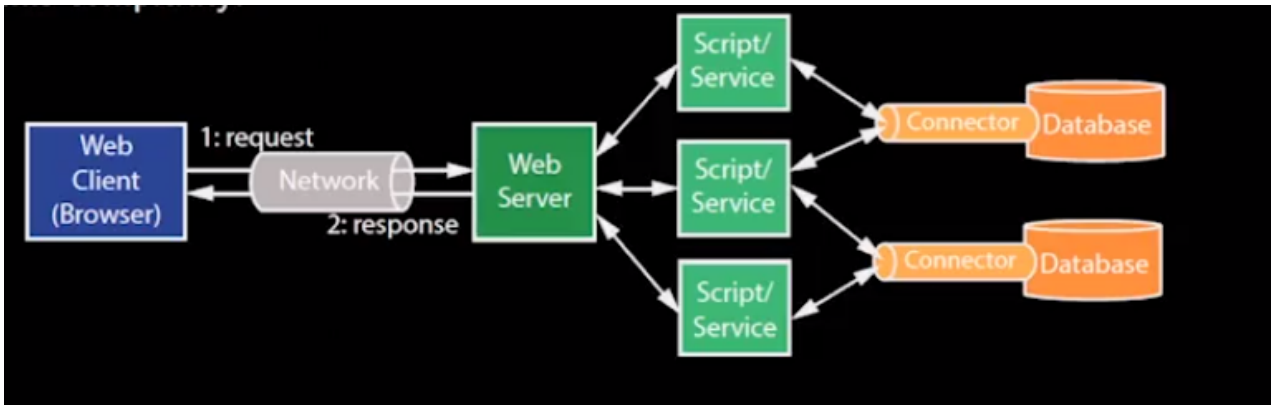
- A Web 1.0 application architecture is not much more complicated than the client-server model



- The web server is primarily fetching static web pages - not much interactivity
- No separation of data from its presentation.
- The browser is very simple - it only needs to render HTML

Web 2.0 and 3.0 Application

- Web 2.0 and 3.0 application architectures are better organized to deal with this complexity:



- Server-side functionality is partitioned more intelligently
- The browser is more capable, with better standards support.