



CoSc3081

Web Programming

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Chapter 1

The World Wide Web

- Course overview
- The Internet and World Wide Web
- Web Hosting and Domain Name Registration



Course Objective

- At the end of this course you will be able to:
 - ▣ Provide fundamental concepts and skills for the understanding and development of web- based applications.
 - ▣ Construct Web sites using HTML and Server Side scripting Languages.
 - ▣ Implement client-side interactivity
 - ▣ Use CSS to manage Web site presentation and maintenance



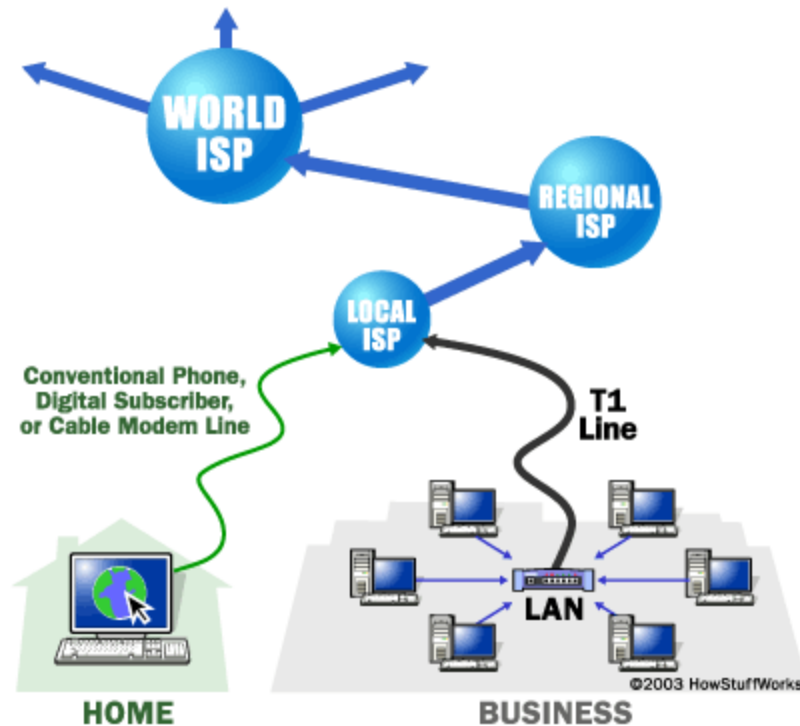
Course Objective...

- At the end of this course you will be able to:
 - Select and customize existing technologies to set up and maintain web servers
 - Specify, build and manage form and content of information-rich web sites
 - Design, implement and evaluate client-server systems following specific protocol specifications, taking into account concurrency issue.



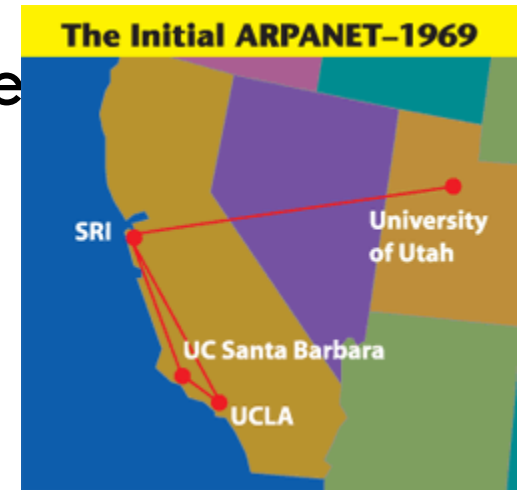
What is the internet?

- A collection of computer networks that use a protocol to exchange data
- Is the World Wide Web (WWW) and the internet the same?



Brief history

- Began as a US Department of Defense network called ARPANET (1960s-70s)
- Packet switching (in the 60s)
- E-mail is born on 1971
- TCP/IP beginning on 1974 (Vinton Cerf)
- USENET (1979)
- By 1987: Internet includes nearly 30,000 hosts



Brief history

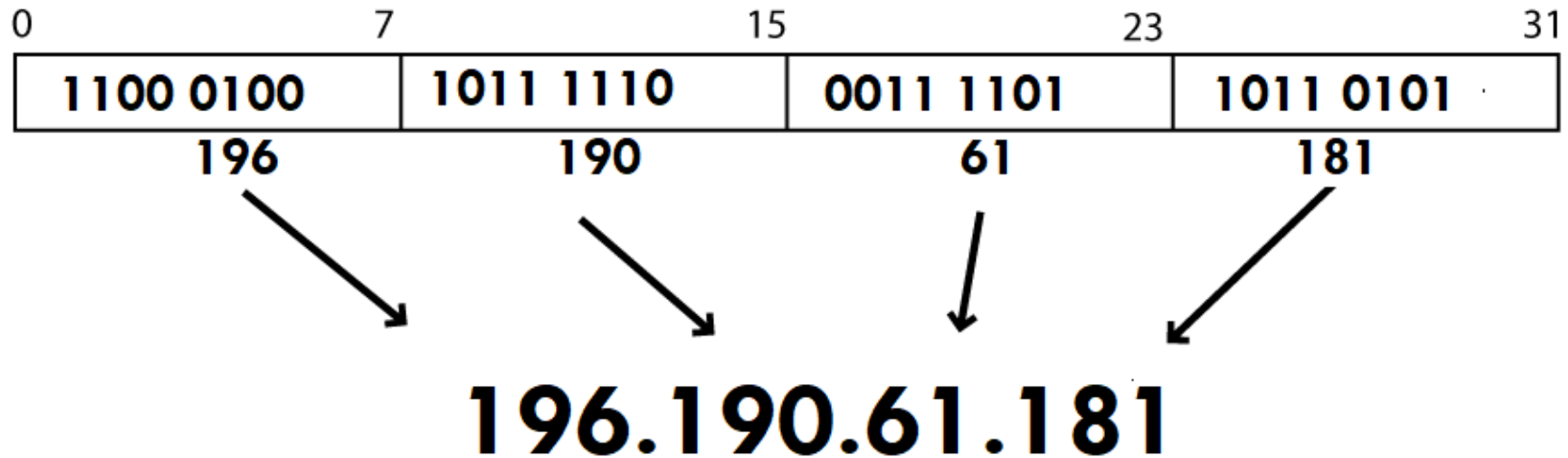
- ❑ WWW created in 1989-91 by Tim Berners-Lee
- ❑ Popular web browsers released
 - ❑ Netscape 1994
 - ❑ IE 1995
- ❑ Amazon.com opens in 1995
- ❑ Google January 1996
- ❑ Wikipedia launched in 2001
- ❑ MySpace opens in 2003
- ❑ Facebook February 2004





Internet Protocol (IP)

- Simple protocol for data exchange between computers
- IP Addresses:
 - ▣ 32-bit for IPv4
 - ▣ 128-bit for IPv6



Transmission Control Protocol (TCP)

- ❑ Adds multiplexing, guaranteed message delivery on top of IP
- ❑ Multiplexing: multiple programs using the same IP address
- ❑ Port: a number given to each program or service
 - ❑ port 80: web browser (port 443 for secure browsing)
 - ❑ port 25: email
 - ❑ port 22: ssh
- ❑ Some programs (games, streaming media programs) use simpler UDP protocol instead of TCP



Web Browser

- Web browser: fetches/displays documents from web servers
 - ▣ Google Chrome
 - ▣ Mozilla Firefox
 - ▣ Microsoft Internet Explorer (IE)
 - ▣ Apple Safari
 - ▣ Opera



Web Servers

- Web server: software that listens for web page requests
 - ▣ Apache
 - ▣ Microsoft Internet Information Server (IIS)



Domain Name Server (DNS)

- Set of servers that map written names to IP addresses
 - ▣ Example: myweb.edu.et → **196.190.61.181**
- Many systems maintain a local cache called a hosts file
 - ▣ Windows: C:\Windows\system32\drivers\etc\hosts
 - ▣ Mac: /private/etc/hosts
 - ▣ Linux: /etc/hosts



Uniform Resource Locator (URL)

- Identifier for the location of a document on a web site
 - ▣ Example: `https://www.ait.edu.et/cs/index.html`
- Upon entering this URL into the browser, it would:
 - ▣ ask the DNS server for the IP address of **www.ait.edu.et**
 - ▣ connect to that IP address at **port 80**
 - ▣ ask the server to GET **/cs/index.html**
 - ▣ display the resulting page on the screen



Web Languages

- ❑ Hypertext Markup Language (**HTML**): used for writing web pages
- ❑ Cascading Style Sheets (**CSS**): stylistic info for web pages
- ❑ PHP Hypertext Processor (**PHP**): dynamically create pages on a web server
- ❑ **JavaScript**: interactive and programmable web pages
- ❑ Asynchronous JavaScript and XML (**Ajax**): accessing data for web applications
- ❑ eXtensible Markup Language (XML): metalanguage for organizing data



Web Technologies

Frontend



Web Technologies

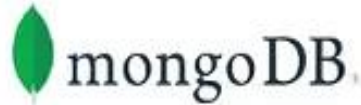
Backend



Database



ORACLE



Editor



Sublime Text 3



Brackets



Visual Studio Code





End of Chapter 1

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