CCY1210 – Introduction to Web Technologies

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Introduction to the Internet

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TECHNOLOGIES, VERSIONS AND IDEAS

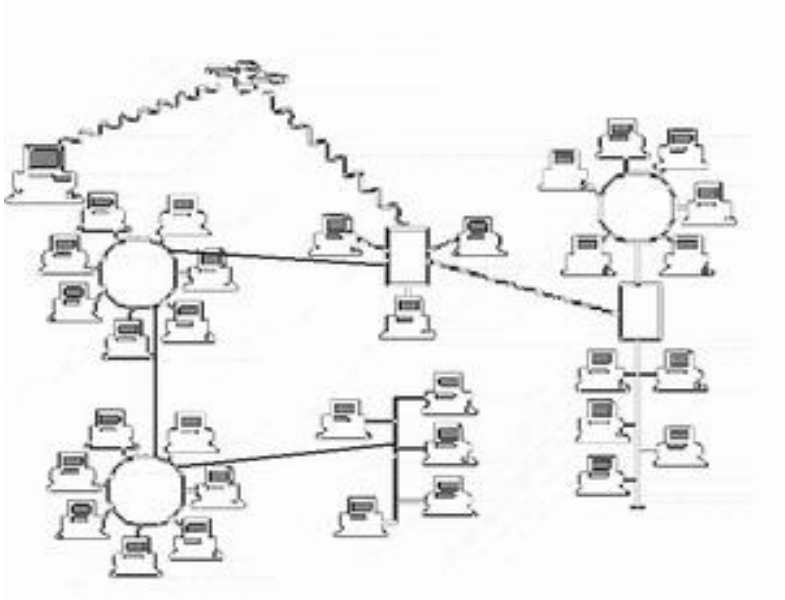
What is the Internet?

INTERNET = INTERnational + NETwork

What is the internet?

- A collection of many different networks of computers connected by:
  - Telephone cable
  - Optical fibers
  - Radio signals
  - Ethernet cable
  - Satellite communication
  - Microwave signals

What the Internet Looks Like



Computers Communicating

- The internet is a way for computers to communicate with each other. Therefore when a computer needs to communicate with another, it needs to know two things:
  - Who to communicate with => IP address
  - How to communicate => TCP/IP protocol

Internet Protocol (IP)

- **Protocol:** A set of rules used for a specific procedure. In our case communication.
- **Internet Protocol (IP):** A set of rules computers use to communicate across the internet.
- **Transmission Control Protocol (TCP):** A second layer protocol used to handle large amounts of data, and cases where the transmitted data are corrupted.
- TCI-IP is the set of rules that modern computers use to communicate with the internet

IP Address

- Every computer on the internet has a unique address, used to identify it, called IP address.
- IP address is composed of four numbers separated by a period (.) e.g. 192.168.10.103
- With the number of computers on the internet, it is not practical for every computer to know the IP address of every other. There are specific computers used for this job called routers. These act like post offices.

Web Pages

- The World Wide Web consists of files, known as pages or web pages, containing links to resources throughout the internet.
- Access to the Web pages may be accomplished by:
  - Entering the Internet address directly
  - Browsing through pages and selecting links to move from one page to another.
  - Searching through subject directories linked to organized collections of Web pages.
  - Entering a search statement at a search engine.
- A Web site is a collection of web pages under the control of one person or group. Usually there is a default or starting page, and from there links to the rest web pages of the site.
- How can we build web pages?

What do we need to build a (simple) website?

1. A way to define structure and content (the way our website is build, the information it contains, the connections it has)
   - This is done with Hypertext
2. A way to define look (how the information is displayed)
   - This is done with Style-sheets

- The two main web technologies for defining hypertext and style sheets are: HTML and CSS

Hypertext = Hyper (super) + text

- Is a document containing connections to other documents. These connections are called links and are user selectable.
- Links can be words or graphics, and they may lead to other documents, images, video and sound.
- Hypertext is created with documents written in a language known as Hyper Text Markup Language (HTML).
- In this language marks or tags as better known are used to format the text, place the links and incorporate graphics, video and audio files.

CSS = Cascading Style Sheets

- Style sheets are instructions that tell the browser **how to display** HTML
- Styles were added to HTML version 4.0 (we are in version 5 now) to solve a problem
  - Different browsers displayed the same HTML differently!
- Think of it this way: CSS is to HTML what clothes are to a person.
- But how can I find a "person" in the "world"?
  - How can I find a website in the internet?

The Uniform Resource Locator

- The URL specifies the Internet address of a file stored on a host computer connected to the Internet.
- Every file on the internet has a unique URL.
- URLs are translated into numeric address using a special software system, the **Internet Domain Name System** or DNS.
- An example of a URL is:

http://www. citycollege.sheffield.eu

The Anatomy of the URL

- The format of the URL is:

  Protocol://host/path/filename

  http://www.city.academic.gr/intranet/courses/
  BSc_Computer_Science/csd1730/default.html

- Protocol = http
- Host computer name = www
- Second level domain name = city.academic
- Top level domain name = gr
- Path = intranet/courses/BSc_Computer_Science/csd1730
- File name = default.html
- Other examples:
  - telnet://library.albany.edu
  - ftp://bongo.cc.utexas.edu/microlib

URL Specifics

- Other Host computer names are www2 and www3.
- Second level domain names can be registered (with a price) on special companies.
- Top level domains are predefined. Depending on the type, they have an appropriate name:

.com	commercial enterprise	.gr	Greece
.gov	US government	.de	Germany
.mil	US military	.jp	Japan
.net	Network access provider	.uk	United Kingdom
.org	Nonprofit organization	.ch	Switzerland
.edu	Educational institution	.ac	Academic institution

The Internet today

- Most popular websites:
  - Facebook, Google, YouTube, Twitter, Flickr, Amazon, ebay, etc
- Not just websites, but something new.
- A means of communication as never before seen.
- WEB 2.0

Web 2.0

- Tim O'Reilly, the O'Reilly Media Web 2.0 conference in 2004.
- **WEB 2.0 does not refer to software, or technologies.**
- It refers to the use of web technologies in order to facilitate a better and more interactive way of exchanging information, of interoperability and collaboration between users, based on their needs.
- WEB 2.0 is implemented with a number of web technologies (HTML, XML, Javascript, AJAX, etc) and over a number of devices (PC, mobile phones, hand held devices, etc).

So what is WEB 2.0

- http://www.youtube.com/watch?v=NLlGopyXT_g&feature=channel

Web 2.0 technologies

- HTML 5 : used to define how information is structured in the website
  - What web-pages the website will have
  - what logical sections each web-page has (toolbars, footers, etc)
- CSS 3 : used to “dress-up” the website, defines how each element in the website will look
- XML : used to define the actual information that will be shown at the website
- Javascript: used to add interactivity
- Others: SQL, php, etc.

So finally, what is this course about?

- How can people use the internet to find information?
  - How do I research a topic to find information?
  - How do I know that the information is good?
- How can people use the internet to add information?
  - How can I publish my work / ideas on the web?
  - How can I make it appealing to others?
  - How can I store and / or represent information in a universal way?

What is expected from you?

1. Attend all lectures (1 hour per week)
2. Study the material at home, find more information about the subject each week
3. Come to the laboratory sessions (2 hour per week) well prepared
4. Work the tasks we did at the lab again on your own time before the next lecture.
5. Work on the coursework that you will have (make a plan)
   - Some work will be you working within a group!
6. Prepare for the final assessed lab