Introduction to Computers
II
CSM 184

Unit 1

Introduction to the Internet and Web

Introduction

- It's no secret that more and more the internet is becoming an integral part of our everyday lives.
- But if you are new to the online experience, it may be a bit overwhelming.
- You may be wondering, "What exactly is the internet, and how does it work?“
- In the early days, most people just used the internet to search for information.
- Today's internet is a constantly evolving tool, that not only contains an amazing variety of information, but also provides new ways of accessing, interacting and connecting with people and content.

Internet

- When most people think of the internet, the first thing they think about is the World Wide Web.
- Nowadays, the terms "internet" and "World Wide Web" are often used interchangeably — but they're actually not the same thing.
- The internet is the physical network of computers all over the world.
- The World Wide Web is a virtual network of web sites connected by hyperlinks (or "links").
- Web sites are stored on servers on the internet, so the World Wide Web is a part of the internet.

Internet

- It is the largest network in the world that connects hundreds of thousands of individual networks all over the world.
- The popular term for the Internet is the “information highway”.
- Rather than moving through geographical space, it moves your ideas and information through cyberspace – the space of electronic movement of ideas and information.

Internet

- No one owns it
- It has no formal management organization.

- As it was originally developed by the Department of defense (USA), this lack of centralization made it less vulnerable to wartime or terrorist attacks.

- To access the Internet, an existing network need to pay a small registration fee and agree to certain standards based on the TCP/IP (Transmission Control Protocol/Internet Protocol) .

1. Finding Information Online

- The most common way to find information online is with Search Engine.
- All you have to do is type in a few words, and the search engine will give you a list of results that you can click on
- There are many different search engines that you can use, but Google is the most popular one

2. Intelligent Personal Assistants

- If you're using a mobile device, there are some situations where it's not convenient to type a search into a search engine. Instead, you can simply **talk** to your device's intelligent personal assistant.
- One example is Siri, which comes pre-installed on the iPhone 4S and the iPhone 5.
- With Siri, you can ask a question like "What's the weather today?" or "Are there any "gobe" restaurants nearby?" Siri will then try to give you an answer.
- You can also use Siri to do other things on your device such as setting up reminders. For example, you could say, "Remind me to go to the dentist on Thursday

3. Using the Internet to Communicate

- The internet isn't just about finding information. It's also about connecting with friends, family, and people you've never met before.

- Today, there are many different ways to communicate online, including social networking, chat, VoIP, and blogging.

Using the Internet to Communicate: Social Networking

- Social networking has become one of the main ways people keep in touch. Below are a few of the most popular social networking sites:
  - ❖ **Facebook** is used by about one billion people. If you have family or friends that live far away, you can use Facebook to keep up with their lives. You can also share things you've found online that interest you.
  - ❖ **Twitter** lets you share brief messages (or "tweets") with the entire world, or with just your circle of friends. By following people with similar interests, you can discover new things that you wouldn't have found otherwise.
  - ❖ **LinkedIn** is a site that you can use for business networking. It allows you to connect with other people in your field and find out about new job opportunities.

Using the Internet to Communicate: Social Networking

- **Chat and Instant Messaging –**

  Chat and instant messaging programs allow you to have conversations with your friends or just write them a quick note. Two examples are Yahoo! Messenger and Microsoft Messenger, WhatsApp, etc. Some sites, such as Gmail and Facebook, allow you to chat within your browser.

- **VoIP VoIP (Voice over Internet Protocol)**

- VoIP allows you to have telephone service through your internet connection. Some services also let you do video conferencing, such as Skype and Facebook Video Calling. Many of these services are free or very inexpensive, and some people use them as a replacement for a landline, or just to save minutes on their mobile phones.

Using the Internet to Communicate: Social Networking

Blogs

- Today, the average user has the ability to shape the web by adding to it. If you have knowledge or interests that you're passionate about, you can create your own blog and share your thoughts with the world.

- There are many sites like blogger.com and wordpress.com that let you create a blog for free. You don't need any web design experience— most of the technical stuff has already been created for you, and you can choose a predesigned template that has the look and feel that you want.

4. Media on the Internet

- TV, radio, and the internet used to be completely separate things, but that's no longer true with today's technology. You can now watch TV shows on your computer, and you can connect to the internet on many TVs and DVD/Blu-ray players.

- In addition, you can listen to online radio from all over the world, thus granting you greater access to a more diverse range of media.

5. Streaming Media

- TV and radio on the internet are examples of streaming media, which means the media downloads while it’s playing so you don't have to wait for it to download first.

- Not all media is streaming. If you've ever bought music on the iTunes store, you probably had to wait for it to download before you could listen to it.

6. Media Players and Embedded Media

- Media is often embedded in a web page, which means that it plays within the web browser. Other times, you'll use a separate program called a media player to play it.

- Examples include Windows Media Player and iTunes. An iPod contains built-in media player software that can play various types of files.

7. Online Media on Your TV

- You can now access online TV shows, movies, and music on your TV.
- Many newer TVs are able to connect to an existing internet connection. – (Utube, Netflex)
- If yours doesn't have this feature built-in, you can buy a separate digital media receiver, which is a small device that connects to your TV.
- Apple TV and Roku are two examples of digital media receivers. Many game consoles, such as the Xbox 360 and PlayStation 3, can also be used to access online content.

Other uses of the Internet

- Send e-mail messages.
- Send (upload) or receive (down load) files between computers.
- Participate in discussion groups, such as mailing lists and newsgroups.
- Surfing the web.

What is Web?

- The **Web (World Wide Web)** consists of information organized into Web pages containing text and graphic images.
- It contains hypertext links, or highlighted keywords and images that lead to related information.
- A collection of linked Web pages that has a common theme or focus is called a **Web site**.
- The main page that all of the pages on a particular Web site are organized around and link back to is called the site's **home page**.

How to access the Internet?

- Many schools and businesses have direct access to the Internet using special high-speed communication lines and equipment.
- Students and employees can access through the organization's local area networks (LAN) or through their own personal computers.
- Another way to access the Internet is through Internet Service Provider (ISP).

How to access the Internet?

- To access the Internet, an existing network need to pay a small registration fee and agree to certain standards based on the TCP/IP (Transmission Control Protocol/Internet Protocol) reference model.
- Each organization pays for its own networks and its own telephone bills, but those costs usually exist independent of the internet.
- The regional Internet companies route and forward all traffic, and the cost is still only that of a local telephone call.

Internet Service Provider (ISP)

- A commercial organization with permanent connection to the Internet that sells temporary connections to subscribers.
- Examples:
- Prodigy, America Online, Microsoft network, AT&T Networks.
- Cloud GHANA, vTechnology Ghana, Teledata ICT Ltd, MTN, Vodafone, Surfline, Busy 4G, Teledata ICT, etc

How to access the Web?

- Once you have your Internet connection, then you need special software called a browser to access the Web.
- Web browsers are used to connect you to remote computers, open and transfer files, display text and images.
- Web browsers are specialized programs.
- Examples of Web browser: Netscape Navigator (Navigator), Mozilla Firefox, Google Chrome and Internet Explorer, MS Edge, Safari, Opera

Client/Server Structure of the Web

- Web is a collection of files that reside on computers, called **Web servers**, that are located all over the world and are connected to each other through the Internet.
- When you use your Internet connection to become part of the Web, your computer becomes a **Web client** in a worldwide client/server network.
- A **Web browser** is the software that you run on your computer to make it work as a web client.

Hypertext Markup Language (HTML)

- The public files on the web servers are ordinary text files, much like the files used by word-processing software.
- To allow Web browser software to read them, the text must be formatted according to a generally accepted standard.
- The standard used on the web is Hypertext markup language (HTML).

Hypertext Markup Language (HTML)

- HTML uses codes, or tags, to tell the Web browser software how to display the text contained in the document.
- For example, a Web browser reading the following line of text:

  <B> A Review of the Book<I>Wind Instruments of the 18th Century</I></B>

- recognizes the <B> and </B> tags as instructions to display the entire line of text in bold and the <I> and </I> tags as instructions to display the text enclosed by those tags in italics.

Addresses on the Web:IP Addressing

- Each computer on the internet does have a unique identification number, called an IP (Internet Protocol) address.
- The IP addressing system currently in use on the Internet uses a four-part number.
- Each part of the address is a number ranging from **0 to 255**, and each part is separated from the previous part by period,
- For example, **106.29.242.17**

IP Addressing

- The combination of the four IP address parts provides 4.2 billion possible addresses (256 x 256 x 256 x 256).
- This number seemed adequate until 1998.
- Members of various Internet task forces are working to develop an alternate addressing system that will accommodate the projected growth.
- However, all of their working solutions require extensive hardware and software changes throughout the Internet.

Domain Name Addressing

- Most web browsers do not use the IP address to locate Web sites and individual pages.
- They use domain name addressing.
- A **domain name** is a unique name associated with a specific IP address by a program that runs on an Internet host computer.
- This program, which coordinates the IP addresses and domain names for all computers attached to it, is called **DNS (Domain Name System) software**.
- The host computer that runs this software is called a **domain name server.**

Domain Name Addressing

- Domain names can include any number of parts separated by periods, however most domain names currently in use have only three or four parts.
- Domain names follow hierarchical model that you can follow from top to bottom if you read the name from the right to the left.
- For example, the domain name gsb.uchicago.edu is the computer connected to the Internet at the Graduate School of Business (gsb), which is an academic unit of the University of Chicago (uchicago), which is an educational institution (edu).

- How about
  - **knust.edu.gh**

    the computer connected to the Internet at the
    university knust, an educational institution in Ghana

- No other computer on the Internet has the same domain name.

Uniform Resource Locators

- The IP address and the domain name each identify a particular computer on the Internet.
- However, they do not indicate where a Web page's HTML document resides on that computer.
- To identify a Web pages exact location, Web browsers rely on Uniform Resource Locator (URL).
- URL is a four-part addressing scheme that tells the Web browser:

➢ What transfer protocol to use for transporting the file

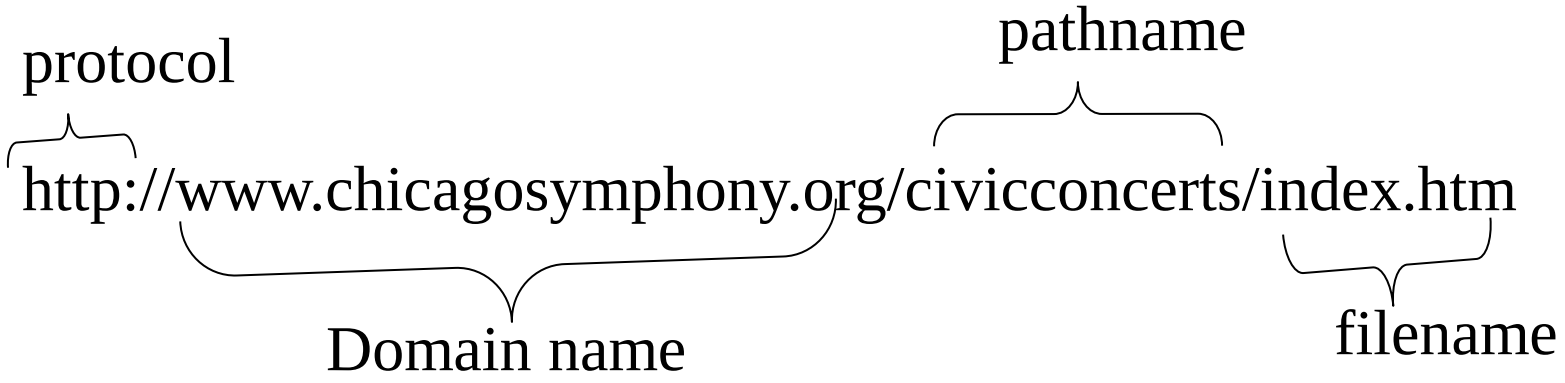
➢ The domain name of the computer on which the file resides

➢ The pathname of the folder or directory on the computer on which the file resides

➢ The name of the file

Structure of a Uniform Resource Locators

HTTPS is far more secure than HTTP.



HTTPS is HTTP with encryption and verification

Many websites use HTTP. However, back in 2014, Google recommended that sites switc to HTTPS. Until then, only sites with e-commerce pages really bothered to use HTTPS.

http => Hypertext Transfer Protocol

HTTP

- The transfer protocol is the set of rules that the computers use to move files from one computer to another on the Internet.
- The most common transfer protocol used on the Internet is the Hypertext Transfer Protocol (HTTP).
- Two other protocols that you can use on the Internet are the File Transfer Protocol (FTP) and the Telnet Protocol

How to find information on the Web?

- A number of search tools have been developed and available to you on certain Web sites that provide search services to help you find information.
- Examples:
- Google search engine, Bing, AOL

➢Yahoo → www.yahoo.com

➢Excite → www.excite.com

➢Lycos → www.lycos.com

➢AltaVista → www/alta-vista.com

➢MSN WebSearch → www.search.msn.com

How to find information on the Web?

- You can find information by two basic means.
- **Search by Topic** and **Search by keywords**.
- Some search services offer both methods, others only one.
- Yahoo offers both.

➢Search by Topic

You can navigate through topic lists

➢Search by keywords

You can navigate by entering a keyword or phase into a search text box.