

## ***Understanding Internet Basics***

Short History of the Internet

What is Internet?

What are Local Area Network (LAN) and Wide Area Network (WAN)

What are Server and Clients?

How Internet Works?

What is World Wide Web?

### **♣ Short History of the Internet**

In 1969, the US Department of Defense started a project to allow researchers and military personnel to communicate with each other in an emergency. The project was called **Arpanet** and it is the foundation of the Internet.

Throughout the 1970's, what would later become the Internet was developed. While mostly military personnel and scientists used it in its early days, the advent of the World Wide Web in the early 1990's changed all that.

Today, the Internet is not owned or operated by any one entity. This worldwide computer network allows people to communicate and exchange information in new ways.

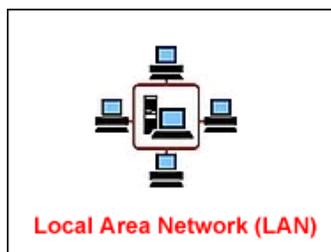
### **♣ Internet**

The Internet is the largest computer network in the world, connecting millions of computers. A network is a group of two or more computer systems linked together.

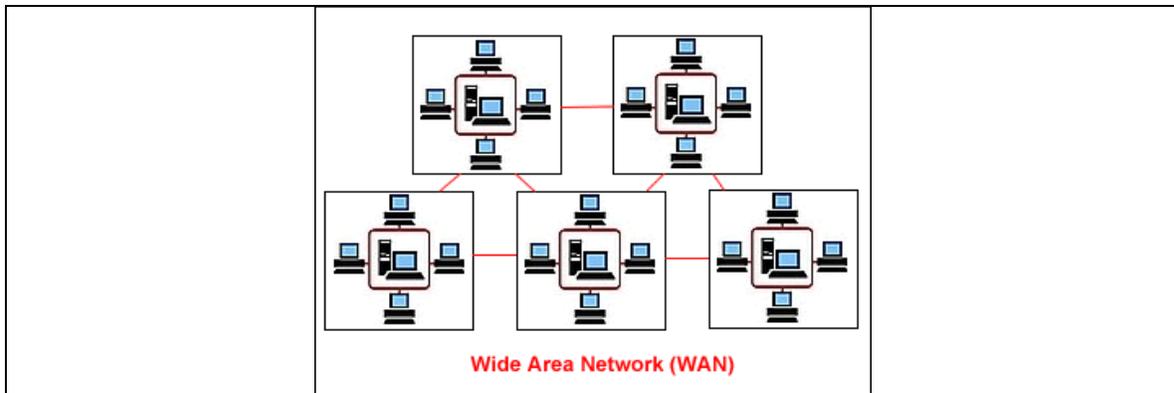
### **♣ Local Area Network (LAN) and Wide Area Network (WAN)**

There are two types of computer networks:

**Local Area Network (LAN):** A LAN is two or more connected computers sharing certain resources in a relatively small geographic location (the same building, for example).



**Wide Area Network (WAN):** A WAN typically consists of 2 or more LANs. The computers are farther apart and are linked by telephone lines, dedicated telephone lines, or radio waves. The Internet is the largest Wide Area Network (WAN) in existence.



### ♣What are Server and Clients?

All computers on the Internet (a wide area network, or WAN) can be lumped into two groups: servers and clients. In a network, clients and servers communicate with one another.

- **Servers**

A server is the common source that :

1. Provides shared services (for example, network security measures) with other machines
2. Manages resources (for example, one printer many people use) in a network.
3. The term server is often used to describe the hardware (computer), but the term also refers to the software (application) running on the computer. Many servers are dedicated, meaning they only perform specific tasks.

For example,

An email server is a computer that has software running on it allowing it to "serve" email-related services.

A web server has software running on it that allows it to "serve" web-related services.

- **Clients**

Independent computers connected to a server are called clients. Most likely, your home or office computer does not provide services to other computers. Therefore, it is a client. Clients run multiple client software applications that perform specific functions.

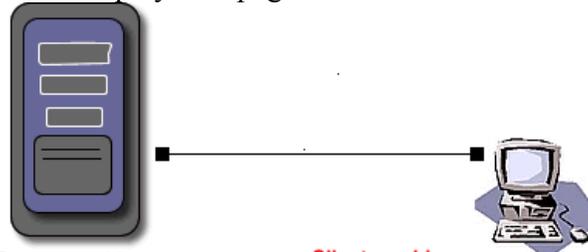
For example,

An email application such as Microsoft Outlook is client software.

Your web browser (such as Internet Explorer or Netscape) is client software.

### ♣How Internet Works?

- Your computer (client hardware) is running a web browser such as Internet Explorer (client software).
- When you want to surf the web, your browser connects to a remote server and requests a web page.
- The remote server (server hardware) runs web server software (server software).
- The web server sends the web page to your computer's web browser.
- Your web browser displays the page.



**Server machine running a web server**

- Remote server runs web server software
- Web server sends the web page to the client machine's browser

**Client machine running a web browser**

- Running a web browser such as Netscape Navigator
- Connects to server and requests a web page
- Web browser displays the web page

### ♣ World Wide Web

- Tim Berners-Lee, a software engineer, invented the World Wide Web in 1991.
- The Web is a system of Internet servers that support specially-formatted documents.
- These specially formatted documents are text documents created in HTML, a formatting language. In conjunction with the World Wide Web, your web browser interprets these text documents so they become web pages.
- Web pages contain formatted text, graphics, sound, animation, and video, allowing point and click navigation.
- Before the Web, the Internet was mostly text-based. To use it, you had to know lots of keyboard command prompts, making it largely unusable to the average person. The World Wide Web changed all that.

### ♣ Access the Internet

How do Modems and Web Browsers work?

Who are Internet Service Providers?

What is the need of Speed?

What is Bandwidth?

What type of access is available?

ISDN (Integrated Services Digital Network)

DSL (Digital Subscriber Line)

Cable Modem

### ♣ Modems and Web Browsers

To connect to the Internet, your computer requires a modem and a web browser.

- **Modem**

A modem is a device that converts a computer's outgoing data to a format that can be transferred via telephone lines. Modems can also convert incoming data so the computer can read it.

A modem can be located inside or outside your computer. Some of the different types of modems are internal, external, voice/data, and fax modems.

- **Web Browser**

Software like Internet Explorer and Netscape a web browser is required to navigate the Web.

#### ♣ Who are Internet Service Providers?

To access the Internet, you need a computer equipped with a modem and web browser, but you'll also need an ISP.

Internet Service Providers (ISPs) are companies that provide access to the Internet.

For a monthly fee (and an initial activation fee), you can purchase a software package from your ISP. These packages feature different levels of Internet access. Flat-rate service will buy you unlimited hours, whereas a less-expensive hourly package buys limited Internet access. In either case, the speed with which you access the Internet factors into how much you pay per month.

The ISP software package usually includes:

Username. A unique name used to gain access to a computer system.

Password. A combination of keyboard characters. Used in combination with a username, passwords allow access to restricted computer information. It is important to keep passwords secret.

Access phone number. For example, (919) 555-5555.

#### ♣ What is the need of Speed?

Slow Internet access means some users are unable to access certain web pages, especially those loaded with graphics, sound, and video. So, to access the latest web technologies, users need more speed.

In response to the need for speed, modems (a device used to access the Internet) were built that were capable of faster data transmission rates.

Faster data transmission means:

- Faster web pages
- Faster email services
- Music, animation, and video plays smoothly

#### ♣ What is Bandwidth?

## Bandwidth

A fast modem doesn't ensure fast transmission rates. Fast data transmission often depends on bandwidth.

Bandwidth is the amount of data actually being sent through a network circuit.

Example: Think of bandwidth in terms of the road system.

Let's say you want to estimate the time it takes for you to commute from home to work. You have to travel through a physical network of roadways to travel from home to work.

To estimate your commute, consider:

What is the speed limit?

Where are you located (big city or rural setting?)

How big (wide) is the road? (2-lane roads, 4-lane roads, or a 6-lane interstate?)

How much traffic will be on the road at any given time?

Is there any construction?

The Internet is similar to the roadway example. Remember, the Internet is a physical network (phone lines, etc). Data has to travel through that physical network. Too much traffic on the network means you may be unable to connect at a fast rate, or at all. The more open and wider your network is, the faster you can connect and surf.

## ♣ What type of access is available?

Many ISPs offer different levels of Internet access. The next few pages detail some different types of access.

### 56K Dial-up

#### Pros:

Uses existing phone lines.

Lower cost-usually around \$22.00 per month.

#### Cons:

Dial-up connection uses existing phone line, making it impossible to receive phone calls unless another line is installed. Uses existing phone lines.

Slow -- Can be limited to speeds of 28.8K to 33.6K. Upload speeds can be limited to as low as 28.8, with download speed approaching 56K under only perfect conditions.

Service can be somewhat unreliable (busy signals, spontaneously terminated sessions, etc).

## ♣ ISDN (Integrated Services Digital Network)

Faster than 56K dial-up, but every ISP does not support ISDN.

#### Pros:

Can provide 2-4 times the speed of a 56K modem.

Uses digital rather than analog signals to transmit data.

#### Cons:

Requires special equipment that can drive up your cost.

Data is not compressed so transmission rates can be comparable to 56k-at more cost.

May be replaced by other technologies.

### ♣ DSL (Digital Subscriber Line)

Newer technologies such as DSL use an ISP to connect to the Internet and allow faster connections.

#### Pros:

Can fall back to slower speeds if the line cannot handle the modem's fastest speed.  
Uses the existing phone line in most cases.  
Does not tie up existing phone line, leading to "always on" access.  
More bandwidth results in improved streaming audio/video, online games, application programs, telephone calling, video conferencing and other high-bandwidth services.  
Can connect multiple computers on a single line.  
Faster than a 56K dial-up modem.

#### Cons:

Availability-limited to homes/businesses with a dedicated copper wire running between it and the phone company's nearest central office.  
Cost-includes installation fees and monthly charges (around \$50.00 per month).  
Need a firewall to ensure home network security. (additional cost)  
Service is not infallible.

### ♣ Cable Modem

Cable modems, another newer technology that uses an ISP to connect to the Internet, allows faster connections.

#### Pros:

Uses coaxial and/or fiber-optic cable rather than phone lines for data transmission, so performance doesn't depend on your distance from a central cable office.  
Can fall back to slower speeds if the line cannot handle the modem's fastest speed.  
Convenient for homes already wired with cable access.  
Does not tie up existing phone line, leading to "always on" access.  
More bandwidth results in improved streaming audio/video, online games, application programs, telephone calling, video conferencing and other high-bandwidth services.  
Can connect multiple computers on a single line.  
Faster than a 56K dial-up modem.

#### Cons:

Availability-limited to homes/businesses with cable access.  
Cost-includes installation fees and monthly charges (around \$40.00 per month).  
Often requires commitment to a cable TV package.  
A firewall is necessary to ensure home network security (additional cost).  
Service is not infallible.

## ♣ Understanding Web Browser Basics

What are basic tools of Web Browser?  
How to Refresh and Stop Web Pages?

## What Is a Search Engine?

### ♣ Basic Tools of Web Browser

To return to the last page you viewed, click your Back button. 

To return to the page you visited before you clicked the Back button, click the Forward button. 

Click the drop down menu to the right of the back and forward buttons to view and select from a list of recently visited sites.

To visit a web page, type the URL in the address bar and click the Go button or simply hit the Enter (Return) key on your keyboard.

Address 

### ♣ How to Refresh and Stop Web Pages?

While using your browser's cache may increase ease of use, you may not be getting the most up-to-date information a site has to offer. To do so, you need to refresh, or reload, a web page. Refreshing requests fresh pages from the web server rather than from the cache stored on your machine's disk.

Most browsers include a Refresh button on the toolbar.  (F5)

Refresh a web page when:

- You want to view the latest version of the page. For example, when viewing a discussion forum, or a news-driven website.
- You get a message that a web page cannot be displayed. For example, "Error 404, File not found."

Most browsers include a Stop button on the toolbar.  (Esc)

Stop a web page when:

- You want to stop a web page from loading.
- A page is taking too long to load.
- You mistyped a URL.

### ♣ What Is a Search Engine?

A search engine searches for keywords and returns a list of documents where the keywords can be found. Most search engines allow you to search using plain language relevant to the topic of interest, meaning you don't have to know any special programming tricks to effectively search the Web.

You're probably already familiar with search engines such as Yahoo, Google, Excite, or AltaVista. You may have even used a search engine to find our site.

## ♣ Understanding Internet Explorer (IE)

Identify IE's Toolbar?

Identify IE's Status bar and explorer bar?

How to Show and Hide Toolbars, Status bar and Explorer bar?

How to Customize Toolbars?  
How to set a Home Page?

### ♣ IE Toolbars

Internet Explorer features customizable toolbars to help you navigate the Web. Below are the toolbars featured in IE 5 and 6.

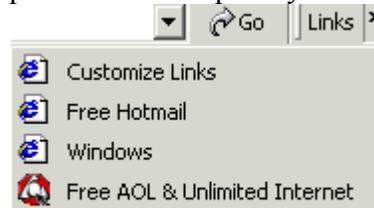
The Standard buttons bar displays commonly used buttons such as the Back, Forward, Stop, Refresh, Home, Search, Favorites, History, and Print buttons.



The Address bar displays the address, or URL, of the web page you are currently visiting. Type new URLs or search terms into the Address bar.



The Links bar is a convenient place to add frequently used links.



**Links bar located to the right of the Address bar**

The Radio bar, available when Windows Media Player is installed, includes a radio station guide and control button such as "play" and "volume."



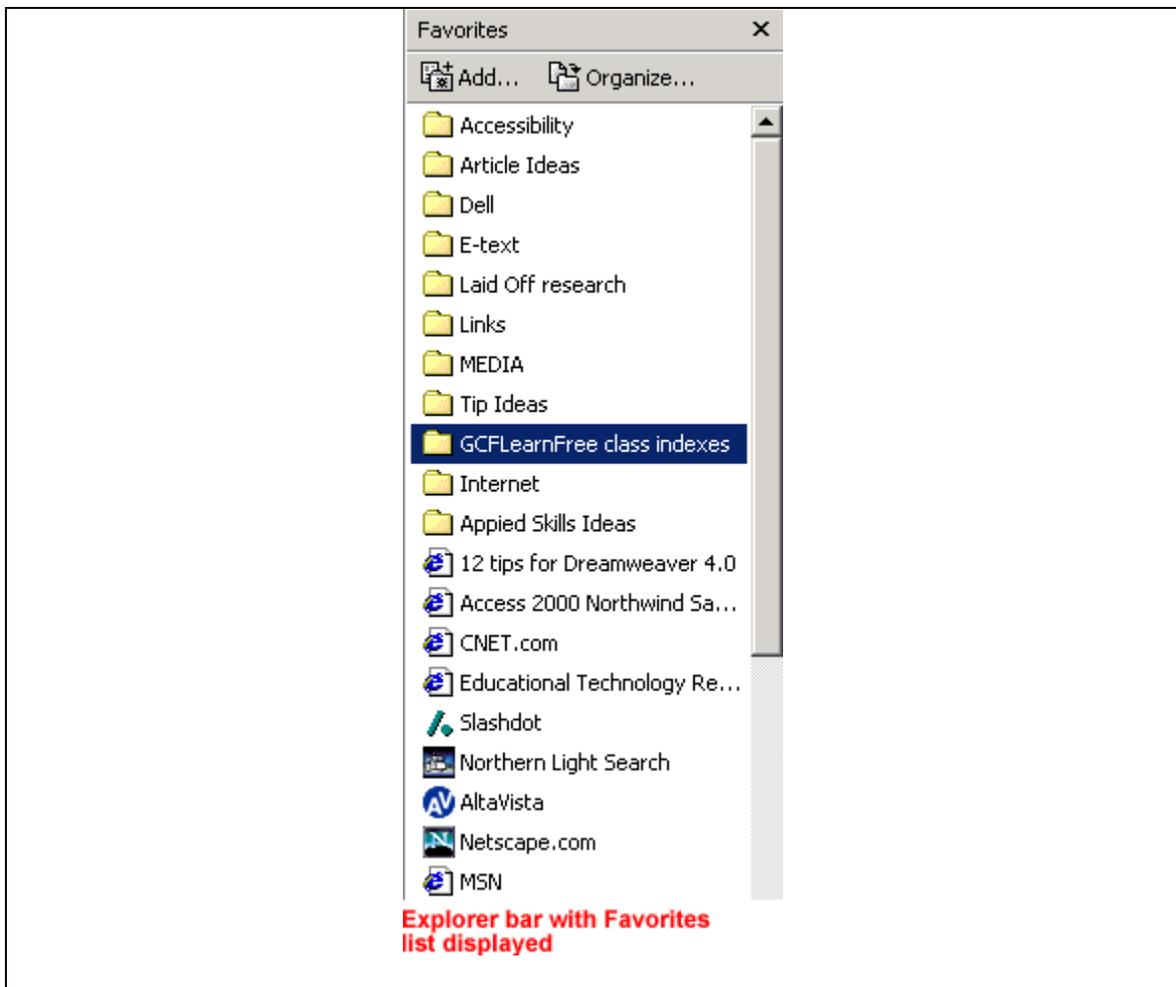
**Radio bar**

### ♣ IE Status Bar and Explorer Bar

Internet Explorer's Status bar and Explorer bar offer additional web navigation methods. The Status bar, located at the bottom of the IE window, indicates when a web site is found, loading, waiting for reply, or if you have a secure connection. It is always a good idea to display the Status bar, particularly for security reasons.



The Explorer bar is a sidebar located in the left side of the IE window. It's a convenient way of accessing the Favorites list, History list, and Search function.

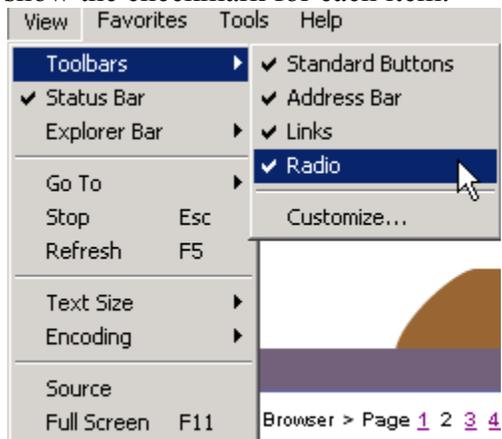


**♣ How to Show and Hide Toolbars, Status bar and Explorer bar?**

In Internet Explorer, you can show and hide the toolbars, Status bar and Explorer bar.

***To show or hide the toolbars:***

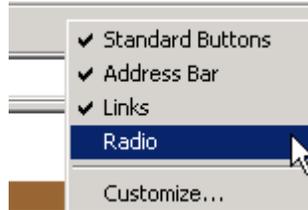
- Choose View → Toolbars from the IE menu bar.
- Click the clear or show the checkmark for each item.



**All toolbars are currently displayed**

Alternately

- Right-click the toolbar and click to clear or show the checkmark for each item.



**To show or hide the Status bar:**

- Choose View and click to clear or show the checkmark.

**To show or hide the Explorer bar:**

- Choose View Explorer bar.
- Choose from Search, Favorites, History, or Folders.

Alternately

- Click  Search  Favorites  on the Standard button toolbar.
- Click button again to hide the Explorer bar or click the X in the upper right corner or the Explorer bar

#### ♣ How to Customize Toolbars?

In Internet Explorer, you can move and resize the toolbars.

**To move a toolbar:**

- Look for the resize/move toolbar handle.
- Put your mouse pointer over the resize/move toolbar handle.
- The mouse pointer becomes a double-headed arrow.
- Click and drag a toolbar up, down, left, or right.
- When moved, toolbars "snap" to the outer edge of the IE window.

**To resize a toolbar:**

- Look for the resize/move toolbar handle.
- Put your mouse pointer over the resize/move toolbar handle.
- The mouse pointer becomes a double-headed arrow.
- Click and drag until toolbar is desired size.

#### ♣ How to set a Home Page?

Your home page is the first page you see when you start Internet Explorer (IE). Change your home page to make surfing the Web easier and more convenient.

For example, if you want to start each Internet session with Google, <http://www.google.com> should be your home page. If you like to check the weather every time you log on, you might prefer <http://www.weather.com> as your home page.

**To change the Home Page:**

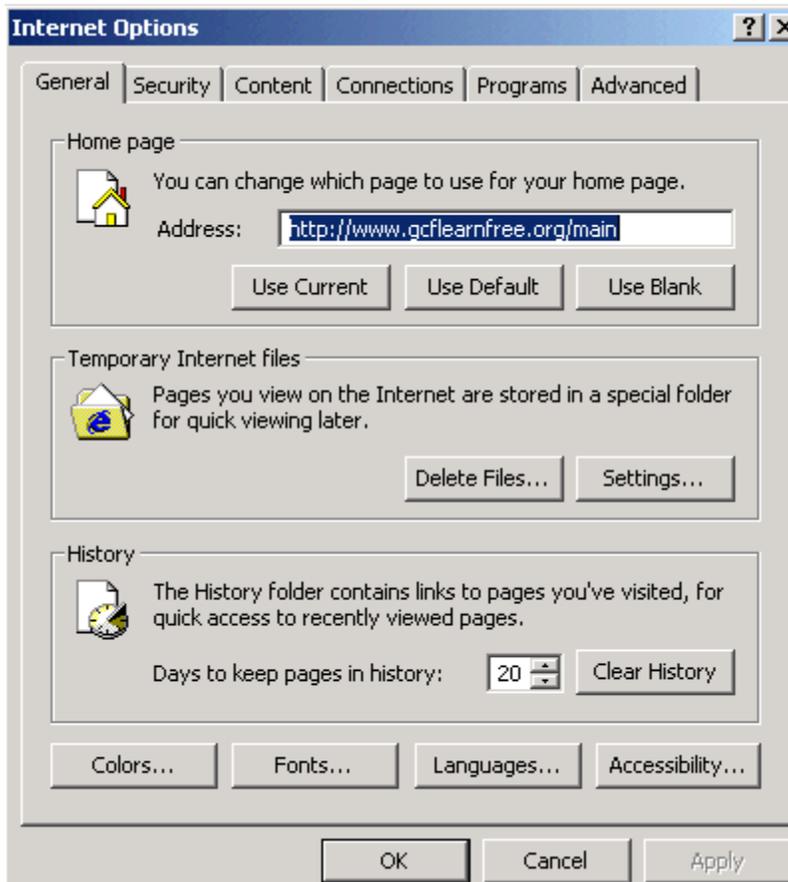
- Choose Tools Internet Options from the IE menu bar. The Internet Options dialog box opens.



- If not already selected, click the General tab.
- Type a new URL in the home page section of the General tab.
- Click OK.

Alternately

- If you like the current page and want to set it as your new home page, click the Use Current button.
- The Use Default button sets [www.microsoft.com](http://www.microsoft.com) as your home page.
- The Use Blank button sets a blank page as your home page. This option is beneficial to those who don't want to begin each Internet session waiting for a home page to load.
- Click OK.



## ♣ Understanding Internet Safety

What should one do for Internet Safety?

How to set a Home Page?

What are Cookies?

All about Viruses

What is an Antivirus Software?

What are Firewalls?

Is Firewall necessary?

Who needs a Firewall?

### ♣ Internet Safety

#### The Importance of Being Safe

If you use the Internet on a semi-regular basis, you are probably concerned with Internet security. There's a lot to know regarding Internet security. In this unit, you'll learn some of the basic things you can do to ensure that your computer, and the sensitive data stored in your computer, will remain safe and secure.

Think for a moment: What kind of data do you have stored on your computer (finances or other sensitive personal information)? Have you ever purchased anything over the Internet? Do you do your banking online?

Unfortunately, there are criminals (sometimes referred to as "hackers" or "crackers") who would like to break or "hack" into your computer for a variety of reasons.

How do you make sure that [www.onlinestore.com](http://www.onlinestore.com) will not sell, loan, rent, lease, barter or publish your personal information?

One of your first lines of defense against potential hackers is password protection.

#### ***Password Do's***

- Computers, programs, and files are often password protected. A password (along with a user name) grants you access to protected computers, programs, or files.
- Do passwords protect computers, accounts, programs, files, etc. Whenever possible, add this basic level of security.
- Do change your password on a regular basis. Your local administrator and/or ISP may recommend when it's best to change your password. Many people change their password once every three to four months. However, if you notice your account has been compromised in any way, change your password immediately. For example, if the date and time of your last login doesn't match the date and time that you remember last being logged in, change your password.
- Do use a password that is at least eight to ten characters long. Use a combination of numbers and letters. A longer password provides greater security. Remember, some passwords are cAse-SeNSitiVE.
- Do memorize your password. While you may find it convenient to keep a list of your user names and passwords beside your computer, this is a blatant security

risk. Don't keep an electronic list of passwords on your computer, particularly if you use a laptop.

### ***Password Don'ts***

- Don't let anyone look over your shoulder while you type in your password. Think the woman standing behind you while you use the ATM is too close for comfort? She may be. Also, don't knowingly give your password to anyone. The purpose of a password is that no one but you can log in and start using your account.
- Don't use a "one size fits all" password. Don't use the same password for your separate accounts. For example, use different passwords for your employer's computer network, voicemail, ISP, web mail, etc.
- Don't choose a password that can be easily traced to you. For example, using your birth date, social security number, phone number, the name of your spouse, child, relative, pet, etc is a bad idea.
- Don't use well-known abbreviations. For example, ASAP (as soon as possible) or NATO (North Atlantic Treaty Organization) is far too familiar (and short, for that matter) to make a solid password.
- Don't use words that can be found in the dictionary. Hackers use dictionaries as a tool to discover passwords. That goes for foreign dictionaries as well.
- Don't ever use your user name as your password. Or your name, for that matter. This is the easiest password to crack.

### ***Creating a Good Password***

- By now, you already know a lot about creating a password, but you may be at a loss for what password you'll use next. Using the following steps, create a good password.
- First, create a sentence or phrase. For example: In Tallahassee Playing Piano for Grandpa March 4.
- Next, base your password on that phrase. Your password would look like this: itpp4gpa34
- It's easy to remember, ten characters, a combination of letters and numbers based on a phrase, can't be found in the dictionary, is not a common acronym, and the information is not personal. (I don't live in Tallahassee, and can't play piano for anyone including my grandpa, in March or any other time.)
- Do not use the example just given as your password. Remember, it is on public display, available to anyone.

### ***♣ What are Cookies?***

Many e-commerce web sites use cookies. A cookie is a small file that a web site puts on your hard drive so it can remember something about you at a later time. For example, a cookie may contain information (such as a unique user ID) that is used to track the pages of the sites you've visited.

At GCF Global Learning, we use a special type of cookie called a session cookie. These cookies expire when you leave our site and do not store personally identifiable information in the cookie. Other sites cannot read them. We use session cookies simply to

keep track of how many members and registered students use the site.

While cookies may seem like an invasion of privacy, they can improve your online experience. Cookies allow you to "personalize" web sites, such as a personalized MSN or Apple start page. They may also save you some time. You don't have to type the same information into a frequently used site over and over again. Cookies help keep track of your order, and certain ads or products display because of what you've purchased in the past, etc.

### ***Controlling Your Cookies using IE***

Depending on your web browser, you may turn cookies on or off, or alerted when a cookie is placed on your hard drive. See your browser's Help menu for more information.

*Internet Explorer 6.0 for PC:*

- Choose Tools →Internet Options from the menu bar.
- Click the Security tab.
- Click Custom Level at the bottom of the window.
- Scroll down to Cookies.
- Two options display: "Allow cookies that are stored on your computer" and "Allow per-session cookies (not stored)"
- Select Enable for both.
- Click OK.

## **♣ Virus Protection**

What is a virus?

Designed by a computer hacker, a virus is a piece of programming code designed with harmful intent. If you open or receive a virus, it can change your desktop settings, reassign file extensions, or erase your entire hard disk.

Viruses can be transmitted as an email attachment, an Internet download, or be present on a CD or floppy disk you insert into your computer. Hackers like to disguise these viruses so average computer users open them and transmit them, whether they know it or not. Many viruses are designed so that they automatically spread to other computer users.

The newer macro viruses send infected documents over the Internet and spread them further than ever.

What is a Trojan horse?

A Trojan horse is a seemingly harmless program in which harmful code is contained. It can gain control of your computer and do some serious damage, such as ruining your hard disk.

What is a worm?

A special type of virus, a worm is a self-reproducing program. While it does not infect other programs, it creates multiple copies of itself. These copies create more copies, and well, you get the idea. Worms are usually detected on networks and larger multi-processing operating systems. With each new copy replicating and executing, systems become overloaded and simply shut down

### ♣ What is an Antivirus Software?

Home computers users and businesses alike are concerned about protecting their computer assets. Computer viruses, worms, and Trojan horses can all compromise security and make your life miserable. There are more and more of these annoyances reported everyday, so protect yourself.

Your first line of defense: Purchase and install Anti-virus software.

*Anti-virus software is a program that searches your computer's hard drive, floppy disks, and email attachments for any known or potential viruses, identifies them, and in some products, removes them.*

You can purchase Anti-virus software such as Norton Anti-virus and McAfee Virus Scan from Internet vendors or traditional "brick and mortar" stores. Prices and level of protection vary from product to product, so do your research.

#### ***Protect Yourself***

- Buying Anti-virus software is more than just a good idea; it's a necessity. However, you are your own best protection from dangerous viruses. Use caution and common sense when opening, executing, or downloading files.
- Don't open email file attachments that come from a suspicious source or from people you don't know.
- Don't open email attachments if the subject lines seems strange or is unexpected.
- Don't open files attached to an email unless you know what it is, even if it appears to come from a friend. Viruses can spread through email so you might want to check to see if this person actually sent the email.
- In general, be cautious when downloading files from the Internet. Don't download files from strangers. Make sure that the source is a legitimate one. If you're not sure, don't download the file at all or download the file to a floppy disk and check it with your anti-virus software.
- If in doubt, don't open, download or execute file or email attachments. It's better to be safe than sorry.
- In order to stay protected, update your software on a regular schedule (once or twice a week), and always when a new virus appears. Anti-virus software companies post the latest signatures, or .dat files, on their web sites.
- Stay informed of the latest threats and downloads the signatures to remain a high level of protection.

### ♣ What are Firewalls?

The best protection against security threats may be anti-virus software and a firewall. In the computer world, *a firewall is a system that keeps dangerous Internet "flames" away from a private computer network, or LAN. In other words, it prevents unauthorized access to or from a private LAN. One mechanism blocks traffic, another permits traffic.*

### ♣ Is Firewall necessary?

Lurking on the Internet, there are thieves and troublemakers who want to log in to your

private network and start snooping around.

A firewall provides another layer of network security. Firewalls can't really protect against viruses, so Anti-virus software and regular updates are still a good idea.

#### ♣ Who needs a Firewall?

Business and home networks alike need a firewall to protect their private information.

##### ➤ **Businesses**

A firewall sets up an access control policy. Access control policies are used to keep people (hackers) from accessing the business's private network. Now that business-oriented data is frequently collected, kept, and analyzed with electronic database systems, businesses with security/confidentiality policies must protect themselves.

Firewalls are also used to keep people (employees) inside the private network. For example, employers may want to ensure that their employees are working, not emailing friends all day.

##### ➤ Homes

High-speed Internet connections, such as a cable or DSL modems, provide the convenience of "always on" access. Because the flow of information to and from your computer to the Internet is more accessible to hackers, you need another layer of security.