Discovering the Internet
Second Edition

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**Getting the most out of this textbook**

**Get Online!**

If all that you do is read the text on the printed pages of this book, then you won’t get very much out of it. If you really want to learn about the Internet and how it works, then you need to get online. Surf the Web, send an email or an instant message, and watch some streaming video. You need to become a part of the Internet in order to really understand it.

**Go to the book web site**

Open up a web browser, and go to http://www.bmoseley.com/dti/. There, you will find all kinds of information to compliment what’s in the book. There are activities, links to web sites, and other things to explore. There will even be additional chapters and updated versions of this book posted from time to time. Just like the Internet, this book is an ever-changing source of information. The way I look at it, the printed version of the book is just a snapshot of the Internet at a point in time, and something to get you started on your journey in learning about the Internet. Feel free to stop by and see what’s new as you continue to learn.

**Remix this book!**

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Chapter 1 – The History and Development of the Internet

The Birth of a Giant

Imagine this if you will: It is a cool day in October 1969. Inside a small room on the campus of Stanford University, a group of researchers are huddled around a tiny screen. Amid the whirring and beeping of the other machines in the room, the group remains silent. One of the men, with his ear to a phone, looks up and says, “Here it comes!” Their attention becomes even more focused on the small screen. Suddenly, the men erupt in a loud cheer -- jumping up and down, chattering to one another, and frantically writing in their notebooks.

Were these people watching the World Series? Were they crazy? If someone from the current generation of computer users had been present, they would have definitely thought so. If we could look closely at what the researchers were focused on in that moment, we would have seen nothing on the computer screen except a tiny capital letter “L”.

What’s so exciting about that?

The Development of the Internet

What these researchers had witnessed was the first transmission of data across what would become the grandfather of the modern day Internet. The Advanced Research Projects Agency network, ARPAnet, had its humble beginnings as a computer network that connected the campuses of University of California, Los Angeles (UCLA), Stanford University, University of California, Santa Barbara, and University of Utah. Each of these locations had a single node, or connection to the network. While there were other computer networks in existence, this one was special because of the large geographic area that it spanned.

The scene described above took place on October 29, 1969. This was the day that the first data was sent between two of the four computers that were connected to the ARPAnet. The researchers were simultaneously connected via computer and telephone. As data was sent from the UCLA campus to the Stanford campus, the researchers were to be alerted via the phone that the data was on its way. Had you been present as Charley Kline sent the word “LOGIN” from UCLA to a computer at Stanford, you would have witnessed more than just the first data transmission. With the transmission of the letter “G”, you would have also witnessed the first Internet outage as the system crashed.
The researchers didn’t let that stop them. By 1971, the Department of Defense-funded ARPAnet had 15 nodes, including cross country links to Massachusetts Institute of Technology (MIT) and other campuses. The technology for connecting these computers, called the “Internet Protocol”, was becoming more and more widely used. In 1972, email was introduced to the ARPAnet where it immediately flourished. By the end of 1973, email accounted for over 75% of the data traffic on the ARPAnet. By 1981, the expanding ARPAnet had over 213 nodes, with an additional node being added every 20 days. Soon, other existing networks from colleges and government agencies were being added to the ARPAnet, and in 1982 the word Internet, short for Interconnected Network, was first used to describe the network which now spanned much of the globe. By 1984, the Internet had over 1,000 hosts or attached computers, and was quickly expanding. Just three years later, the number of hosts had increased by a factor of 10 to 10,000 hosts, and email and newsgroups had become an essential mode of communication on many college campuses. In 1989, the Internet was made up of over 100,000 hosts.

In 1990, as the number of hosts on the Internet rose above 300,000, the ARPAnet was decommissioned, leaving the Internet as a stand-alone presence. In 1991, the Internet opened to corporate traffic, and the age of ecommerce began as corporations began to think about how they could use the Internet for corporate gain. Also in 1991, Tim Berners-Lee, known as the father of the World Wide Web (WWW), posted the code of what would later be considered the first Web Page to the alt.hypertext newsgroup. In 1993, the first graphical web browser was introduced. Mosaic, as it was called, brought the World Wide Web to the masses by making it easy to navigate the already vast web of interconnected documents found on the Internet. As more and more people began to use the Web, traffic on the Internet began to expand at a rate of 341.634% a year. By 1996, the Internet had become a vast global network, with almost 10 million hosts online.

A study in January of 2005 measured over 317 million hosts online with the number still expanding. The Internet and ecommerce industries generate billions of dollars and hundreds of thousands of jobs each year. Users can access the Internet through all sorts of devices including their computers, television sets, and cellular phones. It's possible to watch live video and hold a videoconference with anyone, almost anywhere around the world. All of this can be done with inexpensive equipment and little overall cost. The growth of the Internet has opened up a new world of information and opportunities for people across the globe.
Going a Little Deeper...

What is the Internet, exactly?

The Internet is most accurately described as a Wide Area Network (WAN). Simply put, it is a group of computers that are linked together for the purpose of communication with one another and are separated by varying amounts of physical distance. In fact, some people have referred to the Internet as ‘the ultimate wide area network’ because there are so many computers connected to it and they are separated by so much physical space. On the Internet, computers are connected by telephone and television cables, fiber optic cables, radio waves, infrared beams, and satellites. In fact, every time your computer is connected to the Internet, your computer becomes part of the Internet itself.

How is the Internet accessed?

Although it is a straightforward process, many people find themselves confused about how connecting to the Internet actually works. Here’s the really simple version:

1. Large ISPs (Internet Service Providers) lease bandwidth from the large phone, cable, and telecommunications companies.

2. Most of the large ISPs don’t deal with individual customers, instead, the large ISPs sub-lease their bandwidth to smaller ISPs, businesses, government and educational entities.

3. In turn, these groups deal with individual users who wish to access the Internet. Depending on the situation, users may pay for their access to the Internet by the hour, or they may pay a flat monthly rate for unlimited access. Of course, those individuals who are accessing the Internet from their place of work or school are almost never charged directly for their individual access. In these situations, the company or school usually picks up the tab for the total amount of data sent and received by its employees/students.

4. Ok, so as the customer of an ISP, you pay $19.95 a month for unlimited Internet access. What exactly does that get you? The most common type of access is called “dial-up” access, and it involves setting up a computer that is connected by a modem to a phone line to dial the phone number of an ISP.

5. When the connecting computer links to the computer on the other end of the line at the ISP, the user’s computer is temporarily given a unique address, called an IP or Internet Protocol Address, so that it will be recognized on the Internet.

6. At that point, the user’s computer becomes a part of the ever-growing, ever-changing Internet. Users can access the resources they are looking for; and when they finish what they are doing, they disconnect their computers from their ISP.
7. As soon as the ISP detects that the user’s computer has disconnected, the unique Internet address is returned to a pool, where it will wait for the next computer to connect.

The scenario above details one of several different ways that a single user can access the Internet. The most important part is the last few steps where the user is connected to the Internet, and the user’s computer is assigned a unique Internet address. This IP address is something common to every computer connected to the Internet.

**How fast is an Internet Connection?**

About 40% of all Internet users have broadband access to the Internet. This means that the connection allows information to flow to and from their computer at higher speeds. The end result of this is that the users don’t have to wait as long as people who don’t have a broadband connection for web pages, emails and other Internet information to appear on their computer. There are many different types of connections to the Internet. Some of them are broadband, while others are much slower.

**Dial-up Access** – This is still the least expensive way to connect to the Internet. For about $10 a month, and sometimes less, you can plug your computer into a phone outlet and connect to the Internet. The computer uses a piece of hardware called a modem to dial the phone number of another computer at your internet service provider (ISP). The other computer picks up the line, and then puts the calling computer through to the Internet. Although the ISP is typically connected to a broadband internet connection, the calling computer’s access speed is limited by the top speed of the phone line, which is often very slow. If you are dialing up, don’t plan on downloading music or watching videos. By the time it finishes downloading, the song will already be out of style.

**DSL** – Digital subscriber line (DSL) also works through your phone lines, but communicates via digital signals which enables more data to be sent through the phone line at one time. DSL is usually the cheapest type of broadband access in any area, although the availability of DSL might be limited in areas where homes are far away from the nearest telephone company switching station. With DSL, you are likely to achieve speeds that are five to ten times faster than dial up.

**Cable Modem** - Cable modem access is another very popular type of residential broadband. Instead of using your telephone lines to communicate, cable modem access uses your cable TV outlets and connects through your cable company. Cable access is often faster than broadband, but your cable connection is shared with your immediate neighbors. If you have a lot of teenagers who like to download music in your neighborhood, you may get better results with DSL.

**Wireless Access (WiFi)** – Go to your local coffee house, and you are likely to see one or two people poking around on their laptops. Is it because there is a magical connection between coffee and productivity? Maybe, but it’s more likely there is a wireless hotspot available at the coffee house. A wireless hotspot allows a computer to connect to the Internet at broadband speeds using radio signals. Wireless technology can be used in homes to connect your computer to your broadband connection as well, but in the case of the coffee house, the wireless users are probably paying by the hour or the day to use the service. Rates for such services usually range from six to ten dollars an hour if purchased on an hourly plan.
**GPRS /Cellular** – GPRS and other cellular modems are usually found in laptops, and are designed to allow the user to connect to the Internet from anywhere within a cellular network. Speeds are often comparable to dial-up access, although higher speed technologies are starting to make their way into the mainstream. This same technology is what is found in many newer cellular phones allowing them to connect to the Internet.

**What are my options for subscribing to an ISP?**

As far as paying for access to the Internet goes, there are four major options:

**A local/regional ISP** — A local or regional ISP is an Internet Service Provider that provides users in a given area with access numbers or high-speed access they can use to connect to the Internet. These ISPs are usually reasonably priced and offer a narrow range of services.

**National ISP** — These ISPs are usually larger companies that have Points of Presence in many of America’s larger cities or in a wide region. The major benefit of a National ISP is that when users travel, they can access the Internet from locations across the nation without having to pay extra fees. In addition to larger service areas, many nationwide ISPs also offer additional services like high-speed access, wireless access, and web site hosting. Earthlink is an example of a nationwide ISP.

**An Online Service Provider (OSP)** — Many people confuse Online Service Providers with Internet Service Providers and for good reason. To further confuse the situation, many OSPs call themselves ISPs. With a few important exceptions, they are actually very similar. Here are the differences between an OSP and an ISP:

- Many times an OSP will limit access to outside Internet resources or at least, make them a little more difficult to access than the “members only” areas, which tend to make money for the OSP.

- One of the most famous OSPs is America Online (AOL). Another OSP that you may have heard of is MSN, or the Microsoft Network.

**A Wireless Service Provider (WSP)** — As you may have already guessed from the name, a WSP is a company that provides access to the Internet via one or more types of wireless devices. Right now, one of the most popular devices for accessing the Internet wirelessly is the cellular phone. Many of these phones can send and receive messages and email, and some can even allow users to surf the web. As you can imagine, a full-size, multi-color web page doesn’t really look right on a two-inch-by-two-inch, one-color screen. As a result, many popular news, financial, and weather sites have designed special alternative web pages that are better suited for these tiny displays.

**Who owns the Internet?**

There are really two answers to this question. Although they seem to contradict one another, they are both true: 1. Nobody, and 2. Everybody. You see, nobody really owns the Internet because it is made up of every computer that is connected to it as well as the information or services that are contributed by that computer. In a sense, the Internet is more than a total of all of the computers in the world that are connected to each other. The Internet is *what happens* when they are all connected.
On the other hand, you can also say that everyone owns the Internet. In reality, everyone who is a part of it, from the largest corporations to individuals like you, owns a little piece of the Internet. Any time we contribute to what’s “out there,” we take ownership of another part of the world wide network of information.

The idea that ownership of the Internet is distributed among millions of people is what makes the Internet such a unique and powerful thing. Never before have people been able to communicate their individual ideas to such a huge audience so easily.

**Who controls the Internet?**

Ironically, even though the Internet isn’t really owned by anyone at all, it is very dependant on a few organizations that control the way things happen on the Internet. These organizations are made up of representatives from the Internet community as well as many of the people and groups who helped the Internet get to where it is today. The reason that most of these organizations were formed is to ensure that all parts of the Internet can fit together, that communication happens effectively on the Internet, and that everyone is ensured a fair share of access to what’s available on the Internet.

Here are some of the organizations that help control the Internet:

- **The World Wide Web Consortium (W3C)** — The mission of the W3C, as stated on its web site, is to “lead the Web to its full potential, which it does by developing technologies (specifications, guidelines, software, and tools) that will create a forum for information, commerce, inspiration, independent thought, and collective understanding.”¹ In other words, it makes up rules and guidelines that help the people who develop products and information for the Internet to communicate more effectively.

  For example, the W3C is the organization that decides which commands and features will be added or removed from each version of HTML (Hypertext Markup Language), the language used to create web pages. The W3C is composed of many entities -- vendors of technology products and services, content providers, corporate users, research laboratories, standards (??) bodies, and governments -- and is directed by Tim Berners-Lee.

- **Internet Corporation for Assigned Names and Numbers (ICANN)** — Here is what the ICANN web site has to say about its mission: “The Internet Corporation for Assigned Names and Numbers (ICANN) is the non-profit corporation that was formed to assume responsibility for the IP address space allocation, protocol parameter assignment, domain name system management, and root server system management functions previously performed under U.S. Government contract by lANA (Internet Assigned Numbers Authority) and other entities.”²
Translation: ICANN is the organization that monitors and oversees the distribution of Internet addresses. This is very important because without the use of these addresses on the Internet, there’s no way to tell one computer from another. Using the Internet without these addresses would be sort of like trying to make a phone call if there was no such thing as phone numbers.

- Internet2 — While Internet2 isn’t really a controlling body that is active in determining what is happening right now on the Internet, it is beginning to play a big part in controlling what the Internet will become in the future. Here is a little bit about Internet2, from its web site:

Internet2 is a consortium being led by over 180 universities working in partnership with industry and government to develop and deploy advanced network applications and technologies, accelerating the creation of tomorrow’s Internet. Internet2 is recreating the partnership among academia, industry and government that fostered today’s Internet in its infancy. The primary goals of Internet2 are to:

- Create a leading edge network capability for the national research community
- Enable revolutionary Internet applications
- Ensure the rapid transfer of new network services and applications to the broader Internet community

There are actually several other important organizations helping the Internet stay “on track.” In fact, there are enough to fill a whole book by themselves. Even so, the examples above are three of the most important organizations that are controlling the Internet.

**Behind the Scenes**

**What is the structure of the Internet?**

The easiest way to understand the structure of the Internet is to think of it as being a tree. The trunk of the tree, in this case, represents the large, high-capacity backbone of the Internet that carries a large portion of the traffic. From the trunk, the branches split off in different directions. Each junction where one or more branches connects to the trunk of the tree represents a machine on the Internet called a router. A router’s job is to help guide the data through the Internet to its final destination. Each of the main branches of the tree then connects through one or more routers to smaller and smaller branches. Finally, we see that the smaller branches split into twigs, which connect to the individual leaves. In this picture, the leaves represent the individual computers that connect to the Internet. This is where the real action happens; where millions of users transmit their information and receive information from other users across the Internet. Ultimately, all communication on the Internet both originates and ends at one of these “leaves.”
If we were to trace the path of information from one computer to another across the Internet, it looks something like this:

1. The data exits the first leaf and travels through branches that gradually increase in size until it reaches the junction that also connects the branch containing the destination leaf.
2. When this junction is reached, the data begins to travel out the second branch, always keeping to the shortest route between the two points.
3. The data then travels through smaller and smaller branches until it reaches the destination leaf.

With only a few computers on the Internet, the data route as part of the process of communication would be very simple to understand. However, since there are millions of computers connected to the Internet, and all of them are communicating at the same time, the sheer amount of communication seems overwhelming.

*The client-server relationship*

Almost every computer on the Internet has one of two jobs and, in a few cases, must perform both jobs at the same time. These two jobs are essential to almost everything that happens on the Internet. Understanding the difference between the two and how they work together is a big part of using the Internet to its full potential.

**Server** — A computer that has the job of a server provides information, service, or both to another computer that is connected to the Internet. An example of a server would be an Internet-connected computer that stores web pages and sends them to computers that request them. This type of server is called a web server. Another type of server that is very common is an email server. An email server provides users who are connected to the Internet with the ability to send and receive email.

**Client** — A client computer is connected to a server computer via the Internet in order to use the server’s information or services. This connection can be over a long period of time, or it can take place in a fraction of a second. An example of a client computer is a computer that is used to view a web page that has been downloaded from a web server over the Internet.

On the Internet, clients and servers are very closely related to one another. In fact, one can’t exist without the other. Almost everything users do on the Internet involves both a client and a server. For example, when someone wants to view a web page on the Internet, their computer becomes a client.

They type in the web address, and their web browser uses that address to send a request through the Internet to the web server for the web page that they want to view. When that request is received, the web server transmits the data for the web page back to the user’s computer where it is displayed on our web browser.
Chapter 2 – Introducing the World Wide Web

When Tim Berners-Lee posted the first web page to an Internet newsgroup in 1991, he probably had no idea what his creation would become. In just over 10 years, the number of web pages that were available online would reach into the billions with an entire industry developed on the foundation of what Berners-Lee called the World Wide Web.

One of the top reasons people buy a computer is to gain access to the Internet. They envision themselves surfing the vast world of web pages and information. They see themselves buying, selling, and interacting with people across the globe with a few clicks of the mouse. While it’s true that the web is an almost endless field of information and possibilities, interacting with it begins with a very simple software program: the web browser.

Browser Mania

Because the World Wide Web is such a huge thing, as anything ‘World Wide’ must be, people often assume that it is very difficult or complicated to use. In reality, it's the simplicity of the Web that has allowed it to grow so large. Even the primary tool for accessing the web, the web browser, is made for simplicity. There are hundreds of web browsers available for use on the Web today, with almost as many different features. Each and every one of them, however, is built on the foundation of the same three basic jobs that every web browser must do:

1. The browser must communicate with the web server. This communication is bidirectional, and requires a special way of communicating that web servers understand. This communication also includes the act of downloading the web page to the computer so that it can be viewed.

2. The browser must display the HTML in the web page correctly. If each web browser software displayed HTML in a different way, then the Web would be a mess. Different people would see different things on different computers, and even making a web page that was readable would be difficult. Making one look nice would be almost impossible.

3. The browser must download, manage and display other objects in the web page including pictures, sounds, and other non-HTML elements.
Where did the web browser come from?

Here are some important milestones in the development of the Web and web browsers:

**December, 1990** — The first web browser, called “WorldWideWeb” was introduced by Tim Berners-Lee. It was later renamed ‘Nexus’ to avoid confusion with the World Wide Web.

**June, 1992** — Lynx, the first web browser to be widely available to the public, was introduced. Lynx was a very simple browser consisting of a text-only interface. In short, Lynx had no pictures, no buttons, and couldn’t play video or music. That’s quite a difference from the web browsers we have today.

**November, 1993** — The first graphical web browser is launched. Mosaic 1.0, a creation of the National Center for Supercomputing Applications (NCSA), represented a major leap forward for web browsers and the web in general. Mosaic made the web accessible to the general population through its easy-to-use interface and its ability to display graphics and colors.

**December, 1994** — Netscape Navigator 1.0 is released to the public. Not only did Netscape Navigator represent another browser for Mosaic to compete with, it also became the first web browser to implement its own custom HTML tags, shaping the way the HTML language and web pages were developed.

**August, 1995** — Microsoft introduces Internet Explorer 1.0. This browser marks the beginning of what has been called ‘the browser wars.’ Netscape and Microsoft would battle for years to develop the browser that would give them control and superiority on the World Wide Web.
What are the essential parts of a modern web browser?

There are hundreds of different web browsers available today. Some of them are for sale, others are free, and still others ask you to view advertising as a condition for using them. Sometimes it can be confusing to decide which web browser is the best one for you. There’s actually a very simple solution to this problem: It doesn’t matter. The reason it doesn’t matter is that almost every web browser has the same core set of features and tools. What makes them all different from one another is the extra features they have or how the core features are used in the browser. The bottom line is that when choosing a browser to use, all that really matters is that it has all of the basic core features that a web browser needs and that the user is comfortable with the way the browser is set up. Here are some of the things that you might look for:

![The Parts of a Web Browser](image)

**Address/Location Bar** — This is usually a very wide text area located at or near the top of the browser window. The Address Bar, as it is usually called, shows the web address of the web page you are currently viewing. In addition, you can go to a web site by typing the web address of the site you would like to view in the Address Bar and pressing the enter key on your keyboard.

**History** — The History is a list of pages that you have visited, which is kept by the web browser. This list is displayed in some sort of collapsing window or as a side-bar to the main browser window. With this list, users can easily navigate to pages that have been previously viewed. The History list also usually gives the user the option of determining how much information to keep in the history, and how long to keep it.

**Back Button** — The Back Button is an almost universal feature to all web browsers. It is usually located at the top of the browser window and almost always bears an icon of an arrow pointing to the left. When clicked, the Back Button allows users to navigate backwards through their history list, starting with the last page that was viewed and then moving on to the one that was viewed before that, and so on. When you first open your web browser, the Back Button is disabled, because there are no entries in the history list yet. The Back Button is also disabled when you reach the first entry in your history list, because you can’t go back any further than that.
Forward Button — The Forward Button will be disabled most of the time you are surfing the web because the only time it becomes active is after you have clicked the Back Button. The purpose of the Forward Button is to allow users to navigate forward (the opposite direction of the Back Button) through their History list. What you may notice when using the Forward and Back Buttons is that if you click the Back Button a couple of times, the Forward Button will be enabled. However, if you click a hyperlink in the page you are viewing, or type a new web address in the Address Bar, the forward button will be disabled again. This is because the references to pages that existed in the history list from the current page forward were replaced by the new page that you visited when you visited the new page.

Reload/Refresh Button — This is another feature that is almost universal in the browser world. The Refresh Button, as it is usually called, causes the web browser to request a fresh copy of the page that is currently being viewed from the web server. Some reasons for doing this include:

- Some web sites (weather, news, stock quotes) are updated very frequently, and are only useful to a user if the information they display is current. By clicking the Refresh Button, a user can get a new copy of the same page, but with updated information.

- Because many users still use a dial-up connection to access the web, browsers often put a copy of all pages that are viewed in what is called a cache on the hard drive of their computer. The idea behind this is pretty simple: When a user goes to a page that they have visited before, the browser displays the saved version of that page, which is very fast, instead of making the user wait for that same page to download from the Internet.

The problem with this method is that sometimes the web page will change between the time that it is placed in the cache, and the time that a user goes back to view it a second time. If the browser displays an outdated version of the page from the cache, a user may not know that the information on the page has been updated. By clicking the Refresh Button, a user can make sure that the version of the web page they are looking at is the most up-to-date version.

Stop Button — The Stop Button has a very simple job: To stop all communication between the web browser and the server. This button is useful any time that a user wants to do something with the web browser other than what the user is currently doing. For instance, let’s say that a user has typed in a web address to go to a favorite web site, but has accidentally typed it incorrectly. Rather than waiting for the wrong web page to download and display in the web browser, the user can just click the stop button and type in the correct address.

Home Button — The Home Button returns the user to the web page that displays in the web browser when the browser is first opened. Most web browsers come with this page set to a page that benefits the manufacturer of the web browser in some way. Fortunately, this page can usually be set to whatever page the user chooses. Most people set it to a page that they visit often or is otherwise useful to them.

Bookmarks/Favorites – Different web browsers may call this feature by different names, but the concept is the same. Bookmarks are links to specific web pages that are stored on your computer, so that you can return to the same web page at a later time/date. There is usually a folder or area within your web browser where bookmarks can be organized in groups and accessed easily.
Getting Around the .com World

What is a web address?

One of the many acronyms that is seen often around the Web is URL, which stands for Uniform Resource Locator - “resource locator” because it helps a web browser to find resources on the web and “uniform” because there is a specific pattern that all URL’s must follow. A typical URL, or Web address, looks something like this:

http://www bmose!ey.com/arp/abstract.htm

This funny looking string of letters, numbers, and punctuation is all your browser needs to find any web page on the Internet. Using the example above, the different parts of the URL have the following functions:

“http://” — This part of the URL tells the web browser that it is going to be talking to a web server. The letters “http” could be replaced with other letters for other types of servers, but we are going to focus on the web for right now. The letters stand for ‘Hypertext Transport Protocol,” but that’s not as important as knowing what they mean. At the beginning of a URL, http:// gets the browser ready to speak the language of the web. Think of it as the equivalent of telling someone who is bilingual that they are about to speak to someone in a specific language. That way, they know they can communicate freely and will be understood.

“www” — These three letters, sometimes called a subdomain, appear in many web addresses but are not an absolute necessity. They were originally designed to designate a URL as being a web address. However, many web sites have abandoned this convention for something that lets people know what a particular site or part of a site is about. For example, typing “http://www.yahoo.com” will take you to the main home page of Yahoo.com, a popular search engine. However, typing “http://maps.yahoo.com” will take you to Yahoo.com’s map and geographical information service. Using this first part of a URL for more informational purposes allows web sites to direct users to the information they have without having to type excessively long URLs (one thing every user hates). The subdomain can even be left out of some web addresses without any negative effects, like “http://yahoo.com”.

“bmodeley” — This part of a URL is called the domain that usually identifies the company, or individual that owns the web site. Domains are bought or registered on a yearly basis, and can be transferred between individuals or businesses. In fact, a few domains have been bought and sold for millions of dollars.

“.com” — The dot-com part of the URL is actually called the Top Level Domain, or TLD. These three letters, plus a period (or ‘dot’), are probably the most famous trademark of the World Wide Web. There are several TLDs including “.com”, “net”, “org” and “.edu”. The letters in a TLD are intended to tell a user what type of organization the web site belongs to, but almost since the first day of the web they have been used by whoever bought them first for whatever use they desire.
When the subdomain, the domain, and the top level domain are put together, they make up the address of the web server itself, sometimes called the domain name. When a user types them together into a web browser, they are translated by a computer called a Domain Name Server, or DNS, into a unique numerical address, called an IP Address. You can think of an IP address in much the same way you would think of a phone number. A phone number connects us with a specific place. In order for a phone number to work, all of the digits must be entered correctly. You could technically enter an IP address in place of this part of the URL and still get the same web site because, in reality, they do the same thing.

By entering the IP address instead of the domain name, you have just saved a domain name server a little bit of work. By entering the wrong domain name or the wrong IP address, you will either get a wrong web site, or no web site at all.

“/arp/abstract.htm” — Everything after the domain name, starting with the forward-slash (/), is what is referred to as the path. An easy way to think of the path is this: if the domain name tells the web browser which web server has the web page, then the path tells it where to find the specific web page on that web server. The path can include the names of folders on the server, the name of the web page file, or both. The names of folders and the web page file are always separated by additional forward slashes. While you can sometimes find other things in a URL, these are the most common parts. Everything else you might find is a form of additional communication between your web browser and the web server, and will always come after the path in the URL. For now, focusing on the parts of the URL that are required is the most important thing.

Like many things you do with your computer, there are several different ways to open a web page in your web browser. Of course, opening your favorite web browser is the first choice. Once your web browser is open, you are ready to start viewing web pages. In fact, when you open your web browser, your web browser’s home page should open automatically as long as you are connected to the Internet. Here are three of the many ways you can open a web page:

**Clicking a Link** — This is the most common way to open a web page, and it also happens to be what makes the web so special and different from other forms of communication. It is what gives the Web its unique, non-linear navigation. For example, when you want to get information from a book, you typically start at the first page, and read through the book page by page until you get the information you need from the book. This is a form of linear navigation. If a book had non-linear navigation like the web does, you could jump from page 1 to page 35 to page 100, gathering only the information you needed and not worrying about the rest.

A hyperlink, or link as it is called, will usually appear as underlined text or some sort of descriptive icon or button in a web page. The text links come in all colors but are most often blue. They may also change colors within a specific site after you have clicked on them to show you what pages you have looked at already. There is one sure-fire way to tell if something (text or otherwise) is a hyperlink: When you move your mouse pointer over it, your mouse pointer will change from an arrow to a hand with a pointing index-finger. When you see this, just click and you’ll be on your way to the next web page. If you’d like to see what the link is connected to, but keep the current page open in your browser, you could right-click the link and look for
a command that says “open in new window” or “open page in new window”. Most browsers have this command, which will open the page that the link connects to in a new browser window. You can look at it, and when you are done you can close the new window to go back to the original page.

**Using the Open command** — In your web browser under the File menu, you will see a command labeled “open,” or ‘open web location.” or something similar. This command will open a small window where you can type the URL of the web page you would like to open. In many web browsers, you can also access this feature by using the keyboard shortcut of pressing CTRL and 0 at the same time.

**Typing the URL in the Address Bar** — There is a reason that very few people actually use the “Open” command in their web browser. The reason for its lack of use is that the same thing can be accomplished in far less time by typing the URL directly in the address bar. To use this method, a user simply clicks in the address bar and types the URL of the web page they would like to view. There are other ways to view a web page, some of which you may prefer to the methods that have been mentioned. As a computer user, it’s important to try out several methods and use the one that make sense to you. This will allow you to complete each task quickly and easily. Remember: the right way to do anything on a computer is the way that works best for you.

**What Was That Web Address, Again?**
It’s inevitable. At some point, no matter how good your memory is, you will forget the address of a web page that you found really fun, interesting, or just plain useful. Wouldn’t it have been nice if you could have saved the address of that web page while you had it? Well, you can! Most browsers have the ability to save a web address in a collection of clickable links called ‘bookmarks” or “favorites.”

**How can a user create a bookmark?**
Here are two of the several ways to create a bookmark:

1. Choose “Add Favorite” or “Add Bookmark” from the Favorites or Bookmarks menu when the page you would like to create a bookmark for is being displayed in your browser. The browser will open a window that will guide you through the process of creating a bookmark and/or a new folder to place it in.

2. Click and drag the icon to the left of the URL in the address bar down to the favorites bar at the left hand side of your browser, or to the links toolbar just above the window in your browser where the web page is displayed.

One of the best ways to learn about this feature is to play around with different methods using web pages that you don’t really want to remember. That way, you can practice without the risk of losing the link to a web page that is important to you.
What can bookmarks NOT do?

Bookmarks are a really helpful part of today’s web browsers. They can help you do many things that wouldn’t be possible otherwise. But like most tools, part of using them successfully is knowing what they can’t do. As far as bookmarks go, there are three things that every user should be aware of:

- They can’t save a web site to your hard disk. Remember, bookmarks are a pointer to a URL. The only thing that gets saved to your computer when you create a bookmark is the text of the web page address. What this means is that when you click on a bookmark, it has the same effect as typing in the web address manually. A common misconception about bookmarks is that once you have bookmarked a web page that it is saved to your hard disk and is available automatically. Although some browsers have an additional feature that allows a web page to be saved for offline viewing, a bookmark doesn’t do this automatically.

- They can’t remember the state of your web browser. In plain English, what this means is that a bookmark just remembers the URL of the page. It doesn’t remember if you were logged into a web site, if you were filling out a web form, or if you were halfway through your favorite online film.

- They can’t remember locations within framesets. Without going too much into the functions of a frameset, what this means is that on sites where there is a window within a window, a bookmark can’t remember what is being viewed in the smaller inside window.
The Web is a Two-Way Street

The Web is a great place for finding information. You can do research, figure out what kind of car you’d like to buy, and even see pictures of your relatives. But that’s only half of the story. The Web would never have gotten to the place it is today if users didn’t have the ability to send information back in the other direction, that is, from a user's web browser to the web server and to other users. After all, you can’t buy anything online unless you can enter your credit card number and shipping address. The vehicle that is most often used to permit web users to send information from a web page to the server or other users is called a form. In the most basic sense, there are two functions that forms have on the web:

1. Forms gather information from users to be stored on a web server. This would include information that is used for ecommerce, mailing lists, memberships to organizations, and any other purpose for which information might be stored.

2. Forms gather information from users to enable interaction with the web site itself, and with other users who are online. One example of this can be found on many car shopping web sites: the car payment calculator. This payment calculator uses a form to allow users to input numbers representing the down payment, interest rate, and length of the loan. Without storing this information, the web server will return a web page to users that tells them what their monthly car payment would be based on the numbers entered. A chat room is another example of this use of forms. When a user enters text into a form in a chat room, it is automatically sent to the other users in that chat room enabling them to communicate with each other in real time.

What are the parts of a form?

Using web forms is not a difficult thing to learn. There are different fields in each form, each allowing users to enter a different type of data. It’s important to understand what each type of form field actually does. These seven are used very often:

- **Text Box** — A text box allows users to enter short pieces of data. Common pieces of information to be entered in a text box include email addresses, phone numbers and names. In most cases, users can enter anything they want into a text box.

- **Password Box** — To a web server, data coming from a password box looks identical to data coming from a text box. In fact, the two types are very similar in both their appearance and their function. They also both allow a user to enter any character the user wants. The difference with a password box is that when users enter their data, they see an asterisk character (*) for each character they type instead of the character they entered. This is designed to offer computer users in a public place some privacy from people who might be peeking over their shoulder as they type in their passwords. Despite what is displayed on screen, if the password is typed correctly the user will gain access to the password protected site.
• **Text Area** — A text area is also similar to a text box in that users can enter anything they choose. The main difference here is that a text area is used to gather larger amounts of data from the user, such as entire paragraphs of text. If you think of the form as a final exam for a college class, the text boxes would be appropriate for answers to fill-in-the-blank questions, whereas the text areas would give ample room for responses to essay questions.

• **Radio Button** — Radio buttons have nothing to do with radios. Go figure. Frankly, most people have never seen a radio with buttons like these before, but the people who invented them decided to call them radio buttons anyway. Radio buttons come in a group. In any group of radio buttons, only one button at a time may be selected. The result is similar to what you might think of as a ‘multiple choice’ question on that final exam mentioned earlier. A button in a group of Radio buttons can be selected by clicking on it. As you select one button in a group, any other button in the group that might be selected is automatically deselected.

• **Checkbox** — Checkboxes work in the same way as a radio button, with one major exception: Each checkbox on a page can be selected or deselected independently of other checkboxes on the same page. You can think of a checkbox as a true/false or yes/no type of response.

• **Drop Down Box** — These rectangular boxes bear a slight resemblance to a text box, with the main difference being a small, down-pointing arrow at the right-hand side of a drop down box. Also called a drop down menu, the drop down box allows users to select from one of several choices in a list. To use a drop down box, users click the arrow on the right hand side to expand the menu. If the menu contains more than six or seven items, a scroll bar on the right hand side of the menu will appear. Users simply click the item they wish to select from the list. After users make their selection, the menu collapses to display the item they chose. After the selection has been made, it's important to remember to click outside the dropdown box to remove the focus. If not, scrolling down the page might change the selection.

• **Buttons** — Buttons are by far the easiest type of form control to use. Most people know intuitively that to activate a button, they simply need to click it with their mouse. In a well-designed web site, a button will have text on it (under it? is this a roll over?) that tells exactly what it does. In most cases, a button will send the form data to the web server for processing.

*Where does my data go?*

Some people don’t like to use web forms, and the reason has nothing to do with the form being difficult to use. Simply put, web forms make people nervous. Why? Because putting personal information into a form on a web site and sending it off into the great unknown is a little scary. Sometimes it’s very scary. It’s not unusual to be concerned when it comes to your personal information and who has access to it. Information you enter into a web form doesn’t disappear into a void when you click the submit button. In fact, probably one of the following happens to your data.

• It is sent to someone via email. This is rarely used for ecommerce or private personal data. Email-based forms are usually used to collect less sensitive data including surveys and basic personal interaction.
• It is saved somewhere on either the web server or another server. This is the method of choice for all sorts of personal information including anything related to electronic commerce. The reason that this method is used more often with private or sensitive data is that by saving the data to a server, a higher level of security is attainable. What this means is that when you submit your credit card number to the web site where you are buying your aunt a pair of Christmas socks, your number and other information gets saved on that very same server that contains the web page or another protected server. Your information stays there until someone who works for Santa’s Sock Shop can come, process your order, and send you your socks. Before entering a credit card number or other sensitive information, look for the lock in the lower right hand corner. The lock is an indicator that you are on a secure site.

• It is sent to another web page. This method is more ambiguous, because this is sort of where everything else happens on the web. Chats, financial calculators, and interactive web sites are just a few examples of what can be done when data from a form is sent to another web page.

*Is it safe to put my data in a form?*

The answer to that is… sometimes. In a later chapter, we will focus on security, which will include some of the things that you should consider when entering your data into a web-based form. In general, though, you should consider the same factors that you use in the rest of your life to determine whether someone can be trusted with personal information. One of the biggest reasons people object to buying something online is that they are worried about “just letting someone have their credit card number.” Oddly, these same people will go out to eat, and at the end of the meal they will hand their credit card to a waiter or waitress who is free to walk around with it, lose it, or copy the number for their own use. In fact, people who buy things from a trustworthy web site have a much greater level of protection than they have at a restaurant.

*I’ve Been Framed!*

If you surf the web for a long enough time, you are bound to see it: A web page that looks like it’s been broken into pieces. Perhaps the bottom of the web page scrolls, but there is a banner across the top that stays in the same place no matter where you scroll on the bottom half of the screen. Although it looks complicated, the answer to this problem is really simple: You are viewing multiple web pages within the same window. The technical name for a web site that divides the window into more than one web page area is a frameset.
What does a frameset do?

A good way to think about a frameset is as a window. Each space, or frame, in the web page is like a pane in the window. Now, just imagine that each time you look through a different pane of the window you see a different scene on the other side. A frameset can divide a web browser window in any number of ways. Each frame displays a web page as though it was in a window all by itself. Many times, frames will have their own scroll bars and move independently of one another.

It is not uncommon for a frameset to have a tall, thin frame on the left hand side that contains links or buttons. When clicked, these buttons change the page in the frame that takes up the right portion of the screen. Another common frameset configuration places a short, wide frame at the top that contains the site name and/or company logo. The frame below it is usually reserved for the content of the site. The benefit of this layout is that no matter what page is being viewed or where the user scrolls the bottom frame, the company name or logo is always visible in the top frame.

Aside from navigation, one of the most common problem areas experienced by users of a frame-based web site is printing. It’s very common for a user to accidentally print the wrong frame or even print all of the frames by accident. Use these two techniques to print the frame that you want and only the frame you want:

1. Click the frame you want to print before choosing ‘print” from the file menu. When the print dialog box appears, look for a command that allows you to print only the “selected frame,” or something to that effect. As usual, different web browsers may use different terms but often have the same or similar features.

2. Right-click in the frame you wish to print, and then choose print from the menu that appears. Make sure that if the option is available, you choose to print only the selected frame.

Lights, Camera, Action!

It’s unlikely that the early pioneers of the Internet envisioned the scope of what a user can experience on the World Wide Web today. In addition to uncovering endless amounts of information, users can view pictures, watch movies, play games, and immerse themselves in endless virtual worlds. Users can even watch live coverage of news and entertainment events as they happen, right over the Internet.

What’s the good news about web multimedia?

One of the really great things about the Internet’s ability to provide us with an almost endless supply of multimedia is that much of it free, and most of it is very easy to use. Because companies on the Internet need to attract users to sell products and services, and make money, their product's site must be as simple to use as possible. Web sites that users can’t figure out with little or no instruction get very few repeat visitors, and multimedia software that is unreasonably complicated doesn’t last very long in the marketplace.

What’s the bad news about web multimedia?

The bad news is that there are literally hundreds of different ways to experience multimedia on the web, each requiring special software or settings in order to function. Another barrier to widespread usage of multimedia on the web is that multimedia files are much larger than text-only web pages. Everything
that is viewed on a user’s screen must first be downloaded from the web server. Large files take much longer to download and, depending on the speed of the connection to the Internet, could force users to wait several minutes to watch a two-minute film clip or animation. If you don't have a broadband connection to the Internet, then you probably won't be viewing too much in the way of multimedia. In the early days of multimedia on the web, content creators had a difficult time enticing users to endure the seemingly endless amount of waiting time to view multimedia files. A user would often tire of waiting and simply move on to something else before the file had finished downloading. Once again, the development of a new technology made the web more accessible to everyday users: streaming media.

**What is streaming media, and how does it help?**

In 1995, a company called Real Networks introduced streaming audio, a new technology which was destined to change the way multimedia functioned on the Internet forever. Streaming audio (and later, streaming video), made web-based multimedia accessible to the common Internet user by overcoming the hurdle of large file sizes that came along with it.

The way streaming media works is pretty simple. The software used to play the media file begins to download the file to your computer. As it begins the download, it takes two measurements: how long it will take the file to download, and how long it will take the file to play. From these measurements, the software calculates how much longer the file will take to download than it will take to play. Next, it takes the result of this calculation and waits that amount of time. Meanwhile, the file downloads into a buffer where it is temporarily stored before it is played.

After the calculated amount of time has elapsed, the file begins to play as it completes the downloading process. The idea is simple: if the file keeps downloading as it plays, then the file will have downloaded completely before it finishes playing. From the user’s perspective, it looks like the file has downloaded in a fraction of the time, because the wait time is now seconds instead of minutes.

The invention of streaming media has made web-based multimedia a viable tool to use on the World Wide Web. Streaming media opened the door for another very important technology: The webcast. Webcasting is similar to streaming media in that a file is playing as it downloads. It is different in that while the file is being downloaded and viewed, it is also being created. In a webcast, a user connects to an ongoing stream of multimedia that is being generated and digitized by a camera, a microphone, or both. This technology has made it possible for users to watch important news and historical events as they happen. In addition, webcasts have been used in several entertainment venues with “virtual admission”, where users are charged to view a popular concert or other entertainment event via a webcast.
What are some common types of multimedia software?

• **Real Audio/Video** — Real Networks was a pioneer in developing software to bring web-based multimedia to the masses. Their software, the RealPlayer, can be downloaded for free from their web site at www.real.com. A more advanced version can also be purchased and downloaded from the same web site. The advanced version has features that enhance the images, sound, and usability of the software. The RealAudio and RealVideo formats are commonly used on the web, so downloading at least the free RealPlayer is a good idea for most web users who wish to view multimedia online.

• **QuickTime** — The QuickTime media format originated on the Macintosh computer platform. Soon, because of its high-quality images and sound, a Windows equivalent was born. Today, the QuickTime media format is widely used for online movies, promotional videos, and other applications where quality is extremely important. Other variants of the QuickTime format allow the creation of interactive scenes and product images. One such example is QuickTime VR (Virtual Reality), which allows users to view a potential new car from any angle or see the inside of a house in 360 degrees without ever setting foot inside the house. The basic QuickTime software can be downloaded from www.quicktime.com for free. It allows users to view any type of QuickTime media. QuickTime Pro, which can be purchased from the same web site, offers users the additional ability to create QuickTime media files.

• **Windows Media** — The Windows Media Player has been included with Windows in the last several versions. With the release of Version 7 just prior to the introduction of Windows 2000, the Windows Media Player became a favorite among the makers of multimedia software for the Web. If you aren’t sure whether you have the most current version, you can download it from www.windowsmedia.com.

• **MP3** — This is actually a type of media rather than a type of media-playing software. ‘MP3’ stands for Motion Picture Experts Group, Layer 3. But what MP3 means is not nearly as important as what it does. This audio file format allows near-CD quality sound to be packed into a file that is much smaller than anything previously available with comparable quality. This combination of high quality and small file size has made MP3 the format of choice for trading popular music files among users of programs like Napster, which allows users to easily swap music files online.
Virtual Reality

Not too long ago, the mention of the words “virtual reality” brought to mind images of fantastic worlds and amazing technologies that were far removed from public participation. The closest any “normal” person ever came to virtual reality was when they were watching it on a movie screen. Now, through the Internet, users can participate in huge virtual worlds filled with thousands of other virtual participants from across the world. They can communicate, create and play games. Virtual economies are even beginning to appear based on commerce activity that occurs in these worlds online.

Second Life

One virtual community that is growing very quickly and showing some very interesting developments is called “Second Life”. This online community is so large that you could easily call it a virtual world. It is a strange blend of reality and virtual reality that allows users to create their own space and their own identity within the virtual world. Here is a description of Second Life, taken from the Second Life web site:

Second Life is a virtual world - a 3D online persistent space totally created and evolved by its users. Within this vast and rapidly expanding place, you can do, create or become just about anything you can imagine. Built-in content creation tools let you make almost anything you can imagine, in real time and in collaboration with others. An incredibly detailed digital body (‘Avatar’) allows a rich and customizable identity. A powerful physics simulation running on a backbone of hundreds of connected computers and growing with the population allows you to be immersed in a visceral, interactive world that as of April 2005 covers more than 12,000 acres and 20,000 owned plots of land. The ability to design and resell 3D content, combined with the ability to own and develop land and a microcurrency, which can be exchanged to real money means that you can build a real business entirely within Second Life.
**MMORPG, anyone?**

What is an MMORPG? A Massively Multiplayer Online Role Playing Game, of course! These games take place in a virtual world, much like second life. They also allow players a certain amount of creative freedom in terms of defining their virtual identities. However, they differ from “normal” virtual communities in that they establish a theme, with goals and tasks that players need to accomplish in order to be successful in the game. Some examples of such games include World of Warcraft, a fantasy-themed game, and Star Wars Galaxies which immerses the players in settings from the films, and allows them to participate in Star Wars-themed missions. These games are known for their creative aspects as well as their tendency to require a huge time investment for players to become successful.

**What’s the big deal?**

In the early days of virtual reality, the image many people had was of someone donning a set of special goggles and gloves that were wired to a computer, and experiencing an ultra-realistic simulation of something found in real life. In almost all cases, the virtual reality experience was focused on one person, interacting with the computer.

Today, virtual reality is nothing like that. The focus of the most important and successful virtual reality environments is on providing a place for people to interact together, express themselves, and be entertained. This is an important development, because it follows the evolution of how people think about the Internet. What started out as merely a structure for exchanging information has now become a place that connects people.
Chapter 4 - Searching the Web

Let’s face it: With millions of web sites available online, finding the information you’re looking for could actually be more difficult than finding a needle in a haystack. Typing the word “football” into one popular search engine will yield over 11 million possible matches for web sites that have something to do with the word “football.” How can you possibly find what you are looking for online? Here’s what it takes:

• Knowing how search engines work.
• Knowing which search engines should be used for which purpose.
• Having a strategy for finding what you want to find online.

Peeking Under the Hood

How do web sites get listed on search engines?

Many users make the mistake of assuming that every web site on the Internet is listed by every search engine. This isn’t true. In fact, many of the web sites aren’t even known by search engines. In the case of most search engines, the owner or creator of a web site must tell the search engine that it exists in order for the search engine to start the process of listing the site:

• In most cases, that process starts with a representative of the web site visiting a special page on the search engine’s web site and filling out a form to register that site with the search engine.
• Typically, the search engine form asks for the name and address of the web site that is being submitted in addition to some sort of a description of what the web site contains, such as keywords that are related to the web site. Some search engines also ask the submitting party to place the web site in some sort of category based on the contents or function of the web site.
• When a search engine receives the registration of the web site, it puts the web site through a process of verification. At minimum, the search engine sends out a bot, short for robot, to visit the web site and make sure that the site is legitimate. A robot is a software program that has the ability to visit web sites and examine their contents. Many search engines are now going a little bit deeper in their examination of registered web sites. In addition to verifying that the site exists, they may also determine what keywords are found in the site, investigate how the site is set up, and assess how popular the site is.
• Factors measured by the bot are fed into a formula that determines a rank or score for that web site. Each search engine has its own secret formula to determine the rank of different web sites.
• Other search engines use people to verify the existence of web sites and determine the site’s relevance to various keywords. In most cases, these people use a standard set of criteria to determine the placement of the site in the search listings.
What factors determine ranking order for web sites?

Once you type in your keywords and hit the ‘search’ button, your search results will rank web sites in an order determined by the search engine you used. Search engines use completely different methods to rank web sites, and web site rankings vary with the keyword used for the search. In other words, using the same search term on different search engines, or using different terms on the same search engine, will almost always yield different results. Users should also remember that search engines, like the rest of the World Wide Web, are always changing. Performing the same search from one minute to the next could, and often does, yield different results. Search engines also change their formulas for ranking web sites from time to time, which has an effect on the order that web sites are ranked (how about appear?). With that said, here are some common criteria that search engines use to determine the order that sites are listed in when someone performs a search:

- Appearance of the search term in the text of the page.
- Appearance of the search term in the META keywords. These are located in a portion of the HTML code of the web page that is hidden from the user, but visible to a search engine.
- Popularity of the web site in terms of visitors.
- Popularity of the web site in terms of the number of other web sites that have links to it.
- Appearance of the search term in prominent places on the page, such as headings, titles, and large text.
- And my personal favorite:

  - The amount of money the web site paid the search engine for a good placement for that search term. Most search engines will allow people or companies to “buy” search terms, meaning those entities pay the search engine for a better ranking when someone searches for that keyword. The more forthcoming search engines will designate a paid listing with headings like “Sponsored Link”, but there are plenty who allow users to think that the web site at the top of the listing is there because it is highly relevant to the search term.

Why is the order of listing in search engines so important?

Despite all of the money spent on advertising each year, search engines remain one of the most effective ways to get visitors to any web site. Web sites can get thousands of visitors every day by obtaining a top listing in a search engine with most keywords.

However, there is one aspect of user behavior that makes search engine listings a highly competitive topic for most web designers: users don’t like to click. This fact dominates the way users navigate the results of a search engine to the point that 80% of all search engine users never see the results from the second page. To save download time, most search engines return their results grouped into sets of about 20 web pages and show the user one page at a time. In practical terms, this means that a web site listed at number 21 will have 1/5 of the chance of ever being visited that the number 20 site will have. Sites that appear on the third or fourth page of a set of search results have an even lower chance of being seen. Because of this fact of user behavior, web site designers, especially designers of web sites that depend financially on the number of visitors who see the site, spend significant time and financial resources to
improve the web site’s search engine listing. Since every search engine looks at different criteria, it takes a great amount of knowledge and skill (and sometimes luck) to end up in a top spot on more than one search engine.

Search Engine Types

One of the most important parts of successfully using search engines is knowing how each search engine works. Knowing what sorts of information a search engine uses to determine a web site’s rank in the listings allows users to take full advantage of the strengths of each search engine and find the information they are looking for quickly and easily. There are thousands of different search engines on the Internet today, with the number of mainstream search engines numbering easily in the hundreds. Before reviewing the different types of search engines, it is important to mention that almost all search engines offer some sort of increased level of service for a price. Some offer an enhanced listing, some charge by the click, and some will do little more than promise to render a decision (not sure what this means) in less time. Search engine users may or may not know which listings are paid listings and which listings have achieved their status through actual merit or relevance to the search terms.

Directories

Web directories use real live people to decide how, or if, web sites are ranked in their listings. Each of these sites may have different criteria that the people use to make their decisions. Most directories make use of categories to organize their listings in addition to some score or measure of relevance to the category or search term. These categories often have several levels of subcategories to allow users to hone in on very specific types of web pages and web sites. Some directories allow web pages or sites to exist in more than one category when appropriate.

Many directories offer a faster response time or a higher level of consideration for a fee. In some cases, however, paying a fee doesn’t guarantee a web site anything. Some popular directory sites are yahoo.com, looksmart.com, and lycos.com.

Crawlers

A crawler uses the links between web pages to find pages to list in its directory. Many search engines that utilize crawling will accept the submission of a URL, which they will use as a starting point for crawling. When a URL is submitted to a crawler, a bot is sent out to follow the links on the page and index the page’s information. The bot will follow links until it runs out of links to follow, and then it will stop.

Sites that have many links leading to them will rank much higher in the search listing of a crawler site simply because they are crawled more often and are assumed to be more relevant. Like directories, crawler sites also have paid services allowing web site owners to buy a higher listing or even ‘sponsor” a search term. Some of the most popular crawler sites are google.com and altavista.com.
Web Rings

In the most technical sense, a web ring is not actually a search engine. Even so, web rings are often very useful in exploring several sites within a topic area. Simply put, a web ring is a group of sites that have joined under a subject area to provide links to one another in an organized fashion. Sites that belong to a web ring will usually carry a common set of hyperlinks and/or logos somewhere on the home page. Clicking on these hyperlinks will allow you to go from one site to the next in an organized fashion so that you will see every site in the ring before seeing any site a second time.

You can find an extremely large listing of web rings at www.webring.org, a site that is owned by Yahoo.com and devoted to web rings.

Ask Jeeves

Ask Jeeves is actually a specific search engine, but it’s unique enough to be put in a category all by itself. What makes Ask Jeeves so unique is the way users can interact with it. Instead of using specific combinations of search terms and difficult-to-remember symbols, users simply type in a question that they want answered. Using a technology called natural language parsing, Ask Jeeves will read the question and return results based on what it thinks the user is looking for by going to askjeeves.com.

Search Engine Inbreeding

Putting search engines in categories is a little bit misleading, because it leads people to believe that most search engines are one thing or another. In fact, most search engines would fall into some combination of two or three of these categories. In their ongoing quest to find the ultimate search engine formula, the people who create and manage the search engines of the world have begun to use technology and ideas from the others. The end result is that behind the scenes, many of the search engines are beginning to work in very similar ways.

Start Your Engines!

How do I know which search engine to use?

The sheer number of search engines available on the Internet today is enough to make a user’s head spin. Admittedly, it’s a little bit intimidating when you realize how many different possibilities there are. Rather than being intimidated, however, web users should be excited that all of these alternatives are available to find what they want on the Internet. With a little understanding of how each search engine works, along with a little ingenuity, users can easily find exactly what they are looking for within minutes, as long as the item or service exists.

A good basic strategy to use for searching the web relates to the type of search engines that exist and how much users know about the topic they are trying to research. If users know very little about a topic, then they will have much better results using a directory site. A directory site that contains categories and subcategories will allow them to start with their very basic or general knowledge on a topic and narrow their search using the subcategories within that site.
For example, let’s say you’re looking for information on the game of football. If you type “football” into the search box on a crawler site like Google.com, you might receive thousands or even millions of web sites in your search results. Obviously, you won’t get very far by going through these listings one by one. Unfortunately, you don’t have the ability within Google.com to narrow your search from that point. If you went to Yahoo.com, however, you could easily find the category for football in Yahoo’s category listings, and then narrow your search by choosing from the many available subcategories.

On the other hand, crawler sites like Google.com and AltaVista.com are great for users who are looking for something or someone very specific. Because crawlers often index the entire text of a web page, they will return results that are very detailed. Crawler sites are extremely useful in locating names or particular passages of text online. That type of information is usually very difficult and sometimes impossible to find in a directory that uses categories. In fact, Yahoo.com actually uses Google.com’s indexes to augment the listings found in its own directory.

If a user was looking for a popular site for tips on buying cars, they might try a site like HotBot.com that uses the Direct Hit service to rank sites according to popularity. Ask Jeeves is a great place to go if you have a specific question to ask, but aren’t sure how to translate it into a good search phrase.

**How can I find the results I want?**

Aside from knowing what search engines to use to find different types of information, there are other ways to shape the results of almost any search engine you might use. Here are some tips on shaping your search term or phrase so that it’s more useful to you:

- Use the plus symbol (+) to specify a search for only pages that include more than one search term. For example, typing +hotels +Hawaii would only give you web pages that contained both the words hotels and Hawaii.

- A hyphen, or the subtraction symbol (-) can be used to subtract results from a search. Typing +hotels +ha wail-Maui in most search engines will give you a list of web pages that have the words hotels, and Hawaii, but not Maui.

- Putting quotation marks around more than one word will result in a list of web pages that contain that exact phrase. Typing “Waikiki Hotels” with the quotes will result in a list of only sites that contain those two words in that order.

Many search engines will allow the use of these three symbols to hone in on the exact results you want. In addition, you can mix and match these symbols in one search to narrow your search even more. This technique is especially useful on some of the larger crawler sites like Google.com, where a more generic search would return too many web sites to be helpful.

**Finding Other Kinds of Information Online**

Search engines are great for finding many different kinds of information online such as driving directions, stock quotations, and even long-lost friends! The trick for success in these specialized searches is to know when it is better to use web sites that are built specifically for that purpose. Since the invention of the Web, these specialized web sites have been popping up at a steady rate. They offer countless services to users for a monetary fee or for the simple favor of viewing advertising along side the searched-for data.
Maps and Driving Directions

Until recent years, getting directions from one place to another could end up being quite a process. You’d have to go buy a map, which may or may not be out of date depending on how old it was, or rely on the memory of a friend to guide you to your destination. The internet has enabled anybody in the world to easily access maps and geographic data online. Services like MapQuest.com can take any address in the United States and instantly give the user a map, aerial photographs, and even detailed driving directions to that address from another location.

While you might be able to find maps to some locations using a general search engine, it is much faster and easier to use a mapping service online. Another great thing about map services is that they are updated as streets and locations change. That makes them better than a paper map that was bought a few years ago and which may already be out of date.

Some of the more popular services that provide maps and directions are www.mapquest.com, maps.yahoo.com, and the newer maps.google.com.

People

Today, millions of people are active Internet users. Still more are waiting to be participants. Whether they are internet users or not, many people in the world can be found by using the internet to search for someone’s email address, mailing address, or phone number. People might also be located online if they have been mentioned in a news article or electronic publication. In reality, the Internet has not created a new segment of publicly available information; it has merely made the information that was already available more easily accessible to a much wider set of users.

Yahoo.com provides users with the ability to search an extensive database of names, phone numbers and email addresses. This information comes from Yahoo.com’s member directory, as well as several other public sources of information.

WhoWhere.com’s service allows users to find an email address or phone number for free, and find even more detailed information about a person for a small fee. Part of the Lycos network of web sites, WhoWhere.com also allows users to easily send a gift or flowers to anyone they might find using the WhoWhere.com people search. You will notice that when you go to WhoWhere.com that it has been acquired by Lycos as part of their search engine. However, it retains the same functionality.
Weather Information

Weather information on the internet is so common that it’s sometimes hard to surf the Web without seeing a weather map or a local forecast. Many of the major portal sites, like www.yahoo.com, www.msn.com, and www.excite.com have a weather service. In most cases, users can simply enter their city and state or their zip code and receive a local forecast or a summary of current conditions. For those who crave more detailed and technical weather information, sites like www.weather.com and www.accuweather.com supply enough information and forecasts to satisfy even the most advanced weather buffs. Satellite pictures, radar screens, storm tracking, and live cameras for some locations are available for free use. In addition to providing detailed weather information directly to users, many of these weather services make money by providing the weather information that is seen on many of the portal sites. For instance, the weather information on yahoo.com is provided by accuweather.com, and the forecasts and current conditions found on msn.com are provided by weather.com services.

Travel Information

Another major industry that has been significantly changed by the Web is the travel industry. People used to have to visit a travel agent to find the best fares on plane flights or cruises or to plan a complex vacation. Now users can go online and access incredible deals on air fares, hotel rooms and amusement park tickets.

Sites like www.expedia.com allow you to plan entire vacations online and then compare airlines, flight times and hotel rooms to find the best deal or the perfect vacation combination for your family. The now-famous Priceline.com allows users to bid on empty airplane seats for last-minute deals on airline travel. This arrangement also helps airlines fill seats that would previously have remained empty. Newer services let users sign up to have changes in flight times, cancellations and other travel information instantly sent to a cell phone or handheld computer. This new ability to share information among users has made traveling easier, more efficient and more available to users all over the world.

Stock Quotes

Another industry significantly altered by the World Wide Web is the stock market. Stock trading websites like eTrade.com allow users to buy and sell stocks instantly without ever speaking to a broker and with minimal fees associated with each trade. This, combined with the ability to monitor stock prices in real-time, has freed investors to trade what they want, when they want.
Internet users can find almost anything they could ever want to buy (and many things they would never want to buy) for sale on the Web. With all of the web sites selling merchandise and services, finding what you want online at the best price possible can be overwhelming. Fortunately, there are a great many sites on the web dedicated to helping users find what they want at the right price. One excellent example of these services is www.shopper.com that provides users with prices, reviews and product information. Another popular way of getting a good deal online is through the use of Internet auctions. Two of the big players in Internet auctions, www.ebay.com and www.ubid.com, run Internet auctions in very similar ways:

1. First, users sign up to participate in the auction sites by providing personal information such as their name, address and email address. This information is usually kept private and is only used to verify the user’s identity.

2. After signing up, users are free to list their products for sale or browse the list of auctions that are already under way. When users find an item they are interested in, they can place a bid for any amount higher than the current high bid for that product.

3. All auctions have an ending time after which no more bids can be placed, and the highest bidder is awarded the item at the high bid price. Users settle the rest of the sale privately, and the seller pays the auction site a percentage of the winning bid for the item.

Online auctions are very popular ways of buying and selling used goods as well as antiques and collectibles. Anyone who is considering using one of these services for buying or selling items, however, should be aware that online auctions are ranked #1 by the National Consumers League for internet fraud. As with anything else online, users can protect themselves by using good judgment.
What is email, anyway?

In the beginning, email was a simple way for researchers to send short text messages to each other across the ARPAnet. Today, we can send audio email, video email and e-greeting cards to our friends and family anywhere in the world. The vast majority of email sent today is still plain text, but users now also have the option of sending email in rich text or html formatted with colored text, images and other special effects. The amount of email sent each day averages an estimated four trillion messages. The obvious investment of the US Postal Service in new advertising campaigns suggests that email has become a well-practiced method for keeping in touch with distant family members and friends.

How does email work?

A common belief of new email users is that email travels directly from the sender’s computer to the recipient’s computer. In fact, email is a little bit more complicated than that. There are actually several different protocols for sending and receiving email, but one of the most common of these is called POP3/SMTP, or Post Office Protocol/Simple Mail Transport Protocol. In this case, two servers work together to receive email.

The figure below illustrates how the two types of servers work together to allow users to send and receive email:

1. Sending users compose an email on their computer and, when they are finished, send it to the SMTP server, or Simple Mail Transport Protocol server that is owned by their ISP.
2. The SMTP server’s only job is to make sure that emails are routed to the right destination. As soon as the SMTP server receives the email message, it uses the recipient’s email address to connect to the correct POP3 server through the Internet and transfers the email message to that server.

3. The email message stays on the recipient’s ISP’s POP3 server until the recipient checks their email. At that time, the email software connects to the POP3 server and requests to download all email messages for that specific user. In most cases, the POP3 will require a user name and password be given to prevent unauthorized users from downloading email. The email messages for the recipient are downloaded, and the recipient can then open and read them using email software. After the email messages are downloaded to the recipient’s computer, they are typically deleted from the POP3 server.

4. If the recipient replies to the original email message, then that recipient become the sender and the process begins again with the new email message being sent to the sender’s SMTP server.

5. The ISP server routes the response back through the Internet to the original sender’s POP3 server where it stays until the original sender checks email.

6. When recipients check their email, the response to the original message is downloaded to their computer where it can be read using email software.

While there are other protocols for sending and receiving email, the POP3/SMTP combination is still the most widely used on the Internet today. When you sign up with an ISP, you will probably be given the addresses of the POP3 and SMTP servers so that you can set up your email software to work properly.

*What are the parts of an email address and what do they mean?*

Some parts of an email address will look familiar to you because they are similar to a URL for a web site. The major difference that you may notice is the presence of the “@” symbol, pronounced “at,” in the address. Here is a common format for an email address:

```
bill@bmoseley.com
```

In the above address, we have the following parts:

**bill** - This is the name of the specific user account that the email is being directed to.

`@` - The @ symbol separates the specific user account from the rest of the address.

**bmoseley.com** - By now you probably recognize this as a domain. In an email address, the domain tells the SMTP server where to route the email.

The three parts of the email address above are all an email needs to get to the right user at the right POP3 server. So when a user says that his email address is “bill at bmoseley.com”, he is literally saying that his email address is the “bill” account at the server “bmoseley.com”
What can I expect from email software that I use?

There are many different types of email software Internet users can download and purchase for their use. Many of the most popular email clients are available for free, and some are automatically installed when you install a web browser. Having so many email clients out there could be confusing, but many of them have the same features and even use similar naming schemes for those features. As a result, learning to use basic email software, or switching from one email software to another, shouldn’t be too difficult. Here are some key commands you will probably see in most email software you use:

- **Send/receive email or check email** - In some email programs, the sending and receiving email functions are combined into one command, while in others they are separated. The “receive” command initiates the process to see if there is any email waiting for your email account on your POP3 server. The send function begins the process of uploading any email you have in your outbox to the SMTP server. Be aware, however, that some email programs are set up to automatically send any emails that are in the outbox every few minutes. Some even send email immediately when it is placed in the outbox.

- **New email or compose email** - This command will open up a new, blank email message. From here, you need to enter the address and text of your email message before you can send your message.

- **Reply** - This command is available when you have selected or are currently viewing an email message you have received. The common use for this command is to send a reply back to the person who sent you an email message. When you choose to send a reply, a new email message will open up. The new email message will have the “to” address filled in with the email address of the person who sent you the original message, and the ‘subject” line of the email will usually have the subject of the original email message preceded by the letters “Re:” so recipients know it is a reply to their original message. Additionally, most email programs will include the text of the original message in the reply so that it can be used as part of the reply or to help recipients remember their original message. The original message text is usually set apart from the text of the reply by an indentation or a special character preceding each line of the original message. A common character that is used for this purpose is the’>” character.

- **Forward** - This is similar to the reply command and is usually found in close proximity to it in your email program. It differs from the reply command, however, in that it is used to send an email message that a user has received onward to a new recipient. Choosing this command will also open a new email message with the original message text included. It will use the original subject line preceded by the letters “Fw:” or “Fwd:.” The ‘to” field will be left blank so that the sending user can enter the address of the new recipient of the forwarded message.
Most modern email programs also help users organize all of their email messages by providing a set of folders or containers for the individual email messages. Here are some folders that are common to most email programs:

- **Drafts** - This folder is called different things in different email programs, but it is present in some form in most of them. The purpose of this folder is to serve as a place to store emails that are not yet ready to be sent, but that need to be saved somewhere until they can be finished at a later date. Most email programs will automatically place emails in this folder if you choose “Save” in the open email that you are composing.

- **Sent Items** - Most email programs have this feature, but it is not present in a few. Don’t be alarmed if you don’t see it in yours because it doesn’t significantly hurt the functionality of the program. If this functionality is something you really want, however, you can download one of several email programs that do have it already. When your messages are sent to the SMTP server, a copy is automatically placed in your “sent items” folder. This is especially useful if you often need to look back at the messages you sent or if you need to keep a record of your communications.

- **Deleted Items** - A good way to think about this folder is to compare it to the trash can people have at home. When you put something in the trash can, you know it’s not something you want. You also know that eventually it will be gone forever. It's trash, but you can always get that item back if you are brave enough. Once the garbage man comes by to pick up the trash, however, it's gone forever. The 'deleted items” folder provides a place for items to go when the user is done with them without having them end up in the local dump unless the user chooses to permanently delete them.

- **Other folders** - For the truly Type-A person inside all of us, many email programs have added the ability to create our own custom folders. Now, you can organize to your heart’s content with folders for each person, purpose, committee or category you want. These custom folders are a great place to store emails you don’t want to delete but don’t need right now.
Using these custom folders for storage not only allows you to be more organized, but it also keeps your inbox clear so you can keep track of any new emails you receive. In addition to the features you might find in the main part of the email program itself, you will notice some or all of the following features and commands when you are composing an email, replying to an email, or forwarding an email to someone:

- **To** - Although this may seem obvious, this is the space where you enter the email addresses of the recipients of your email message. You can usually send an email to more than one person by placing more than one email address in this space, separated by either commas or semicolons depending on your email program. You should be able to find out what to use to separate individual email addresses in your email program’s documentation.

- **CC** - the ‘carbon copy’ field is used to send an identical copy of the email to people who are not in the ‘to’ box while making it clear that they are not the people for whom the email is intended. All recipients of the email message can see everyone who is listed in the ‘to’ and ‘cc’ fields.

- **BCC or BC** - The “blind copy” or “blind carbon copy” field is used to send an identical copy of the email to recipients without disclosing their address, or the fact that they are receiving the email, to any of the other recipients of the email.

- **Subject** - Use this field to type a short description of the subject of your email. There are two rules about the subject of your emails that you need to remember:
  1. Make it short - You don’t have much room to work with.
  2. Make it meaningful - Tell people what they are going to read.

- **Message body or message text** - This is where the text of your message goes. Try your best to keep it short and to the point. The longer your email message is, the more time it will take you to upload and the recipient to download.
• **Attachments** - Attachments are very useful and very overused. An email attachment is any file that is sent along with an email to a recipient. Attachments can be word processor documents, images, programs, or even other emails. In most email programs, there is a button that allows a user to add one or more attachments to an outgoing email message. After the button is clicked, the user is prompted to locate and select the file that is to be attached. Users should be careful not to attach very large files to email messages. Some ISP’s place limits on the size of incoming files. Even in cases where no limits are placed on the size, it may take users several minutes or even longer to download the email message.

• **Send email command/button** - This button places the email message in the “outbox.” Do not choose this option if you are not ready to send the email. Remember, you can always save a copy of the unfinished email in the ‘drafts” folder until it is ready to be sent.

**Instant Messaging**

In today’s world, fast food is no longer fast enough to please most people. It’s not enough to have a hamburger in few minutes; now they want it in a minute or they want it for free. Sending text messages, video clips, and e-greeting cards in the form of email across thousands of miles in a very short time isn’t fast enough, either. Now, they want instant messages sent to and from cell phones, pagers and handheld computers. That’s anytime, anywhere access to friends and relatives. In business, education, and technical fields, people worldwide are flocking to the instant message as a standard mode of communication. Makers of instant messaging software are introducing new features all the time: voice and video conferencing, file sharing applications, and integration with personal information and organization software. Instant messaging has already become a permanent part of the Internet.

**How does instant messaging work?**

Instant messaging is faster than email because when a user sends a message to another user, it is immediately sent to their computer rather than waiting on a server to be downloaded. There is still a server involved, but it has only two very simple purposes:

1. It keeps track of which users are logged in to the Instant Messaging system.
2. It routes messages between users.

The route that an instant message (IM) takes through the Internet is straightforward. Once the author of the message sends it on its way, the message travels to the server. The server relates the screen name of the IM recipient to the Internet address of the computer that the recipient is logged in to, and sends the message on its way. When the message reaches the recipient’s computer, it is immediately displayed by the Instant Messaging software.
How do people know who is online?

Most instant messaging programs allow users to store the screen names of the people they would like to contact in what is usually called a buddy list. Simply put, a buddy list is a list of all of the screen names of the people you know who are using the same Instant Messaging software. When someone is on your buddy list, you can see whether they are online or not. If they are online, you can easily send them a message or communicate with them using one of the several other features available with your instant messaging software.

What else can instant messaging software do?

Instant Messaging software continues to improve, with more features added all of the time. Although simple text messages are still the most popular use of Instant Messaging software, these additional features are fun to use and continue to be developed by software makers who are desperate to attract more users to their software. Although it’s rare to find all of them in one program, here are some features that you might find in newer versions of Instant Messaging software:

- **Group Chat** - This feature allows multiple users to enter a chat room where everyone can simultaneously converse.

- **Voice Chat** - This allows users to speak audibly and hear each other. The effect is very similar to a speakerphone.

- **Videoconferencing** - If users have a video camera attached to their computer, some Instant Messaging programs will allow the users to share the video images coming from their camera with each other while they chat.

- **Internet Phone Call** - This is very similar to voice chat, except that it allows an Instant Messaging user to dial an ordinary phone number. The rates for these phone calls range in price, but are often less expensive than regular long distance rates.

- **File Sharing and Transfer** - This is a very simple way to share files with your friends. Most instant messaging programs allow a user to send files to other users. Some even allow users to specify a folder on their hard drive from which other users on their buddy list can freely download files.

- **Mobile Device/Wireless Integration** - Short Messaging Service, or SMS, has become a very popular service among users of cellular phones. Many Instant Messaging programs allow users to send instant messages to cell phones and handheld computers using SMS technology.
Beam Me Up, Scotty!

It wasn’t too long ago that videoconferencing was something only rich corporations did during important meetings. Not too long before that, it was reserved for science fiction movies and TV shows. Now, anyone can go to a computer store, buy a $50 camera and “beam’ themselves to anyone in the world.

Two-way videoconferencing has become a standard mode of communication online, not just for business users but for home users and educators, as well. Doctors may even assist in surgery from thousands of miles away by observing and directing the procedure over an Internet-connected camera. As with instant messaging software, the makers of videoconferencing software are working hard to come up with new and innovative features to attract users to their software instead of the competitors’ programs. Some makers are even making a move to integrate their videoconferencing software with instant messaging software.

What are some common features of videoconferencing software?

- **Interactive Whiteboard** - This feature allows users, while they are in a videoconference, to ‘draw’ on a whiteboard that can be seen and drawn upon by anyone involved in the conference.

- **Desktop and Application Sharing** - This feature allows one user in the videoconference to share a picture of what’s happening on his computer screen with the rest of the users in the videoconference. This feature is especially useful for instruction or for demonstrating software to users who do not have the software installed on their own computers.

- **File Sharing** - This feature works much like the file sharing feature found in instant messaging software and has the same purpose.

Given the similarity of purpose between videoconferencing and instant messaging, and the rapid adoption of instant messaging software for business use, it is likely that in the future there will be a convergence of these two types of software. While it may not be called videoconferencing software or instant messaging software, the development of new software that has all of the major features of both and will diminish the need for a distinction between the two types.

Etiquette Goes Digital

Every society and culture develops rules and customs over time. These rules and customs, whether written down in a book or not, help the society to function smoothly. They are intended to maintain order, thereby improving the health and happiness of the people in that society.

For example, say you are eating dinner with your family in a fancy restaurant. During the course of the meal, you recline in your chair with your feet up on the table. If you do, there is no doubt that you will receive some dirty looks from other diners.

This shows an obvious lack of etiquette, and although it may not be written anywhere it is an accepted rule of behavior in many societies. What may not be so obvious is the origin of the rule. (And no - your mother did not make it up...) In fact, the idea that putting your feet on the table during a meal is in bad taste probably came from a time and society when the walk to the dinner table included trudging through the horse stables on the way.
What’s the point? The point is that it’s important to recognize that there is a reason behind the rules and norms that develop in any society and culture. Way down the road, those reasons may be less important -- people come to the dinner table with horse dung on their feet slightly less often these days -- but they are extremely important to remember during the time when those ideas about behavior are being established.

We are in just that sort of time with the development of our culture surrounding the Internet. The rules and customs of netiquette, or etiquette on the Internet, are a ‘work in progress”, they are based on some very important principles.

**What are the three principles of Netiquette?**

1. **Save bandwidth** - Bandwidth is the amount of information or data that can fit through a connection to the Internet at one time. The more users that are actively sending and receiving information at any given time, the more the Internet begins to resemble a giant traffic jam of data. As with any other traffic jam, the more crowded it gets, the slower it goes. So the principle of saving bandwidth benefits everybody on the Internet, but only if more than one person pays attention to it.

At the very least, saving bandwidth benefits the users you are interacting with on the Internet. These users may have a slow connection to the Internet, making their personal bandwidth very small. If you email them with a file attachment that is very large, it could take them a long time to download. If it’s an important document for work, then that might be tolerable. If it’s a picture of your adorable cat Fluffy, it could be frustrating for the recipient.

Here are some other ways you can save bandwidth:

- When you are responding to emails, the body of the message you are replying to is often quoted in your reply. If you delete all of the quoted text except sections that are used directly to reinforce your reply, you will save bandwidth for your recipients. If your reply goes to a mailing list or more than one recipient, you can multiply the bandwidth you save by the number of users who will read it.

- If you want to show a picture of your cat Fluffy to your favorite newsgroup or listserv, put it on a web page and send the hyperlink to it. That way, only people who care to see Fluffy in her new Easter bonnet will have to wait for the image to download.

- Newsgroups and mailing lists are a great place for discussions. All too often, however, users will respond to a large group just to say “I agree,” or “Can you email me another picture of your cute cat?” These should be private email messages to the intended recipient, not sent to the whole list.

- If you are developing a web page, it's not just polite to consider others’ bandwidth limitations; it’s good web design. Users are unlikely to return to web sites that are loaded with slow-downloading photos or graphics unless there is a compelling reason to do so.
2. Save users time - When you are using the Internet, good netiquette says that you should do whatever you can to save users time. Here are some practical ways to save time for others online:

- When you send email, make sure that your subject line is relevant, short and meaningful. I hate to admit it, but I’ve gotten way too many emails with a subject line that reads something like “An Email From Dave.” Now, who can tell me why that makes me want to say “duh”? Here’s a hint: I know it’s an email because I’m reading it in my email program, and I can see who it’s from because the sender’s name is listed right next to the email in my program. There’s no way I can tell what the email is about by looking at that subject line, so I’m forced to spend my time opening it. I open it up and read, “Hey Bill, here is a picture of my new cat, Fluffy. I know I already posted a copy of this to both of the mailing lists you subscribe to, but I really wanted to make sure you got a copy. See you soon, Dave” Please excuse me while I roll my eyes...

- Electronic communication is not the same as communication in print. It’s important to point this out to email users and web designers everywhere, so they remember to get to the point. Readers on the Internet don’t want to read a story, unless you have a web site that contains stories.

- Statistics show us that people read significantly slower online, so it’s important to be mindful of this fact. When you write anything intended to be read online, it’s a good idea to use a style called upside-down pyramid. In pyramid style writing, the author provides supporting points that build up to a final point at the end of the text. When writing for anything to be read online, you should work in an obvious direction: Start out with your point or assertion, and let the reader decide how much of your supporting material to read.

3. Respect others’ privacy - Because the Internet makes it easy for anyone to share any kind of information with anyone else in the world with very little control or accountability, there is a great deal of concern over personal privacy online. This concern is reasonable and justified. Violations of people’s private information are perhaps the most serious breaches of netiquette online. Here are some ways you can respect your friends’ privacy on the Internet:

- Never give out someone else’s information even if you intend to do good or you think they would be agreeable to you giving it out. This includes their email address.

- Never post any personal information or any photos of a person on a web page without their express consent. Any web page online can be accessed by anyone in the world, and that means that web pages are not safe places for personal information. In some cases, it is wise to get written permission from people before posting their photo or their information to a web page. This is especially true when dealing with minors because of the safety issues involved.

- Never subscribe anyone else to a mailing list, or otherwise give out their email address to a third party without their consent. It should be their choice to receive additional stuff in their email. Since many advertisers sell their email lists to other advertisers, your friends may end up on several lists besides the ones you have subscribed them to.
What in the world does :-) mean?

One of the chief complaints many users have about trying to communicate online is the lack of the ability to express oneself. It can sometimes be difficult for new users to get their idea across without tone of voice and body language to help the recipients understand the message. In the Internet culture, users have developed replacements for body language and tone of voice.

One of these replacements is called emoting. Emoting, in the strict sense, is the use of the third person to describe an action taken by yourself that would represent an appropriate use of body language in that situation. Sometimes a statement is written out completely, but users often use an abbreviation to emote online. For instance, a user in a chat room might type “LOL?” in response to a funny statement by someone else. LOL, online, is short for ‘Laughs out Loud”. Here are some other abbreviations you might see online:

• ROFLOL - Rolling on the Floor Laughing Out Loud
• Cya - See ya!
• L8R — Later
• TTYL-Talk to you later

Listing all of the abbreviations that someone might find online would be a book in itself and would be out of date almost before it was published. The Internet is a rapidly evolving culture with new sayings and ways of communicating ideas being developed all of the time.

In addition to emoting, users on the Internet will often use emoticons, or pictures made of text, to represent body language and other concepts:

:-) or:) Smiley face
;-) Winking
:-P Sticking tongue out

There are thousands upon thousands of emoticons in use on the Internet. If you can’t figure out what one means when you see it, just use your imagination or ask another user. Most people online are glad to help out a newbie ;-) The web site at www.netlingo.com has several resources for those seeking to learn to communicate online.

Just like any other language, the language of the Internet is constantly evolving to include new words and phrases. The best way to keep up with it is to participate in the culture. Just remember the three principles of netiquette and you should do fine.
Chapter 6 – Privacy and Security

For many people, the World Wide Web is a very scary thing. They hear stories on the news and in the movies about identity theft, the loss of private information, and people falling victim to numerous scams. These fears are not unfounded. Such things do occur on the Internet. However, fear of something bad happening shouldn’t keep us from venturing out into the World Wide Web. With a little knowledge of what a trustworthy web site contains, the web can be very safe and enjoyable.

What’s different about trusting people online?

You can’t always see who you are dealing with. — When you are typing your credit card into a web page to buy that new book from Amazon.com, where does that information go, and who sees it along the way? One of the scariest parts of the web for people is that they don’t know who they are dealing with. There seems to be a fairly common fear among new Internet users that after taking their money, an online merchant will just disappear without a trace. In reality, this is no more common than when it happens offline.

There is a feeling that the usual rules don’t apply. - The news is full of things that are happening on the Internet. We hear stories of millions of teens trading copies of music that they don’t own, or people who write computer viruses that cost companies millions of dollars in time and damage to their data and systems. The reality of our situation is that rules do apply, and in very much the same way. The real issue here is that technology has outgrown our ability to control people’s actions. In other words, these people are breaking the law, and will be punished when caught. The problem is catching them.

Unfounded and irrational fears run wild. — The Internet can be a very scary place for new users. The ability to communicate and share information that it gives to everyone is still somewhat new. Many people have not gotten used to the idea that they can communicate with someone across the globe with just a few clicks of the mouse. Many of these unfounded or irrational fears have little to do with real dangers of the Internet. In fact, many of these fears are rooted in a lack of understanding of the technology itself. Here is the basic reality of the Internet and safety: There are things you can do to protect yourself and your computer. All it takes is a little bit of knowledge, and the time to implement it.

What do I need to know in order to protect myself online?

The fear that someone will steal and use their vital or personal information without their permission tops the list of Internet-related fears. It’s hard to believe, but the vast majority of credit card information that is “stolen” through the Web is actually freely given up by the cardholder. The victims of this credit card theft, most of the time, are simply not careful enough, and their credit card information is given to a web site that cannot be trusted. Other times, users submit their information to a web site that is not secure, and their private information is captured en route.
A secure web site has nothing to do with the owner of the site or whether they can be trusted. The word “security” actually refers to a technological feature that any web site should have before asking for personal or financial information. Remember that your data travels through many other computers and Internet routers between your computer and the server that holds the web site. As it travels, it can be intercepted by other people. A secure web site uses encryption to scramble your data so that it is unreadable by anyone except the web site at the other end. That way, you are protected from anyone who might be snooping around.

You can tell that a web page is secure by looking at either the bottom right or left hand corner of your web browser. Most web browsers will display an icon of a locked padlock if the web page is secure, and will either display an unlocked padlock or nothing at all if it isn’t. Some web browsers will also alert you when you enter a secure area of a web site. Any web page where you enter personal data, especially financial data, should be secure. if it isn’t, then you are taking a risk by supplying your data.

Of course, all of the security in the world won’t help you if the owner of the web site isn’t trustworthy. Security protects your data in transit, but it’s up to you to decide whether your data is safe when it gets to where it’s going. Here are four things you can do to protect yourself:

- Look for a privacy agreement on the web site. This is basically a statement or promise from the web site that they won’t go selling your email address or other personal information to other companies without your consent. There is some pretty good legislation in this area, so most sites that are legitimate will have this available for potential customers.

- See if there is a customer service or return policy. A lack of a return policy doesn’t mean that a site can’t be trusted, but it is a fact that many of the more reputable, established companies on the web have put some thought and money into making it at least somewhat convenient for customers to return items that don’t work, don’t fit, or that they just don’t want.

- Ask other Internet users if they have heard of the site. Nothing spreads faster on the Internet than news of someone who got ripped off. If you aren’t sure about a particular site, just ask around and see if anyone else has heard of it. Of course, you need to make sure that you can trust the opinions of the people you ask as well.

- Do your homework. — Call the numbers listed on the web site. Many times you can tell whether a company is legitimate by simply talking to them on the phone. Another place to check would be the Better Business Bureau in their area. if they have had some bad customer reports, the Better Business Bureau might be able to give you an advance warning. The BBB has a web site that allows you to search for companies by name.

**Internet Security Threats**

The Internet is a wild place, by design. It is always changing, always growing, and anyone can participate in almost any way they can imagine. This is what makes the Internet such a powerful and amazing thing, but also what makes it such a dangerous place for those who do not know how to watch out for themselves. By knowing what to watch out for and what to avoid, you can take advantage of all that the Internet has to offer without worrying about the potential dangers that exist online.
Should I worry about Hackers?

To many people, hackers seem like they could only exist in movies. After all, how could people use a computer to do all of those things? Hacking may not happen exactly the way it is portrayed in the movies, but it is very real. The most basic definition of a hacker is a computer security expert. They are often referred to as coming in two flavors: White hat (think good guy in a western movie) and black hat (the bad guys).

Nobody can make a guarantee that your computer will not be targeted by a hacker. However, it is important to remember that while a hacker could technically attempt to break into any computer they are not likely to do so in such a random way. Most of the time, hackers target large, visible entities like banks, ISP’s and internet-based companies like Yahoo.com. What’s more, attacks are usually motivated by large monetary gain, political statements, or something as simple as proof that it can be done. All of these things add up in the favor of the individual user, since an attack on a target that small would hardly be worth the effort that it would take.

How can I prevent my computer from catching a virus?

A computer virus can be caught as easily as a biological virus, and can be very damaging to your computer’s data. Technically, a virus is a program that is run on your computer without your knowledge or consent. Viruses can do great harm to your computer, because your computer cannot easily protect itself against programs that are run on it. The key to protecting your computer against viruses is learning how to avoid getting a virus in the first place.

The most common way for a computer to become virus-infected is through email attachments. An email attachment is a small file or program that gets sent to users along with an email message. They can be useful for many things, but unfortunately this usefulness has been eclipsed by the number of viruses that have taken advantage of this capability. One of the most important things you can do to protect your computer against virus infection is to guard yourself against virus-infected email attachments. If you happen to open an email attachment that is infected, then you have essentially given that virus permission to do anything it wants to do on your computer.

Of course, not all email attachments are dangerous. Here are some rules that can help you decide whether it’s safe to open an attachment or not.

1. If you know the person who sent it to you.

   and

2. If you were expecting an email with an attachment.

If both of these are true, then it’s safe to open the attachment 99% of the time. However, just knowing the person who sent it to you is not enough to assume that it’s safe. There are many viruses out there that can impersonate people when they spread, so make sure that rules 1 and 2 are both true. If you get something from a person you know, but you weren’t expecting it, then you should contact that person to find out what it is that they sent you.
It is also very important to purchase anti-virus software for your computer. Good antivirus software scans email as it enters and leaves your computer, and also looks at every file on your computer on a regular basis to make sure that your computer is virus free. If it finds a virus, the software can either clean the virus from the file, or at least quarantine the file so that the virus can’t spread or do any more damage.

Anti-virus software works by recognizing patterns in the programming code contained in a virus. Each time a file is scanned, it is compared to a file within the anti-virus software that contains definitions of every known virus. If there is a match, then the scanned file is tagged as a virus and dealt with. If there is no match, then the file is assumed to be safe. Unfortunately, many people let their virus definitions go out of date. Since an estimated 13 new viruses are created every day, it doesn’t take long before there are viruses spreading through the Internet that outdated virus definitions cannot match. If there is no match, then viruses can easily slip through an important line of defense in your computer’s security. So if you have anti-virus software, make sure you update your virus definitions often so that it can do its job.

_Aren’t worms supposed to stay underground?_

Worms and viruses are often confused with one another. At times, worms and viruses are combined to make a particularly annoying threat to your security. In technical terms, a worm is a program that can spread – all by itself – through the Internet or any other network. Some worms exploit holes in network security, and others exploit the gullibility of computer users. Worms are usually very smart in terms of being able to find address books on your computer, look at web sites you have visited recently, or scan for computers on a network. They may do severe damage to a computer, or they may just spread from one computer to the next without doing any real damage to the host computers. One area that is almost always affected by worms is the computer network over which it spreads and often the servers on that network as well. A worm that uses email to spread can quickly overwhelm and even shut down an email server for a period of time.

_Pishing? I thought it was spelled “fishing”…_

The idea of phishing originated on America Online in the mid-1990’s where mal-intentioned users would try to lure (hence the term, phishing) innocent users into giving up sensitive information, such as AOL account information or credit card numbers. Often times the scam would involve someone posing as a legitimate account representative with AOL, claiming that there was a problem with the user’s account that needed to be fixed. They would request information from the unsuspecting user, and then use that information for their own unauthorized purposes.

Today, phishing has become one of the premiere internet scams. Often associated with the auction web site Ebay or one of several financial institutions, phishing scams target unsuspecting users with emails threatening a discontinuation of service if the user does not supply the specified information. The email appears in most cases to be legitimate communication from the institution, and often times includes some story involving a server crash, possible corrupt data, or even a routine security check. In many cases, users are asked to go to a web site, enter their name, credit card number, account information, PIN numbers, and even social security number to “restore access” to their account. Of course, despite appearances, these websites are not related in any way to the institutions that they are claiming and any information entered into these form fields will be sent to someone who intends to steal your money, or worse, your identity.
Internet Privacy Threats

It is important to know the difference between something that is a threat to your privacy and something that is a threat to your security. In a nutshell, the difference could easily be explained by saying that a security threat is a blatantly illegal act, while a privacy threat is marginally legal but something that most people are not comfortable with. So if you aren’t a celebrity (my apologies to you if you are), then why would anyone care about invading your privacy? In almost every case, your age, gender, marital status and the web sites that you visit are a potential gold mine to advertisers. By gathering this information, they can predict what products you will be interested in, where you are likely to shop, and the best way to get your money (legally). There are a number of ways that your personal information can be harvested online, and some are more ethical than others.

Cookies, anyone?

When someone says the word “cookie”, the first thing that comes to many peoples’ minds is a pile of warm gooey chocolate chip cookies sitting on a plate next to a tall glass of milk. However, if you ask anyone who works in the Internet field what comes to their mind when they hear the word, you will get an entirely different response.

A cookie in the world of the web is a small text file that is saved on your computer by a web site you visit. A cookie usually contains information about you, such as your identity, your preferences, and even information about the purchases you make. Cookies are used by web sites to track return visitors to web sites, and to personalize a user’s experiences when they visit a web site.

One web site that uses cookies very effectively to provide extensive personalization for the individual user is Amazon.com. When a user visits Amazon.com, a cookie is stored on their computer that allows the web site to recognize them when they come back. If they buy books, search for specific book titles, or browse other areas of Amazon’s selection of merchandise, then the specifics of whatever they do is stored in a user profile on Amazon’s servers. Every time they return to the site, Amazon reads the cookie on the user’s machine and finds the correct user profile for the user. Using the information in this user profile, Amazon suggests books and other items users are likely to buy, based on their past purchases.

Some people find this personalization to be very helpful and convenient. Other people find it rather creepy and don’t like the idea that their every move is being watched and saved in a database on a computer somewhere. Some people even believe that cookies are a threat to their personal information or might compromise the security of their computer. Among all of the technologies that have been introduced to the Web, cookies are perhaps the most controversial and widely debated. They are probably the most widely misunderstood, being the subject of several incorrect beliefs and assumptions. In reality, there are several limitations on cookies that are designed to protect the users from the theft of their personal information.
What are the capabilities of cookies?

- Cookies can store information from a web site. — Any information that you provide to a web site, through filling out a form, buying something, or even just clicking a link, can be stored as a cookie.
- Cookies can be read by the same web site that created them. — A web site is allowed to read any cookie that is placed on your computer by that same web site. Web sites are never allowed to read cookies that they did not create.
- Cookies can be erased at the user’s discretion.
- Cookies can be turned off in the web browser.

What are the limitations of cookies?

- Cookies from a particular web site can’t get information from you that you don’t provide to that same web site, even if you have provided that same information to a different web site. (The one thing you should be aware of, though, is that images on web pages can come from other web sites. In this case, you could be surfing cats.com, and if an advertising banner is displayed from dogs.com you could end up with cookies from both cats.com and dogs.com on your computer, even if you never go to the dogs.com web site)

- Cookies can’t be used to break in to your computer, take over your computer, or steal other information from your computer.

How can I take control of my cookies?

Whether you allow cookies to be placed on your computer or not, it is very useful to know how to manage the cookies and cookie settings on your computer. The first thing you will want to figure out how to do is turn the cookies off and on. This setting can be found by looking in the Help menu of your web browser.

Another important thing you may want to do is to remove all of the cookies on your computer. This is especially true if you share a computer with another person, and you do not want your personal information used by someone else. Again, every web browser has a different way to do this, as well as a different location for storing that browser’s cookies on your hard disk. Most newer browsers allow you to delete or view the cookies on your hard drive with the click of a button. A good place to look for help on this is the ‘Preferences” or “Internet Options” in the menu bar of the browser. Another option for those who want more control of their cookies is cookie management software available from any of several third-party software developers.

Do you want to receive email updates from our affiliates?

Any time you read those words, translate them as, “May we please profit from the sale of your email address to people who want to fill up your email inbox with **SPECIAL OFFERS**?” If you read the privacy agreements of many of these sites, they will put some sort of limits on who will be given access to your email address, but most people don’t have the time or patience to read through all of the legal mumbo jumbo that is contained in such a privacy agreement. Look at it this way: If you want information on a product, it is very easy to look it up online at your own convenience. Once you give out your email address to an indiscriminate web site, it is virtually impossible to retract that decision.
Your email address, when lumped together with 20,000 others, is a valuable commodity. This is even more true if your address is accompanied by personal demographic information, like your age or gender. The sale of email lists to companies and individuals who sell things online can easily run in the amount of hundreds or thousands of dollars per list. Your email address is a valuable commodity, not because it is tied to your financial information but because it is an almost instant gateway to you, from anywhere in the world. Be careful who you give it to and who you give permission to use it.

Look at this great new screen saver I downloaded for FREE!

I shudder every time I hear those words. Nothing is really free in life. Things on the Internet are no different, and just because something isn’t costing you money doesn’t mean that you aren’t paying for it. There are a few pieces of software that are free to you. In most of these cases, the developers are hoping that you will buy an upgrade to a more powerful version of the software, or perhaps it is a one-person project that a programmer is using as sort of a functioning business card – to show off their skills. In many cases, software companies will allow people to download and use a time-limited trial of their very expensive software. Once the time limit has expired, you are required to buy the software or it will stop working.

However, there is some software that doesn’t fit any of these categories. It seems to be completely free, until you open the program and up pops a banner advertisement, just like the ones you hate to see smack in the middle of your favorite web sites. This is called adware, and the authors are making money by selling advertising space on their software. By giving it away free, they can get more people to use it, and that allows them to charge more for advertising space.

Unfortunately, there is an even worse category of “free” software. This software may or may not show you advertising while you use it, but it does something far worse. It watches what you do, and reports your actions back to the creators of the software, without telling you that it’s doing so. Spyware, as it’s called, can hide on your computer, and is usually aimed at recording data that would be useful to advertisers, like what web sites you go to, or how many emails you send in a day. Since the majority of spyware that comes in a “free” program is limited to demographic information, it is usually seen as a privacy threat, but spyware can become a security threat. Some types of spyware are packaged much like a virus, and have the ability to log your actual keystrokes. In these cases, the spyware can send anything you type to its creator, including passwords, credit card numbers and other very sensitive information.
That’s it! I’m never using my computer again!

It’s easy to feel very threatened or overwhelmed by the number of security and privacy threats that you can encounter online. However, it’s good to remember that if you protect yourself and you know what to avoid, you can be a part of the online community without putting yourself at risk.

Here are some things you can do to protect yourself:

- Buy antivirus software. There are many different kinds, and they all do a very good job. If you are unsure, then your local computer retailer can answer your questions. Remember, though – Antivirus software relies on updated virus definition files to accurately recognize viruses, so make sure you keep yours updated.

- Turn on your Windows XP firewall. If you don’t have Windows XP, then you can get a good firewall for free at www.zonealarm.com. While you are there, you might look at some of their other products, as they are a well respected company. A firewall protects your computer by limiting the traffic that can get in from the outside.

- Update your copy of Windows. Surely you’ve seen that annoying little window at the bottom-right of your screen that keeps saying, ”Updates are available”. You probably just close it in annoyance like everyone else. The problem with this is that most of those updates are designed to close security holes that have been found in Windows. If you don’t update Windows, then your computer can fall easy prey to hackers, viruses and worms.

- Use strong passwords. Don’t use the word “password”, or “1234”. They might be easy for you to remember, but they are also very easy for someone else to guess. Computer security experts recommend that all passwords be 10 characters in length or greater, and contain both letters and numbers.

- If you use a wireless network at home, then you should activate the security measures in the equipment. Security measures are always turned off by default, but a wireless network without security is an open invitation to hackers and information thieves. If you don’t know where to start, then look in your wireless equipment’s instruction manual for WEP (Wireless Encryption Protocol) and WPA (WiFi Protected Access).

Don’t trust anyone online without good reason. It’s very easy for trustworthy parties to prove to you that they are safe. Rely on the same logic that you use in trusting people or companies in the rest of your life, and you should be fine (unless you trust everyone in the rest of your life, in which case you should get some help).
Chapter 7 – The Basics of Web Design

Can you tell a good web site from a bad web site? When asked this question, most people say yes. However, if you asked people how they can tell the difference, they might have a little more difficulty providing you with an answer.

One of the greatest things about the Web is that anyone with access to it can communicate their ideas and information to a world-wide audience. On the other hand, one of the worst things about the Web is that anyone with access to it can communicate their ideas and information to a world-wide audience.

Let’s face it:
Not everything out there on the Web is worth reading or even factual. But how can you tell the difference?

Far too many people decide to trust a web site based on how the web site looks, or even by gut feeling. While those factors should be part of our decision to trust a web site, they aren’t reliable enough by themselves. It’s important to match those less reliable but still important factors with measures that are reliable and that look at the real issues surrounding the business-consumer relationship. Here are some things you might want to take into consideration when you are evaluating web sites for your own use.

Examining a web site’s purpose can tell us a lot about the web site and even begin to give us a clue as to whether we can trust it or not. After all, creating a web site isn’t too difficult. It’s enough work, however, that you can be sure that whoever created the web site had a pretty good reason for doing so.

People build web sites to:

- **Share information** — This was the original purpose of the Web, and it is still a common reason that many people have for publishing a web site.

- **Gather information from users** — Websites which gather information include polls, voting sites, and mailing list sites.

- **Connect users to each other** — Also called community building, this goal can be found in web sites such as fan clubs, discussion forums, and special interest groups. Most of the time, these sites include information that is updated by the web designer and information or discussions that are created and driven by the interaction of the users on the web site.

- **Perform ecommerce** — Ecommerce is the process of buying or selling goods or services over the Web. It includes stores, auctions, classified ads, investing, and countless other ways of doing business.

**Who is the intended audience of the web site?**

In most cases, a well-designed web site will make it pretty obvious who its audience is, and the site will cater to that audience. Analyzing the target audience of a web site helps you understand the target for the information and services that the site offers. For instance, you wouldn’t use a web site targeted at sixth-grade children for a college research paper.
**Does the design of the web site make sense?**

In designing a web site, the focus is on the information and how it can be accessed by a user. Information on a well-designed site should be:

- **Grouped logically** — In other words the categories of information should compliment the information itself and make that information more useful. For example, if you walk into a grocery store to buy the ingredients to make a cake, you would expect the cake mix and the frosting to be on the same aisle because they belong together. Likewise, on a web site for advertising software for sale, you would expect that games, business, and graphic design software grouped into separate categories.

- **Ordered/located logically** — How information is ordered really depends on the categories used. Some categories don’t require a specific order at all, while others an obvious order. If a web site contains a calendar of events where information is grouped by month, you will expect to find the information in order by month. On the other hand, a used car web site might have different categories of cars, but they don’t necessarily suggest an order in and of themselves. In that case the web site designer might settle for an alphabetical listing or a listing by model year.

- **Linked together in a way that makes sense** — if you are reading a book, you expect that page four will be found directly after page three. You would also expect that the page reference numbers in the book’s table of contents to represent the pages that contain the information indicated in the table of contents. Once users go to the home page of a web site, they often rely solely on the links within the site to help them find the information they are looking for. A good web site design will contain links that are accurate and easy to understand.

**Does the design compliment the content and navigation of the site?**

One of the most obvious signs of a bad web site is pages that are just plain ugly. If web pages are not visually attractive, many users won’t pay attention to the site. The components of web page design, however, go much deeper than just the attractiveness of the page.

Layout and design of the individual web site pages can determine whether or not people can read, understand and even get to the information contained within a web site. Be on the lookout for two specific problem issues:

The information hierarchy of each page should be clear— In a nutshell, an information hierarchy is the aspect of web page design that tells a user the relative importance of pieces of information on a given web page. Effective web designers will use one or more of the following methods to create an information hierarchy:

**Size** — The relative size of items on a web page is a good indicator of importance. For instance, a title of a web page is usually much larger than the rest of the text on the page so that it is one of the first things a user sees.

**Position** — The position of web page elements also tells a user how important they are. When reading English, people start at the top left corner and move across and down the page. Because of this, the top left corner of the web page is prime real estate. On a well-designed web page, you will see things like the navigation menu, the company logo, or the title of the page in this space.
Color — When elements of a page are a different color than the rest of the page, they tend to stand out. For this reason, color can also be used to help establish an Information Hierarchy.

Navigation – The navigation elements should be easy to find and consistently placed across pages. Navigation elements are the links in a web site that represent the main structure of the web site. Oftentimes, the navigation elements represent the main sections of the information that is contained on the site. They can be hyperlinks in the form of buttons, graphics, or text. A well-designed site will have an easy to find set of navigation elements that make it easy for users to both see what part of the site they are looking at currently, and find their way to the part of the site they are looking for.

Does the information itself seem to be trustworthy?

Historically, the Web has been used for the sharing of information. Even today, in our world of eCommerce, information is still responsible for a high percentage of the traffic on the web. However, because the Web is an open medium where anyone who has the desire to share information can do so quite easily, there is a wealth of both factual and false information available. Whenever people turn to the Web for information, whether it's research for a paper or prices on new cars, they should evaluate the sources of information that they find to make sure that what they are reading is factual.

The practice of evaluating sources of information isn’t limited to the web. People everywhere are constantly evaluating what they read, see, and hear. The difference is that on the web, a site can appear to be very trustworthy when it shouldn’t be trusted at all. While the design of a web site is an important indicator of quality, it can also be misleading as to whether the web site should be trusted. Here are a few factors that can be used to evaluate a web site apart from the design:

- **The owner of the site** — Is it possible to find out who the owner is on the web site? This is a critical question to ask because the owner of the site influences the way information is presented on the site. For instance, would you trust a ‘scientific’ report on a web site that said that drinking Pepsi can improve your health? It’s a stretch, but you might as long as the web site wasn’t owned by Pepsi.

- **The author of the site** — Like the owner of the web site, the author of the web site has a major impact on whether the information on the site can be trusted. One of the major factors related to the author’s role in the web site is their authority to present information on the topic of the web site. If the author is qualified to contribute information in a particular topic area, then the information itself can be trusted.

- **The goals of the site** — A very simple example of how a site’s goals can affect the accuracy of its information can be seen on any auction web site. If a user picks almost any product on the site and reads the description of the item, he is likely to read the following words in the text: ‘like new.’ It is possible that many of these products are like new, but the fact that the whole goal of the site is to sell items to other users casts a little doubt on almost everything that is written about the products themselves.

Likewise, other web sites have other goals. As you surf the web for fun or for the gathering of information, always take a web site’s goals into account. Ask yourself what the web site wants you to think. That technique can save you from believing information that just isn’t true.
Behind the Scenes Online

The magic of web pages allows us to do all kinds of things online, from gathering information and ordering merchandise to interacting with friends and family. Most people will acknowledge that something is going on behind the scenes, but many web users will also tell you that they have no idea what it is.

What are web pages made of?

Today’s Web has many different technologies at work in the background. While it hasn’t always been that way, technologies that support communication, graphic animation, and streaming media are now the norm. Despite the number of different technologies involved in making the Web work, there is one foundational technology that provides the basic structure and acts as the glue that holds everything together: HTML.

What is HTML?

Hypertext Markup Language, or HTML, is what all web pages were made of in the beginning. There are two parts to the name of this language that describe the two major functions:

- **Hypertext** - This word describes the ability of HTML to link documents together using clickable text. Hypertext is a piece of text that users can click on to connect to related information.

- **Markup Language** - The term markup language refers to a set of tags or commands that are used to designate pieces of text as different parts of a page or story. Markup languages actually originated with newspapers that wanted to have a common method of getting the stories to the typesetter in an understandable format. Authors didn’t have the ability to increase the font size of a headline, but they needed a standard way to let the printer know that it needed to be done. By putting the headline between two headline tags like `<H1>` and `</H1>`, the author can easily let the printer know what to do with the text.

Hypertext Markup Language doesn’t tell people what to do with text. Instead, HTML tells a web browser what to do with the text. In other words, every web page has text mixed with HTML. In every web page, the HTML tells the browser what color, size, and font to use for displaying the text. More importantly, HTML also tells the browser what part of the document the text represents, whether it is the title, a heading, or the body text of the page.
What does HTML look like?

Anyone can see the HTML behind a web page. All a user has to do to view the HTML in a web page is right-click anywhere on that web page, and choose “view source” or “view source code” from the menu that pops up. A new window will open up, with the HTML code for the web page you were looking at.

To most people, HTML code might look like the text from a web page mixed with gibberish and a whole lot of angle brackets (“<” and “>”). Each word or words inside of angle brackets is called an HTML Tag. Tags are used to surround pieces of text, and are what tells the browser what to do with it. Most tags have both a beginning and an ending tag in a pair, with text in the middle. Some beginning tags also have what are called attributes, which give more or more specific information about that tag. For example, a `<FONT>` tag might have attributes for size and color. Web page text, along with surrounding tags might look like this:
How does HTML work?

HTML tags, although they look confusing, are actually not extremely difficult to use. They work by surrounding the text of the HTML document with a beginning and ending tag that determine which text will be affected.

For example, this:

```
<html>
<head>
  <title>My Short Web Page</title>
</head>
<body>
  <h1>This is a web page.</h1>
  <p>This is some red text.</p>
</body>
</html>
```

Will look like the following if opened in a web browser:

This is a web page.

This is some red text.

If you look closely at the two images above, you might even be able to pick out a few things that make sense. However, writing raw HTML isn’t the only way to create a web page.
The Tools of the Trade

There are thousands of different tools you can use to create a web page. Some of them require a great amount of knowledge of web design and HTML coding, while others require only your imagination and a desire to create.

What tool can I use for free?

HTML is actually read as plain text by the computer, and doesn’t do anything special until it is opened in a web browser. Because of this, it is possible to use a very basic text editor such as the Notepad program in Windows to create HTML pages. Notepad can be found in under “Accessories” in your Start Menu.

Notepad is free, and it’s also very simple and straightforward to use. It doesn’t do anything you don’t ask it to, and it doesn’t have any tricky features or commands to learn. The main drawback of Notepad is that it doesn’t help you at all. In order to create a web page with it, you must know HTML. You must also type each tag and letter individually, as opposed to some HTML creation environments where there are commands that generate HTML code for you. Another thing that Notepad doesn’t do for you is what’s called code highlighting or syntax highlighting. This feature allows anyone writing HTML code to easily distinguish between normal text and the surrounding HTML code by differences in the color of the text. In Notepad, everything is Black, so users can’t easily separate the tags from the text.

Overall, Notepad isn’t really an ideal tool for beginners, because it doesn’t help you learn to write HTML correctly. Without help, even the simplest of web pages can take a while to create. Honestly, there are many professionals – even ones who are experts in HTML – who use other pieces of software that speed up the web design process instead of using Notepad.

What tool can I use if I don’t want to learn HTML?

FrontPage was designed to allow beginning web designers to develop web pages with advanced features quickly and easily. It isn’t free, but it allows you to create a web page without having to think about the HTML. Using FrontPage, you create a web page in an environment that looks much like Microsoft Word, and FrontPage creates the HTML for you in the background. FrontPage is easy to learn, and full of features. FrontPage also has an HTML view which allows you to edit the HTML code directly, or learn by seeing how the HTML changes with the development of your page.

Other than not being free, FrontPage has a few other drawbacks. One of the big ones for many people is that in order to develop web pages that use all of FrontPage’s features, you must have access to a web server that has special software installed, called the FrontPage Extensions. Another issue for some web developers is that FrontPage likes to have the HTML for its web pages written a specific way, so from time to time a user will spend time writing HTML code of their own only to have FrontPage rearrange it. This may not be a big deal if you don’t plan on writing a lot of HTML code.
What tool do professional web designers use?

Web design professionals use a variety of different tools to accomplish their task, depending on their style of design, experience, and a number of different other factors. One tool that many professionals use is Macromedia Dreamweaver. Dreamweaver allows designers to work in a design oriented environment, or to see the HTML code behind the scenes. It also has several advanced features that allow the designer to build interactive web pages with forms, frames and multimedia.

Dreamweaver can be difficult for beginners to learn, since it doesn’t look like anything else most people have used. It also assumes that you have a basic level of knowledge about the Web and about HTML. Beginners may choose to start with Dreamweaver, but it often takes them a little while to get going. With that said, however, Dreamweaver offers a tremendous amount of power and flexibility, and does a great job of speeding up the design process for anyone who knows how to use it.

Ready, Set, Go!

For many beginning web designers, getting started on their first web site can be the most difficult part. Admittedly, without a method for developing a web site, it knowing where to begin can be a little intimidating. Many professional web designers go through a somewhat complex series of steps to develop a high quality web site. You can get a good start on your first web site by thinking through the answers to the following questions:

What is the purpose of my web site?

Do you want to inform your users, or is your purpose to entertain them? Do you want people to come to your site to buys something, or should they pay for the right to read what’s on the web pages you develop? Perhaps your goal is to simply express yourself online or share photos of your kids (or your cat Fluffy) with your family members.

Whatever the purpose of your web site, it should be the steering wheel for your entire web site design. The purpose of your web site should affect all of the following things:

• The amount and type of information on the site
• The way the text on the site is written
• The layout and design of the pages on the site
• How the site information is grouped
• The size, type and number of images on each page
• What sort of technology beyond HTML might be needed
Who will be the users of my web site?

Answering this question will help you to design the site to appeal to the people will be using it the most. It is impossible to figure out what every user to your web site will be looking for or expecting when they get there, but you should have a pretty good idea what kind of a person you might be targeting for your web site, especially if your web site is representing a business. Here are some things that you might want to consider when you are thinking about your site’s future visitors:

- Age
- Gender
- Ethnicity/language/culture
- Computer experience
- Their purpose for visiting
- What they might be expecting to see/do on your site

How should the information be grouped on the site?

When you have answered the question regarding the purpose and users of your web site, you should have pretty good idea of what information you want to include on the web site. The next step in the process is to group this information in a way that is most useful and appealing to your users. It’s always a good idea as you move through this step and the next few steps to try to put yourself in the shoes of your users, so you can look at your plans from their perspective. If you think your web site is great, but your users hate it, then it’s of no use.

In addition to your users, you might want to consider the following things when you group your content:

- How much text is comfortable for users to view on a single web page?
- Does the nature of the content suggest grouping? (i.e.: categories, steps in a process, etc.)
- Does the content require many images that would be better off grouped into separate pages?

How should the information be arranged?

Some web designers arrange the web site content as they are grouping it. Others claim that the arranging of the information should be a step unto itself, so that adequate time and thought is invested into this step of the process. The arrangement of information is often a natural outgrowth of the groups you have put the information into. Perhaps the information suggests a an arrangement, such as alphabetical order, numerical or chronological order. Other times, the purpose of the content requires a specific order, as in the steps of a process.

If your information was grouped by month or year, it would make sense to put it in chronological order. Nobody would look for the months of the year in alphabetical order. On the other hand, if you were listing traffic laws by each of the 50 states in the United States, you might be better off going with an alphabetical listing that you would be if you ordered the list by the size of the state, or the date the state became a part of the Unites States.

As with your other steps, think of the ordering of your information in terms of what will make the most sense to your users. What makes sense to you might be the same, but if you design a site based on your own perspective and your users expect something different, they might get lost on your web site and not come back.
What page should I create first?

In most cases, the answer to this question would be simple. You should create the home page of your web site first. It’s the first page that your users see, it’s the page that establishes the navigation scheme of your site, and helps users find everything else. The home page of any site will often determine whether users will even bother to look at any of the other pages, or whether they will be headed off to your competitors’ sites without a second thought. Why? Because most users on the Internet are still using a slow dial up modem, and for them each page that they have to download is an investment of their time. You can count on the fact that they won’t wait around for a second page of your site to load if your home page doesn’t plainly tell them that they have found exactly what they’ve been looking for. In 99 percent of all web sites, the home page should be the first page you work on, with the other pages being based on the design and layout of the home page.

However, like any rule there is an exception to this one. The time that you may not want to design your home page first is the time that you are designing a web site around a single feature that will be the draw to your site for almost every single visitor that looks at your pages. For instance, let’s say that you invented the world’s first online auto payment calculator. If you wanted to make a web site to house the calculator, but didn’t have any other real purpose for the site, then you would probably design the web page that had the calculator on it first. Then if the site required any other pages (and that’s a big ‘if’), you would design the other pages around the calculator page.

If You Build it, They Will Come...

This is where the rubber meets the road: The only way to test a web designer’s knowledge of web design to see something that they have designed. Building your first web page can be intimidating for some people, but it doesn’t have to be terrifying if you remember that all web design really comes down to a simple balance of the parts of a web page. Your goal as a web designer should be nothing more or less than making the text, graphics, and other elements of the web page work together to accomplish the purpose of the web site. If you can do that, then you can be a successful web designer, whether web design is your job, part of your education, or just a hobby.

Before you get started, there is one important thing you need to remember. There are hundreds of really amazing technologies available for use in web development. Streaming audio and video, web animation, interactive components and countless others. The important thing that you need to remember is this:

Don’t use them all in the same web page! In fact, don’t even use them all on the same web site. Far too many perfectly good web sites have been made ineffective by the overuse of gadgets, trinkets and goodies that look ‘neat’, but accomplish little.

You will be tempted by these eye catching tricks as you develop your web site. When you are, you must ask yourself, “Does this really help the purpose of my web site?” In the answer is ‘no’, then you must leave the extra items off your pages. Your users will thank you.
If web pages aren’t meant to me a showcase for the latest eye candy, then what do designers focus on when they are designing them? After all, design is all about making things look neat, right? Wrong. All design, not just that found on the Web, is meant to facilitate the communication of information to an audience. In other words, design is about information, not looks. As a result, your focus during web design should be on the content of your pages, not on how they look. The content of our pages can be text, photos, and even multimedia in some cases. Let’s put it this way: If web design was a fancy restaurant, then the content would be the main course. It’s what you are there for. The other things are nice and can serve to make the main course even better, but you are there for the main course.

**How can I work with the text in my web pages?**

For the most part, the text on your web pages should be governed by the KISS Principle (Keep it simple, stupid.), but there are a few other things that you should know about the text structure of your web pages before you get started.

Reading online is different. Studies show that people read much slower online. As was mentioned in an earlier chapter, this should affect how you write your text for online use. However, it should also affect how the same text appears on the page. One thing that significantly affects the readability of your text is column width. If your columns of text are too wide, then your text will be difficult to read, because users’ eyes will get lost when traveling from the end of one line on the right to the beginning of the next line on the left. Experts say that 72 characters of text is the most that web designers should use, while others say that even 72 is too many for one line. The best practice is to actually try to read the text after it is placed in the page. If reading it feels awkward, then you should shorten the width of the lines. Remember also that you aren’t designing this for yourself. Always try to look at your site from the perspective of your users when you are reviewing its design. Other obstacles to readability include tiny text, obscure fonts, and colors that are too similar to the background that they are written on.

Effective communication requires a visual hierarchy. A visual hierarchy is the use of color, size, shape, and position to show the relative importance of the items in a page or design. To better understand the concept of a visual hierarchy, look at the front page of a newspaper.

At the top of the page, you will see a masthead, usually bearing the name of the newspaper in large, fancy letters. Below that, in what are usually slightly smaller letters, you will see the big headline of the day. Other headlines on the front page of the paper are still larger than the other text on the page, and they are bold, but they are smaller than the main headline. Along the left hand side of the page, you will sometimes find excerpts and references to featured stories of that day in the other sections of the paper.

Because in English we read from left to right and top to bottom, the top-left corner of anything we look at is the first place we look. Pay attention next time you look at anything, and you’ll notice that this is true. Because it is the first place English readers look, the top-left corner of a web page is a place of importance. This is a great place to put a company logo, the name of the web site, or other information that no users should leave the site without seeing.
The relative size and position of the text on your page also tell the users how important each piece of text on your page is. The important things, like headlines or headings for stories should be larger, bolder and stand out more. The body text on your page should be as small as possible while maintaining readability. The only text smaller than body text should be a caption or a footnote. Designers make a huge mistake when they try to emphasize too many things on one page. The result is a page where nothing stands out because everything is bold. The more sparingly you use emphasis in a web page, the more the things you choose to emphasize will stand out.

**How can I work with images on my pages?**

Here are some facts that you will want to be aware of as you begin to work with images in your web pages:

- Images are stored as separate files on the web server - This means a couple of things for you: First, it means that you must make sure that when you put your web page on the server, you also place your images on the server. Second, it means that when you insert an image into your web page, it needs to be in the same relative folder to the web page on the server that it was when you inserted it, or else it may not show up when you view the page in a web browser.

- Images are positioned relative to the text on your page - Many new web designers express their frustration with getting images where they want them to go in their web page. Many of us are used to our favorite Word processing program, where we can click and drag images to the exact position on the page where we want them to be, and they will stay there all by themselves. However, when we are creating web pages, the images behave as though they are a part of the text. You could even think of them as an oversized character if it helps you. So when you insert an image in your web page, it moves right along with the text before and after it, using the same alignment as the paragraph it is in.

- If you want to have an image aligned differently than the text that surrounds it, or if you would like the text to flow around the image, then you must change a setting of the image called alignment. The procedure for changing this setting differs by the program you are using. The alignment property allows you to specify the alignment of the image in relation to the surrounding text. The settings are easier to discover than to read about, so the best way to learn how the settings work is to put an image right in the middle of a paragraph of text, and try different alignment settings to see how the text and image are affected.

- There are only a few types of images that will work with web pages - There are two types of image files that are more or less universal in terms of which web users can view them:

  The first of these is called JPEG, which stands for Joint Photographic Experts Group. JPEG files end in the letters “jpg” or “jpeg”, and are often used for photographs or images with many colors online. The second file type that is widely used online is GIF, or Graphics Interchange Format. GIF files end in the three letters ‘gif’, and are often used for logos or images with very few colors.

  Both of these formats are used because they use image compression to make their file sizes relatively small, so users don’t have to wait as long for them to download. If you have an image that you would like to use on your web page, but it isn’t in one of these two formats, then you will have to convert it to either GIF or JPEG format before you can use it.
How can I insert a hyperlink in my web pages?

There are three types of hyperlinks that are commonly found in web pages:

- **The internal hyperlink** - An internal hyperlink is a hyperlink that connects a user to a web page or other file on the same web site. The URL for an internal hyperlink could look something like ‘Ihtml/files/page.html’, or it could just be the name of the page itself, like “page.html”. While it’s not necessary, in internal hyperlink can also use a full URL to link to a file on the same web site.

- **The external hyperlink** - When you are linking to a web page on another web site, you must use the full address of the web site you are linking to, so that the web browser can find the correct web server and page. An external hyperlink must always include the full URL, like: “http://Iwww.bmoseley.com/html/files/page.html”

- **The email hyperlink** - This type of hyperlink doesn’t connect the user to a web page or file when it is clicked. Instead, it causes a new email message to be opened on the user’s computer, with the address of the web site owner in the ‘to’ field. The URL for this type of hyperlink looks like “mailto:bill@bmoseley.com” where “bill@bmoseley.com” is the email address of the web site owner.

There’s no place like home

Where will my web site live?
As you know by now, every web site that is accessible worldwide is hosted on a web server. People quickly realized after the Web began to grow that it was too costly and involved for every individual who wanted to have a web site to keep up their own web server, and companies called web hosts started popping up all over the world. Today, when a web designer wants to build a web site online, they can choose from millions of different web hosts, each with their own pricing scheme, features and options. All they have to do is set up a hosting account with a web host, and they will have access to their own little piece of real estate on the World Wide Web. There are three different types of web hosts that a user might see when they are shopping around:

- **Free Hosts** - Nothing on the web is really free. So when you see the words “Free Web Hosting”, be aware that you will be compensating this company in some way for the web hosting services they are providing you with. The most common way for free web hosts to make money is by displaying banner ads when visitors view the pages that they host. Essentially, what that means is that any time someone looks at your pages, they are forced to view banner advertisements as well. This can be annoying for web surfers, so think twice before using a free web host for your business or other important web pages. Additionally, the service and customer support for free web hosts can be poor or nonexistent, and don’t expect a lot of help from them if you have questions about your site. The phrase, “You get what you pay for” definitely applies here.
Cheap Hosts - The other way that free web hosts make money is by allowing users to pay to have their pages hosted without the banner advertisements. In addition, customers who pay for the hosting may also be given a higher level of service and support. Be cautious here, though; you should always shop around when you are actually spending money on web hosting. Better yet, get a referral from someone who has used a particular web host and has a good experience. In this category of host, there are more bad hosts than good. If you shop around, you should be able to find a high quality web host for $5-10 a month.

Expensive Hosts - Web designers should never buy hosting that they don't need. Here are some factors that you can look at to help you decide whether to take that next step and invest in a more expensive host ($25.00 per month and up):

- Will you be selling things online?
- Will you have an exceptionally large number of visitors?
- Does your business depend on this site?
- Will you be including moderate to large amounts of pictures and/or multimedia in your site?
- Will you need to use specialized tools like Microsoft FrontPage to build your site, which require special server settings or software in order to work properly?

Once I have my web hosting account, how do I put my web site there?

Almost every web host out there has a different procedure for publishing web pages to their servers. Here are a few of the more common methods:

File Transfer Protocol (FTP) - This is a very common method, and almost every major web host at least provides this as one option to get your pages to the web server. This method involves using a special software, called an FTP Client, to connect to the web server and copy the files to the server. The more files you have, the longer it takes to transfer them.

Online File Manager - A online file manager is a tool that is provided to web hosting clients by the web host. They are usually custom developed by the web host for their own system, and while the exact layout and function of these web browser-based tools differs from one host to another, there is usually a similar set of functions for each one. Most of these tools allow you to add, rename, and delete files. Some may even allow you to create or edit HTML files directly on the web server. For making minor adjustments to pages or sites, this type of tool works fine. However, for site-wide changes or major revisions to a page, these tools can be slow and cumbersome.

Web Development Tools - Some web development programs allow designers to create their web pages right on the server, or manage all of the transfer of the HTML files to the server. This way, there is no need to transfer them to the server, because they are there from the moment that you click the “save” button. It may not seem like a big deal at first, but not having to transfer all of your web pages to the server each time there is a change can save a lot of time. This feature alone may make FrontPage a worthwhile investment for many people.
**What if I want my own .com?**

Ownership of your own domain on the Internet isn’t included with your average web hosting package, although some web hosts do provide this service for their customers. If you would like to have a domain of your very own, then you must register it.

Domains are registered online on a yearly basis, for usually around $35 or so a year. If the registration expires before a user renews it, then it is usually returned to the pool of available domains, and anyone may register it. Once a domain is registered, it must be pointed to your particular web site. Your web host should be able to help you with this process. If you would like to get more information on registering a domain, go to www.netsol.com.

Participating in the development of the World Wide Web can be a very exciting thing for many people. As with other aspects of the Internet, try to be as informed and cautious as possible, and you should do fine. The same three principles of netiquette apply to the Web that apply to the other forms of communication online. Follow those principles, and your time online should be productive and enjoyable.