

Study Guide for Certification Exam IC³ GS4 Session 3 Living Online

Internet and Computing Core Certification Global Standard 4

The Living Online examination covers skills for working in an Internet or networked environment and maximizing your communication, education, collaboration and social interaction in a safe and ethical way.

Instructions:

1. Log into our online classroom at canvas.instructure.com (You should have received an invitation to the class from me.)
2. Read this study guide
3. Take quizzes (may be repeated)

Helpful Videos on Windows 7

<http://windows.microsoft.com/en-us/windows7/help/getting-started#T1=tab01>

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Exam Objectives

Communication Networks and the Internet

Networks and the Internet turn computers into powerful tools for finding, sharing, and storing information around the globe. This domain helps you identify network fundamentals and the benefits and risks of network computing. This includes understanding that different networks transmit different types of data, the roles of clients and servers in a network, and the fundamental principles of security.

- Identify network fundamentals and the benefits and risks of network computing

Electronic Communication and Collaboration

Email, cell phones, blogs, teleconferencing, social networks, and other electronic communication tools connect billions of people instantly worldwide. This domain helps you identify various types of electronic communication and collaboration, how they work, and how to use them effectively. This includes an understanding of “the rules of the road” for online communication (e.g., “netiquette”), and common problems associated with electronic communication (e.g., delivery failure, junk mail, fraud, viruses, etc.).

- Identify different types of electronic communication/collaboration and how they work
- Identify how to use an electronic mail application
- Identify the appropriate use of different types of communication/collaboration tools and the “rules of the road” regarding online communication (“netiquette”)

Using the Internet and the World Wide Web

The Internet is not just for entertainment; it has become one of the principle ways of finding and sharing information, keeping up with friends, doing business, and even dealing with the government. This domain provides a thorough review and explanation of the Internet and some key, supporting components such as web sites and effective ways to search for and find information. Also learn how to evaluate the quality of information found on the Web, and identify responsible and ethical behaviors when creating or using online content.

- Identify information about the Internet, the World Wide Web and Web sites and be able to use a Web browsing application
- Understand how content is created, located and evaluated on the World Wide Web

The Impact of Computing and the Internet on Society

Computers are becoming more and more important to every aspect of life, including work, school, government, home and social interaction. This domain identifies how computers are used in different areas of life, the risks of using computer hardware and software, and how to use computers and the Internet safely, ethically and legally.

- Identify how computers are used in different areas of work, school and home
- Identify the risks of using computer hardware and software and how to use computers and the Internet safely, ethically and legally

Communication Networks and the Internet

Networks and the Internet turn computers into powerful tools for finding, sharing, and storing information around the globe. This domain helps you identify network fundamentals and the benefits and risks of network computing. This includes understanding that different networks transmit different types of data, the roles of clients and servers in a network, and the fundamental principles of security.

Identify network fundamentals and the benefits and risks of network computing

Networking Fundamentals

A network is a group of computers that can share information through their interconnections. A network is made up of the following components:

- Computers (often called nodes or hosts)
 - Anything connected to a network is called a node (shared printers, computers...)
 - Computers connected to a network are also called hosts.
- Transmission media--a path for electrical signals between devices
 - Network Interface Card (NIC)
 - Network cable (often Cat5) or a wireless NIC
- Network interfaces--devices that send and receive electrical signals
 - Modem (for example a cable modem from Comcast) to connect to another network enabled computer (Comcast)
 - Old dial up (telephone) modems used POTS (plain old telephone service) at only 56 kps (kilobyte per second)
 - A typical cable modem runs at 54mbps—almost 1,000 times faster! What is the network speed of your computer in the lab?
 - Hub: Simple connection point that forwards info to all other connections. (old)
 - Router: Manages traffic on the network.
 - Switch: Connects additional computers to the router. Better than a Hub.
 - Comcast customers use a combination router/modem
- Protocols--rules or standards that describe how hosts communicate and exchange data. By having standards, devices from different manufacturers can communicate. For example, smartphones, tablets, and PCs using a variety of browsers can all access the same website.

Setting up a Wireless Network

Here's a video that walks through the process of setting up a home wireless network.

<http://www8.hp.com/h20621/video-gallery/us/en/customer-care/1251261017001/set-up-a-home-wireless-network/video/#>

Ping

To test if a computer has connectivity with another computer on the same network segment, follow these steps:

- Find out the IP address of the computer you want to ping.
- At the Command Prompt enter *ping* followed by the IP address. You can also ping a website. To ping my website, enter this at the Command Prompt:
 - ping www.mrspeterson220.com
- Using the ping command, find out the IP address of Google.com. If you enter the IP address in the Chrome address bar, it should open www.google.com. This will only work for the backbone companies. www.ibm.com is one. What is the IP address of www.ibm.com?

User IP Address

To find out the IP Address of your computer, enter *ipconfig* at the Command Prompt, or follow these steps in Windows:

- Control Panel > Network and Internet category > Network and Sharing Center
- Click the name of your network listed in “View Your Active Networks”
- Click *Details*

User’s Network Speed

To find your wireless network speed:

- Right click the bars in the system tray
- Open the Network and Sharing center
- Wi-Fi Status will display speed and duration

Network Protocols

Protocols are the rules used to communicate across a network. The **TCP/IP Suite** is a set of protocols that is used on the Internet and on most networks. These include:

- **HTTP (Hypertext Transfer Protocol):** Used to transfer Web pages across the Internet.
- **HTTPS (Hypertext Transfer Protocol over Secure Socket Layer):** Used to securely transmit data by having it encrypted. This is used in e-commerce sites.
- Transport Protocols: How information is actually sent through various devices on the Internet.
 - **TCP (Transmission Control Protocol):** Used to download files. TCP breaks a file into packets. Each packet could take a different route to reach its destination—whichever is the fastest. Once there, the packets are checked and reassembled so the user can see the complete file. If a packet doesn’t make it to the destination, there is a request for a new packet. This is why you can’t open a file until it is completely downloaded.
 - **UDP (User Datagram Protocol):** Used to stream videos. As with TCP, the file is divided into packets. However, if a packet doesn’t reach the destination, it is simply dropped. This is why you can watch a movie before the entire file is downloaded.

- **FTP (File Transfer Protocol):** Enables users to transfer files between computers. This is used when a website administrator uploads files to a website. This is used when uploaded files to GoogleDrive.

Types of Networks

Peer to Peer: (*P2P*) Each computer can share resources and files with any other computer. An example of a peer to peer network is Napster. Peer to Peer is not centrally controlled.

Client-Server: Server provides services to the clients. In our classroom, your computer is a client. The “P” drive where you save your work is on a File Server. The Printer Server allows each student to share the same printer. Client-Server networks are centrally controlled,

Network Sizes

Personal Area Networks (PAN)

- Usually cover the small area around a user’s workspace
- Allow users to transfer files and gain access to printers and other nearby hardware
- Cover a range of up to 10 meters in distance
- Used to connect devices a single person uses with their computer

Local Area Networks (LAN)

- A private network of computers normally located in the same office or building
- Have a high speed and low error rate
- Are able to be measured in meters because of their small geographical size
- Typically means the computers in the network are within the same building or office

Wide Area Networks (WAN)

- Private network of computers spread over a large geographic area
- Provide connections between computers in multiple locations,
- Cover a significantly larger area than LANs
- Can be used to connect different office locations of a large company
- Consist of several LANs linked together to create a larger network

Controller Area Networks (CAN)

- Are used for real-time control operations (measure and control temperature, fluids, time, etc.)
- Was originally developed for use in vehicles
- Has excellent error protection to prevent problems
- Sends shorter messages than other networks

Benefits of Networks

- Users can communicate, collaborate, share files, and share hardware such as printers.
- Less cost since users can share printers
- Client/server networks are centrally controlled:

- User logins are authenticated (when you enter your user and password) so users are given access only to what they have permission to access. For example, in our school teachers can edit files to the Student Read drive, but students can only view these files.
- User files on the server can be backed up
- Users can be added or removed
- Users can be given rights to different parts of the network
- Software updates can be centrally controlled.

Advantages of Networks:

- Increased collaboration and communication so several people can work on the same project and share documents
- The ability to allow multiple users to work with the same database files simultaneously
- Less expensive software costs. Purchasing a site license for many users is much cheaper than buying software for each user individually.
- Less expensive hardware costs. Many users can share equipment such as printers.
- Less expensive maintenance costs. Most software is installed once over the network. Maintenance can be provided remotely from one central location instead of at the individual workstation.
- More productivity. Most employees will be using the same software and have the same setup, making it easier to use software and share files.
- More security. Network Administrators control user access. When an employee leaves the company, their access to the network is easily terminated.
- Centralized control of hardware and software, reducing costs of installation and maintenance.
- Applications are standardized on a network since they're installed from a central server.
- This also provides consistency and more productivity
- Online training, video conferences
- If the server goes down, users will still be able to access most software such as MS Office and work on files locally. They would need to log on as "Workstation only."
- Usually there is more room for user files on a network server than at their workstation

Disadvantages of Networks

- Users have less autonomy (independence) and privacy
- Privacy and Security issues:
 - Computer hacked, personal data stolen, identity stolen
- Reliance on networks
 - If computer goes down due to weather or other circumstance, online data is inaccessible.
 - Vulnerability of data and resources being lost or corrupted by coworker
 - Failure of centralized system could stop work for many employees at once
 - Addiction: Instead spending too much time gaming or social networking

Electronic Communication and Collaboration

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When sending documents that require a signature, use paper mail instead of email. (Although many programs today provide ways of adding electronic signatures.)

Identify different types of electronic communication/collaboration and how they work

Synchronous Communication (real time communication)

VoIP (Voice Over IP)

- Allows users to make phone calls using the Internet instead of traditional phone service.
- T-Mobile, Comcast, Vonage provide VoIP services.

Video Conferencing

- An online face-to-face meeting using a WebCam and microphone.
- Skype and Google Hangout are examples of Video Conferencing
- In April 2013 Microsoft replaced its Instant Messenger service with Skype

Asynchronous Communication

Blog

- Post information where it can be read and discussed by others at any time.
- Facebook Wall is similar to a Blog

Podcast

- Audio files
- Radio shows and college lectures
- Play on iPod

Microblogging: SMS technology (Short Message Service)

- Allows subscriber to broadcast short messages. Twitter and Tumblr are examples.
- Two-way dialog between users who are both online, but users cannot see what each other is typing while typing. (Instant messaging, chatting) Can you figure out how to chat with fellow students in our lab?
- Quick messages that don't need to be archived or saved
- Commonly used with cell phones (texting).

MMS (multimedia messaging service)

- Allows for the inclusion of video, picture, audio, etc. into the text message. Whenever a picture message is sent from a mobile phone, this is considered an MMS message.

Forum

- A forum is a place where users of a particular product or service may go to ask questions about the product/service they acquired. Many software companies host online communities (forums) for their users. <http://answers.microsoft.com/en-us>

Identify how to use an electronic mail application

Basic steps to send an email are to click Compose, enter an email address, subject, and message, and click Send.

- **Email Address:** mpeterson@barrington220.org means:
 - Name of individual: mpeterson
 - Name of organization: barrington220
 - Type of organization: org (non-profit)
- **Recipient:** Person(s) in the To: CC: or BC: fields (receiving the email)
- **Sender:** Person in the From: field (sending the email)
- **TO:** Person(s) receiving the email directly. (this email address is visible to all recipients)
- **CC (Carbon Copy):** Person(s) receiving a copy of the email. All these email addresses are visible to all recipients and the sender
- **BC (Blind Copy):** Person(s) receiving a “blind” copy of the email. (this email address is visible only to the blind recipient and the sender)
 - Tip: To send an email to several people, but show only one name in the *To* field, place all the email addresses in the BC field.
 - In some programs, this field is labeled BCC (Blind carbon copy)
- **Reply vs Reply to All**
 - **Reply** sends email only to the sender
 - **Reply to All** sends email to the sender as well as everyone in the CC field (but not to those in the BC field—remember, those are invisible)
- **Paperclip icon** indicates an attachment. **Attached files** can be previewed, opened, or saved.
- When you don't have the software necessary to open an attachment, **Preview** (sometimes called View) can be used instead.
- **Mailing lists** or groups can be saved to send emails to a group of people who share a common interest.
- Sometimes the marks >> are displayed in an email that had been replied to or forwarded.
- Email messages listed in the Inbox can be **organized** in many ways:
 - Click a column heading to sort (click the Date heading to sort by date, click the Subject to sort by subject...)
 - Right click a column heading to include another heading or option such as *Find*.

- **Auto Emails (sometimes called “Rules”)**
 - “Out of Office” can be set up to automatically replay to messages when the user is out of the office
 - “Auto Forward” Rule can be set up to automatically forward certain messages to a different user, helpful when the user is out of the office.
- **Computer Use Policy:** Document containing rules that must be followed before using a computer within an organization. The OK button you click on just before entering your user name and password is BHS’s Computer Use Policy.

Email Benefits

- Immediate delivery
- Can send to more than one recipient
- Keeps a record of previous emails
- Easy to search through and organize previous emails
- Messages and attachments can be sent, received, and forwarded quickly and inexpensively

Email Security

- Messages are *encrypted* so only intended recipient can open an email
- Email on a company or school’s email system is owned by the company or school, and can be access by a network administrator.
- Do not use Company email for personal email
- Do not forward chain-emails. These often carry viruses
- Do not open an email from someone you don’t know—again, these often carry viruses

Identify the appropriate use of different types of communication/collaboration tools and the “rules of the road” regarding online communication (“netiquette”)

Email Netiquette

- Always use correct grammar, punctuation, and spelling in professional emails.
- Don’t use Reply to All unless everyone listed needs to receive the reply
- Always include a *subject* in the Subject line.
- Never us ALL CAPS—It gives the impression of SCREAMING.

Using the Internet and the World Wide Web

The Internet is not just for entertainment; it has become one of the principle ways of finding and sharing information, keeping up with friends, doing business, and even dealing with the government. This domain provides a thorough review and explanation of the Internet and some key, supporting components such as web sites and effective ways to search for and find information. Also learn how to evaluate the quality of information found on the Web, and identify responsible and ethical behaviors when creating or using online content.

Identify information about the Internet, the World Wide Web and Web sites and be able to use a Web browsing applications

The Internet

- A world-wide “super network” of computer networks that links computers around the world
- Publicly accessed network
- Allows interconnected computer networks to transmit data back and forth
- Enables contact between companies, individuals, academic institutions, etc.
- Consists of approximately 60,000 independent networks and 350 million active users
- Is doubling in size each year

History of the Internet and the World Wide Web

- The **Internet** and the **World Wide Web** have a whole-to-part relationship. The Internet is the large container, and the Web is a part within the container.
- On Friday October 29, 1969 at 10:30 p.m., the first **Internet** message was sent from computer science professor **Leonard KleinRock's** laboratory at UCLA.
- **Robert Kahn and Vinton Cerf** created the architecture for the Internet and collaborated on the design of software – known as the Transmission Control Protocol/Internet Protocol, or **TCP/IP**.
- British physicist **Tim Berners-Lee** invented the web at CERN in 1989. The project, which Berners-Lee named **World Wide Web**, was originally conceived and developed to meet the demand for information sharing between physicists in universities and institutes around the world. He started W3C.org, which sets the standards for code used in web pages. Sir Tim Berners-Lee wants the WWW to be free to everyone.

Website and Internet Terms

- **Webpage:** A document that can be viewed by people navigating the World Wide Web
- **Website:** A group of related webpages
- **Home Page:** A “Home” navigation button of a website displays that website’s home page
- **Browser:** A software application that allows navigation of the World Wide Web
- **ISP:** Internet Service Provider—Maintain and support network connectivity for customers.
 - Comcast
 - AT&T
 - NetZero

- **HTML (Hypertext Markup Language):** Common computer language used to create web pages.
- **Plug-in:** A software component that adds a specific feature to an existing software application. Examples are Adobe Flash Player, Adobe Reader, Real Player, Windows Silverlight, and Java. Be careful when downloading plug-ins. Some might be used to hijack your browser, run adware or spyware, or include unwanted programs or toolbars.
- **Extension:** Similar to a plug-in, but provided by the same company. For example, Google has many extensions for GoogleApps; however, to view a pdf file, a user needs the Adobe Reader plug-in.
- **URL: (Uniform Resource Locator):** This is the web address of a website. The Domain Name System (DNS) keeps track of all URLs so no two websites may have the same one. Each URL has a unique IP address, which is four sets of three digits like this 123.123.123.123. Think of it as a phone number. Entering the website's URL into a browser is much easier than entering the website's IP address. For example, Google's IP Address is 74.125.225.114, but it's much easier to enter www.google.com
- **ICANN:** The Internet Corporation for Assigned Names and Numbers (ICANN) is responsible for managing and coordinating the Domain Name System (DNS).

Common Top-Level Domains

| | |
|------|------------------------|
| .com | Commercial |
| .edu | College or university |
| .gov | Government |
| .mil | Military |
| .org | Nonprofit organization |

Browser

When choosing a browser, choose one that is has the features you use, is secure, fast, and easy to use.

<http://internet-browser-review.toptenreviews.com/>

Internet Explorer Tips

- The **House** button opens the browser's home page. The default home page is set in Tools→Internet Options, General tab, Home Page
- The **Star** button is used to save and access favorite websites. Click the Star, choose Add to Favorites. *Favorites* are also called *Bookmarks*.
- The **Gear** button is used to set your default home page. Click the Gear > Internet Options > General tab > Home page.

- The **Back** button displays the previous webpage (Alt + Left Arrow). Hold the Back button to view **history**. Ctrl + H also shows history.



- **Cache:** Internet browsers use caching to store HTML web pages by storing a copy of visited pages and then using that copy to render when you re-visit that page. If the date on the page is the same date as the previously stored copy, then the computer uses the one on your hard drive rather than re-downloading it from the internet.

Shortcuts

- Ctrl + H displays browser history.
 - Other ways: Click the Down arrow by the back button or click the Favorites (star) button.
- Ctrl + F to Find a word or phrase on the displayed page or document
- F5 to Refresh (update) the content of a displayed webpage
- Triple click to select a paragraph (usually works)
- Shift with arrow to select text
- Ctrl + C to Copy selected content
- Ctrl + V to Paste

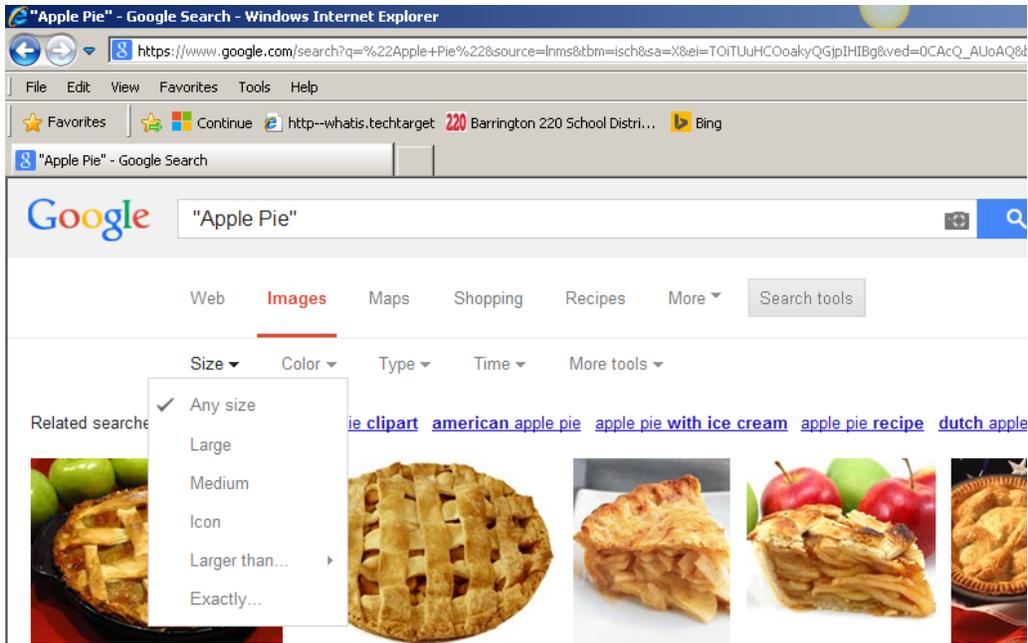
Understand how content is created, located and evaluated on the World Wide Web

Online Research

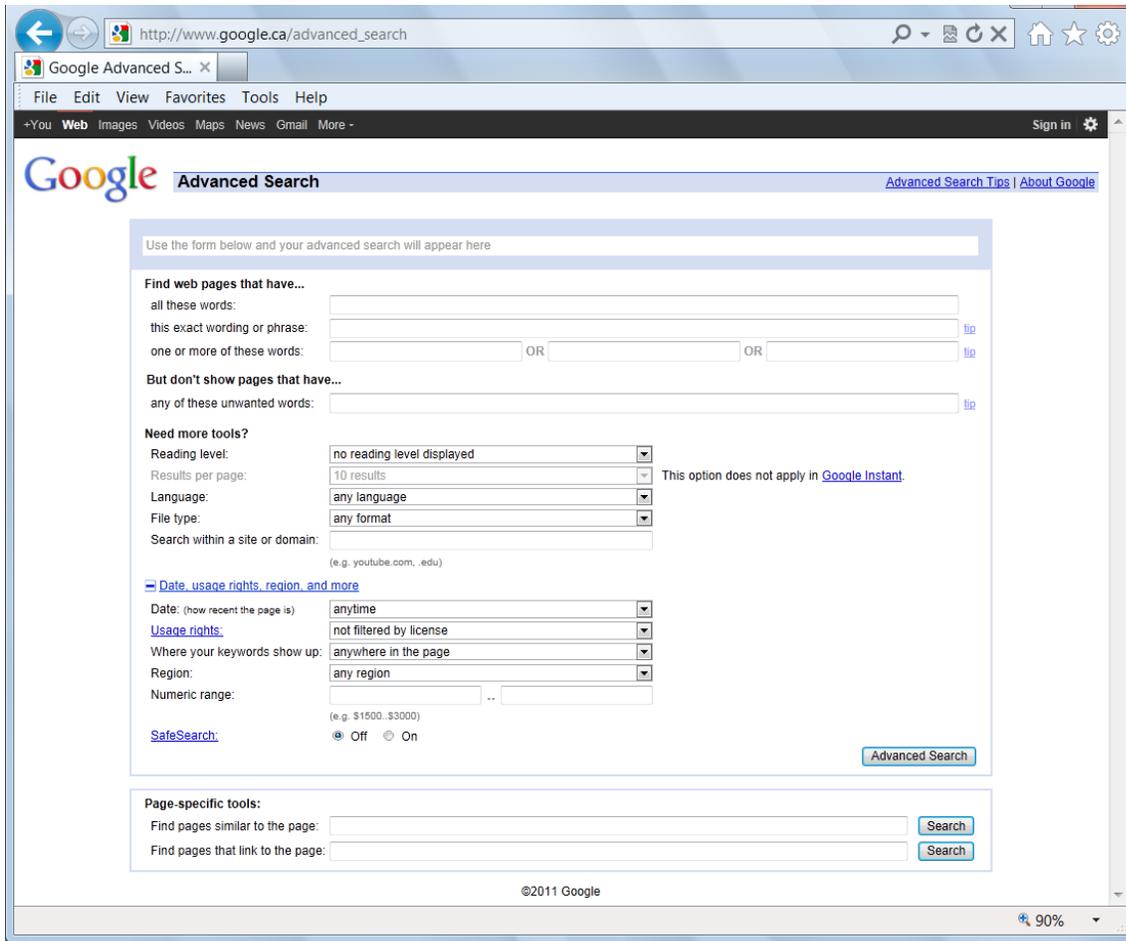
When doing research, select **key words** that describe what you are looking for. Use Boolean logic operators to have better control in your search.

Evaluating Information

- **Bias:** Is the information on the site slanted towards a particular political or other point of view?
- **Validity:** Can the information be verified by multiple sources?
- **Relevance:** Does the information relate to the topic being researched?
- **Reliability:** Who is the author? Is the author an expert in this area? How current is the information?



Use Google's **Advanced Search** to narrow down a search even more.



The Impact of Computing and the Internet on Society

Computers are becoming more and more important to every aspect of life, including work, school, government, home and social interaction. This domain identifies how computers are used in different areas of life, the risks of using computer hardware and software, and how to use computers and the Internet safely, ethically and legally.

Identify how computers are used in different areas of work, school and home.

Collecting Information

- Collecting data. For example:
 - Using the Internet to list all the US Presidents and Vice Presidents.
 - Using the Internet to find all the cities that have hosted the Olympics.
 - Using the Internet to find images of particular plants.

Organizing Information

- Organizing data in a logical order. For example:
 - Sorting cities alphabetically or by population
 - Arranging information into a database or a spreadsheet

Communicating Information

- Using one of the many application and collaboration tools to communicate the information. Here are some examples:
 - Social Networking site to share information with a large group of people and allow for commenting
 - Presentation application to communicate information to a class or other audience.
 - Collaboration application to communicate with team members working together on a project.
 - Email to send information to specific people.
 - Word processing application to communicate information in a written report for class.
 - Spreadsheet application to communicate data in the form of a visual graph.

Identify the risks of using computer hardware and software and how to use computers and the Internet safely, ethically and legally

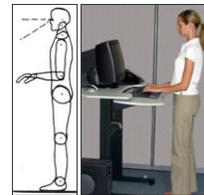
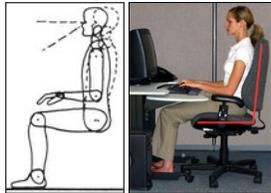
Computer Health and Safety

- Sit correctly at the computer to avoid head and neck injuries as well as hand and wrist injuries.
 - OSHA gives these guidelines:
<http://www.osha.gov/SLTC/etools/computerworkstations/positions.html>
 - Microsoft gives these guidelines:
<http://www.microsoft.com/hardware/en-us/support/ergonomic-comfort>

- Regardless of how good your working posture is, working in the same posture or sitting still for prolonged periods is not healthy. You should change your working position frequently throughout the day in the following ways:
 - Make small adjustments to your chair or backrest.
 - Stretch your fingers, hands, arms, and torso.
 - Stand up and walk around for a few minutes periodically.
 - Occasionally use your opposite hand to control the mouse. Repetitive motions are what cause most carpal tunnel injuries.
- Follow these keyboarding techniques to type faster and avoid injury:
 - Sit straight, like a piano player
 - Keep feet flat on the floor
 - Keep wrist up (not resting on the keyboard)
 - Don't look at your keyboard
 - Elbows should be next to the torso, and bent at a 90 degree angle.
 - Sit about an arm's length away from the monitor.
- Eye strain can be caused by watching flickering or quickly moving light patterns on a monitor.

Upright sitting posture. The user's torso and neck are approximately vertical and in-line, the thighs are approximately horizontal, and the lower legs are vertical

Standing posture. The user's legs, torso, neck, and head are approximately in-line and vertical. The user may also elevate one foot on a rest while in this posture.



Ergonomic Keyboards



Split



Curved

- Cables should be accessible, but kept off the floor and out of traffic areas.
- Don't overload electrical outlets
 - Use an Uninterruptable Power Supply (UPS)
 - Use surge protectors

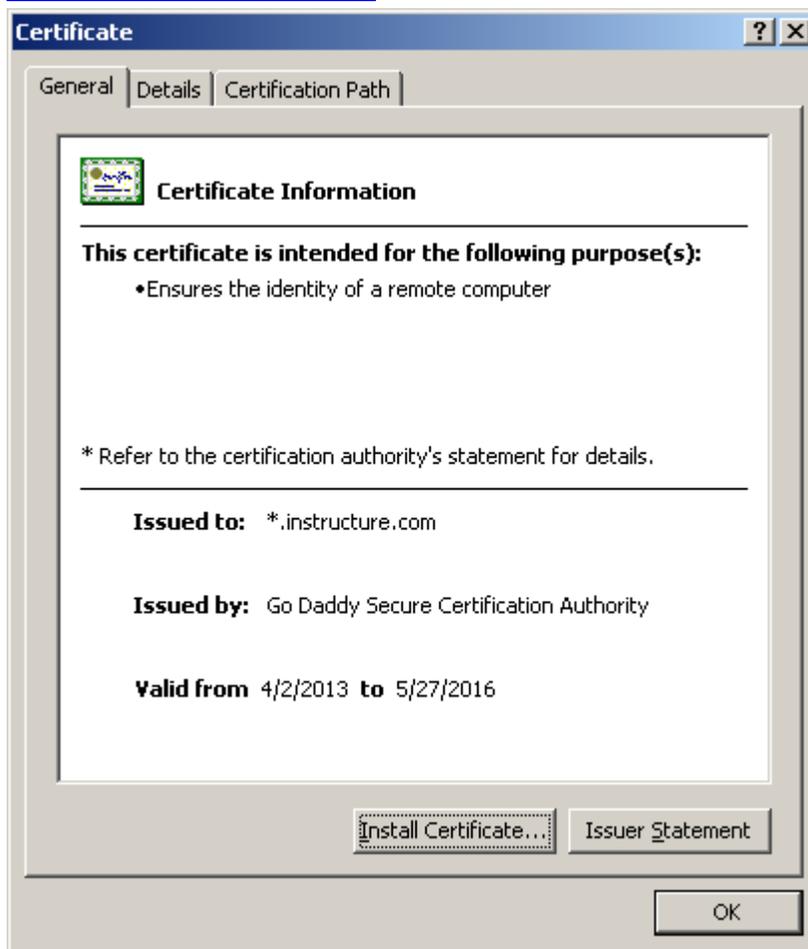
Network Security Terms

- **SSID (Service Set Identifier)** A sequence of characters that uniquely names a wireless local area network.

- **WEP (Wired Equivalent Privacy):** A security protocol that is designed for a wireless local area network by encrypting data transmitted over the WLAN (Wireless Local Area Network). Usually sufficient for home networks.
- **WPA (Wi-Fi Protected Access):** An improvement on expected replacement of WEP. WPA provides more sophisticated data encryption than WEP and also provides user authentication.
- **Passphrase:** A string of characters used for creating a digital signature to prove to a recipient the identity of the sender. To add a digital signature to a Word document, Go to File > Info > Permissions. Mark the document as Final. Then, add the digital signature. If the document is changed, the digital signature will become invalid.

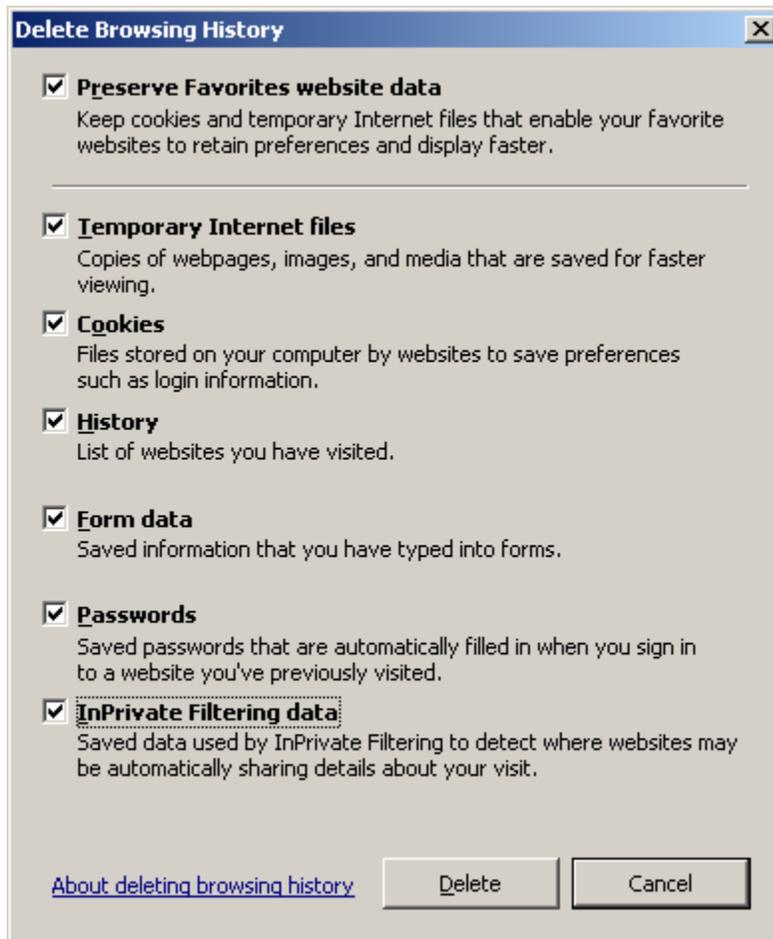
Safe Surfing

- **HTTPS (Hypertext Transfer Protocol over Secure Socket Layer):** Be sure HTTPS is in the address bar when completing forms that should be secure, such as credit card information, reading email, checking grades, or modifying account information. To view a certificate, click the Lock in the address bar, click View Certificates Can you view the certificate on <https://canvas.instructure.com?>



- **Clear Cache:** When using a public computer, it's good to clear temporary files when done browsing. **Internet Options > General** to delete browsing history, cookies, saved passwords,

and temporary Internet files.



Passwords

- Change your passwords frequently
- Never give out your passwords
- Don't use the same password for everything
- Passwords should be at least 8 characters long; and include symbols, numbers, upper case, and lower case
- Passwords should not easily guessed. Don't use your birthday or names of family members, friends, or pets

Cookies

- Are small files stored on your computer
- Saved when a user visits Web sites
- Collect information used for:
 - customizing Web sites
 - collecting demographic information for advertisers
 - tracking user preferences

Bad Cookies

- Could be considered an invasion of privacy
- Track which Web sites you visit
- Track where you go on the Web site
- Can be pulled from multiple sources to build a “profile” of your habits
 - users may be unaware any of these actions are taking place

Good Cookies

- Are useful for customizing advertisements
 - prevent young people from being targeted with walkers and the elderly do not end up with banner ads for skydiving
- Identify your home computer when using it to re-access ecommerce sites.

Other Security Tips

- Avoid SPAM (unsolicited emails)
 - Avoid posting your email address on unsecured websites
 - Install anti-spam filtering software
- Use only secured websites for ecommerce
 - Address starts with https:// and has a padlock icon.
 - Website is using encrypted communications
- Filtering
 - Prevent what websites can be viewed
 - BHS filters YouTube, Facebook...
 - Browser Options: In Internet Explorer, click Options→Content→Parental Controls to restrict access to inappropriate websites.
 - Anti-Spam Filtering Software: Filters Spam emails from entering your email inbox.
- Don't download files from questionable websites—they might contain a virus.
- Don't open attachments from questionable emails—they might contain a virus.
- Report cybercrimes to the companies involved and to the Federal Trade Commission at FTC.gov
- Protect your personal information (Don't leave papers around that contain your SS#, birthdate, address...)
- Back up important files (extra copies on flash drive, using backup software, external hard drive, or online file storage site)
- Never log into an ecommerce site from a public computer
 - Key logger might be installed to record your user name, password, and credit card number.

Malware

Malicious software, consists of programming (code, scripts, active content, and other software) that is designed to disrupt or deny operation, gather information that leads to loss of privacy or exploitation, or

gain unauthorized access to system resources, or that otherwise exhibits abusive behavior. Malware includes

Spyware

- Is software installed discreetly altering the usability of a computer
- Usually installs with other programs, such as file sharing programs
- Includes side-effects such as pop-up advertisements and crashing of the computer

Keylogger

- A program with negative intentions that records information about a user's browsing information, e-mails, instant messages or any other activity performed while using a keyboard

Computer Virus

- If your computer is locking up or running slower than usual; has extra, unwanted toolbars or icons, chances are it has a virus.
- Malicious computer program created by a user with objectives to harm or steal another's property
 - Begins to carry out whatever malicious activity it is supposed to, once it has multiplied and infected other programs
 - the malicious activity is known as the payload
 - Can spread fast, slow or not spread at all
 - Can remain dormant in a computer until a specified time
 - Spread through e-mail and Internet downloads
 - Can alter the normal functions of your computer
 - Can delete all data and files on a computer

Computer Worm

- An independent program which multiplies itself by copying a segment of itself onto another computer
 - Can contain malicious instructions to hinder a computer's performance
 - Uses flaws or holes in the network to gain access to individual computers
 - this gives worms the ability to move extremely fast through a network infecting computers
 - it could possibly infect an entire network of computers within seconds

Trojan Horse

- A malicious program disguised inside of another program seemingly beneficial or harmless
 - Will generally gain access to administrative areas on a computer
 - once it has gained access to these areas, it will create a back door
 - this gives the creator of the Trojan horse unauthorized access to the user's computer and the information it contains

- Will sometimes monitor keystrokes and browsing activity
 - this information is sent to companies sending the user content and information they did not request
- Can be discreet
 - meaning they do not leave any trace of their presence

Copyright Law

- Protects owners from having their **Intellectual Property** copied. Examples of intellectual property include:
 - designs
 - concepts
 - software
 - inventions
 - trade secrets
 - formulas
 - brand names
 - art (songs, stories, movies, graphics...)
- Protect an author's original work
 - automatically held when a work is created
 - denoted by the symbol © (but symbol is not required)
 - Professional productions: 95 years from publication or 120 years from creation, whichever is shorter
 - Individual productions: protected for life of author plus 70 years after authors death
 - Unauthorized copying is prohibited in most cases
 - Fines for using copyrighted material can be higher than \$150,000
- Copyright-free (public domain):
 - Content from these websites is copyright free, however siting is still advised
 - Any .gov site
 - NASA (National Aeronautics and Space Administration)
 - NOAA National Oceanic and Atmospheric Administration
 - FWS U.S. Fish and Wildlife Service
 - Smithsonian www.si.edu
 - Usually 10% or less of the original work is copyright free, but permission and proper siting is still advised.
- Fair Use
 - Copyrighted materials (text, pictures, movies, songs...) may be used without paying royalties for purposes of research, criticism, comment, news reporting, and teaching under the name of fair use.
 - Research papers
 - Include a citation to give credit to the owner
 - Provide enough information for someone else to find the same text or picture
 - Do not change the meaning of the material

- If a school project is published online, it no longer falls under Fair Use
- Intellectual property can also be protected through other legal measures such as trademarks, patents, End User License Agreements (EULA).

Cybercrime

- Any crime involving computers
- By connecting to the Internet, a user will:
 - Risk losing autonomy and privacy
 - Risk access to confidential data by unauthorized people

Pirating

- The illegal stealing, copying or exchanging of media including:
 - software
 - movies
 - music

Predators

- Take advantage of children by:
 - using instant messaging, e-mail and social network sites
 - gaining victims trust and engaging in sexually explicit conversations
 - trying to arrange face-to-face meetings

Hacker

- A computer user with malicious intentions that attempts to gain access to another user's computer and information through deceptive methods.

Identity Theft

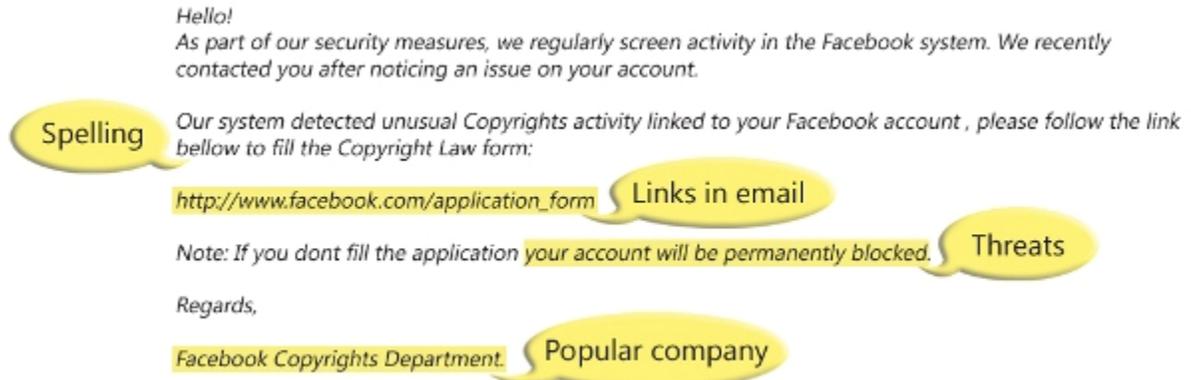
- Is when someone steals your personal information to commit fraud or other crimes including:
 - your name
 - credit card information
 - Social Security number
- Nine million Americans have their
- identities stolen each year

Phishing

- Involves e-mails pretending to originate from banks or online retailers such as eBay[®] or PayPal[®]
- Looks very similar to an actual e-mail originating from retailer or bank.
- Some look like legitimate job applications.
- Links to a form for victims to enter sensitive information such as user names and passwords.
- Victim might also receive malicious viruses or spyware.
- If you receive an email claiming that you need to log into your account, never click on the link. Instead browse to your bank (or whomever the email is claiming to be from) and log in there.

- Report the email to your bank and to the Federal Trade Commission.

Sample phishing email:



<http://www.microsoft.com/security/online-privacy/phishing-symptoms.aspx>

Tips to Avoid Cybercrime

Install Internet Security Software

- anti-virus, anti-adware, anti-spyware, anti-spam)
- implement an Internet firewall, a buffer between your computer and the Internet
- install security updates
- Best source for detailed technical information about viruses and solutions is the manufacturer of your anti-virus software.
- Purchase only software that comes with a EULA (End Users License Agreement)
- Register your software

Cyberbullying

- Is Internet harassment
- Tips for dealing with a cyberbully:
 - take a break to reduce tension and calm down
 - cut off all communication with the cyberbully
 - tell an adult

Cyberbullying Legal Terms

- **Cyberbullying:** The use of cell phones, instant messaging, e-mail, chat rooms or social networking sites such as Facebook and Twitter to harass, threaten or intimidate someone.
- **Defamation:** Any intentional false communication, either written or spoken, that harms a person's reputation; decreases the respect, regard, or confidence in which a person is held; or induces disparaging, hostile, or disagreeable opinions or feelings against a person.
- **Libeling:** A false publication, as in writing, print, signs, or pictures, that damages a person's reputation
- **Slander:** Making a false spoken statement damaging to a person's reputation.
- **Flaming:** Attacking someone verbally online. Flaming entails insults, bigotry, name-calling, or any outright hostility directed at a specific person.
- **Spamming:** Sending a message indiscriminately to multiple mailing lists, individuals, or newsgroups.