

# Study Guide for Certification Exam IC<sup>3</sup> GS3 Session 3 Living Online

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## **Instructions:**

1. Log into our online classroom at [canvas.instructure.com](https://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)

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## IC3 Session 3 Living Online

This certification covers Computers and Society, Electronic Mail, Internet, and Networks.

### 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”)

# Study Guide for Living Online Certification Exam

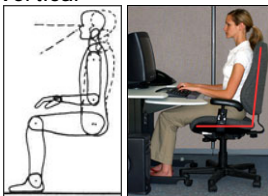
## Shortcuts

- Ctrl + H displays browser history
  - other ways:
    - Down arrow by the back button
    - 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
- Ctrl + C to Copy
- Ctrl + V to Paste

## Office 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>
  - 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.
  - Follow these keyboarding techniques to type faster and avoid injury:
    - Sit straight
    - Keep feet flat on the floor
    - Keep wrist up (not resting on the keyboard)
    - Don't look at your keyboard
- 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

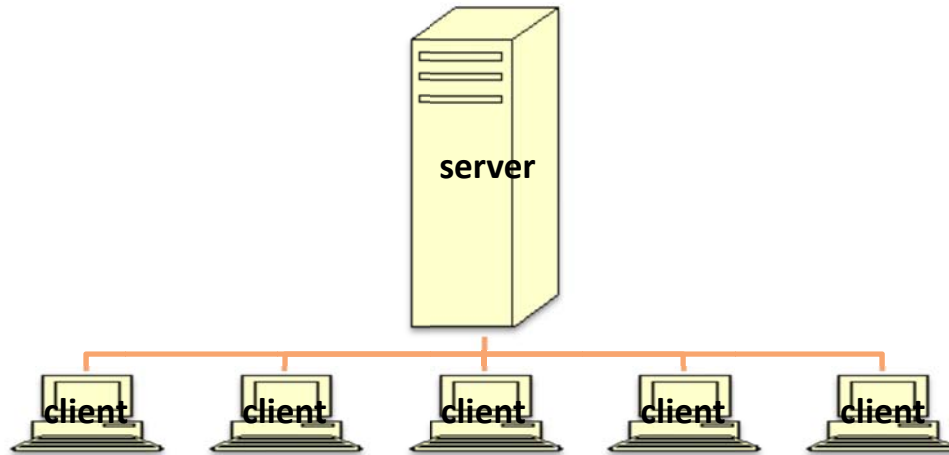


**Standing posture.** The user's legs, torso, neck, and head are approximately in-line and vertical. The user may also elevate one foot on a rest while in this posture.



- 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

## Equipment and Supplies



- **Server:** A computer connected to a network that provides services to other computers.
- **Client:** Computer or program that requests services from a server. Your PC in the classroom is a client. Your files are on a server.
- **Node:** Each element on a network (client, printer...).
- **Routers:** This network device identifies and selects the route the data should take to reach its intended destination. The router forwards packets from one network to another.
- **Modems:** Device enabling transfer of data between computers via telephone or other communication lines.
- **Uninterruptable Power Supply:** Device that allows your computer to keep running for at least a short time when the primary power source is lost.
- **Surge protector:** (surge suppressor) PowerStrip that protects the computer from pulses of higher-than-normal electric voltage.
- **PDA (Personal Data Assistant):** Handheld organizer for calendars, task lists, notes, and email. Newer versions can also email, connect to the Internet and display and send images.
- **Toner:** Ink used by laser printers. Be sure to recycle toner cartridges rather than throw them away, and to purchase recycled toner cartridges instead of new ones. Recycled toner cartridges are less expensive and better for the environment.

## Technologies

- **Voice Recognition:** Converts the spoken word into written text or commands ("Dragon Naturally Speaking)
- **Speech Synthesis:** Reads text on the screen (Screen Reader). Beneficial to users who are blind.
- **Optical Character Recognition (OCR):** Converting handwritten or printed text into electronic text. (SmartBoards have OCR)
- **Optical Scanning:** Used in stores to read product labels.
- **Magnetic Strip Reading:** Used by credit card readers at stores and by ATM machines.
- **Digital Imaging:** Used to create electronic photos that can be stored or sent online.

## Electronic Mail

Benefits	Netiquette	Email Security
<ul style="list-style-type: none"> <li>• Immediate delivery</li> <li>• Can send to more than one recipient</li> <li>• Keeps a record of previous emails</li> <li>• Easy to search through and organize previous emails</li> <li>• Messages and attachments can be sent, received, and forwarded quickly and inexpensively</li> </ul>	<ul style="list-style-type: none"> <li>• Always use correct grammar, punctuation, and spelling in professional emails.</li> <li>• Don't use Reply to All unless everyone listed needs to receive the reply</li> <li>• Always include a <i>subject</i> in the Subject line.</li> <li>• Never use ALL CAPS—It gives the impression of SCREAMING.</li> </ul>	<ul style="list-style-type: none"> <li>• Messages are <i>encrypted</i> so only intended recipient can open an email</li> <li>• Email on a company or school's email system is owned by the company or school, and can be accessed by a network administrator.</li> </ul>

### Other Email tips:

- **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.
- **Email Address:** [mpeterson@barrington220.org](mailto: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)
- 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*.
- **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.

## Other forms of Communication:

### Paper Mail:

- When sending documents that require a signature, use paper mail instead of email.

### Synchronous Communication

- Instant Messaging:
  - Real time communication
  - Also called Chatting and Text Messaging
  - Two-way dialog between users who are both online
  - Quick messages that don't need to be archived or saved
- Video Conferencing: An online meeting using a WebCam and microphone. (Skype)
- Voice-over-the-Internet Protocol (VoIP): Telephone service that uses the Internet at a lower cost than a traditional phone service. TMobil and Comcast offer this service.

### Asynchronous Communication

#### *Blog*

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

#### *Podcasting*

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

#### *Text Messaging*

- Text messages and images sent via a cell phone

## Networks

### 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 providing 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

- 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

### Protocols

Protocols are the rules used to communicate across a network.

- **TCP/IP (Transmission Control Protocol/Internet Protocol):** Protocols for sending packets across the Internet. Data is separated into packets as it moves to its destination, and not every packet takes the same route. TCP/IP allows the computers to examine the packets and piece the data back together. TCP/IP allows for faster transmission of data.
- **FTP (File Transfer Protocol):** Enables users to transfer files between computers. This is used when a website administrator uploads files to a website.
- **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.

## Network Administrators

- Security responsibilities
  - Monitor the network for unusual traffic or files
  - Assign each user a unique user name and initial password
  - Are able to reset passwords for users who forget theirs
  - Are able to remove user access from users when necessary (ie employee termination)
- Other responsibilities
  - Backup files regularly
  - Restore lost files
  - Ensure proper functioning of the network
  - Maintain network servers
  - Purchase hardware and software for the organization
  - Connect peripherals such as printers to the network

## Types of Networks

### *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

### *Metropolitan Area Networks (MAN)*

- Cover an area the size of an average to large city
- Are high-speed networks designed to link together metropolitan size areas, campuses or school districts
- Fall between the size of LANs and WANs
- Cover about 80 kilometers worth of distance

### *Controller Area Networks (CAN)*

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

### 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

### 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

### Intranet

- A network that follows internet rules but is used primarily within an organization

### Internet

#### Top-Level Domains

.com	Commercial
.edu	College or university
.gov	Government
.mil	Military
.org	NonProfit organization

### E-Commerce

- Buying/selling goods and services online

Organization	Use of E-Commerce
Government	Collect tax revenues and other fees.
Business	Sell goods and services online.
Individual	Purchase goods and services online.

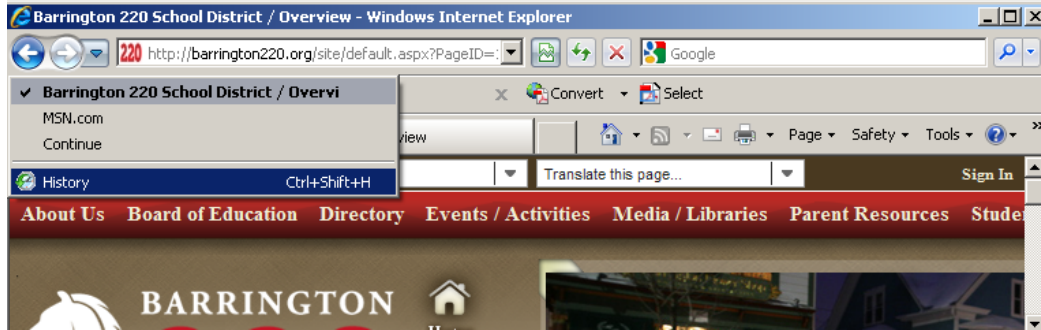
### Internet Terms

- **Webpage:** A document that can be viewed by people navigating the World Wide Web
- **Website:** A group of related webpages
- **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.

## Tips to navigate a website

### Internet Explorer

- The **Home** button opens the browser's home page. The default home page is set in Tools→Internet Options
- The **Back** button displays the previous webpage (Alt + Left Arrow)
- The **History** button (down arrow near back button) displays browser history. (Ctrl + H)



- In Internet Explorer Version 9, a Start button was added that displays browser history.

### Typical Website

- A page named *Links* would most likely contain a list of links with information related to the current website.
- A "Home" button of a website displays that website's home page

### Webpage

- Identify these parts of a webpage:
  - url
  - text
  - button
  - graphic
  - hyperlink
  - radio button
  - dropdown list
  - Title

## Working with Information

### 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.

### 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?

### Organizing Information

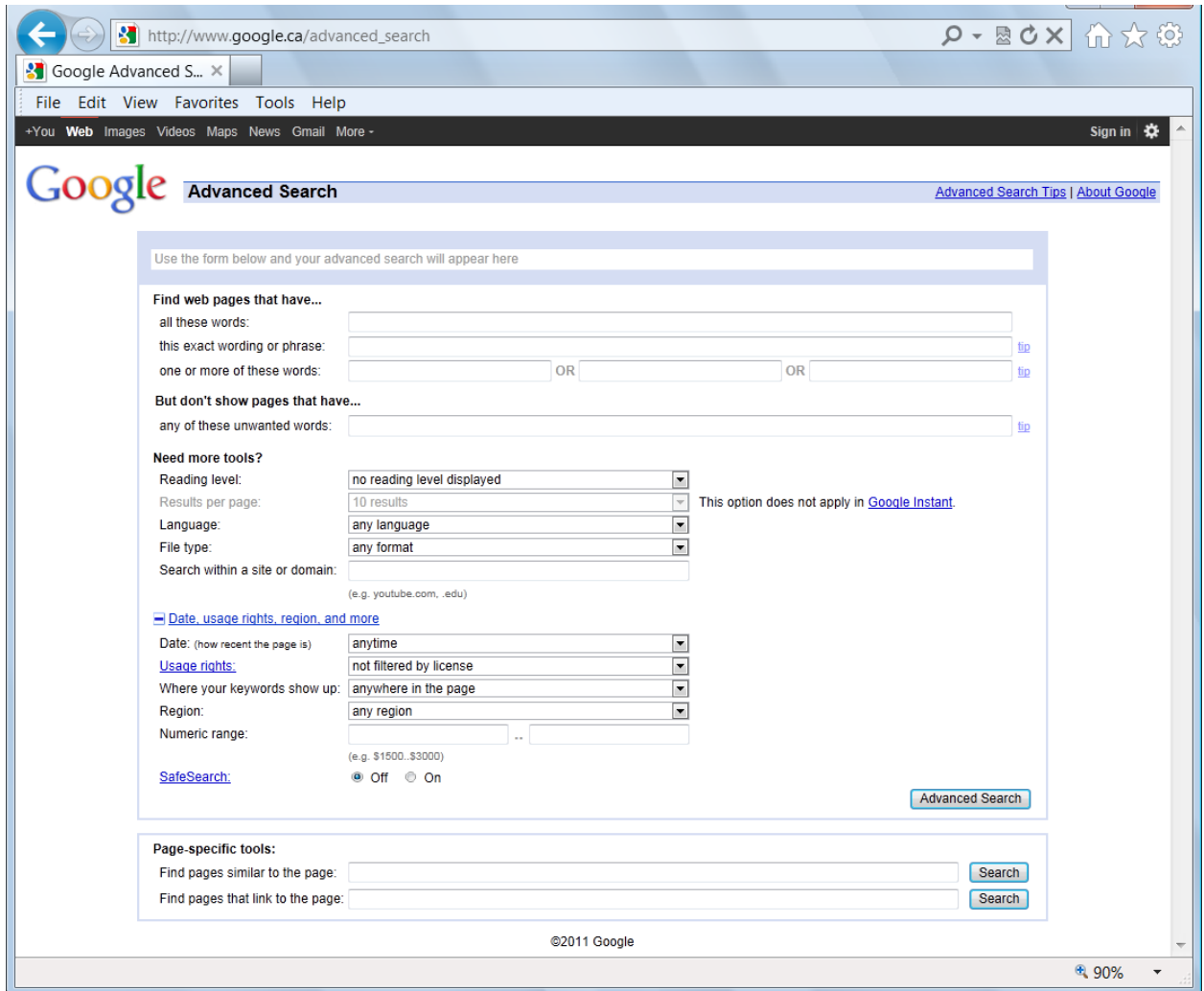
- Organizing data in a logical order. For example:
  - Sorting cities alphabetically or by population
  - Arranging information into a database or a spreadsheet

### 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.

## Online Research

- Use Advanced Search to narrow down a search.



The screenshot shows the Google Advanced Search interface in a browser window. The address bar displays "http://www.google.ca/advanced\_search". The page title is "Google Advanced Search". The main content area is titled "Use the form below and your advanced search will appear here".

**Find web pages that have...**

- all these words:
- this exact wording or phrase:  [tip](#)
- one or more of these words:  OR  OR  [tip](#)

**But don't show pages that have...**

- any of these unwanted words:  [tip](#)

**Need more tools?**

- Reading level:
- Results per page:  This option does not apply in [Google Instant](#).
- Language:
- File type:
- Search within a site or domain:  (e.g. youtube.com, .edu)

[Date, usage rights, region, and more](#)

- Date: (how recent the page is)
- [Usage rights:](#)
- Where your keywords show up:
- Region:
- Numeric range:  --  (e.g. \$1500, \$3000)
- [SafeSearch:](#)  Off  On

**Page-specific tools:**

- Find pages similar to the page:
- Find pages that link to the page:

©2011 Google

- Save links as a Favorite
- Use History to view previously visited sites
- Use relevant keywords when searching for a topic

## Copyright Law

- Protect an authors 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:
  - 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](http://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

## 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

## 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

- 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

## 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.

## Pirating

- Is 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<sup>®</sup> or PayPal<sup>®</sup>
- Looks very similar to an actual e-mail originating from retailer
- Tries to gather financial information, user names and passwords from victims
  - if recipient visits the fake retailer they may receive malicious viruses or spyware

## 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

## 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.

### 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](http://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

### 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