Chapter 1

Using Technology to Change the World

Social Networking: A means by which people use the Internet to communicate and share information among their immediate friends, and meet and connect with others.

Crisis Mapping Tool: A tool that collects fi from e-mails, text messages, blog posts, and Twitter tweets and maps them, making the information instantly publicly available.

Digital Divide: The gap between the levels of Internet access and the availability of technical tools in different regions of the world.

QR (Quick Response) Codes: A technology that lets any piece of print in the real world host a live link to online information and video content.

Crowdsourcing: The phenomenon of consumers checking in with the voice of the crowd before making purchases.

Crowdfunding: Asking for small donations from a large number of people, often using the Internet; a style of generating capital to start a business through social media.

Collaborative Consumption: Sharing products rather than owning them individually.

Computer Literate: Being familiar enough with computers that you understand their capabilities and limitations and you know how to use them.

Augmented Reality: A combination of our normal sense of the objects around us with an overlay of information displayed.

Affective Computing: A type of computing that relates to emotion or deliberately tries to influence emotion.

Data Mining: The process by which great amounts of data are analyzed and investigated. The objective is to spot significant patterns or trends within the data otherwise not obvious.

Information technology (IT): The set of techniques used in processing and retrieving info.

Cognitive Surplus: Results when leisure time and tools allow us to engage in creative acts.

Software: Refers to the commands that instruct a computer what to do.

Computer Forensics: Analyzing computer systems to gather potential legal evidence.

Spam: Unwanted or junk e-mail.

Web 2.0: Tools and web-based services emphasizing online association among users.

Chapter 2

Looking at Computers: Understanding the Parts

All-in-One Computer: A desktop system unit that houses the computer's processor, memory, and monitor in a single unit.

All-in-one Printer: Combines functions of a printer, scanner, copier, and fax.

Application Software: Software that performs some useful task such as word processing or playing a game for a user.

Aspect Ratio: The width-to height proportion of a monitor.

Binary Digit (Bit): A digit that corresponds to the on and off states of a computer switch that contains a value of either 0 or 1.

Binary Language: The language computers use to process data into information consisting of only the values of 0 and 1.

Computer: A data-processing device that gathers, processes, outputs, and stores data and information.

Input: The gathering of data or allowing the user to enter data.

Processing: The manipulation, calculation, or organization of data into information.

Output: The display of data and information in a form suitable for the user.

Storage: The saving of data and information for later use.

Data: Numbers, words, pictures, or sounds that represents facts, figures, or ideas.

Information: Data that has been organized or presented in a meaningful fashion.

Byte: Eight binary digits (bits).

Kilobyte (KB): A unit of computer storage equal to approximately one thousand bytes.

Megabyte (MB): A unit of storage measuring roughly one million bytes.

Gigabyte (GB): A unit of computer storage equal to approximately one billion bytes.

Terabyte (TB): A unit of computer storage equal to approximately one trillion bytes.

Hardware: Any part of the computer you can physically touch.

System Software: The set of programs that enables a computer's hardware devices and application software to work together; it includes the operating system and utility programs.

Operating System (OS): The system software that controls the way in which a computer system functions, including the management of hardware, peripherals, and software.

Laptop Computer: Portable computer that has keyboard, monitor, and other devices integrated into a single compact case.

Netbook: A computing device that runs a full-featured operating system but weighs two pounds or less.

Tablet PC: A notebook computer designed specifically to work with handwriting recognition technology (similar to notebook but monitor swivels and folds.)

Tablet Computer: Portable computing device with a touch screen used as a drawing/writing pad.

Desktop Computer: A Computer intended for use at a single location that consists of a case that houses the main components of the computer, plus the peripheral devices.

Peripheral Device: A device such as a monitor, printer, or keyboard that connects to the system unit through the data port.

Mainframe: A large, expensive computer that supports hundreds or thousands of users simultaneously and executes many different programs at the same time.

Supercomputer: A specifically designed computer that can perform complex calculations extremely rapidly (used in weather forecasting or atomic energy research).

Embedded Computer: A specifically designed computer chip that resides inside another device, such as a car.

Input Device: A hardware device used to enter, or input, data and instructions into a computer (keyboard, mouse, etc.).

Keyboard: A hardware input device used to enter typed data and commands into a computer.

Mouse: A hardware input device used to enter user responses and commands into a computer.
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Stylus: A pen-shaped device used to tap or write on touch-sensitive screens.

QWERTY Keyboard: A keyboard that gets its name from the first six letters on the top left row of alphabetic keys on the keyboard (the type of keyboard used in many computer devices).

Bluetooth technology: A type of wireless technology that uses radio waves to transmit data over short distances used to connect peripherals.

Optical Mouse: A mouse that uses an internal sensor or laser to control the mouse's movement.

Touch Pad (Track Pad): A small, touch-sensitive screen at the base of a notebook keyboard that is used to direct the cursor.

TrackPoint Device: A small, joystick-like nub that enables you to move the cursor with the tip of your finger.

Touch Screen: A type of monitor or display that accepts input from a user touching the screen.

Flash Drive: A drive that plugs into a universal serial bus (USB) port on a computer and stores data digitally.

Microphone (Mic.): A device that allows the user to capture sound waves and transfer them to digital format on your computer.

Output Device: A device that sends processed data and information out of a computer in the form of text, pictures, sound, or video.

Monitor (Display Screen): A common output device that displays text, graphics, and video as soft copies (copies that con only be seen on screen).

Printer: A common output device that creates tangible or hard copies of text and graphics.

Liquid Crystal Display (LCD): The most common type of technology used in flat-panel computer monitors.

Light Emitting Diode (LED): A newer, more energy efficient type of monitor.

Legacy Technology: Comprises computing devices, software, or peripherals that use techniques, parts, and methods from an earlier time that are no longer popular.

Organic Light-Emitting Diode Displays (OLED): A display that uses organic compounds to produce light when exposed to an electric current.

Pixel: A single point that creates the images on a computer monitor that is illuminated by an electron beam that passes rapidly back and forth.

Resolution: The clearness or sharpness of an image, which is controlled by the number of pixels displayed on the screen.

Contrast Ratio: A measure of the difference in light intensity between the brightest white colors and darkest black colors that a monitor can produce.

Viewing Angle: Measured in degrees, this is the maximum angle at which a monitor can be viewed before the image equality degrades to unacceptable levels.

Brightness: A measure of the greatest amount of light showing when a monitor is displaying pure white; measured as candelas per square meter (cd/m2) or nits.

Response Time: The measurement in milliseconds of the time it takes for a pixel to change color.

Projector: A device that can project images from your computer onto a wall or viewing screen.

Nonimpact Printer: A printer that sprays ink or uses laser beams to make marks on the paper.

Impact Printer: A printer that has tiny hammer-like keys that strikes the paper through an inked ribbon, thus making marks on the paper.

Inkjet Printer: A nonimpact printer that sprays tiny drops of ink onto a paper.

Laser Printer: A nonimpact printer known for quick and quiet production and high-quality printouts.

Plotter: A large printer that uses a computer-controlled pen to produce oversize pictures that require precise continuous lines to be drawn.

Thermal Printer: A printer that works either by melting wax-based ink onto ordinary paper or by burning dots onto specially coated paper.

Speaker: An output device for sound.

Surround-Sound Speaker: Speaker systems set up in such a way that they surround an entire area with sound.

Motherboard: A special circuit board in the system unit that contains the Central Processing Unit, the memory (RAM) chips, and the slots available for expansion cards.

System Unit: The metal or plastic case that holds all the physical parts of the computer together.

Expansion Card (Adapter Cards): A circuit board with specific functions that augment the computer's basic functions and provide connections to the other devices.

Sound Card: An expansion card that attaches to the motherboard inside the system unit and that enables the computer to produce sounds by providing a connection for the speakers and microphone.

Video Card (Video Adapter): An expansion card that is installed inside a system unit to translate binary data into the images viewed on the monitor.

Modem Card: An expansion card that provides the computer with a connection to the Internet via conventional phone lines.

Network Interface Card (NIC): An expansion card that enables a computer to connect to other computers or to a cable modem to facilitate a high-speed Internet connection.

Random Access Memory (RAM): The computer's temporary storage space or short-term memory, (volatile).

Volatile Storage: Temporary storage, such as RAM, that is cleaned out when the power is off.

Read-Only Memory (ROM): A set of memory chips located on the motherboard, which store data and instructions that cannot be changed or erased.

Central Processing Unit (CPU): The part of the system unit of a computer that is responsible for data processing and is the largest and most important chip in the computer (the "brains"); it controls all the functions performed by the computer's other components and processes all the commands issued to it by software instructions.

Gigahertz (GHz): One billion hertz.

Hard Disk Drive (HDD, Hard Drive): The computer's nonvolatile, primary storage device for permanent storage of software and documents.

Nonvolatile Storage: Permanent storage, as in read-only memory (ROM).

Solid-State Drive (SSD): A storage device that uses the same kind of memory that a flash drive use, but can reach data in only a tenth of the time a flash drive requires.

Drive Bay: A special shelf inside a computer that is designed to hold storage devices.

Internal Hard Drive: A device that holds all permanently stored programs and is located inside the system unit.

External Hard Drive: A hard drive that is enclosed in a protective case to make it portable and can be connected to the computer with a data transfer cable and is often used to back up data.

Flash Memory Card: A solid-state storage device used for fast and easily transferable information storage in digital devices such as camera and mobiles.

Optical Drive: A hardware device that uses lasers or light to read from, and maybe even write to, CDs, DVDs, or Blu-ray discs.

Compact Disc (CD): A method of optical storage for digital data; originally developed for storing digital audio.

Digital Video Disc (DVD): Video interface technology that newer LCD monitors, as well as other multimedia devices such as television, DVD players, and projectors.

Blue-Ray Disc (BD): A method of optical storage for digital data, developed for storing high-definition media. It has the largest storage capacity of all optical storage options.

Port: An interface which external devices are connected to the computer.

Universal Serial Bus Port (USB): A port that can connect a wide variety of peripheral devices to the computer, including keyboards, printers, mice, smartphones, PDAs, flash drives, and digital cameras.

Connectivity Port: A port that enables the computer (or other devices) to be connected to other devices or systems such as networks, modems, and the Internet.

Ethernet Port: A port that is slightly larger than a standard phone jack and transfers data at speeds up to 10,000 Mbps; used to connect a computer to a DSL or cable modem or a network.

Modem Port: A port that uses a traditional telephone signal to connect a computer to the Internet.

Video Graphics Array (VGA): A port to which a CRT monitor connects.

Digital Video Interface (DVI): Video interface technology that newer LCD monitors and other multimedia devices such as televisions, DVD players, and projectors use to connect to a PC.

S-Video (Super Video): A type of technology used to transmit video signals; used on newer LCD monitors, as well as other multimedia devices such as televisions, DVD players, and projectors.

High-Definition Multimedia Interface (HDMI): A compact audio-video interface standard that carries both high-definition video and uncompressed digital audio.

Power Supply: Regulates the wall voltage to the voltage required by the computer chips; it is housed inside the system unit.

Cold Boot: The process of starting a computer from a powered-down or off state.

Sleep Mode: A low-power mode for electronic devices such as computers and saves electrical power consumption and saves the last-used settings. When device is "woken up" work is resumed more quickly than when a cold booting the computer.

Hibernate: A power-management mode that saves the current state of the current system to the computer's hard drive.

Warm Boot: The process of restarting the system while it's powered on.

Ergonomics: How a user sets up his or her computer and other equipment to minimize risk of injury or discomfort.

Fire Wire 400 (800): An interface port that transfers data at 400 Mbps (800 Mbps).

Scanner: An electronic device that generates a digital representation of an image for data input to a computer.

Smartphone: A device that integrates a cell phone with the features of a PC, such as the ability to store information, receive email, and install programs.

Software: A program or instructions that give directions to the computer.

Ultra Book: A full-featured but lightweight laptop computer that features a low-power processor and a solid-state drive; it tries to reduce its size and weight to extend battery life without sacrificing performance.

Webcam: A camera that broadcast images through the Internet through a computer or web cell phone.

Chapter 3

Using the Internet: Making the Most of the Web's Resources

Internet: A network of networks that is the largest network in the world, connecting millions of computers from more than one hundred countries.

World Wide Web (WWW or Web): The part of the Internet used the most;

Web Browser (Browser): Software installed on a computer system that allows individuals to locate, view, and navigate the web.

Client: A computer that requests information from a server in a client/server network (such as your computer when you are connected to the Internet).

Server: A computer that provides resources to other computers on a network.

Client/Server Network (Server-Based Network): A type of network that uses servers to deliver services to computers that are requesting them (clients).

Internet Backbone: The main pathway of high-speed communications lines over which all Internet traffic flows.

Internet Protocol Address (IP Address): The means by which all computers connected to the Internet identify each other, consisting a unique set of numbers separated by dots.

Web 2.0: Tools and Web-based services that emphasize online collaboration and sharing among users.

Social Networking: A means by which people use the Internet to communicate and share information among their immediate friends, and meet and connect with others through common interests, experiences, and friends.

E-mail (Electronic Mail): Internet based communication in which senders and recipients correspond.

E-mail Client: A software program that runs on a computer and is used to send and receive e-mail through the ISP's server.

Instant Messaging (IM): A program that enables users to communicate online in real time with others who are also online.

Blog (Weblog): A personal log or journal posted on the web.

Video Log (Vlog or Video Blog): A personal online journal that uses video as the primary content in addition to text, images, and audio.

Wiki: A type of Web site that allows anyone visiting the site to change its content by adding, removing, or editing the content.

Podcast: A clip of audio or video content that is broadcast over the Internet using compressed audio or video files in formats such as MP3.

Really Simple Syndication (RSS): An XML-based format that allows frequent updates of content on the World Wide Web.

Aggregators: A software program that goes out and grabs the latest update of the Web material (usually podcasts) according to your specifications.

Webcast: The broadcast of audio or video content over the Internet. Unlike a podcast, it is not updated automatically.

Multimedia: Anything that involves one or more forms of media plus text.

Streaming Audio: Technology that enables audio files to be fed to a browser continuously. This lets the users avoid having to download an entire file before listening.

Streaming Video: Technology that enables video files to be fed to a browser continuously. This lets users avoid having to download an entire file before viewing.

Multiplayer Online Games: An online game in which play occurs among hundreds or thousands of other players over the Internet in a persistent or ever-on game environment. In some games, players can interact through trading, chatting, or playing cooperative or combative mini-games.

Massively Multiplayer Online Role Playing Games (MMORPGs): A gaming environment in which thousands of participants interact in a virtual game world by assuming roles of fictitious characters.

Plug-in (Player): A small software program that "plugs in" to a Web browser to enable a specific function, such as to view and hear certain multimedia files on the Web.

E-commerce (Electronic Commerce): The process of conducting business online for purposes ranging from fund-raising to advertising to selling products.

Business-to-Consumer (B2C): E-commerce transactions between businesses and consumers.

Business-to-Business (B2B): E-commerce transactions between businesses.

Consumer-to-Consumer (C2C): E-commerce transactions between consumers through online sites such as eBay.com.

Secure Socket Layer (SSL): A protocol that provides for the encryption of data transmitted using the Internet.

Web Site: A location on the Web.

Uniform Resource Locator (URL): A website's unique address. (Ex: microsoft.com)

Home Page: The main or opening page of a Web site.

Domain Name: A part of the Uniform Resource Locator (URL) that consists of two parts: the site's host and a suffix that indicates the type of organization.

Hypertext Transfer Protocol (HTTP): The protocol that allows files to be transferred from a Web server so that you can see them on your computer by using a browser.

Web Server: A computer running a specialized operating system that enables it to host Web pages (and other information) and provide requested Web pages to clients.

File Transfer Protocol (FTP): A protocol used to upload and download files from one computer to another over the Internet.

Host: The portion of a domain name that identifies who maintains a given Web site. For example, berkeley.edu is the domain for the University of California, which maintains that site,

Top-Level Domain (TLD): The suffix, often of three letters, in the domain name (such as .com or .edu) that indicates what kind of organization the host is.

Path (Subdirectory): The information after the slash indicates a particular file within the site.

Hyperlink: A type of specifically coded text, that when clicked, enables the user to jump from one location, or Web page, to another within a Web site or to another Web site altogether.

Breadcrumb Trail: A navigation bar that displays the page names in order of level from the home page to the current page based on the navigation structure (also called the path).

Favorites: A feature in Microsoft Internet Explorer that places a marker of a site's Uniform Resource Locator (URL) in an easily retrievable list in the browser's toolbar.

Bookmark: Internet browser feature that allows users easy and quick access to websites deemed as "favorites".

Live Bookmark: A bookmark that delivers updates to you as soon as they become available using Really Simple Syndication (RSS).

Social Bookmark (Tag): A keyword or term that Internet users assign to a Web resource.

Keyword: (1) A specific word a user wishes to query (or look for) in an Internet search or (2) a specific word that has a predefined meaning in a particular programming language.

Search Engine: A set of programs that searches the Web for specific words (or keywords) you wish to query (look for) and then returns a list of the sites on which those keywords are found.

Subject Directory: A structured outline of Web sites organized by topics and subtopics.

Metasearch Engines: A search engine that searches other engines rather than individual websites.

Spider: A program used by a search engines that constantly collects information on the Web, following links in Web sites and reading Web pages; it gets its name because they crawl over the Web using multiple "legs" to visit as many sites simultaneously.

Boolean Operators: A word used to refine logical searches. For Internet searches, the words "and," "not," and "or" describe the relationships between keywords in the search.

Semantic Web (Web 3.0): An evolving extension of the World Wide Web in which information is defined in such a way to make it more easily readable by computers.

Social Commerce: A type of electronic commerce that uses social media to assist in the online buying and selling of products and services.

Web-based E-mail: An e-mail system that allows users to access e-mail messages using a browser.

Chapter 4

Application Software: Programs That Let You Work and Play

Software: The set of computer programs or instructions that tells the computer what to do and enables it to perform different tasks.

Program: A series of instructions to be followed by a computer to accomplish a task.

System Software: The set of programs that enables a computer's hardware devices and application software to work together, including the Operating System (OS) and utility programs.

Application Software: The set of programs on a computer that helps a user carry out specific tasks.

Software as a Service (SaaS): Software that is delivered on demand over the Internet. Also referred to as Web-based applications.

Web-based Applications: A program that is hosted on a Web site and does not require installation on the computer (Google Docs).

Productivity Software: Programs that enable a user to perform various tasks required for Home, School or Office; most contain similar components- word spreadsheet, presentation.

Word Processing Software: Programs used to create and edit written documents such as papers, résumés, and letters.

Open Source Software: Program code that is publicly available with few restrictions (it can be copied, distributed, or changed without the stringent copyright protections of proprietary software products) made by volunteers.

Proprietary or Closed-Source Software: Custom Software application that is owned and controlled by the company that created it (MS Windows, MS Office, iTunes).

Spreadsheet Software: An application program, such as Microsoft Excel or Lotus 1-2-3, that enables a user to do calculations and numerical analyses easily.

Presentation Software: An application program, such as MS PowerPoint or Apple Keynote, or OpenOffice.org that enables a user to create dynamic slide shows.

Database Software: Powerful applications that allow you to store and organize data.

Personal Information Manager (PIM) Software: Programs that strive to replace the various management tools found on a traditional desk.

Wizard: A step-by-step guide that walks a user through the necessary steps to complete a complicated task.

Template: A pre-designed form included in many productivity applications (that provides the basic structure for a particular kind of document, spreadsheet, or presentation).

Macro: A small program that groups a series of commands to run as a single command.

Software Suite: A collection of software programs that have been bundled together as a package.

Tax Preparation Software: An application program for preparing state and federal taxes; each program offers a complete set of tax forms and instructions as well as expert advice on how to complete each form.

Accounting Software: An application program that helps business owners manage their finances more efficiently by providing tools for tracking accounting transactions such as sales, accounts receivable, inventory purchases, and accounts payable.

Desktop Publishing Software (DTP): Programs for incorporating and arranging graphics and text to produce creative documents.

Web Page Authoring Software: Programs you can use to design interactive Web pages without knowing any HyperText Markup Language (HTML) code.

Project Management Software: An application program, such as Microsoft Project, that helps project managers generate charts and tables used to manage aspects of a project.

Customer Relationship Management (CRM) Software: A business program used for storing sales and client contact information in one central database.

Enterprise Resource Planning (ERP) System: Used to control many "back office" operations and processing functions such as billing, production, inventory management, and human resource management.

Mapping Programs: Software that provides street maps and written direction to locations.

Online Mapping Service: An alternative to more traditional mapping software programs; easily accessible with many Internet connection and updated more frequently than offline services.

Vertical Market Software: Software that is designed for a specific industry's needs as opposed to software that is useful across a range of industries.

Computer-Aided Design (CAD): A 3D modeling program used to create automated designs, technical drawings, and model visualizations.

Multi-Media Software: Programs that include image, video, and audio editing software, animation software, and other specialty software required to produce computer games, animations, and movies.

Image (Photo) Editing Software: Programs for editing photographs and other images.

Audio Editing Software: Programs that perform basic editing tasks on audio files such as cutting dead air space from the beginning or end of a song or cutting a portion from the middle.

Digital Video Editing Software: A program for editing digital video.

Simulation Programs: Software, often used for training purposes, which allows the user to experience or control an event as if it is reality.

Course Management Software: A program that provides traditional classroom tools, such as calendars and grade books over the Internet, as well as areas for students to exchange ideas and information in chat rooms, discussion forums, and e-mail.

Drawing (Illustration) Software: Programs for creating editing two-dimensional line-based drawings.

Software License (End Users License Agreement (EULA)): An agreement between the user and the software developer that must be accepted before installing the software on the computer.

Software Piracy: Violating a software license agreement by copying an application onto more computers than the license agreement permits.

Copy Left: A simplified license scheme that enables copyright holder to grant certain rights to a work while retaining other rights.

Bloat Ware: The pre-installed software (often trial versions) on a new computer.

Freeware: Any copyrighted software that can be used for free.

Beta Version: A version of the software that is still under development.

Shareware: Software that enables users to "test" the software by running it for a limited time free of charge.

System Requirements: The set of minimum storage, memory capacity, and processing standards recommended by the software manufacturer to ensure proper operation of a software application.

Full Installation: The process of installing all the files and programs from the distribution CD to the computer's hard drive.

Custom Installation: The process of installing only those features of a software program that a user wants on the hard drive.

Integrated Help: Documentation for a software product that is built directly into the software.

Chapter 5

System Software: The Operating System, Utility Programs, and File Management

Application Software: The set of programs on a computer that helps a user carry out tasks.

System Software: The set of programs that enables a computer's hardware devices and application software to work together; it includes the operating system and utility programs.

Operating System (OS): The system software that controls the way in which a computer system functions, including the management of hardware, peripherals, and software.

User Interface: Part of the OS that enables individuals to interact with their computer.

Utility Program: A small program that performs many of the general housekeeping tasks for the computer, such as system maintenance and file compression.

Microsoft Disk Operating System (MS-DOS): A single-user, single-task operating system created by Microsoft and was the first widely installed operating system in personal computers.

Icons: A pictures on the computer display that represents an object such as software application, file, or folder.

Menu: A list of commands that displays on the screen.

Multitask: The ability of an operating system to perform more than one process at a time.

Real-Time Operating System (RTOS): A program with a specific purpose that must guarantee certain response times for particular computing tasks, or else the machine's application is useless; is found in many types of robotic equipment.

Firmware: System software that controls hardware devices.

Multiuser Operating System: An operating system that enables more than one user to access the computer system at one time by efficiently juggling all the requests from multiple users (also known as Network Operating System).

UNIX: An operating system originally conceived in 1969 by Ken Thompson and Dennis Ritchie of AT&T's Bells Labs. In 1974, the code was rewritten in the standard programming language C.

Mainframe: A large, expensive, computer that supports hundreds or thousands of users simultaneously and executes many different programs at the same time.

Windows: An operating system by Microsoft that incorporates a user-friendly graphical interface.

Windows 7: Microsoft operating system that builds upon the security and user interface upgrades that the Windows Vista release provided, and gives users with touch-screen monitors the ability

to use touch commands to scroll, resize windows, pan, and zoom.

Mac OS: The first commercially available operating system to incorporate a graphical user interface with user-friendly point-and-click technology.

Platform: The combination of a computer's operating system and processor; the two most common types are the PC and the Apple Macintosh.

Linux: An open source operating system based on UNIX; because of the stable nature of this operating system, it is often used on Web servers.

Command-Driven Interface: Interface between user and computer in which the user enters commands to communicate with the computer system.

Menu-Driven Interface: A user interface on which the user chooses a command from menus displayed on the screen.

Graphical User Interface (GUI): A user interface that display graphics and use the point-and-click technology of the mouse and cursor, making them much more user friendly.

Event: The result of an action, such as a keystroke, mouse click, or signal to the printer, in the respective device (keyboard, mouse, or printer) to which the operating system responds.

Interrupt: A signal that tells the operating system that it is in need of immediate attention.

Interrupt Handler: A special numerical code that prioritizes requests from various devices, then places them in the interrupt table in the computer's primary memory.

Preemptive Multitasking: When the operating system processes the task assigned a higher priority before processing a task that has been assigned a lower priority.

Spooler: A program that helps coordinate all print jobs being sent to the printer at the same time.

Virtual Memory: The space on the hard drive where the operating system stores data if there isn't enough random access memory (RAM) to hold all of the programs you're currently trying to run.

Swap File (Page File): A temporary storage area on the hard drive where the operating system "swaps out" or moves the data or instructions from random access memory that have not recently been used. This takes place when more RAM space is needed.

Paging: The process of swapping data or instructions that have been placed in the swap file for later use back into active random access memory (RAM). The contents of the hard drive's swap file then become less active data or instructions.

Thrashing: A condition of excessive paging in which the operating system becomes sluggish.

Device Driver: Software that facilitates the communication between a device and the operating system.

Plug and Play (PnP): The technology that enables the operating system, once it is booted up, to recognize automatically any new peripherals and configure them to work with the system.

Application Programming Interface (API): A block of code in the operating system that software applications need to interact with.

Power-On-Self-Test (POST): The first job that the basic input/output system (BIOS) performs, ensuring that the essential peripheral devices are attached operational. This process consists of a test on the video card and video memory, and a memory test to ensure memory chips are working properly.

Basic Input/Output System (BIOS): A program that manages the data between a computer's operating system and all the input and output devices attached to the computer; also responsible for loading the operating system (OS) from its permanent location in the hard drive to random access memory (RAM).

Kernel (Supervisor Program): The essential component of the operating system that is responsible for managing the processor and all other components of the computer system.

Registry: A portion of the hard drive containing all the different configurations (settings) used by the windows operating system (OS) as well as by other applications.

Authentication: The process of identifying a computer user, based on the login or username/password.

Safe Mode: A special diagnostic mode designed for troubleshooting errors that occur during the boot process.

Device Manager: A feature in the Windows operating system that lets individuals view and change the properties of all hardware devices

Last Known Good Configuration: A Windows feature that starts the computer by using the registry information that was saved during the last shutdown.

Desktop: The feature that put all of the elements necessary for a productive work session and that are typically found on or near the top of a traditional desk, such as files or folders.

Recycle Bin: A folder on a Windows desktop that in which deleted files from the hard drive are held until permanently purged from the system.

Gadget: A mini-application that runs on the desktop, offering easy access to a frequently used tool such as weather or calendar item.

Taskbar: In later versions of Windows operating systems, a feature that displays open and favorite applications for easy access.

Toolbar: A group of icons collected for easy access.

Scrollbars: On the desktop, the bar that appears at the side or bottom of the window and controls which part of the information is displayed on the screen.

Ribbon: An interface in the Microsoft Office suite that groups related commands into tabs for easy access.

Widget: A mini application developed for the Macintosh platform.

File Management: The process by which humans or computer software provide organizational structure to a computer's contents.

Directory: A hierarchical structure that includes files, folders, and drives to create a more organized and efficient computer.

File: A collection of related pieces of information stored together for easy reference. In database technology it is called a group of related records.

Folder: A collection of files stored on a computer.

Library: In Windows 7, a folder that is used to display files from different locations as if they were all saved in a single folder, regardless of where they are actually stored in the file hierarchy.

Root Directory: The top level of the filing structure in a computer system.

Windows Explorer: The main tool for finding, viewing, and managing the contents of your computer by showing the location and contents of every drive, folder, and file.

File Name: The first part of the label applied to a file; it is generally the name a user assigns the file when saving it.

Extension: In a file name, the three letters that follow the user-supplied file name after the dot (.); it identifies what kind of family the files belong to or which application should be used to read it.

File Path: The exact location of a file, starting with the drive in which the file is located, and including all folders and subfolders.

File Compression Utility: A program that takes out redundancies in a file to reduce the file size.

Disk Cleanup: A Windows utility that removes unnecessary files from the hard drive.

Disk Defragmenter: A utility that regroups related pieces of files on the hard drive, enabling

faster retrieval of data.

File Allocation Table (FAT): An index of all sector numbers that the hard drive stores in a table to keep track of which sectors hold which files.

System Restore: A utility in Windows that restores system settings to a specific previous date when everything was working properly.

System Restore Point: In Windows, a snapshot of your entire system's settings used for restoring your system to a prior point in time.

Track: A concentric circle that serves as a storage area on a hard drive platter.

Sector: A section of a hard drive platter, wedge-shaped from the center of the platter to the edge.

Backup and Restore: A Windows utility that allows the user to create a duplicate copy of all the data on the hard drive and copy it to another storage device.

Task Scheduler: A Windows utility that enables you to schedule tasks to run automatically at predetermined times with no interaction necessary on your part.

Chapter 6

Understanding and Assessing Hardware: Evaluating Your System

3-D Sound Card: An expansion card that enables a computer to produce omnidirectional or three-dimensional sounds.

Access Time: The time it takes a storage device to locate its stored data.

Audio MIDI Interface: Interface technology that allows a user to connect guitars and microphones to their computers.

Cache Memory: Small blocks of memory, located directly on and next to the central processing unit (CPU) chip, that act as holding places for recently or frequently used instructions or data that the CPU accesses the most. When these instructions or data are stored in cache memory, the CPU can more quickly retrieve them than if it had to access the instructions or data from random access memory (RAM).

Clock Speed: The steady and constant pace at which a computer goes through machine cycles, measured in hertz (Hz).

Core: A complete processing section from a central processing unit, embedded into one physical chip.

CPU Benchmarks: Measurements used to compare performance between processors.

CPU Usage: The percentage of time the central process unit (CPU) is working.

CPU Usage Graph: Records your central processing unit (CPU) usage for the past few seconds.

Graphics Double Data Rate 5 (GDDR5): A standard of video memory.

Graphics Process Unit (GPU): A specialized logic chip that's dedicated to quickly displaying and calculating visual data such as shadows, textures, and luminosity.

Hard Disk Drive (HDD): The computer's nonvolatile, primary storage device for permanent storage of software and documents.

Head Crash: Impact of the read/write head against the magnetic platter of the hard drive; often results in data loss.

Hyper-threading: A technology that permits quicker processing of information by enabling a new set of instructions to start executing before the previous set has finished.

Latency (Rotational Delay): The process that occurs after the read/write head of the hard drive locates the correct track and then waits for the correct sector to spin to the read/write head.

Machine Cycle: The series of steps a central processing unit goes through when it performs a program instruction.

Memory Module (Memory Card): A small circuit board that holds a series of random access memory (RAM) chips.

Moore's Law: A prediction, named after Gordon Moore, the co-founder of Intel; states that the number of transistors on a central processing unit chip will double every two years.

Nonvolatile Storage: Permanent storage, as in read-only memory (ROM).

Optical Drive: A hardware device that uses laser or light to read from, and even write to, CDs, DVDs, or Blue-ray discs.

Optical Media: Portable storage devices, that use laser to read and write data.

Overclocking: Running the central processing unit at a speed faster than the manufacturer recommends.

Physical Memory: The amount of random access memory (RAM) that's installed in a computer.

Platter: A thin, round, metallic storage plate stacked onto the hard drive spindle.

Random Access Memory (RAM): The computer's temporary storage space or short-term memory. It's located in a set of chips on the system unit's motherboard, and its capacity is measured in megabytes or gigabytes.

Read/Write Head: The mechanism that retrieves (reads) and records (writes) the magnetic data to and from a data disk.

Redundant Array of Independent Disks (RAID): A set of strategies for using more than one drive in a system.

Raid 0: The strategy of running two hard drives in one system, cutting in half the time it takes to write a file.

Raid 1: The strategy of mirroring all the data written on one hard drive to a second hard drive, providing an instant backup of all data.

Sector: A sector of a hard drive platter, wedge-shaped from the center of the platter to the edge.

Seek Time: The time it takes for the hard drive's read/write heads to move over the surface of the disk to the correct task.

Solid-State Drive (SSD): A storage device that used the same kind of memory that flash drives use but that can reach data in only a tenth of the time a flash drive requires.

Sound Card: An expansion card that attaches to the motherboard inside the system unit and that enables the computer to produce sound by providing a connection for the speakers and mics.

SuperFetch: A memory-management technique used by Windows 7. Monitors the applications you use the most and preloads them into your system memory so that they'll be ready to go.

Surround Sound: A type of audio processing that makes the listener experience sound as if it were coming form all directions.

System Evaluation: The process of looking at a computer's subsystems, what they do, and how they perform to determine whether the computer system has the right hardware components to do what the user ultimately wants it to do.

Track: A concentric circle that serves as a storage area on a hard drive platter.

Video Card (Video Adapter): An expansion card that's installed inside a system unit to translate binary data (the 1s and 0s the computer uses) into the images viewed on the monitor.

Video Memory: Random access memory that's included as part of a video card.

Volatile Storage: Temporary storage, such as RAM. When the power is off, the data in volatile storage is cleared out.

Chapter 9

Securing Your System: Protecting Your Digital Data and Devices

Adware: A program that downloads on your computer when you install a freeware program, game, or utility. Generally, adware enables sponsored advertisements to appear in a section of your browser window or as a pop-up ad box.

Antivirus Software: Software that is specifically designed to detect viruses and protect a computer and files from harm.

Backdoor Program: A program that enables a hacker to take complete control of a computer without the legitimate user's knowledge or permission.

Backup: A backup is a copy of computer files that you can use to replace the originals if they are lost or damaged.

Biometric Authentication Device: A device that uses some unique characteristic of human biology to identify authorized users.

Black-Hat Hacker: A hacker who uses his knowledge to destroy information for illegal gain.

Boot-Sector Virus: A virus that replicates itself into the master boot record of a flash drive or hard drive.

Botnet: A large group of software applications (called robots or bots) that runs without user intervention on a large number of computers.

Computer Forensics: The application of computer systems and techniques to gather potential legal evidence; a law enforcement specialty used to fight high-tech crime.

Cookie: A small text file that some Web sites automatically store on a client computer's hard drive when a user visits the site.

Cybercrime: Any criminal action perpetrated primarily through the use of a computer.

Cybercriminal: An individual who uses computers, networks, and Internet to perpetrate crime.

Cyberloafing: Doing anything with a computer that is unrelated to a job (such as playing video games), while one is supposed to be working (also called cyberslacking).

Data Breach: When sensitive or confidential information is copied, transmitted, or viewed by an individual who was never authorized to handle the data.

Data File: File that contains stored data.

Denial-of-Service (DoS) Attack: An attack that occurs when legitimate users are denied access to

a computer system because a hacker is repeatedly making requests of that computer system that tie up its resources and deny legitimate users access.

Distributed Denial-of-Service (DDoS) Attack: An automated attack that is launched from more than one zombie computer at the same time.

Drive-by Download: The use of malicious software to attack your computer by downloading harmful programs onto your computer, without your knowledge, while you are surfing a site.

E-mail Virus: A virus transmitted by e-mail that often uses the address book in the victim's e-mail system to distribute itself.

Encryption Virus: A malicious program that searches for common data files and compresses them into a file using a complex encryption key, thereby rendering the files unusable.

Firewall: A software program or hardware device designed to prevent unauthorized access to computers or networks.

Geotag: Data attached to a photograph that indicate the latitude and longitude where you were standing when you took the photo.

Grey Hat Hackers: A cross between black and white – they will often illegally break into systems merely to flaunt their expertise to the administrator of the system they penetrated or to attempt to sell their services in repairing security breaches.

Hacker: Anyone who unlawfully breaks into a computer system (whether an individual computer or a network).

Hoax: An e-mail message or Web site that contains information that is untrue, and is published with the purpose of deceiving others.

Identity Theft: The process by which someone uses personal information about someone else (such as the victim's name, address, and Social Security number) to assume the victim's identity for the purpose of defrauding others.

Image (System) Backup: A copy of an entire computer system, created for restoration purposes.

Incremental (Partial) Backup: A type of backup that only backs up files that have changed since the last time files were backed up.

Inoculation: A process used by antivirus software; compares old and current qualities of files to detect viral activity.

Internet Protocol Address (IP Address): The means by which all computers connected to the Internet identify each other. It consists of a unique set of four numbers separated by dots such as 123.45.178.91.

Keystroke Logger: A type of spyware program that monitors keystrokes with the intent of stealing passwords, login IDs, or credit card information.

Logic Bomb: A computer virus that runs when a certain set of conditions is met, such as when specific dates are reached on the computer's internal clock.

Logical Port: A virtual communications gateway or path that enables a computer to organize requests for information (such as Web page downloads and e-mail routing) from other networks or computers.

Logical Port Blocking: A condition in which a firewall is configured to ignore all incoming packets that request access to a certain port so that no unwanted requests will get through to the computer.

Macro Virus: A virus that is distributed by hiding it inside a macro.

Malware: Software that is intended to render a system temporarily or permanently useless or to penetrate a computer system completely for purposes of information gathering. Examples include spyware, viruses, worms, and Trojan horses.

Master Boot Record (MBR): A small program that runs whenever a computer boots up.

Multipartite Virus: Literally meaning "multipart" virus; a type of computer virus that attempts to infect both the boot sector and executable files at the same time.

Network Address Translation (NAT): A process that firewalls use to assign internal Internet Protocol (IP) addresses on a network.

Packet Analyzer (Sniffer): A computer hardware device or software program designed to detect and record digital information being transmitted over a network.

Packet Filtering: A feature found in firewalls that filters out unwanted data packets sent to specific logical ports.

Personal Firewall: A firewall specifically designed for home networks.

Pharming: Planting malicious code on a computer that alters the browser's ability to find Web addresses and directs users to bogus Web sites.

Phishing: The process of sending e-mail messages to lure Internet users into revealing personal information such as credit card or Social Security numbers or other sensitive information that could lead to identity theft.

Polymorphic Virus: A virus that changes its virus signature (the binary pattern that makes the virus identifiable) every time it infects a new file. This makes it more difficult for antivirus

programs to detect the virus.

Pretexting: The act of creating an invented scenario (the pretext) to convince someone to divulge information.

Program File: A file that is used in the running of software programs and does not store data.

Quarantining: The placement (by antivirus software) of a computer virus in a secure area on the hard drive so that it won't spread infection to other files.

Rootkit: Programs that allow hackers to gain access to your computer and take almost complete control of it without your knowledge. These programs are designed to subvert normal logon procedures to a computer and to hide their operations from normal detection methods.

Scareware: A type of malware that is downloaded onto your computer and tries to convince you that your computer is infected with a virus or other type of malware.

Script: A list of commands (mini-programs or macros) that can be executed on a computer without user interaction.

Social Engineering: Any technique that uses social skills to generate human interaction for the purpose of enticing individuals to reveal sensitive information.

Spam Filter: An option you can select in your e-mail account that places known or suspected spam messages into a folder other than your inbox.

Spear Phishing: A targeted phishing attack that sends e-mails to people known to be customers of a company. Such attacks have a much greater chance of successfully getting individuals to reveal sensitive data.

Spyware: An unwanted piggyback program that downloads with the software you want to install from the Internet and then runs in the background of your system.

Stealth Virus: A virus that temporarily erases its code from the files where it resides and hides in the active memory of the computer.

Surge Protector: A device that protects computers and other electronic devices from power surges.

Time Bomb: A virus that is triggered by the passage of time or on a certain date.

Trojan Horse: A computer program that appears to be something useful or desirable (such as a game or a screen saver), but at the same time does something malicious in the background without the user's knowledge.

Uninterruptible Power Supply (UPS): A device designed to power a computer from large

batteries for a brief period during a loss of electrical power.

Urban Legend: A hoax that becomes so well known that it is accepted by society as true even though it is false (also known as an urban myth).

Virus: A computer program that attaches itself to another computer program (known as the host program) and attempts to spread itself to other computers when files are exchanged.

Virus Signature: A portion of the virus code that is unique to a particular computer virus and makes it identifiable by antivirus software.

White-Hat Hacker: A hacker who breaks into systems just for the challenge of it (and who doesn't wish to steal or wreak havoc on the systems). Such hackers tout themselves as experts who are performing a needed service for society by helping companies realize the vulnerabilities that exist in their systems.

Whole-House Surge Protector: A surge protector that is installed on (or near) the breaker panel of a home and protects all electronic devices in the home from power surges.

Worm: A program that attempts to travel between systems through network connections to spread infections. Worms can run independently of host file execution and are active in spreading themselves.

Zombie: A computer that is controlled by a hacker who uses it to launch attacks on other computer systems.

Chapter 7

Networking: Connecting Computing Devices

4G: The latest mobile communication standard with faster data transfer rates than 3G.

Backward Compatibility: The accommodation of current devices being able to use previously issued software standards in addition to the current standards.

Bandwidth: The maximum speed at which data can be transmitted between two nodes on a network; usually measured in megabits per seconds (Mbps).

Broadband: A high-speed Internet connection such as cable, satellite, or Digital Subscriber Line (DSL).

Cable Internet: A broadband service that transmits data over coaxial cables.

Cat 6 Cable: An Unshielded Twisted-Pair (UTP) Cable that provides more than 1 GB throughput.

Client/Server Network (Server-Based Network): A type of network that uses servers to deliver services to computers that are requesting them (clients).

Coaxial Cable: A single copper wire surrounded by layers of plastic insulation and sheathing; used mainly in cable television and cable Internet service.

Data Transfer Rate (Bandwidth): The maximum speed at which data can be transmitted between two nodes on a network; usually measured in megabits per second (Mbps).

Digital Subscriber Line (DSL): A type of connection that uses telephone lines to connect to the Internet and that allows both the phone and data transmissions to share the same line.

Ethernet Network: A network that uses the Ethernet protocol as the means (or standard) by which the nodes on the network communicate.

Fiber-Optic Cable: A cable that transmits data at close to the speed of light along glass or plastic fibers.

Fiber-Optic Service (FiOS): Internet access that is enabled by transmitting data at the speed of light through glass or plastic fibers.

Firmware: System software that controls hardware devices.

Gigabit Ethernet: The most commonly used wired Ethernet standard deployed in devices designed for home networks which provides bandwidth of up to 1 Gbps.

Hacker: Anyone who unlawfully breaks into a computer system (whether an individual computer or a network).

Home Area Network (HAN): A network located in a home that is used to connect all of its digital devices.

Home Network Server: A device designed to store media, share media across the network, and back up files on computers connected to a home network.

Internet Service Providers (ISP): Companies that specialize in providing Internet access. They may be specialized providers, like Juno, or companies that provide other services in addition to Internet access (such as phone or cable television).

Local Area Network (LAN): A network in which the nodes are located within a small geographic area.

Metropolitan Area Network (MAN): A Wide Area Network (WAN) that links users in a specific geographic area (such as within a city or country).

Mobile Broadband: Connection to the Internet through the same cellular network that cell phones use to get 3G or 4G Internet access.

Multiple Input Multiple Output (MIMO): A design in routers that provides for faster wireless data transmission by utilizing more than one antenna to transmit and receive data.

Network: A group of two or more computers (or nodes) that are configured to share information and resources such as printers, files, and databases.

Network Adapter: A device that enables the computer or peripheral to communicate with the network using a common data communication language, or protocol.

Network Administration: Involves tasks such as: (1) installing new computers, (2) monitoring the network to ensure it is performing efficiently, (3) updating and installing new software on the network, and (4) configuring or setting up proper security for a network.

Network Architecture: The design of a computer network; includes both physical and logical design.

Network-Attached Storage (NAS) Device: A specialized computing device designed to store and manage network data.

Network Interface Card (NIC): An expansion card that enables a computer to connect to other computers or to a cable modem to facilitate a high-speed Internet connection.

Network Navigation Devices: A device on a network such as a router, hub, and switch that moves data signals around the network.

Network Operating System (NOS): Software that handles requests for information, Internet

access, and the use of peripherals for the rest of the network nodes.

Network-Ready Device: A device (such as a printer or external hard drive) that can be attached directly to a network instead of needing to attach to a computer on the network.

Node: A device connected to a network such as a computer, a peripheral (such as a printer), or a communication device (such as a modem).

Packet (Data Packet): A small segment of data that is bundled for sending over transmission media. Each contains the address of the computer or peripheral device to which it is being sent.

Peer-to-Peer (P2P) Network: A network in which each node connected to the network can communicate directly with every other node on the network.

Personal Area Network (PAN): A network used for communication among devices close to one person using wireless technologies.

Piggybacking: The process of connecting to a wireless network without the permission of the owner of the network.

Router: A device that routes packets of data between two or more networks.

Satellite Internet: A way to connect to the Internet using a small satellite dish, which is placed outside the home and is connected to a computer with coaxial cable. The satellite company then sends the data to a satellite orbiting the Earth. The satellite, in turn, sends the data back to the satellite dish and to the computer.

Service Set Identifier (SSID): A network name that wireless routers use to identify themselves.

Switch: A device for transmitting data on a network. It makes decisions, based on the Media Access Control (MAC) address of the data, as to where the data is being sent.

Throughput: The actual speed of data transfer that is achieved. It is usually less than the Data Transfer Rate and is measured in megabits per second (Mbps).

Transceiver: In a wireless network, a device that translates the electronic data that needs to be sent along the network into radio waves and then broadcasts these radio waves to other network nodes.

Transmission Media: The radio waves or cable that transport data on a network.

Twisted-Pair Cables: Cables made of copper wires that are twisted around each other and are surrounded by a plastic jacket (such as traditional home phone wire).

Unshielded Twisted-Pair (UTP) Cable: The most popular transmission media cable option for Ethernet networks. It is composed of four pairs of wires that are twisted around each other to

reduce electrical interference.

Wide Area Network (WAN): A network made up of Local Area Networks (LANs) connected over long distances.

Wireless Fidelity (WiFi): The 802.11 standard for wireless data transmissions established by the Institute of Electrical and Electronics Engineers (IEEE).

Wireless Range Extender: A device that amplifies your wireless signal to get it out to parts of your home that are experiencing poor connectivity.

Chapter 11

Behind the Scenes: Databases and Information Systems

Alphabetic Check: Confirms that only textual characters are entered in a database field.

Artificial Intelligence (AI): The science that attempts to produce computers that display the same type of reasoning and intelligence that humans do.

Batch Processing: The process of accumulating transaction data until a certain point is reached, then processing those transactions all at once.

Binary Large Object (BLOB): In databases, a type of object that holds extremely large chunks of data in binary form; this data is usually video clips, pictures, or audio clips.

Business Intelligence Systems: Used to analyze and interpret data to enable managers to make informed decisions about how best to run a business.

Clickstream Data: Information captured about each click that users make as they navigate a site.

Completeness Check: A process that ensures that all database fields defined as "required" have data entered into them.

Consistency Check: The process of comparing the value of data in a database field against established parameters to determine whether the value is reasonable.

Database: A digital collection of related data that can be stored, sorted, organized, and queried.

Database Administrator (Designer): An IT professional responsible for designing, constructing, and maintaining databases.

Database Management System (DBMS): A specially designed application software used to create and manage databases.

Data Centralization: Having all data in one central location (usually a database). Data centralization helps ensure data integrity by requiring data to be updated only in one place if the data changes.

Data Dictionary (Schema): A file that defines the name, data type, and length of each field in the database.

Data Inconsistency: Any difference in data in lists caused when data exists in multiple lists and not all lists are updated when a piece of data changes.

Data Integrity: The process of ensuring that data contained in a database is accurate and reliable.

Data Mart: Small slices of a data warehouse.

Data Mining: The process by which great amounts of data are analyzed and investigated. The objective is to spot significant patterns or trends within the data that would otherwise not be obvious.

Data Redundancy: When the same data exists in more than one place in a database.

Data Staging: A three-step process: extracting data from source databases, transforming (reformatting) the data, and storing the data in a data warehouse.

Data (Field) Type: An attribute of a data field that determines what type of data can be stored in the database field or memory location.

Data Warehouse: A large-scale electronic repository of data that contains and organizes in one place all the data related to an organization.

Database Query: An inquiry the user poses to a database to extract a meaningful subset of data.

Decision Support System (DSS): A system designed to help managers develop solutions for specific problems.

Default Value: The value a database will use for a field unless the user enters another value.

Detail Report: A report generated with data from a database that shows the individual transactions that occurred during a certain time period.

Enterprise Resource Planning (ERP) System: Used to control many "back office" operations and processing functions such as billing, production, inventory management, and human resources management.

Exception Report: A report that shows conditions that are unusual or that need attention by users of a system.

Expert System: A system designed to replicate the decision-making processes of human experts to solve specific problems.

Export: The process of putting data into an electronic file in a format that another application can understand.

Field: A field where a category of information in a database is stored. Fields are displayed in columns.

Field Constraint: Any property that must be satisfied for an entry to be accepted into the field.

Field Name: An identifying name assigned to each field in a database.

Field Size: The maximum number of characters/numbers that a field in a database can contain.

Foreign Key: The primary key of another database table that is included for purposes of establishing relationships with another table.

Fuzzy Logic: A type of logic that allows the interjection of experiential learning into an equation by considering probabilities.

Hyperlink Field: A field in a database that stores hyperlinks to Web pages.

Information System: A system that includes data, people, procedures, hardware, and software and that is used to gather and analyze information.

Input Form: A form that provides a view of the data fields to be filled in a database, with appropriate labels to assist database users in populating the database.

Join Query: A database query that links (or joins) two database tables using a common field in both tables and extracts the relevant data from each.

Knowledge-Based System: A support system that provides additional intelligence that supplements the user's own intellect and makes a decision support system (DSS) more effective.

Management Information System (MIS): A system that provides timely and accurate information that enables managers to make critical business decisions.

Many-to-Many Relationship: A database relationship in which one record in a database table (A) can have many related records in another table (B), and any record in table B can have many related records in table A.

Memo Field: A text field in a database that is used to hold long pieces of text.

Metadata: Data that describes other data.

Model Management System: A type of software that assists in building management models in decision support systems (DSSs).

Multidimensional Database: A database that stores data in multiple dimensions and is organized in a cube format.

Natural Language Processing (NLP) System: A system that enables users to communicate with computer systems using a natural spoken or written language as opposed to using computer programming languages.

Normalization: The process of recording data only once in a database to reduce data redundancy.

Numeric Check: A data validation routine that confirms that only numbers are entered in a

database field.

Numeric Field: A field in a database that stores numbers.

Object-Oriented Database: A database that stores data in objects, not in tables.

Object Query Language (OQL): A query language used by many object-oriented databases.

Office Support System (OSS): A system (such as Microsoft Office) designed to assist employees in accomplishing their day-to-day tasks and to improve communications.

One-to-Many Relationship: A database relationship in which one record in a data table can have many related records in another data table.

One-to-One Relationship: A database relationship in which one record in a data table has only one related record in another data table.

Online Analytical Processing (OLAP): Software that provides standardized tools for viewing and manipulating data in a data warehouse.

Online Transaction Processing (OLTP): The immediate processing of user requests or transactions.

Primary Key: The unique field that each database record in a table must have.

Query: The process of requesting information from a database.

Query Language: A language used to retrieve and display records from a database. A query language consists of its own vocabulary and sentence structure, used to frame the requests.

Range Check: A type of data validation used in databases to ensure that a value entered falls within a specified range (such as requiring a person's age to fall in a range of between 1 and 120).

Real-Time Processing: The process of updating a database (or information system) immediately as changes are made.

Record: A collection of related fields in a database.

Referential Integrity: For each value in the foreign key of one table, there is a corresponding value in the primary key of the related table.

Relational Algebra: The use of English-like expressions that have variables and operations, much like algebraic equations.

Relational Database: A database that logically groups similar data into relations (or tables).

Relationship: The link between tables that defines how the data are related.

Select Query: A query that displays a subset of data from a table based on the criteria specified.

Structured (Analytical) Data: Data that can be identified and classified as discrete bits of information (such as a name or phone number). Unstructured data includes nontraditional data such as audio clips (including MP3 files), video clips, and pictures that must be viewed in their entirety rather than in discrete segments.

Structured Query Language (SQL): The most popular database query language today.

Summary Report: A report that summarizes data in some fashion (such as a total of the day's concession sales at an amusement park). Also known as a summary data report.

Table (File): A group of related records.

Time-Variant Data: Data that doesn't all pertain to one period in time—for example, data in a data warehouse.

Transaction Processing System (TPS): A system used to keep track of everyday business activities (such as sales of products).

Unstructured Data: Nontraditional database data such as audio clips (including MP3 files), video clips, pictures, and extremely large documents. Data of this type is known as a binary large object (BLOB) because it is actually encoded in binary form.

Validation: The process of ensuring that data entered into a database is correct (or at least reasonable) and complete.

Validation Rule: A rule that is set up in a database to alert the user to possible wrong entries.

Chapter 12

Behind the Scenes: Networking and Security in the Business World

Access Card Reader: A device that reads information from a magnetic strip on the back of a credit card-like access card (such as a student ID card); card readers are easily programmed by adding authorized ID card numbers, Social Security numbers, and so on.

Access Method: A program or hardware mechanism that controls which computer is allowed to use the transmission media in a network at a certain time.

Active Typology: A network topology in which each node on the network is responsible for retransmitting the token, or the data, to other nodes.

Application Server: A server that acts as a repository for application software.

Authentication: The process of identifying a computer user, based on a login or username and password. The computer system determines whether the computer user is authorized and what level of access is to be granted on the network.

Authentication Server: A server that keeps track of who is logging on to the network and which services on the network are available to each user.

Bastion Host: A heavily secured server located on a special perimeter network between a company's secure internal network and its firewall.

Biometric Authentication Device: A device that uses some unique characteristic of human biology to identify authorized users.

Bridge: A network device that is used to send data between two different local area networks (LANs) or two segments of the same LAN.

Brute Force Attack: An attack delivered by specialized hacking software that tries many combinations of letters, numbers, and pieces of a user ID to attempt to discover a user password.

Bus (Linear Bus) Topology: A system of networking connections in which all devices are connected to a central cable called the bus (or backbone).

Centralized: A type of network design in which users are not responsible for creating their own data backups or providing security for their computers; instead, those tasks are handled by a centralized server, software, and a system administrator.

Client: A computer that requests information from a server in a client/server network (such as your computer when you are connected to the Internet).

Client/Server Network (Server-Based Network): A type of network that uses servers to deliver services to computers that are requesting them (clients).

Cloud Server: Servers that are maintained by hosting companies, such as Rackspace Hosting, and that are connected to networks via the Internet.

Coaxial Cable: A single copper wire surrounded by layers of plastic insulation and sheathing; used mainly in cable television and cable Internet service.

Communications Server: A server that handles all communications between the network and other networks, including managing Internet connectivity.

CSMA/CD: A method of data collision detection in which a node connected to the network listens (that is, has carrier sense) to determine that no other nodes are currently transmitting data signals; short for Carrier Sense Multiple Access with Collision Detection.

Data Collision: When two computers send data at the same time and the sets of data collide somewhere in the media.

Database Server: A server that provides client computers with access to information stored in a database.

Decentralized: A type of network in which users are responsible for creating their own data backups and for providing security for their computers.

Dedicated Server: A server used to fulfill one specific function (such as handling e-mail).

Device Driver: Software that facilitates the communication between a device and the operating system.

E-mail Server: A server that processes and delivers incoming and outgoing e-mail.

Extranet: The portion of a company's intranet that is used to share business information with business partners such as vendors, suppliers, and customers.

Fiber-Optic Cable: A cable that transmits data at close to the speed of light along glass or plastic fibers.

File Server: A computer deployed to provide remote storage space or to act as a repository for files that users can access.

Frame: A container designed to hold multiple data packets.

Guest Server: Virtual servers running on a host machine.

Honey Pot: A computer system that is set up to attract unauthorized users by appearing to be a key part of a network or a system that contains something of great value.

Hybrid Topology: A topology comprised of several topologies and combined into one network.

Information Assurance: The set of measures intended to protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and nonrepudiation.

Intranet: A private corporate network that is used exclusively by company employees to facilitate information sharing, database access, group scheduling, videoconferencing, and other employee and customer collaborations.

Jam Signal: A special signal sent to all network nodes, alerting them that a data collision has occurred.

Local Area Network (LAN): A network where nodes are located within a small geographic area.

Media Access Control (MAC) Address: A physical address, similar to a serial number on an appliance, that is assigned to each network adapter; it is made up of six 2-digit characters such as 01:40:87:44:79:A5.

Metropolitan Area Network (MAN): A wide area network (WAN) that links users in a specific geographic area (such as within a city or county).

Network: A group of two or more computers (or nodes) that are configured to share information and resources such as printers, files, and databases.

Network Adapter: A device that enables the computer (or peripheral) to communicate with the network using a common data communication language, or protocol.

Network Administrator: Someone who has training in computer and peripheral maintenance and repair, network design, and the installation of network software; installs new equipment, configures computers for users, repairs equipment, and assigns network access to users.

Network Operating System (NOS): Software that handles requests for information, Internet access, and the use of peripherals for the rest of the network nodes.

Network Topology: The layout and structure of the network.

Open Systems Interconnection (OSI): Established by the Institute of Electrical and Electronics Engineers (IEE), a standard of communications adopted throughout the computing world that provides the protocol guidelines for all modern networks.

[Data] Packet: A small segment of data that is bundled for sending over transmission media. Each packet contains the address of the computer or peripheral device to which it is being sent.

Packet Screening: A process that involves examining incoming data packets to ensure they originated from, or are authorized by, valid users on the internal network.

Passive Topology: When data merely travels the entire length of the communications medium and is received by all network devices.

Personal Area Network (PAN): A network used to connect wireless devices (such as Bluetooth-enabled devices) in close proximity to each other.

Possessed Object: Any object that a user carries to identify him- or herself and that grants the user access to a computer system or computer facility.

Print Queue: A software holding area for printing jobs.

Print Server: A server that manages client-requested printing jobs for all printers on the network.

Protocol: (1) A set of rules for exchanging data and communication. (2) The first part of the Uniform Resource Locator (URL) indicating the set of rules used to retrieve the specified document.

Proxy Server: Acts as a go-between for computers on the internal network and the external network (often the Internet).

Ring (Loop) Topology: A network configuration in which the computers and peripherals are laid out in a configuration resembling a circle. Data flows around the circle from device to device in one direction only.

Router: A device that routes packets of data between two or more networks.

Scalability: The ability to easily add more users to a network without affecting the performance of the other network nodes (computers or peripherals).

Server: A computer that provides resources to other computers on a network.

Shielded Twisted Pair (STP) Cable: Twisted pair cable that contains a layer of foil shielding to reduce interference.

Star Topology: An active topology in which the nodes connect to a central communications device called a switch. The switch receives a signal from the sending node and retransmits it to the node that should receive it.

Switch: A device for transmitting data on a network. A switch makes decisions, based on the media access control (MAC) address of the data, as to where the data is to be sent.

Terminator: A device that absorbs a signal so that it is not reflected back onto parts of the network that have already received it.

Token: A special packet containing data.

Token Method: The access method that ring networks use to avoid data collisions.

Transmission Media: The radio waves or cable that transport data on a network.

Tunneling: The main technology for achieving a VPN. Data packets are placed inside other data packets. The format of these data packets is encrypted and is understood only by the sending and receiving hardware, known as a tunnel interface. The hardware is optimized to seek efficient routes of transmission through the Internet, making information harder to intercept or decrypt.

Twisted Pair Cable: Cables made of copper wires that are twisted around each other and are surrounded by a plastic jacket (such as traditional home phone wire).

Unshielded Twisted Pair (UTP) Cable: The most popular transmission media option for Ethernet networks, made of four pairs of wires twisted around each other to reduce electrical interference.

Virtual Private Network (VPN): A network that uses public communication pathways (usually the Internet) to provide branch offices or employees who are not at the office with secure access to the company network. VPNs maintain privacy by using secure data communication protocols.

Virtualization: Involves using specialized software to make individual physical servers behave as though they are more than one physical device. Each virtual server can operate as its own separate device and can even run its own operating system.

Web Server: A computer running a specialized operating system that enables it to host Web pages (and other information) and provide requested Web pages to clients.

Wide Area Network (WAN): A network made of LANs connected over long distances.

Wireless Access Point (WAP): A device similar to a switch in an Ethernet network. It takes the place of a wireless network adapter and helps relay data between network nodes.

Wireless Media: Communications media that do not use cables but instead rely on radio waves to communicate.

Wireless Network Interface Card (Wireless NIC): A card installed in a system that connects with wireless access points on the network.

Chapter 8

Digital Devices and Media: Managing a Digital Lifestyle

Analog: Waves that illustrate the loudness of a sound or the brightness of the colors in an image at a given moment in time.

Analog-to-Digital Converter Chip: Converts analog signals into digital signals.

Base Transceiver Station: A large communications tower with antennas, amplifiers, and receivers/transmitters.

Bluetooth Technology: A type of wireless technology that uses radio waves to transmit data over short distances (approximately 30 feet for Bluetooth 1 and 60 feet for Bluetooth 2). Often used to connect peripherals such as printers and keyboards to computers or headsets to cell phones.

Cellular Phone: A telephone that operates over a wireless network. Cell phones can also offer Internet access, text messaging, personal information management (PIM) features, and more.

Codec: A rule, implemented in either software or hardware, which squeezes a given amount of audio and video information into less space.

Copyleft: A simplified licensing scheme that enables copyright holders to grant certain rights to a work while retaining other rights.

Data Plan: A connectivity plan or text messaging plan in which data charges are separate from cell phone calling charges and are provided at rates different from those for voice calls.

Derivative Work: Intellectual property based on original work but is modified in some way.

Digital Signal Processor: A specialized chip that processes digital information and transmits signals very quickly.

Flash Memory: Portable, nonvolatile memory.

Global Positioning System (GPS): A system of 21 satellites (plus 3 working spares), built and operated by the U.S. military, that constantly orbit the earth. They provide information to GPS-capable devices to pinpoint locations on the earth.

Internet Tablet: A very light, portable computing device without a keyboard.

Micro Browser: Software that makes it possible to access the Internet from a PDA/smartphone.

Mobile Switching Center: A central location that receives cell phone requests for service from a base station.

Multimedia Message Service (MMS): An extension of short message service (SMS) that enables messages that include text, sound, images, and video clips to be sent from a cell phone or PDA to

other phones or e-mail addresses.

Netbook: A computing device that runs a full-featured operating system but weighs two pounds or less.

Peer-to-Peer (P2P) Sharing: The process of users transferring files between computers.

Portable Media Player (PMP): A small portable device (such as an iPod) that enables you to carry your MP3s or other media files around with you.

Resolution: The clearness or sharpness of an image, which is controlled by the number of pixels displayed on the screen.

Sampling Rate: The number of times per second a signal is measured and converted to a digital value. Sampling rates are measured in kilobits per second.

Short Message Service (SMS): Technology that enables short text messages (up to 160 characters) to be sent over mobile networks.

Smartphone: A device that combines the functionality of a cell phone, a PMP, and a PDA into one unit.

Syncing (Synchronizing): The process of updating data on portable devices (such as a cell phone or iPod) and computer so that they contain the same data.

Telephony: The use of equipment to provide voice communications over a distance.

Ubiquitous Computing: The condition in which computing is so woven into the fabric of everyday life that it becomes indistinguishable from it.

Voice over Internet Protocol (VoIP): A technology that facilitates making telephone calls across the Internet instead of using conventional telephone lines.

Wireless Internet Service Provider (wireless ISP): An ISP that provides service to wireless devices such as PDA/smartphones.

Wireless Markup Language (WML): A format for writing content viewed on a cellular phone or personal digital assistant (PDA) that is text-based and contains no graphics.

Chapter 10

Behind the Scenes: Software Programming

Active Server Pages (ASP): Programming language used to build websites with interactive capabilities; adapts an HTML page to the user's selections.

AJAX (Asynchronous JavaScript and XML): A collection of technologies that allow the creation of web applications that can update information on a page without requiring the user to refresh or leave the page.

Algorithm: A set of specific, sequential steps that describe exactly what the computer program must do to complete the required work.

Architecture Neutral: A feature of Java whereby code needs to be compiled only once, after which the code can be run on many different CPUs.

Beta Version: A version of the software that's still under development. Many beta versions are available for a limited trial period and are used to help the developers correct any errors before they launch the software on the market.

Binary Decision: A type of decision point in an algorithm that can be answered in one of only two ways: yes (true) or no (false).

C: A programming language originally developed for system programmers.

C++: A programming language; takes C to an object-oriented level.

C#: A Microsoft programming language developed to compete with Java.

Class: A category of input identified in object- oriented analysis; classes are defined by information and actions.

Code Editing: The step of programming in which a programmer types the code to be executed.

Coding: Translating an algorithm into a programming language.

Comment: A note left by a programmer in the program code to explain the purpose of a section of code, to indicate the date the program was written, or to include other important information about the code so that other programmers can more easily understand and update it.

Compilation: The process by which code is converted into machine language—the language the central processing unit can understand.

Compiler: A program that understands both the syntax of the programming language and the exact structure of the central processing unit and its machine language.

Control Structure: General term used for a keyword in a programming language that allows the programmer to direct the flow of the program based on a decision.

Data: Numbers, words, pictures, or sounds that represent facts, figures, or ideas; the raw input that users have at the start of a job.

Data-Flow Diagrams: Diagrams that trace all data in an information system from the point at which data enters the system to its final resting place (storage or output).

Data (Field) Type: (1) Describes the kind of data being stored at the memory location; each programming language has its own data types (although there is some degree of overlap), (2) In a database, indicates what type of data can be stored in a field and prevents the wrong type of data from being entered into the field.

Debugger: A tool in an integrated development environment that helps programmers analyze a program as it runs.

Debugging: The process of running a program over and over to find and repair errors and to make sure the program behaves in the way it should.

Decision Point: A place where a program must choose from a list of actions based on the value of a certain input.

Documentation: Description of the technical details of the software, how the code works, and how the user interacts with the program; in addition, all the necessary user documentation that will be distributed to the program's users.

Dynamic Decision Making: The ability of a web page to decide how to display itself based on the choices the reader makes.

Editor: A special tool in an integrated development environment (IDE) that helps programmers as they enter code.

Error Handling: The part of a problem statement where programmers describe what the program should do if the input data is invalid or just gibberish.

Executable Program: The binary sequence that instructs the central processing unit to run the programmer's code.

eXtensible Markup Language (XML): A markup language that enables designers to define their own data-based tags, making it much easier for a website to transfer the key information on its page to another site; it defines what data is being described rather than how it's to be displayed.

Fifth-Generation Language (5GL): A computer language in which a problem is presented as a series of facts or constraints instead of as a specific algorithm; the system of facts can then be queried; considered the most "natural" of languages.

First-Generation language (1GL): The machine language of a central processing unit (CPU); the sequence of bits that the CPU understands.

Flowchart: Visual diagram of a process, including the decisions that need to be made along the way.

For: In Visual Basic, programmers use the keyword For to implement a loop; after the keyword For, an input or output item is given a starting value, and then the statements in the body of the loop are executed.

Fourth-Generation Language (4GL): A computer language type that includes database query languages and report generators.

General Availability (GA): The point in the release cycle, where, after release to manufacturers, software is available for purchase by the public.

Hypertext Markup Language (HTML): A series of tags that define how elements on a website should be displayed in a browser.

If else: In C++, a binary decision in the code where the program can follow one of two paths: If the decision is made one way, the program follows one path; if made the other way (else), the program follows another path.

Information: Data that has been organized or presented in a meaningful fashion; the result, or output that users require at the end of a job.

Information System: A system that includes data, people, procedures, hardware, and software that help in planning and decision-making; a software-based solution used to gather and analyze information.

Inheritance: In object-oriented analysis, the ability of a new class to automatically pick up all the data and methods of an existing class and then extend and customize those to fit its specific needs.

Integrated Development Environment (IDE): A developmental tool that helps programmers write and test their programs; one IDE can be configured to support many different languages.

Interpreter: For a programming language, translates the source code into an intermediate form, line by line; each line is then executed as it's translated.

Java: An object-oriented programming language that has a large set of existing classes.

JavaScript: A scripting language that's often used to add interactivity to web pages; often used for creating Dynamic HTML effects.

JavaServer Pages (JSP): Programming language used to build websites with interactive capabilities; adapts the HTML page to the user's selections.

Keyword: (1) A specific word a user wishes to query (or look for) in an Internet search. (2) A specific word that has a predefined meaning in a particular programming language.

Logical Error: An error in a program that produces unintended or undesired output, where the syntax is correct but some other human error has occurred.

Loop: A type of decision point in an algorithm. In a loop, a question is asked, and if the answer is yes, a set of actions is performed. Once the set of actions has finished, the question is asked again, creating a loop. If the answer to the question is no, the algorithm breaks free of the loop and moves on to the first step that follows the loop.

Method: The process of how a program converts inputs into the correct outputs.

Next: In Visual Basic, programmers use the keyword Next to implement a loop; when the Next command is run, the program returns to the For statement and increments the value of the input or output item by 1 and then runs a test cycle.

Object: An example of a class in object-oriented analysis.

Objective C: The programming language most often used to program applications to run under OS X.

Object-Oriented Analysis: A type of analysis in which programmers first identify all the categories of inputs that are part of the problem the program is meant to solve.

Operator: A coding symbol that represents a fundamental action of the programming language.

Pascal: A programming language; the only modern language that was specifically designed as a teaching language.

PHP (Hypertext Preprocessor): Programming language used to build websites with interactive capabilities; adapts the HTML page to the user's selections.

Portability: The capability to move a completed solution easily from one type of computer to another.

Problem Statement: The starting point of programming work; a clear description of what tasks the computer program must accomplish and how the program will execute those tasks and respond to unusual situations.

Program Development Life Cycle (PDLC): The process of performing a programming project, which consists of five stages: describing the problem, making a plan, coding, debugging, and testing and documentation.

Program Specification: A clear statement of the goals and objectives of the project.

Programming: The process of translating a task into a series of commands a computer will use to perform that task.

Programming Language: A kind of "code" for the set of instructions the central processing unit knows how to perform.

Prototype: A small model of a program built at the beginning of a large project.

Pseudocode: A text-based approach to documenting an algorithm.

Rapid Application Development (RAD): An alternative program-development method; instead of developing detailed system documents before they produce the system, developers first create a prototype, then generate system documents as they use and remodel the product.

Release to Manufacturers (RTM): The point in the release cycle, where, after beta testing, a manufacturer makes changes to the software and releases it to other manufacturers, for installation on new machines, for example.

Reusability: In object-oriented analysis, the ability to reuse existing classes from one project for another project.

Runtime Error: An error in a program that occurs when a programmer accidentally writes code that divides by zero, a mathematical error.

Scope Creep: An ever-changing set of requests from clients for additional features as they wait longer and longer to see a working prototype.

Scripting Language: A simple programming language that's limited to performing a set of specialized tasks.

Second-Generation Language (2GL): A computer language that allows programmers to write programs using a set of short, English-like commands that speak directly to the central processing unit and that give the programmer direct control of hardware resources; also called assembly language.

Service Pack: A software update.

Source Code: The instructions programmers write in a higher-level language.

Statement: A sentence in a code.

Structured Query Language (SQL): A database programming language used to construct queries to extract data from relational databases; one example of a fourth-generation language.

Syntax: An agreed-on set of rules defining how a language must be structured.

Syntax Error: A violation of the strict set of rules that define the programming language.

System Development Life Cycle (SDLC): A process used to develop information systems; it consists of the following six steps: problem and opportunity identification, analysis, design, development, testing and installation, and maintenance and evaluation.

Test Condition: A check to see whether the loop in an algorithm is completed.

Testing Plan: The part of the problem statement that lists specific input numbers the programmers would typically expect the user to enter; the plan then lists the precise output values that a perfect program would return for those input values.

Third-Generation Language (3GL): A computer language that uses symbols and commands to help programmers tell the computer what to do, making 3GL languages easier for humans to read and remember (ex. BASIC, FORTRAN, COBOL, C/C++, and JAVA).

Top-Down Design: A systematic approach in which a problem is broken into a series of high-level tasks.

Variable: Each input and output item the program manipulates.

Variable Declaration: Tells the operating system that the program needs to allocate storage space in RAM.

VBScript: A subset of Visual Basic, used to introduce dynamic decision making into web pages.

Visual Basic (VB): A programming language used to build a wide range of Windows applications.

Visual Programming: In programming languages that support Windows programming, programmers can use the mouse to lay out on the screen where the scroll bars and buttons will be in the application; the code needed to explain this to the computer is then written automatically.

Web Services: Part of the Microsoft .NET Framework, programs that a website uses to make information available to other websites.

Chapter 13
Behind the Scenes: How the Internet Works

Applet: A small program designed to be run from within another application. Java applets are often run on your computer by your browser through the Java Virtual Machine (an application built into current browsers).

Cascading Style Sheets (CSS): A list of statements (also known as rules) that define in one single location how HTML/XHTML elements are to be displayed.

CGI Script: A computer program that conforms to the Common Gateway Interface (CGI) specification, which provides a method for sending data between end users (browser users) and Web servers.

CGI-Bin: A directory where Common Gateway Interface (CGI) scripts are normally placed.

Circuit Switching: A method of communication in which a dedicated connection is formed between two points (such as two people on telephones) and the connection remains active for the duration of the transmission.

Classless Interdomain Routing (CIDR): Pronounced "cider," this is an addressing scheme that allows a single IP address to represent several unique IP addresses by adding a network prefix (a slash and a number) to the end of the last octet; also known as super netting.

Client/Server Model: A way of describing typical network functions. Client computers (such as your desktop PC) request services, and servers provide ("serve up") those services to the clients.

Client-Side Program: A computer program that runs on the client computer and requires no interaction with a Web server.

Commerce Server: A computer that hosts software that enables consumers to purchase goods and services over the Web. These servers generally use special security protocols to protect sensitive information (such as credit card numbers) from being intercepted.

Common Gateway Interface (CGI): Provides a methodology by which a browser can request that a program file be executed (or run) instead of just being delivered to the browser.

Computer Protocol: A set of rules for accomplishing electronic information exchange. If the Internet is the information superhighway, then protocols are the driving rules.

Connectionless Protocol: A protocol that a host computer can use to send data over the network without establishing a direct connection with any specific recipient computer.

Connection-Oriented Protocol: A protocol that requires two computers to exchange control packets, which set up the parameters of the data exchange session, before sending packets that contain data.

Document Object Model (DOM): A means to organize objects and page elements in a Web page. DOM defines every item on a Web page, such as graphics, tables, and headers, as an object.

Domain Name System (DNS) server: A server that contains location information for domains on the Internet and functions like a phone book for the Internet.

Dotted Decimal Number (Dotted Quad): One of the numbers in an Internet Protocol (IP) address.

Dynamic Addressing: The process of assigning Internet Protocol (IP) addresses when users log on using their Internet service provider (ISP). The computer is assigned an address from an available pool of IP addresses.

Dynamic Host Configuration Protocol (DHCP): The protocol that handles dynamic addressing. Part of the Transmission Control Protocol/Internet Protocol (TCP/ IP) protocol suite, DHCP takes a pool of IP addresses and shares them with hosts on the network on an as-needed basis.

Dynamic HyperText Markup Language (DHTML or Dynamic HTML): A combination of Web development technologies including HTML, cascading style sheets, and a scripting language that are used to add interactivity to a Web site after the Web site has been loaded onto the client computer.

Element: The tags and the text between the tags in HyperText Markup Language (HTML).

E-mail Server: A server that processes and delivers incoming and outgoing e-mail.

Encryption: The process of encoding data (ciphering) so that only the person with a corresponding decryption key (the intended recipient) can decode (or decipher) and read the message.

File Server: A computer deployed to provide remote storage space or to act as a repository for files that users can access.

Handshaking: The process of two computers exchanging control packets that set up the parameters of a data exchange.

Hexadecimal Notation: A number system that uses 16 digits to represent numbers; also called a base 16 number system.

HTML Tag: The bracketed information that surrounds elements of a Web page in order to convey information about them and define how their content is to be displayed.

HyperText Transfer Protocol (HTTP): The protocol that allows files to be transferred from a Web server so that you can see them on your computer by using a browser.

HyperText Transfer Protocol Secure (HTTPS): A protocol that will encrypt the information sent

between your browser and the server.

Internet Backbone: The main pathway of high-speed communications lines over which all Internet traffic flows.

Internet Cache: A section of your hard drive that stores information that you may need again for surfing (such as IP addresses and frequently accessed Web pages).

Internet Corporation for Assigned Names and Numbers (ICANN): The organization responsible for allocating IP addresses to organizations to ensure they are unique and have not been assigned to other users.

Internet Exchange Point (IXP): A device that allows different Internet service providers to exchange information between networks.

Internet Protocol (IP): A protocol for sending data between computers on the Internet.

Internet Protocol Version 4 (IPv4): The original IP addressing scheme.

Internet Protocol Version 6 (IPv6): A proposed IP addressing scheme that makes IP addresses longer, thereby providing more available IP addresses. It uses eight groups of 16-bit numbers.

Internet Protocol Address (IP Address): The means by which all computers connected to the Internet identify each other. It consists of a unique set of four numbers separated by dots such as 123.45.178.91.

JavaScript: A scripting language often used to add interactivity to Web pages. JavaScript is not as fully featured as Java, but its syntax, keywords, data types, and operators are a subset of Java's.

Java Object Notation (JSON): A syntax for exchanging text information between computers.

Key Pair: A public and a private key used for coding and decoding encrypted data.

Multipurpose Internet Mail Extensions (MIME): A specification that was introduced in 1991 to simplify attachments to e-mail messages. All e-mail client software now uses this protocol for attaching files.

Negative Acknowledgment (NAK): What computer Y sends to computer X if a packet is unreadable, indicating the packet was not received in understandable form.
Network Prefix: The part of a network address under the CIDR IP addressing scheme. It consists of a slash and a number added to the end of the last octet in an IP address.

Octet: Eight bits. For example, each of the four numbers in the dotted decimal notation of an Internet Protocol (IP) address is represented by an octet.

[Data] Packet: A small segment of data that is bundled for sending over transmission media.

Each packet contains the address of the computer or peripheral device to which it is being sent.

Packet Switching: A communications methodology in which data is broken into small chunks (called packets) and sent over various routes at the same time. When the packets reach their destination, the receiving computer reassembles them.

Point of Presence (POP): A bank of modems through which many users can connect to an Internet service provider (ISP) simultaneously.

Positive Acknowledgment (ACK): What computer Y sends when it receives a data packet that it can read from computer X.

Pretty Good Privacy (PGP): A popular public-key encryption package.

Private Key: One-half of a pair of binary files that is needed to decrypt an encrypted message. Only the individual who created the key pair and never distributes it keeps the private key. The private key is used to decrypt messages created with the corresponding public key.

Private-Key Encryption: A procedure in which only the two parties involved in sending a message have the code. This could be a simple shift code where letters of the alphabet are shifted to a new position.

Proprietary System: A software product whose code is not generally available (is kept private) and that is generally developed and marketed by a single company.

Public Key: One-half of a pair of binary files that is needed to decrypt an encrypted message. After creating the keys, the user distributes the public key to anyone he wishes to send him encrypted messages. A message encrypted with a public key can be unencrypted only using the corresponding private key.

Public-Key Encryption: A procedure in which the key for coding is generally distributed as a public key that may be placed on a Web site. Anyone wishing to send a message codes it using the public key. The recipient decodes the message with a private key.

Root DNS Server: A group of servers maintained throughout the Internet to which ISP Web servers connect to locate the master listings for an entire top-level domain.

Second-Level Domain: A domain that falls within top-level domains of the Internet. Each second-level domain needs to be unique within that particular domain but not necessarily unique to all top-level domains.

Secure Sockets Layer (SSL): A protocol that provides for the encryption of data transmitted using the Internet. The current versions of all major Web browsers support SSL.

Server-Side Program: A program that is run on a Web server as opposed to inside a Web browser.

Simple Mail Transfer Protocol (SMTP): A protocol for sending e-mail along the Internet to its destination.

Static Addressing: A means of assigning an Internet Protocol (IP) address that never changes and is most likely assigned manually by a network administrator.

T Line: A high-speed fiber-optic communications line that is designed to provide much higher throughput than conventional voice (telephone) and data (DSL or cable) lines.

TCP/IP: The main suite of protocols used on the Internet.

Three-Way Handshake: A process used by the Transmission Control Protocol (TCP) to establish a connection.

Transmission Control Protocol (TCP): A protocol that prepares data for transmission and provides for error checking and resending lost data.

Transport Layer Security (TLS): A protocol that provides data integrity and security for transmissions over the Internet.

User Datagram Protocol (UDP): A protocol that prepares data for transmission but that has no resending capabilities.

Web Server: A computer running a specialized operating system that enables it to host Web pages (and other information) and provide requested Web pages to clients.