Terminology

Chapter 1

Why Are Words Important?

- Connection between language and thought
  - 1984 and Newspeak
  - Wine appreciation
- Communication with others
  - "The cup holder on my PC is broken"*
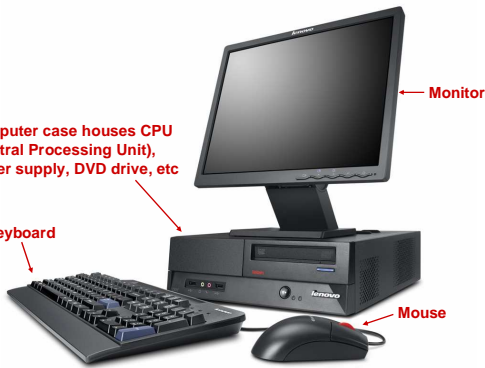 - Where is the computer?

* http://www.rinkworks.com/stupid/

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Where Is The Computer?

Monitor

Computer case houses CPU (Central Processing Unit), power supply, DVD drive, etc

Keyboard

Mouse

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Motherboard

card slots   **CPU socket**

- Circuit board containing most of the circuitry of a personal computer (PC) system

- Contains the **CPU** (**central processing unit**)—the part that does the computing
  - http://biorobots.cwru.edu/server/howto/buildcomp/mountcpu/

- Can extend functionality via **daughterboards** (more often called: **cards**)
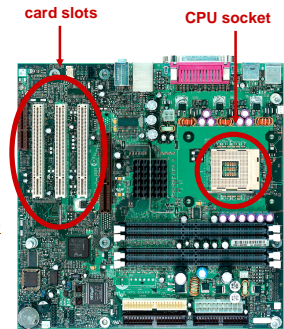
Figure 1.9 A computer motherboard.

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Buying A Computer

- What are you looking for in a computer?

5

Buying A Computer

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(Slide 7 — spec comparison)

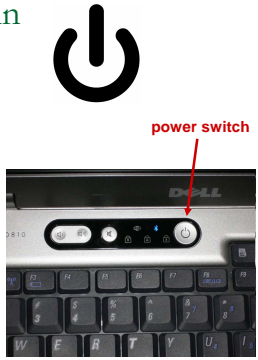| Inspiron 1525	Inspiron 1525	Studio 15	XPS M1530
Intel® Celeron® 560 (1MB cache/2.13GHz/533Mhz FSB)	Intel® Pentium® Dual Core T3200 (2.0GHz/667Mhz FSB/1MB cache)	Intel® Core™ 2 Duo T5800 (2.0GHz/800Mhz FSB/2MB cache)	Intel® Core™ 2 Duo T5800 (2.2GHz/800Mhz FSB/2MB cache)
Operating System Genuine Windows Vista® Home Basic Edition SP1	**Operating System** Genuine Windows Vista® Home Basic Edition SP1	**Operating System** Genuine Windows Vista® Home Premium Edition SP1, 64-bit	**Operating System** Genuine Windows Vista® Home Premium Edition SP1, 64-bit
LCD Panel Glossy, widescreen 15.4 inch display (1280x800)	**LCD Panel** Glossy, widescreen 15.4 inch display (1280x800)	**LCD Panel** Glossy, widescreen 15.4 inch display (1280x800)	**LCD, Color and camera** Glossy, widescreen 15.4 inch LCD (1280x800) & 2.0 MP Camera
Combo or DVD+RW Drive	Combo or DVD+RW Drive er (DVD+-RW)	Combo or DVD+RW Drive 8X Slot Load CD / DVD Burner (Dual Layer DVD+-R Drive)	Combo or DVD+RW Drive Slot Load DVD+-RW (DVD/CD read/write)
Dance Dance Revolution 2?			
Memory 2GB[2] Shared Dual Channel DDR2 (2 Dimms)	**Memory** 3GB[2] Shared Dual Channel DDR2 (2 Dimms)	**Memory** 3GB[2] Shared Dual Channel DDR2	**Memory** 4GB[3] Shared Dual Channel DDR2 SDRAM at 667MHz (2 Dimms)
Hard Drive Size: 120GB[4] SATA Hard Drive (5400RPM)	**Hard Drive** Size: 160GB[4] SATA Hard Drive (5400RPM)	**Hard Drive** Size: 250GB[4] SATA Hard Drive (5400RPM)	**Hard Drives** 500GB[4] SATA Hard Drive (5400RPM)
	What is SATA?		
Video Card Intel Graphics Media Accelerator X3100	**Video Card**	**Video Card** Intel Graphics Media Accelerator X3100	**Video Card** 256MB NVIDIA® GeForce® 8600M GT
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Battery Options 6 cell battery	**Battery Options** 6 cell battery		What's the difference between Wireless-N and 802.11g?
System Color Jet Black	**System Color** Jet Black	**System Color Option** Jet Black	**System Color** Tuxedo Black
Warranty & Service 1Yr Ltd Hardware Warranty[5]	**Warranty & Service** 1Yr Ltd Hardware Warranty[5]	**Hardware Support Services** 1Yr Ltd Hardware Warranty[5]	**Warranty & Service** 2Yr Ltd Hardware Warranty[5]

What Do All These Words Mean?

- How do you find out what these words mean?
  - Search online: Wikipedia, Google, etc…
    - Is the information reliable? (Future lecture)
  - Ask others

- Are they all important?
  - Not really, but there are some basic terms you should be familiar with.

Wiki

- **wiki**: page or collection of web pages designed to enable anyone who accesses it to contribute or modify content
  - "wiki wiki" means "quick" in Hawaiian

On Again, Off Again

- **boot**: start a computer

- **reboot** (or **power cycle**): restart a computer; turn off and then on again
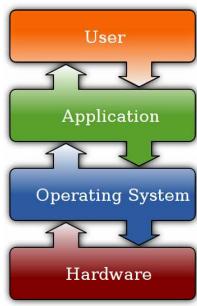
power switch

Hardware and Software

- **hardware**: physical devices

- **software**: computer programs (instructions for a computer)

Operating System

- **operating system** (**OS**): infrastructure software component of a computer system responsible for management and coordination of activities (e.g., operating the hardware) and the sharing of the limited resources (e.g., memory) of the system

User
Application
Operating System
Hardware

Operating System (cont'd)

- Examples:
  - Windows
  - Mac OS
  - Linux
  - Solaris

- Not limited to desktop and laptop computers: video game consoles, handheld devices (e.g., cell phones), etc…

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Hard Drive vs. Memory

- **hard drive**: persistent storage
  - Data does not disappear after you turn off the computer
  - "Long-term memory"

Figure 1.11 A hard disk.

- **memory**: where programs and their data reside while in use
  - Data not saved will be lost if the computer crashes
  - Also called RAM (Random Access Memory)
  - "Short-term memory"

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Byte

- **byte**: unit of measurement of information
  - Similar to gram for mass and watt for power
  - Use with standard prefix multipliers: kilobyte (KB), megabyte (MB), gigabyte (GB), terabyte (TB), petabyte (PB), etc…
    - **kilo**: 1,000
    - **mega**: 1,000,000
    - **giga**: 1,000,000,000
    - **tera**: 1,000,000,000,000
    - **peta**: 1,000,000,000,000,000
  - For more information, see: http://searchstorage.techtarget.com/sDefinition/0,,sid5_gci499008,00.html

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Byte (cont'd)

- How much information is in a byte?
  - To be addressed in a future lecture

- How much hard drive space do you need?
  - Depends on how you use your computer
    - 20-page English essay ~ 120 KB
    - Song ~ 5 MB
    - 30-minute TV episode ~ 200 MB
    - Compressed movie ~ 800 MB
    - DVD-quality movie ~ 4 GB

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Byte (cont'd)

- How much memory do you need?
  - Depends on how you use your computer
  - More RAM means more programs can be run simultaneously. Can also run more data-intensive software.
  - Running too many programs with not enough RAM will result in the computer grinding to a halt (or running painfully slow)
 - For most people (in 2009), 1-2 GB is sufficient.

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Need For Speed

- **clock rate** (or **clock speed**): fundamental rate in cycles per second (measured in **hertz**) at which a computer performs its most basic operations such as adding two numbers
  - Use with standard prefix multipliers: megahertz (MHz) and gigahertz (GHz)

- Comparisons only useful between computer chips in the same processor family
  - For example, clock speeds of an Intel 486 CPU is not directly comparable to a MIPS R4000.*

- Without knowing anything about processor families, 2.0 GHz or more should be fast enough for most people (in 2009).
  - My computer (1.6 GHz) could be faster, but it gets the job done.

*The processor family names are not important. You only need to know them if you really want the latest and greatest.

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Video

- **video card** (or **graphics card**): hardware component responsible for generating and outputting images to a display (e.g., monitor or TV)

- **pixel**: smallest displayable unit in an image (short for **pic**ture **el**ement)
  - Ken Rockwell, *The Megapixel Myth* (http://www.kenrockwell.com/tech/mpmyth.htm)
  - Factoid: In 3-D, the smallest unit is a **voxel** (**volumetric pixel**)
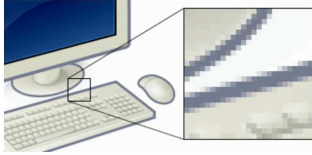
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Resolution

- **resolution**: number of pixels in each dimension that can be displayed, specified as width x height
  - Examples:
    - 1280x1024
    - 640x480
   - 1024x768 (maximum resolution of many projectors)

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Peripheral

- **peripheral**: external device connected to a computer whose functionality is dependent upon the computer
  - Examples:
    - printer
    - scanner
    - speaker
    - external hard drive

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USB vs. FireWire

- In the "old days", peripheral devices (such as printers, mice, and keyboards) each required special sockets.
- USB and FireWire standardized the interfaces.

USB
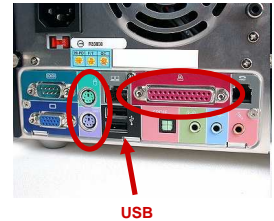
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USB vs. FireWire

- USB
- FireWire

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Drive

- **drive**: device that reads data and often writes data onto a storage medium
  - Examples:
    - hard drive
    - CD-ROM drive

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USB Flash Drive

- **USB flash drive**: portable rewriteable data storage device with a USB interface

- Also known as **USB stick**, **thumb drive**, or simply **flash drive**.

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Device Driver

- **(device) driver**: program that allows other programs to interact with a hardware device

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Do you understand most of the ad now?

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Battery Options 6 cell battery	**Battery Options** 6 cell battery	**Battery Options** 56 Whr Lithium Ion Battery (6	**Primary Battery** 56 Whr 6-cell Lithium Ion Primary

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