HARDWARE:

What is inside the Box?

Some of the components of a computer you look at every time you use a computer, other you have to open up the case to see.

All the parts of a computer, those you see and those you don't, can be divided into 4 categories based on the function they perform. Those categories are: Input Devices, Output Devices, Processors and Memory.

What is the function of each type of device?

Input Devices: Input devices give a computer new information. They help the computer to learn about the outside world, the wishes of the user (you) or what another computer knows.

Output Devices: Output devices tell the world what a computer knows. They show a user or another computer what the computer is working on or has discovered.

Processors: A processor computes all answers and makes all decisions for a computer. It tells all the other parts of a computer what to do and when. It does all this, yet it only knows how to add, and tell the difference between 0 and 1. The processor is often called the Central Processing Unit or CPU. Many computers only have one processor. More powerful computers will have several processors.

Memory: Memory is where the processor stores the program it is running and the information the program is using.

Can you name some input and output devices? Are there any devices which would fall in more than one category?

Table 1: All parts of a computer can be broken into 4 categories.

Input Device	Output Device	Processor	Memory
Keyboard	Monitor	Control or Central Processing Unit (CPU)	Random Acess Memory (RAM)
Floppy Disk Drive	Printer	Data path	Read Only Memory (ROM)
CD-ROM Drive	CDRW Drive		Magnetic Memory or Secondary Memory (Includes floppies and hard drives)
CDRW Drive	Floppy Disk Drive		
ZIP Disk Drive	Zip Disk Drive		
Tape Drive	Network / WWW		
Network / WWW	Speakers		
Digital Camera			

Processors

A Processor is made up of 2 main parts, the CONTROL UNIT and the DATAPATH.

Controll Unit - You can think of the Control Unit as the supervisor. She tells everyone what to do. The control unit takes the instructions (called the program) from the main memory and makes the computer do what the program says to do. The control is also responsible for planning what tasks get done when. It brings different programs into memory to be executed and gives each input and output device a turn to “speak” or run.

Datapath - The datapath is also controled by the Control Unit. The datapath is a well traveled highway. It is along the Datapath that numbers from the main memory travel and are processed. To be processed means that the control unit looks at them and either says “Yes, you are a 0”, “No, you are a 1”, or adds another number to them. The Datapath then returns the number or new number to main memory.

Memory

How does a computer decide what type of memory to use?
It makes tradeoffs!

Main Memory or RAM - Random Acess Memory - Very fast, but more expensive than secondary storage

Secondary Storage - i.e. Hard Disks - Cheaper and Slower.

Your computer has to decided how important retrieval speed is or how quickly it needs to be able to get to something. It puts things it uses a lot in the RAM and things it uses occasionally on a disk.

It is sort of like how you work when you are doing your homework. You puts the books and papers you need for a particular assignment closest to you on your desk. That way you can get to them quickly. If you suddenly need a dictionary, you would have to get up and go to the bookshelf. That is okay though, because you don’t need a dictionary too often. If you finish one assignment and start another you many need a completely different set of books, so you would put the old books on your desk back in you book bag. You would then put the new books on your desk. A computer works the same way. When it finishes one task it writes what is in the RAM to the disk, and then copies new information from the disk to the RAM before starting another task.