

## TuneFind Digital, No. 1

### Introductory: Learning about Your Computer's Basic Architecture

Remember how excited you were, when you used a word processor program on a computer for the first time! It was like when your dad took you to the ocean for the first time.

You said,

"Wow! it's so big and it roars."

Or when I heard my mom's bubbly voice on a cold winter day.

"Mi-chan!, look outside, it snows."

And I climbed to the window.

"Wow! it looks soft and fluffy, that's why it's so cold today."

And that was the first day I ever saw snow.

If your excitement was as big as these life changing experience, then your perceptions about the computer and my expectations about it are very similar. Yes, you can count on so many things on your computer. The more time you invest in learning about it, the more power you get. From another point of view, I see the computer as a giant conglomerate of languages. In expressing your desires through many functions like vocabularies, the computer does it for you, from word-processing, to graphics, to sound, and beyond.

Now, let us start looking at the very basics of the computer's functional architecture. The best way to do this, I dare say, is to get an extra cheap second-hand computer <sup>\*1)</sup> (so your precious computer stays safe from risks), and to beat up that computer many times, by tossing it up, slamming it down, erasing all system files, then reloading it. Until I experienced the first setup of system software on my computer by myself, I was always awkward about the computer because I was afraid of serious irreversible mistakes. Then, having experienced this process, my attitude changed. I have now beaten up all my precious computers fully.

**Words of the Most Importance:** Make sure to have the System Software (in floppies or CD-ROM) with your computer!

A micro-computer has three-functional layers. They are,

- Bottom layer: Hardware [motherboard with BIOS (basic input output system) and memory, hard disk, etc.]
- Middle layer: Operating system (such as MacOS, Microsoft-Windows)
- Top layer: Many Application programs (software) (such as from small WinZip to a big application Adobe Illustrator, etc.).

These three functional layers are easily understood, because the booting up process goes through from bottom to top. If something is wrong in hardware (bottom layer), the machine doesn't respond (black out). If something is wrong in Operating system, it may cause hanging-up in the middle of the booting process, or it only can get the DOS (disk operating system) prompt (C:\) with blinking cursor (in case of PC). Any of your daily working programs are

usually at the top layer, and if you want to install a new program, carefully check its compatibility with both underlying layers (middle layer Operating System compatibility and bottom layer Hardware compatibility). And you can't fix a lower layer without shutting down the upper functionality, while the top most layer should be manipulatable while running Operating System. If you want to overhaul the lower layers' functionality, depend on a case you may need to reload all Application programs (top layer) again.

When you start using a computer for the first time, you will inevitably have some errors along the way. When you first get an error message, think about **which layer** it comes from, top Application program layer, the middle Operating System, or from the bottom hardware layer. The more precisely you can locate the error's root, the more easily and quickly the error problem can be fixed.

Here are quick tries in case of some stubborn errors.

- (1) Reset or Turn off-then-on the computer's electricity for restart.
- (2) [Ctrl] + [Alt] + [Del], push 3-keys all together for restart (for a PC).  
and watch carefully the messages on the screen.

It is nice to have a few notes about two major functional components on hardware: **memory** and **hard disk**. This topic is covered somewhere else \*2), but here are added notes. On a hard disk, digital information is recorded magnetically, whereas at memory board it is handled by electronically. A typical piece of unit for digital information is 8 bits, and 1 bit is either 0 or 1 in computer's terminology. Thus, a unit of 8 bits of digital information is written in 8 digits such as "01000001", and this set (8 bits) is called 1 byte, and it is like a piece of brick in architecture. Most western language characters are 1 byte size, and the above "01000001" represents "A" character on the screen. While hard disk can have big digital spaces (as big as several hundreds mega bytes to many giga bytes), memory can only handle a dozen mega bytes to a few hundred mega bytes and is occasionally a limiting factor for certain memory consuming application programs, such as graphics.

\*1) A few ways for getting a second-hand computer: [www.recycler.com](http://www.recycler.com); [www.ebay.com](http://www.ebay.com); [www.dollarcomputer.com](http://www.dollarcomputer.com).

\*2) In "Savvy Leaflet" (No.1), which will be available in print at your local community place.