Functionality of bios 247 essay

What is the function of BIOS chips? I have often wondered this. How did they come about? How do they work? Yes, BIOS chips have been a bit of a mystery. I will research this and see if I can understand them a bit more by doing so.

“ The ROM BIOS chip transfers information from the keyboard into computer language of zeros and ones.” This was the first thing I came across while searching for a true definition of a BIOS chip. The location of this was on the discovery channel’s page, and it seemed to be meant for children, so I decided that this must have been a *very* simplified explanation, to give children a general gist of what it does. I disagree with teaching children this way, for if they ever become a computer science major they will have to be untrained of this illusion (but that is a separate paper entirely).

“ The problem with the year 2000 is that the BIOS in many of today’s PCs operates under a date format that uses two digits to represent and store the year, so they will falsely claim that the year 2000 (or 00) falls before the year 1999 (or 99). If a computer’s system clock reads the date incorrectly, then all mission-critical applications, all file time stamping, and even scheduled backups are predicted to fail. But this problem will not afflict the Macintosh. Since it’s introduction, the Macintosh has had the ability to correctly handle the year 2000 and beyond. The Macintosh operating system uses a 32-bit value to store seconds, meaning that the Macintosh clock will work correctly until the year 2040.” The “ Year 2000 problem” is something I had heard of as well, but I was unclear of. Apple’s web page did a nice job of explaining it, but once again, I don’t know how effective it is to listen to a company who is in competition with IBM compatible machines.

Perhaps I should refine my search constraints a bit more and see what happens.

I managed to find a web page belonging to a BIOS manufacturer. Their web page was very helpful for me. From their web page, I found that BIOS stands for Basic Input and Output System. “ Because it is stored in a Read-Only Memory (ROM) chip on the motherboard, it is sometimes call the ROM BIOS. The BIOS is the first program to run when you turn on the computer. It initializes and tests the hardware in your computer (a process called POST for Power On Self Test). Finally, after everything is running, the BIOS program loads and runs your operating system. Another function of the BIOS is to run Setup for making changes in your computer. A third function of the BIOS is to help operating systems and application programs manage the hardware by means of a set of routines called BIOS Run-Time Services.” This is what I consider to be a lot more helpful than the earlier quotes I managed to find. This quote is from a technical page, and does clear up some things. The reason I chose the BIOS research was so that I would learn more about what BIOS is, and now I realize that the setup is not the BIOS, but only a part of it. I see that it is integrated into a few parts.

As a part of the BIOS, the setup will allow you to change the setting on your computer. There are many options in setup, many of which I don’t understand. I have a pretty good knowledge of BIOS setup, but many of the options I still do not understand and am kind of afraid of (for example, LBA mode). There are many fine tuning options you can set there, such as power on number lock, and more important items contained within, such as hard drive type and the like. Somewhat recently, the release of “ plug and play

BIOS” led me to believe the BIOS was only made up only of the part I know now as the setup, but I understand the “ plug and play” does not necessarily describe the whole BIOS, but the setup. Plug and play BIOS contains more advanced settings than the older setup programs did. Once again, from their web site, I found a huge list of improvements to AMIBIOS; their new version called AMIBIOS 98. “ There is boot support for the operating system from a variety of bootable devices, including HDD, FDD, DVD, CD-ROMs, or a Removable High-Capacity Floppy such as LS-120, ZIP and MO drives. AMIBIOS 98 offers full support for the Universal Serial Bus (USB) standard. USB technologies allows users to quickly and easily attach and reconfigure a wide range of peripheral devices, from keyboards to printers to monitor devices. WINBIOS Icon-Based BIOS Setup Interface Provides Easy Access and Configuration of System Parameters, and BIOS Anti-Virus Boot Track Protection is also implemented. Also implemented was enhanced IDE Support, supporting devices such as CD-ROMs, Zip Drives, and LS 120 Floptical drives. There is a Large Mode Hard Disk Auto Detect and Auto Configuration up to 4 Drives.” Much of this was paraphrased, since the page had things in list form, and much of the material contained was not as impressive as the highlights chosen. The multiple boot support is very impressive to me. In Macintosh systems, booting off a CD-ROM drive is possible. However, I did not even realize that function is now also available on the IBM compatible side. The Universal Serial Bus also seemed to me to be a great improvement over earlier BIOS. Built in BIOS virus scanning and an icon based setup will make things a lot easier for people who don’t know what they are doing, people who would usually have to call technical support lines to figure out how to even USE the BIOS. Enhanced IDE support is

definitely a plus as well, with the new technologies available today. And the multiple drive configurations is something that will save people a lot of trouble as well. So, what did I take from this? Well, the main idea that I came up with was that the BIOS is not unlike any other computer component. Whereas one day an 8X CD-ROM drive is top of the line, the next week it can pale in comparison to a 24X CD-ROM. The setup is one part of the BIOS that epitomizes the rest of it. Just as other components evolve, so do the parts of the BIOS, working towards a better BIOS overall (though not as rapidly as other components have evolved). The BIOS setup is also something I learned was a very complex thing, which is important to a computer beyond what I thought. I also drew from this that the BIOS is the program an IBM compatible’s microprocessor uses to get the computer system started after one turns it on. It also manages data flow between the computer’s operating system and attached devices such as the hard disk, video card, keyboard, mouse, and printer. Basically, if we are to relate to the human body, BIOS is the backbone of the computer. Also, the operating system does not have to have hardware addresses and the like programmed into it, for the information is contained within the BIOS. When device details change, only the BIOS program needs to be changed, in most cases, during your system setup. Neither the operating system nor any applications one uses need to be changed. BIOS is also the main intermediary between the microprocessor and I/O device control information and data flow, though in some cases, BIOS can arrange for data to flow directly to memory from devices (such as video cards) that require faster data flow to be effective.

From what was said in our class one day, the BIOS is the first thing contacted when one turns a computer on. All it takes is a 0 turning into a 1 and the BIOS takes over from the microprocessor. How does the microprocessor contact the BIOS? Well, BIOS is a made accessible to the microprocessor on an EPROM (Erasable Programmable Read-Only Memory) chip. When one turns on a computer, the control lies with the BIOS program, which is always located at the same place on EPROM. When BIOS starts up the computer, first it will determine if all of the attachments are in place and operational (keyboards, memories, hard and floppy disk drives, etc. Basically, the information contained within the setup). After verifying this, it loads the operating system, which then assumes command from the BIOS.

Basically, what the BIOS is is a link from the microprocessor to the operating system. The BIOS will allow a computer's operating system to concentrate on more complex things than what memory addresses are reserved for the video card, or what type of hard drive is installed. The BIOS is a necessary component, separating some complex things from the operating system, and keeping it stored in a safe place (in case of a hard drive crash, where would the computer's information be?). Basically, the BIOS is an integral part of a computer. Whoever invented BIOS saved computer programmers a lot of time.

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