# Computer Troubleshooting Tutorial

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

# TABLE OF CONTENTS

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

# Chapter 1: Getting Started

## WHAT IS A COMPUTER?

Computer is a programmable machine that responds to a specific set of instructions in a well-defined manner and executes prerecorded instructions. It receives input, stores and manipulates data and provides output.

## COMPONENTS OF A COMPUTER

**HARDWARE** refers to the tangible part of the computer or parts of the computer that you can touch.

**SOFTWARE** refers to the set of instructions or program codes that instruct hardware to perform the tasks example: Windows Operating System (OS), Android OS, MAC OS, MS Office. It is the intangible part of the computer.

## TYPES OF SOFTWARE

- **Application software** uses the computer system to perform useful work or provide entertainment functions beyond the basic operation of the computer itself. **Examples**: MS Word, MS Powerpoint, MS Excel, Acrobat Reader, Fireworks, Paint
- **System software** is designed to operate the computer hardware, to provide basic functionality, and to provide a platform for running application software System software includes:
    - o **Operating systems** are essential collection of computer programs that manages resources and provides common services for other software. Supervisory programs, boot loaders, shells and window systems are core parts of operating systems. In practice, an operating system comes bundled with additional software (including application software) so that a user can potentially do some work with a computer that only has an operating system. **Examples:** Windows Operating System (OS), Android OS, MAC OS
    - o **Device drivers** are computer programs that operates or controls a particular type of device that is attached to a computer. Each device needs at least one corresponding device driver; thus a computer needs more than one device driver. **Examples:** video card and LAN card drivers
    - o **Utilities** are software designed to assist users in maintenance and care of their computers. **Examples:** Anti-virus, firewall, anti-spyware

References:

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

- **Malicious software** or **malware** are computer software developed to harm and disrupt computers. As such, malware is undesirable. Malware is closely associated with computer-related crimes, though some malicious programs may have been designed as practical jokes. Examples: virus, worms, spyware, key loggers, Trojan horse.

## TYPES OF COMPUTERS

**SUPERCOMPUTERS** are very large computers with thousands of linked microprocessors that perform extremely complex calculations.

**MAINFRAME COMPUTERS** are computers used primarily by corporate and governmental organizations for critical applications, bulk data processing such as census, industry and consumer statistics, enterprise resource planning and transaction processing.

**MINI COMPUTERS** are midsized computers. In size and power, minicomputers lie between workstations and mainframes. In the past decade, the distinction between large minicomputers and small mainframes has blurred, however, as has the distinction between small minicomputers and workstations. But in general, a minicomputer is a multiprocessing system capable of supporting from 4 to about 200 users simultaneously.

**MICRO COMPUTER/PERSONAL COMPUTER** is commonly referred as PC. The first personal computer produced by IBM was called the PC, and increasingly the term PC came to mean IBM or IBM-compatible personal computers.

A **PC** is a general-purpose computer, whose size, capabilities and original sale price makes it useful for individuals, and is intended to be operated directly by an end-user with no intervening computer operator. It is also called micro computer

## KINDS OF PERSONAL COMPUTERS

**DESKTOP COMPUTERS** is a computer designed to fit comfortably on top of a desk, typically with the monitor sitting on top of the computer. Desktop model computers are broad and low, whereas tower *model* computers are narrow and tall. Because of their shape, desktop model computers are generally limited to three internal mass storage devices. Desktop models designed to be very small are sometimes referred to as slim line *models*

References:

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

**LAPTOP** is a small, portable computer -- small enough that it can sit on your lap. Nowadays, a computer laptop is more frequently called a *notebook computer*, though technically laptops are somewhat larger in size than notebooks in both thickness and weight.

**NETBOOK** is an extremely lightweight personal computer. Notebook computers typically weigh less than 6 pounds and are small enough to fit easily in a briefcase.

**SMART PHONES** are a handheld device that integrates mobile phone capabilities with the more common features of a handheld computer or PDA. Smart phones allow users to store information, e-mail, install programs, along with using a mobile phone in one device. For example a Smartphone could be a mobile phone with some PDA functions integrated into the device, or vise versa.

**HANDHELD COMPUTERS OR PERSONAL DIGITAL ASSISTANTS (PDAS)** are pen-based and also battery-powered. They are small and can be carried anywhere. They use a pen like stylus and accept handwritten input directly on the screen. They are not as powerful as desktops or laptops but they are used for scheduling appointments, storing addresses and playing games. They have touch screens which we use with a finger or a stylus.

**TABLET PC** is a type of notebook computer that has an LCD screen on which the user can write using a special-purpose pen, or *stylus*. The handwriting is digitized and can be converted to standard text through handwriting recognition, or it can remain as handwritten text.

## BASIC PARTS OF PERSONAL COMPUTER

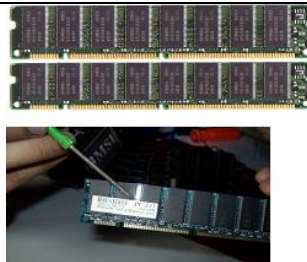| NAME | DESCRIPTION |
|------|-------------|
| **CASE** | <br>The computer case is used to physically mount the components of the computer. Cases typically come bundled with a power supply. It is also called CPU box or Tower case. |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

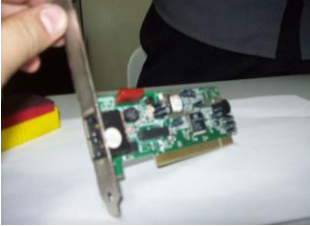| | |
|---|---|
| **MOTHERBOARD** | <br><br>The motherboard is the main circuit board of the computer and is also known as the main board or logic board. When you open the case of the computer, the biggest piece of silicon that you will see is the motherboard. Attached to the motherboard are the central processing unit (CPU), Read Only Memory (ROM), Random Access Memory (RAM), expansion slots, Peripheral Component Interconnect (PCI) slots, and Universal Serial Bus (USB) ports. It also includes controllers for devices like the hard drive, DVD drive, keyboard and mouse. Basically, the motherboard is what makes everything in your computer work together or **carries all the load.** |
| **MEMORY** | <br><br>Stands for "Random Access Memory," and is pronounced like the male sheep. RAM is made up of small memory chips that form a memory module. These modules are installed in the RAM slots on the motherboard of your computer.<br><br>Every time you open a program, it gets loaded from the hard drive into the RAM. This is because reading data from the RAM is much faster than reading data from the hard drive. The more RAM, the more data can be loaded from the hard drive into the RAM, which can effectively speed up your computer. |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

| | |
|---|---|
| **SOUND CARD** |   The sound card is a component inside the computer that provides audio input and output capabilities. Most sound cards have at least one analog line input and one stereo line output connection. The connectors are typically 3.5 mm mini jacks, which are the size most headphones use. Some sound cards also support digital audio input and output, either through a standard TRS (tip-ring-sleeve) connection or via an optical audio port, such as Toslink connector. |
| **VIDEO CARD** |   Video cards, also called graphics accelerators, can speed up both 2D and 3D graphics rendering. Programs such as photo editors and Web browsers may benefit from 2D acceleration, while CAD design programs and video games will most likely benefit from the card's 3D acceleration. Some programs rely so heavily on the video card, that they will not run if a supported video card is not installed. |
| **MODEM** |   The word modem is actually short for Modulator/Demodulator. A modem is a communication device that can be either internal or external to your computer. It allows one computer to connect another computer and transfer data over telephone lines. The |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com
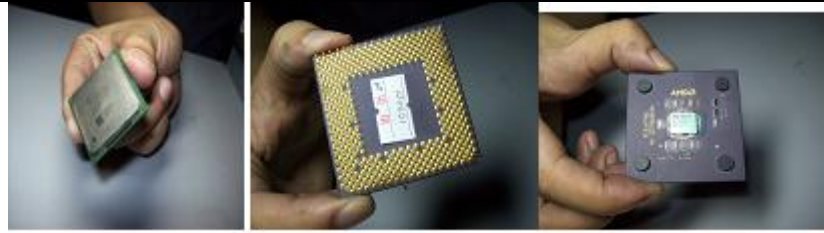
| | |
|---|---|
| | original dial-up modems are becoming obsolete because of their slow speeds and are being replaced by the much faster cable and DSL modems. |
| **NETWORK INTERFACE CARD/LAN CARD** | <br><br>The LAN Card is a 'door' to the network from a computer. Any type of network activity requires a LAN Card - the Internet, network printer, connecting computers together. |
| **COMPUTER MONITOR** | <br><br>The term "monitor" is often used synonymously with "computer screen" or "display." The monitor displays the computer's user interface and open programs, allowing the user to interact with the computer. Older computer monitors were built using cathode ray tubes (CRTs), which made them rather heavy and caused them to take up a lot of desk space. Most modern monitors are built using LCD technology and are commonly referred to as flat screen displays. |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

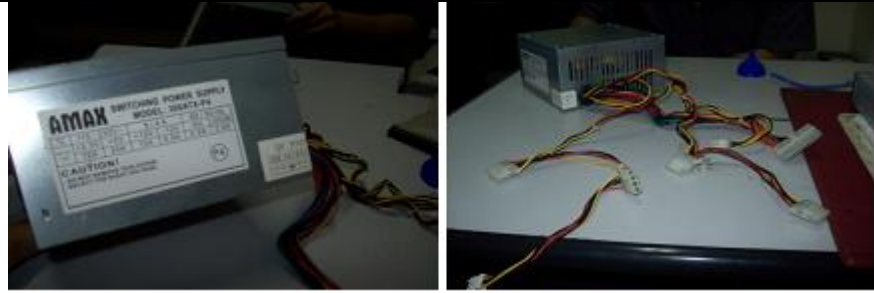| **PROCESSOR** | <br><br>A processor, or "microprocessor," is a small chip that resides in computers and other electronic devices. Its basic job is to receive input and provide the appropriate output. While this may seem like a simple task, modern processors can handle trillions of calculations per second.<br><br>The central processor of a computer is also known as the CPU, or "central processing unit". It is the brain of the computer. It has two parts namely: **Arithmetic Logic Unit (ALU)** and **Control Unit (CU).**<br><br>The **ALU** is a digital circuit that calculates an arithmetic operation (addition, subtraction, etc.) and logic operations (Exclusive Or, AND, etc.) between two numbers. The ALU execute the mathematical and logical operation in the computer.<br><br>The **CU** is the circuitry that controls the flow of information through the processor, and coordinates the activities of the other units within it. |
|---|---|
| **CPU FAN** | <br><br>The fan is used to expel warm air from inside or move air across a heat sink to cool down the processor. Without a CPU fan, the processor might overheat and burn up. |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

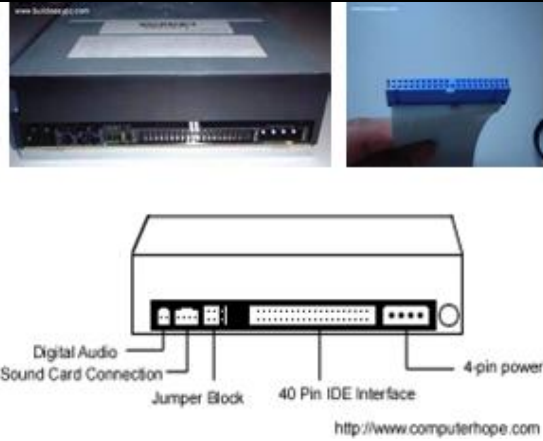| **POWER SUPPLY** |  |
| --- | --- |
| | A power supply is a hardware component that supplies power to an electrical device. It receives power from an electrical outlet and converts the current from AC (alternating current) to DC (direct current), which is what the computer requires. It also regulates the voltage to an adequate amount, which allows the computer to run smoothly without overheating. The power supply an integral part of any computer and must function correctly for the rest of the components to work. |
| **FLOPPY DRIVE** |  |
| | The floppy drive reads data from and writes data to a small disk. The most common type of floppy drive is the 3.5" drive and the 5.25" drive. The floppy drive is completely obsolete. |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

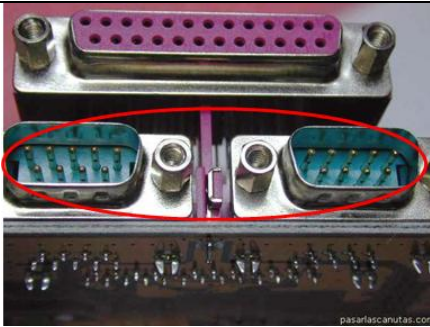| | |
|---|---|
| **CD AND DVD ROM DRIVE** |  CD stands for "Compact Disc Read-Only Memory" and DVD stands for " Digital Video Disc" or Digital Versatile Disc"". The "ROM" part of the term means the data on the disc is "read-only," or cannot be altered or erased. Because of this feature and their large capacity, CD and DVD are great media format for retail software. |
| **HARD DRIVE** |  The hard drive is what stores all your data. It houses the hard disk, where all your files and folders are physically located. A **typical hard drive** is slightly larger than your hand, yet can hold over hundreds of gigabytes (GB) of data. The data is stored on a stack of disks that are mounted inside a solid encasement. |
| **KEYBOARD** |  |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| | |
|---|---|
| | A keyboard is basically a board of keys. Along with the mouse, the keyboard is one of the primary input devices used with a computer. The keyboard's design comes from the original typewriter keyboards, which arranged letters and numbers in a way that prevented the type-bars from getting jammed when typing quickly.<br><br>This keyboard layout is known as the QWERTY design by Christopher Sholes, which gets its name from the first six letters across in the upper-left-hand corner of the keyboard.<br><br>The standard 101/102-key PC keyboard layout was invented by Mark Tiddens of Key Tronic Corporation in 1982 while the standard Microsoft keyboard has 104/105-keys. |
| **INTEGRATED DRIVE ELECTRONICS (IDE) CABLE** | <br><br>It is a standard type of connection for storage devices in a PC. Generally, it refers to the types of cables and ports used to connect some hard drives and optical drives to the motherboard. |
| **SERIAL ADVANCED TECHNOLOGY ATTACHMENT OR "SERIAL ATA"** (**SATA) CABLE** | <br><br>It is an interface used to connect ATA hard drives to a computer's motherboard. SATA transfer rates start at 150MBps, which is significantly faster than even the fastest 100MBps ATA/100 drives. For this and other reasons, Serial ATA is likely to replace the previous standard, Parallel ATA (PATA), which has been around since the 1980s. |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
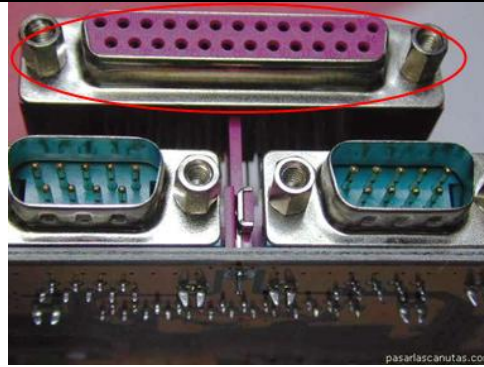"Computer POST and beep codes" from www.computerhope.com

| | |
|---|---|
| **MOUSE** |  The mouse is one of the primary input devices used with today's computers. The name comes from the small shape of the mouse, which you can move quickly back and forth on the mouse pad and the cord, which represents the mouse's tail. If you are using a wireless mouse, the analogy does not work so well. The term mouse is not an acronym. The mouse was invented by Douglas C. Engelbart around 1964 who named it for its resemblance to that rodent with its long tail. Yet some claim that mouse is an acronym for **Manually-Operated User-Select Equipment**. The globally accepted plural form of mouse are mice, mouses and mouse devices. |
| **SERIAL PORT** |  The serial port is a type of connection on PCs that is used for peripherals such as mice, gaming controllers, modems, and older printers. It is sometimes called a COM port or an RS-232 port. There are two types of serial ports -- DB9 and DB25. DB9 is a 9-pin connection, and DB25 is a 25-pin connection. |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

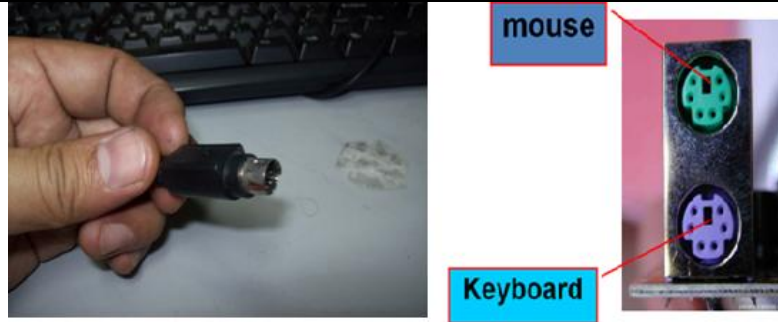| | |
|---|---|
| **PARALLEL PORT** |  |
| | This interface is found on the back of older PCs and is used for connecting external devices such as printers or a scanners. It uses a 25-pin connector (DB-25) and is rather large compared to most new interfaces. The parallel port is sometimes called a Centronics interface, since Centronics was the company that designed the original parallel port standard. It is sometimes also referred to as a printer port because the printer is the device most commonly attached to the parallel port. |
| **UNIVERSAL SERIAL BUS (USB) PORT** |  |
| | USB is the most common type of computer port used in today's computers. It can be used to connect keyboards, mice, game controllers, printers, scanners, digital cameras, and removable media drives, just to name a few. With the help of a few USB hubs, you can connect up to 127 peripherals to a single USB port and use them all at once. USB is also faster than older ports, such as serial and parallel ports. |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

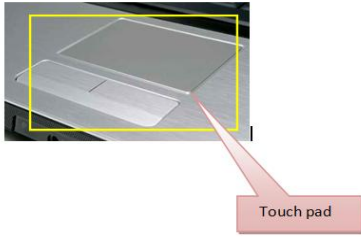| PS/2 PORT | |
|---|---|
| |  PS/2 is a type of port used by older computers for connecting input devices such as keyboards and mice. The port was introduced with IBM's Personal System/2 computer in 1987 (which was abbreviated "PS/2"). In the following years, the PS/2 port became the standard connection for keyboards and mice in all IBM compatible computers.<br><br>The PS/2 port has six pins and is roughly circular in shape. Since each PS/2 port is designed to accept a specific input, the keyboard and mouse connections are typically color-coded. For example, the keyboard port on the back of the computer is often purple, while the mouse port is usually green. Similarly, the connector on the end of the keyboard cord is purple and the mouse cord connector is green. This makes it easy for all users to know where to plug the cables into the computer.<br><br>If you are using a PS/2 device, it is best to turn off the computer before connecting or unplugging a keyboard or mouse. |
| **IBMTRACK POINT** |  The TrackPoint is IBMs name for the stick that sits between the g, h and b keys of the keyboard. It is used as a pointing device and hence as an alternative to an external mouse or a touchpad. |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| | |
|---|---|
| **TOUCH PAD** | <br><br>A **touchpad** or **trackpad** is a pointing device featuring a tactile sensor, a specialized surface that can translate the motion and position of a user's fingers to a relative position on the operating system that is outputted to the screen. Touchpads are a common feature of laptop computers, and are also used as a substitute for a mouse where desk space is scarce. Trackpad are also available as detached accessories. |
| **TABLET PEN (STYLUS)** | <br><br>A computer input device that enables a user to hand-draw images, animations and graphics, similar to the way a person draws images with a pencil and paper. |
| **TOUCH SCREEN** | <br><br>An electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with a special stylus/pen and-or one or more fingers. |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| **PRINTER** | |
|---|---|
| |  *laser printer* A printer is any device that prints text or illustrations on paper. Categories of printer: • **daisy-wheel**: Similar to a ball-head typewriter, this type of printer has a plastic or metal wheel on which the shape of each character stands out in relief. A hammer presses the wheel against a ribbon, which in turn makes an ink stain in the shape of the character on the paper. Daisy-wheel printers produce letter-quality print but cannot print graphics. • **dot-matrix**: Creates characters by striking pins against an ink ribbon. Each pin makes a dot, and combinations of dots form characters and illustrations. • **ink-jet**: Sprays ink at a sheet of paper. Ink-jet printers produce high-quality text and graphics. • **laser**: Uses the same technology as copy machines. Laser printers produce very high quality text and graphics. • **LCD & LED :**Similar to a laser printer, but uses liquid crystals or light-emitting diodes rather than a laser to produce an image on the drum. |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| | |
|---|---|
| | • <u>**line printer**</u>: Contains a chain of characters or pins that print an entire line at one time. Line printers are very fast, but produce low-quality print.<br><br>• <u>**thermal printer**</u>: An inexpensive printer that works by pushing heated pins against heat-sensitive paper. Thermal printers are widely used in calculators and fax machines. |
| **COMPUTER SPEAKER/MULTI-MEDIA** | <br><br>These are speakers external to a computer, that disable the lower fidelity built-in speaker. They often have a low-power internal amplifier. The standard audio connection is a 3.5 mm (approximately 1/8 inch) stereo phone connector often color-coded lime green (following the PC 99 standard) for computer sound cards. |

## <u>STORAGE DEVICES</u>

**HARD DISK** is a magnetic disk use to store computer data. The term hard is used to distinguish it from a soft, or *floppy,* disk. Hard disks hold more data and are faster than floppy disks. A hard disk, for example, can store anywhere from 10 to more than 4 terabytes, whereas most floppies have a maximum storage capacity of 1.4 megabytes. It can be either internal or external to your computer.

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

**CD** is a type of optical disk capable of storing large amounts of data -- up to 1GB, although the most common size is 650MB (megabytes). A single CD-ROM has the storage capacity of 700 floppy disks, enough memory to store about 300,000 text pages.

**DVD** is a type of optical disk technology similar to the CD-ROM. A DVD holds a minimum of 4.7GB of data, enough for a full-length movie. DVDs are commonly used as a medium for digital representation of movies and other multimedia presentations that combine sound with graphics.

**FLOPPY     DISK** drives     store     information     on **floppy     disks**,     also called **floppies** or **diskettes**. Compared to CDs and DVDs, floppy disks can store only a small amount of data. They also retrieve information more slowly and are more prone to damage. For these reasons, floppy disk drives are less popular than they used to be, although some computers still include them.
They are called "floppy" disks because the outside is made of hard plastic and the disk inside is made of a thin, flexible vinyl material.

**USB FLASH DISK** is a data storage device that includes flash memory with an integrated Universal Serial Bus (USB) interface. It is typically removable and rewritable and physically much smaller than an optical disc. Most weigh less than 30 grams (1.1 oz). As of January 2013, drives of up to 512 gigabytes (GB) were available. A one-terabyte (TB) drive was unveiled at the 2013 Consumer Electronics Show and became available later that year.

**SECURE DIGITAL CARD (SD CARD)** is a kind of memory card. These are often used to store images or data in digital cameras. As of 2008, different capacities between 4 Megabytes and 32 gigabytes have been made. The card has a rectangular design, but one edge is *chipped off*. This means that the cards cannot be inserted into the cameras (or other devices) the wrong way.

**There are different kinds of cards:**

- Those labeled *SD*, with capacities up to 2 GB
- Those labeled *SDHC*, with capacities between 4GB and 32GB
- Those labeled *SDXC*,which capacities of up to 2 TB.

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

SD and SDHC are not compatible, but devices that accept SDHC also accept SD cards. The interface of SDHC and SDXC cards is the same, but SDXC uses a different file system.
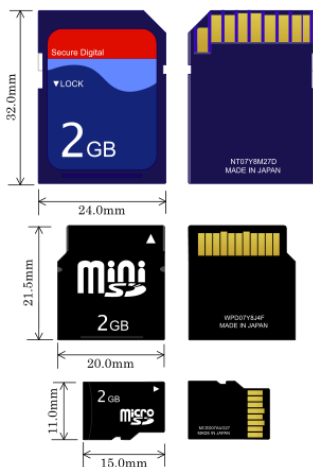
*Classes of SD Card* - refers to the read and write speeds.

- *Class 2* - which means 2 MBytes/second,
- *Class 4* - 4 MB/sec and *Class 6* at 6 MB/sec.

**microSD** is a kind of removable flash memory card used for storing information. SD is an abbreviation of Secure Digital. The cards are used in mobile phones. They are also used in newer types of handheld GPS devices, portable media players, digital audio players, expandable USB flash drives, Nintendo DS flashcards, and digital camera.

It is the smallest memory card that can be bought; at 15 mm × 11 mm × 1 mm (about the size of a fingernail), it is about a quarter of the size of a normal-sized SD card. There are adapters that make the small microSD able to fit in devices that have slots for standard SD, minSD, Memory Stick Duo card, and even USB.

TransFlash and microSD cards are the same and can be used in place of each other.

An SD card, miniSD card, and microSD card

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

## Chapter 2: Basic Computer Troubleshooting

### COMPUTER FREEZES OR LAGS

- Press the **Ctrl & Alt & Del** keys on your keyboard. Task Manager will pop up.
- In the Task Manager, click the Applications tab.
- Highlight the "not responding" program/s with the status 'Not Responding' and choose End Task.
- Click "Yes" to confirm your action.
- Do this for all programs that are not responding.
- If the above steps failed, restart your computer
- If you cannot shutdown/restart your computer, then hold down the power button on the machine until it forcibly turns off. Wait a few seconds and then turn it back on again.
- You may unplug your computer,
- Plug it again
- Switch it on.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

### NO POWER

- Check if all the cables are securely plugged into the back of the machine and the monitor.
- Check if the power cables are plugged into a power socket and the socket has been turned on.
- Try using a different power socket
- If you are using a power extension, replace the extension or plug the power cable directly into a power socket in the wall.
- Try to replace the power of your computer.
- Check all the light indicator in the system unit:
    - If there are lights on the case but not the monitor, then it's probably a monitor issue.
    - If there are lights on the monitor but not the case, then it's probably a machine issue.
    - If there are no lights on anything, then it may be possible there is a local power cut.
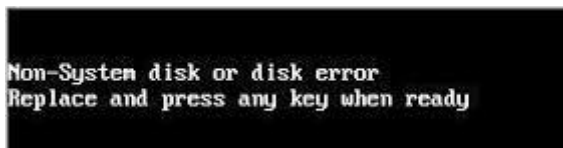
**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

- With laptops, try removing the power cable and the battery. Hold down the power button for about ten seconds, and then plug the battery and power cable in again. Press the power button to see if it switches on.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## NO DISPLAY ON THE MONITOR/SCREEN

- Check if both the computer and monitor are on.
- Check if the monitor is securely plugged into the computer.
- Check if the power cable is firmly plugged into the monitor.
- Some computers have multiple display ports, so make sure you have plugged the monitor into the correct one. Try each one in turn, switching the monitor off then on in between moves.
- Check the brightness & contrast levels of the monitor via the menu button, to make sure it has not been set too dark.
- Move the mouse or press any key on the keyboard to make sure the screensaver is not on or that the computer is not on standby, hibernation/sleep mode.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## NON-SYSTEM DISK OR DISK ERROR



```
Non-System disk or disk error
Replace and press any key when ready
```

- Remove any floppy disks, CD/DVD discs and USB memory sticks or external hard drives and try booting up again.
- If you hear unusual noise, power off the computer.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## KEYBOARD/MOUSE ERROR

- Check if the keyboard/mouse is firmly plugged into the correct ps2/usb port of the computer.
- Try to unplug the mouse or the keyboard, then reinsert it back into computer.
- Try to plug your USB keyboard/mouse into a different USB socket.

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

- Replace the keyboard/mouse.
- Press Caps Lock and/or Num Lock on your keyboard, if the indicators did not light up, your keyboard might be busted.
- If you are using a wireless keyboard/mouse, try pressing the reset button on the device or replace the batteries.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## BLUE SCREEN OF DEATH

- Windows may automatically restart after displaying a blue screen, as shown below. You may also get a Windows startup menu upon reboot. Choose 'Start Windows Normally'.



- If Windows hasn't automatically restarted after displaying a blue screen, force restart your computer. If your computer has restarted, select the "start windows normally.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752.

## WINDOWS DOES NOT START SUCCESSFULLY OR REPEATEDLY DISPLAYS BLUE SCREEN

- When you turn on the computer, press the F8 key on your keyboard repeatedly until you get a Windows startup menu (same as to the image above). Choose to start Windows in 'Safe Mode'. If Windows boots up and you can login, restart Windows and let it boot as normal which may resolve the problem.
- When you turn on the computer, press the F8 key on your keyboard repeatedly until you get a Windows startup menu (same as the image above). Choose 'Last Known Good Configuration', which will try and load Windows with the settings that last worked successfully.
- Run system restore.

*References:*

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

- o System Restore is a feature of Windows can restore your machine to an earlier point or from the time  of last known configuration or before the time before you started experiencing problems.
  - o System Restore will **not** delete any of your personal files or documents.
  - o To acces System Restore,
  - o Go to: Start -> All Programs -> Accessories -> System Tools -> System Restore.
  - o Choose a date and restore point that you would like Windows to restore to. You should choose a date that is before the time you started experiencing the problems.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## CANNOT BOOT INTO WINDOWS

- In Windows Vista/7: Press F8 repeatedly at boot until you get the Windows startup menu. One of the entries in the menu is 'Repair your computer'. This may also be shown automatically as an option if Windows failed to start correctly last time around:
- In Windows XP: Press F8 repeatedly at boot until you get the Windows startup menu. Choose 'Safe Mode with Command Prompt. You will need to type in a local administrator username and password. Then type in: **%systemroot%\system32\restore\rstrui.exe** and press return.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## CANNOT LOGIN TO WINDOWS

- Check the Caps Lock or Num Lock.
- Check if your typing the right by typing it into the username box or in notepad or word. This will allow you to see what you are typing.
- Check that the 'Logon to' box shows the right domain (example cs_mdom or this computer).
- Check if the  network cables are plugged securely.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

References:

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

## CANNOT ACCESS THE INTERNET OR WEB BROWSING IS SLOW/INTERMITTENT

- Check if all the Internet peripherals are plugged securely.
- Turn off or reset your modem and router. Count from 1 to 15 before turning on.
- Restart your computer.
- Call your Internet Service Provider.
- For slow internet access, upgrade your Internet subscription example: from 512 kbps to 1 mbps or higher or from DSL to lease line.
- For wireless internet, position your modem/router in an open area or a place where there is better internet signal.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## CANNOT ACCESS E-MAIL

- Check the Caps Lock or Num Lock.
- Check if your typing the right by typing it into the username box or in notepad or word. This will allow you to see what you are typing.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## ISSUES WITH MICROSOFT OFFICE

- For Office 2007, run the Microsoft Office Diagnostics tool:
  - o Click on Start -> All Programs -> Microsoft Office -> Microsoft Office Tools -> Microsoft Office Diagnostics.
  - o Click on Continue to start the tests and repair any problems found.
- For Office 2010, run the Repair tool:
  - o Click on Start -> Control Panel -> Programs & Features (or Add/Remove Programs in Windows XP).
  - o Click on 'Microsoft Office Professional Plus 2010' and then click on the Change button in the toolbar.
  - o Choose Repair and click on Continue.
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

References:

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

## SLOW COMPUTER

- Close other running programs or applications.
- Restart your computer.
- Scan for viruses and malware.
- Free up hard disk Space by deleting unnecessary files and applications.
- Run a disk scan
  - o In My Computer, right click on the C: drive icon and choose Properties.
  - o Click on the Tools tab and then click on the Check Now button:
  - o Tick the box next to 'Automatically fix file system errors' and 'Scan for and attempt recovery of bad sectors'. Then click on Start:
  - o You may get a warning that Windows can't check the disk while it's in use. It will ask you if you want to schedule a check the next time your restart your computer. Click on 'Schedule disk check' and restart your computer. This scan may take a while to complete:
- Defragment Your Hard Disk
  - o Click on Start -> All Programs -> Accessories -> System Tools -> Disk Defragmenter.
  - o Click on the Analyze button to allow Windows to check if the disk needs to be defragmented.
  - o If Windows reports that the disk needs to be defragmented, click on the Defragment button. This may take some time to complete. Do not use your computer while defragmenting:
- Upgrade your hardware or buy a new computer
- Reinstall Windows
- If you cannot resolve the issue, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

## BEEP CODES

### AMI BIOS BEEP CODES

| BEEP CODE | DESCRIPTIONS |
|-----------|--------------|
| 1 short | DRAM refresh failure |
| 2 short | Parity circuit failure |
| 3 short | Base 64K RAM failure |
| 4 short | System timer failure |
| 5 short | Process failure |
| 6 short | Keyboard controller Gate A20 error |

References:

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

| | |
|---|---|
| 7 short | Virtual mode exception error |
| 8 short | Display memory Read/Write test failure |
| 9 short | ROM BIOS checksum failure |
| 10 short | CMOS shutdown Read/Write error |
| 11 short | Cache Memory error |
| 1 long, 3 short | Conventional/Extended memory failure |
| 1 long, 8 short | Display/Retrace test failed |

## AWARD BIOS BEEP CODES

| BEEP CODE | DESCRIPTION |
|---|---|
| 1 long, 2 short | Indicates a video error has occurred and the BIOS cannot initialize the video screen to display any additional information |
| Any other beep(s) | RAM problem. |

## IBM BIOS BEEP CODES

| BEEP CODE | DESCRIPTION |
|---|---|
| No Beeps | No Power, Loose Card, or Short. |
| 1 Short Beep | Normal POST, computer is ok. |
| 2 Short Beep | POST error, review screen for error code. |
| Continuous Beep | No Power, Loose Card, or Short. |
| Repeating Short Beep | No Power, Loose Card, or Short. |
| One Long and one Short Beep | Motherboard issue. |
| One Long and Two Short Beeps | Video (Mono/CGA Display Circuitry) issue. |
| One Long and Three Short Beeps. | Video (EGA) Display Circuitry. |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| Three Long Beeps | Keyboard or Keyboard card error. |
| One Beep, Blank or Incorrect Display | Video Display Circuitry. |

## MACINTOSH STARTUP TONES

| BEEP CODE | DESCRIPTION |
|---|---|
| Error Tone. (two sets of different tones) | Problem with logic board or SCSI bus. |
| Startup tone, drive spins, no video | Problem with video controller. |
| Powers on, no tone. | Logic board problem. |
| High Tone, four higher tones. | Problem with SIMM. |

# Chapter 3: Computer Safety and Maintenance

## HOW TO KEEP COMPUTER in GOOD WORKING CONDITION?

- **KEEP YOUR COMPUTER CLEAN PHYSICALLY.**

  o Clean the keyboard
      1. Unplug the keyboard from the USB or PS/2 port. If the keyboard is plugged into the PS/2 port, shut down the computer first.
      2. Turn the keyboard upside down and gently tap remove dirt.
      3. Use a can of compressed air to clean between the key or vacuum cleaners.
      4. Moisten a cotton cloth with rubbing alcohol and wipe the dirt on the keys
      5. Do not pour alcohol (or any other liquid) directly onto the keys. If you accidentally spill on the keyboard, shutdown the computer, turn the keyboard upside the down to drain

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

the liquid. If the liquid is very sticky, wash it with water.
Let dry for two days or you may use hair dryer.

o Clean the mouse
There are two main types of mice: optical and mechanical.

- **Optical mice**

    1. Wipe the dirt with Moisten a cotton cloth.
    2. Let it dry.

- **Mechanical mice**

    1. Check if there is an owner's manual provided by the manufacturer and follow the instructions given. or
    2. You may unplug the mouse from the USB or PS/2 port. If the mouse is plugged into the PS/2 port, shut down the computer first.
    3. Wipe the dirt with moisten a cotton.
    4. Remove the track ball by turning the ball-cover ring counterclockwise.
    5. Clean the track ball and the track ball receptacle/inner part of the mouse.
    6. Let it dry

o Clean the monitor

    1. Turn off the computer.
    2. Unplug the monitor from the power.
    3. Use a soft, clean cloth moistened with water to wipe the screen clean.
    4. Do not use glass cleaner.

o Keep the computer cool. Place your computer open desk/area.
o Shutdown your computer properly.
o When not in use, unplug your computer.
o Cover it with customized computer cover to protect it from dust and dirt.
o If you have further questions, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

- **PROTECT YOUR COMPUTER AND YOUR AGAINST MALWARE AND VIRUSES**

  o Install an anti-virus.
  o Install a firewall.
  o Avoid visiting un-trusted sites especially porn sites.
  o Install updated software patches/updates.
  o Do not open unsolicited e-mail, ads and pop-ups
  o Backup your computer. You may use external hard drive, cd/dvd or online backup services
  o Be smart.
  o If you have further questions, contact ITMS Helpdesk through telephone numbers 723-0401 local 4425 and (02) 633-6752.

## AVOIDING STRAIN AND INJURY

- Make sure that your chair is comfortable. Use chairs specially designed to support the lower back and promote good posture.
- Place the keyboard in a position that allows you to keep your wrists straight and relaxed to avoid wrist strain. Use ergonomic keyboard designed to minimize wrist strain.
- Place the mouse right next to the keyboard.
- Use mouse pad with wrist pad to avoid wrist strain.
- Place the monitor at a comfortable distance preferably 20 to 40 inches away from your eyes. It should also be at eye level or slightly lower.
- Take frequent breaks:
  o Look away from the monitor every once in a while.
  o Close your eyes for two minutes and look on something green to relax your eyes.
  o Stand up and walk around.

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

## Chapter 4: Sample Exercises

### TRUE or FALSE

_____ 1. Higher temperatures and longer power-off time will shorten cell life of CMOS battery.

_____ 2. The BIOS software is built into the PC, and is the first software run by a PC when powered on.

_____ 3. BIOS parameters can be configured by the user through the BIOS/CMOS setup program.

_____ 4. Power-on self-test (POST) is a process performed by firmware or software routines immediately after many digital electronic devices are powered on.

_____ 5. POST beep codes vary from manufacturer to manufacturer.

_____ 6. In a computer, an **interrupt request** (or **IRQ**) is a hardware signal sent to the processor that temporarily stops a running program and allows a special program, an interrupt handler, to run instead.

_____ 7. The CPU sometimes called "Processor" actually functions as the "Brain" of the computer. It interprets and execute program commands and processes data stored in memory.

_____ 8. USB was designed to standardize the connection of computer peripherals, such as keyboards, pointing devices, digital cameras, printers, portable media players, disk drives and network adapters to personal computers, both to communicate and to supply electric power.

_____ 9. The fundamental purposes of the BIOS are to initialize and test the system hardware components, and to load a boot loader or an operating system from a mass memory device.

_____ 10. When you turn ON the computer, it will first run through POST, a series of software-controlled diagnostic test. The POST checks system memory, the motherboard circuitry, the display, the keyboard, the diskette drive, and other I/O devices.

_____ 11. Cables, power connectors and audio connectors are designed so that they can only be inserted in one direction. Usually the first position of the power cables are labeled red in color.

_____ 12. It is recommended that the SATA hard drives be connect to SATA connectors, and IDE device to IDE connectors, for better system efficiency.

_____ 13. To prevent component damage, do not power up the system until the installation is complete

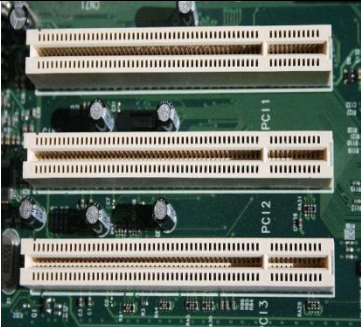_____ 14. Due to power concerns, it is recommended that a power supply

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

delivering large amount of power to be used. If an insufficient power supply is used, the result may be an unstable system or a system that is unstable to boot

_____ 15. Thermal compound (*heatsink jelly*, *heatsink compound, thermal gunk, silicon compound*) is a sticky paste which is placed directly onto the CPU. This compound allows for the heatsink to placed directly to the CPU

## IDENTIFICATION

| ACRONYMS | ANSWERS |
|---|---|
| 1.  USB | |
| 2.  CPU | |
| 3.  BIOS | |
| 4.  CMOS | |
| 5.  AGP | |
| 6.  IDE | |
| 7.  PCI | |
| 8.  ALU | |
| 9.  CU | |
| 10. KB | |
| 11. MB | |
| 12. GB | |
| 13. POST | |
| 14. SATA | |
| 15. RAM | |

_____ 1. The basic unit of information in computing and digital communications.

_____ 2. It is used to represent a single alphanumeric character, punctuation mark, or other symbol.

_____ 3. A computer network that covers a relatively smaller area, such as in building or enterprise.

_____ 4. It is a non volatile memory used to store permanent programs used in certain computer components.

_____ 5. A special type of PROM that can be erased by exposing it to an electrical charge.

_____ 6. It is a standard bus (computer interconnection) architecture that is associated with the IBM AT motherboard. It allows 16
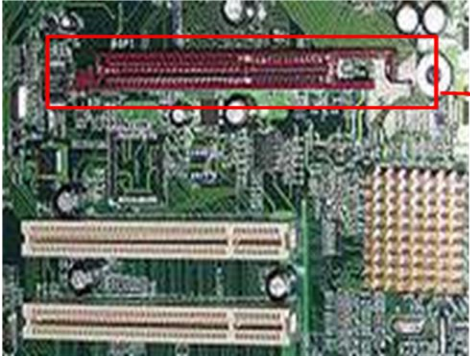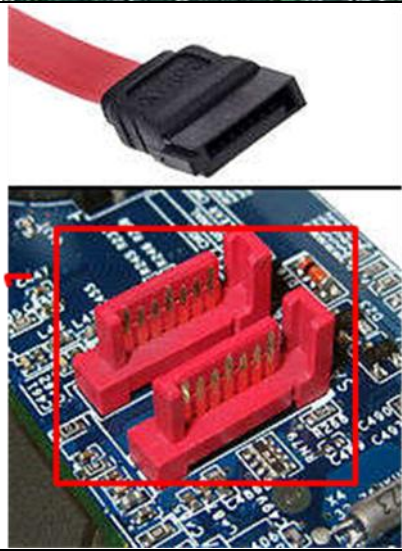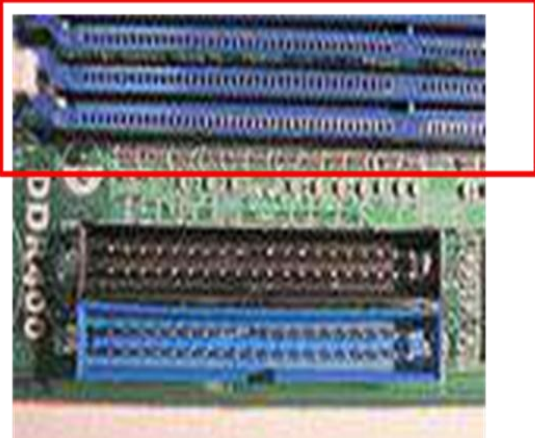
**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

bits at a time to flow between the motherboard circuitry and an expansion slot card and its associated device.

_____ 7. It is a standard bus (computer interconnection) architecture that extends the ISA standard to 32-bit interface.

_____ 8. A disk contains the core file of an operating system and is used to boot up the operating system.

_____ 9. It is a special set of instructions that allows the computer's operating system to communicate with devices such as VGA, audio, printer or modem.

_____ 10. It is a computer file system architecture now widely used on many computer systems and most memory cards, such as those used with digital cameras. It was also commonly used on hard disks throughout the DOS and Windows 9x eras, but its use on hard drives has declined since the introduction of Windows XP, which primarily uses the newer NTFS.

_____ 11. Iit is the standard file system of Windows NT, including its later versions Windows 2000, Windows XP, Windows Server 2003, Windows Server 2008,Windows Vista, and Windows 7.

_____ 12. A type of disk-drive interface widely used to connect hard disks, CD-ROMs and tape drives to a PC, in which the controller electronics is integrated into the drive itself, eliminating the need for a separate adapter card.

_____ 13. A type of port developed by IBM for connecting a mouse or a keyboard to a PC. The PS/2 port supports a mini DIN plug containing just 6 pins.

_____ 14. It is the smallest unit of time recognized by the device.

_____ 15. Also called the memory controller hub.

_____ 16. Also called the I/O controller hub .

_____ 17. It is a hardware signal sent to the processor that temporarily stops a running program and allows a special program, an interrupt handler, to run instead.

_____ 18. It refers to a worldwide standard for wireless exchange of data between two devices. Connections can be point-to-point or multi-point. The maximum range is 10 meters to 60 meters. Data can be exchange at a rate of 1 megabit per second.

_____ 19. A collection of integrated chips designed to perform one or more related functions.

_____ 20. It is a set of electronic components in an integrated circuit that manages the data flow between the processor, memory and peripherals.

---

---

**References:**

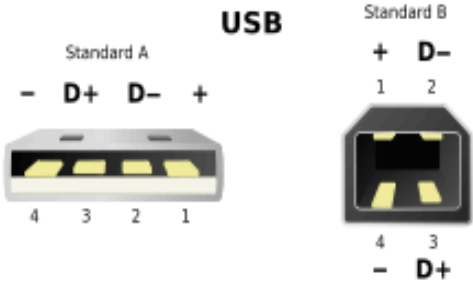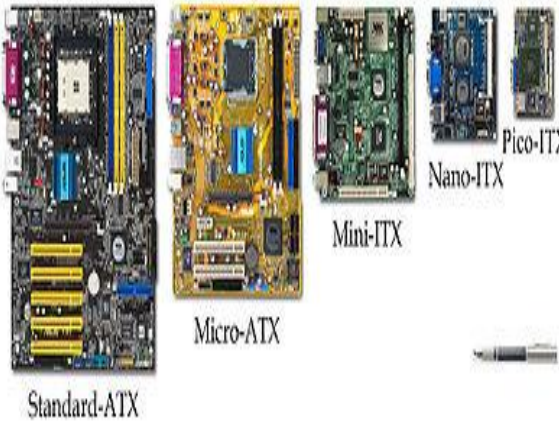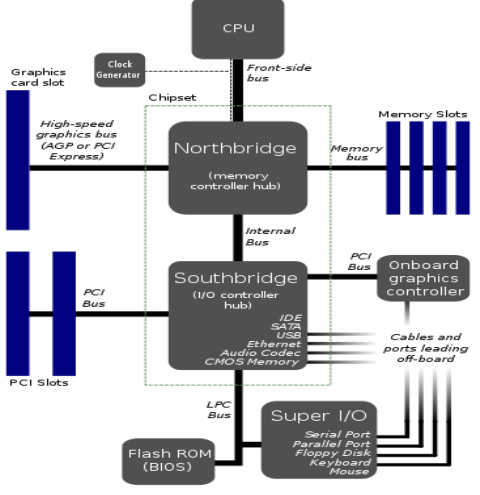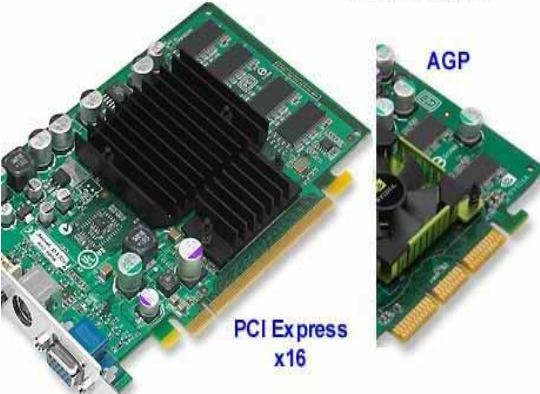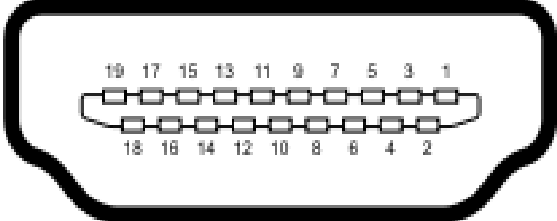"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

| NR | IMAGES | ANSWERS |
|----|--------|---------|
| 1 |  | |
| 2 |  | |
| 3 |  | |
| 4 |  | |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| | | |
|---|---|---|
| 5 |  | |
| 6 |  | |
| 7 |  | |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| | | |
|---|---|---|
| 8 |  | |
| 9 |  | |
| 10 |  | |
| 11 |  | |

*The **Philippine National Police** does not endorse any product, brand or service.*
*This tutorial is for training purposes only and not for sale.*

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*
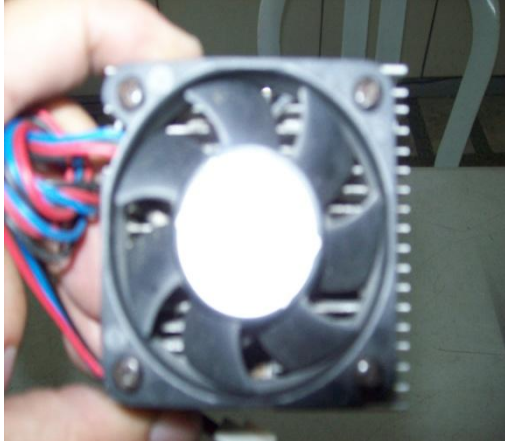
| 12 |  | |
| 13 |  | |
| 14 |  | |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

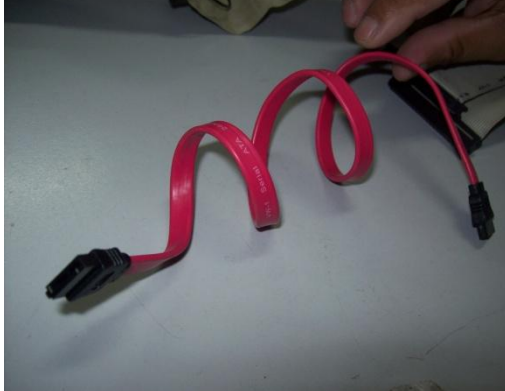| | | |
|---|---|---|
| 15 |  | |
| 16 |  | |
| 17 |  | |
| 18 |  | |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

| | | |
|---|---|---|
| 19 |  | |
| 20 |  | |
| 21 |  | |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| | | |
|---|---|---|
| 22 |  | |
| 23 |  | |
| 24 |  | |

*References:*

*"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com*
*"Type of Software" from www.wikipedia.com*
*"Computer Part Profiles" from http://pcsupport.about.com*
*"LAN Card: Definition, Function and Types" from http://education-portal.com*
*"CPU Fan" from http://geekdictionary.computing.net*
*"Hardware Installation Guide" by Emil Raro*
*"How to Install Windows 7" from http://m.wikihow.com*
*"General Hardware Issues" from www1.imperial.ac.uk*
*"Computer POST and beep codes" from www.computerhope.com*

| 25 |  | |
|----|----|----|
| 26 |  | |
| 27 |  | |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com

| | | |
|---|---|---|
| 28 |  | |
| 29 |  | |

**References:**

"Hardware Definition Terms" from www.techterms.com, www.webopedia.com, www.wikipedia.com
"Type of Software" from www.wikipedia.com
"Computer Part Profiles" from http://pcsupport.about.com
"LAN Card: Definition, Function and Types" from http://education-portal.com
"CPU Fan" from http://geekdictionary.computing.net
"Hardware Installation Guide" by Emil Raro
"How to Install Windows 7" from http://m.wikihow.com
"General Hardware Issues" from www1.imperial.ac.uk
"Computer POST and beep codes" from www.computerhope.com