

Computer Assembly (Installing Mother Board & CPU)

IT@SCHOOL HARDWARE
TEAM

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Pre-Installation Precaution

- ◆ Mother board contains very electric sensitive components and will be very easily damaged if handled improperly.
- ◆ Unplug the power Cord from the wall socket before touching any component. Failure to do so may cause severe damage to the motherboard, peripherals, and / or components.

Pre-Installation Precaution (2)

- ◆ To avoid damaging the motherboard components due to static electricity, **NEVER** place your motherboard directly on the carpet or the like. Also remember to use a ground wrist strap or touch a safety **grounded object** before you handle components.

Pre-Installation Precaution (3)

- ◆ Hold the component by the **edge** and **do not** touch the ICs.
- ◆ Whenever you uninstall any components, please place it on a grounded antistatics pad or in the bag that comes with the component.
- ◆ When placing screw into the screw holes to secure the motherboard to the chassis, please **DO NOT** over-tighten the screws ! Doing so may permanently damage the motherboard.

Pre-Installation Precaution (4)

- ◆ **Never** put your motherboard on any metal Surface. Be careful when you connect the power plug with your motherboard.

Opening the Case



Replace the ATX Connector Plate

- ◆ Remove the ATX Connector Plate from the Case



Before



After

Replace the ATX Connector Plate

- ◆ Find the Connect Plate that come with the Motherboard and place it on the case

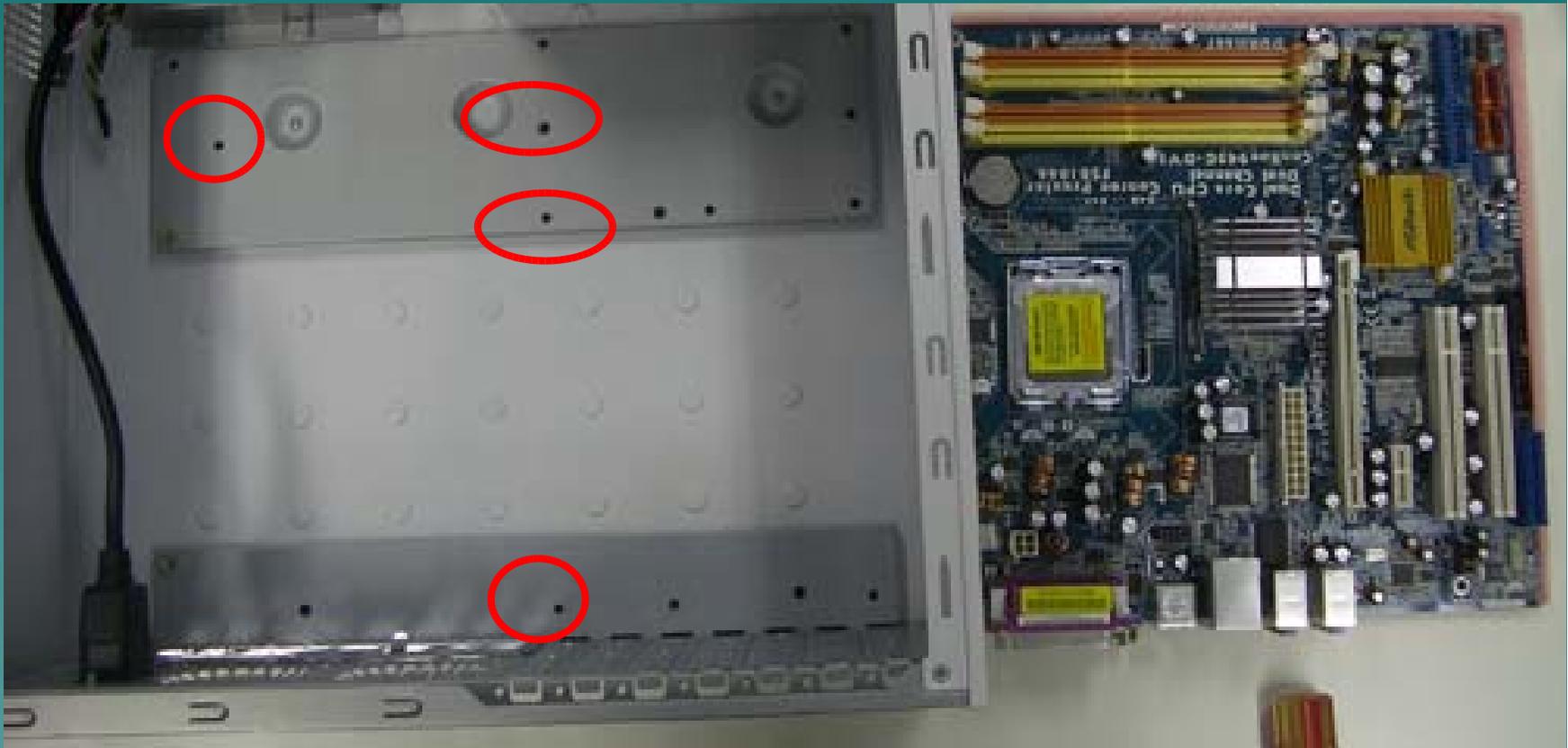


Before

After



Determine Mother Board Mounting Location



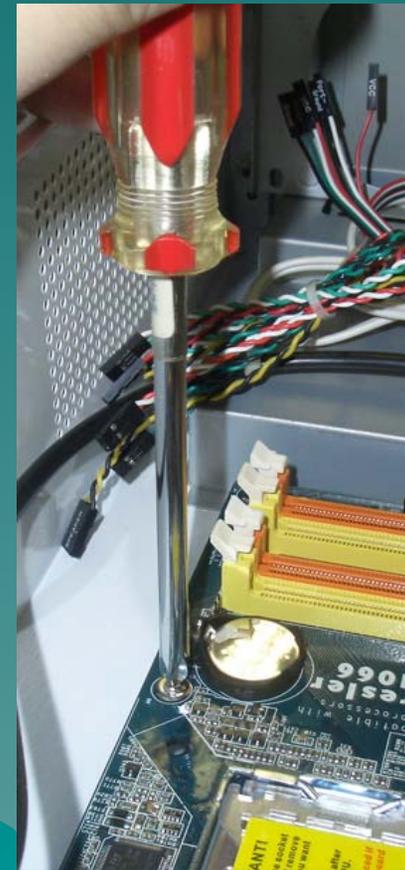
Install the Motherboard Standoffs

Install the standoffs in the appropriate location. The standoffs may come a variety of styles. The most common is the brass hex standoff that requires a hex driver to install. Others include a clip style that snaps into the tray.



Fasten the Motherboard

Lay the motherboard over the tray and align the board so all the standoffs are visible through the mounting holes. Starting with the center most mounting point, insert the screws to fix the motherboard to the tray. After the center, work in a star pattern to affix the corners of the board.

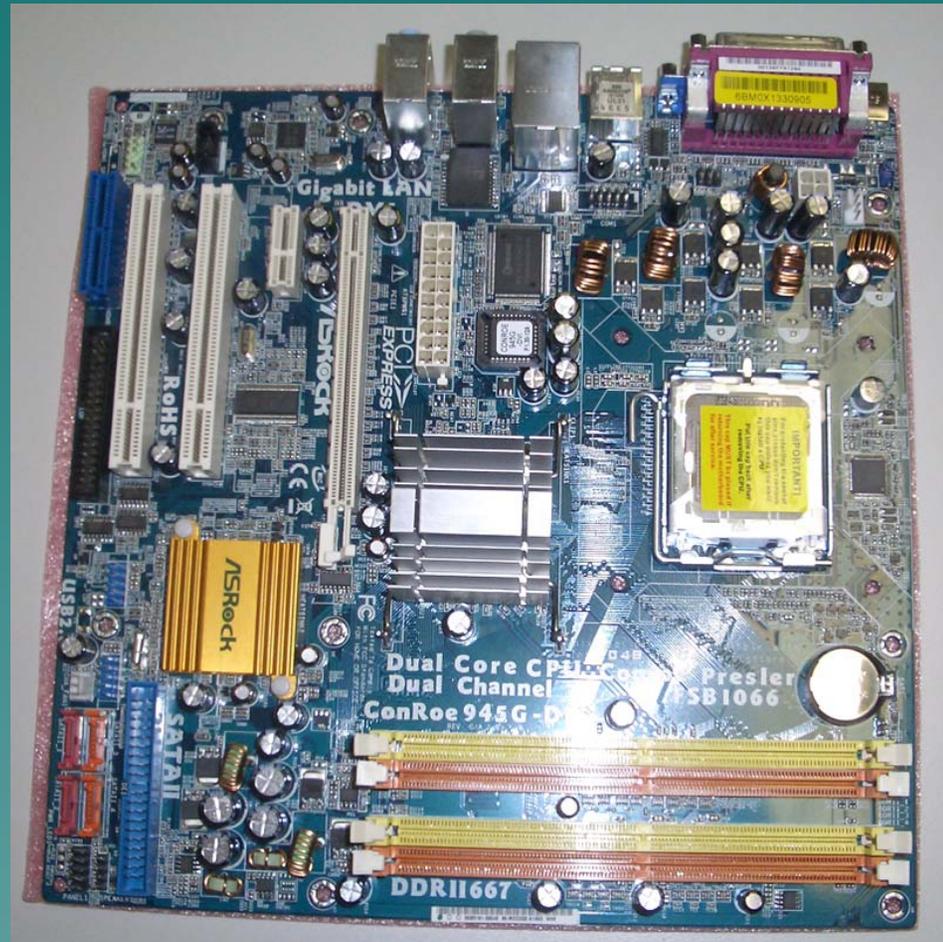


Knowing Your MotherBoard

- ◆ Motherboard connects all the computer component (CPU, Hard Disk, RAM, Video Card, Other USB Device etc) together.
- ◆ Introduce different part of Motherboard.
- ◆ You should familiar with your motherboard before install any component on it.

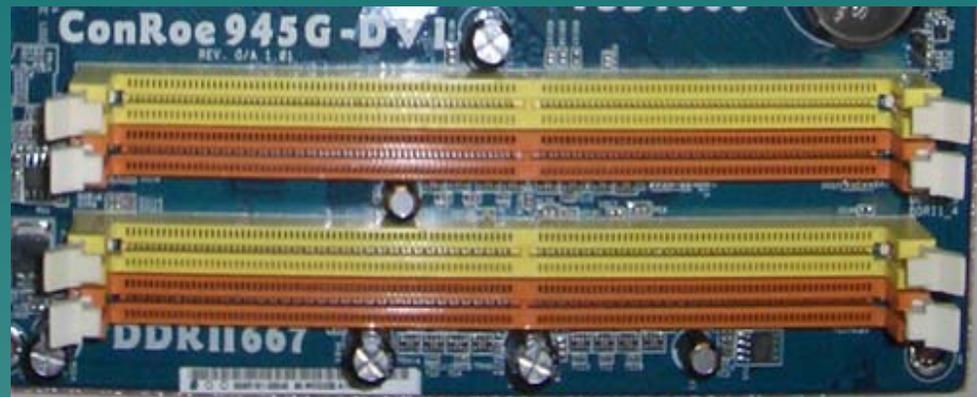
Knowing Your MotherBoard - CPU Socket

- ◆ This is an Intel socket 775 Motherboard.
- ◆ Different CPU use different Motherboard, make sure your CPU is compatible with your motherboard if you buy them separately.



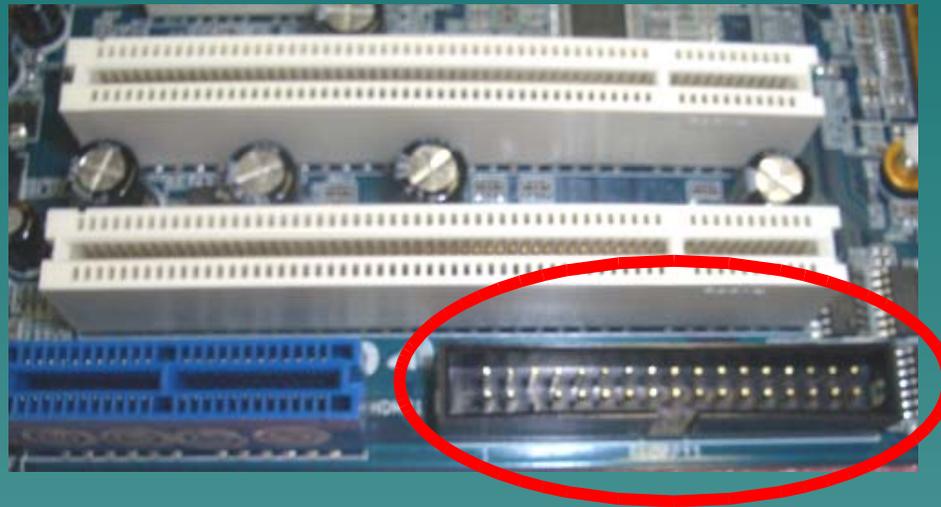
Knowing Your MotherBoard - Memory slot

- ◆ This is a 240 pins DDRII (Double Data Rate II) DIMM Slots.
- ◆ It support Dual Channel memory Technology.



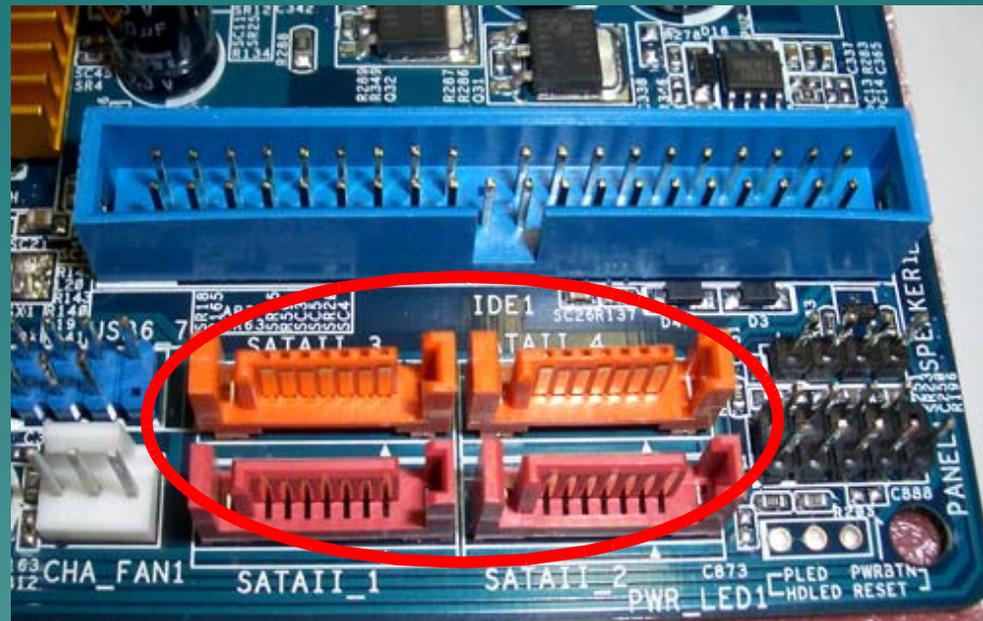
Knowing Your MotherBoard - Floppy Disk Connector

- ◆ It is a 33 / 34 pins connector which used to connect the motherboard to a 3.5" floppy disk.



Knowing Your MotherBoard - SATA Connector

- ◆ These SATAII (Serial ATAII) connectors used to connect SATA hard disk for internal storage device. This



Knowing Your MotherBoard - USB Headers

- ◆ Besides the default USB ports on the I/O panel, some motherboard do provides additional USB headers on the motherboard to connect to the case USB Connector.
- ◆ Each USB 2.0 header provides up to two USB 2.0 ports.



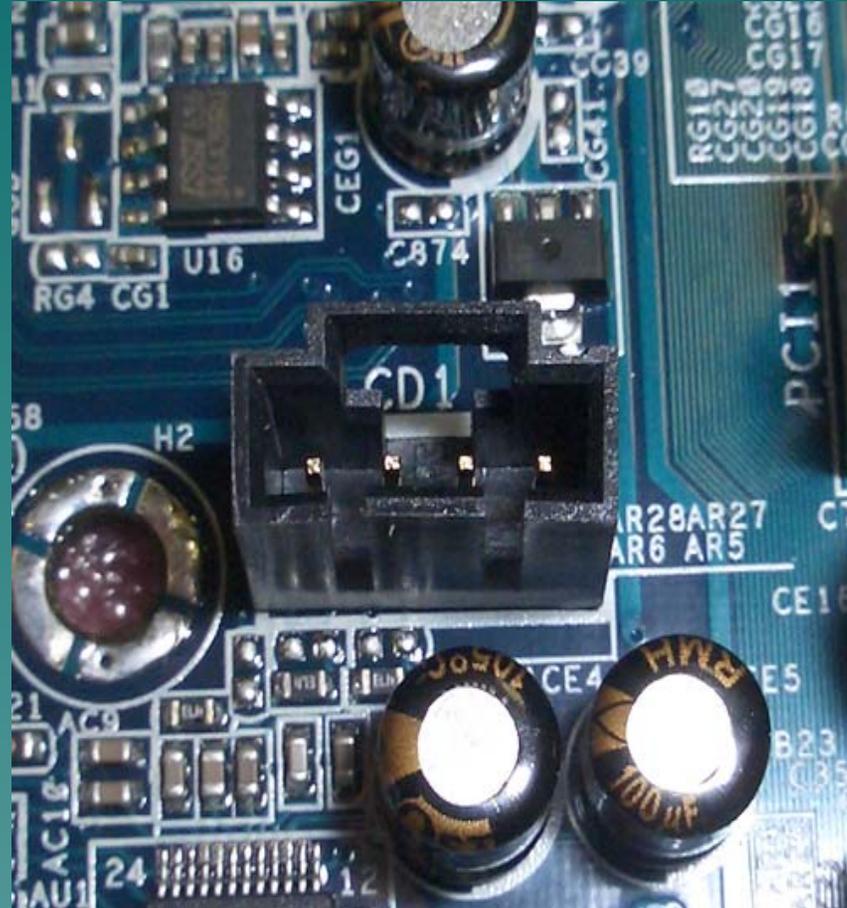
Knowing Your MotherBoard - Infrared Module Header

- ◆ This header support an optional wireless transmitting and receiving module



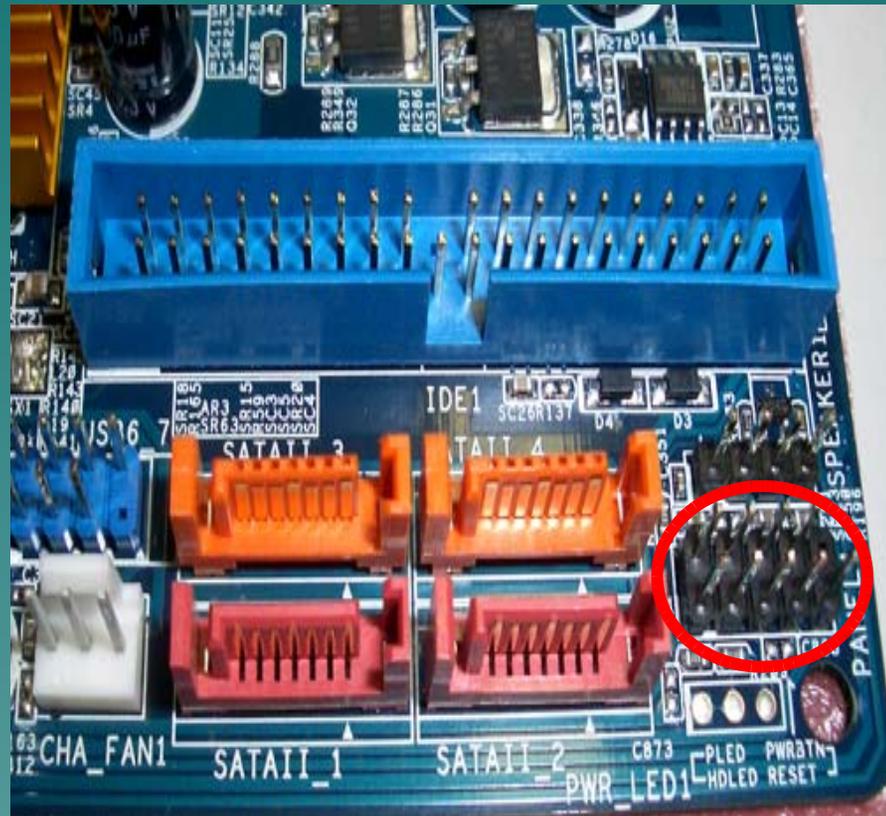
Knowing Your MotherBoard - Internal Audio Connector

- ◆ This connector allow transmitting stereo audio from other sound source such as CD ROM, DVD ROM or TV capture



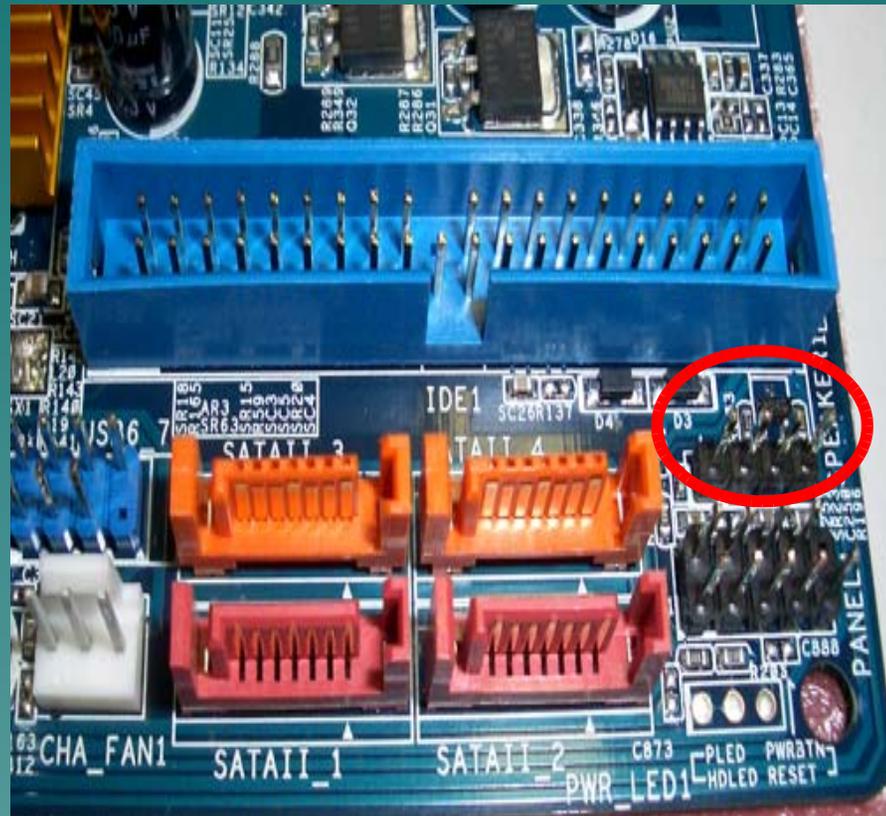
Knowing Your MotherBoard - System Panel Connector

- ◆ This header accommodates several system front panel function. Power button, reset button, hard disk indicator and power indicator



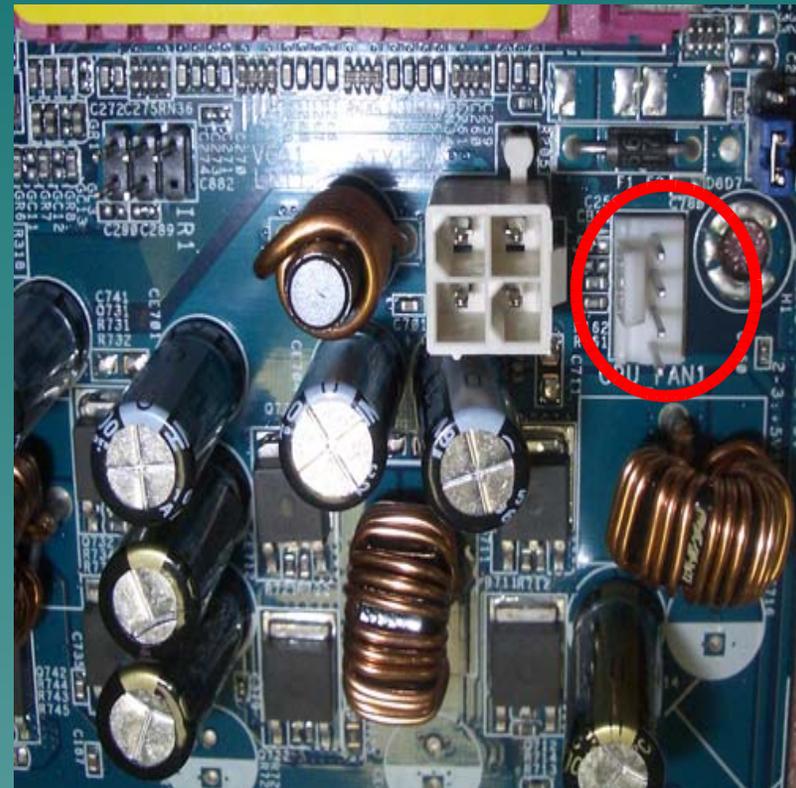
Knowing Your MotherBoard - Chassis Speaker Header

- ◆ If your case has a speaker, you should connect your speaker to this header.



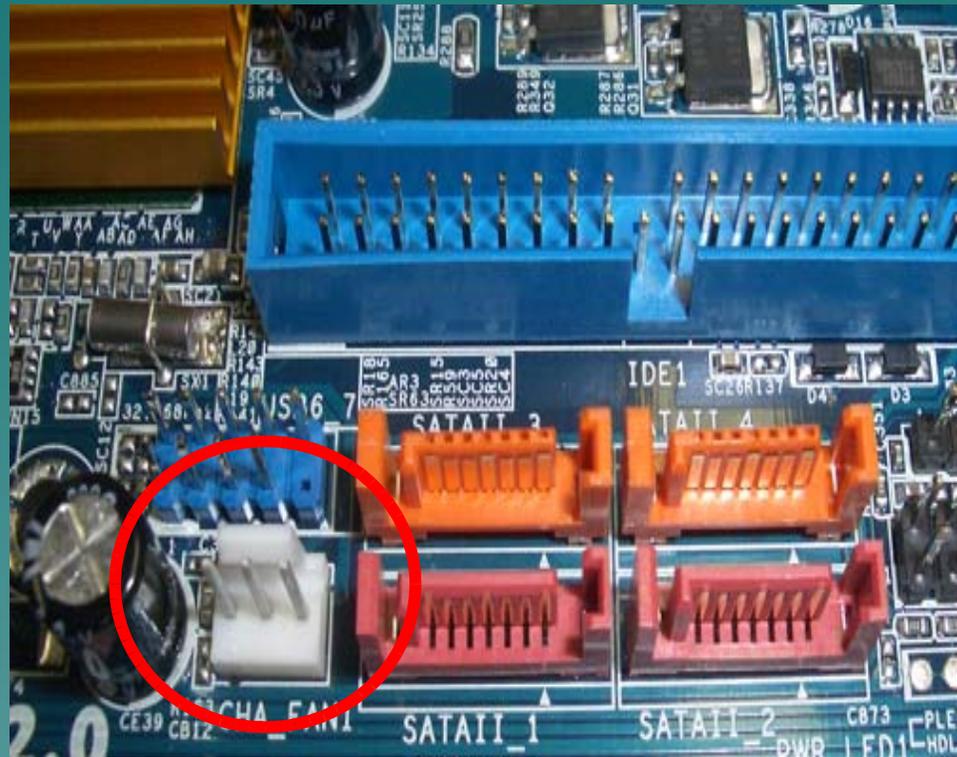
Knowing Your Motherboard - CPU Fan Connector

- ◆ Connect a Case fan power cord this this connector. Once you have a correct fan connected, your BIOS can detect the existing of the fan and its rotation speed.
- ◆ Fan speed will be automatically adjusted depends on the motherboard and other



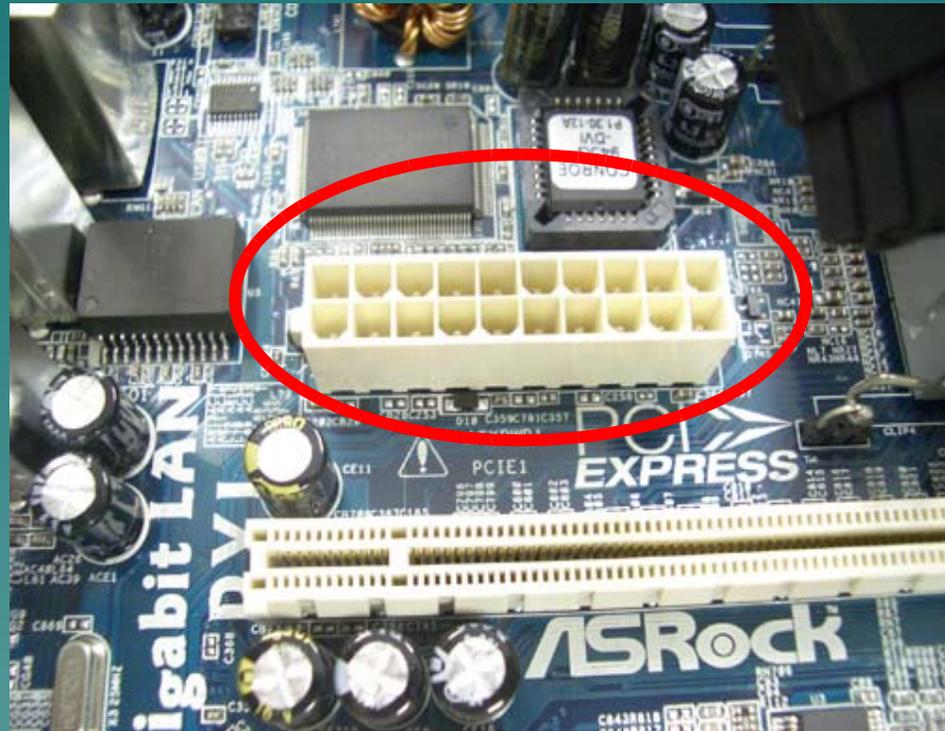
Knowing Your Motherboard - Chassis Fan Connector

- ◆ Similar with the CPU Fan Connector, it's used to connect the Case Fan in order to increase the ventilation.



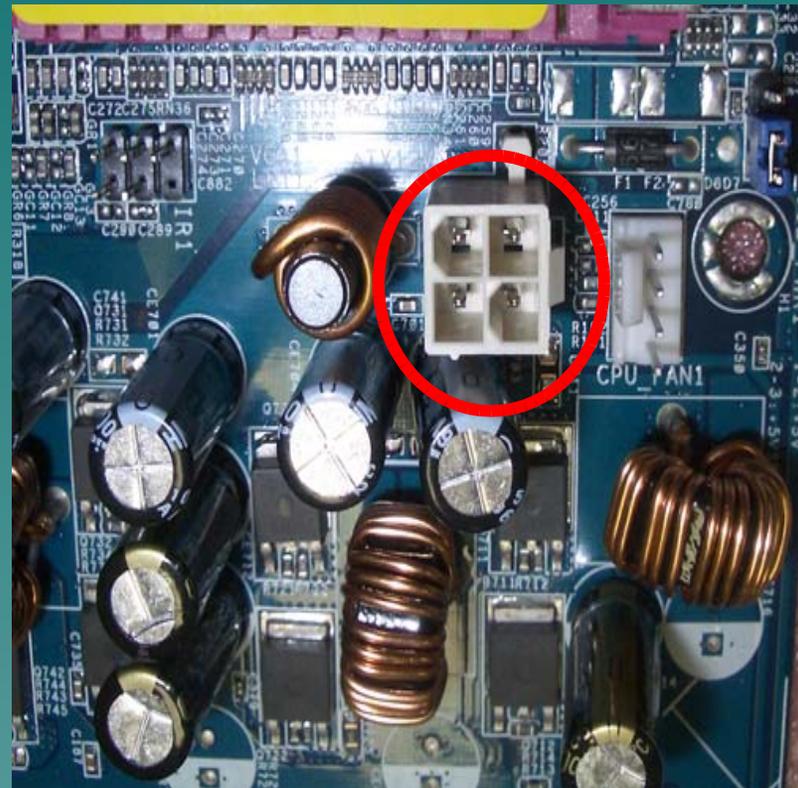
Knowing Your Motherboard - ATX Power Connector

- ◆ Connect the ATX Power supply connector to provide power for all the component.



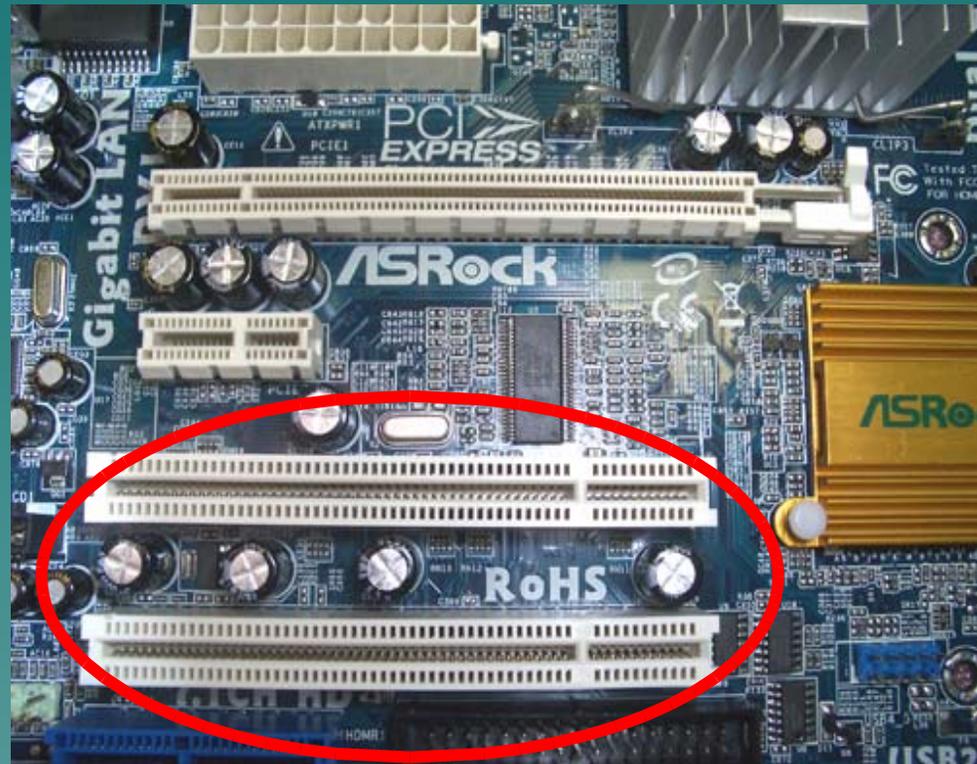
Knowing Your Motherboard - ATX 12V Connector

- ◆ Some motherboard do requires to connect a power supply with ATX 12V plug to this connector so that it can provide sufficient power.



Knowing Your Motherboard - PCI Slot

- ◆ Allow you to add any addition device which communicate with a PCI slot.
- ◆ Example of PCI slot device include TV capture card, Network Card etc



Knowing Your Motherboard - Battery

- ◆ This battery provide power for the BIOS to store information and maintain the clock to run when the system is power-down.
- ◆ Running out of this battery will cause the system setting



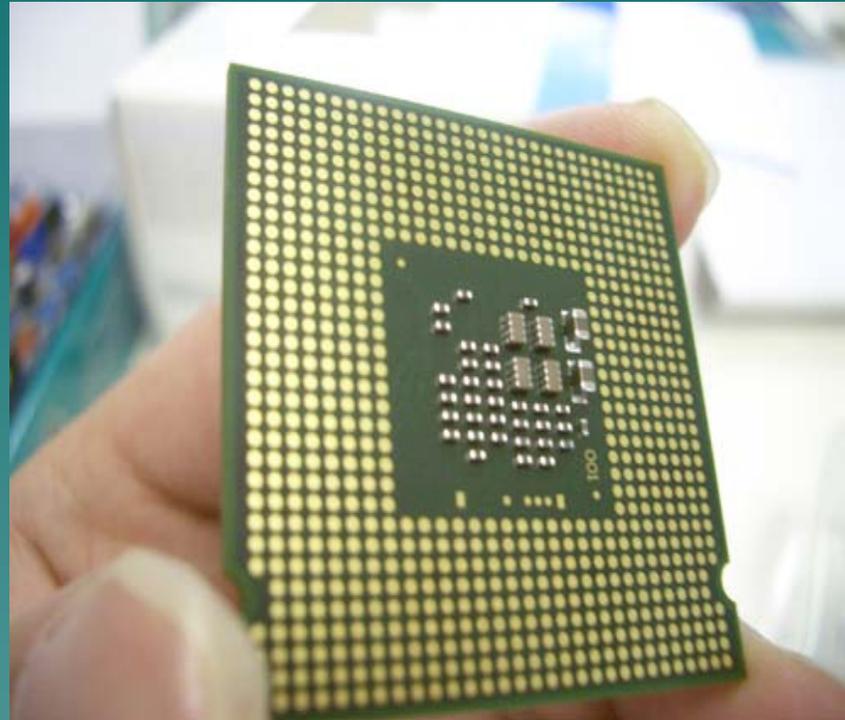
Get ready to Install Component !

- ◆ You are now familiar with your mother board. It's Now ready to install the motherboard into the case.



Installation of CPU – Don't touch the CPU !

- ◆ DO NOT touch the CPU. It's very easy damaged. Hold the edge of the CPU and place it on the CPU socket properly.



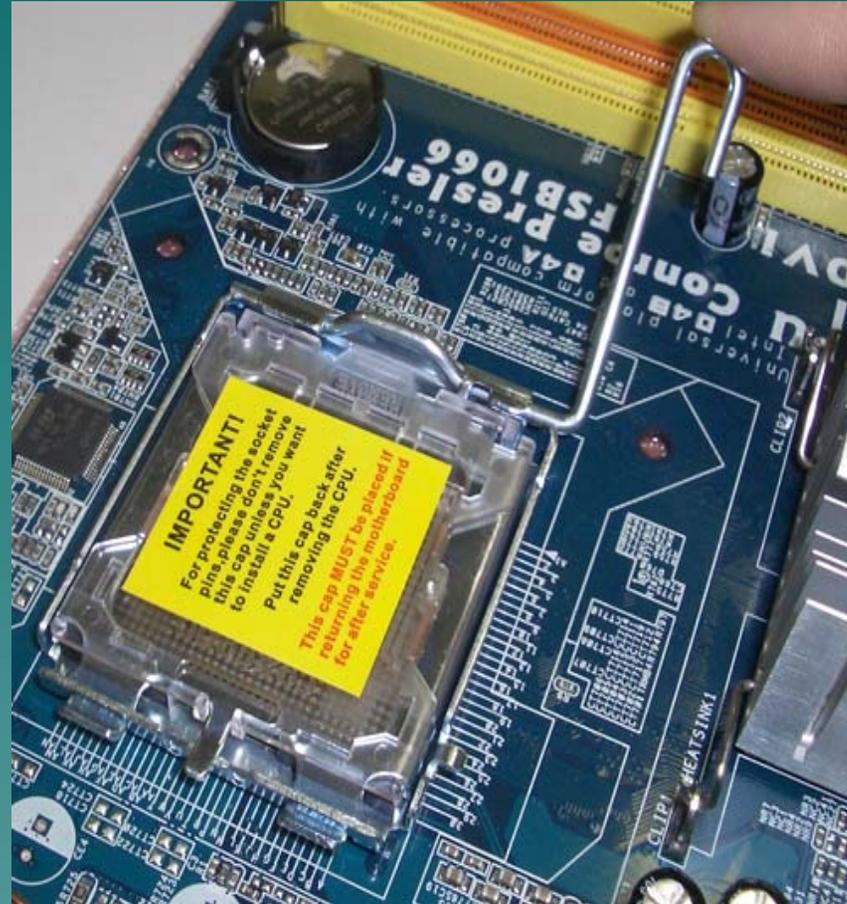
Installation of CPU (Socket 775)

- ◆ Disengaging the lever by depressing down and out on the hook to clear retention tab.



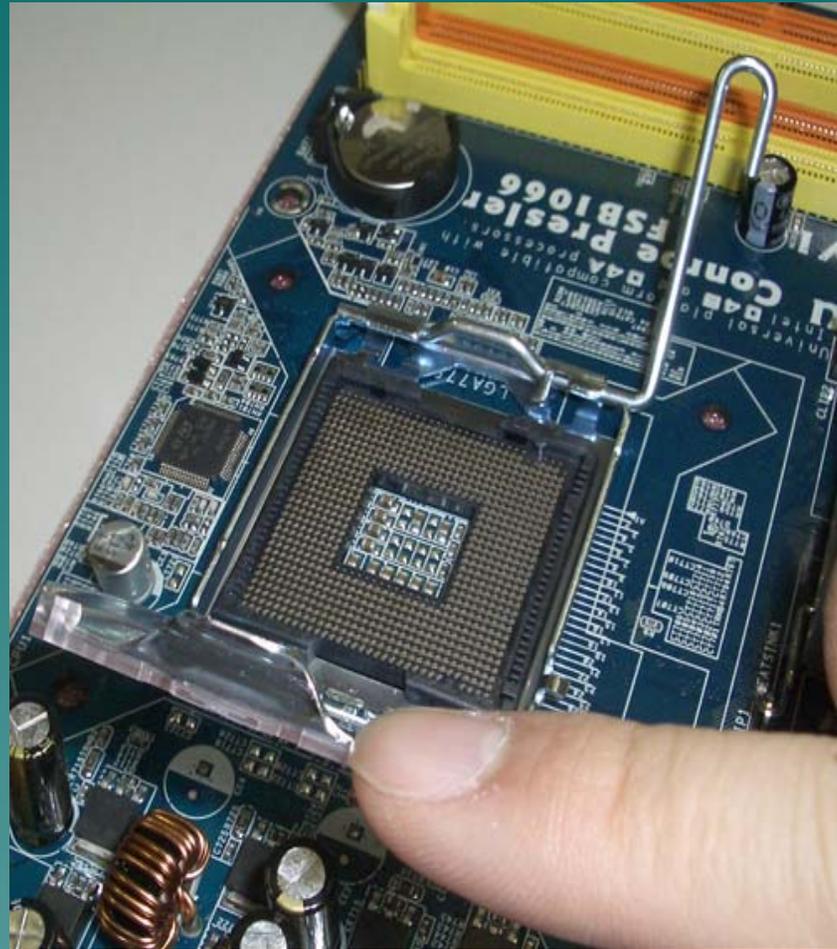
Installation of CPU (Socket 775)

- ◆ Rotate the load plate to fully open position at approximate 100 degree.



Installation of CPU (Socket 775)

- ◆ Rotate the load lever to fully open position at approximately 135 degrees.



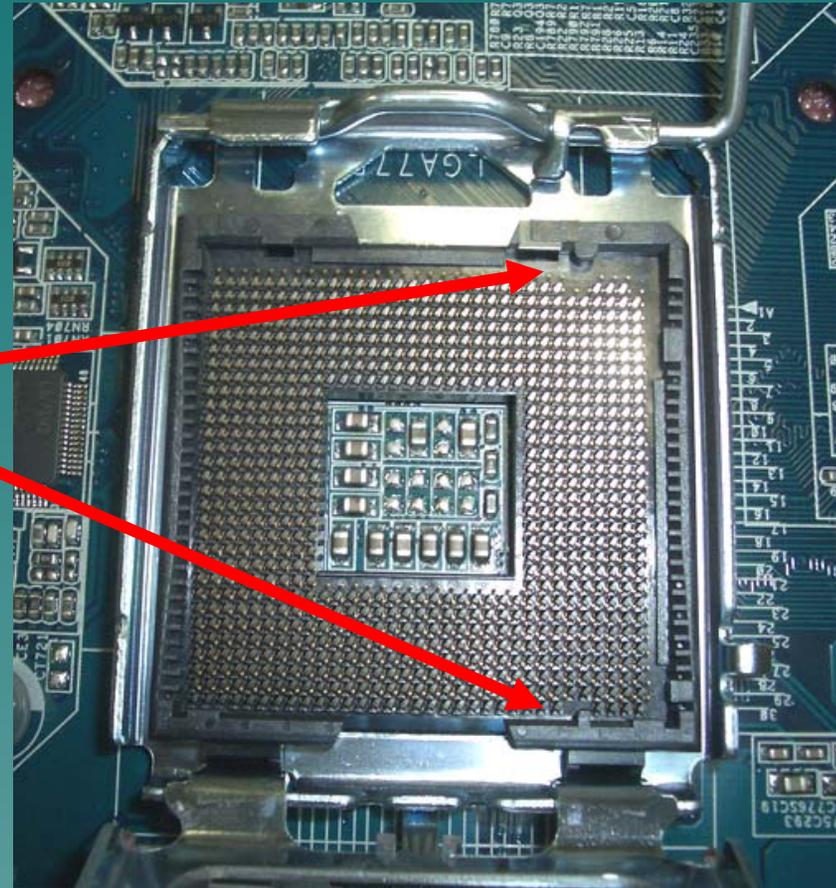
Installation of CPU (Socket 775)

- ◆ Hold the CPU by the edges where marked with black lines.
- ◆ Locate the two orientation key notches.



Installation of CPU (Socket 775)

- ◆ Orient the CPU with IHS (Integrated Heat Sink) up. Locate Pin 1 and the two orientation key notches.



Installation of CPU (Socket 775)

- ◆ Carefully place the CPU into the socket by using a **purely Vertical motion**.
- ◆ Remove the PnP Cap. This Cap protect the CPU Socket



Installation of CPU (Socket 775)

- ◆ Verify that the CPU is within the socket properly mated to the orient keys.



Installation of CPU (Socket 775)

- ◆ Close the Socket
- ◆ Rotate the load plate onto the IHS
- ◆ While pressing down lightly on load plate, engage the load lever.
- ◆ Secure load lever with load plate tab under retention tab of load lever.

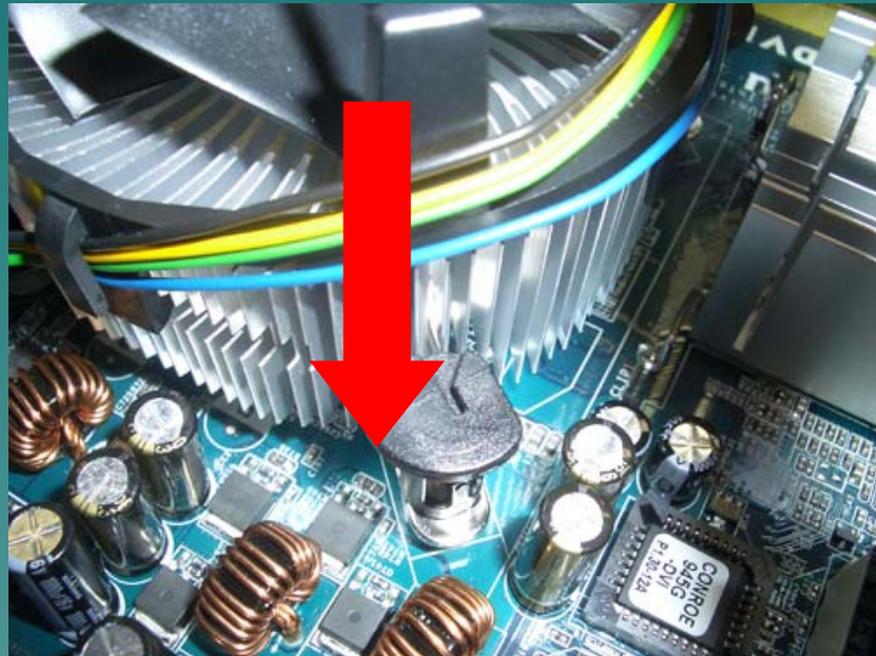
Installing the CPU Heat Sink

- ◆ Most CPU Heat Sink come with a CPU Fan. You have to place the Heat Sink on top of the CPU.



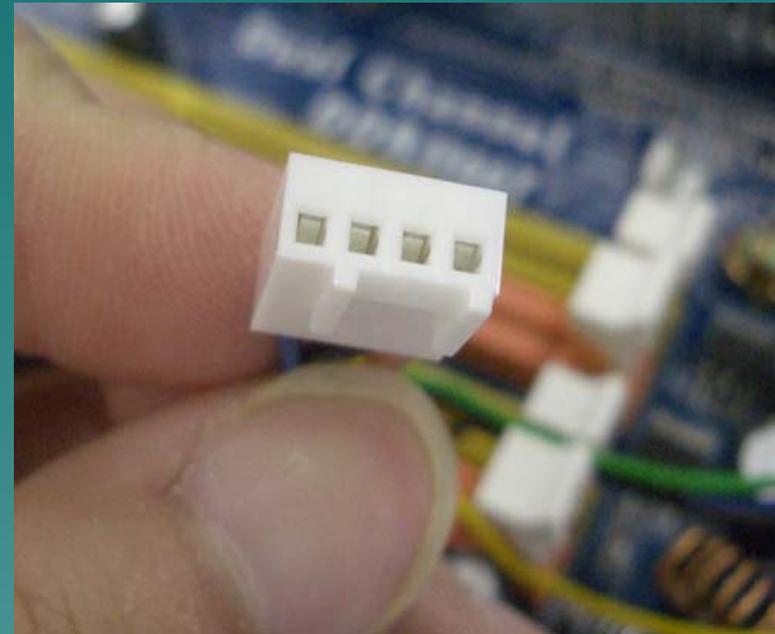
Secure the CPU fan

- ◆ Secure the CPU Fan on the motherboard by pressing the knob until you heard a “click”.



Connect the CPU Fan with the Mother Board

- ◆ Connect the CPU Fan to the Motherboard CPU Fan Socket



Installation of Memory Module

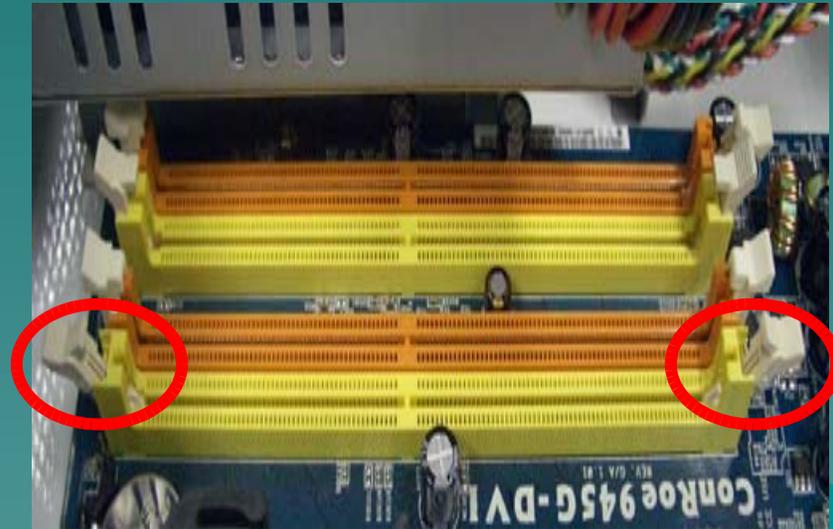
- ◆ Caution ! - The first step whenever you work on a computer system is to fully power down the computer system.
- ◆ Shut down the computer. Once the operating system has safely shut down, flip the switch on the back of the power supply to the off position and remove the AC Power Cord.

Locating the Memory Module Slots

- ◆ Examine the motherboard to locate the memory module slots. If the module slots are located under a power supply or drive, it may be necessary to remove additional parts to access the slots to install the memory modules.

Locating the Memory Module Slots

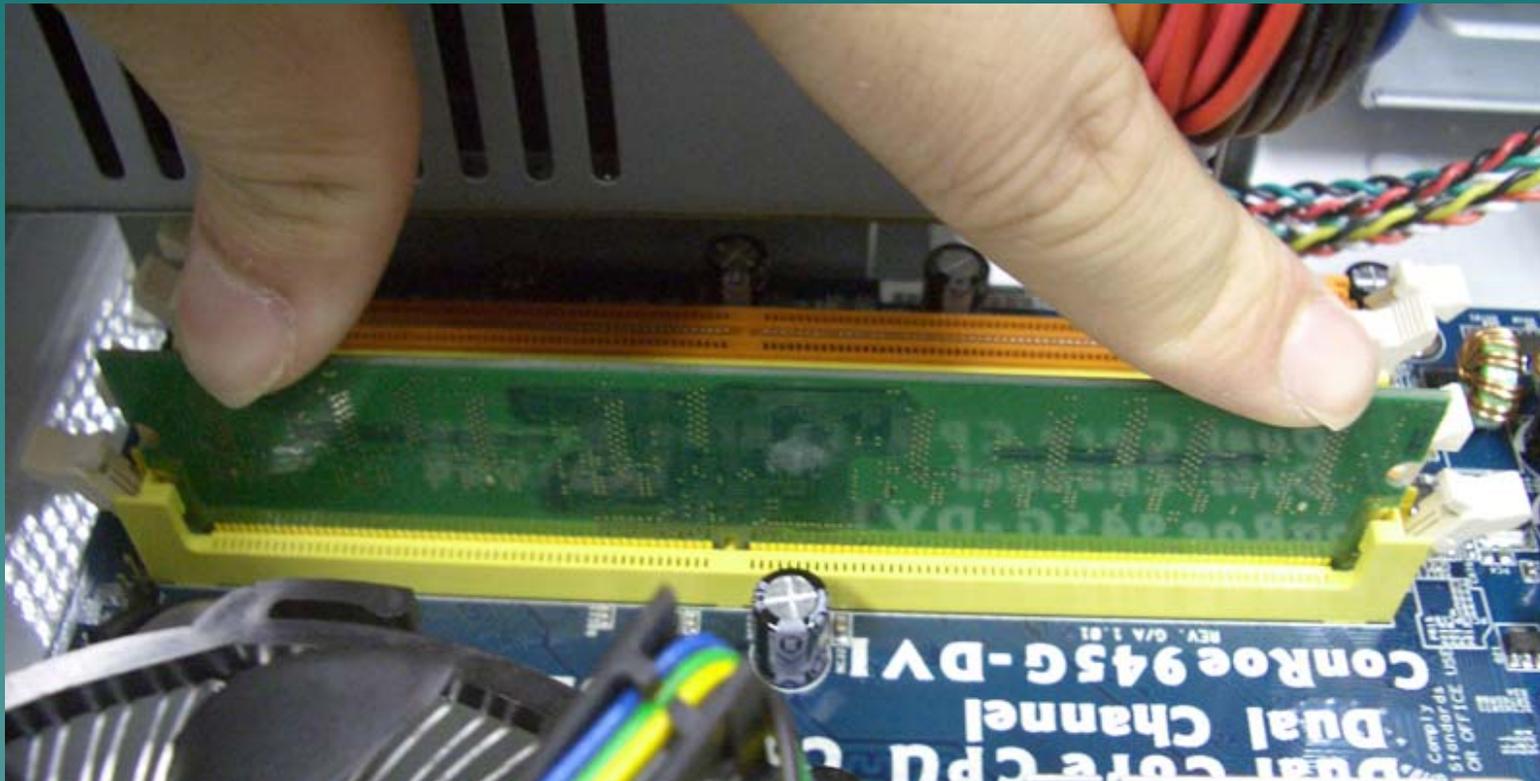
- ◆ Depends on different model, Some Motherboard have four memory slots while some of them only have two.
- ◆ In order to properly insert the memory



Insert the Memory Module

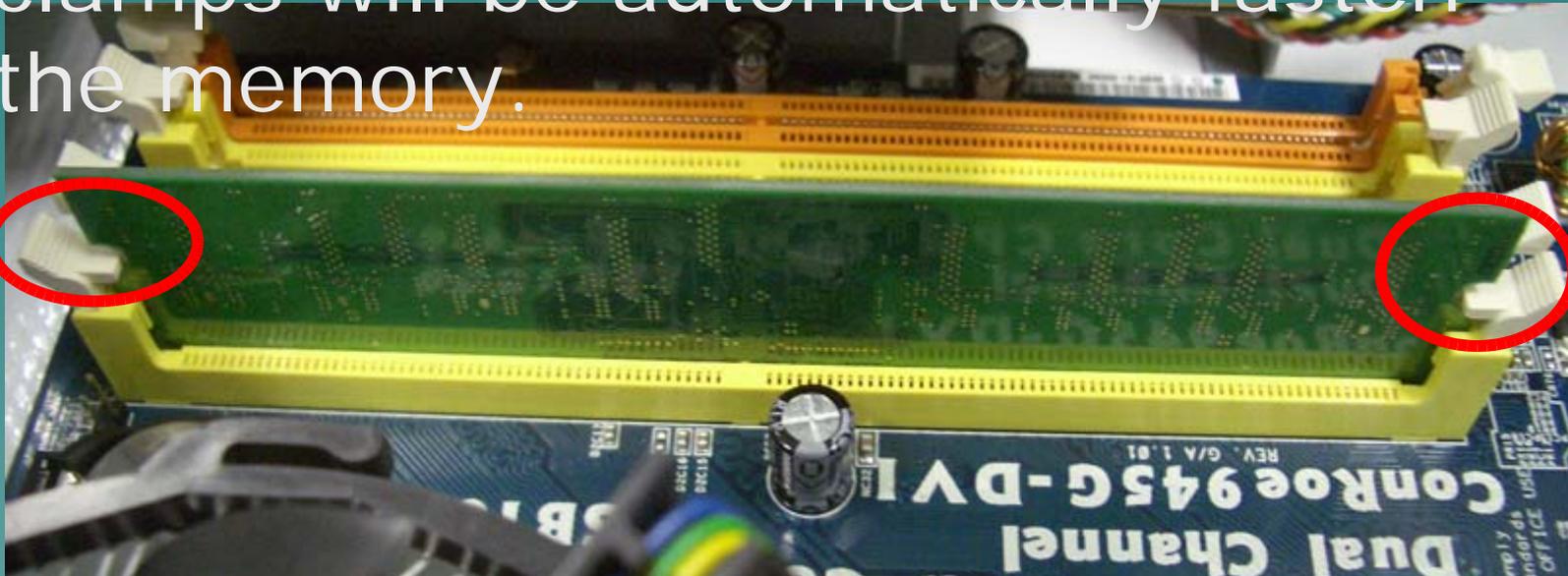
- ◆ To insert the memory module into the slot, align the memory module above the slot and make sure that the notch in the memory module is in the correct position. When the module is properly align, gently press down on both sides of the memory module downward into the slot. It should click into

Insert the Memory Module



Fasten the Module Clamps (if required)

- ◆ Make sure your memory module clamps have been fasten the modules. Normally when you place your memory module correctly, the clamps will be automatically fasten the memory.



Installation of Power Supply

- ◆ Different Computer case have different computer power supply. You should buy a suitable computer supply otherwise it will not fit your case.
- ◆ Power supply provide stable voltage to the computer. If there is any problem with your power supply, your computer will become very unstable.

The Power Supply Mount

- ◆ Some computer case has the power supply mount, use your screw driver to loose the screw and get the power supply mount.



The Power Supply Mount

- ◆ Fasten the mount together with the power supply.



Fasten the Power Supply

- ◆ You should fasten the Power supply before putting it back to the computer case.



Check Your Power Supply Voltage

- ◆ Check Your power supply voltage selector to see whether it has select to 220V or 230V before connecting



Place the Power Supply back to the case

- ◆ After secure the Power Supply with the mount, you can place the Power Supply back to the Case and secure it with a screw driver.

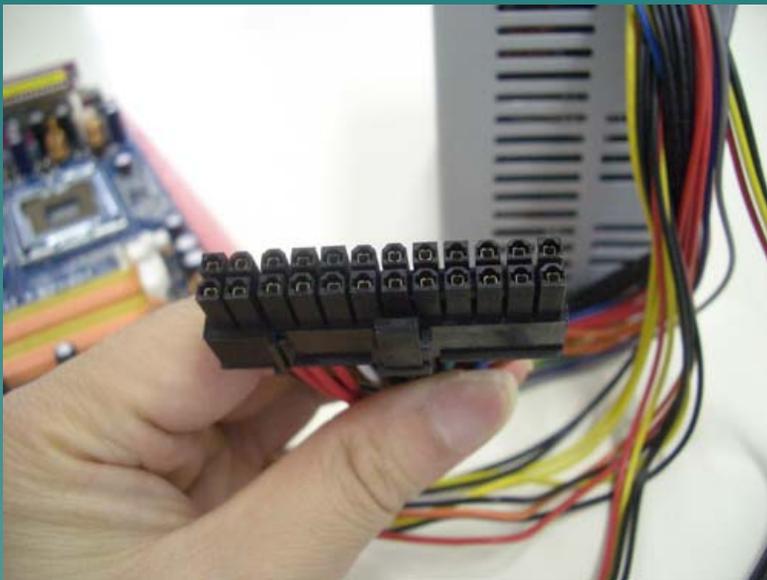


Knowing Your Power Supply

- ◆ Power Supply comes out with several plugs different plug serves different function, basically you will easily identify different type of plug by their outlook.

Power Plugs For Motherboard

- ◆ These two plugs are used to provide power to the Motherboard.



20 pins / 24 pins
Main Power Supply Cord



4 pins Power
Supply Cord

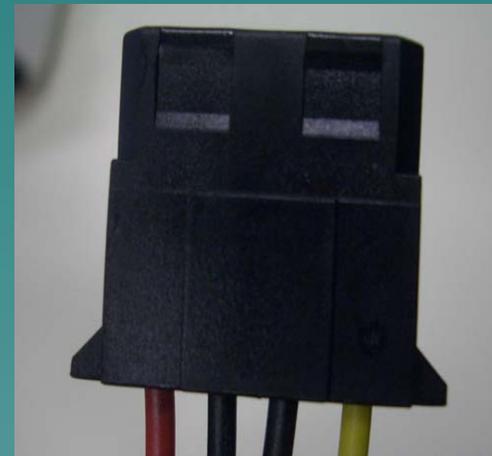
Power Plug For SATA Hard Drive

- ◆ Each Computer should have a hard drive, this power plug is designed for SATA Hard Drive.



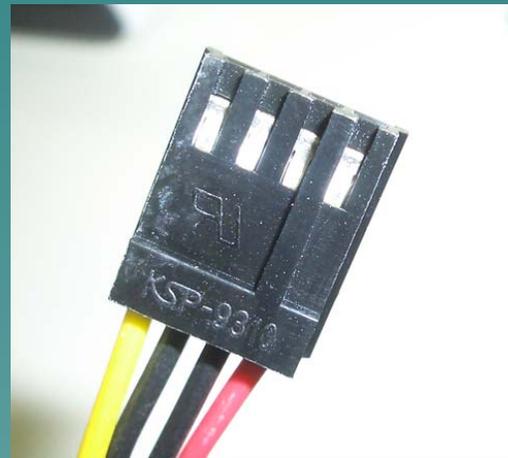
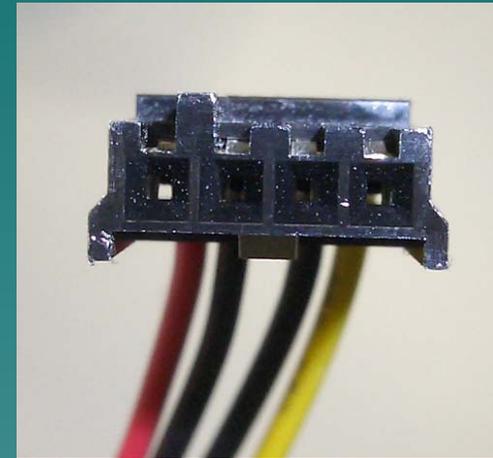
Power Plug For ATA Hard Drive / CDROM

- ◆ This plug is designed for providing power for ATA / IDE Hard Drive, CDROM / DVD ROM.
- ◆ Some Motherboard or video card require this kind of power plug.



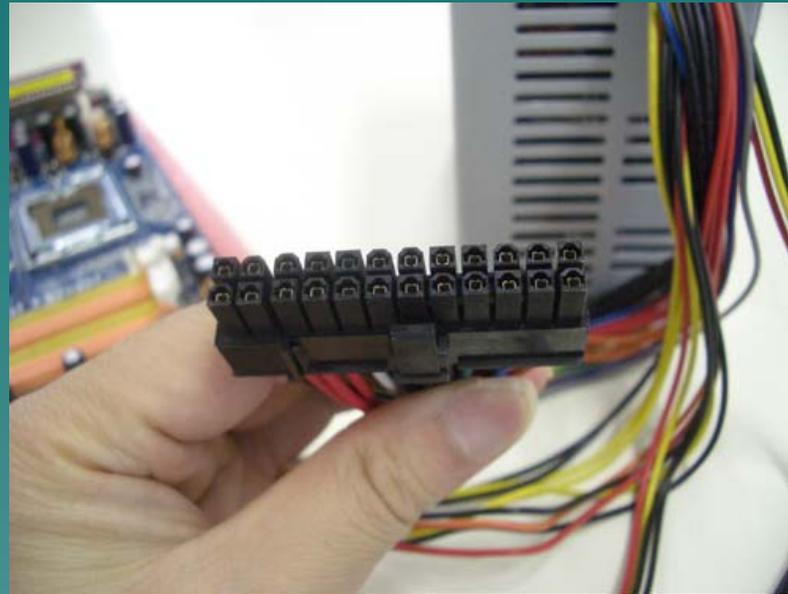
Power Plug For Floppy Drive

- ◆ Although 3.5" floppy is not popular nowadays, The Power Supply for floppy disk still provided by power supply.



Connect the ATX Power Connector

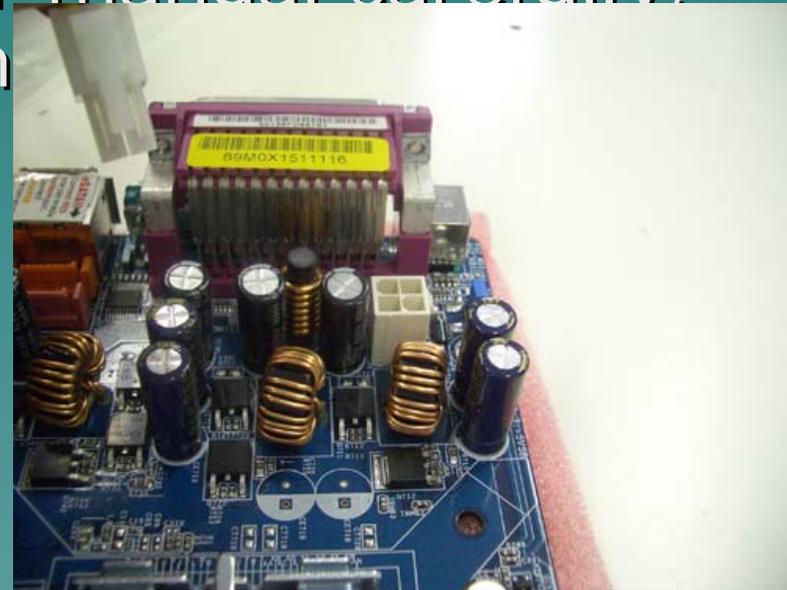
- ◆ Different Motherboard requires different Power Socket. Some Motherboard requires 20 Pins, some requires 24



24Pins Power plug

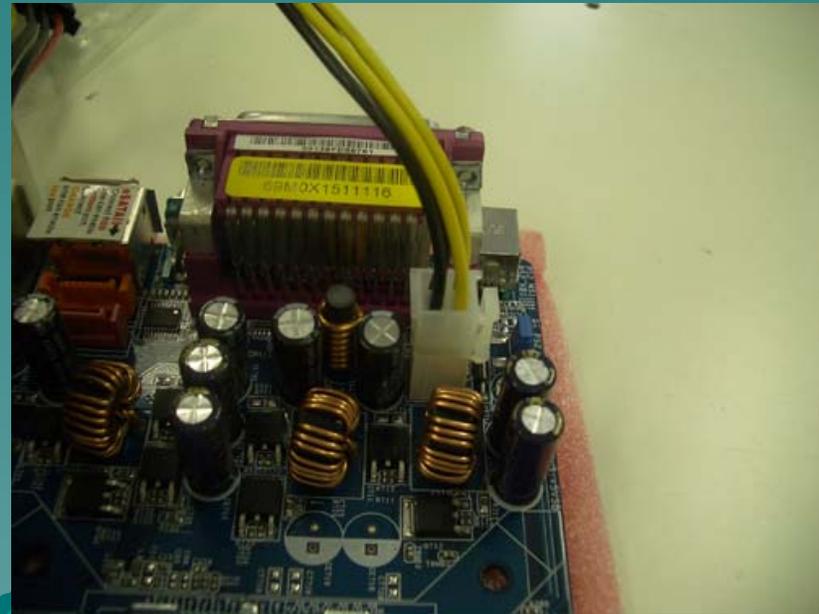
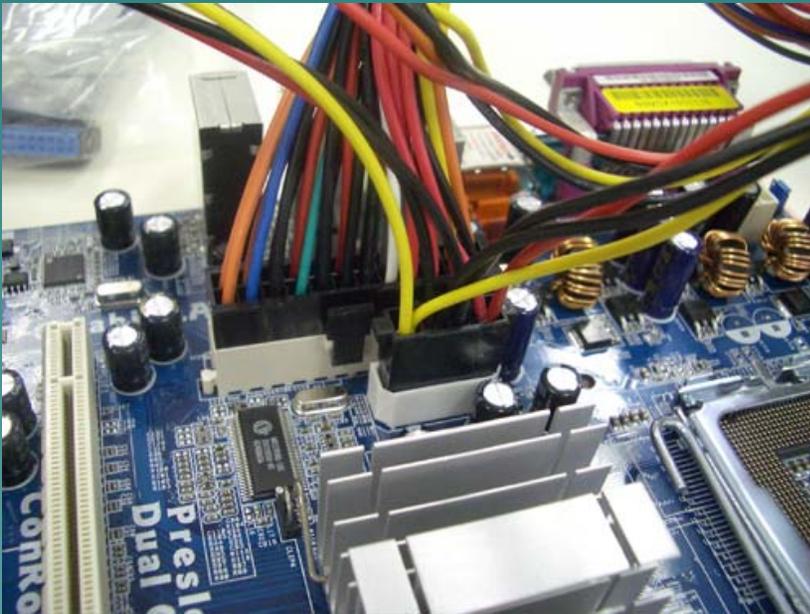
Connect the ATX Power Connector

- ◆ Locate the Power Socket in the Motherboard. Some motherboard have more than one power Connectors, you should read the user manual carefully.



Connect the ATX Power Connector

- ◆ Plug the power plug into the socket to provide power for the motherboard.

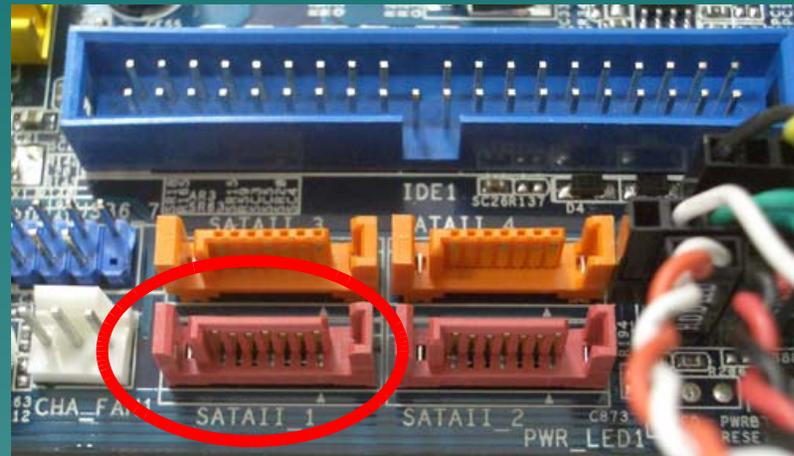


Installation of Hard Disk

- ◆ In this tutorial, we are going to install an SATA Hard Disk. Some Motherboard does not support SATA Hard Disk will use IDE / ATA Hard Disk instead.

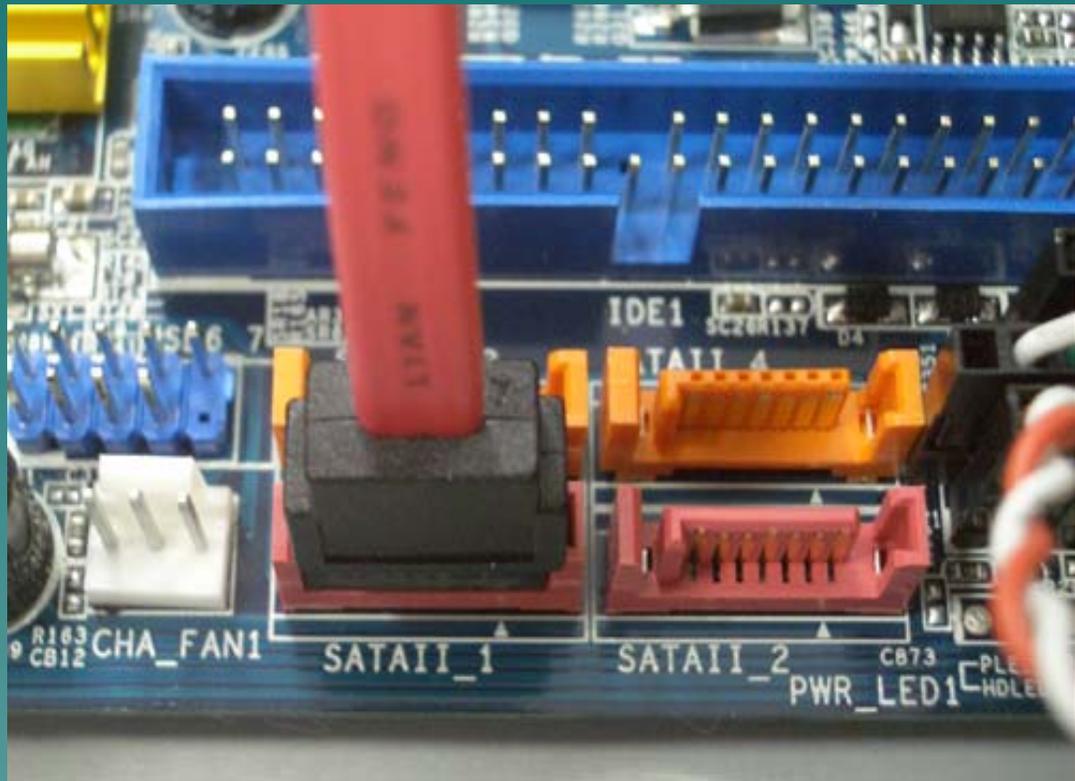
Locate the SATA Cable Connector

- ◆ Locate the SATA Hard Disk Connector on the Motherboard.
- ◆ For those Motherboard does not have SATA Connector, you may need to purchase an

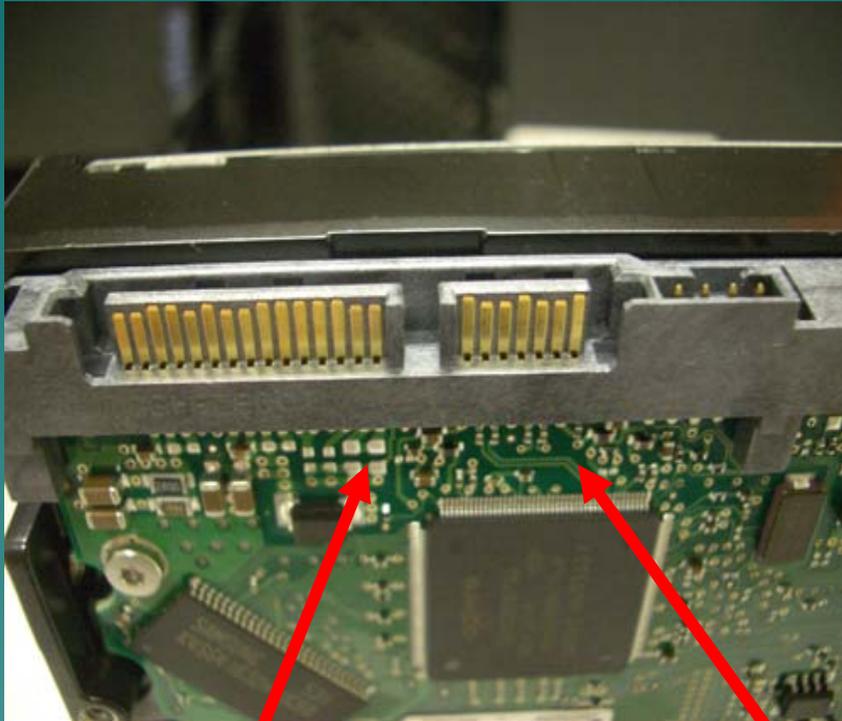


Attach SATA Cable to the Motherboard

- ◆ There are two ends for a SATA cable. One end of the cable connected to the Motherboard while the



Attach SATA Cable to the Hard Disk



SATA Power cable Connector SATA Signal cable Connector

Installation of IDE CDROM / DVD ROM

- ◆ The following steps describe a proper method to install an ATA based optical drive into a desktop computer system. These instructions are valid for any form of optical based drive such as CD-ROM, CD-RW, DVD-Rom or



Place the CD / DVD Drive into the Case



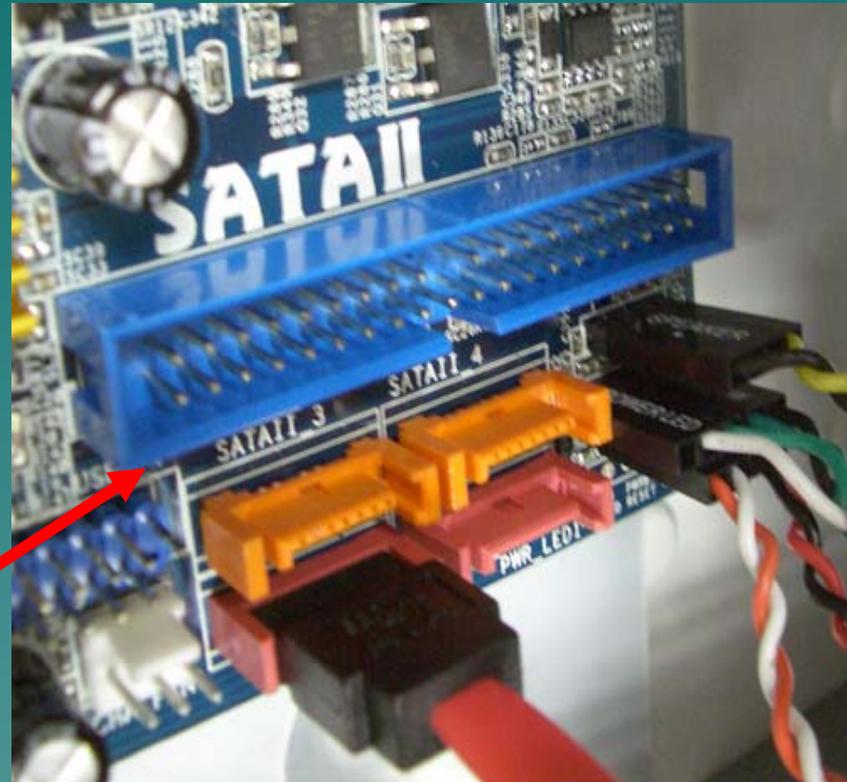
Identify the IDE / ATA Signal cable

- ◆ An IDE / ATA Signal Cable is a flat cable with two or three connectors.
- ◆ Locate the IDE / ATA Cable socket in the motherboard, plug the cable into the



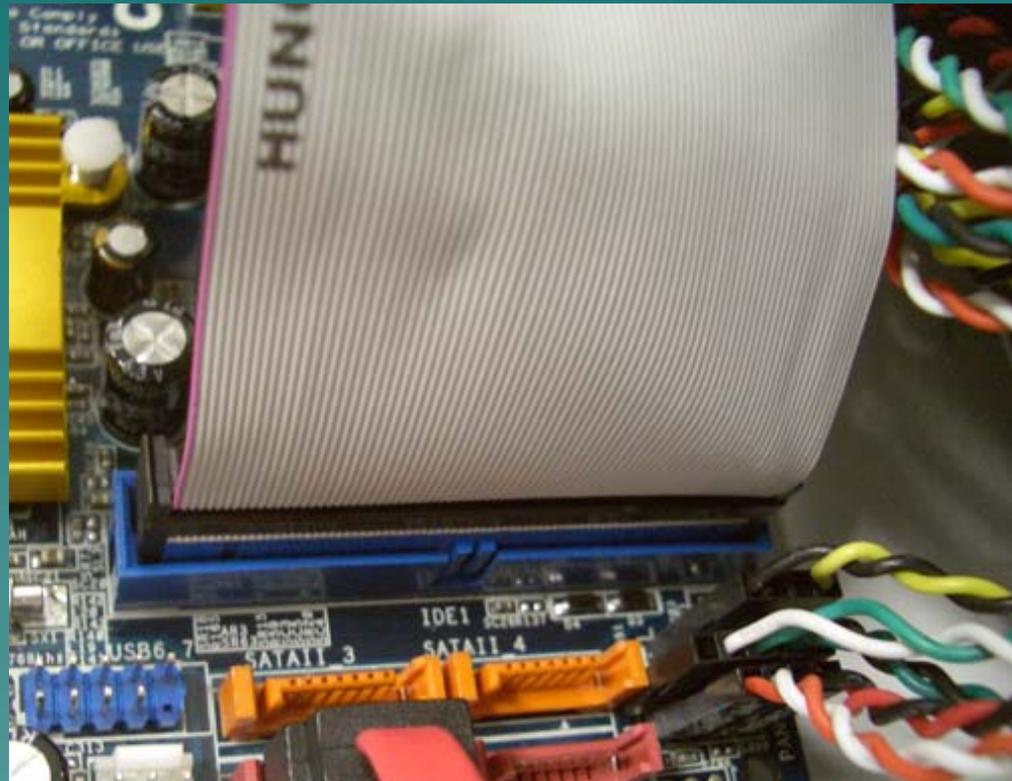
Identify the IDE / ATA Socket

- ◆ Locate the IDE / ATA Socket on the motherboard. Usually, it is blue in colour and contains 2X20 pins socket.
- ATA Socket



Attach IDE Cable to the Motherboard

- ◆ Plug the IDE Cable to the blue socket on the motherboard carefully and press it until it secure on the socket.



Attach IDE Cable to the CD ROM

- ◆ Locate the IDE Connector on the CDROM and Carefully plug the Cable into the connector.



Be Careful !
Red line is Line #1

Attach IDE Power Cord to the CDROM



Install Additional Graphic Card

- ◆ Some mother board has a build in graphics card / display card.
- ◆ Addition graphic display card can be purchased separately.
- ◆ User who want to have high performance graphic processing power usually buy a separate display card rather than using a built-in display.

Advantages of Using a graphics card.

- ◆ High graphics processing power.
- ◆ No need to share the memory with the system – More memory available for the system to run application.
- ◆ Save space – Better ventilation inside the case.
- ◆ Can simultaneously support more than one monitor

Disadvantages of using a separate graphics card

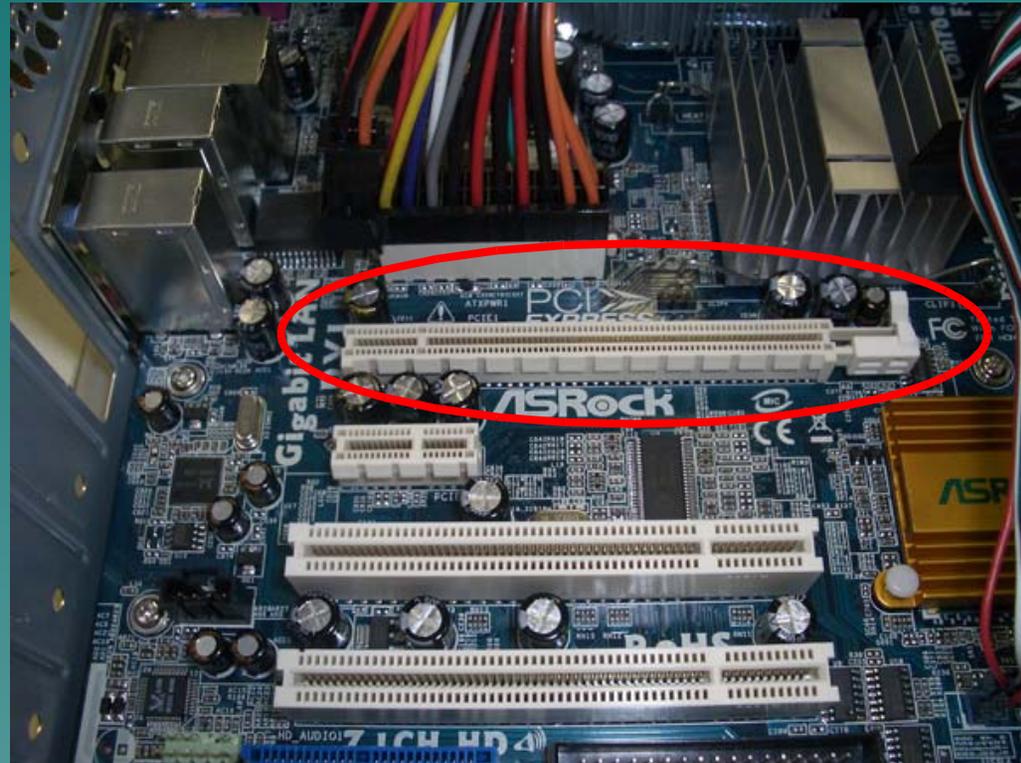
- ◆ Cost – Need money to buy a graphics card.
- ◆ Extra Power is required – Need to have a more powerful power supply.
- ◆ Generate more heat to the system as graphics card will generate heat.

Type of Display Card

- ◆ There are many type of display card. They can be classified by their slot.
- ◆ Oldest – PCI Display Card
- ◆ Around 1 to 2 year ago – AGP Display Card
- ◆ Now – PCI-E Display Card

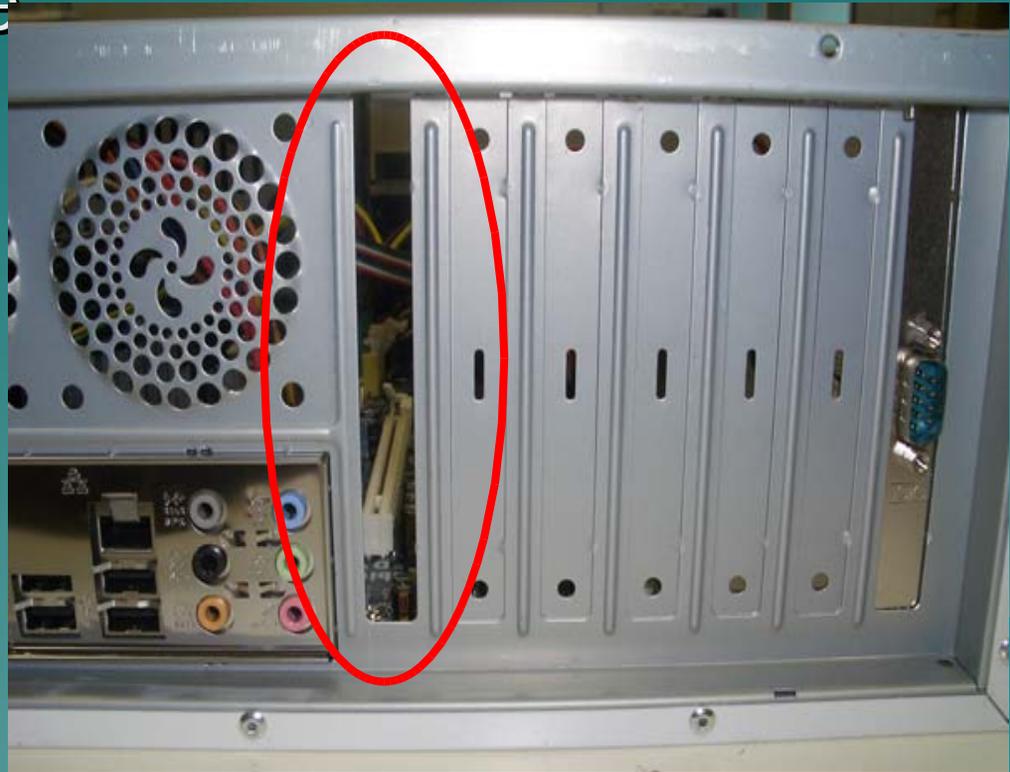
Installation a PCI-E Display Card

- ◆ Locate the PCI-E Slot in the Mother board.



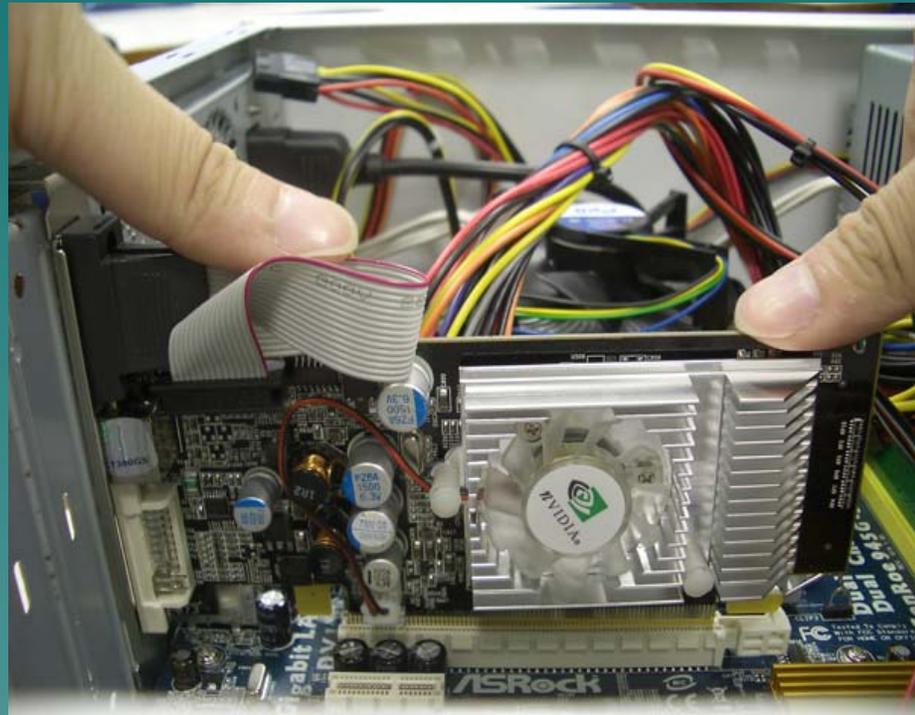
Installation a PCI-E Display Card

- ◆ Remove the Back Cover Plate from the case.



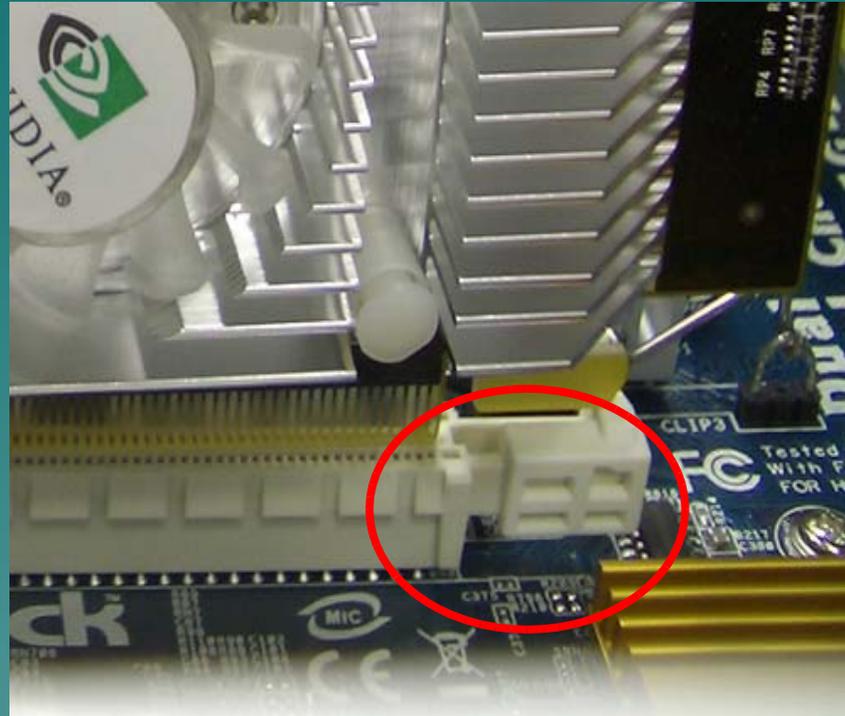
Installation a PCI-E Display Card

- ◆ Place the Display Card in the PCI-E Slot, make sure that your Lock in the PCI-E Slot is open such that the Display Card can be placed in the



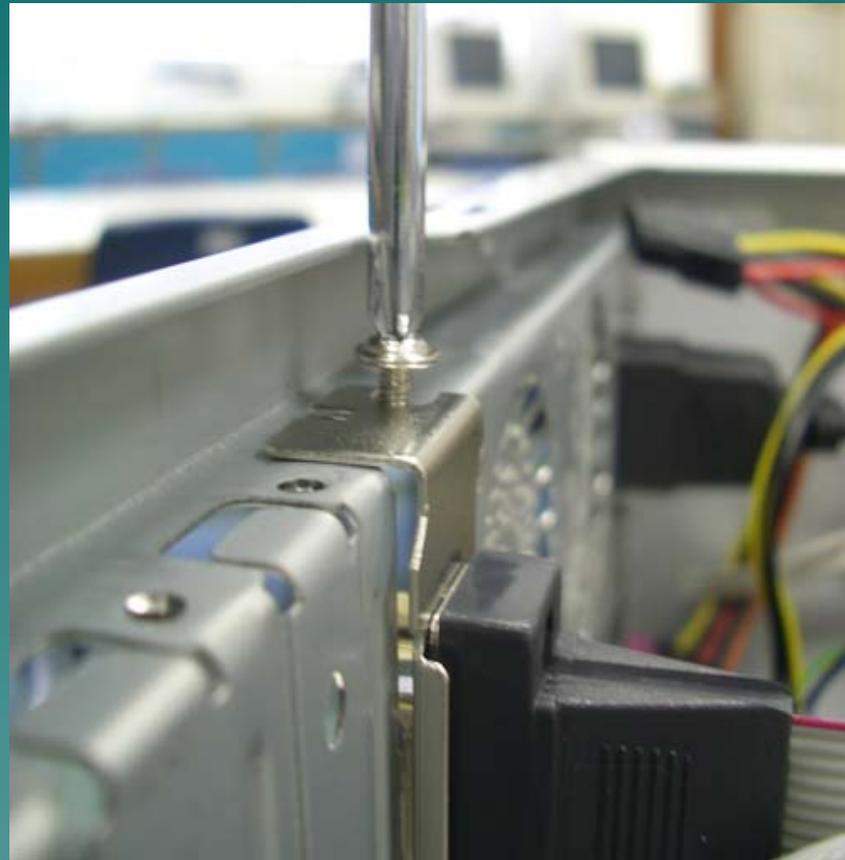
Installation a PCI-E Display Card

- ◆ Secure the Display card by locking it in the PCI-E slot.



Installation a PCI-E Display Card

- ◆ Secure the Display card by using a screw driver.



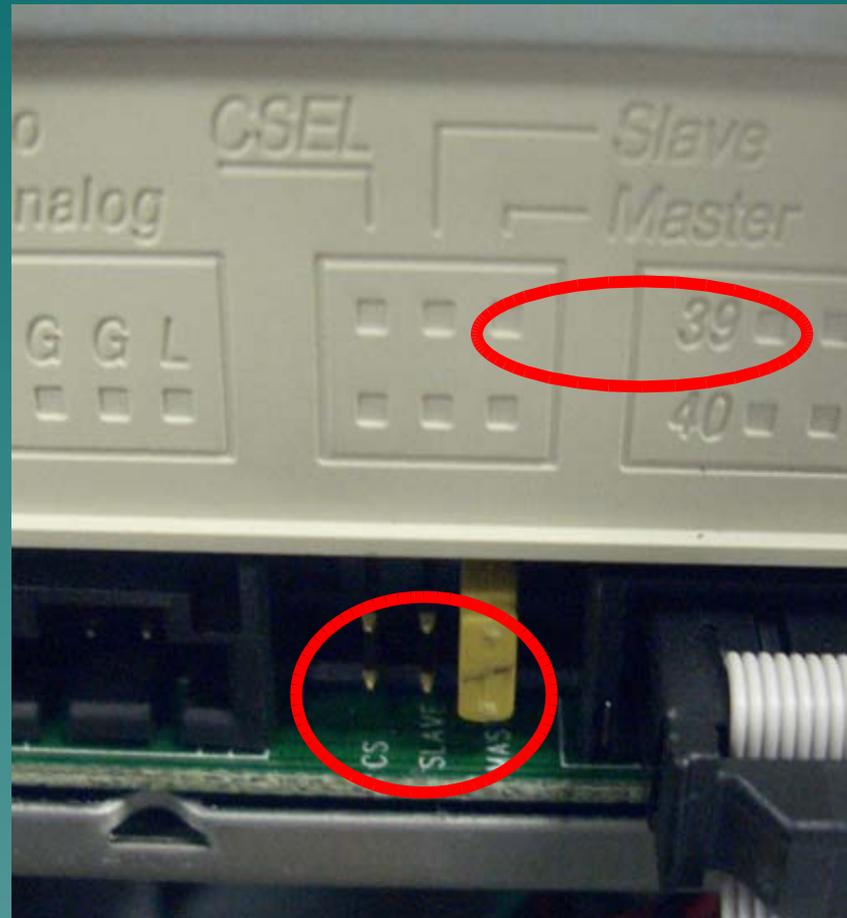
Change the Jumper setting

- ◆ This interface can have two devices on a single cable. Each device on the cable must be placed into the appropriate mode for the cable. One drive is listed as the master and the other secondary drive is listed as a slave.
- ◆ This setting is generally handled by one or more jumpers on the back of the drive. Consult the documentation or diagrams on the drive for the location and settings



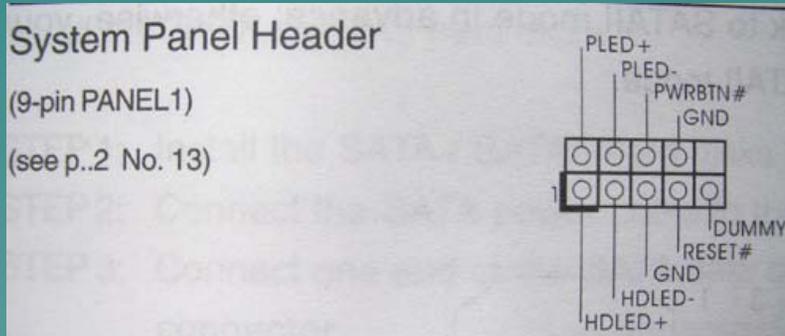
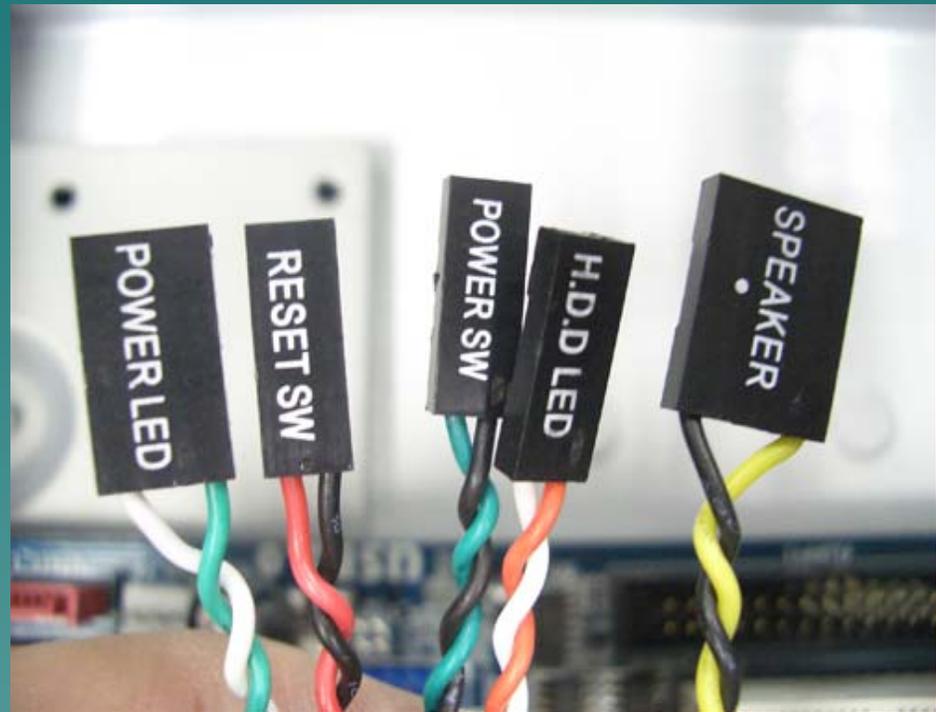
Setting the IDE Drive Mode

- ◆ In this slide, we set the CDRROM to a Master Mode.



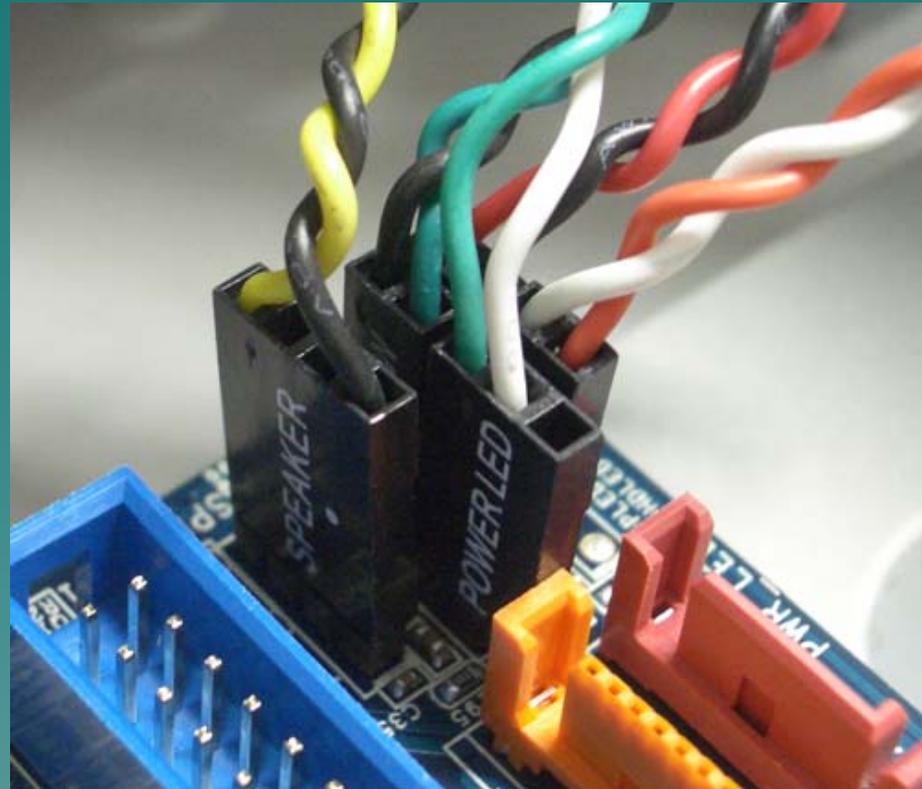
Identify the ATX Control Wires

- ◆ Connect the Power LED, HD LED, Power Switch, Reset Switch, Speaker Control Wire to the Motherboard.



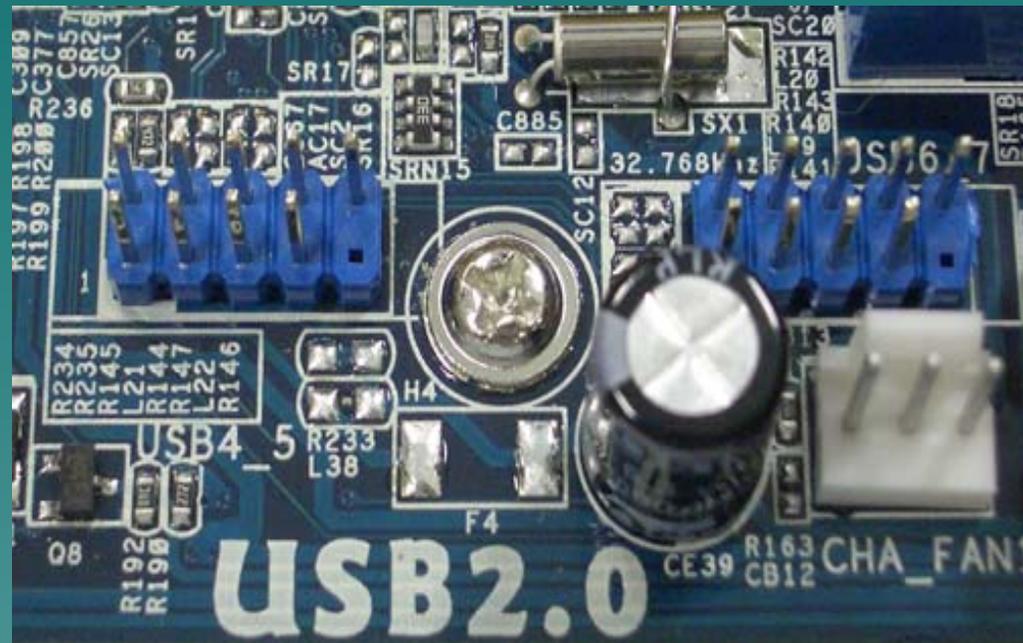
Attach ATX Control Wires

- ◆ After connecting the ATX Control wire the wiring should look like.



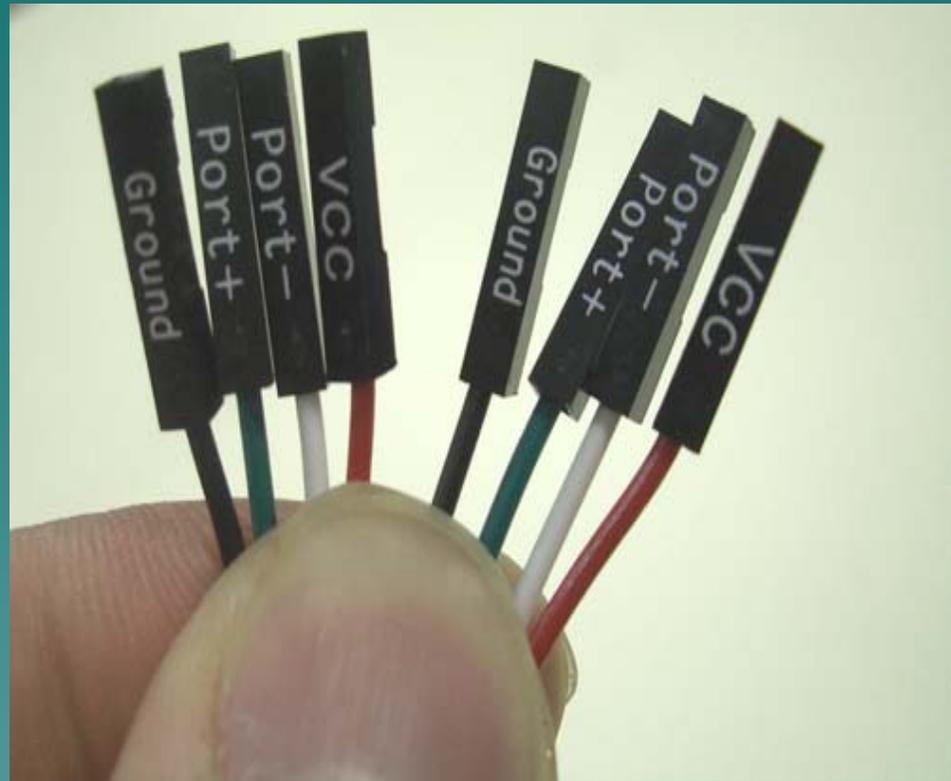
Locate the USB Connector

- ◆ Computer Case have external USB Connection, You should connect the USB Signal cable to the motherboard



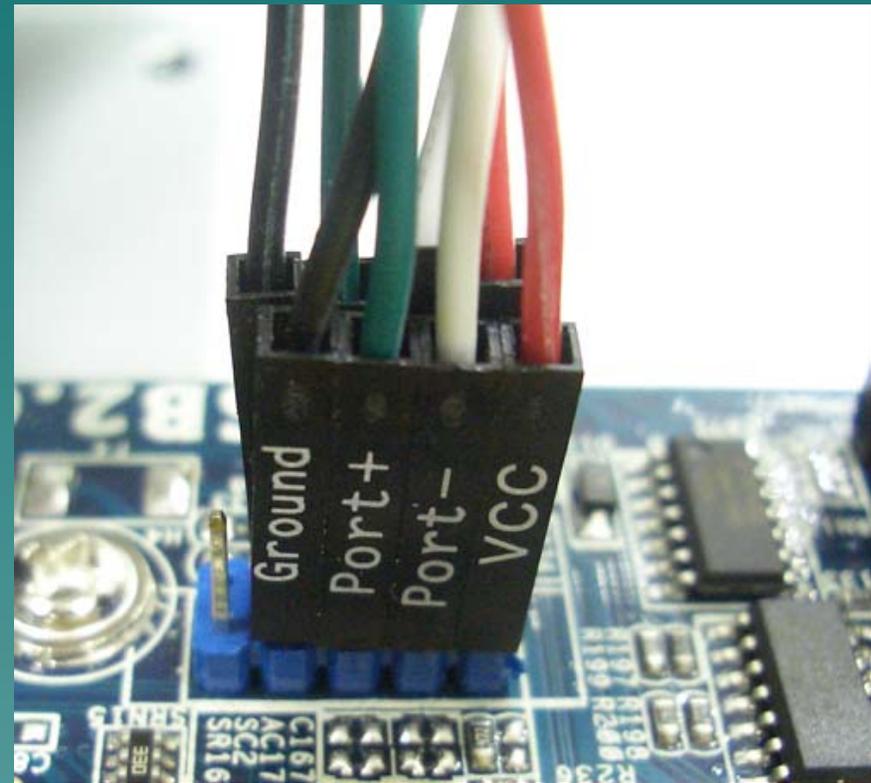
Identify the USB Port Wires

- ◆ You should be careful to when inserting the USB Port Header. Incorrect wiring may damage the



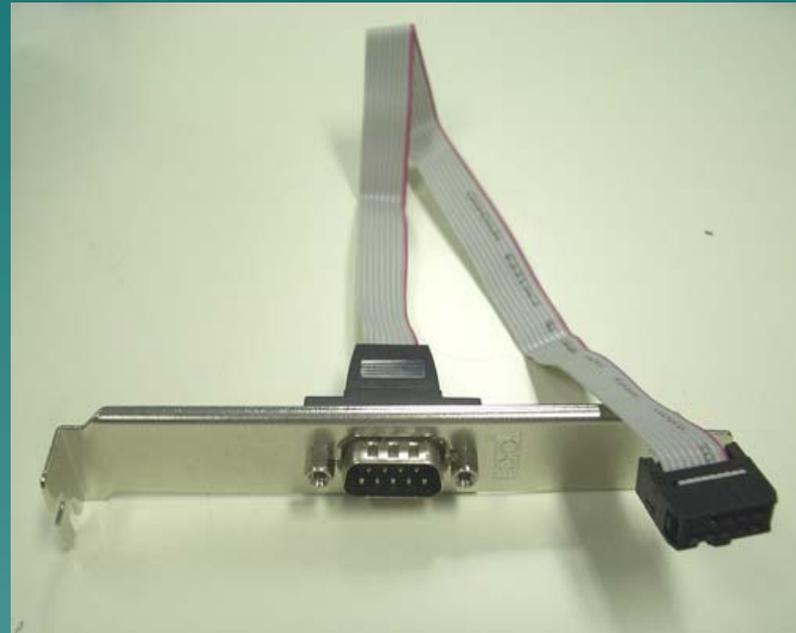
Attach the USB Port Header

- ◆ Each USB Connection contains 4 wires, two for power supply (VCC / Ground), two for Signal transmission



Installation of COM Port

- ◆ Some motherboard provide external COM Port.
- ◆ COM Port is a slow speed communication channel. The maximum speed is around 57,600 bps (bit per second).
- ◆ You can find the COM Port Adaptor from the motherboard package.



Installation of COM Port

- ◆ Remove one of the Panel Cover from the Case.



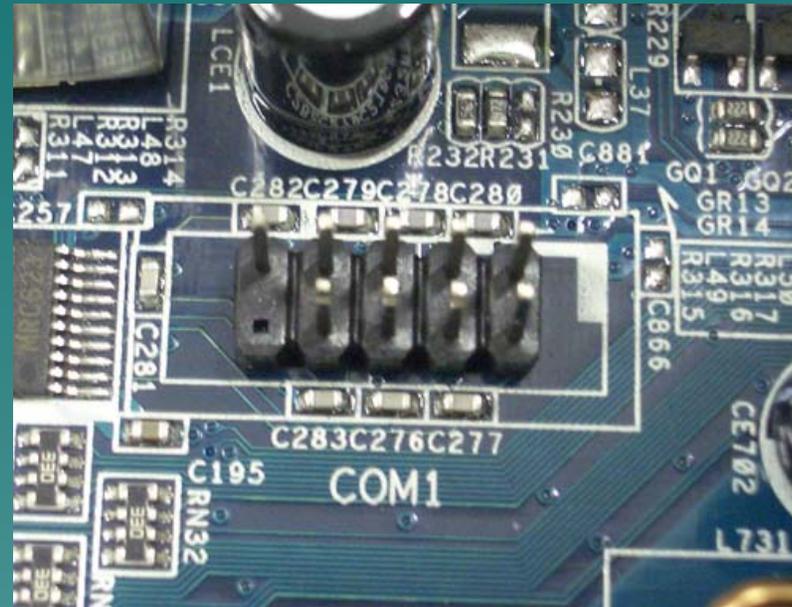
Installation of COM Port

- ◆ Insert the COM Port Panel into the case and use screw to secure it.



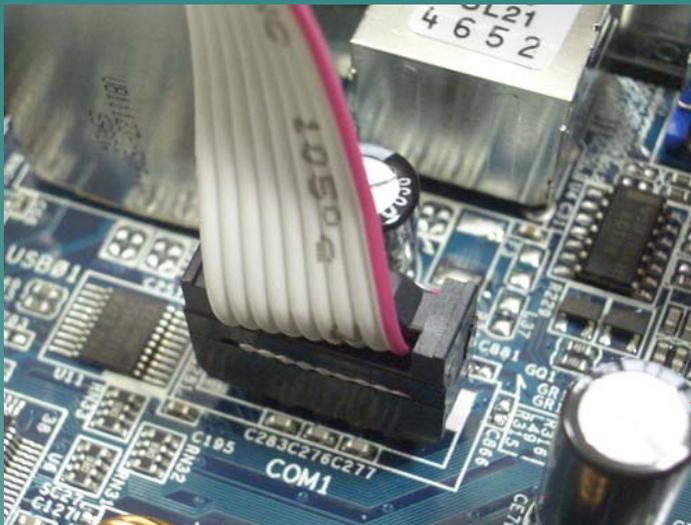
Installation of COM Port

- ◆ Locate the COM Port Header in the Motherboard.



Installation of COM Port

- ◆ Plug the Cable to the COM Port Header.
- ◆ Arrange the wiring.



Install the Case Fan

- ◆ Some case provide addition fan for ventilation. In order to connect the fan to the power supply, you should locate the power



Close the Cover

- ◆ After connecting the Case Fan, you can now close the Case Cover and proceed to O/S (Operating System) and software installation.



End

~ END ~

