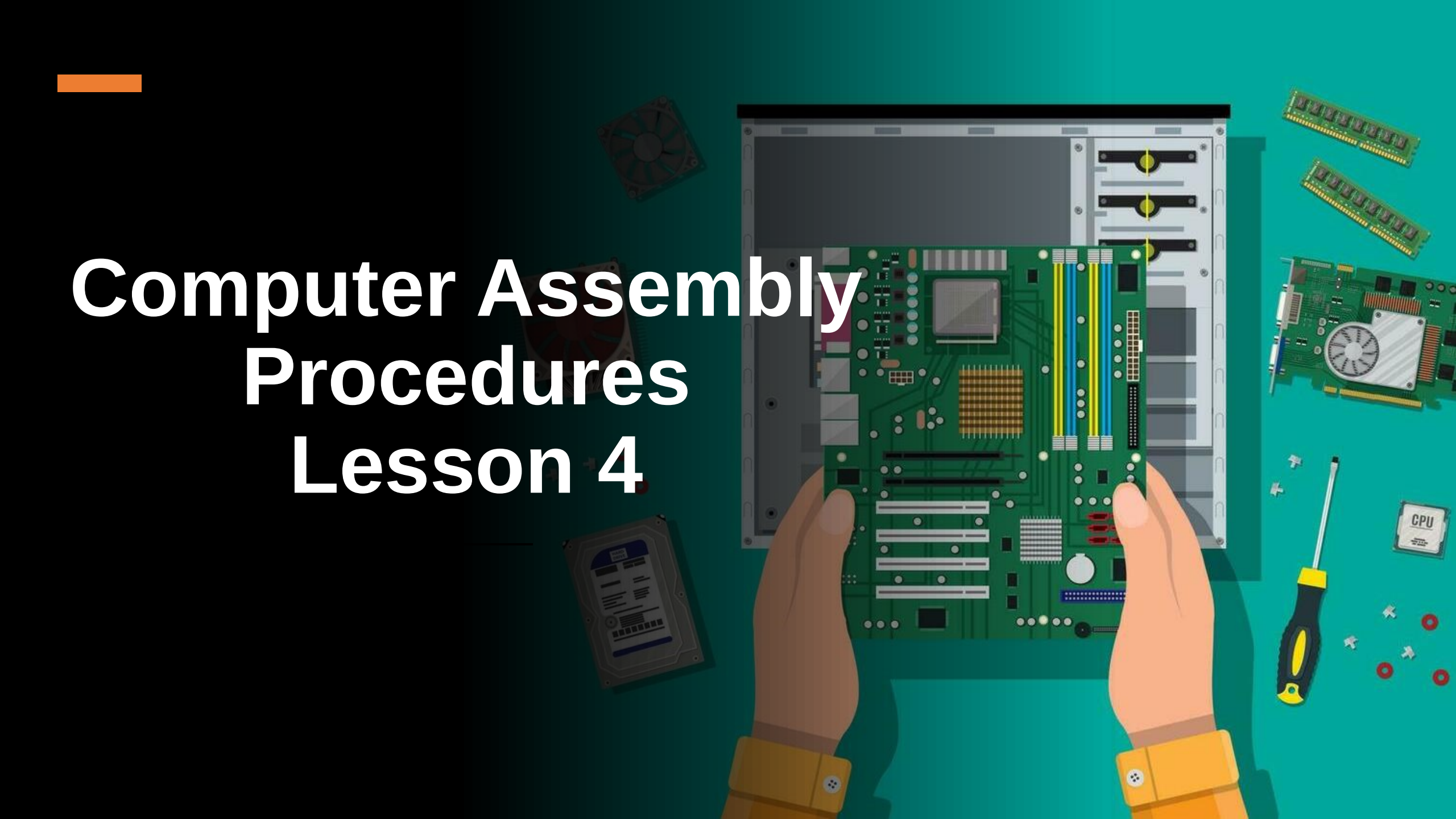
Computer Assembly Procedures Lesson 4



This set of instructions will help you assemble a basic computer capable of running most modern software packages encountered by a casual user. Modern computers become more affordable when users supplement their monetary investment with a few hours of effort.

This computer build will be very basic and will be the minimum hardware necessary to have a functional system. After you have all of the parts and materials needed, it will take between 2 and 4 hours to assemble your computer and you will need to be able to use simple hand tools, such as a screwdriver and a pair of pliers

Step 1: Procuring Parts

First you will need to buy the parts necessary to build the computer. The parts we will use in this project are labeled in figure 1:

1. Processor (CPU)
2. Computer Case
3. Optical Drive (DVD RW and SATA capable)
4. Memory (RAM)
5. Power Supply
6. SATA Cables
7. Motherboard (SATA Capable)
8. Processor Fan
9. Case Fan
10. Hard Drive (SATA Capable)
11. Assortment of case and drive screws (Not Pictured)
12. Flowers (necessary if you are invading the space of your significant other)

Computer Case

₱690.00 – 1350 php

Random Access Memory

₱995 – 3350 php (4GB)

₱465 – 1050 php

Power Supply Unit

Central Processing Unit (CPU)

₱4,750. ₱4,899 core I3

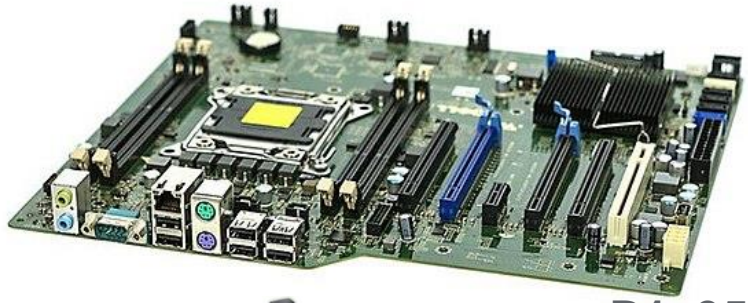
₱6,158. ₱7,099

₱ 15.00- ₱ 30.00

Sata Cables

₱4, 853.00 – 9, 890 php

Motherboard



₱1, 353.00 – 5, 490 php

Hard Drive

₱ 280-400.00 php

Optical Drive

₱ 129-300.00 php

System Fan

₱159-299php

Processors fan

Step 2: Gather Tools and Supplies

Gather the tools you will need for the project:

- Screwdriver (for slotted and Phillips head screws)
- Wire cutters and strippers
- Needle-nosed pliers
- Utility knife
- Small flashlight
- Adjustable wrench
- Small container to hold screws
- Heat sink compound
- Anti static Mat
- Anti static Strap

Step 4: Prepare the Case for Assembly

Three things need to be done before assembly begins:

- Remove any parts or packaging materials that may have been shipped inside the case
- Remove the cover for the optical drive. On our case, we will be removing the cover on the highest drive bay to mount our DVD drive Do this by pressing in the retaining tabs shown
- Make note of the cables pre-installed in the case. These should be front panel connections for features such as the power switch, audio

Step 5: Ground Yourself

Put the grounding strap on your wrist (Figure 10) and connect the other end to the computer case. If your strap is not equipped with a clip to hook to the case, find a place to wedge against the metal as shown in figure 11.

This will prevent any buildup of static electricity on your body from damaging the computer components.

Caution: Static electricity can ruin computer components. Always wear a grounding strap when handling any internal components.

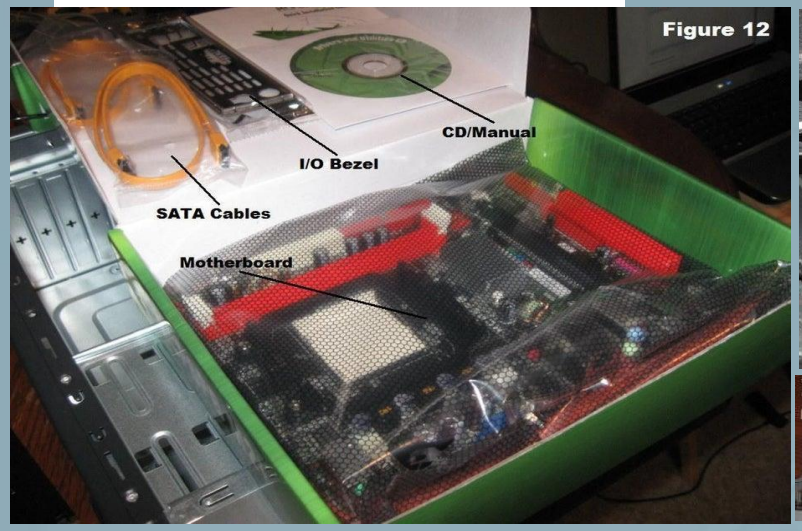
Step 6: Install Power Supply
Consult your case documentation for details and then follow these directions to install the power supply:
Align the mounting holes in the case and power supply as shown in figure 26.
Insert screws and tighten.

Figure 26

Step 7: Install Motherboard

To install the motherboard, we need parts that should have been included with your purchased components:

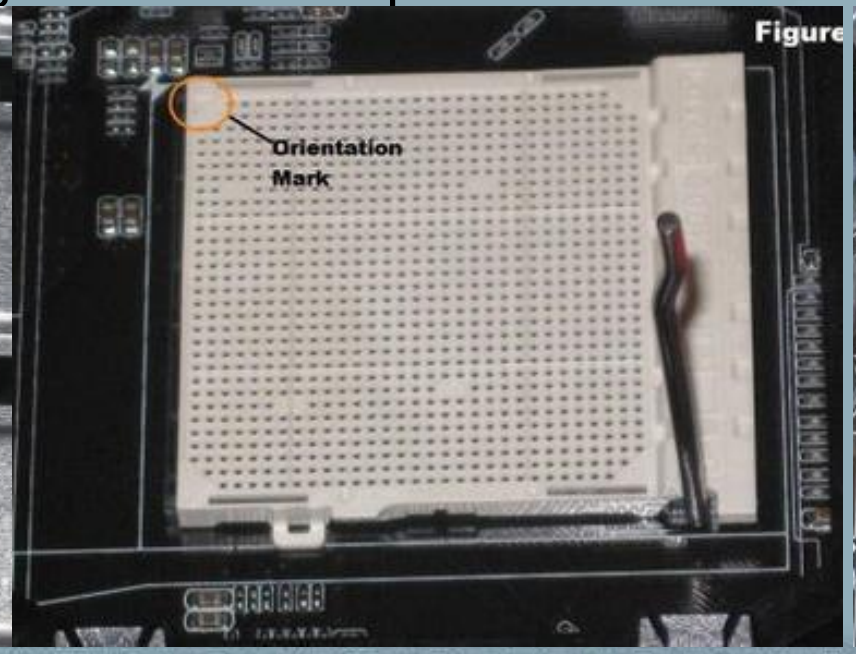
I/O Bezel is a trim panel installed in the back of the case that surrounds the interface ports on the motherboard. It should be included with the motherboard.

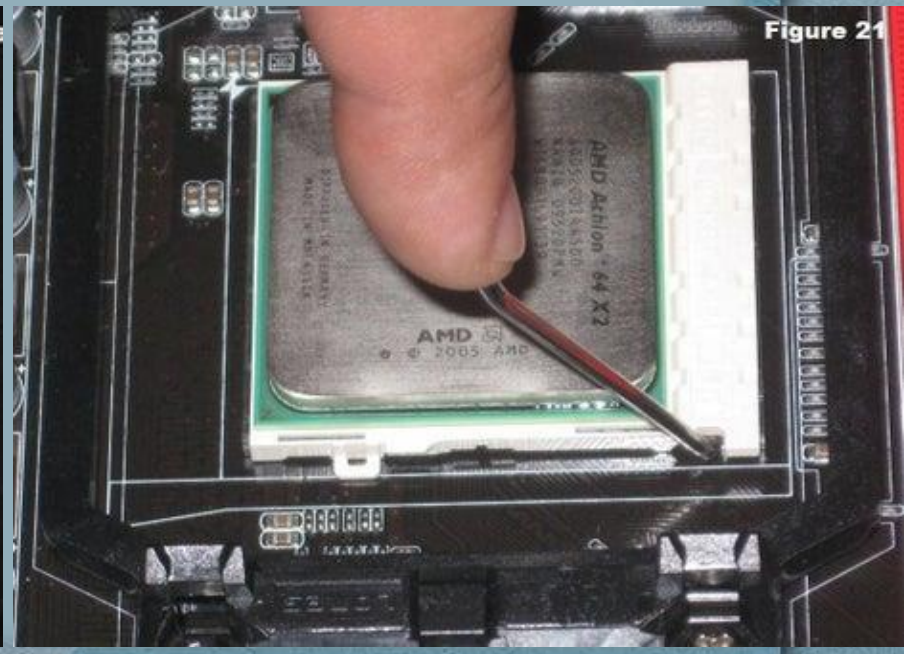


Step 8: Install the CPU

The CPU is the brain of the computer. It is installed on the motherboard in the socket shown in figure 20.To install the CPU:

Find the corner marking that designates pin 1 of the CPU. On this AMD brand processor, the corner is marked with an arrow. Consult the manufacturer's documentation for specific information about your processor. Lift the small metal rod next to the socket as shown in figure 20. Find the corresponding marking on the CPU socket and insert the CPU so that the markings are lined up. Push the rod down to lock the





Step 9: Install the CPU Fan

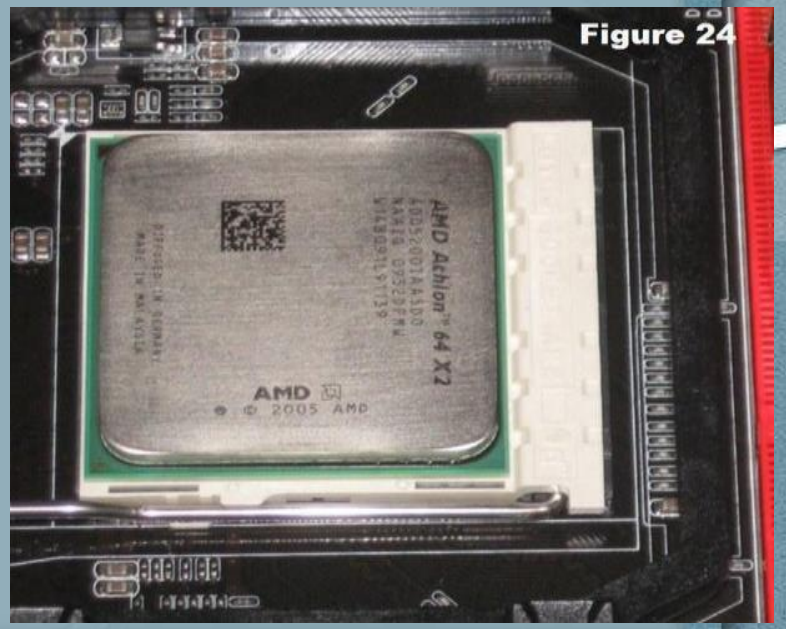
The CPU fan is really a combination of a heat sink and fan together. The unit draws heat away from the CPU . To install the fan:

Place thermal compound to the CPU following the instructions provided with the compound.

Set the fan assembly on the CPU with mounting tabs aligned.

Pull the locking rod down on the fan assembly to lock into place.

Connect the fan assembly's power connector to the motherboard. Consult the manual to determine proper placement.



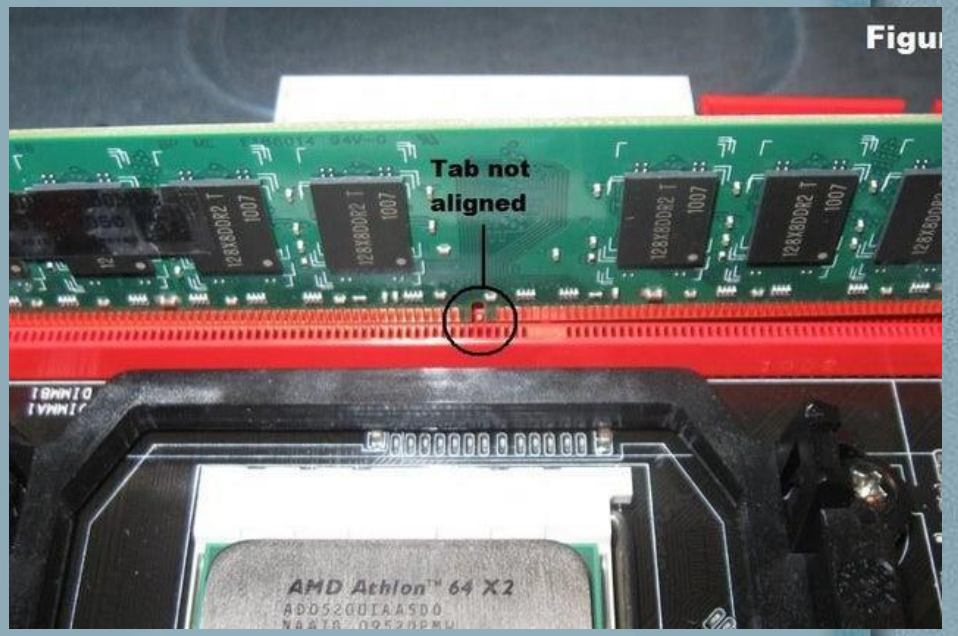
Step 10: Install RAM

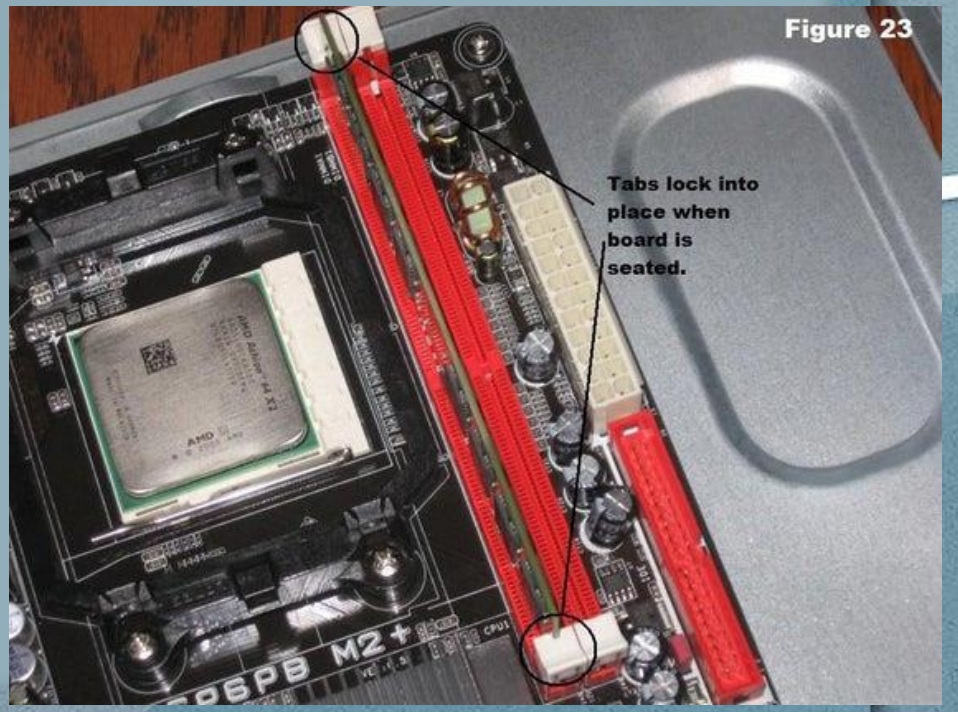
The RAM is the temporary memory location that the processor works from. Permanently stored data is pulled from disks and stored in RAM while the processor works with it. The memory is easy to install:

Set the RAM board in the socket as shown in figure 22. Check to see that the notch in the board is in the correct location. If it is not, turn it around 180º.

Press firmly on both ends of the board to set it into the socket. Make sure the tabs lock into place as shown in figure 23.

Caution: Pressing the boards in when the tab is not aligned could cause damage to the RAM boards as well as the motherboard.

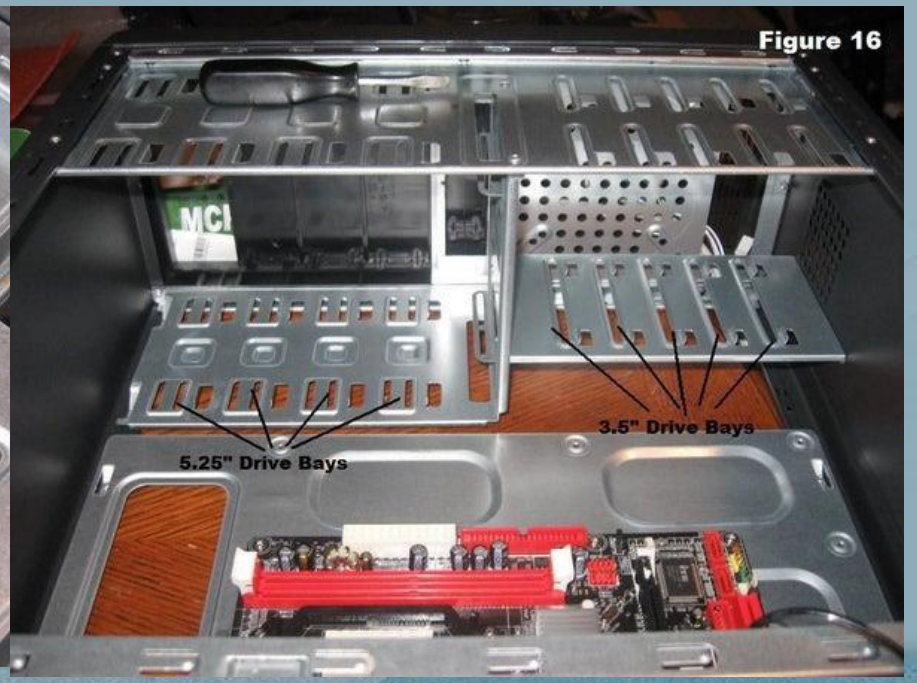




Step 11: Install Hard Drive

The hard drive is the device that stores all of your data. It is 3.5" wide and needs to be mounted so that you can gain access to the cable connections on the back (figure 16). If that is not possible you may need to connect cables before you install the drive. To mount the drive:

Find a 3.5" drive bay to install the drive in. If you have trouble finding a place to mount the drive consult your case documentation for suggestions.



Step 12: Install Optical Drive

The optical drive is 5.25" wide and is installed in the drive bay that we removed the cover from in a previous step. Cable access considerations apply to this drive also. To install the drive:

Slide the drive into the drive bay until the screw holes are lined up and the front of the drive is flush with the front of the case (figure 18). Make sure that it is orientated correctly.

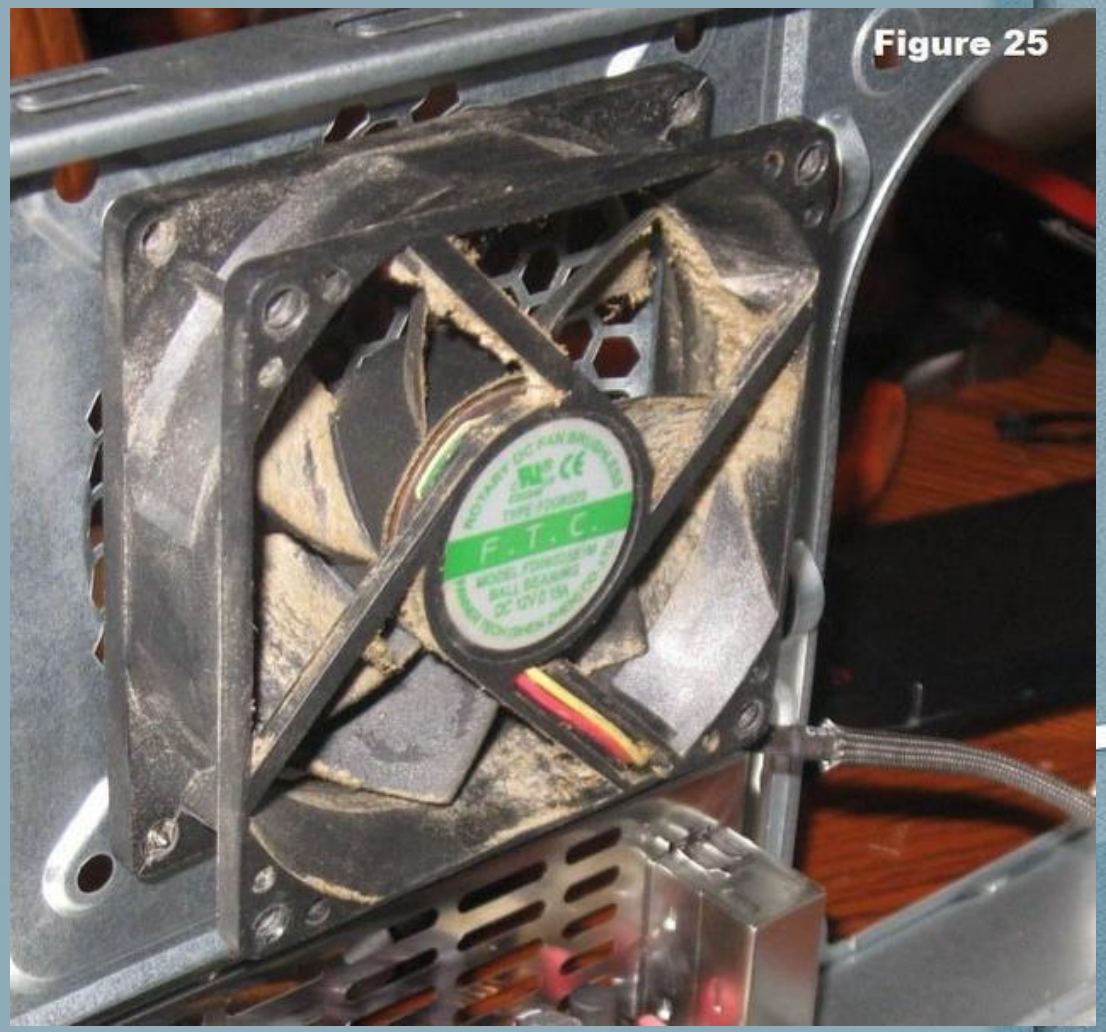
Install the screws.

Step 13: Install Case Fan

The case fan is usually installed on the back panel of the case. If the fan mount is not obvious consult the case documentation. To mount the fan:

Align the mounting holes by holding the fan to the mounting pad on the inside of the case as shown in figure 25. The fan needs to be mounted so that it blows air out of the case.

Insert the screws from the outside of the case and tighten.



Step 14: Connect Cables

With all of the components installed in the case, the jungle of wires can be daunting. It is important to consult the motherboard manual in order to make sure proper connections are made. There are two kinds of connections, power and data.

Every device that has been installed needs power. In figure 27, the power supply connectors are shown. The motherboard has two power connections, and there are two connectors specifically for SATA devices (drives). The other connectors will run fans and other non-SATA devices.

Data cables connect drives and front panel devices to the motherboard. Please consult the motherboard documentation for the exact placement of connectors.Warning: Incorrect connections can damage components and cause bodily injury.

Figure 27

Step 15: Wrap-up

Now that the components are completely installed, the last thing to do is to reinstall the side panels on the case. The computer is now ready to be turned on and to have software loaded on it. If the computer has problems starting up, check all component connections and mounting to make sure that you have hooked everything up correctly. Consult individual component manuals for specific troubleshooting information if problems persist.