Lab 3.5.3: Motherboard Installation

Estimated time: 45 Minutes

Objective

Upon completion of this lab, the motherboard will be placed into the case and secured. The CPU, the heat sink, and the memory will also be installed.

Equipment

The following equipment is required for this exercise:

- ESD wrist strap & Anti-Static Mat
- Tool kit and screws
- Motherboard & Manual
- CPU with Fan & Heat sink
- Thermal grease
- RAM (use the appropriate type for your motherboard)

Scenario

The case for your friend's computer should be ready for the next step. Continue to work on installing the CPU and RAM.

Procedures

You must wear an anti-static wrist strap for this lab and use extreme care. One discharge of static electricity could render a motherboard useless. In this lab, continue to work on the PC that is being built and properly install the motherboard, CPU, heat sink, CPU fan, and RAM.

Step 1

Lay the motherboard down on the anti-static mat. Identify the CPU socket on the motherboard. The CPU socket is keyed so the CPU may only be inserted one way.

What CPU type does the motherboard support? _____

Step 2

Pick up the CPU and locate pin one. Note that the CPU may only be inserted one way into the CPU socket.

Install the CPU into the CPU socket. If the CPU is being installed into a ZIF (Zero Insertion Force) socket, no force is necessary. If any force has to be applied, the CPU is not lined up correctly.

After the CPU is seated, adjust the CPU socket lever until it is in the locked position. When the lever is locked the CPU is secure.

Who is the manufacturer of the CPU? _____

Step 3

Attach the cooling fan to the heat sink. Use the four screws that came with the cooling fan to attach the fan securely to the top of the heat sink.

Note: Some heat sinks are already equipped with a fan and will not need to be secured with screws.

Is the heat sink being installed attached with screws? _____

Step 4

To attach the fan-heat-sink assembly to the CPU, lay the heat sink down on the CPU and align the heat sink clips to their correct positions on the CPU socket. If necessary, rock the heat sink into position until one side of the heat sink is locked down to the outside of the CPU socket. Next, push down the other clip until it locks. After both sides of the heat sink are clipped, the heat sink will be secured to the CPU.

Caution: *Using a screwdriver may be necessary to secure the heat sink clips, but do not apply excessive force. If the screwdriver slips off the clips, it may damage the motherboard.*

Step 5

Attach the power connection for the heat sink fan to the motherboard. Use the motherboard manual to identify the fan's power pins on the motherboard. Connect the fan's power leads to these pins and making sure they are secure and in the correct orientation.

Step 6

Install the memory. When installing the memory, the first step is to identify the memory sockets. Use the motherboard's manual to identify the memory sockets.

Examine the memory sockets and the memory chip(s). Memory and associated sockets are "keyed" to ensure proper installation. Take the memory and line it up with the socket. Slowly seat the memory into socket one. It may help to "rock" the memory into the socket until secure by gently pushing alternately on the ends of the chip. Remember, just as with the installation of the CPU, if too much force is exerted the motherboard can be damaged or destroyed.

If more than one memory chip is to be installed then follow the instructions in the motherboard's manual to add more. It is common for the next memory chip to be placed in socket two. Refer to the motherboard's manual for specific information.

Step 7

Install the motherboard. Align the motherboard with the standoffs and set it in the case. You might have to push the motherboard back slightly against the I/O plate to get it to line up correctly. Once the motherboard is seated use the proper screws to secure it to the case. Do not over-tighten the screws or the board may be damaged.

Step 8

Connect the front panel LEDs to the motherboard. The motherboard connects to the LEDs on the front panel of the computer case to give the operational status of the computer. For example, a green LED on the front panel indicates that the computer is running.

Use the video demonstration and/or the motherboard's manual to identify all of the LED pin outs.

Connect each LED wire to the appropriate pin outs.

Troubleshooting

Proper installation of the cooling fan is absolutely necessary with newer processors. Newer processors run at very high temperatures that can cause diminished performance or, in rare cases, destruction if not cooled properly.

Reflection

What would happen if the CPU fan stopped during normal computer operations?

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What was the most difficult component to install? Why?

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