CPADS HW Activity II – Part II

“Get It Together!”

The goal of this third activity is to reinstall the CPU in the good systems (with thermal compound). Then we will take a look at the system BIOS to see the various options available. PLEASE ASK IF YOU HAVE ANY QUESTIONS DURING THIS ACTIVITY!

**1. Motherboard ID**

Since the hardware you will be working on may be different from the first activity, we will again practice identifying the various motherboard components (but will not reassemble the PC just yet).

Motherboard Specs

Manufacturer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Model \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*I/O Slots – give number available* ***and example component*** *attached there*

PCIe x16 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PCIe x1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PCI \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

IDE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SATA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Floppy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Power (# pins) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*External Ports – give number* ***and example component*** *attached there*

PS/2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

USB \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

LAN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

IEEE 1394 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

VGA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DVI \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

HDMI \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Audio \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2. CPU Installation – FOR REAL!**

Since you now have experience with heatsink/fan removal and installation, your first task is to remove the heatsink (you will want to unhook the heatsink fan from the motherboard). Next you will want to remove the CPU from the socket and thoroughly clean off the old thermal compound from both the CPU and heatsink using rubbing alcohol, paper towels and/or Q-tips. Once you have the CPU cleaned off, identify the specs of the CPU you have in the following table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Motherboard**  **Manufacture/Model** | **CPU Manufacturer** | **CPU Family** | **CPU**  **Speed** | **CPU**  **Socket** | **CPU**  **L2 Cache** |
|  |  |  |  |  |  |

Reinstall the CPU in the socket making sure it is seated and the lever locked in its downward position and thoroughly clean (**make sure not to touch the top of the CPU with your fingers which will leave residual oils**). The next task is to mount the heatsink/fan on top of it. Apply a VERY SMALL amount of thermal compound (the silver *goo*).

* For AMD CPU’s – apply a small amount in the center of the processor about the size of a small grain of rice.
* For Intel CPU’s – apply a small amount along a line from left to right across the middle of the CPU.

The purpose of the thermal compound is to fill in the small imperfections in the surfaces of the CPU heat spreader and the heatsink, **not** to form a layer of paste between them. As Dr. Hovemeyer put it so eloquently - “You are NOT frosting a cake!” Do not spread out the thermal compound as it will take care of itself when the CPU heats up. If you fail to seat the heatsink properly, you should clean off the thermal compound and start over with a fresh dollop of goo.

**FINALLY, REMEMBER TO PLUG THE FAN IN TO THE CPU FAN HEADER!**

**3. PC Assembly**

Assemble the rest of the components in the case, turn the computer back on, and hopefully it will boot.

* Ensure both memory sticks are installed in dual-channel configuration (see your motherboard manual)
* Install your optical drive in the top drive bay of your PC case
* Mount your SSD in the supplied bracket with the supplied screws
* Install your SSD in your PC case
* Connect the supplied SATA power cable to your two SATA devices
* Connect a SATA data cable to each of your SATA devices

**4. BIOS configuration**

Often times it will be beneficial to modify the computer hardware settings via the BIOS (Basic Input/Output System). The BIOS is usually brought up by pressing either <DEL> or <F2> when the computer is *first booting up*, i.e. before the OS begins to load. Watch the boot screen carefully when your machine first starts up to see what key presses are required to enter the BIOS.

Reboot your machine and enter the BIOS (aka Setup menu).

Select either “Load Optimal Settings” or “Load Default Settings.” Go through the various menus and set the following options (in no particular order):

* Disable the floppy drive and controller (if present)
* Set the boot sequence to CD-ROM/HDD
* Disable the logo startup screen (so POST messages appear when the computer is turned on).

Find the list of SATA devices and note the devices that are installed and on what channel they appear.

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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Find the CPU information in the BIOS and list the information below:

**CPU Family:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CPU Speed:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_