

# HARDWARE MAINTENANCE

There basically different types of Personal Computer but most recognized are:

**Desktop:** Desktop Computer is a personal computer designed for regular use at a single location on or near a desk or table due to the size and power requirement.

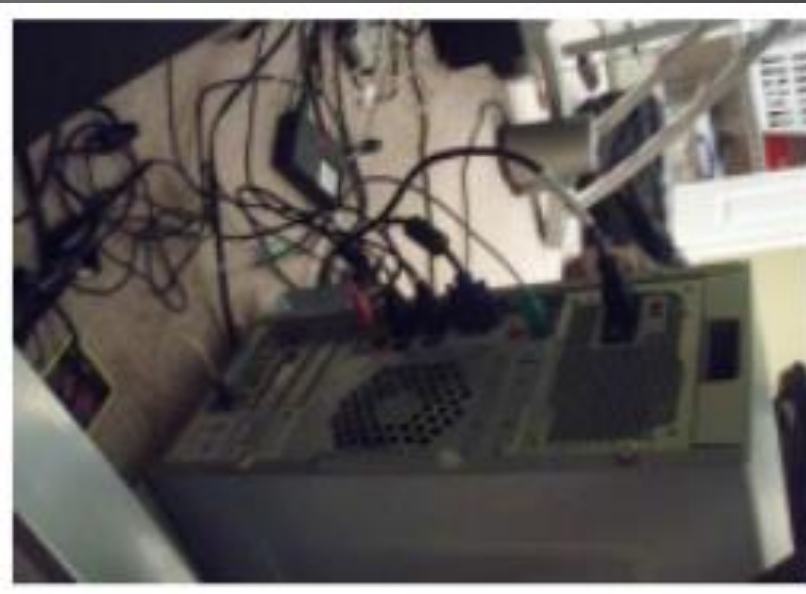
**Laptop:** Is a small, portable personal computer with a “clamshell” form factor, typically having a thin LCD or LED computer screen.

There are basically two components of computer hardware those physically seen that outside the computer and those inside the casing those cannot be seen unless the computer is disassembled. These are RAM, CPU, fan, cables, harddisk, and many others. And these parts can develop faults on the cause of use and require adequate maintenance, either through corrective, predictive or preventive maintenance.

# HOW TO DISASSEMBLE YOUR COMPUTER IN ORDER TO REPLACE A MALFUNCTIONED PART

## Step 1: Unplugging





The first thing you do, is unplug every cable that's plugged in to your computer. That includes the following cables:

- Power
- USB
- Mouse
- Keyboard
- Internet
- Ethernet
- Modem

So pretty much just unplug every cable from your computer.

## Step 2: Outer Shell/Casing





Now that your computer is fully unplugged, move your PC to a clean work space, preferably a carpet. The carpet is better than tile, because screws and other small parts will roll around.

### **Step 3: Outer Shell/Casing (cont.)**

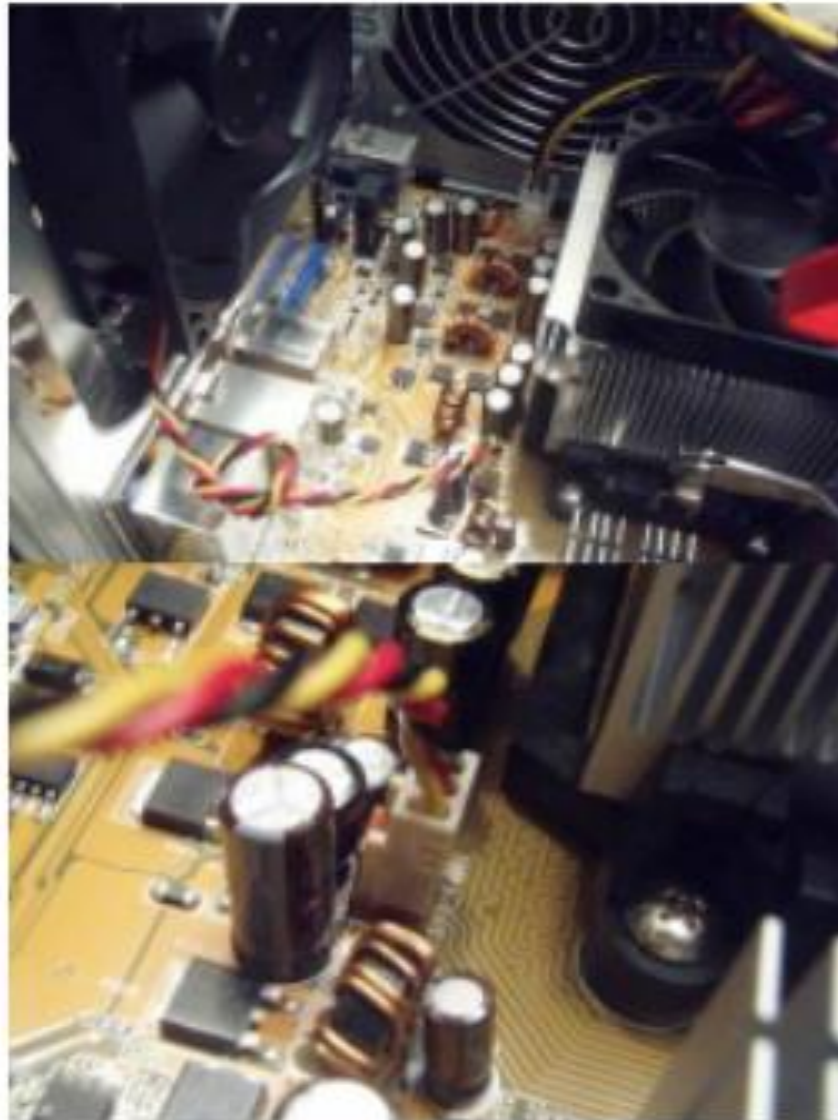




Just like the side panels, the top panel slides off. Also like the side panels, the top one slides toward the back of the computer. The front panel clips on to the metal frame with four tabs, so you must push them in and slide the whole panel forward.

**Step 4: System Fan**





First, unplug the fan from the motherboard. You can find the plug by following the wire from the fan. It should be labeled "SYS\_FAN1". Next, you will have to unscrew the fan from the outside. You should now be able to lift the fan out of the PC.

## Step 5: CPU Fan



## Step 6: Power Supply



The power supply is a large metal box located at the upper-back part of the computer. They sometimes come with an on/off switch that is accessible from the back of the computer. The main power cord also plugs into the back of the power supply.

### **Step 7: CD/DVD Drive[s]**



The CD/DVD drive is one of the easiest components to remove. First, unplug the ribbon from the back of the drive. Once that is completed, pull on the tab securing the drive in place, then push it out from the inside.

### Step 8: Card Reader





Most card readers have a protective plastic cover on the part that you can see from the external computer, which can be removed by lifting the tabs on the top and bottom. Refer to the pictures.

## Step 9: Hard Drive and Portable Hard Drive Slot



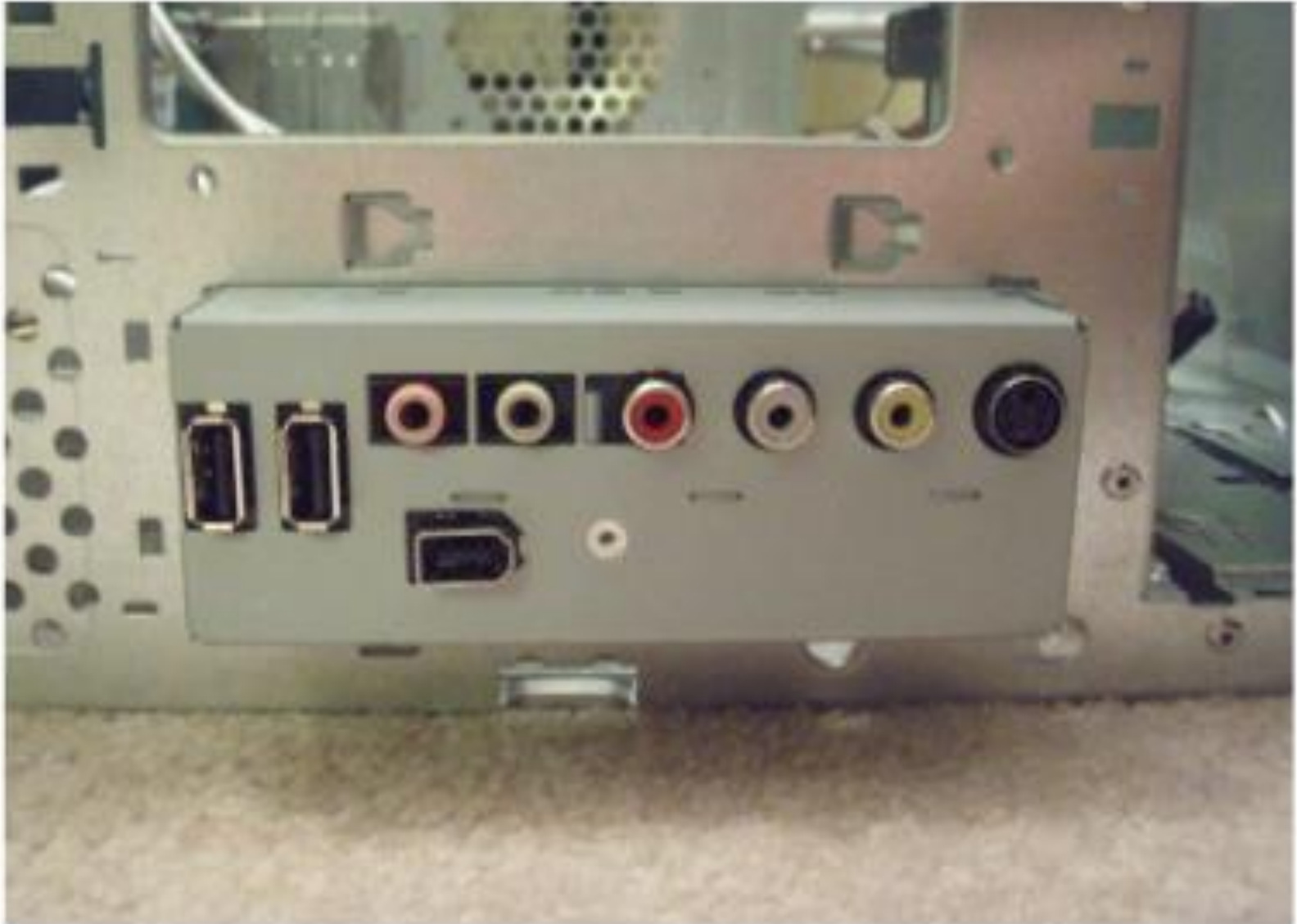
To remove the hard drive from the side of the slot, unscrew the four screws securing it in place. You must be very careful to not drop the hard drive, as it is very delicate!

## Step 10: Expansion Cards



There should be a single screw on top of each expansion card slot, whether it's occupied, or empty. Remove the screws on the occupied card slots. Once the screws are removed, you should be able to remove the cards by pulling them carefully upward.

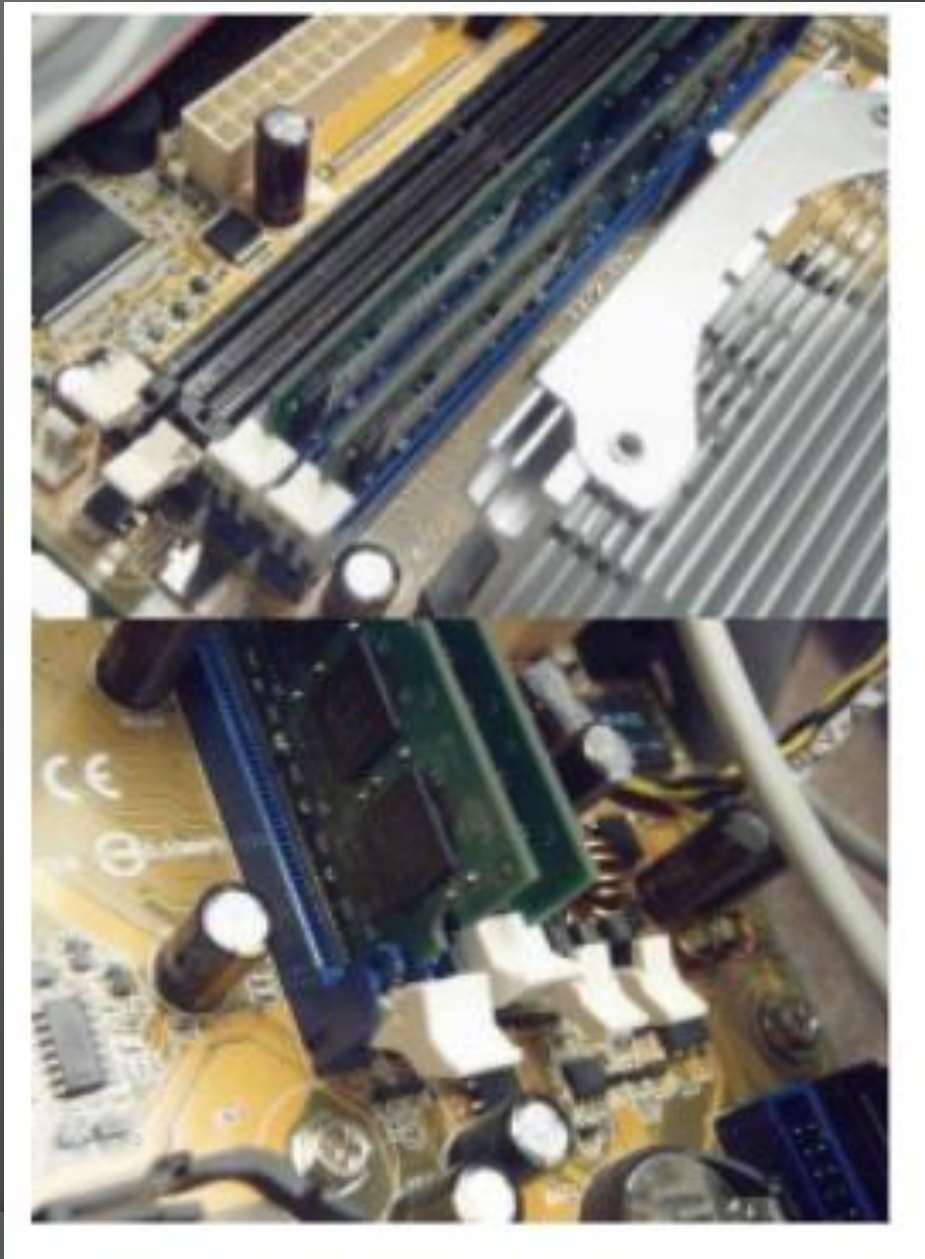
## Step 11: Connectivity Center Cables





The connectivity center is the area on the front of the computer where there is many input sections, like usb, firewire, microphone, headphones, video, etc.. I won't remove the whole connectivity center in this step, but I will unplug all the cables coming from it.

## Step 12: Random Access Memory (RAM)



So pretty much, the more RAM you have, the faster your computer runs. Most computers have 4 RAM slots, and two RAM chips. My computer came stock with two, but yours might have more or less. To remove the RAM, push down on both tabs holding the RAM in place, which are located at both ends of the RAM. Please see the pictures.

### **Step 13: Power Button and Power LED + HDD LED**



To remove the LEDs from the "chassis", push them from the front with a screw driver. To remove the button, you will need to push it from the back, the side with the wires. For clarification, see the pictures.

## Step 14: Connectivity Center





First thing, unscrew the single screw holding it in place. There might be a different amount of screws, in different locations on your computer, but just unscrew them all! Once the screw[s] are removed, the whole component should slide into the inside of the computer, which can then be removed.

## Step 15: Mother Board





anyway. The motherboard links every component in the computer together. The CPU, RAM, and expansion cards are attached directly to it, and every other part of the computer is in one way or another attached to it.

## Step 16: Done!



# COMPUTER HARDWARE REPAIR

## GENERAL GUIDELINES FOR REPAIRING COMPUTERS

For repairing or trouble-shooting a computer use the following guidelines:

**Gather together your toolkit:** e.g. air blowing machine, screw drivers, socware, back up disk etc.

**Check for power FIRST, before doing anything else.**

10 - 15 percent of all computer Issues/Problems emanate from power surge. Check this BEFORE doing anything else. Check to be sure if the computer is plugged in to an AC outlet properly.

**Check your external connections to the computer.**

Specifically, check the mouse, keyboard, monitor, modem and/or printer cables, making sure that all are secure and in the right sockets.

**Perform the Power On Self Test (tiPOST)**

POST is a set of procedures that a computer runs through each time it is turned on. It ensures that all of the system's hardware is working properly before trying to load the operating system. If the computer does not pass POST, it will not boot.

**Tip:** Make sure the computer turns on. If nothing happens (no lights, no sound, no fans, etc.), the computer has a power related issue.

## **GENERAL GUIDELINES FOR REPAIRING COMPUTERS**

**If the computer is still malfunctioning, go ahead then and case.**

Check to see that all of the cards are fully pressed down into the bus connections, that any socketed chips are fully pressed into their sockets, and that all cable connections are fully attached. Make sure that the drive cables are attached correctly.

**Clean any dust or foreign material out of the case while it is open.**

Dust can cause overheating problems and electrical shorts. Sometimes, insects will nest inside the case as well. All of this needs to be cleaned out before you close up the case. Take precautions to avoid inhaling excess dust, and consider using protective eyewear if necessary.

**Try to boot the computer to the hard drive, or to a bootable CD/DVD disk if necessary.**

Sometimes the hard disk will become corrupted by a user, or by a virus.

**Check the CMOS setup program, and correct any configuration problems.**

If the information in CMOS RAM about your PC's configuration has been changed, or if the battery has died, your computer will not boot correctly, or it will not recognize certain components.

**Look for unwanted changes.**

Someone may have turned the brightness down on a monitor, or the LAN staff may have changed your PC's configuration without your knowledge (or approval), or an installation program may have corrupted your software. Look for recent changes in your system's operation. You may need to run an uninstaller program to remedy software-related problems.

**Isolate the problem to one piece of hardware, or one software package. When all these fails, then consult a professional.**

**The computer is unable to start up –**

If the computer does not turn on when you press the power button, the following suggestions may help you to determine why the computer will not start up.

First of all, check if the computer is plugged in to an AC outlet properly.

Plug another electrical device into the outlet to be sure that the outlet is providing adequate power. A surge protector can be used in this case, because voltage surges can be very damaging to computers and other electrical components. Then put on the system to perform a POST

After the POST and it confirms that, the computer is producing all of the usual startup sounds and lights, but the monitor is not displaying any information, perhaps there is a problem with the monitor. Make sure that

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it is connected to a power source, and also that the VGA cable is connected to the computer.

## **The computer screen is blank**

If the screen is blank, the computer may not be set to display the image on the computer screen.

First, check if the monitor is plugged in to a power outlet and is connected to the computer securely and make sure the monitor power button is on.

If the power light is not on, it means that the outlet is not delivering power to the monitor. Fixing the power outlet in such cases should help solve the issue.

**Immediate Solution:** Restart your computer and run a virus scan.

**Note:** You should have a reliable antivirus software installed on the computer to fix this issue.

- **Windows do not boot properly** – If windows do not boot properly then you should reinstall windows with the windows recovery disk. Most of the times, this should help you get rid of the problem.

**The computer is on but not responding** –

the computer is on but not responding to software or keyboard commands, then it must be frozen or halted.

**Immediate solution:**

Press and hold the power button for at least 5 seconds, it will be turned off.

Now restart your computer. This should fix the problem.

**An external device is not working** – If an external device does not function as expected.

**Immediate Solution:**

turn it on according to Manufacturers instruction;

be sure that all device connections are secure and receiving electrical power

Be sure the device is compatible with the operating system.

And that the correct drivers are installed and updated.

**THE END**