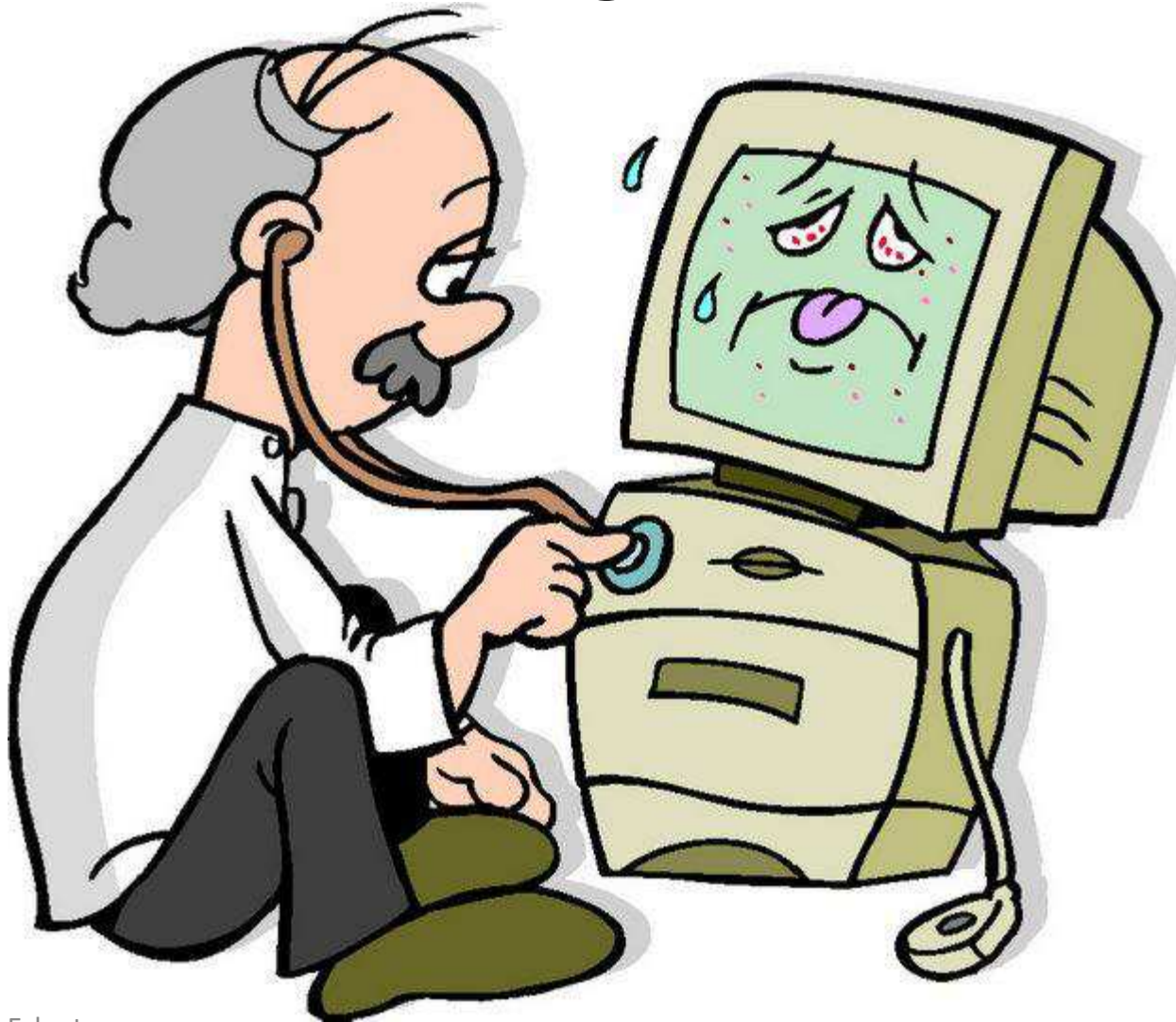


Computer Repair

Diagnosis



The basics

- Is it plugged in?
- Are the connecting cables (USB, Ethernet, etc.) correctly connected?
- Have you tried rebooting it?
- Did you reboot it again?
- If no Internet, have you rebooted the router?

Software failures

- Black screen at boot with blinking underscore:
 - Corrupted boot sector; ran FixMbr from Windows install disk
- Repartitioning gone astray; could not find OS to boot
 - C drive had been unmounted by antivirus; remounted using Acronis Disk Director
- Operating system upgrade caused programs to not work
 - Example: VLC media player after Windows 10
 - Installed new version

Examples of Microsoft Update issues

- Windows 10 Anniversary edition
 - broke scanning on HP Officejet printers
 - Old version VLC Media Player rendered non-functional
 - Solution; uninstall software, reboot, reinstall current versions
- Windows 10 Creator's Update
 - Introduced two non-existent non functional Officejet printers
 - Solution: delete extraneous printers

Hardware Failures I have seen

- On / Off switch
- Power supplies
- Hard drives (both spinning and SSD)
- Motherboard
- Laptop screen
- DVD drive

On Off switch

- Symptom: no response when pressing switch, no light, no fan, no boot
- Diagnosis: opened case, jumpered on / off switch connector on motherboard momentarily, computer booted normally
- Quick resolution: connected interrupt switch to motherboard on / off connection

Power Supply failures

- Dramatic: Blue flash loud pop, smell of burning rectifier!
- Silent: machine simply failed to boot; no sound, no lights, no fan
- Be alert: some desktop machines use non standard power supplies (e.g. Dell Optiplex)

Hard Drive failures

- Partial failure #1: all normal except graphic card driver failed to load; mimicked graphic card failure
- Partial failure #2: machine failed to boot; connected drive to USB / SATA adapter; program and data files appeared OK; cloned to new drive, and did repair installation of Windows; all OK.
- Partial failure #3 only data files intact; clean installed Windows and programs to new drive, copied data files to new drive(tedious, many hours)

Hard Drive Failures

- Total failure: machine would not boot; locked out of BIOS. Mimicked motherboard failure. Physically removed drive; BIOS now accessible. Drive was unclonable with multiple cloning tools. Restored image file to new drive. IMAGE FILE ESSENTIAL!
- Total failure; drive unreadable. Restored image file to new drive
- Cascading failure while diagnosing; machine eventually could not even support clean install of Windows. Removed drive; found it unreadable. Replaced drive; clean install Windows

Motherboard failure

- One USB port after another failed
- Then machine would not boot
- Motherboard obsolete, so
- Replaced motherboard, CPU, cooler, RAM
- Machine booted from old drive; installed chipset drivers for new motherboard; good to go!
- Required new Windows license due to CPU and motherboard replacement

Laptop screen failure

- Symptom: rapidly worsening flickering horizontal lines on laptop screen; HDMI video output to external monitor normal
- Replacement monitor was available from Amazon for \$60
- YouTube video showed exactly how to do the replacement
- It was this laptop

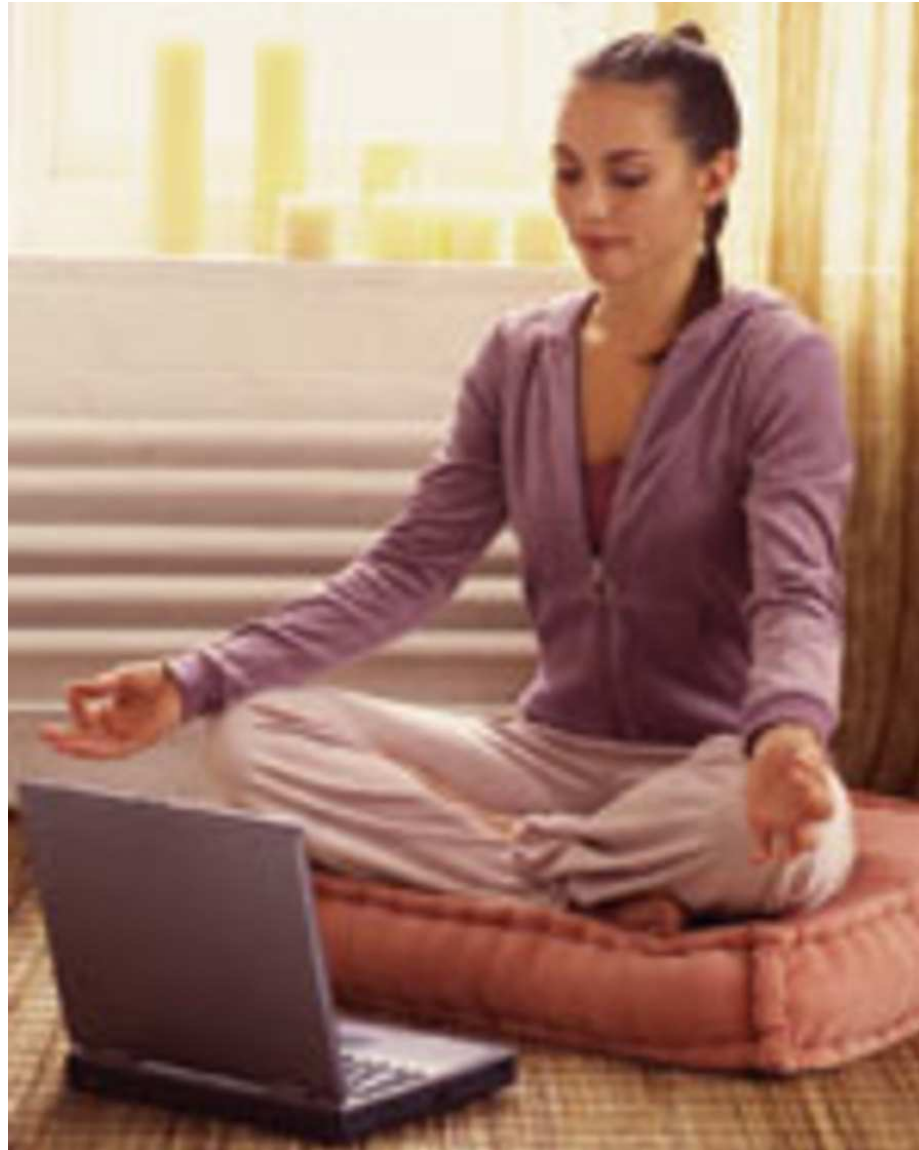
Tools for computer repair

- Hardware
- Software
- Another computer that works

Tool NOT needed



Approach the PC not with a hammer, but with meditative mindfulness



Tools needed (really)

- Phillips and flathead screwdrivers
- Jewelers screwdriver set (laptops)
- Small Torx driver set (especially for Mac laptops)
- 5 mm nutdriver (for motherboard screws)
- Static control: grounding wrist strap or caution!
DO NOT wear shoes while working in area with carpet. **STATIC CAN FRY MOTHERBOARD, CPU, RAM, and DRIVES (i.e., all electronic components)**
- Two SATA / USB drive adapters

Software needed

- **Google**; the Google AI knows the answer to all things techie
- Drive cloning software EZ Gig IV or Acronis True Image
- Imaging software (Acronis True Image)
- Crucial system scanner (identify RAM modules needed)
 - Double check RAM limits on Internet chatter; some machines support more than manufacturer claims!
 - This laptop supports 8 GB RAM, rather than the 4 GB claimed
- **YouTube**; there is a YouTube video on everything techie
 - Laptop disassembly and reassembly
 - How to replace anything
- Windows install DVD

Geeky point

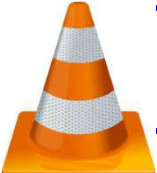
- Microsoft website will not allow choice of versions of Windows 10 iso files; redirects to Windows Media Builder, only allowing the version on the machine.
- Solution: Chrome UA Spoofer
 - Chrome extension that makes Chrome emulate a different device (e.g., an iPad)
 - Now you see full list!
 - <https://www.microsoft.com/en-gb/software-download/windows10ISO>

Other useful software

- PCUnlocker
 - Shareware to remove Windows passwords
- Command S at boot to get to Unix shell on a Mac

- **Some laptops are not designed intelligently for hard drive access**
- Remove back
- Remove keyboard; disconnect cable
- Remove monitor; disconnect cable
- Remove palmrest; disconnect cables
- Remove motherboard; turn over
- AH, there is the hard drive!!

Google is your friend

- Dell Inspiron N5110 Hard Drive replacement
- First hit gives detailed instructions
- Video hits give great illustration of procedure
- <https://www.youtube.com/watch?v=muJVRvJV6Hs>
-  [Play video](#)

Common upgrades

- New version of Windows
- RAM
- Hard drive
- Video card
- Memory card reader
- Blu-ray player

Software / Hardware resources

- Amazon
- NewEgg
- Microcenter
- B & H Photo
- Fry's
- Best Buy
- eBay (especially for obsolete parts)
- Software Empire (currently excellent prices on Windows and Microsoft Office)

Last Resort: Thermite



5/3/2017 Bob Eckert