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PC Disassembly

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In this video from ITFreeTraining, I will look at the basics of how to open up a computer to conduct repairs on it. In later videos I will look at how to install components and make repairs to a computer.

Field Replaceable Units (FRUs)

- Easily replaceable/upgradable components

0:11 Before I look at how to take a computer apart, I will first look at Field Replaceable Units or FRUs. FRUs are easily replaceable or upgradable components. Some examples of these are memory modules, video cards and solid state drives.

Each of these components are installed by plugging them into the computer. You essentially just need to plug the component in the right place and plug in any required cables. Nowadays with computer components being cheap and difficult to repair, in most cases to repair a computer it will be a matter of swapping a dead component with a working component. So, let's have a look at how to disassemble a computer in order to repair or upgrade it.

Backup the Computer

- OS will most likely have backup software
- Many 3rd party backup software solutions available

User data or full backup

0:55 Before you start upgrading a computer, you should consider backing up the computer. The specific task you are doing will determine the amount of risk of losing data. If you are simply installing a memory module, the risk of data loss is very low. If you are changing a motherboard then the risk is much higher. It is up to you how you want to manage this risk.

To back up your computer, your operating system will most likely have some basic backup software. If no software is available or you want some more advanced software, you can consider third party backup software. There are many free backup software solutions as well as commercial software available.

Lastly, consider what you want to back up from your computer and how much space you need for the backup. A backup will generally consist of a backup of user data only or a full backup or somewhere in-between. How much you back up will determine what space you will require for the backup.

In the real world, if you are careful when you are working on a computer and don't damage any of the components, most upgrades and maintenance won't cause any data loss.

Create a Clean Work Area
- Good height and good lighting

Throw away items not needed

2:08 Wherever possible you should create a clean area to work in. You don't want to take a computer apart and lose screws or parts because the work area is a mess. In some cases you will be working on-site and won't have a work area available. This, however, does not stop you moving the computer to somewhere else with more space. You will find that some tech areas have years of old parts lying around. If you don't need the items anymore, throw them away.

You will find computer repair areas get cluttered with items very quickly. Over the years, you will just find that so much stuff will start accumulating. You don't need to keep everything. I once visited a work shop that had a bucket just full of screws. You are never going to need that many, so keep some for spares and throw away any you don't need.

If you are creating a work area, have it at a good height and with good lighting. If you are using the work area all day, you don't want to be continually bending over it and hurting your back. Good lighting will allow you to see what you are doing. It can get very dark inside a computer case if you don't have some good lighting.

Use Anti-Static Protection

- Anti-static mat or work area

3:17 The next step is to use anti-static protection. This can be in the form of an anti-static mat or a work area that is designed with anti-static materials. We have a whole video on static electricity. The main point to remember is that static electricity needs to go somewhere. Make sure your mat is connected to somewhere the electricity can go. If you don't have this, make sure you ground yourself first, so you don't have any buildup of static electricity.

Have the Required Tools

Screwdriver   Notepad   Photos   iOpener

3:44 The next step is to have the required tools. Did I mention it is a good idea to have a Philips head screwdriver? The Phillips head screwdriver is the tool that you will find that you will use the most. It is also a good idea to have a notepad and pencil. Even if you are not taking apart a computer and only making changes to the BIOS settings, it is good to write down what you changed. This is invaluable if you have to change the settings back at a later time.

It is also a good idea to take photos. If you don't have a camera, most mobile devices have cameras in them. On a standard desktop computer this may not be necessary, but is useful when you start working on specialized equipment with a lot of parts. Having a photo to refer to makes it easier to know where to put everything back in. Photos are also good if the device has been damaged. Taking photos will document any existing damage so a customer can't blame you for the damage later on.

Sometimes devices will require specialized tools. This is often the case with the small devices like mobile devices. It is always good to know what you need in advance. The last thing you want to do is open up a customer's device and have to leave to go back to the workshop to get more tools.

Power Down the Computer/Device

- Switch off and unplug the power
- Press the power button

Power can remain for a few minutes

5:01 The next stage is to power down the device. To do this, switch off the power supply and unplug the power. In this case I have the computer on an anti-static mat. This will help protect the components in the computer from static electricity.

On this motherboard, there are some LED lights to indicate power is coming from the power supply. Not all motherboards will have this. These LEDs will slowly drain all the power stored in the capacitors in the power supply. You will notice that power can remain for anywhere from a few seconds to a few minutes.

The next step is to press the power button. On some devices this will help drain any remaining power. On modern computers this may or may not do anything. In the case of this computer it did not have any effect as the LED lights are still on.

Next, I will connect my anti-static mat to the computer. Following this, I will connect my anti-static wrist band to the computer. This will give a path for any static electricity to go.

You will notice that now the LED lights have switched off. It took almost a minute for this to occur, just to give you an idea of how long electricity can remain in a computer when it is unplugged. If you are going to be working on a computer, I would switch off the power first to give the maximum amount of time for the capacitors in the power supply to drain.

Remove Case Lid and Start Work

- Remove required screws and remove lid
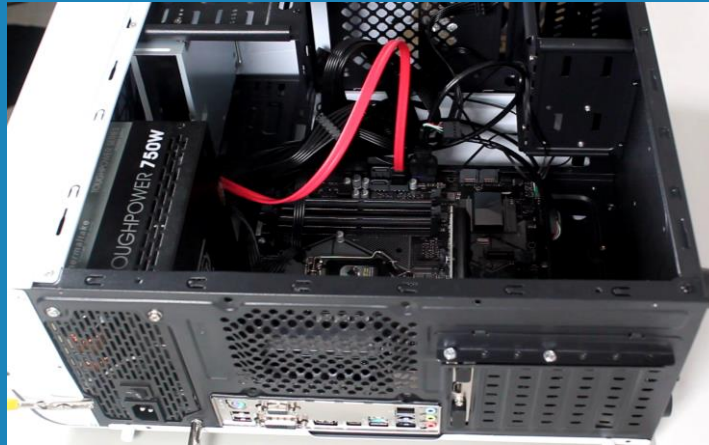
6:25 The next step is to remove the case lid so you can start work on the computer. To do this, you just need to remove the required screws and then remove the lid of the computer case. We can now safely work on the computer.

This concludes this video on disassembling a computer. In later videos I will look at how to install and upgrade the components inside the computer. Until the next video, I would like to thank you for watching.

References
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"Picture of notebook" https://www.pexels.com/photo/black-laptop-computer-beside-white-steno-notebook-2034373/

Credits
Trainer: Austin Mason http://ITFreeTraining.com
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