Inside of a Laptop

For this project, we chose to dismantle a laptop because it's a common device. This particula laptop was already malfunctioning.

In order to take it apart, we removed the back cover by unscrewing two Phillips head screws that were holding it in place. First, we removed the hard drive, which stores all of the data, and the cooling fan, which keeps the computer from overheating. We removed the broken screen next, so the laptop would be less complicated to deconstruct. Afterwards, we removed the bezel, which gave us access to the LCD screen, which is used to display information and the webcam, is used to get a video feed. These two parts can be removed from the computer after *detaching* the bezel. Moreover, it became tremendously difficult to disassemble the computer because there were many hidden screws scattered in it. Next, we removed the top half and the bottom half of the chassis similar to a sandwich. This allowed us to remove the keyboard, which was flexible and was held in place with two screws. Once this was complete, we could remove the motherboard from the chassis. It was originally covered by other parts. We could also remove all the daughter boards that contain the I/O as the motherboard came off. After this, we had all of the parts disassembled

The motherboard is the mainboard in the system that connects all of the components together in a meaningful way. One of the most important parts is the CPU, or Central Processing Unit, which is soldered directly to the center of the motherboard. This part does most of the calculations needed to run a computer. Next is the RAM or Random Access Memory that sits to the right of the CPU. It stores data temporarily, such as browser tabs, but clears itself when there is no power. The hard drive in this laptop contains a spinning disk that stores all of your data by writing 0's or 1's to the drive, which can also be read. The many daughter boards contain the I/O (input/output) needed to communicate with the outside world. This includes USB ports, headphone jack, ethernet ports, display connectors, and SD card readers. A WiFi card is used to read WIFI signals. Small speakers and microphones were used to listen and transmit sound along with a webcam for video. There were no Texas Instruments parts in this laptop.

Taking apart a laptop is not as easy as it sounds. They are designed to be space saving and efficient. The main takeaway here is understanding how all of the components work and communicate with each other. It was also important in understanding the engineering behind making a laptop work seamlessly in a small form factor.



Figure 1. This is the laptop that was dismantled with a broken screen.



Figure 2.

This is the motherboard containing the shiny CPU, RAM, and WiFi card. The empty spot is where the heatsink and fan would go.



Figure 3.

This is the top-down view of the laptop with the keyboard removed. The ribbon cable connections are visible here.



Figure 4. This is the top-down view of the laptop with the top half of the chassis removed. The motherboard, daughterbards, and ribbon cables are visible here.



Figure 5.

Here only the motherboard with its shield and disk reader are visible. The rest has been removed.

Figure 6.

Here are all of the parts that have been removed from the laptop. This is the structure of the laptop.





Parts list:

- Motherboard
- CPU
- 2 sticks of 4GB RAM
- CMOS battery
- CD player
- Fan with heatsink and with copper heatpipe
- 2 speakers
- Daughter boards (for I/O)
- Webcam
- LCD display
- Keyboard
- 2.5" HDD
- WiFi card
- Battery
- Chassis parts