Electronics Online Challenge Sponsored by Texas Instruments

Device taken apart: Dell Latitude E6510

Research, labeling, summary done by Huey Briones

Device deconstruction and documentation done by Eshwar Sarey

School: Pinecrest Academy Sloan Canyon

Team # 74177H

Table Of Contents

Final Summary Report 3

External anatomy pictures 5

Internal anatomy pictures 8

Citations 15

Final Summary Report

This was one of Eshwar's old computers that he had lying around. He had apparently taken this computer apart before because he has a knack for taking apart old electronics, so he was completely fine with taking the whole thing apart again. It had belonged to his father and was his work laptop until he no longer had a need for it. And so he decided to use this for the project.

He first started by taking apart the bottom screws to take off the base panel so he could begin taking everything apart. He would end up winding down the computer until we could identify some of the pieces. While he was taking everything apart, he would take pictures or his progress so we could show them off in the project later on.

Once he finished taking it apart, he sent me the pictures for me to analyze and identify the pieces inside. According to Eshwar, he said his favorite part of taking the laptop apart was discovering how everything fit in together, for instance the pci module and the cpu, and how they were both fit inside neatly.

Then it came to my part of the project, the researching. To be quite frank, it was a really stressful part of the project, but I was able to get it done. The most difficult part was trying to find the service manual. I spent forever looking through the official dell website until I finally found it. And then, I completed the research and the whole project was done.

I definitely think that this project was a very interesting one and very different from past school projects mainly due to the fact that we had to do this all online because of covid. It was hard communicating with zoom but we somehow managed to get everything done. I think my

favorite part of the project itself was how I was able to gain a better understanding of the insides of the laptop and how it functions.

External anatomy pictures

Here we can see the laptop closed and from the top-down view. On the top-down view, we can see the keyboard all lined up, the mousepad and the left and right click buttons, as well as the speakers on the sides of the keyboard, the display screen, and lastly the power button on the top right to turn it on.

Shown right here is the side view of the laptop. Here we can see a couple of usb ports, an hdmi port, and a disc launcher

Access panel

The access panel is on the bottom of the laptop and you have to remove this in order to access the insides of the laptop

Internal anatomy pictures

RAM chips

Ram chips contain transistors that allow implementation of random access memory in hardware

Hard drive

The hard drive stores data on the computer

Processor

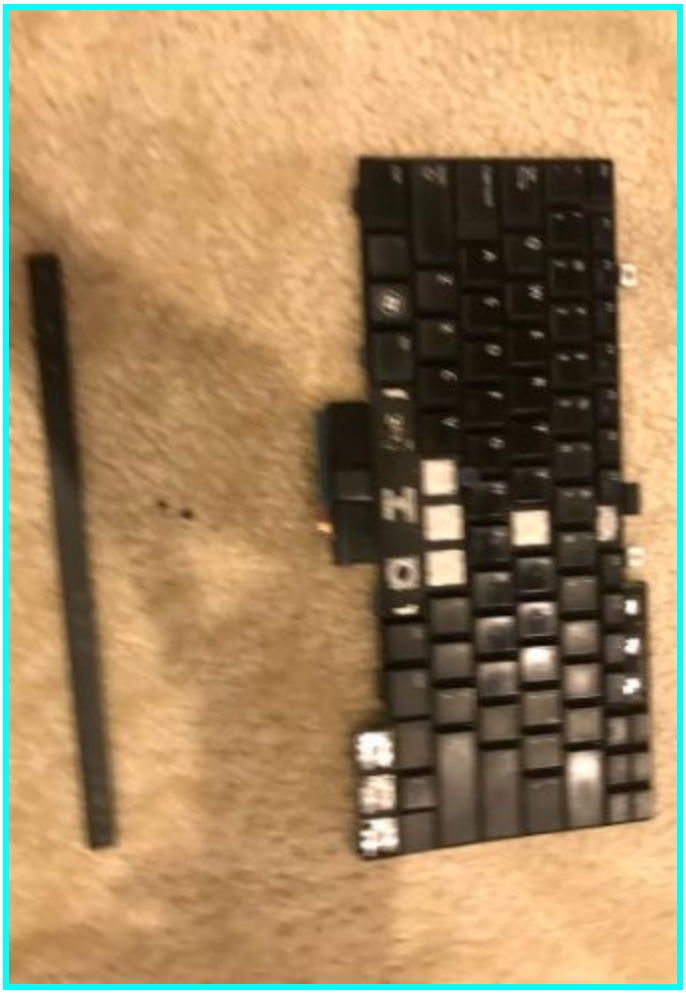
The CPU (Central processing unit) handles most of the algorithms a computer does.

Heat sink

The heat sink draws heat away from components such as the integrated graphics and CPU through heatpipes.

Fan assembly

The fan then takes that heat and blows it out of the computer to keep the computer cool



Keycaps

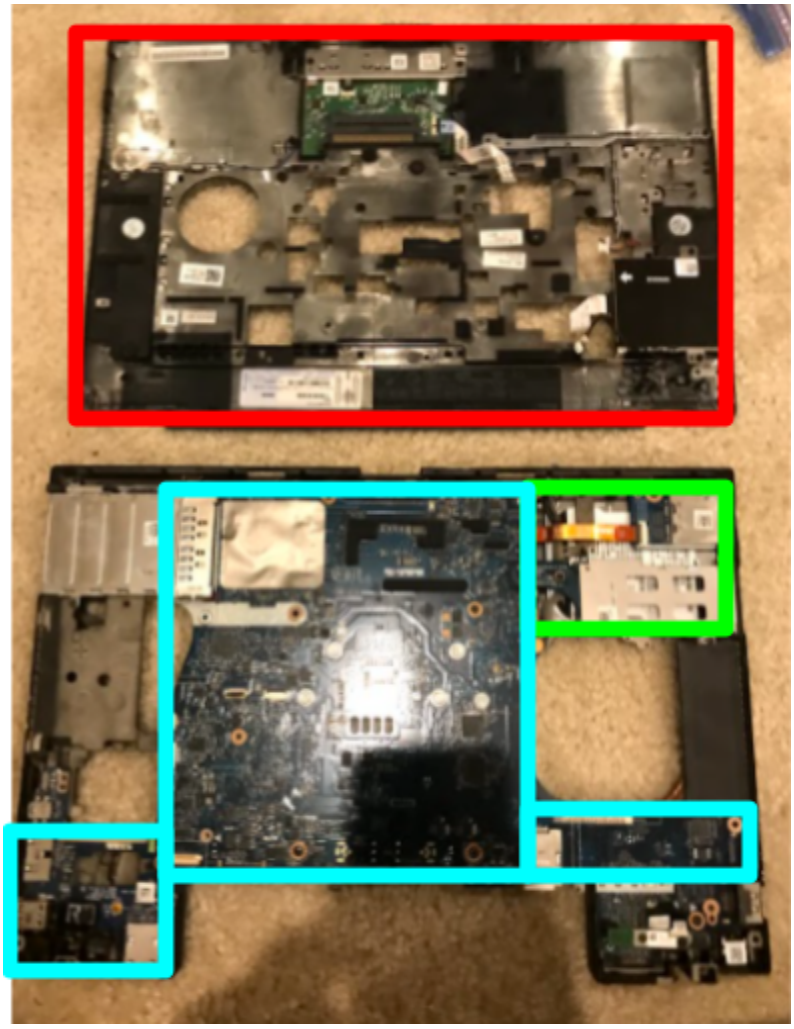
Keycaps allow you to interact with the keyboard and therefore the computer itself

Coin cell battery

The battery holds a residual amount of energy to make sure the hard drive doesn't die from energy loss if the computer is suddenly turned off

Latitude ON flash card

The flash card is a sort of buffer for data on hard drives that stores incoming data and pushes it onto the hard drive.



Bottom chassis assembly

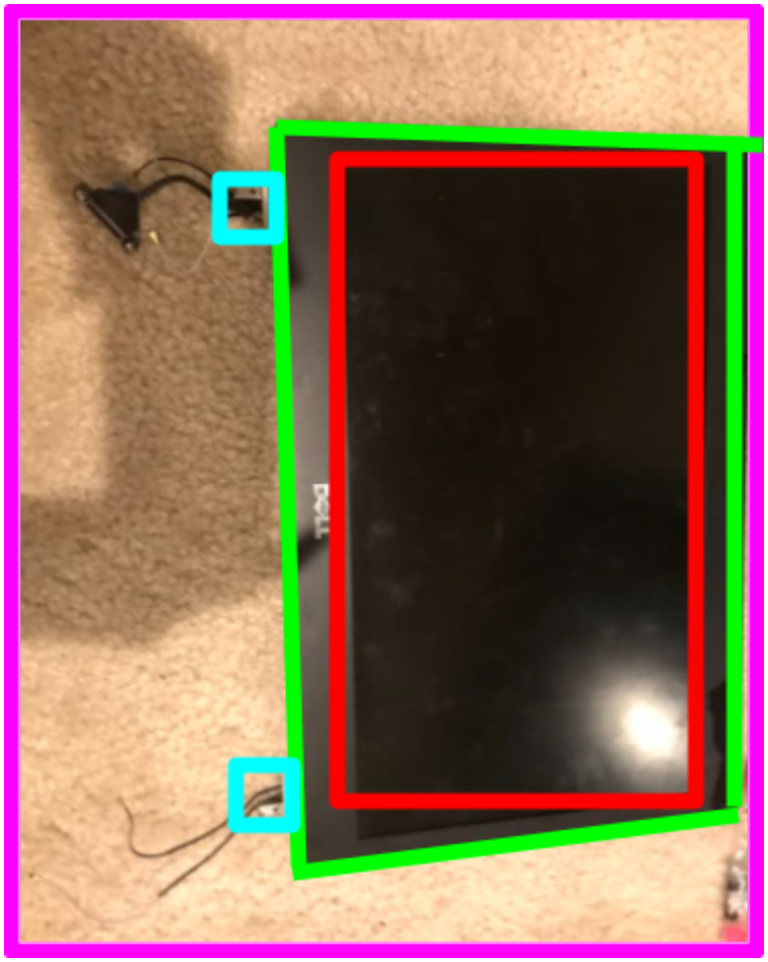
The manufactured piece on the bottom that holds the computer together.

Sd card board

It holds the assembly for the SD card reader.

Motherboard

The motherboard links all of the components together so they work.



Display assembly

The entire display

Display hinges

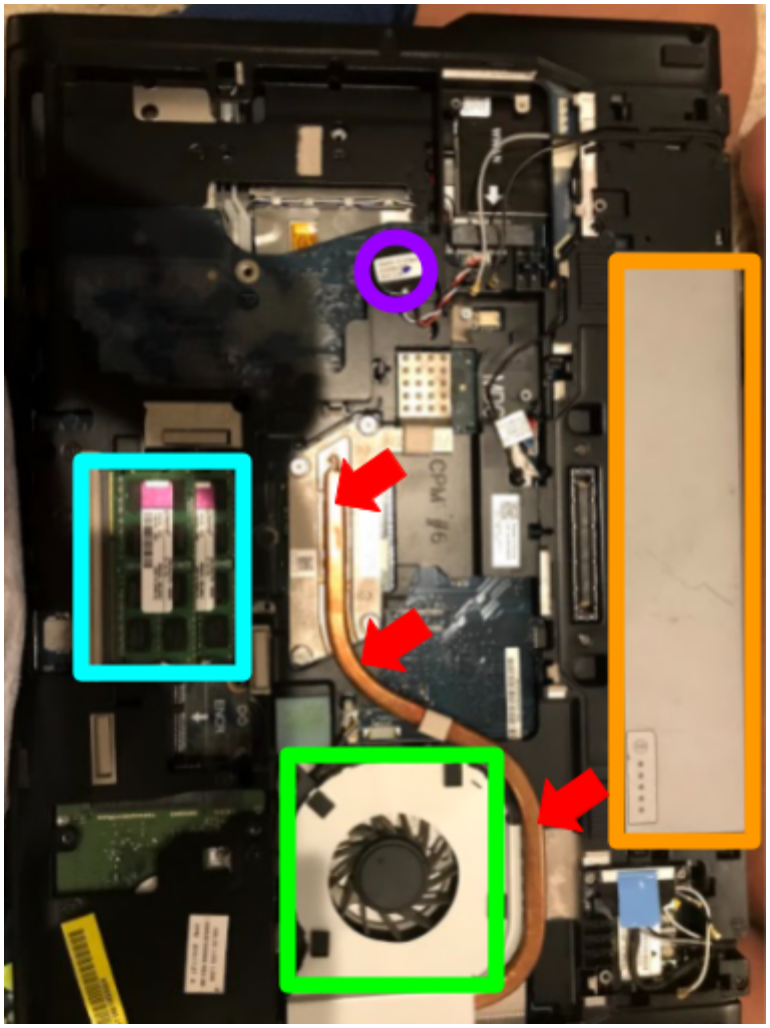
The hinges that allow the display to turn with angles of freedom

Display panel

The panel that displays the output of the computer.

Display bezel

A bezel that hides all the wires that go into the display/pixels



Heat sink

Draws heat away from chips

Fan assembly

Removes heat from the computer

Memory module

Holds data that is constantly used, is reset on the computer turning off

Coin cell battery

Holds residual energy so the motherboard/cmos doesn't crash

Battery

Holds power to use the computer away from a power source

Citations

N/A, N/A. “Latitude E6510 Laptop: Dell United States.” *Dell*, 0AD, www.dell.com/us/en/business/notebooks/latitude-e6510/pd.aspx?refid=latitude-e6510.

Support Team, Dell. “Dell Latitude E6510 Service Manual.” *Dell.com*, June 2010, downloads.dell.com/manuals/all-products/esuprt_laptop/esuprt_latitude_laptop/latitude-e6510_service%20manual_en-us.pdf.

Support Team, Dell. “Support for Dell Latitude E6510.” *Dell.com*, 0AD, www.dell.com/support/home/en-us/product-support/product/latitude-e6510/docs.