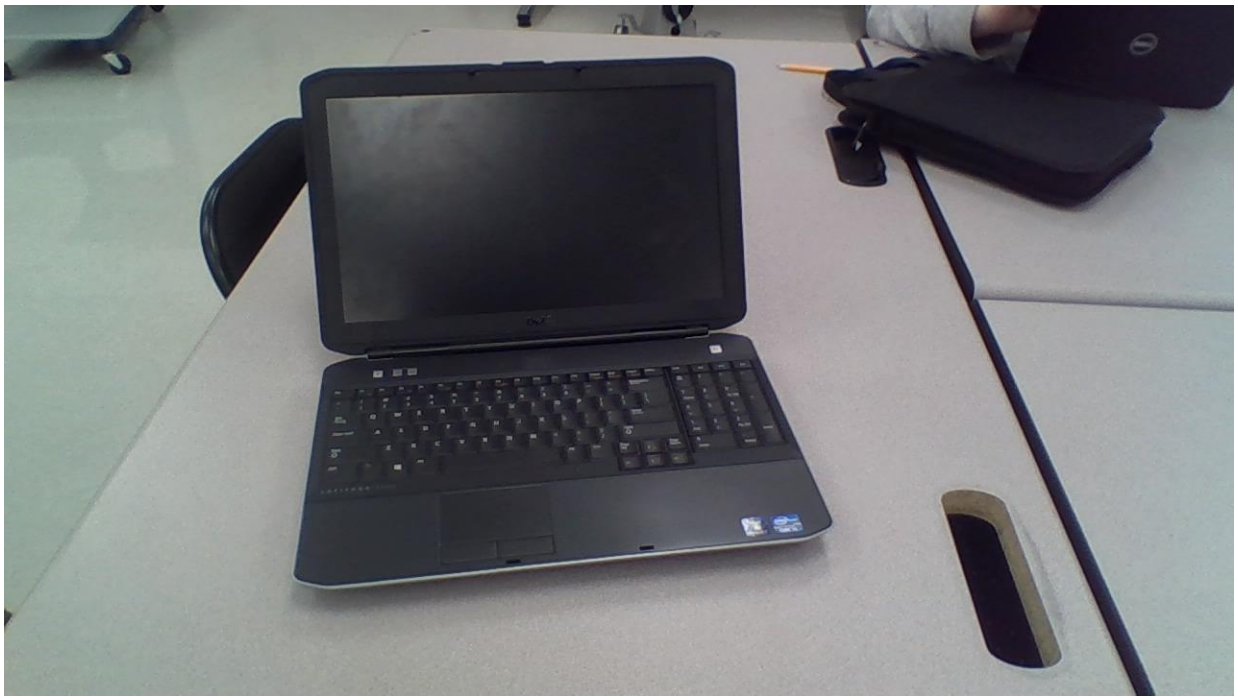
Reverse Engineering VEX

The process of Reverse Engineering a DELL Laptop



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INTRODUCTION

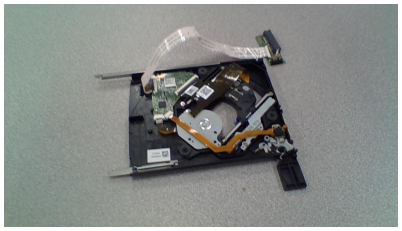
Hello. This is the procedure of the EOMS Solid Gears Team deconstructing and deciphering a *DELL Laptop*. The reason we chose this is because it was one of the easiest devices to get our hands on. Through our deconstruction and analysis, we shall document the procedure of the deconstruction, summarize the deconstruction and perform a proper analysis to infer what parts each and every piece plays inside the computer.

PROCEDURE

- *Shortly after removing the bottom of the computer, we removed the battery and photographed our findings.*

- *Shortly after finding and extracting the battery from the laptop, we located a thermometer inside of the laptop. We assume the device is used in order to inform*
- *the computer shuts off when it begins to overheat.*

- *During our deconstruction, we removed the disk component from the laptop and photographed our findings.*
- *We deconstructed the disk player and analyzed it.*



- *At the same time, we found a sort of card that appears to be the data storage for the laptop.*
- *We located and removed the memory card which was in the center of the laptop software. It has a total storage of 320 gigabytes.*
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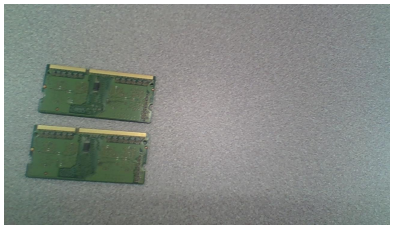
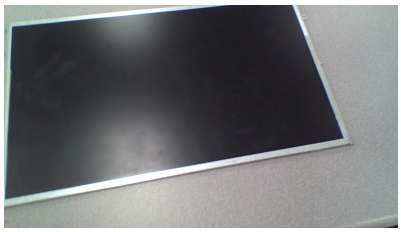
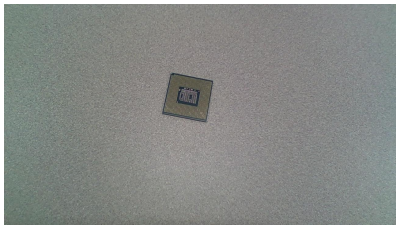
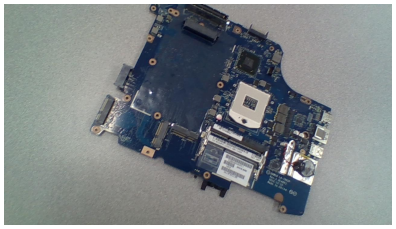
- *We located and removed the ram after tinkering with an antagonistic screw.*
- *We finally removed the antagonistic screw after a struggle that approached infinity.*
- 
- *We extracted a conductor that powers the computer fan and a piece of the motherboard.*
- *We extracted more of the keys (for some reason).*
- *We extracted the entire keyboard in our attempt to reach the motherboard and located a device that processes the inputs of the keys as they're typed.*
- *We removed the frame of the screen of the computer.*
- *After removing the screen frame, we are going after the screen itself.*
- *We finally removed the screen and photographed our findings.*

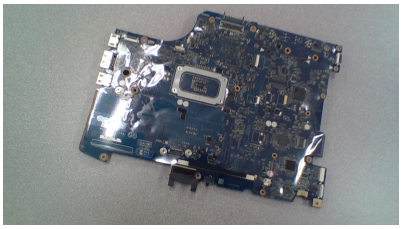


- *we again try to dig further into the computer to identify and extract the motherboard.*
- *In our attempt to access the motherboard, we located and identified a strange, currently undefined, component.*



- *We finally have direct sight of the motherboard and are beginning to extract the surrounding components.*
- *We have completely extracted the screen, and have located a device that we originally hypothesized was the motherboard, however it is smaller and connects to the screen. My current hypothesis is that it projects the digital images onto the screen upon translating it into pixels.*
- *In the device, we have located a switch that we hypothesize is the switch that flips the numbers in a computer.*
- *We continued our path to the motherboard by deconstructing the top of the computer fully, and with that, we reached the motherboard.*
- *We extracted the top of the keyboard and located the sensor for the touchpad.*
- *Nearing the end of our deconstruction, we have removed the motherboard. I have visually captured the top and bottom of the motherboard.*



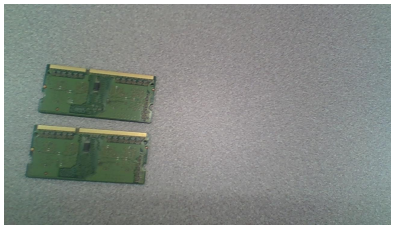


- *After successfully extracting the mousepad, we finally finished our endeavors.*

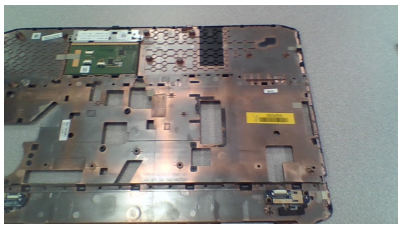
RESULTS

From the project, we learned about the inner workings of a computer device and documented the extraction process as well as what was extracted (seen below). Overall, this is what we discovered about a computer:

- The Motherboard is large, in the center area of the computer and separated from the other parts.
- There are two pieces of ram



- A brass coloured material is used as a component, likely to traverse electricity through the computer.



- A fan is used to keep the computer cool.

SUMMARY

Starting from the beginning of the timeline, we received the computer and were eager to begin our deconstruction. After we began deconstructing, one of the first important components located within the walls of the device was the battery component. For safety reasons, we needed to extract it, though it had no power, so as to not damage the component for possible future usage.

The battery component powers the computer. Electrical energy is transferred from the wall socket, through your charger, and directly transferred to the battery. The battery is what allows the computer to run for as long as it does. The newer the battery, the longer the computer is going to run. Of course, after a while the battery will just malfunction and become unoperational.

One of the next components we extracted from the laptop was the fan. The fan was connected to a brass coloured material which we theorized to be an electrical conductor. Our inference was that, because the battery was connected to this brass coloured material, it conducted electricity to the fan which allowed the fan to sustain the computer at acceptable temperatures, which allows a greater time usage during the usage of your laptop before it overheats and shuts down.

Going back in time, we find that one of the first extracted components was the disk drive; The disk drive is a component that transfers the data in a disk directly to the computer, allowing it to transfer the data in the CD and project it onto your screen without this simple component, you wouldn't be able to watch video files, like movies on your laptop..

In the middle of our journey, we discovered the memory drive, which consisted of 320 Gigabytes and honestly that seems like alot more than a laptop could be able to hold.

Later in the process, we located and extracted the motherboard, a vastly complex circuit circus with multiple switches. We theorized that those switches recorded the data and allowed you to type. Specifically, we theorized that each switch represented a number in binary. Binary code is a language made particularly of 1's and 0's. It is a language computers use to transfer information and perform commands and calculations. Interestingly enough, these switches can be changed and affected by radiation was discovered as recently as 2014.

These are the primary components we located and were able to decrypt the purpose. In conclusion, we were able to deconstruct and decipher the purposes of the components located in the interior of the DELL Laptop.

The process of deconstructing the computer took place over about 2 - 3 weeks. However, the process did not feel that long because of the enjoyment extracted from the process. We, the EOMS Solid Gears, enjoyed deconstructing the computer and extracting the components while simultaneously deciphering the components themselves and providing our hypothesis on what they were and their purpose. From this elaborate

process, we learned about the components of a computer and the deconstruction process, and I hope from our documentation, you can learn more about a computer, too.