

VEX Reverse Engineering Challenge Dell Latitude E6420 Laptop



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For my reverse engineering project I chose a 2011 Dell Latitude E6420 Laptop that was used by my robotics team when it first was created. I chose this laptop as opposed to our others because both the power and cooling systems were damaged and I was intrigued about taking it apart and finding out why. It was also no longer being used so

I figured I would give it one final use before disposing of it.

The content I found inside the laptop was actually quite interesting, because it's a toughbook laptop and they are meant to be very durable, this led to the laptop being compartmentalized, everything was easily separated from the rest of the system. After taking off the bottom plate, I noticed first the cooling fan and the heat sink which converts heat into power which is used to activate the fan and cool the internal components so as to not overheat. The next thing I noticed was a small wire. I noticed a coin cell battery inside of a black wrapping.



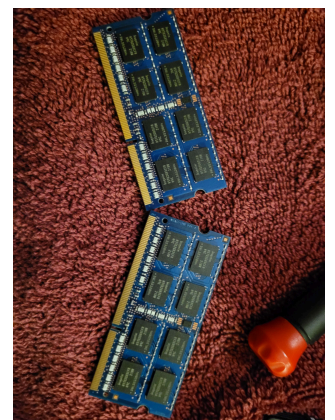
I researched and found out it's used to maintain service connection and also save data such as time and date to not lose it if the motherboard dies. I did run into a few issues, the main being



that due to the frame of the laptop, many of the part inside were inaccessible due to being built into the actual frame and soldered in to where it was near impossible to take it out, though I continued even to the extent of possibly damaging a few parts. I removed both memory cards and the processor of the laptop. The

memory cards are self explanatory, they are the storage and store the laptops data.

The processor runs the system and it essentially provides the power from the battery to the motherboard allowing the code and information to go through.



There were also more parts I could include but I felt the previously aforementioned were the most notable as they were the main parts I was interested in.

Overall this was an interesting experience that made me learn both the easy and hard way about how these projects work. I opened up this laptop with no prior knowledge hoping to fix its issues and replace some parts. I ended up fixing the cooling system by putting in a new fan and putting in a new battery to fix the power issues. I learned a lot about the internals of laptops as previously I didn't know what a heat sink was. I realized that these are delicate pieces and I should've done this with more prior knowledge because if so I wouldn't have made so many mistakes. All in all though, I plan to continue to work on this laptop and hopefully make it run like an up to date laptop and make it usable again.

