**CDEFO Week 9 (#8)**

Week 8 - End:

- Build user experiences, curate content, and test stability. (until the end)
    - Write any remaining C++ functions
    - Make the experiences pretty and bug free
- Building the user experiences is probably going to take the longest, as it is going to have some QA involved to make sure they are actually enjoyable. Lots of talking to users.
- Write documentation for the C++ library (until the end)
- Prepare for demonstrations

I am happy to say that, with the exception of the 4 user experiences, I am confidently on schedule. At this point, the schedule is kind of free-form. The software is mostly done with the exception of user experience-specific functions, and the enclosures and frames have all been printed/cut and just need to glued together. Anyways, despite the fact that I'm mostly on schedule now, I used the majority of spring break to catch up. Last time I wrote a research journal I hadn't had any of the enclosures at all. Initially I was going to send everything off to be printed and cut, which would've cost around $30 for the arduino enclosures, and $50 for all of the 3d printed components. I discovered, however, that there was a "makerspace" near my house, so I instead postponed everything to spring break. This place, OpenWorks in Baltimore, offers a $25/day pass that gives access to…

8 3D printers

3 laser cutters
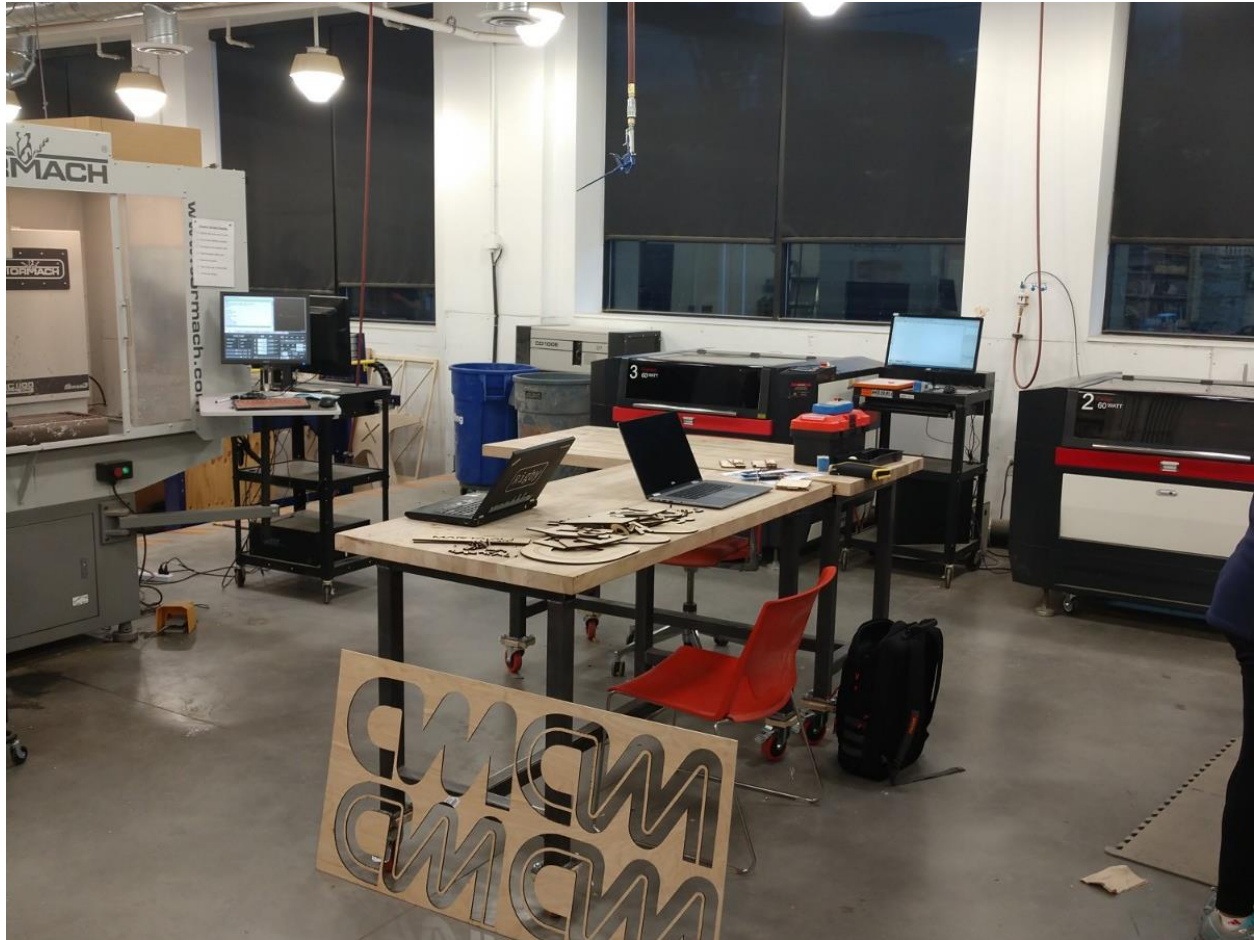
and dozens of soldering stations, CNC mills, wood shops, etc.

After attending a short orientation where I met most of the staff, I payed my $25 fee, worked from 9AM to 9PM. Over the course of the whole day, I occupied 4 of those Ultimaker 2 Extended printers to make more than 50 Dowel connectors (the jobs actually took so long I needed to come back the morning after to pick up everything). At $.03/gram of PLA filament, this only cost me $18! These are the dowel connectors that I printed, which I modeled in Autodesk Inventor.
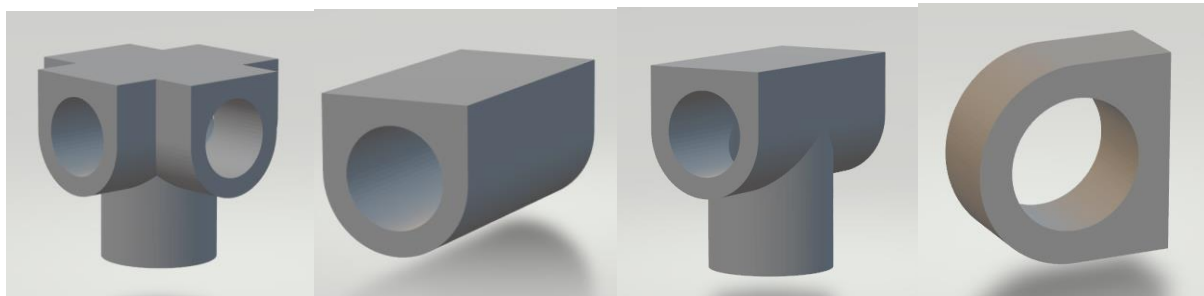
The laser cutter was free to use, and there was abundance of scrap wood that the technicians let me use so that I didn't to cut my own, I ended up using a 24"x36" printer named Cypress to cut this design.
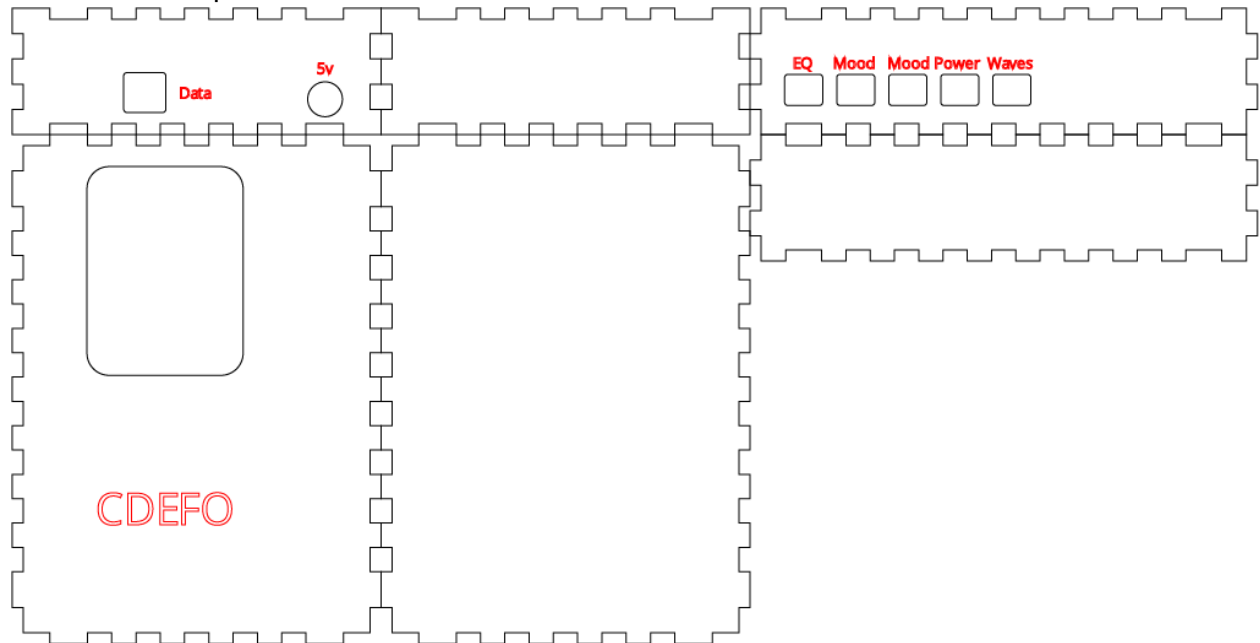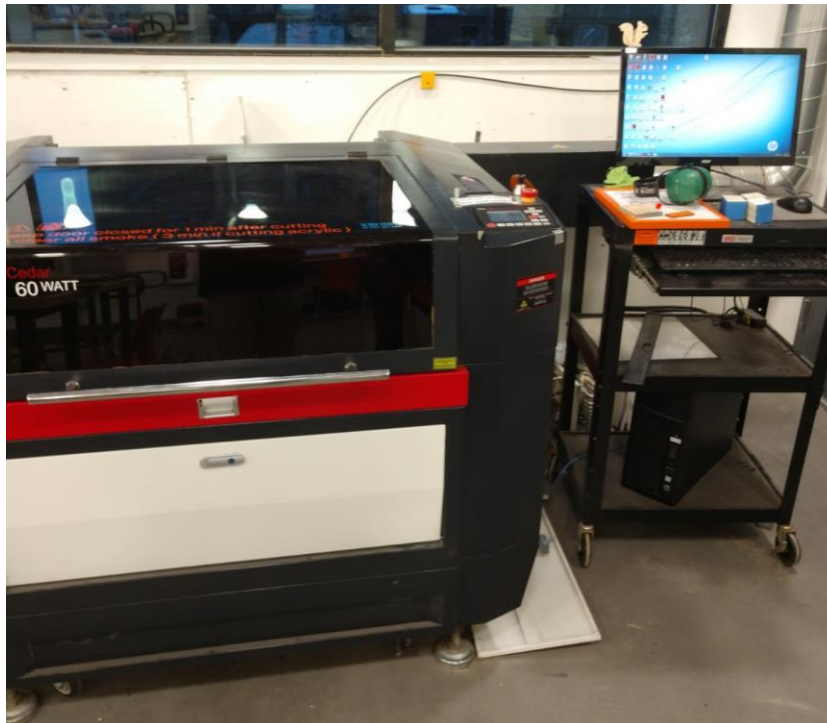
"Spacious" version: "Tiny" version:

DXF file that I uploaded to the laser cutter:

"Cypress":

I actually printed 2 versions of this. The first one was too small to accomodate all of the wiring, but it can still be used to house the microphone for the LED music visualizer I'm making. The box I'm using here was made in Adobe Illustrator and was then exported as an Autodesk DXF file which can be read by the laser cutter. The box is designed with a screwless "finger joint"

design that only requires glue, since the interlocking wooden tabs provide enough pressure to obviate the need for screws. Also, the wood I used to allow for a reliable NFC connection is too thin to accommodate screws. Unfortunately, after having to tune my 3D Print jobs and adjust the laser-cut enclosures, I didn't have enough time to solder everything to the Arduino, which I plan on doing during the working lab as soon as we get back to class.

I also cut and hemmed (with the help of my sister) the 20ft worth of diffusion curtain that I ordered off of Amazon into three 6' long sheets. The 3 curtains will be mounted by the wooden dowel frames I'm making, and have the LED strips sitting behind them.

Cutting/Hemming Curtains:

Dowels + LED diffusion bars:
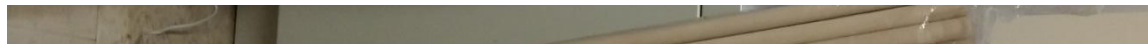
The purpose of the curtains is to diffuse the light from the led so it instead looks like a consistent bar of light as opposed to a whole bunch of square LED's. The idea is that the viewer will think the wall has lights in it instead of just one section of it. The described purpose of this Nylon Silk material is that it increases the perceived size of the light sources that pass through it to remove hard shadows when doing film and photography, but it fits this purpose well.

So, after a very eventful and productive Spring Break, I am entirely caught up with my timeline and can continue building the two user experiences I have so far. Unfortunately, I didn't work on the software really at all over break, but the core functionality was finished as of the previous research journal and the documentation was being planned out. I spent around 30 hours over break designing, printing, and cutting everything.