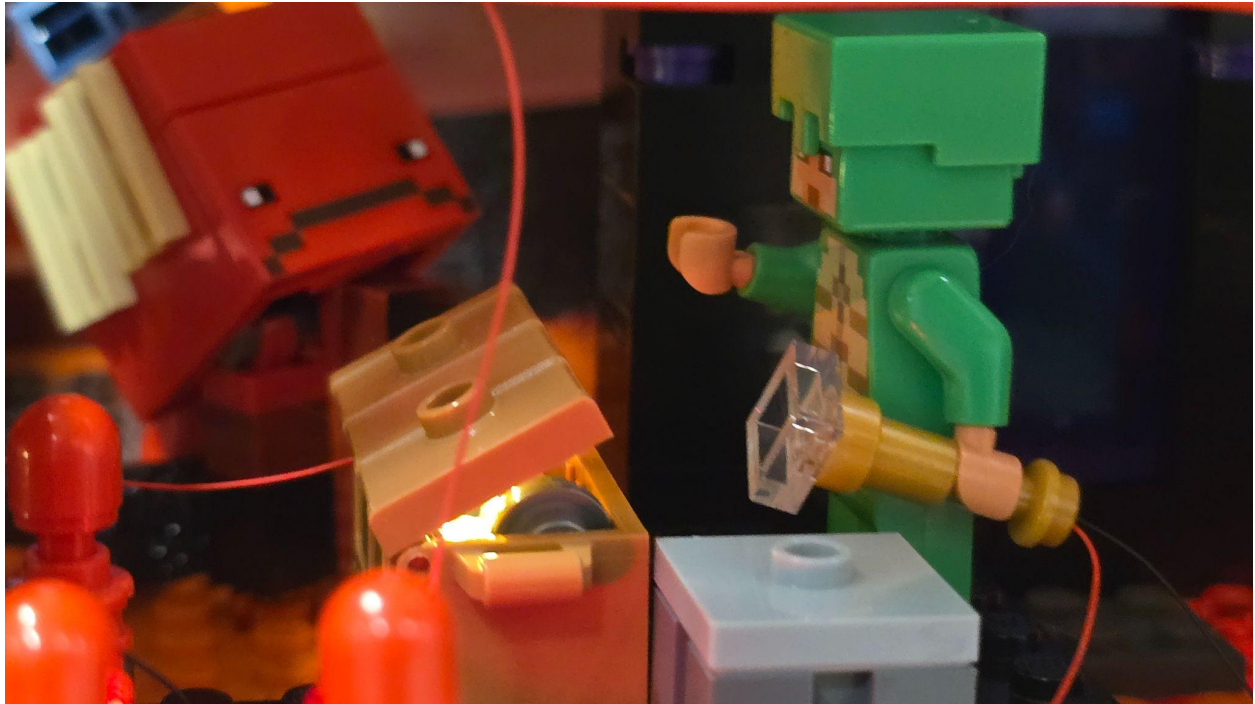
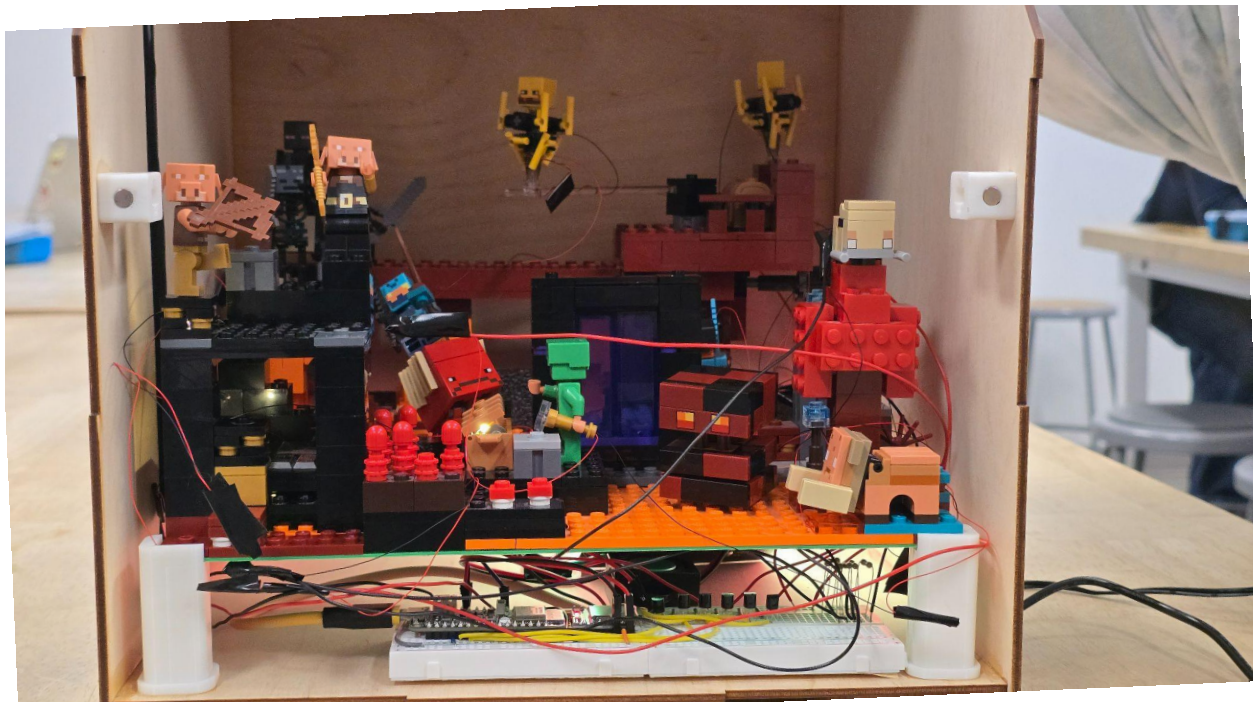


The Nether

By Sebastian Pereyra & Ramiro Contreras



Showcase



[Full Class Demo Video: Link to Youtube Video](#)

The Nether is a continuation of our last project. For this piece, we wanted to bring our

creation to life. We captured the beauty of Minecraft and LEGO into our box, which helps with lighting and emphasis on imagination, to prompt the question “what’s in the box?”, and “what’s that noise?”

This piece requires the user to lift the lid in order to see what's happening in the mini lightbox. We engage users by playing sounds of regular Minecraft gameplay, with a main focus on the audibly pleasing clips like breaking a block.

This set also shows progress in the game’s objective of entering the Nether, which is a rite of passage for most gamers since it requires a specific set of materials, where you also enter a more dangerous land.

The components used were: An ESP32, a couple of transistors, mini LEDs, a NeoPixel matrix MP3 Board, a speaker, and a 5V power supply.

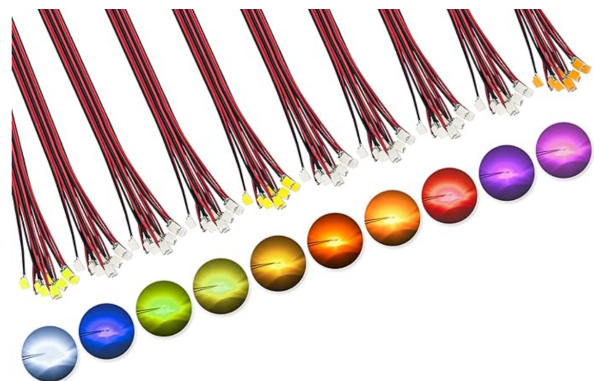
Ideation/Design Process:

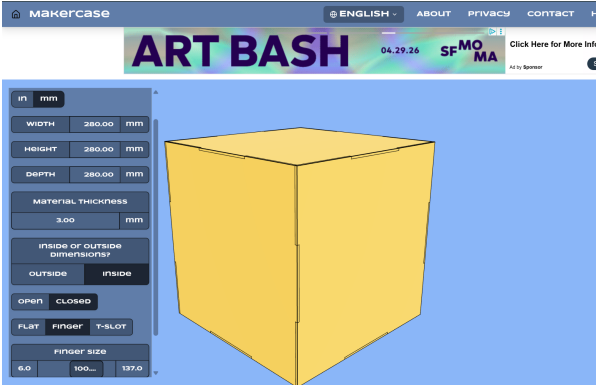
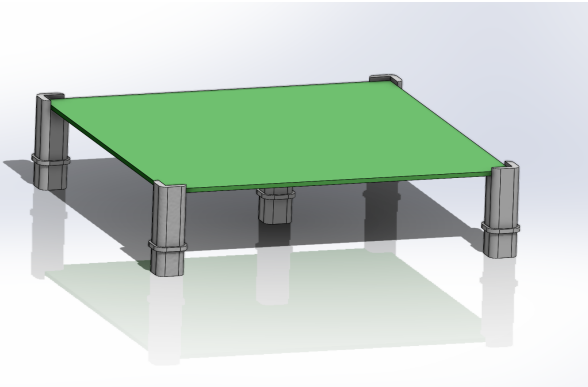


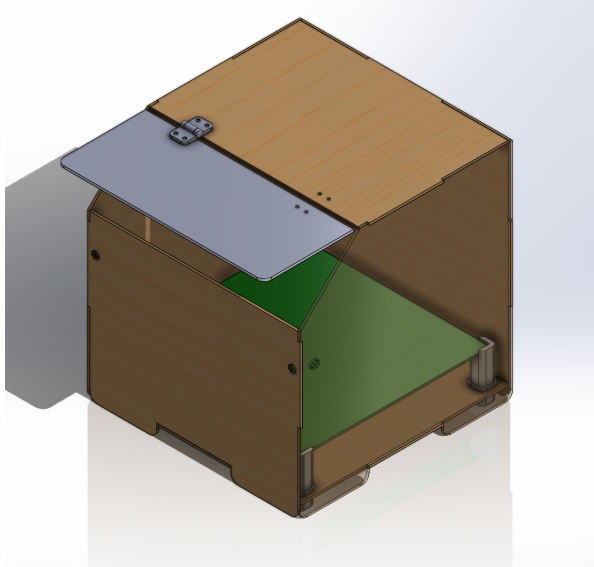
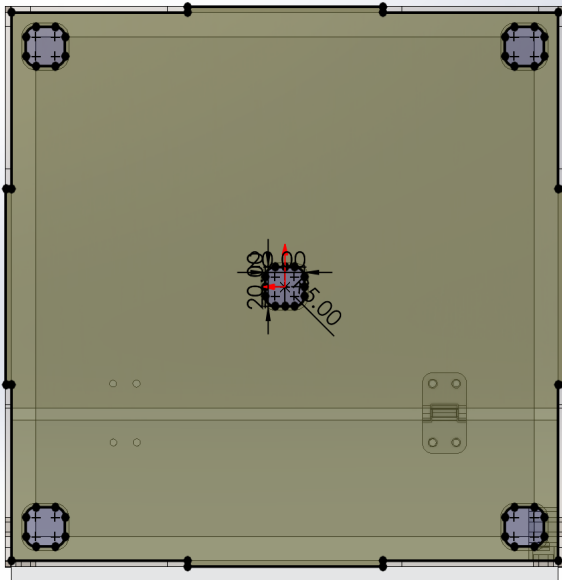
The Nether for inspiration



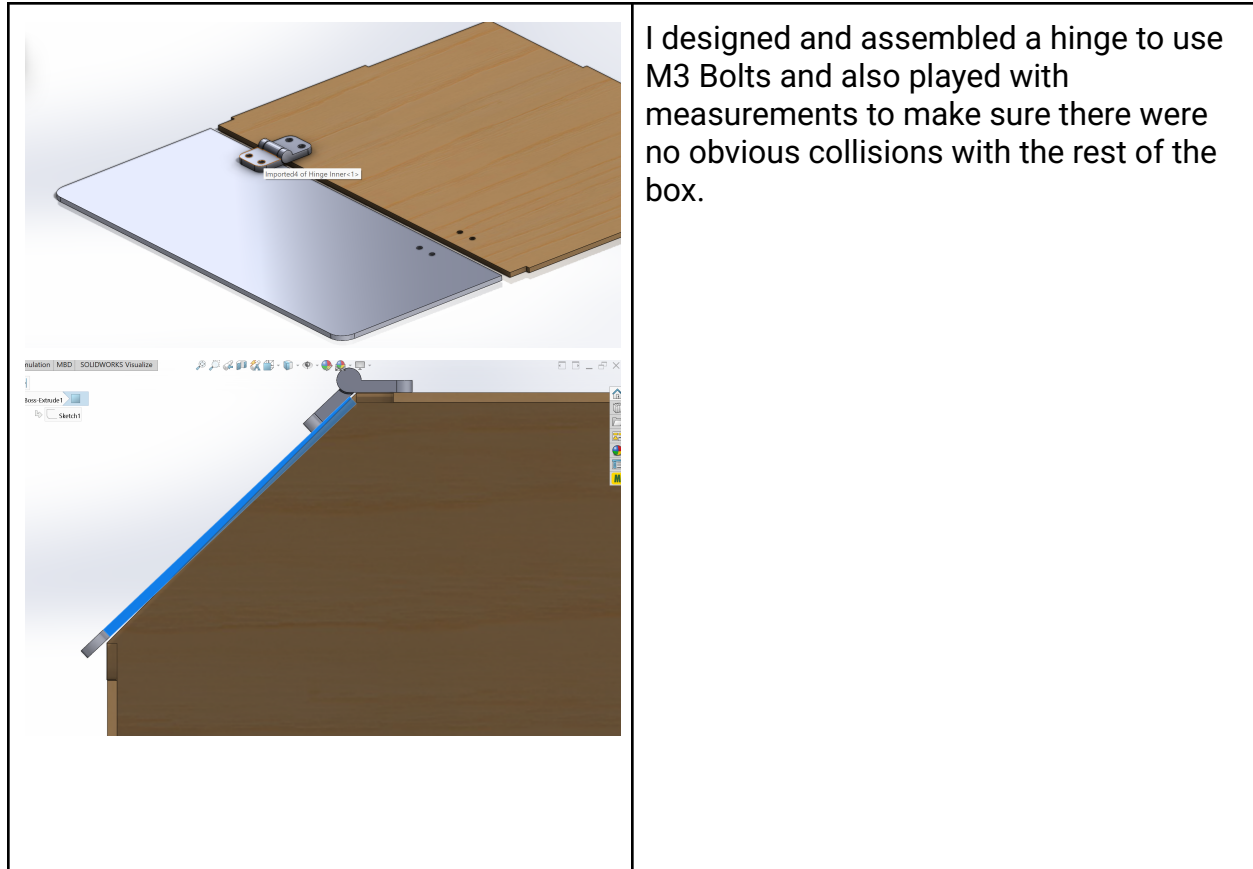
Inspiration for what type of lights we'd want to use

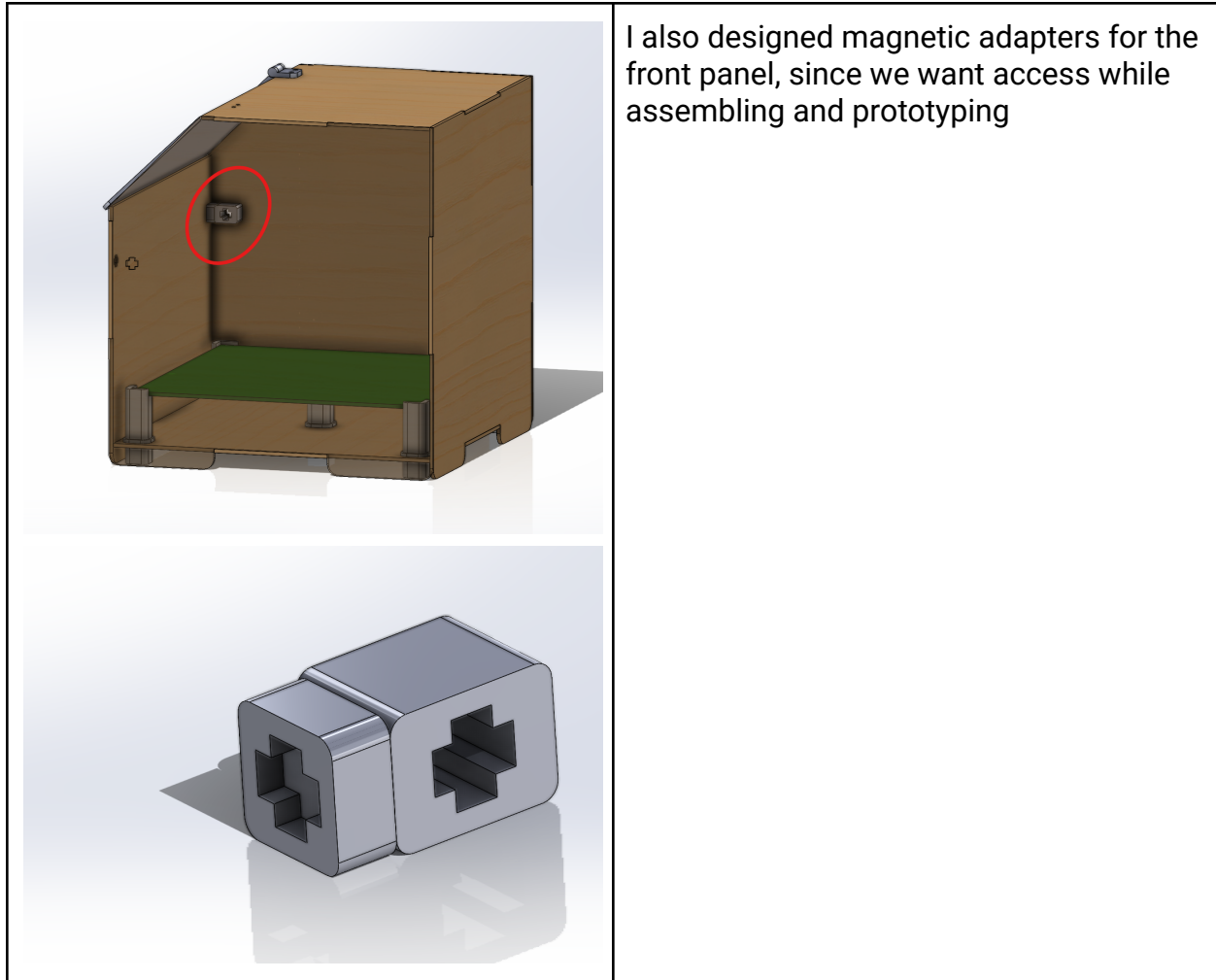


	I knew we needed to start with a laser cut box, so I went to MakerCase, selected basic box and created rough measurements for the LEGO Base
	I then designed the base that would support the LEGO set, with enough space for the microcontroller to sit under (we did not want to have many visible electronics).

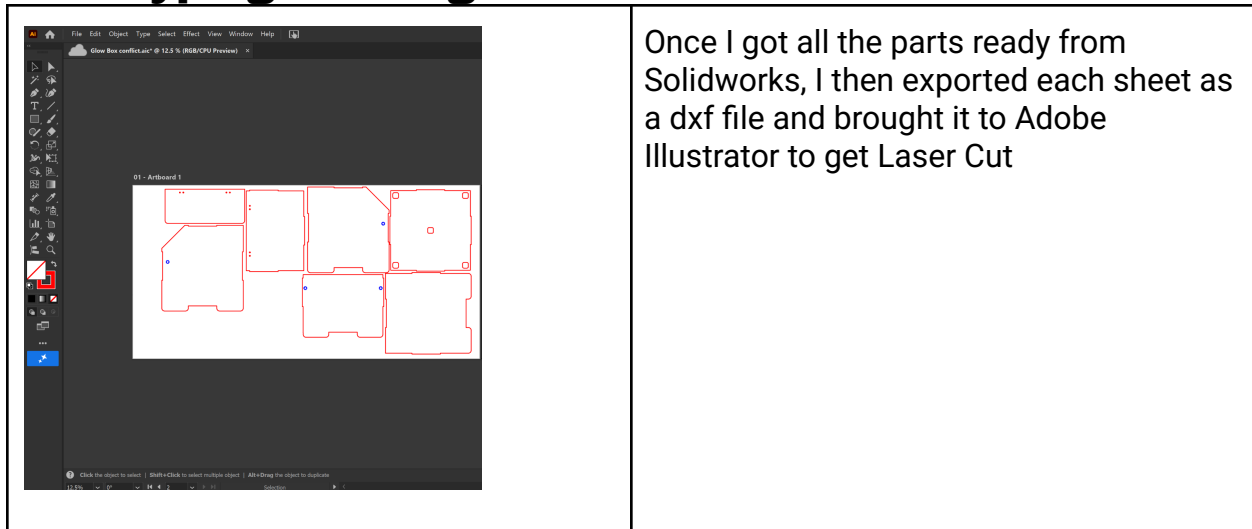


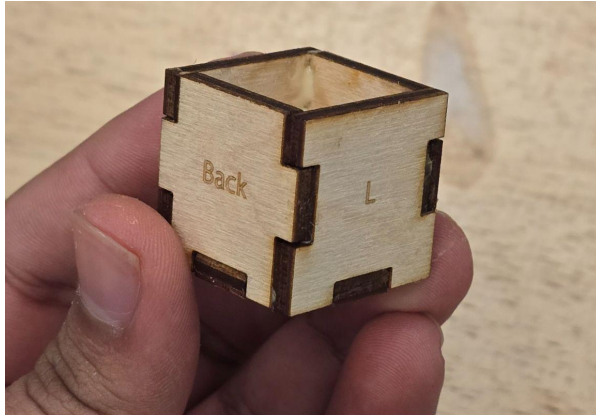
Once I exported the basic box file into a dxf file, I imported it into Solidworks as sketches, then I extruded each piece to match the material thickness. After each piece was the right thickness, I then went into SolidWorks assembly where I assembled the parts accordingly. Then I started modifying the sketches of each wall until I got an assembly that matched the goal of lifting a panel to reveal what's inside. This also included design goals, such as having feet on the box.



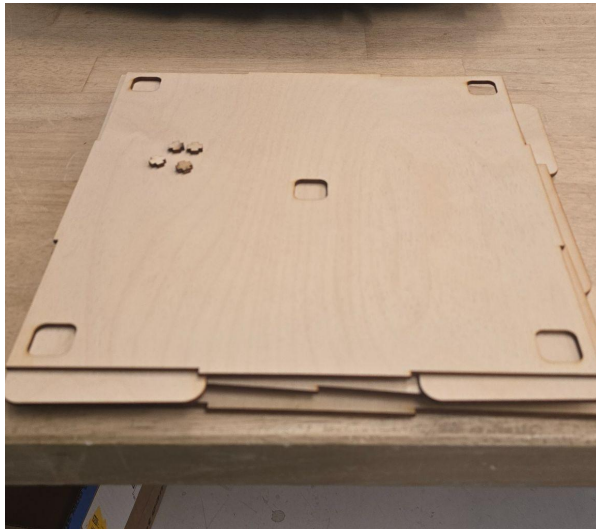


Prototyping/Building Process:

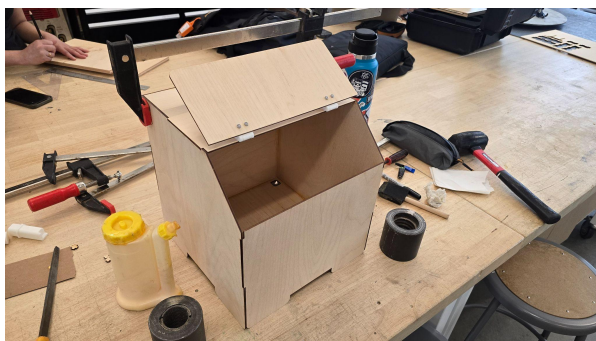




I tested the box cut tolerances by creating a mini box in Makercase, exporting it to Adobe Illustrator, and laser cutting using the provided dimensions before starting the full lasercut.



I completed the laser cut for the entire box.

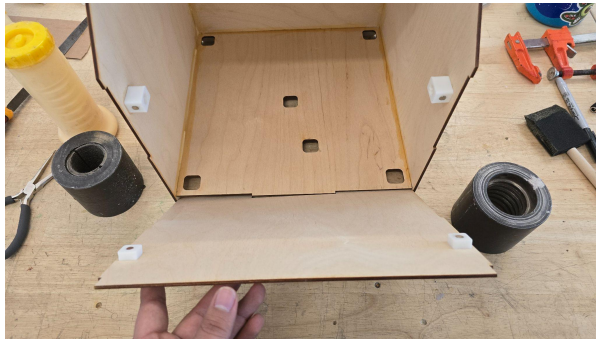


I then assembled the box using wood glue, 3D printed components, bolts, nuts, and clamps



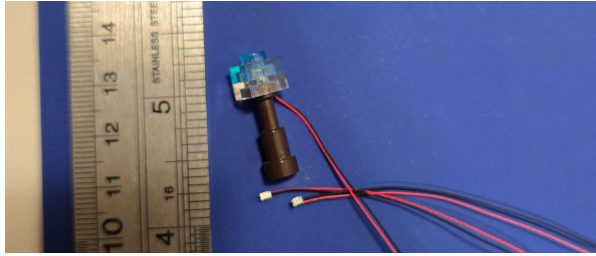
I superglued the 3D-printed components to the wood.

I also superglued the magnets into their slots

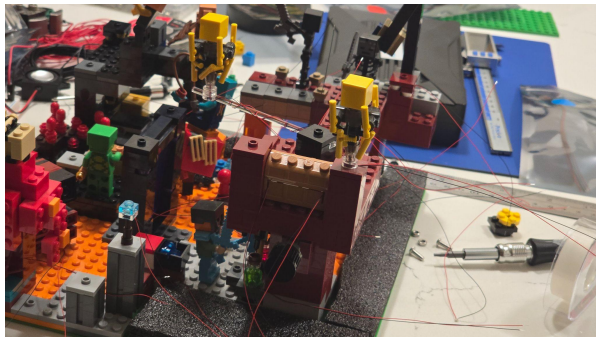
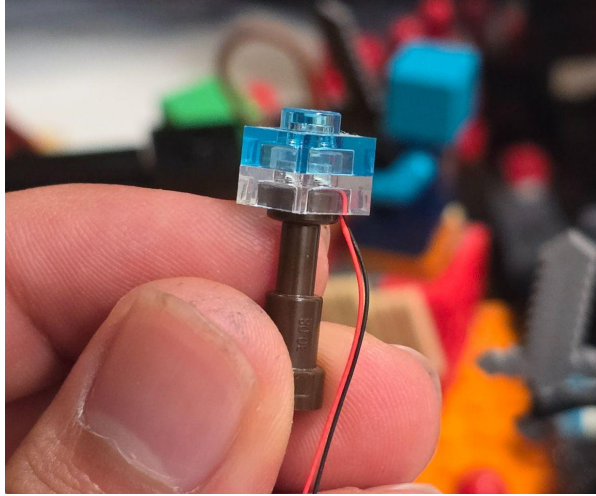


We assembled the wiring for the breadboard and tested a single mini LED. And we also tested the sounds of the nether on the speaker, sourced from a youtube video.

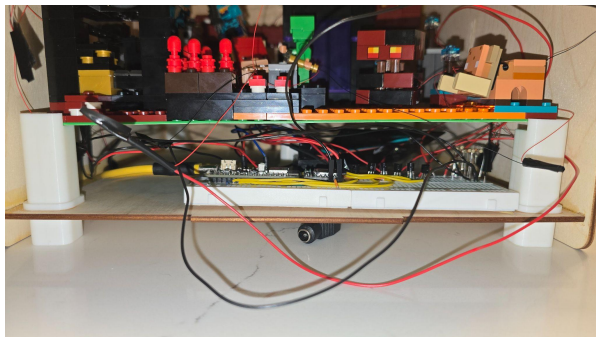




We then set up our new Nether Lego Theme and inserted the LEDs where we saw fit.



We wired everything, then routed wires throughout the set, then connected all the LEDs in series through soldering, then placed the LEGOs in the housing.

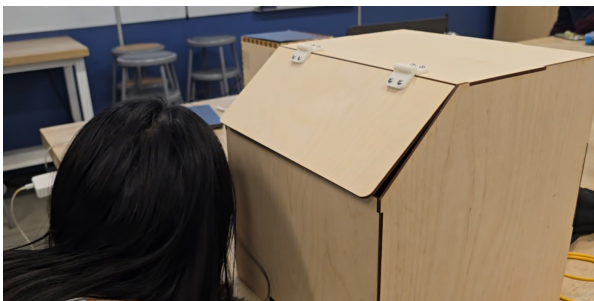




We added a limit switch at the top of the box to detect when the lid was opened or closed. This would activate the music and the neo pixel under the buildplate.



Finally we presented in class.



Conclusion / Reflection

The goal of the piece was to invite users through an audibly pleasing and recognizable gaming sound. During our class demonstration, we had random participants enjoy the box, especially the interaction of random Minecraft music playing from their action of opening the lid. They also recognized the orange light as lava. For the future, we hope to incorporate a more environmentally engaging piece and have properly working and wired mini LEDs, since ours did not work.

I think it turned out okay, but there is a lot more room for improvement, especially with the lighting effects and user engagement

Links

Code	https://github.com/Ramirocon/The-Nether-LED-light-up/tree/main
Final video	https://youtu.be/-KmV8Y_eIVA

Sources

If you used tutorials, Stack Overflow code, or other third-party materials, you should cite them here! It's good practice and this way you'll be able to find it again in the future :-)

If there are sections of your code that are from third-party sources, try to directly cite them in your code using a *//comment*, too.

Chat GPT	chatgpt.com
Laser Cut Box Generator	https://www.makercase.com/basicBox
SolidWorks	
Adobe Illustrator	
Minecraft Music and Ambience video	https://youtu.be/VVOIHEzgZHY