

3D Printed Globe

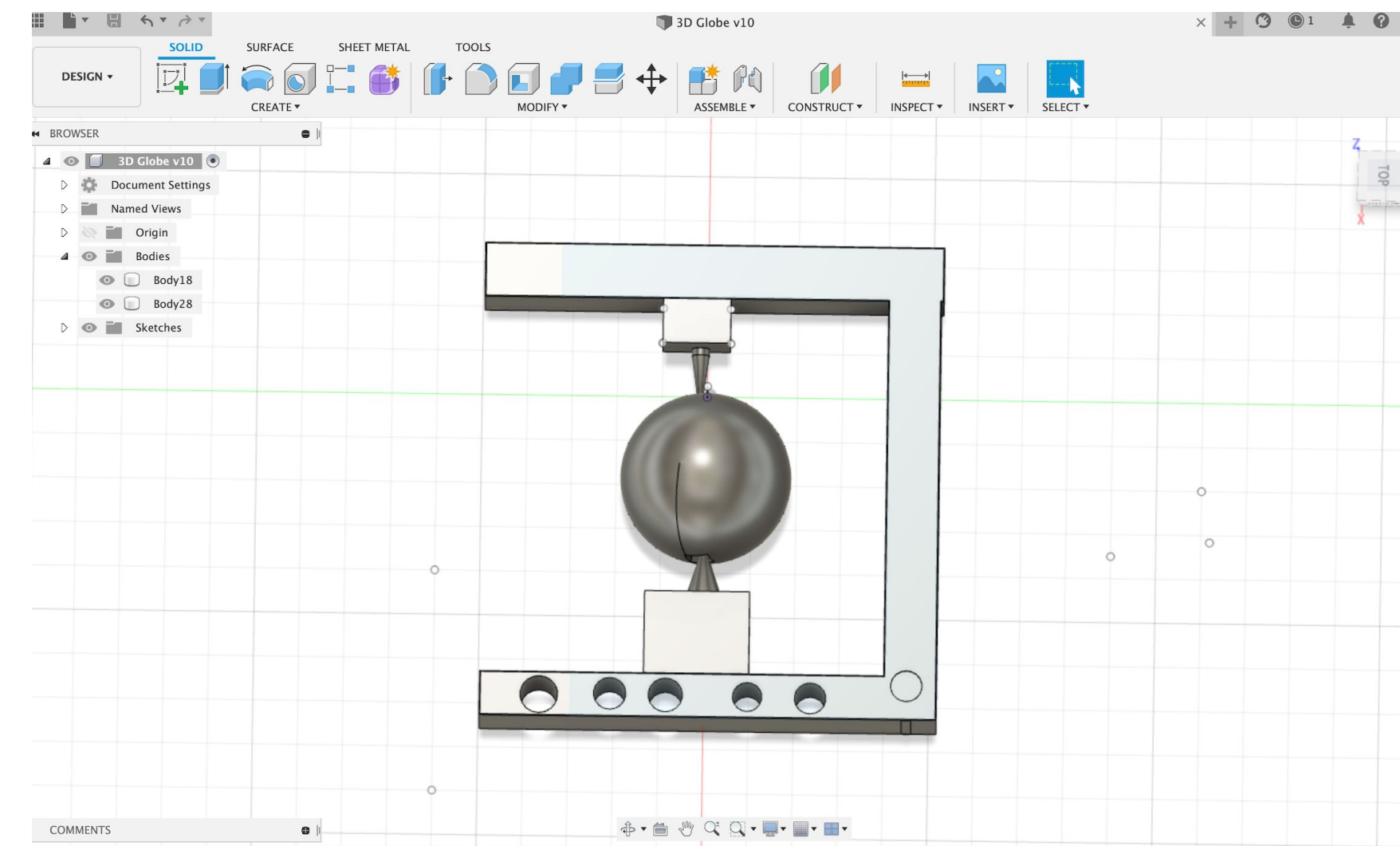
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Abstract

My project is a 3D printed globe. The mechanical movement is the globe spinning and there will be 5 LED lights on the base of the structure. This globe can be used to help students at their desks during a history or geography class or it can be used for instruction by the teacher. The LED lights will help students be more intrigued and engaged in their learning and the lesson at hand. The LED lights will be triggered by the room light to blink in a specific sequence.

Introduction

One quote that was presented to the class the first day was said by Martin Luther King Jr. "Life's most persistent and urgent question is, 'What are you doing for others?'" Each person in the class had to use this quote to think of a project to create. This is when the idea of the globe with the lights came to mind. This project at a larger scale with the world on the sphere can be a real help in classrooms. The lights changing colors in a sequence can gravitate students to the globe and might help them focus more on looking at the globe when working on a project requiring it instead of looking around the room and being distracted. Students who are younger might be more intrigued than the older students with a globe with lights, however it can still be a helpful tool in the classroom and it is visually pleasing to be displayed. Through personal experience I have seen elementary school students become very intrigued and fixated on items with lights.



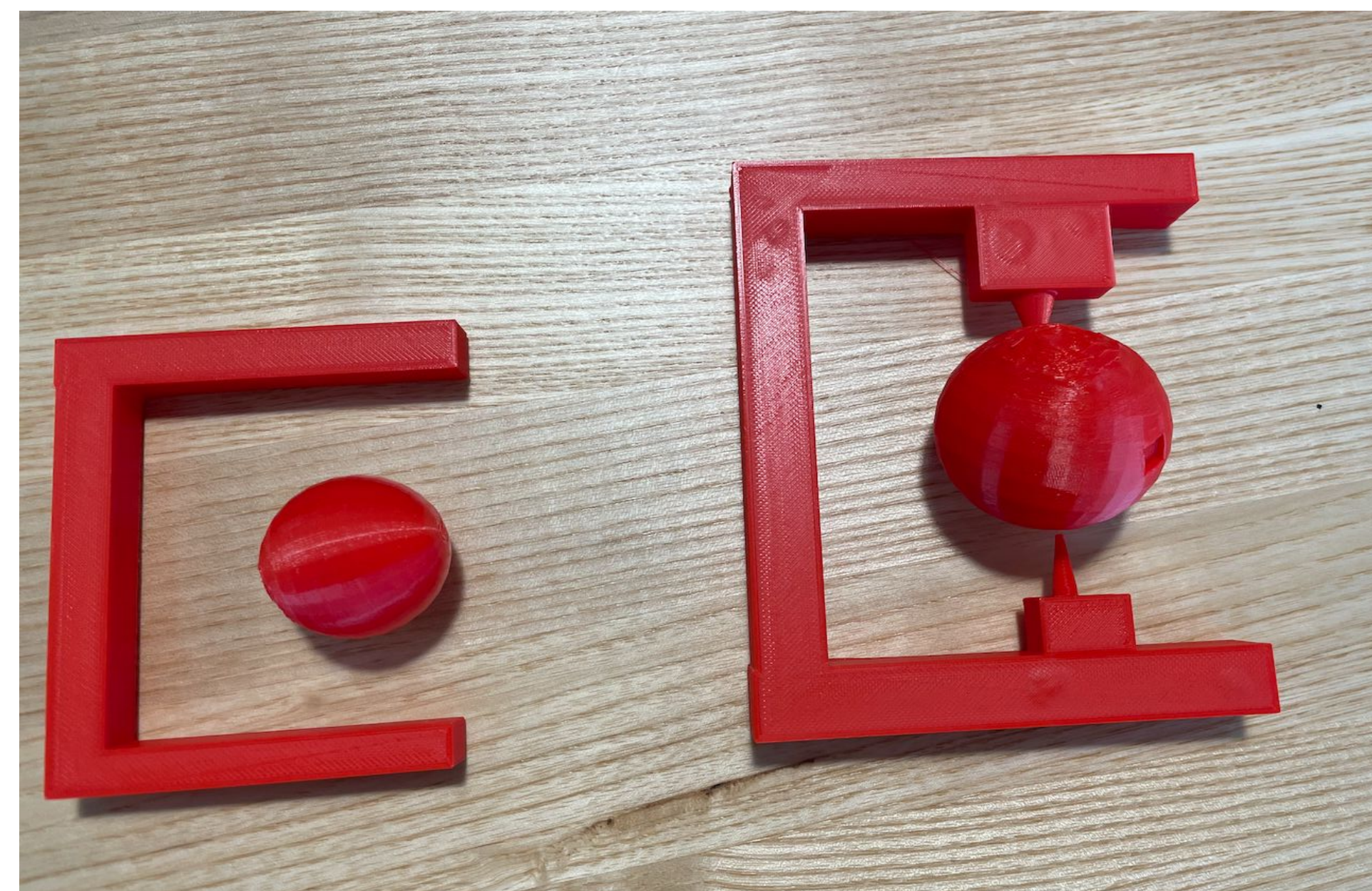
This screenshot is of my final project on Fusion 360 before it was printed.

Methods and Materials

This project was printed at the IDEA Lab on West Campus using 3D printers. The print itself is made from a plastic filament that is heated on the printer to create the structure. The software used to design the print was Fusion 360. The lights were coded on Arduino using the circuit, breadboard, photoresistors, and LED lights. The Arduino allowed the code to be created and sent from the computer to the circuit to run the loop.

Results

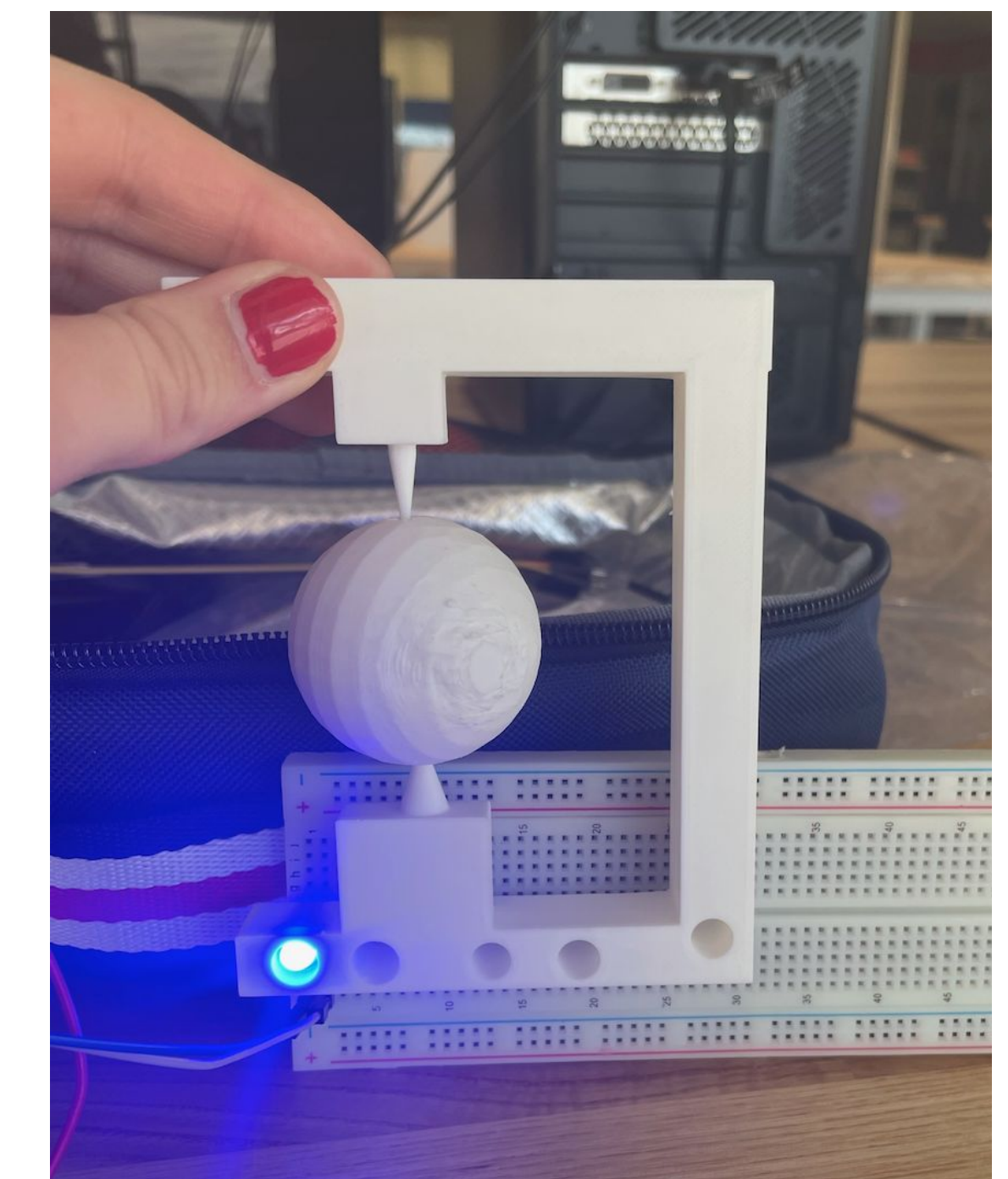
My project started off pretty rough. One of my first prints is the picture on the far left. The sphere was floating essentially and I did not have anything to hold up the sphere or allow it to spin. The next print which is in red next to that one had the cones to allow the sphere to spin, however they were not long enough to allow the sphere to spin. Again the sphere was just floating. It was hard making sure the cones were not in the sphere fully because in that case the sphere would not have been able to spin, so working on the program was like a trial and error because I had to check from all sides to make sure the sphere would be able to spin. The middle photo on this slide, this is my final project design. The cones were long enough for the sphere to sit up freely and spin in the indented sections without issues. The holes on the base of the structure are for the lights to blink in sequence.



This picture is of my first and second failed prints.



This is my final print.



This is my final print with one of the LED lights working in the holes where they are placed.

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