Marble Sorter

POE

6th

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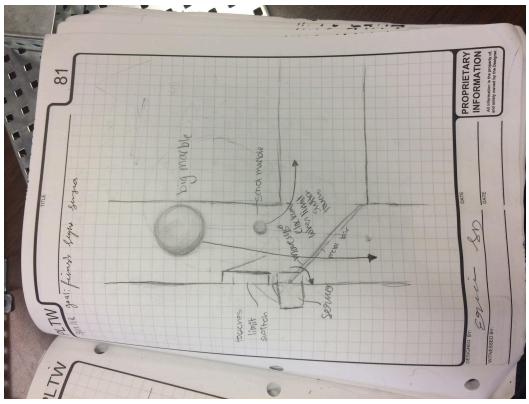
Team Roles

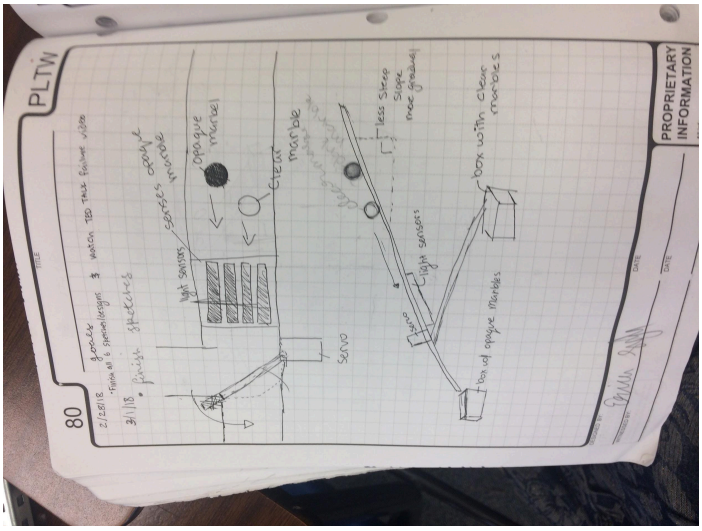
Project manager, Reporter, Builder, Coder, Researcher (for groups with 5)

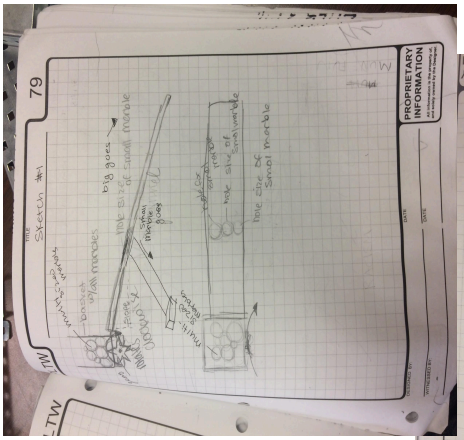
- Project Manager:(Everyone) Responsible for keeping the group on track and providing deliverables to the boss (me). You are in charge of the report.
- Designer:(Everyone) Responsible for documenting in the engineering notebook everything that went into the design process (All the ideas that were presented, good or bad).
- Builder:(EVeryone) Responsible for taking charge of the building phase and documenting the build and prototyping
- Coder:(Akanksha) Responsible for writing the code for your design and making sure the pseudo-code design options from the notebook are also included.
- Researcher:(Everyone) (For groups of 5 this is a standalone position, for groups of 4 this task must be split among the group) Response for researching design ideas online and documenting this, with appropriate references to where the information came from.

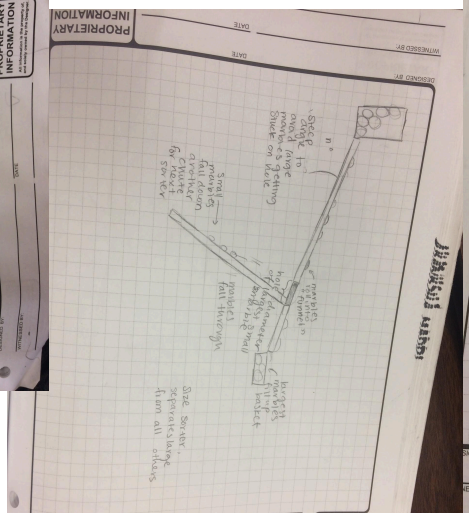
Introduction

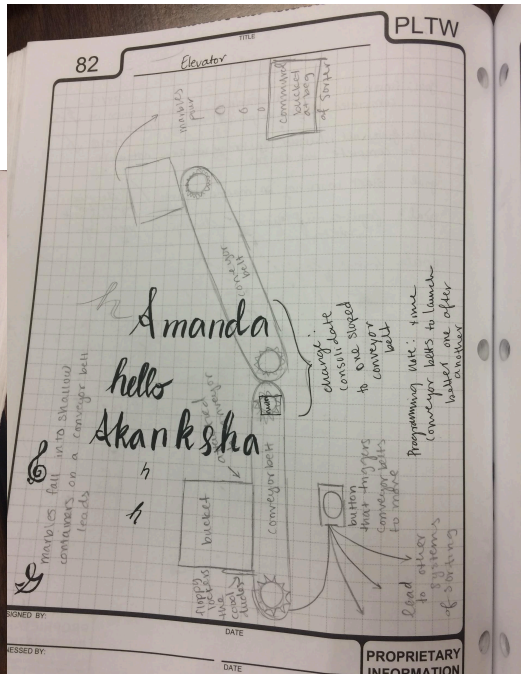
The problem was set when multiple groups of three were assigned to build a marble sorter. For the full month of April and March these students were building. The requirements entailed a machine that could sort four different types of marbles, with 15 marbles in total. The machine also had to include a 3D modeled part of a laser printed part which wasn't a funnel.

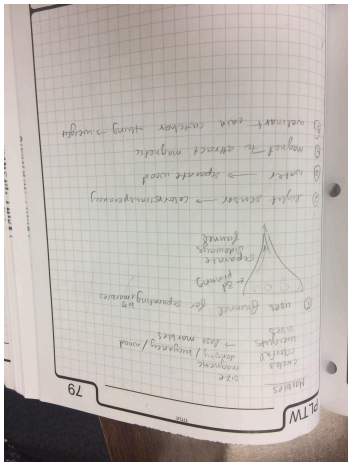






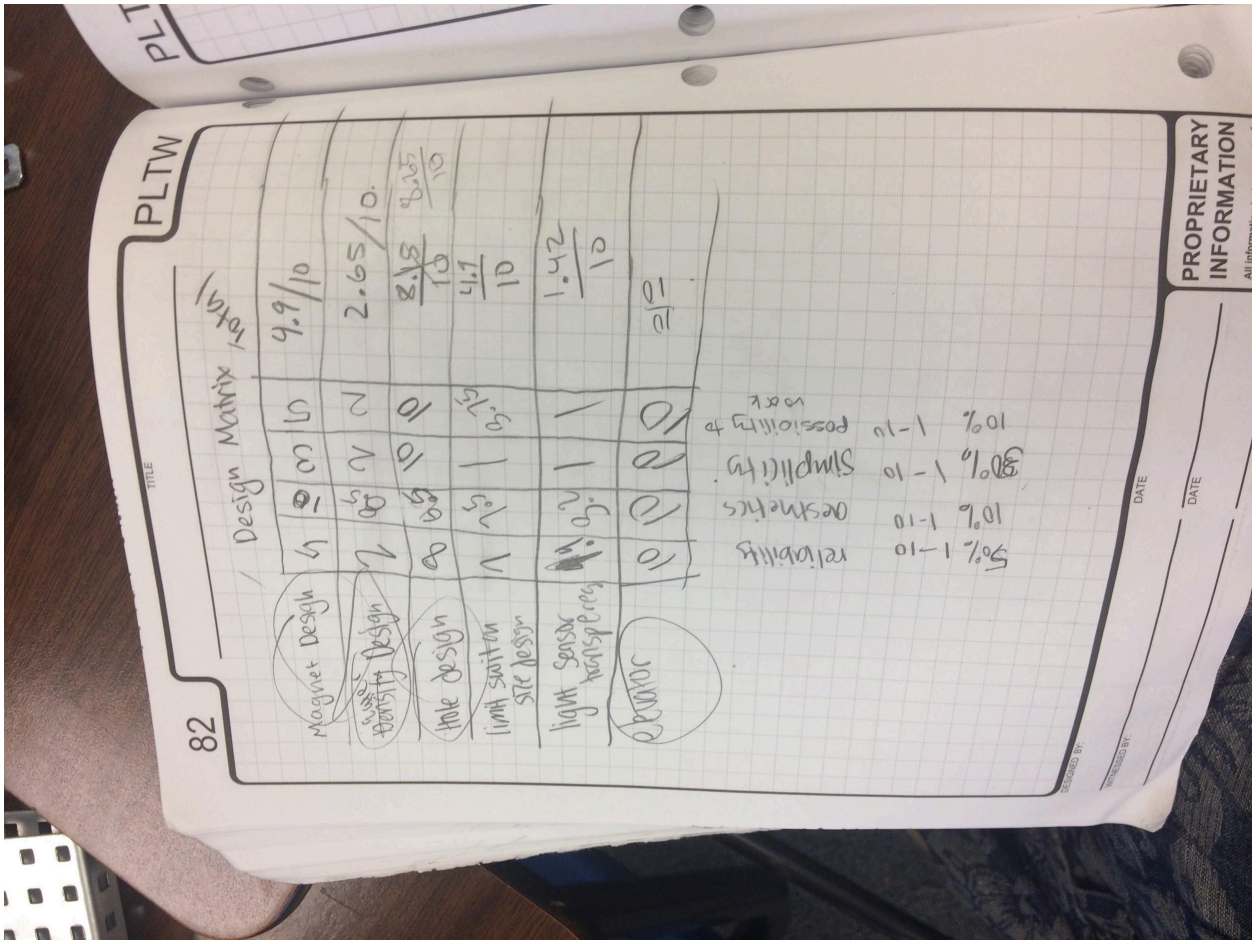






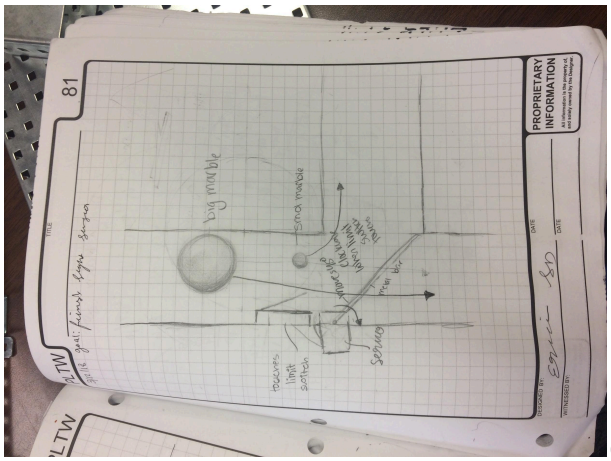
Decision Matrix

Evaluate the four solution ideas using a decision matrix. Determine the best solution to the problem.

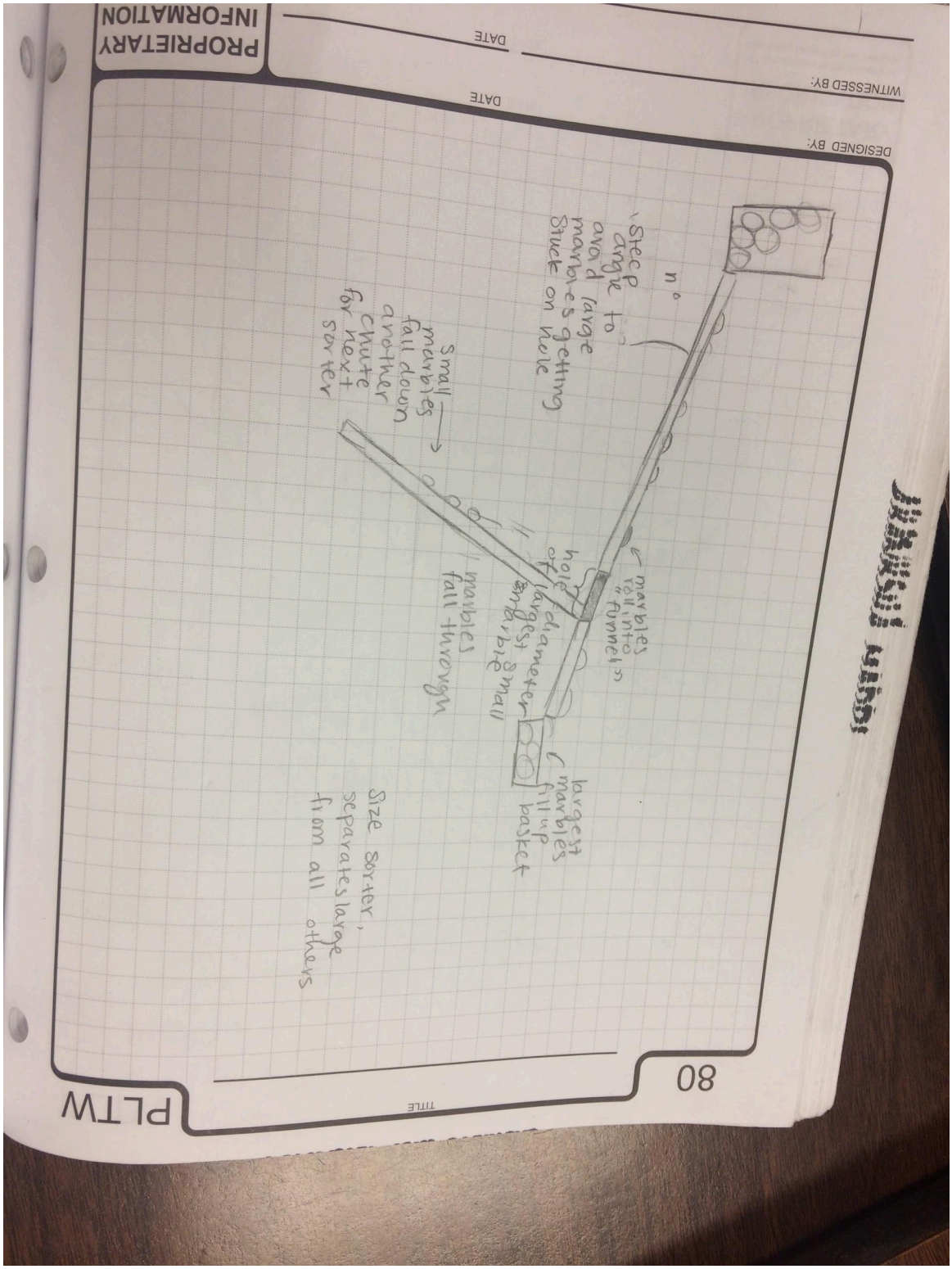


Final Design Solution

Create a detailed pictorial sketch to document the best solution, based upon your team's decision matrix. Your sketch should include a rationale for the design selected as the final design solution. Each sketch should be signed, dated, and should



include labels and descriptions for communication.



Design Modifications

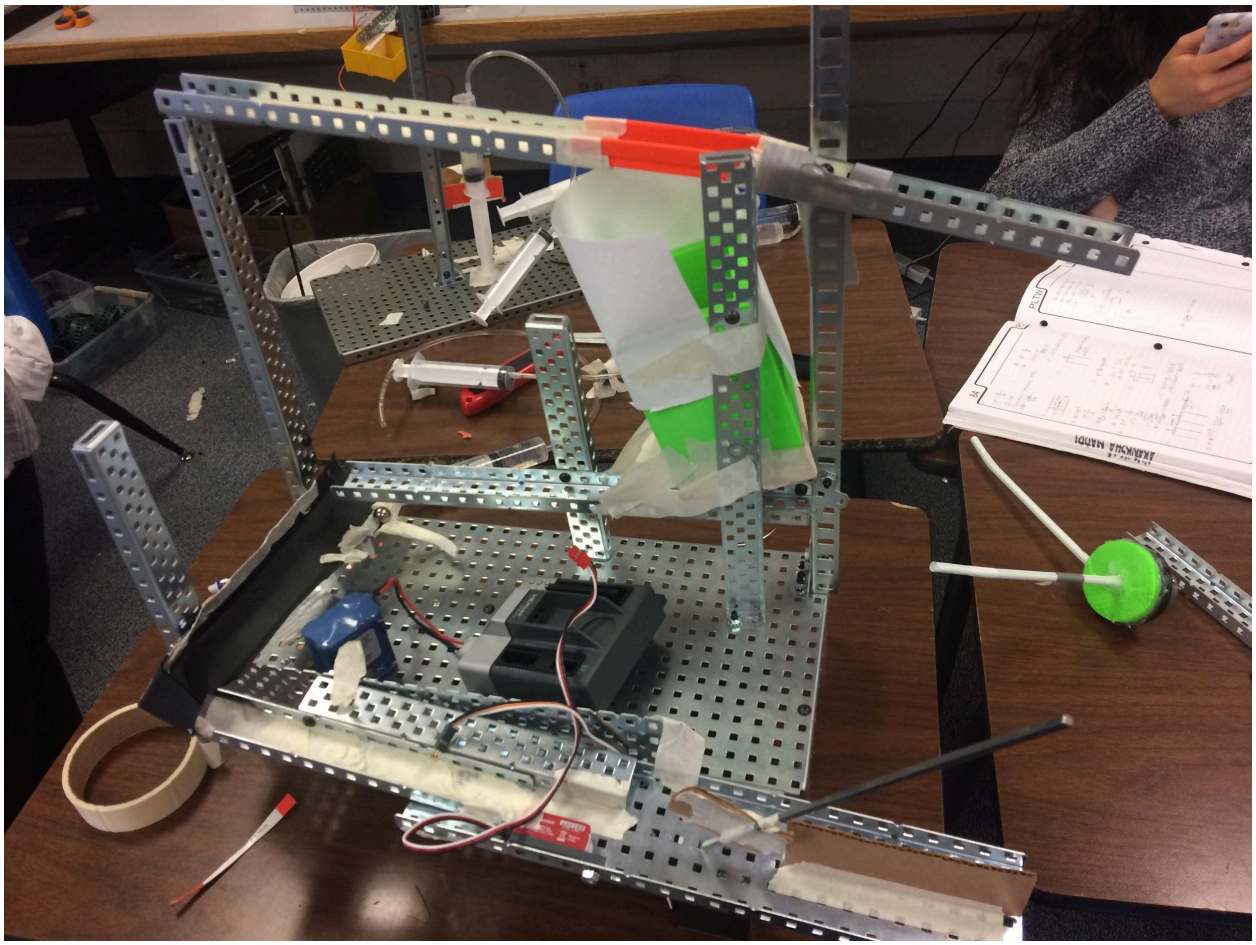
We used a few different designs from our original idea. This included not using the water method and instead using the 3D printed object from our water sorter as a way to drop the marbles one at a time for the color sorter, which was changed from the light sensor.

Code Generation

Put your code here.There was code I just don’t have access to it.

Final Design

This section will include information pertinent to the design solution in the form of images (e.g., **photographs of final solution**, photographs of testing solution, 3D models, assemblies, **drawing files**, orthographic and isometric drawings, assembly, schematics, exploded views, written programs, flow charts, calculations, and data tables).



Reflection

This is not just answering the questions. This should be in paragraph form and should be very detailed. The questions are here to guide your thinking but should be deleted in the final report. How well did you accomplish your objectives? What would your team do differently with your design solution and why? Do the results fulfill the problem statement? Provide a brief

1. What was the most challenging aspect of this design problem?

2. What are some creative changes that you would make to the design solution if you could start over?

The most challenging aspect of the design problem was the minor details that caused the project to not work. The positioning of the magnet would occasionally lead to it block the other marbles, and the velocity of the marbles would occasionally cause them to be unable to be sensed by the color sensor. If I had the ability to change certain design aspects I if I could start over I would never try the water or light sensor and go directly to the color and magnet sorting systems.

References

All information we received was from the people in J-4 during 6th period or anytime we worked on the product.