

CD Case Organizer

Define and Explore

2.8.21

Problem Definition: Movie/Game Holder

Goal: Make a rack to hold movies and games

Primary Functionality:

- Good structure (Not flimsy)
- Cases won't fall out
- Light (Easy to move around)

Secondary Functionality:

- Cases are easily replaced
- Easily cleaned
- Easy to move around (with movies)

Constraints:

Size: What I will make needs to fit within the shelf it will be placed on

Units: This also depends on the size, but different designs will allow for more or less units

Improv mats: I think I can start with a scaled down version with popsicle sticks and then move up to better wood, or another material

Research Slides

Wall shelf (box)

Overview:

This version uses a wall mounted rectangular boxes stacked on each other to hold multiple movie

Pros:

- Holds a lot of movies
- Size can vary
- Looks nice

Cons:

- Stuck to a wall (can not move around)
- Making holes in the wall

Takeaways

- The design can not vary as its just a box
 - I already made a wall shelf so probably won't do this
- <https://www.pinterest.com/pin/771804454872378487/>



DVD Tray

Overview:

This is a simple design that guarantees the cases won't fall out

Pros:

- Cases won't fall
- Simple design

Cons:

- Bulky
- Can't separate movies from games

Takeaways:

- This design would work but I wouldn't be able to tell apart games from movies
- This design is good to help me move it around but it takes up a lot of space

<https://www.amazon.com/Stock-Your-Home-Stackable-Organization/dp/B000NZMKLY>



Takeaway Summary

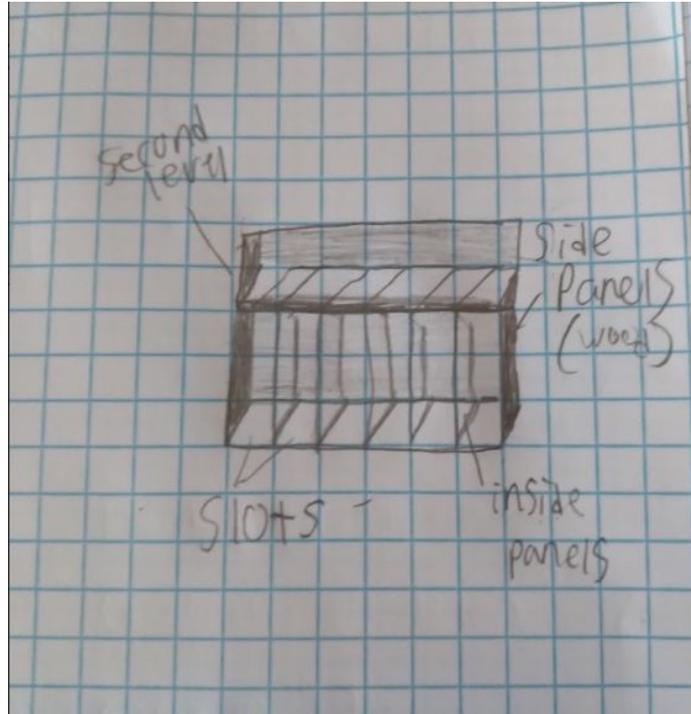
- All of the designs go with a “box” design
- It seems the best material is wood, although I can test with other materials
- I can either make one big one for movies and games with a divider, or two separate ones. This would change the design I chose as I could reduce the length and wouldn't need a divider
- Aesthetics is not as important
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Ideate and design

Key Features

Primary functionalities

- Holds movie and game cases
- Does not take up too much room
- Easy to move



Key features

- Materials (Made with thin wood to reduce weight)
 - a. How will i get the wood?
 - b. Can i use another material?
- Two levels
 - a. Where will the second level be Positioned?
 - b. Can I make the second level move?
- slots?
 - a. Is this necessary?

Key features approach

Materials

- Prototypes made with cardboard
- Scrap wood?

Two levels

- An adjustable second level
- Having two levels will make it bigger so i need to find a way to keep it slim
- I could just double the first level and stack them

Slots

- Must be very thin so that it does not affect the amount of cases that fit in the holder
- I don't know if i really need this feature

Prototype design

Prototype goal

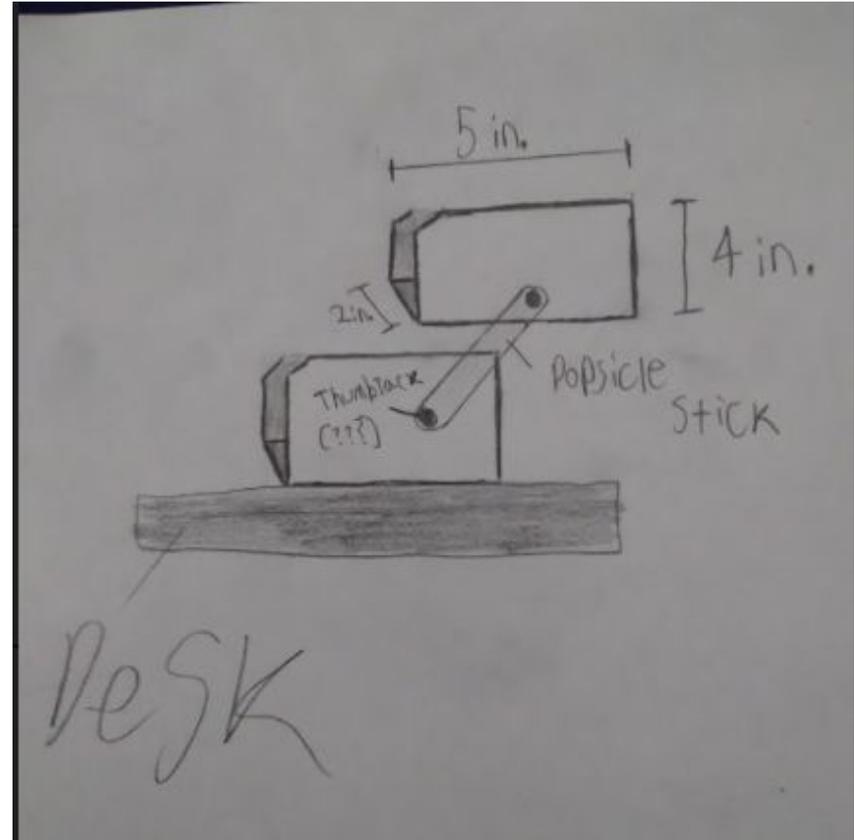
- Test designs that try to get the key feature of movable second level to work

Approach

- Build cardboard boxes that are connected via a popsicle stick that is pinned to both on the ends and is able to move

Materials

- Cardboard, popsicle sticks, thumbtack, tape, glue, pins



Build, Test, Evaluate Prototype

3.17.21

Prototype Build

Approach:

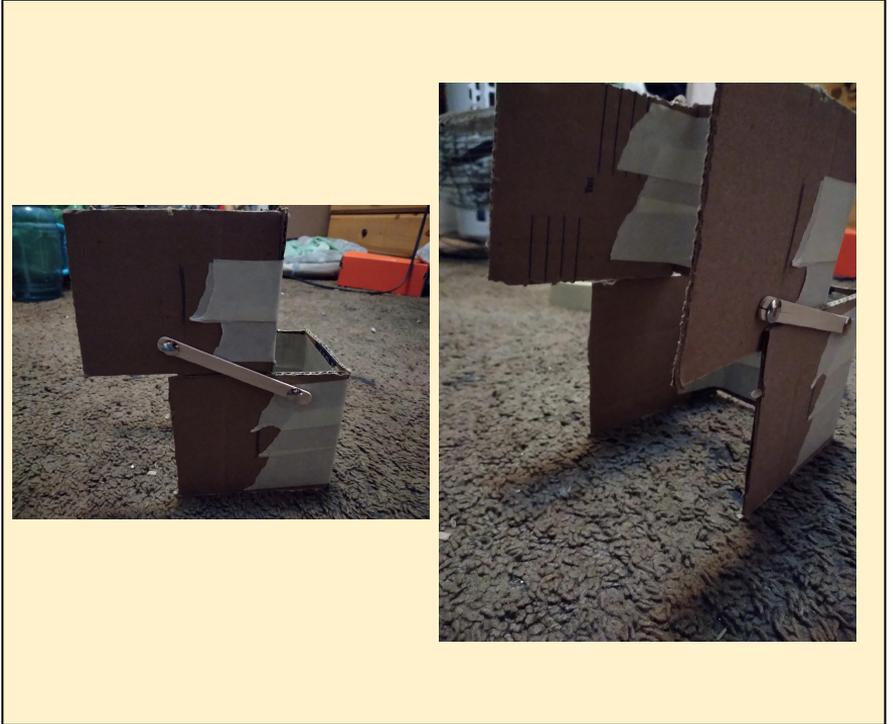
- For my prototype I decided to make a scaled down version of my final design. While also using materials that I think are good enough to be part of the prototype but not the final.

Something I liked:

- I have to say that the think that I most liked is the fact that my design worked for the most part. There were a few problems that you will see, but I think that the design itself is pretty good.

Something I will not do again:

- I would probably not use just tape as a binding tool. Especially using it to keep cardboard together. It can work but the faces can be flappy. I think I can add glue amongst other things to keep firmness.



Prototype Test

Test objective:

- Testing the Design

Test method:

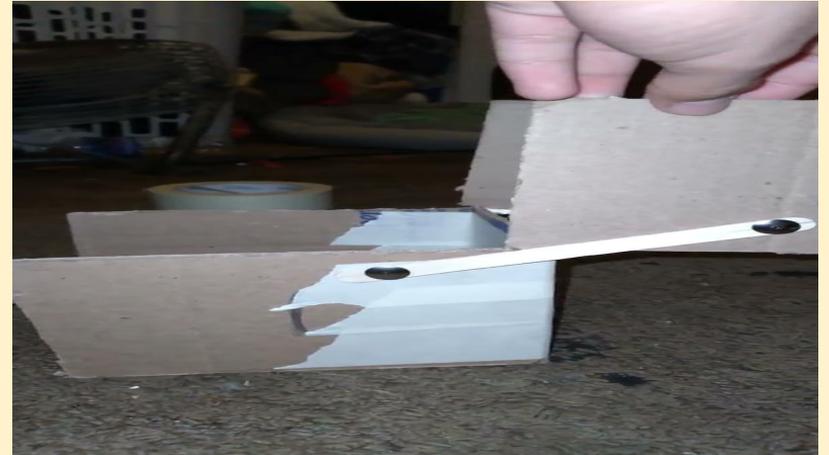
- I sized down the design but kept the key features the same. I also used improvised materials

Test criteria for success:

- If the key elements of the design work I think it's a success. The point of this design was to have an adjustable second level so that is the main objective I tried to achieve with this prototype

Evidence: (see video)

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Phase 1 Prototype Evaluation

Aspects of my prototype that I like:

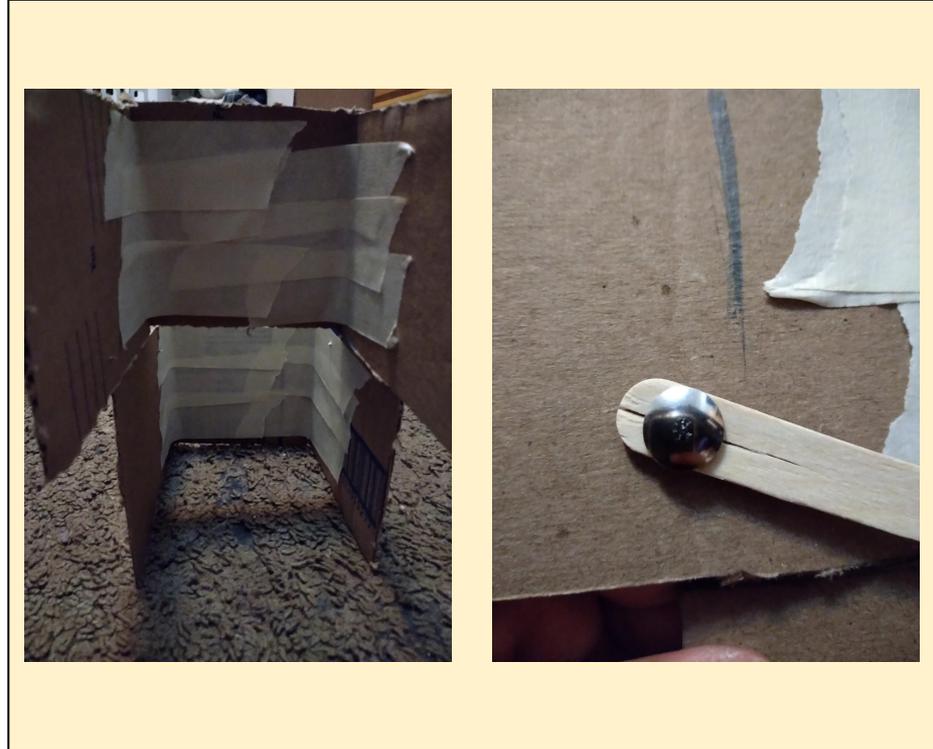
- I liked that the popsicle stick and thumbtack idea worked to a certain extent. I am happy that the design worked out although there are multiple areas for improvement.

Aspects of my prototype that I did not like:

- I did not like that the thumbtack broke the popsicle stick, although this was expected it decreased the strength and connection between the levels.

Improvements for the next iteration

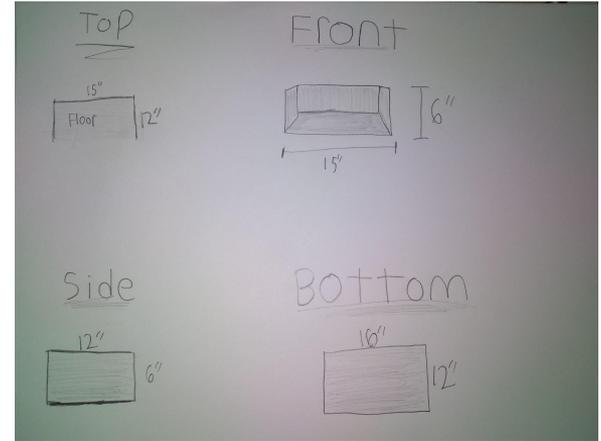
- I will definitely step up the materials game. I think one of the reasons the design was not a total success was because the materials were flimsy and not very great, however I was testing the design not the sturdiness.



Final Documentacion

Design

- For my design I decided to build two cardboard structures to hold the Disc cases and the stack them on top of each other therefore having two levels.
- The reason for two levels is so that one could hold movies and the other video games.
- I wanted to connect the two levels so that the top level could slide forward and backwards.
- However, since the levels are not connected they can be separated and moved around more easily.



Build

- For my final draft I wanted to upgrade the material to wood but I just couldn't find the time to do this so I stuck with cardboard.
- I built what I had designed as the picture was pretty clear for me.
- Unfortunately I couldn't find a way to connect the two levels although you can still slide the top one into different positions.
- The entire structure is made of cardboard and is held together by superglue which I found to be really effective and much better than a combination of regular glue and tape.
- Because I used superglue I had to be quick when putting it together and that was quite a struggle.
- The structure held pretty good and I get reminded that cardboard can be really strong when used correctly.



Testing

- I decided to do simulated testing as I just wanted the structure to be able to hold the cases. And there was no better way than to put it under pressure.
- I separated the Movies from video games and organized them to use as much space as possible. As you can see on the right the organizer was able to hold all cases and in different positions just as I had wanted it to
- Happy with the result I called this test a success



Evaluation

Overall I enjoyed this project as it challenged my creativity and other skills. I think you can really see the progress from the first rough draft to the final and that is what I think this class is about, having an idea and developing over time based on what you find to work and what doesn't.

I am happy with my final product, although it is a bit different than I imagined it to be in the beginning, I can use it as intended. And also I learned that you do not need the best materials to build something that works.

