Low-Fi Prototypes

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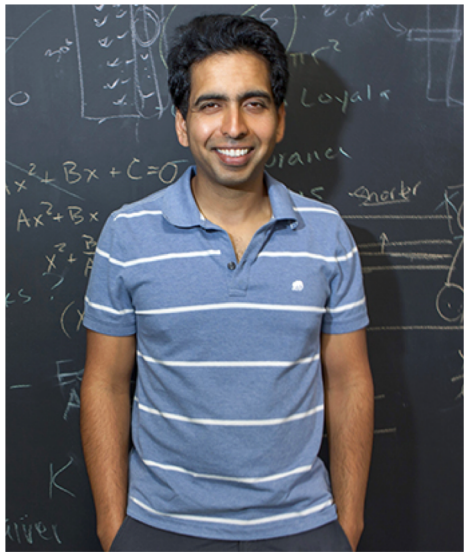
COMS 4170
30 March 2022

Raise your hand or type in zoom

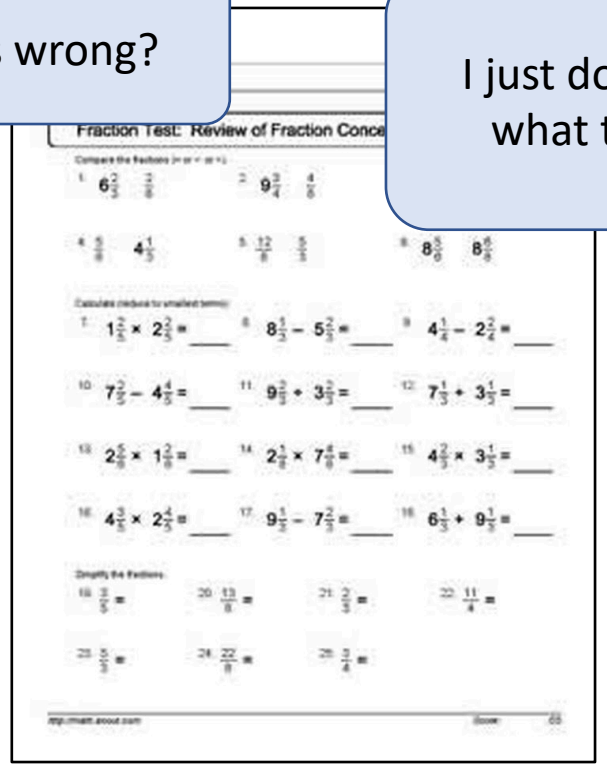
Design Challenge:

- Design an interface to help a user **learn** an introductory topic **interactively**
- And help them assess themselves with a **quiz**.

Design is a process where you work with users to understand their problems…

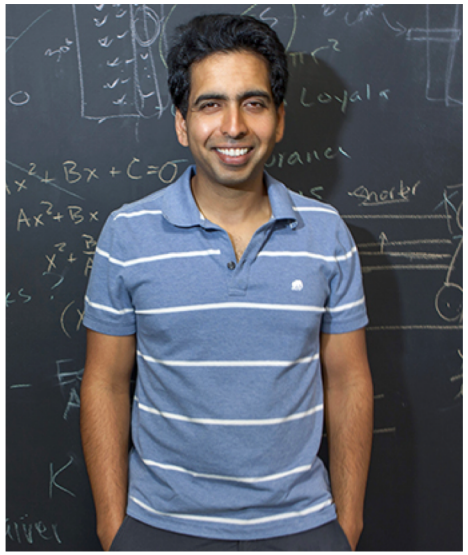


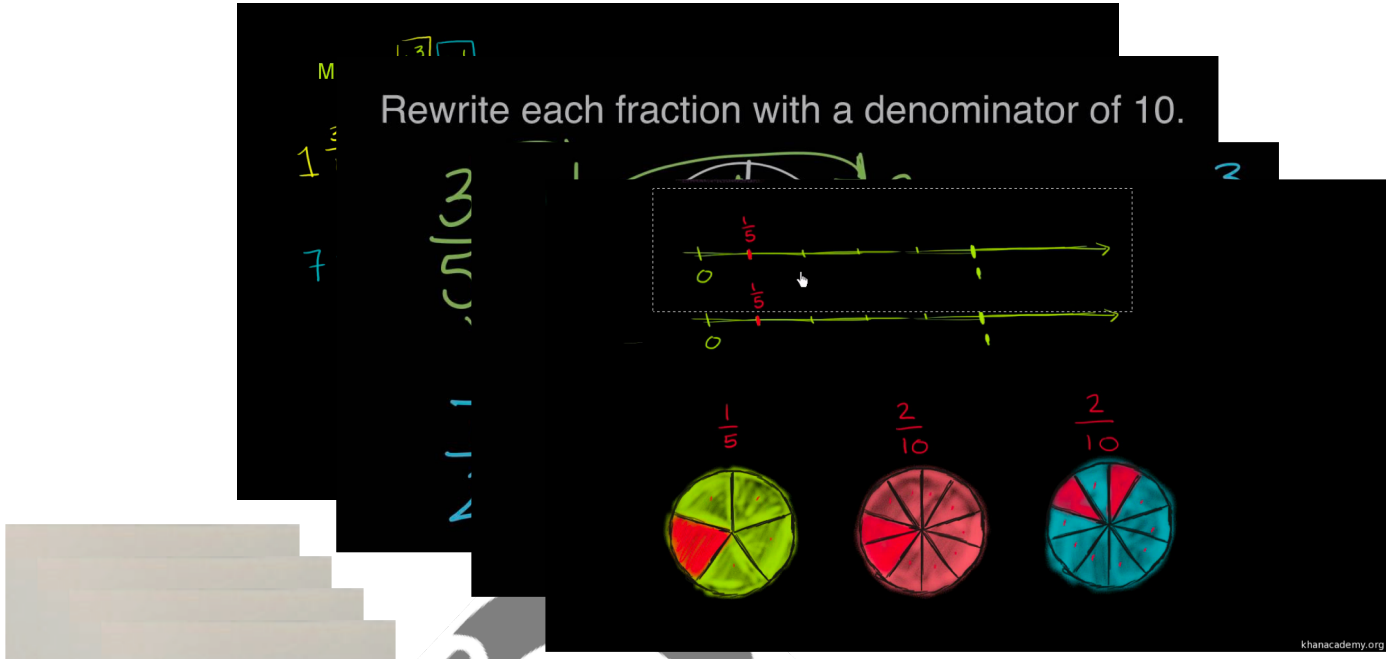
What's wrong?

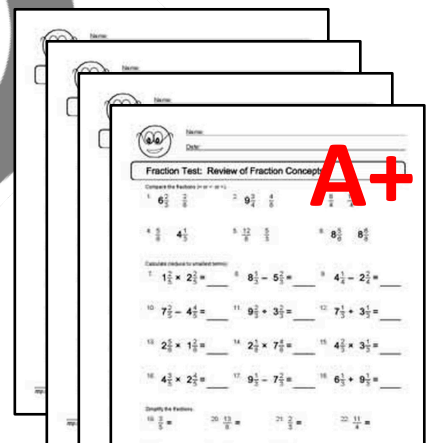


I just don't get what to do.

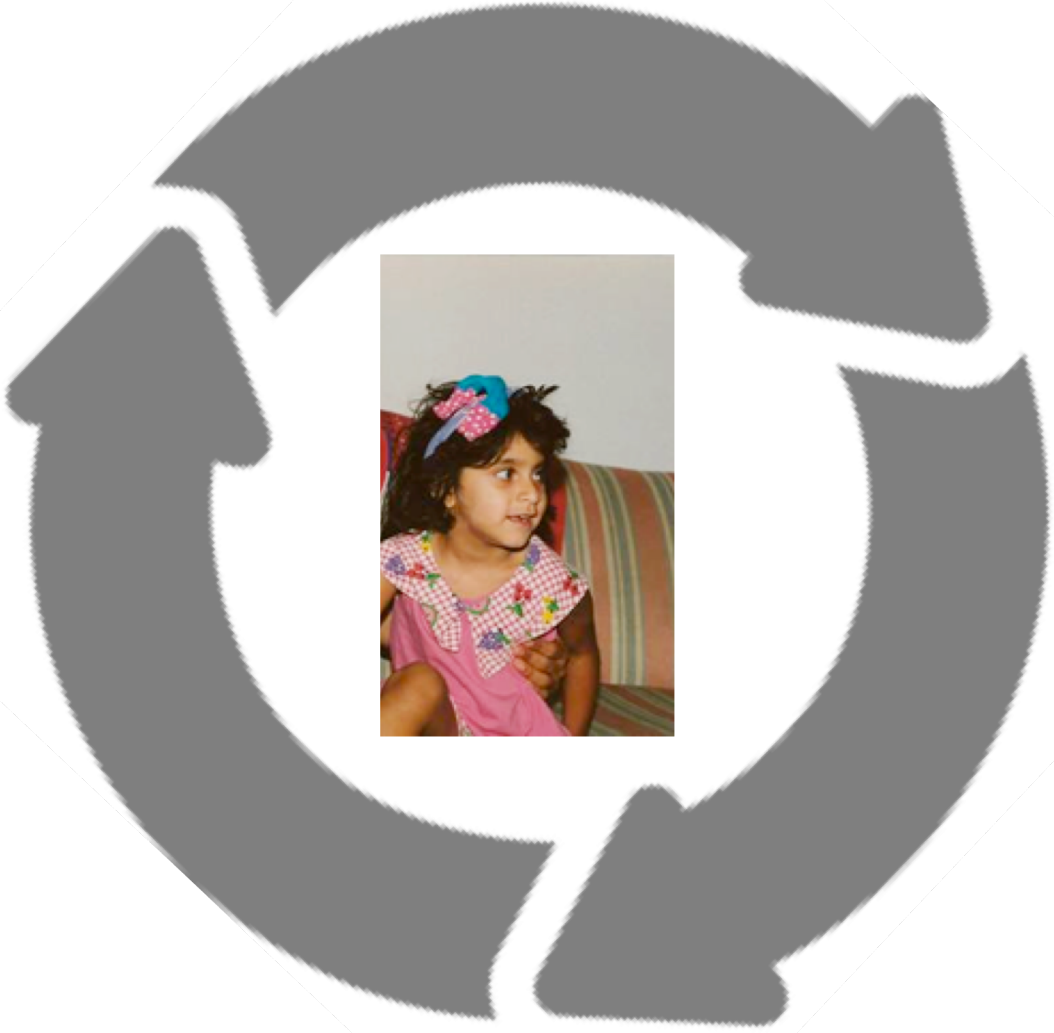
And test solutions with users until it solves the problem.





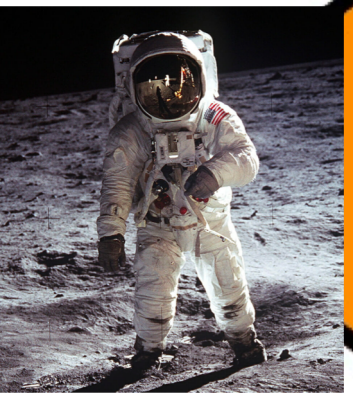


The **user** is at the center of the process



Flare and Focus

The Double Diamond Process



Challenge

- Brainstorm
- Interview
- Research

Synthesize into insights and ideas

Ideas

- Prototype solutions
- Explore technical options

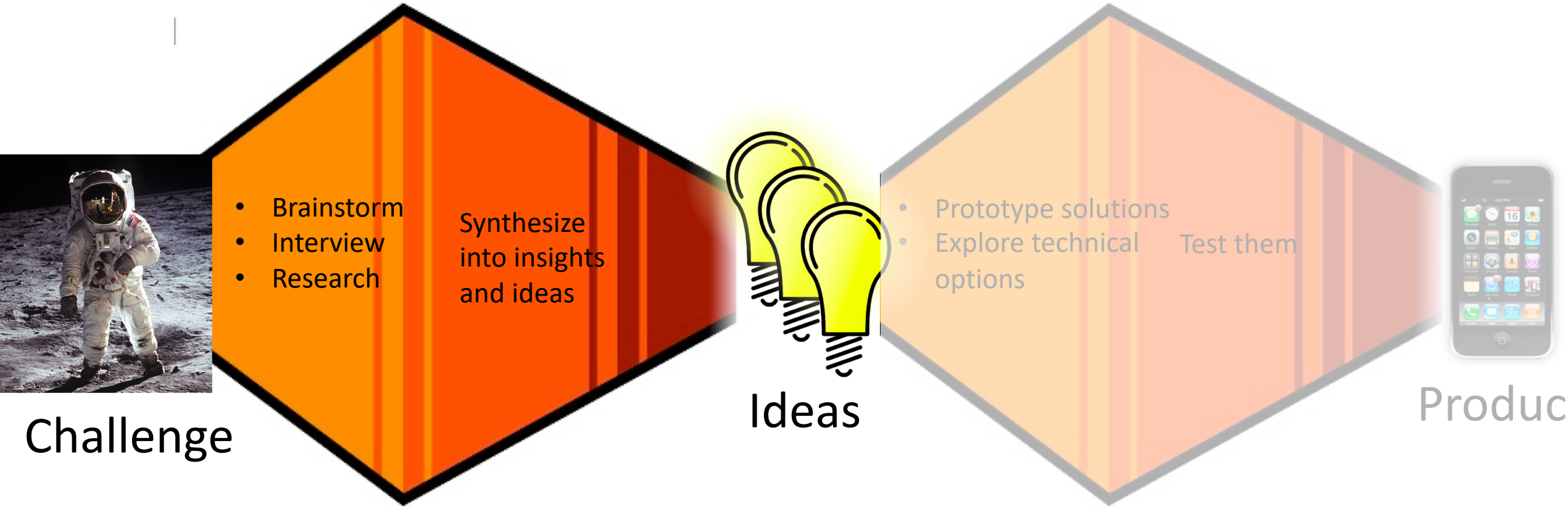
Test them

Product

Understand the problem

Solve the problem

Homework 8


Challenge
Brainstorm
Interview
Research
Synthesize into insights and ideas
Ideas
Prototype solutions
Explore technical options
Test them
Product
Understand the problem
Solve the problem

Homeworks 9-13

Challenge

- Brainstorm
- Interview
- Research

Synthesize into insights and ideas

Ideas

- Prototype solutions
- Explore technical options

Test them

Product

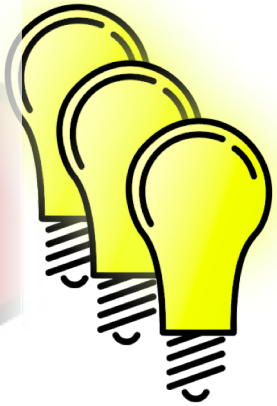
Understand the problem

Solve the problem

People expect implementation to be linear

Challenge

Ideas



Ideas

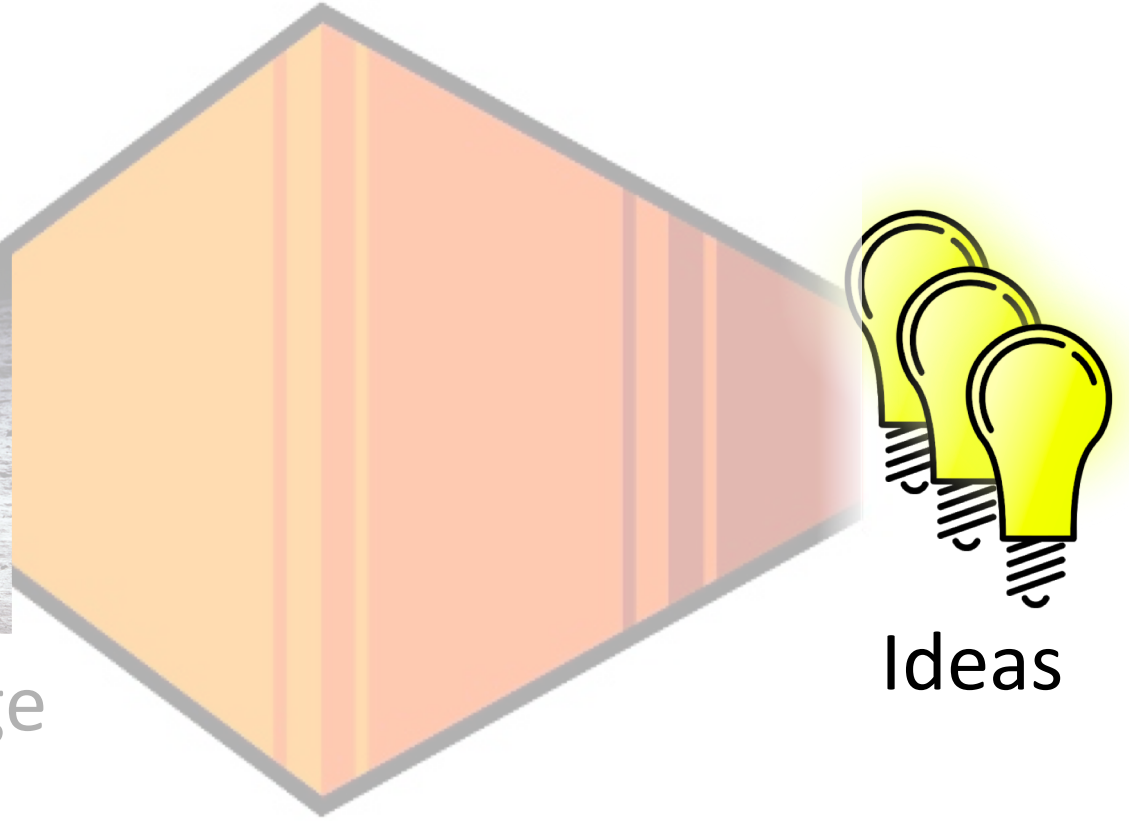
Expectation

Implementation

Product

Instead, implementation is iterative.

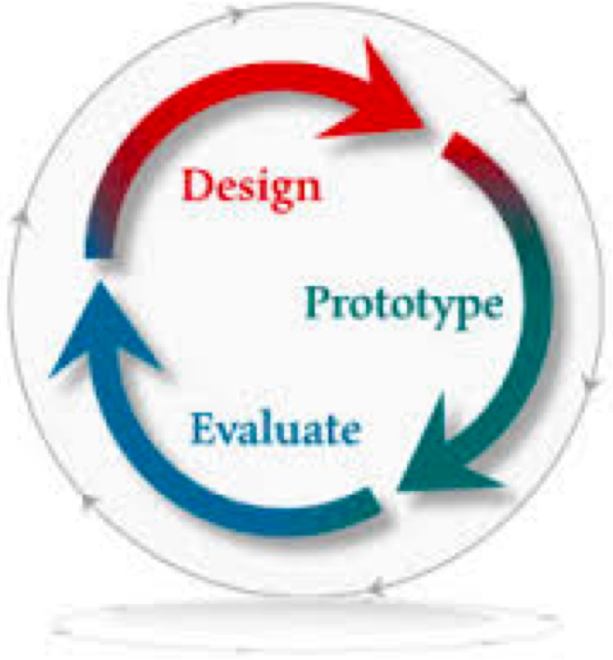
Challenge



Ideas

Ideas

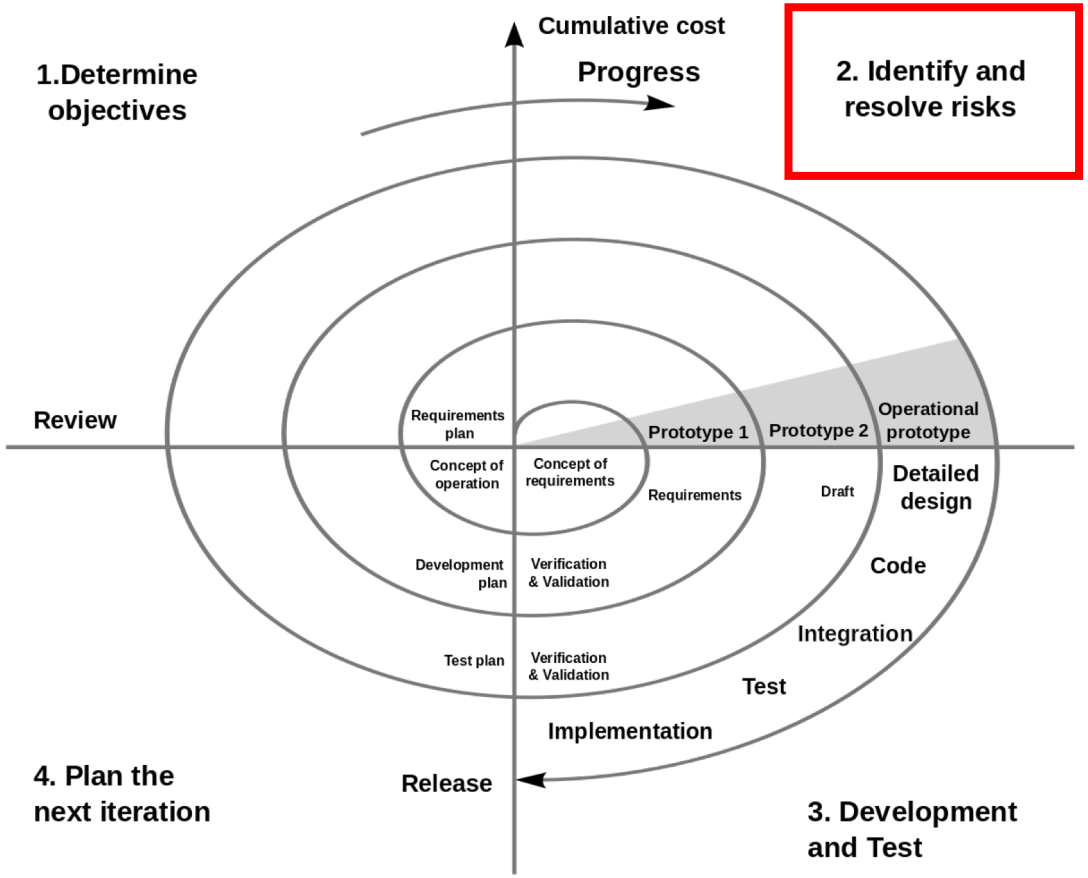
Reality



Implementation

Product

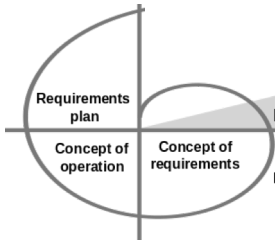
Iterative Design is good because it minimizes risk



The first iteration should be as **low-fidelity** as possible

1.Determine objectives

2. Identify and resolve risks

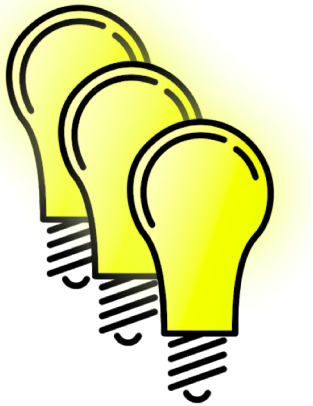


4. Plan the next iteration

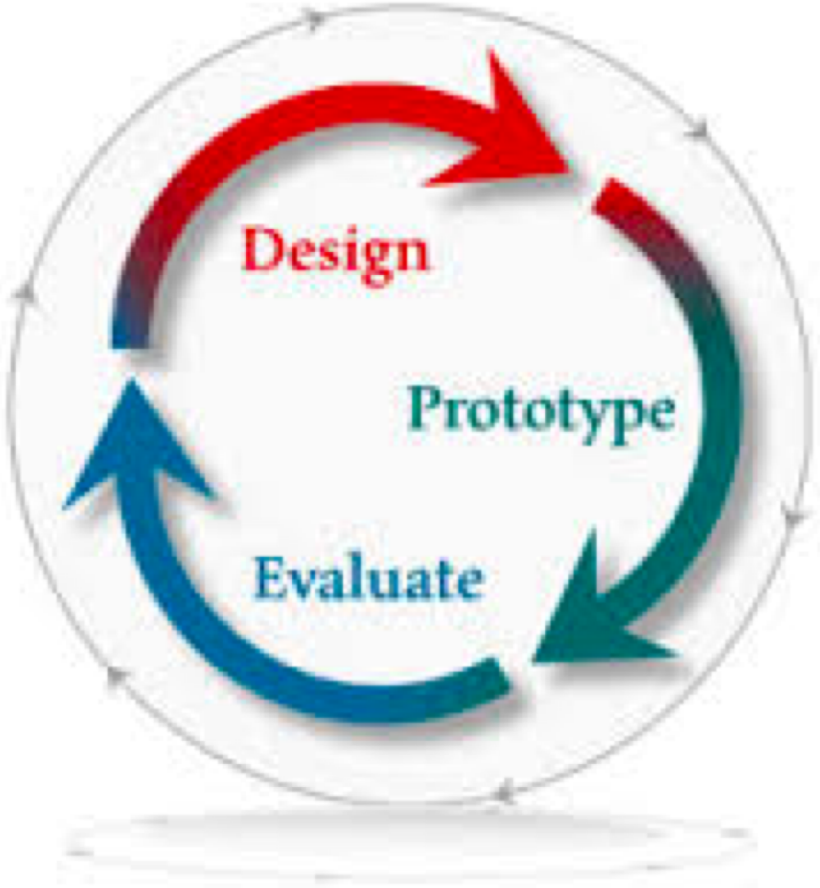
3. Development and Test

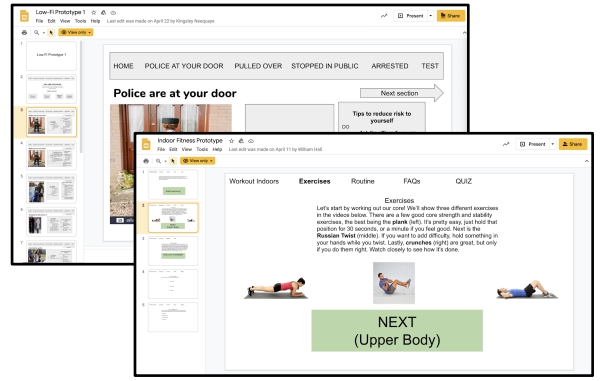
Homework 9: Low-Fi Prototypes

(the first design iteration)



Ideas

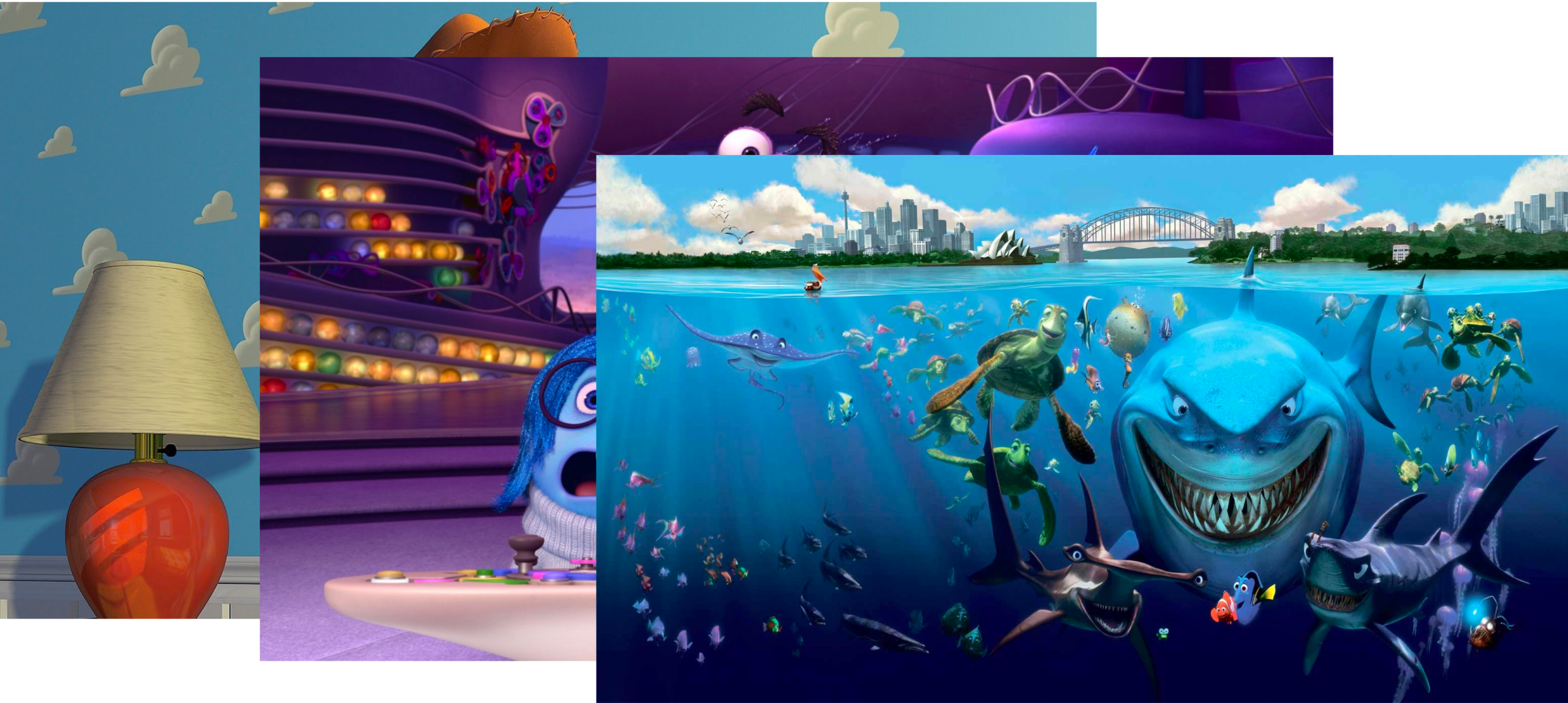




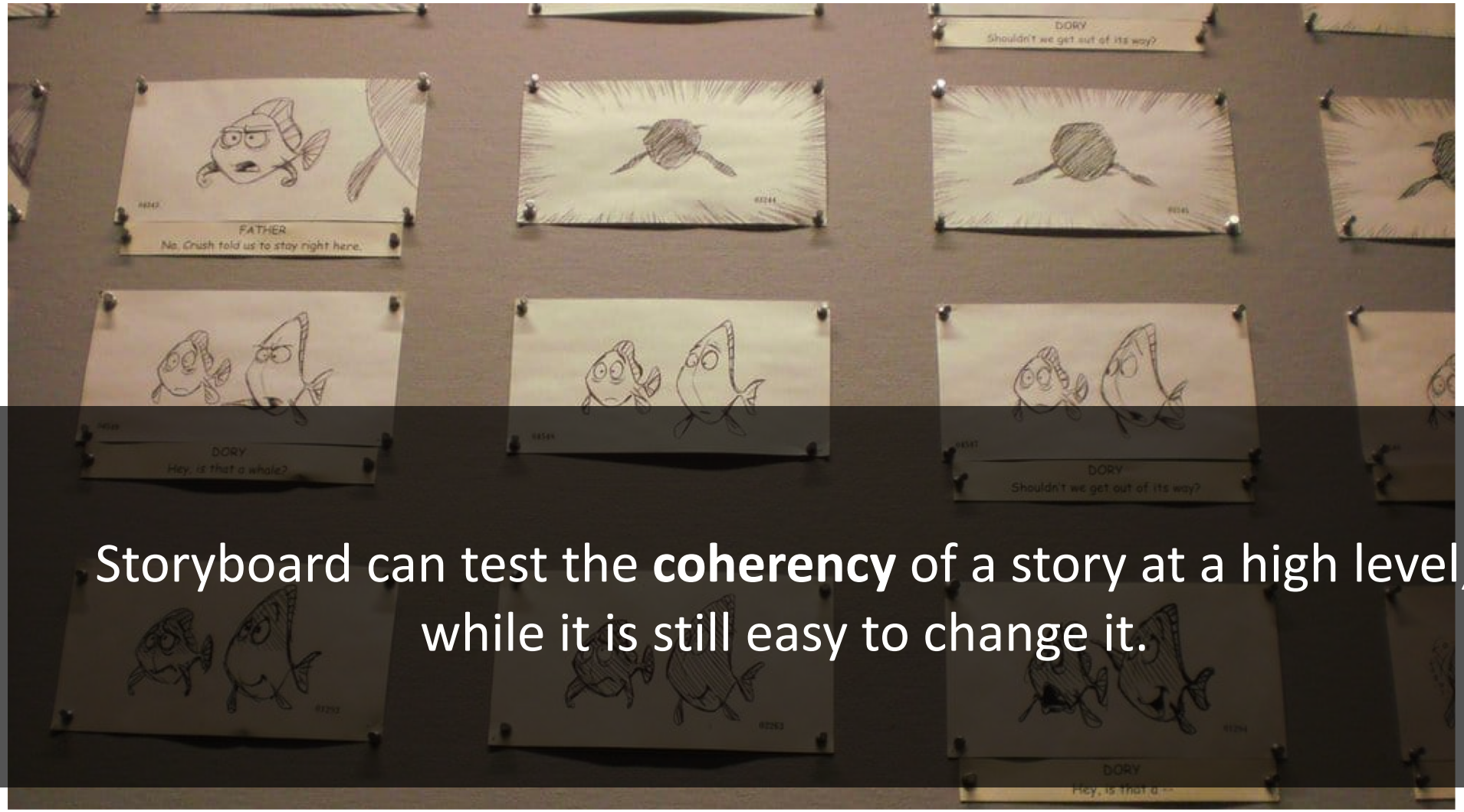
Low-Fi Prototypes

Low-Fidelity Prototypes

Pixar makes detailed and beautiful films

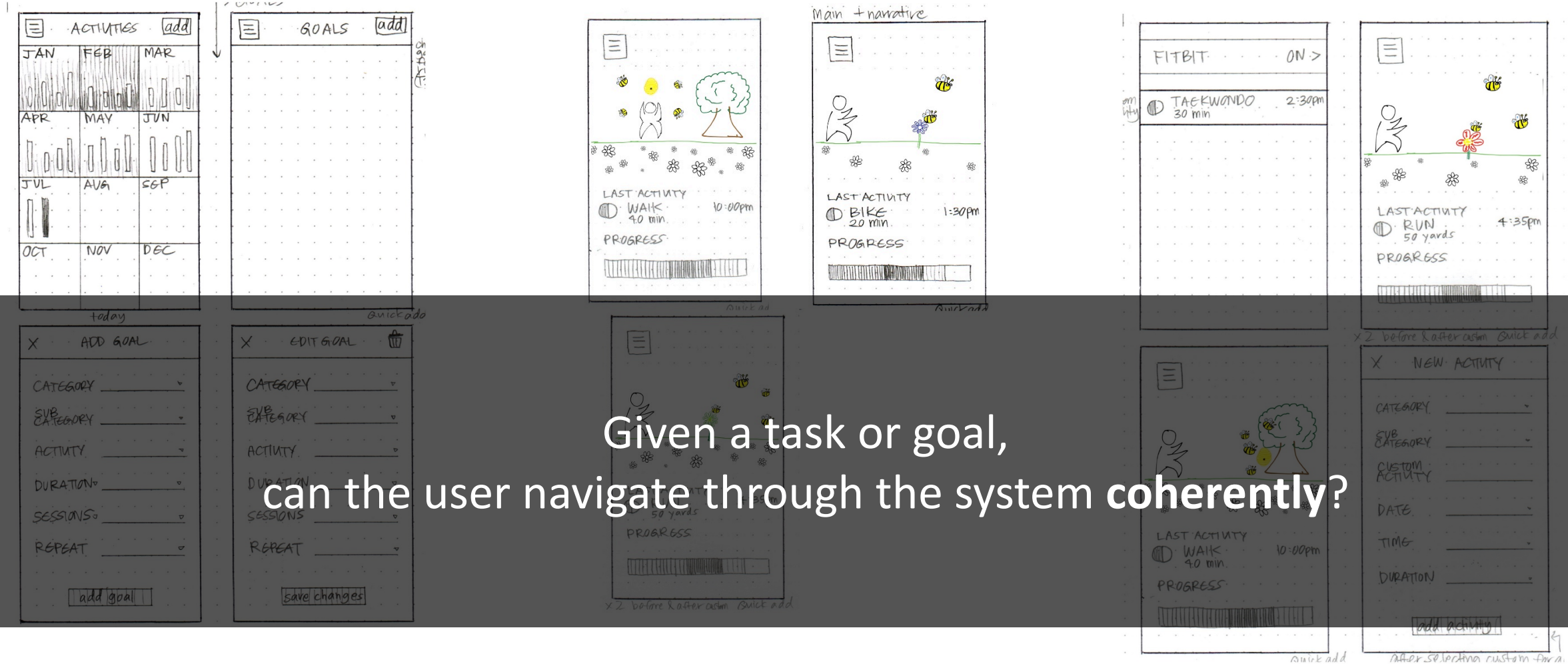


They always start with a **storyboard**. Why?



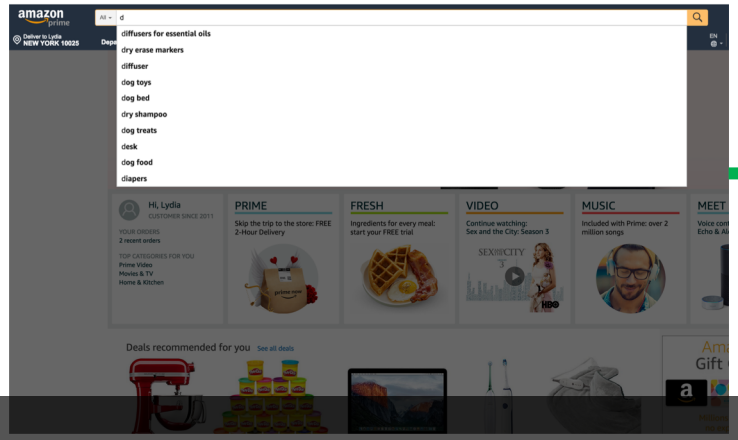
Storyboard can test the **coherency** of a story at a high level, while it is still easy to change it.

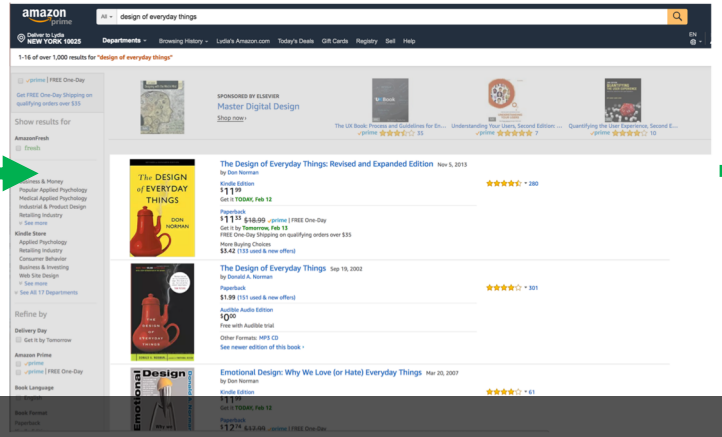
Storyboards are also good for prototyping software interactions

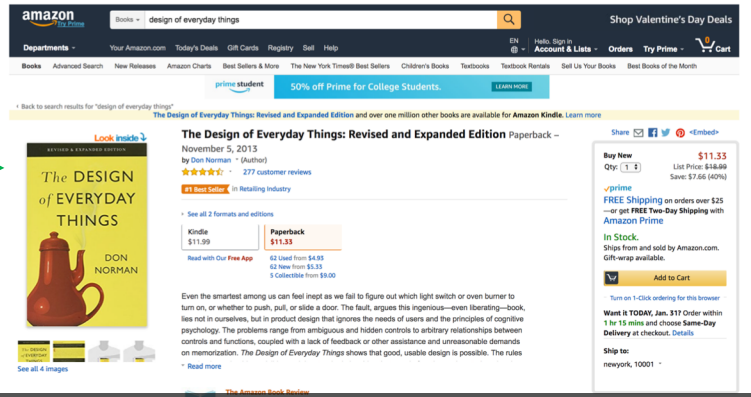


Given a task or goal,
can the user navigate through the system **coherently**?

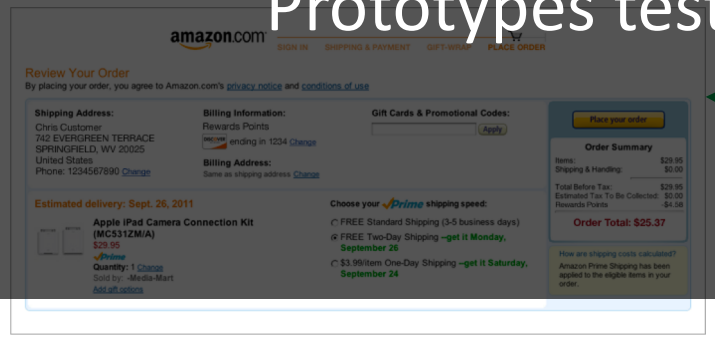
For complex goals, break the task into **states**, **options**, and **transitions** to new states.

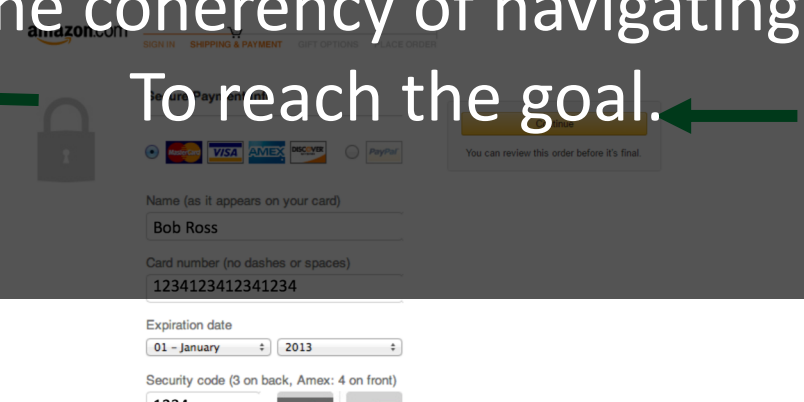


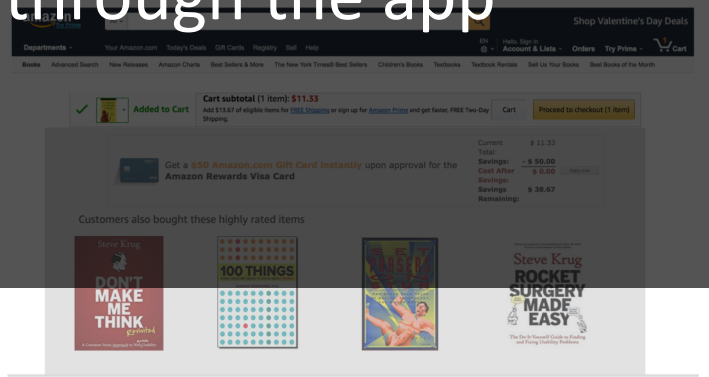




Prototypes test the coherency of navigating through the app
To reach the goal.







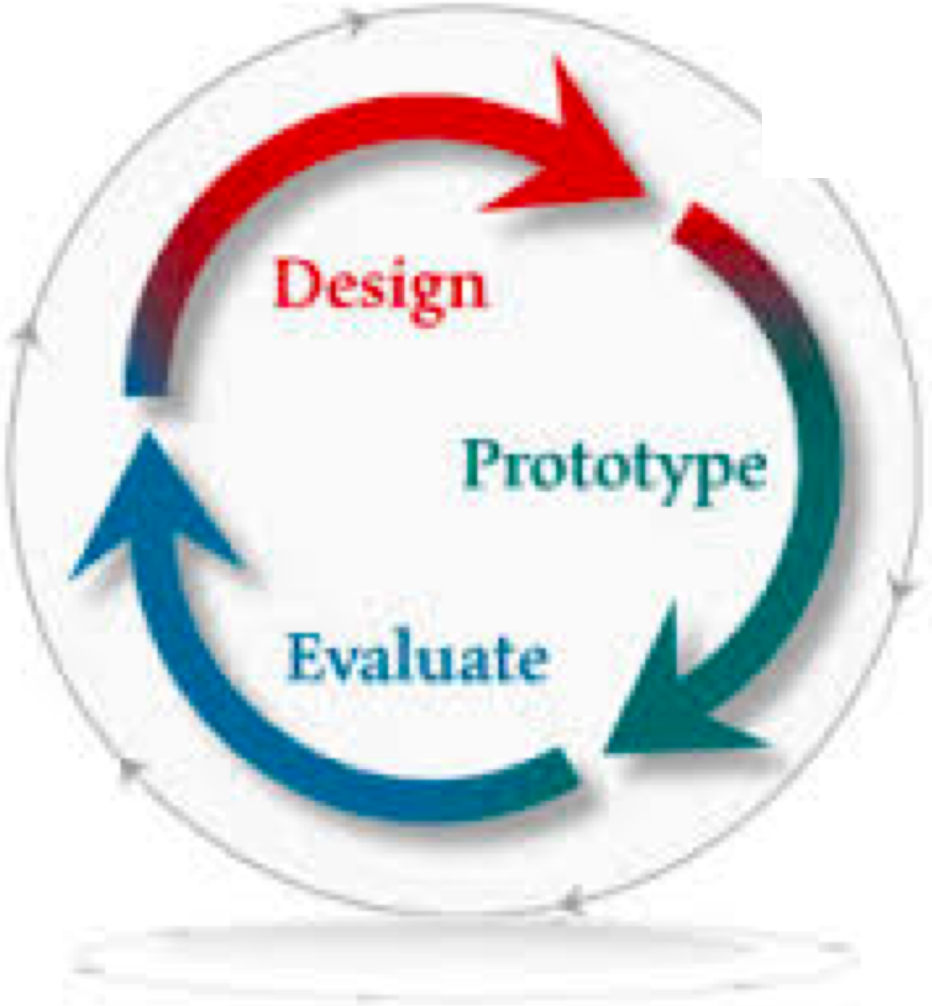
Main Prototype Goal:

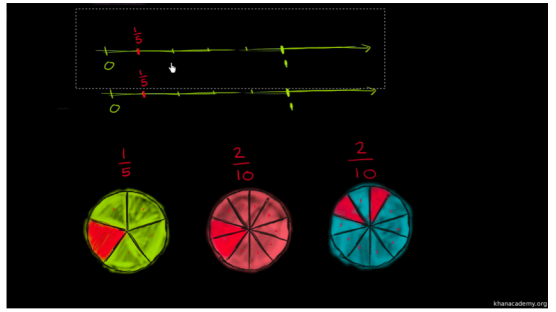
Coherence

Is there a path through the system by which the user can accomplish their goal?

Translating an idea into a prototype is HARD.

Teach fractions by working through problems slowly.

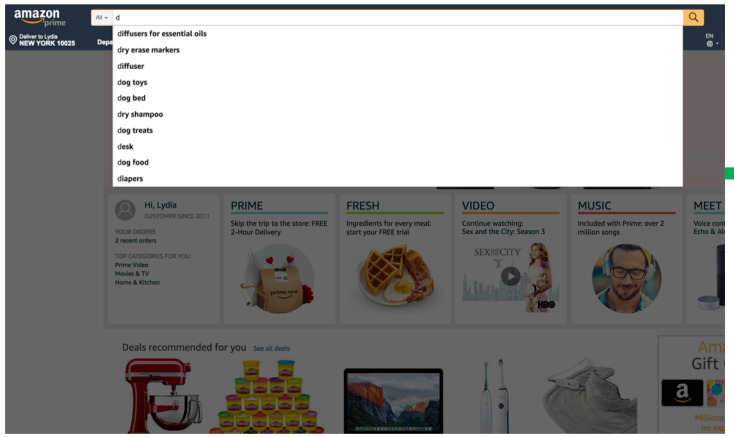


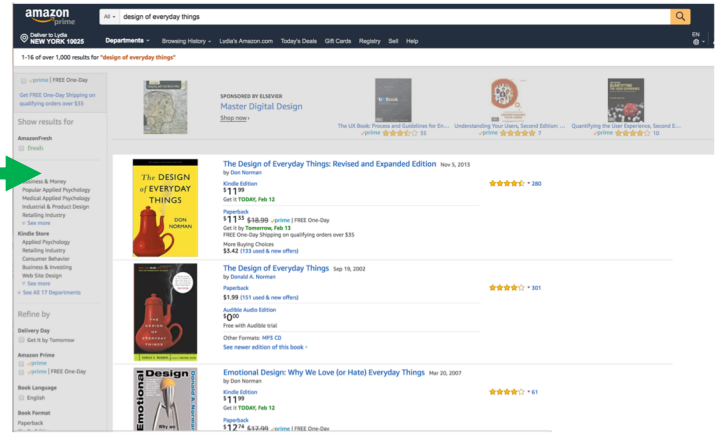


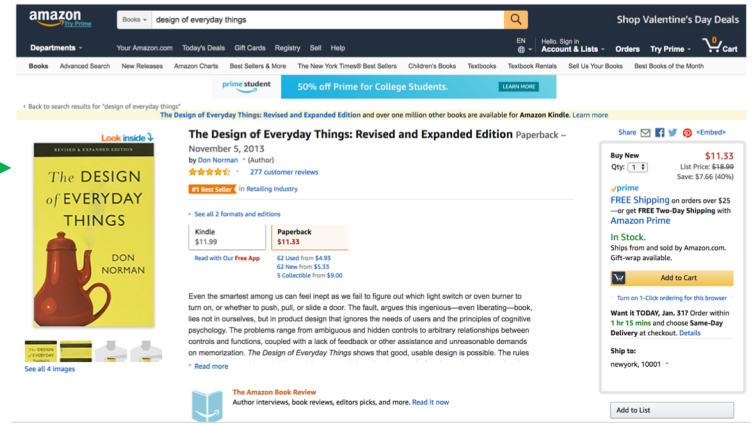
Low-Fi Prototype

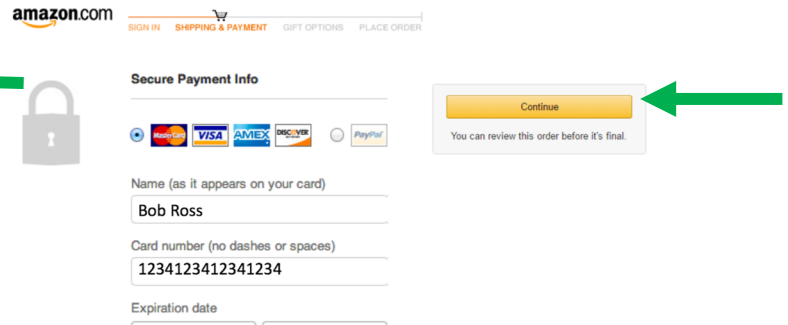
You will probably learn as much from
making the prototype,
as you will from running it.

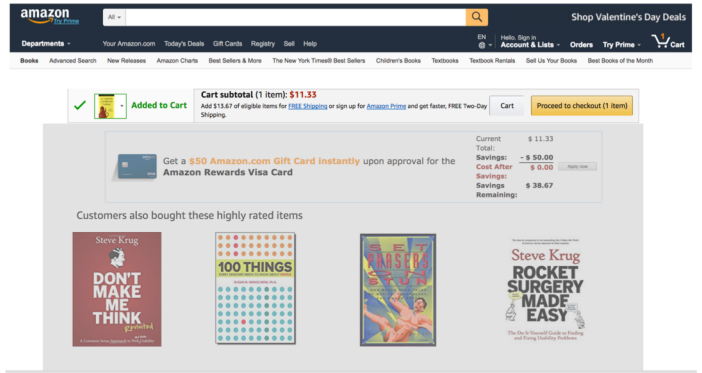
Focus on breaking the task into **states**, **options**, and **transitions**





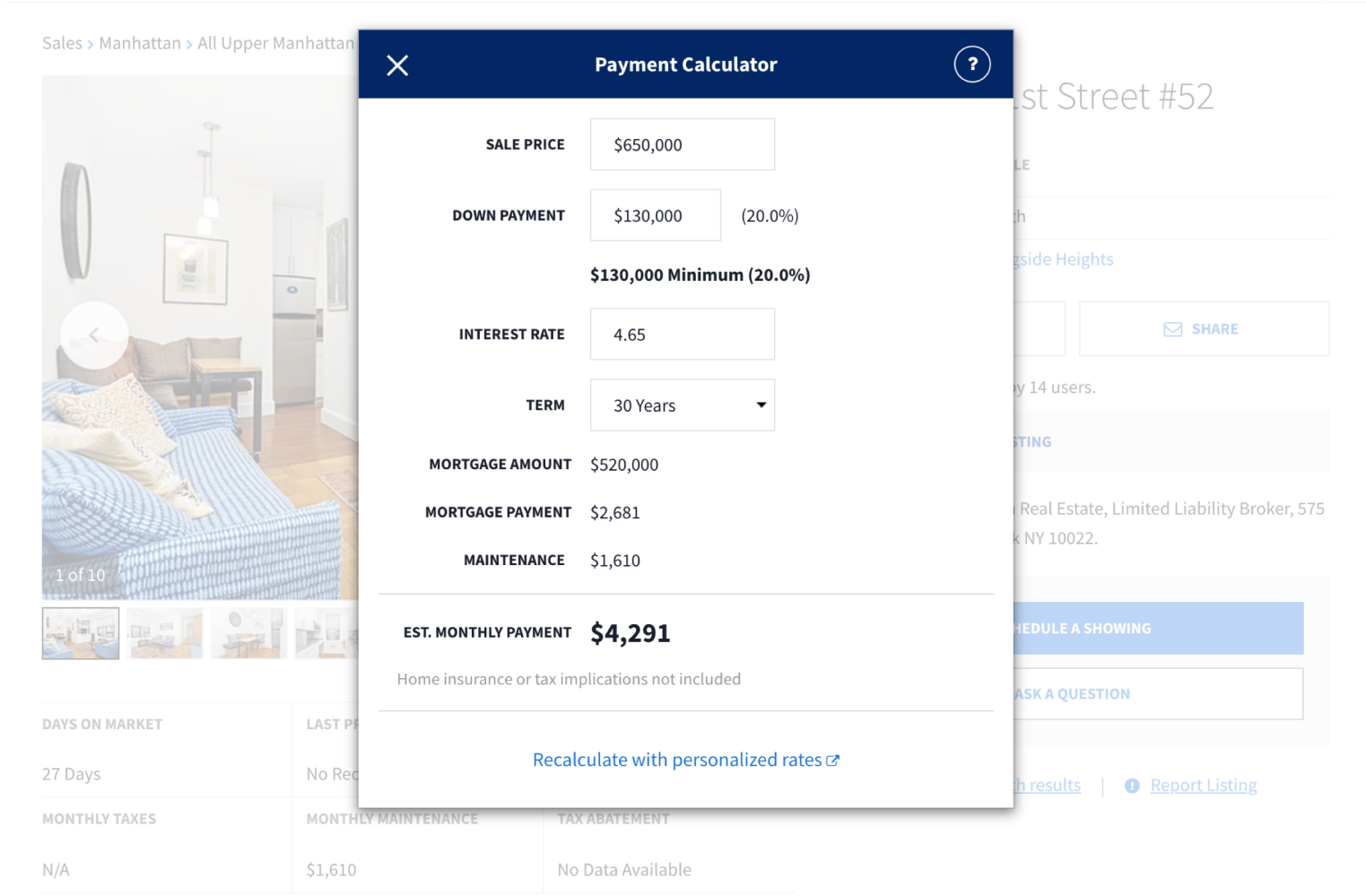




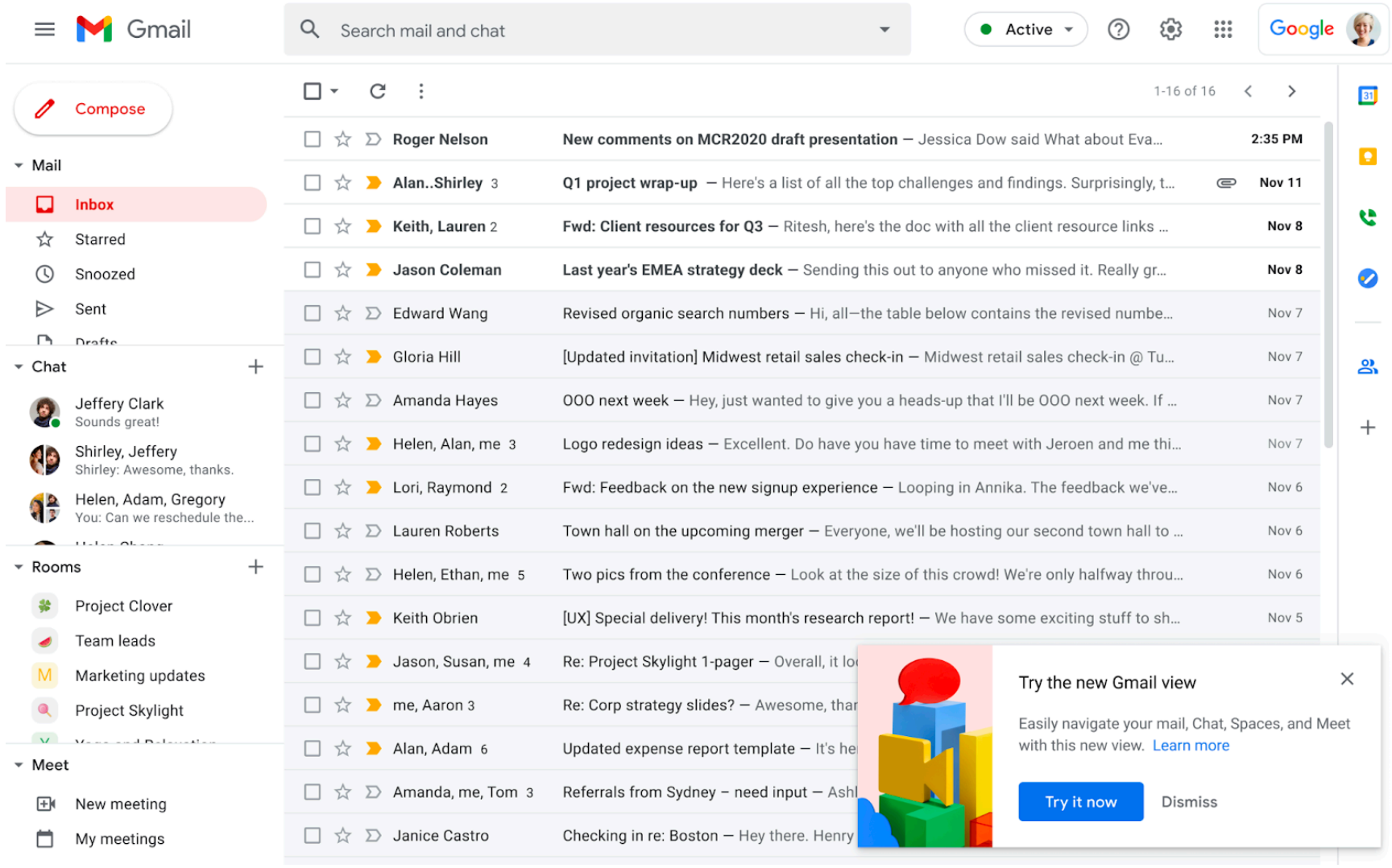


Prevent Errors in Options: Provide good defaults

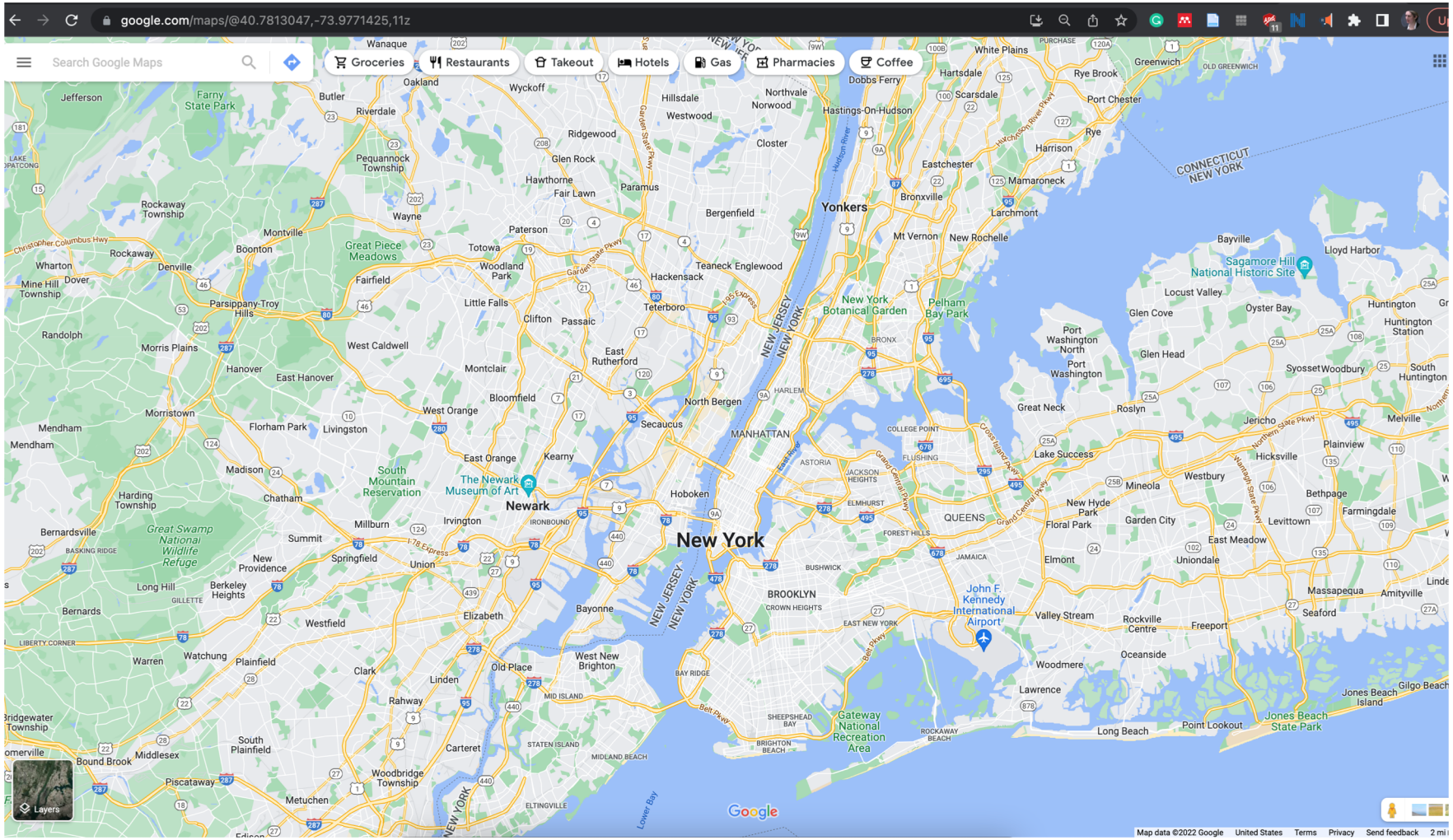
Good defaults will help to guide the user away from making a mistake because they will be given a context to work from.



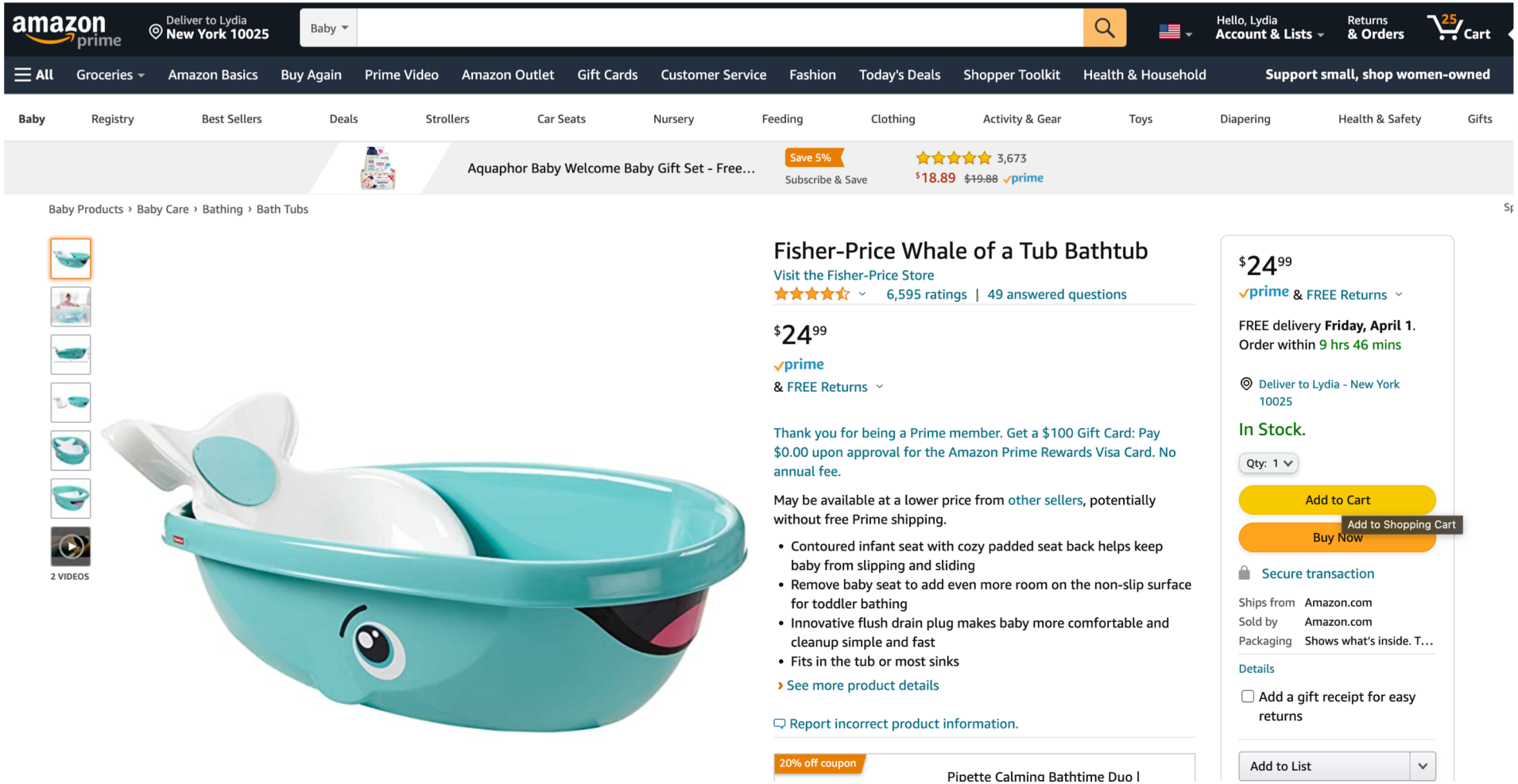
What’s the default way Gmail sorts email?



What’s the default location on Google Maps?



What’s the default number of bathtubs to buy?



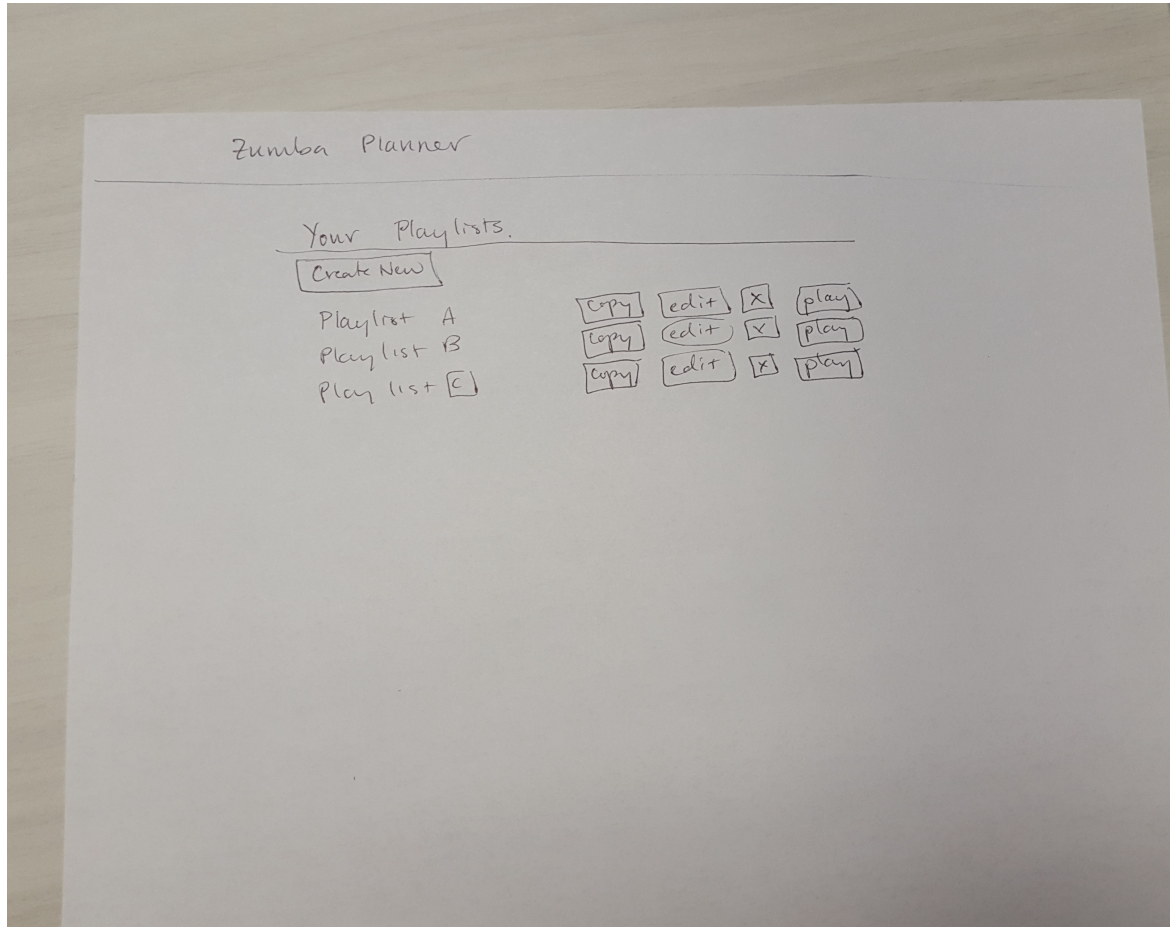
Paper Prototype Example

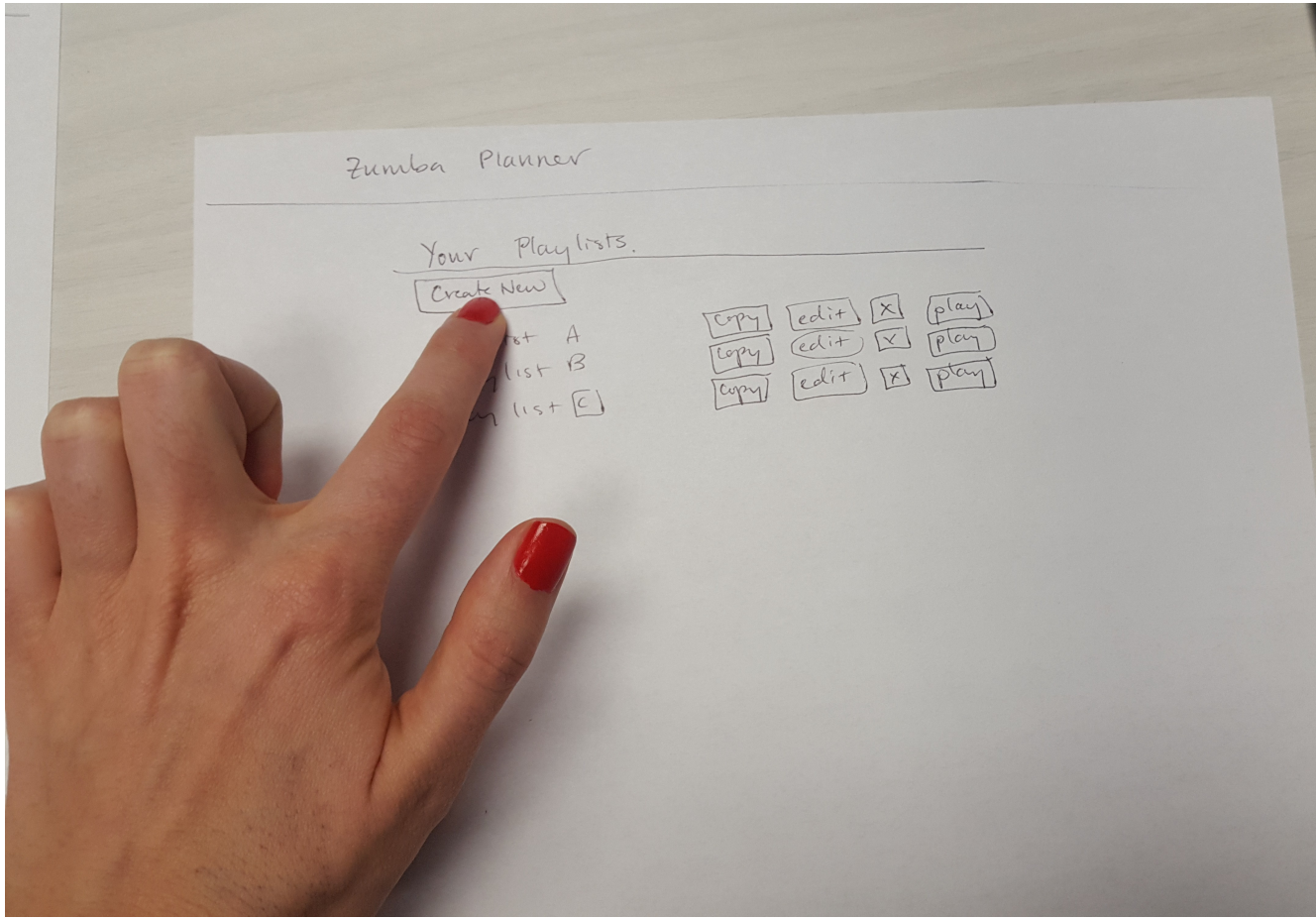
Write down a Persona:
Person, a high level Goal, 4 or 5 subgoals

- **Idea**: Zumba playlist maker
  - **Person**:
    - You are Katie - a Zumba instructor in New York City.
  - **Goal**
    - Your goal is make a playlist of dance songs that last 20 minutes (at least 19 minutes and at most 21 minutes)
  - **Subgoals**:
    - 1. Create a new playlist
    - 2. Add a song to the playlist
    - 3. Add songs to the playlist until the play list is at least 20 minutes long
    - 4. If the playlist is too long, remove a song
    - 5. Play the playlist

Subgoal 1:

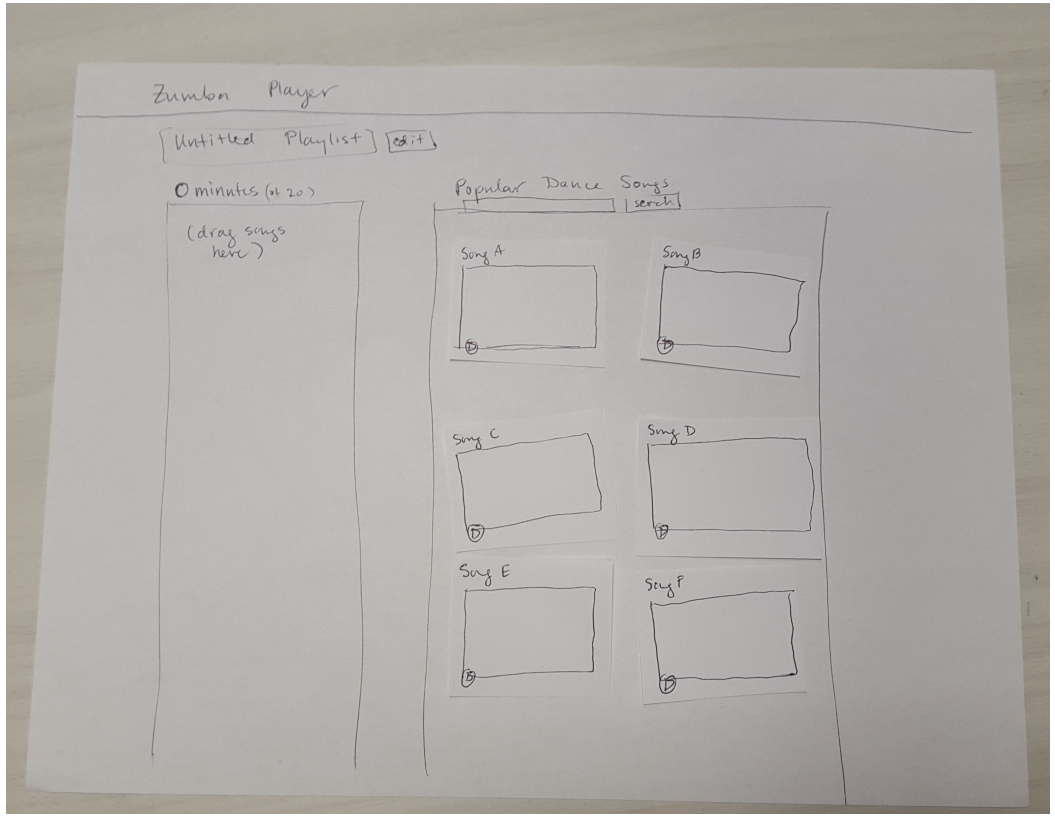
Create a new playlist

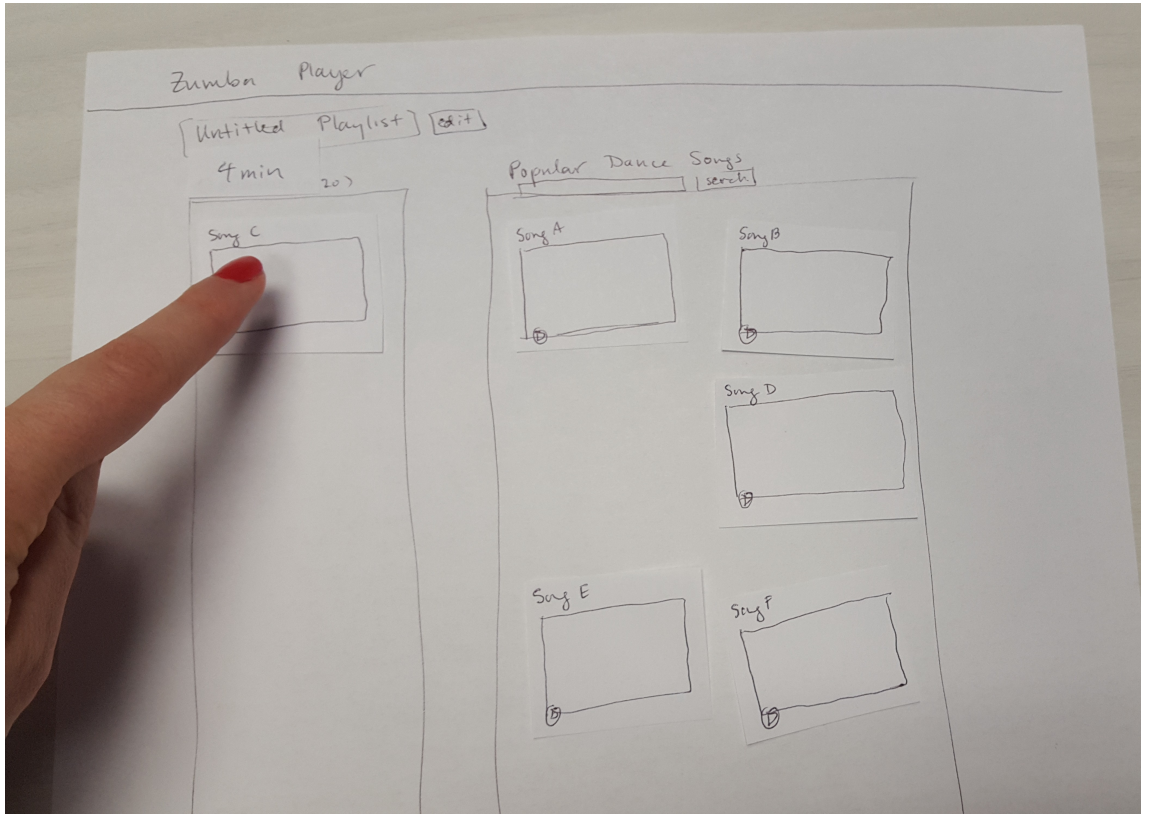




Subgoal 2:

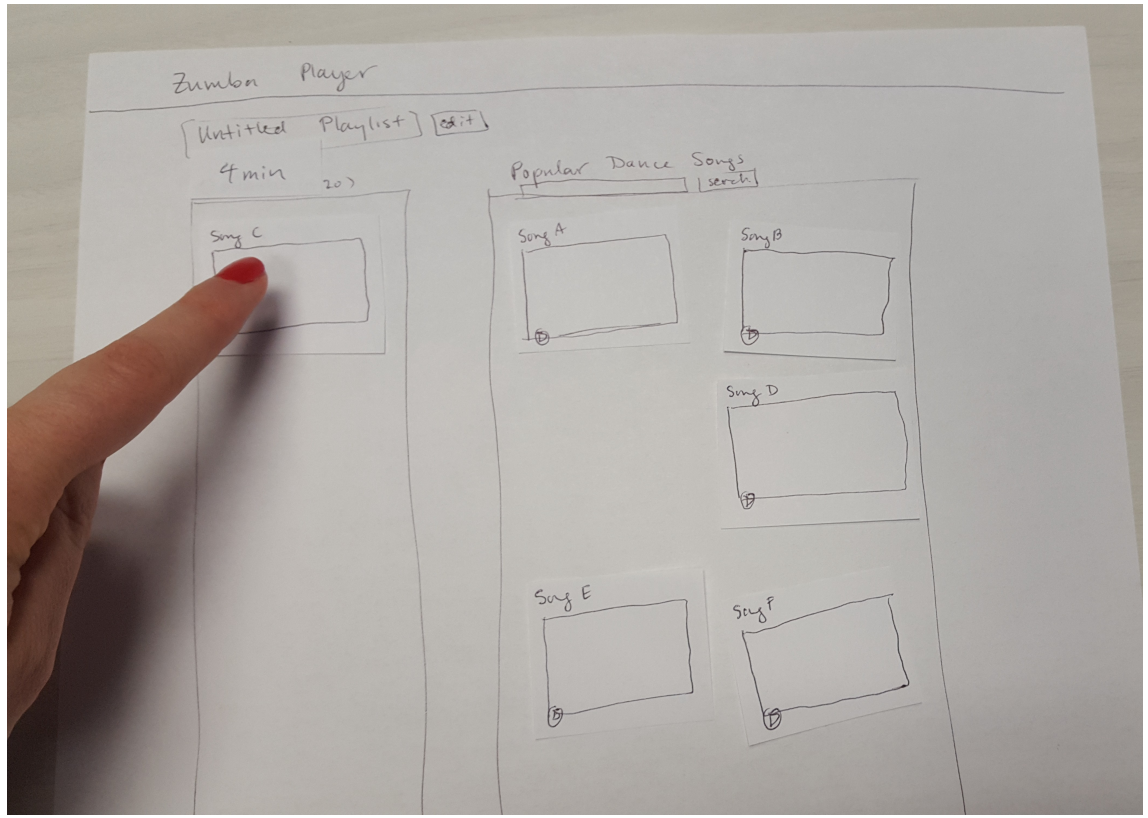
Add the first song to the playlist

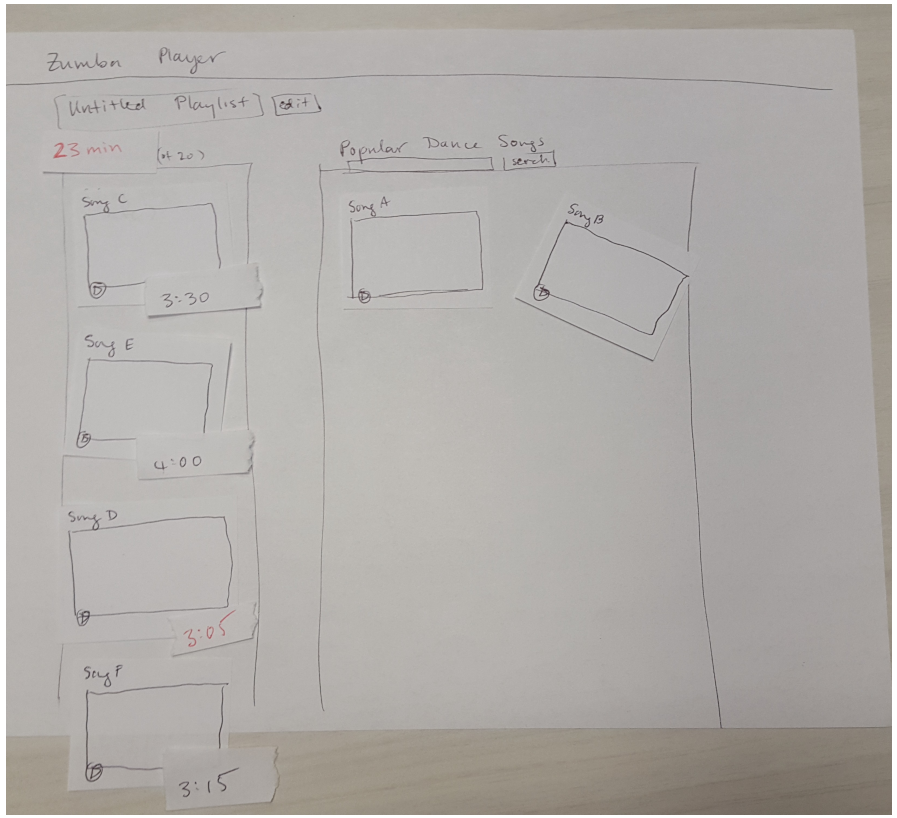




Subgoal 3:

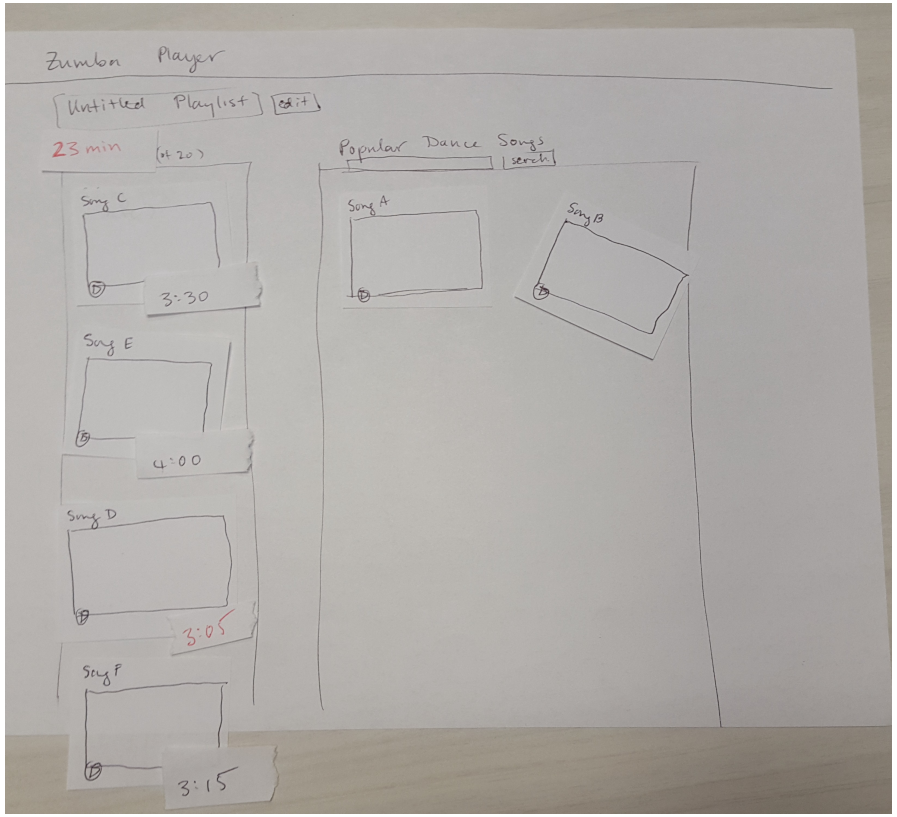
Add songs until the playlist is at least 20 minutes.

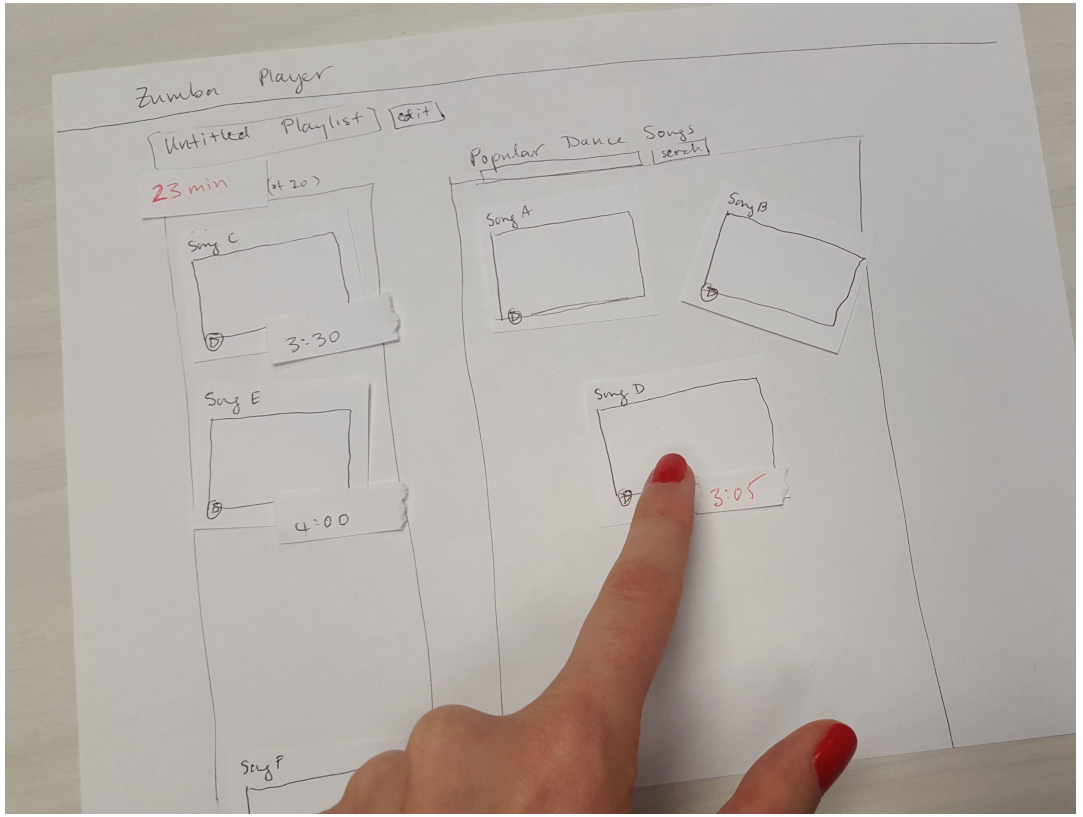




Subgoal 3:

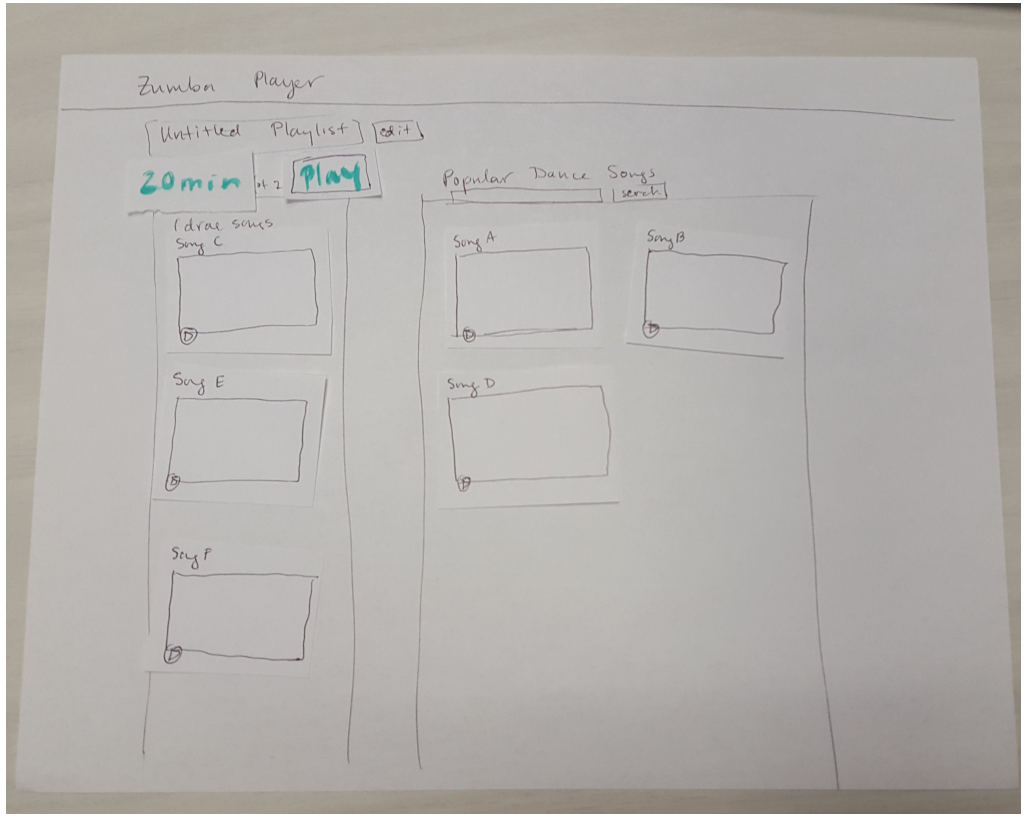
Remove songs until the playlist is 19-21 min

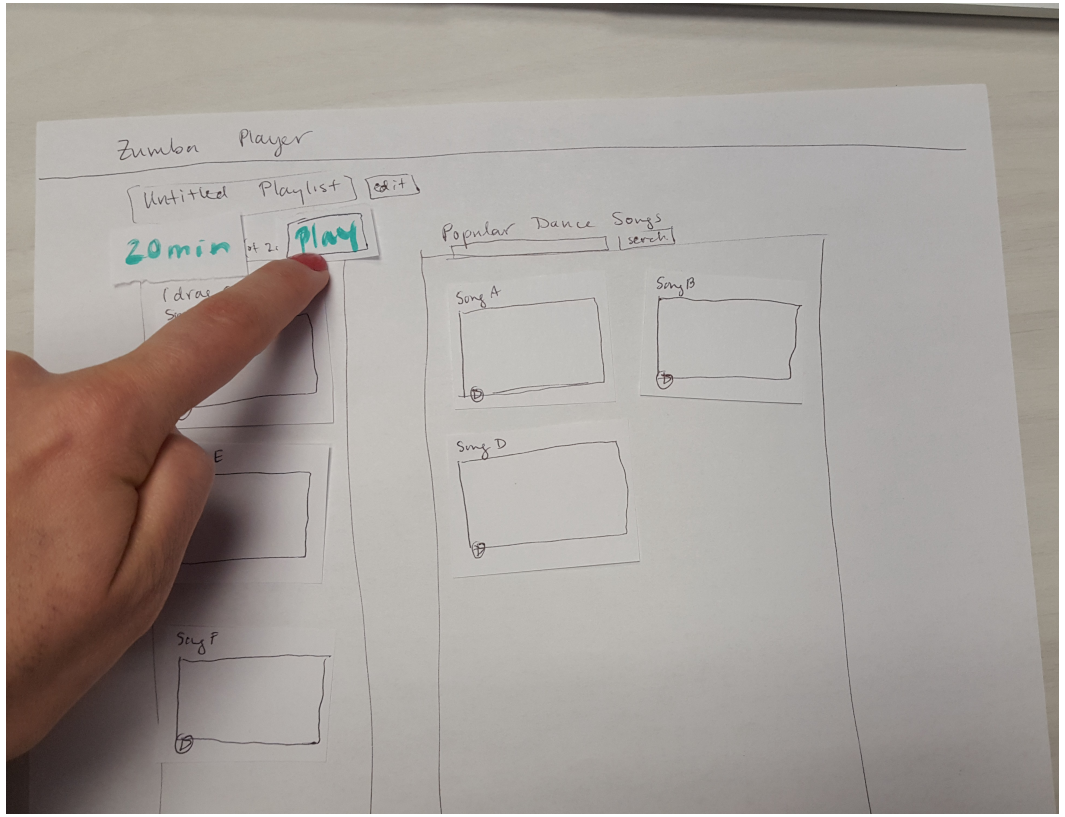




Subgoal 5:

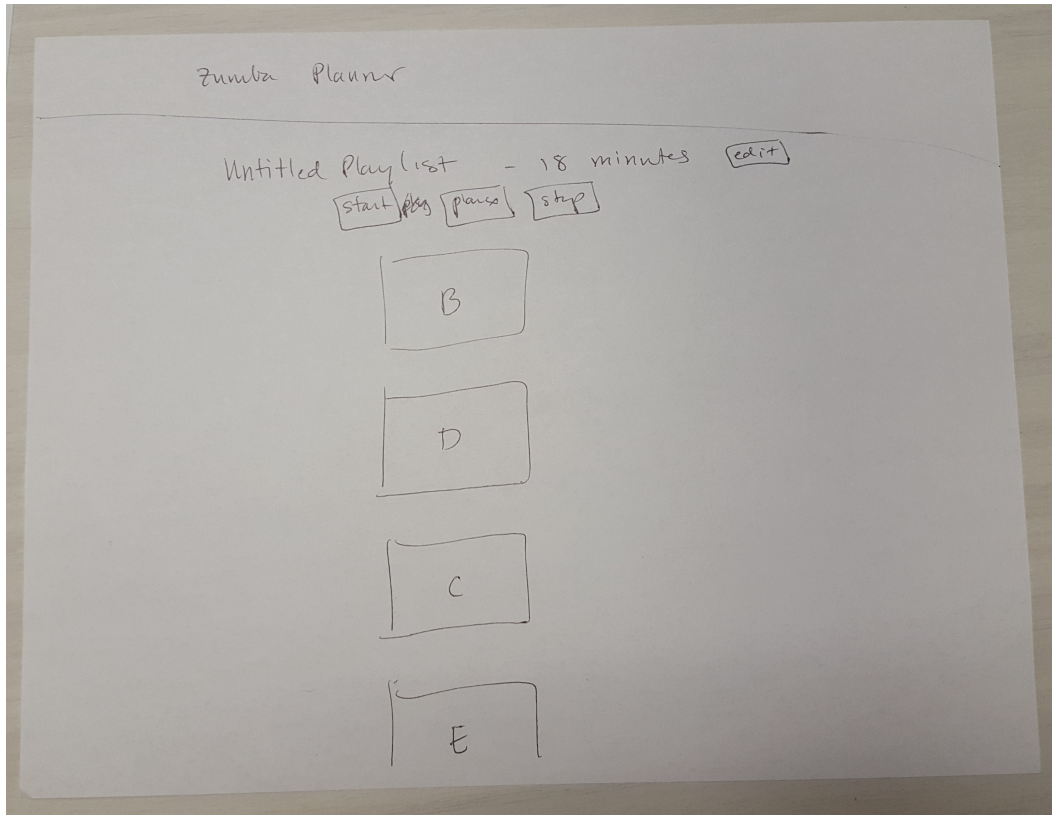
Play the playlist (part 1)

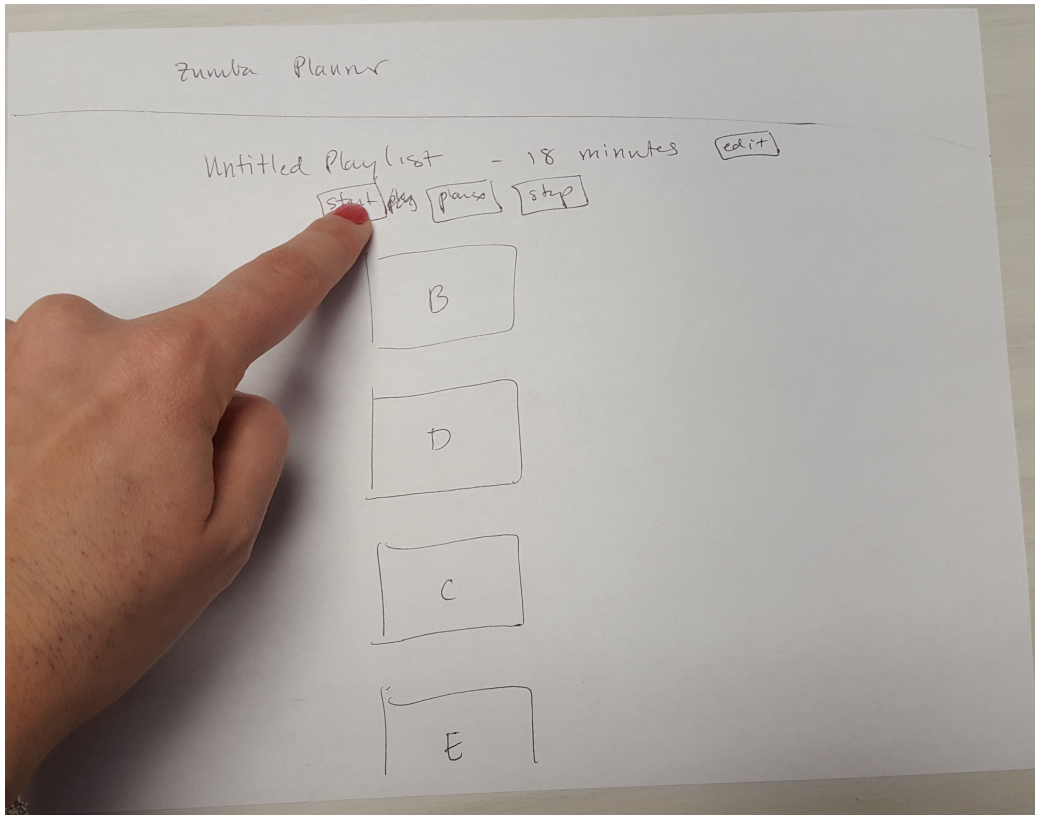




Subgoal 5:

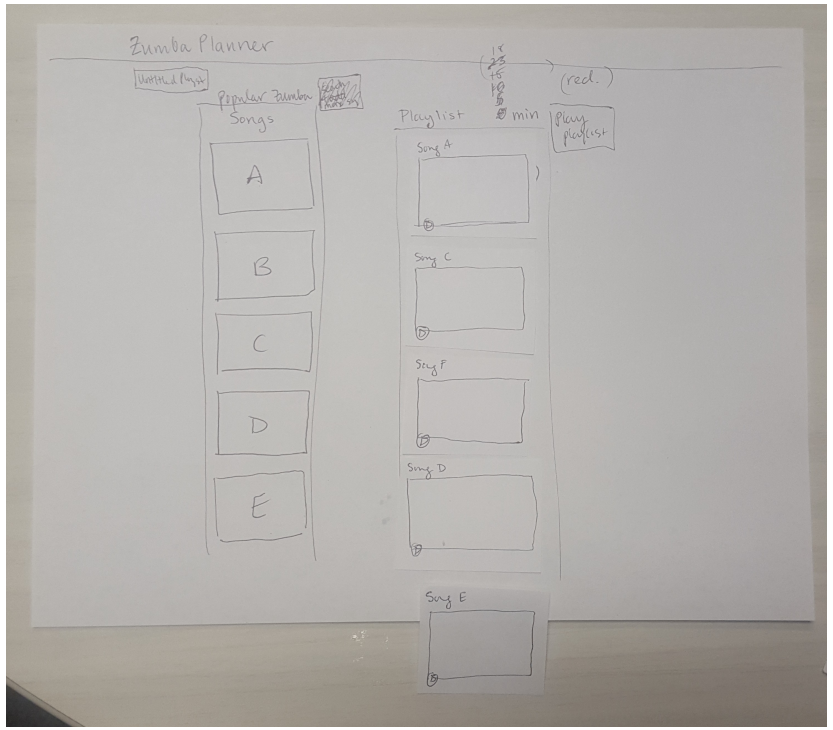
Play the playlist (part 2)

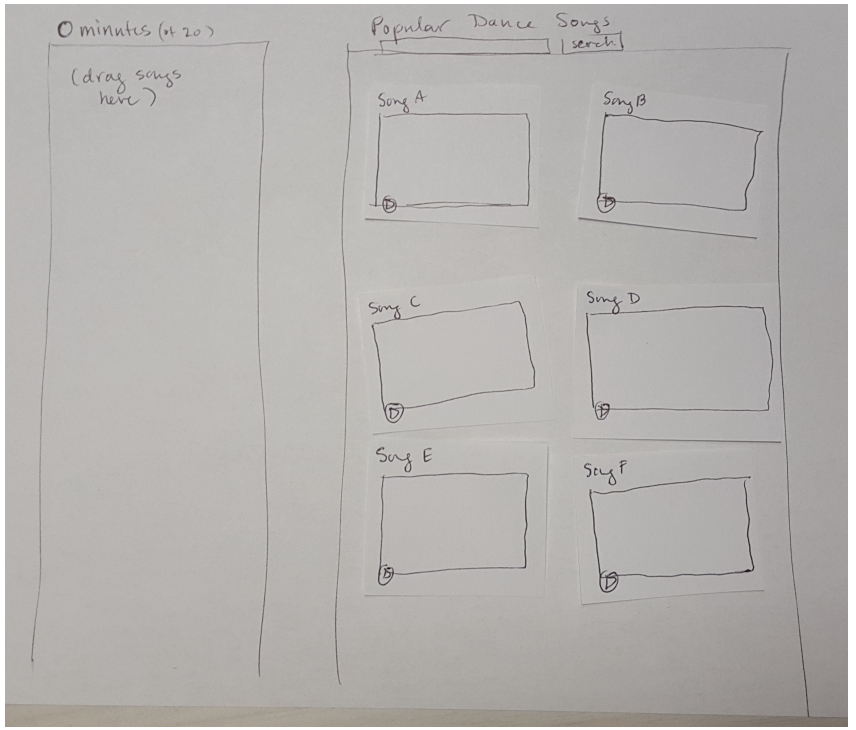




You will probably learn as much from
making the prototype,
as you will from running it.

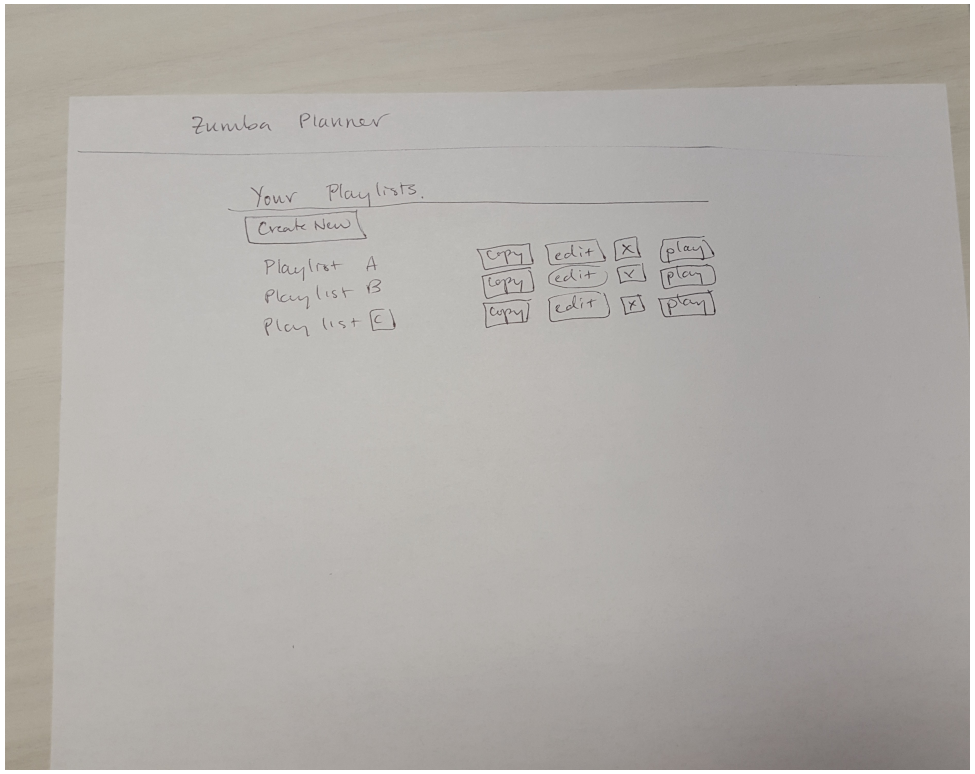
I started with the the playlist drag interface…

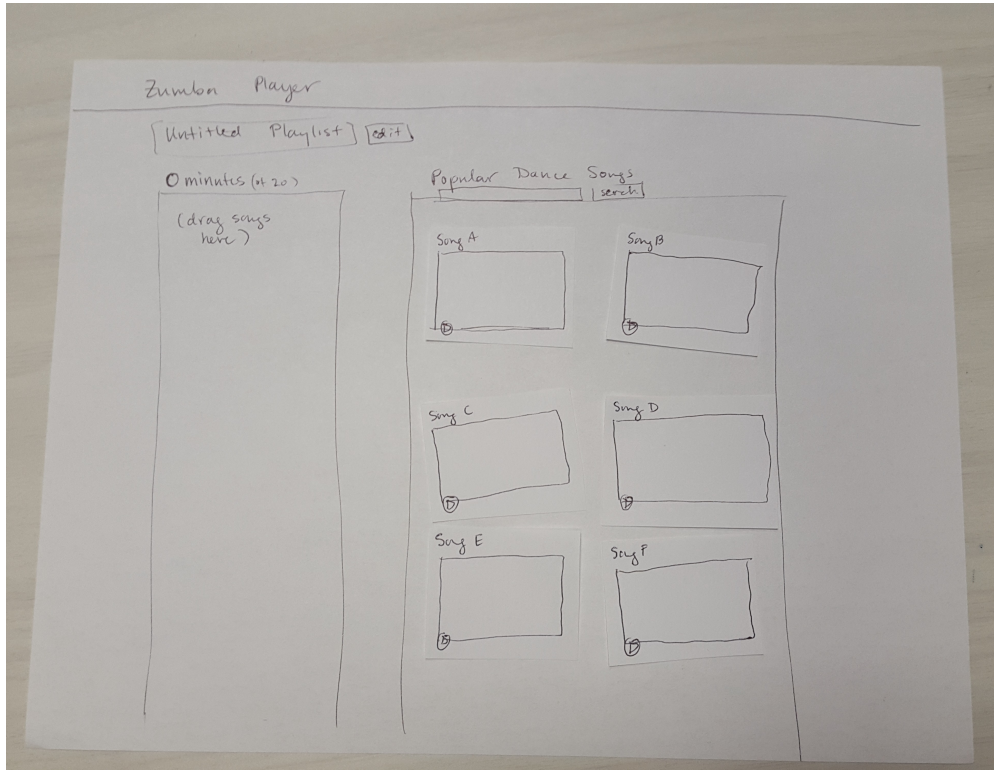




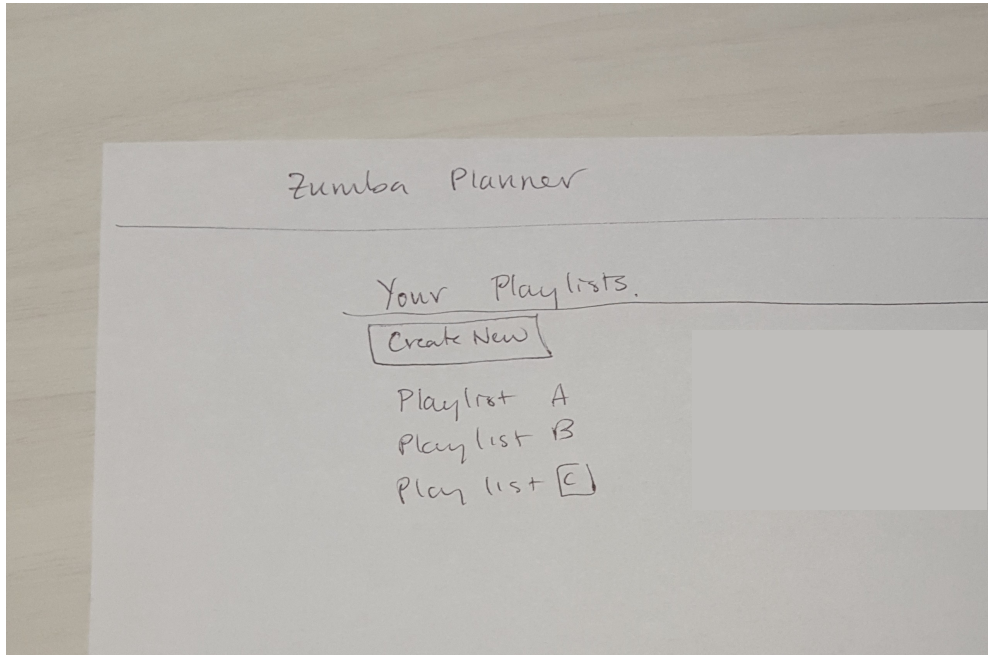
And I realized I needed more songs to pick from, so I made the songs to pick from 2 columns.

I learned that playlists need names





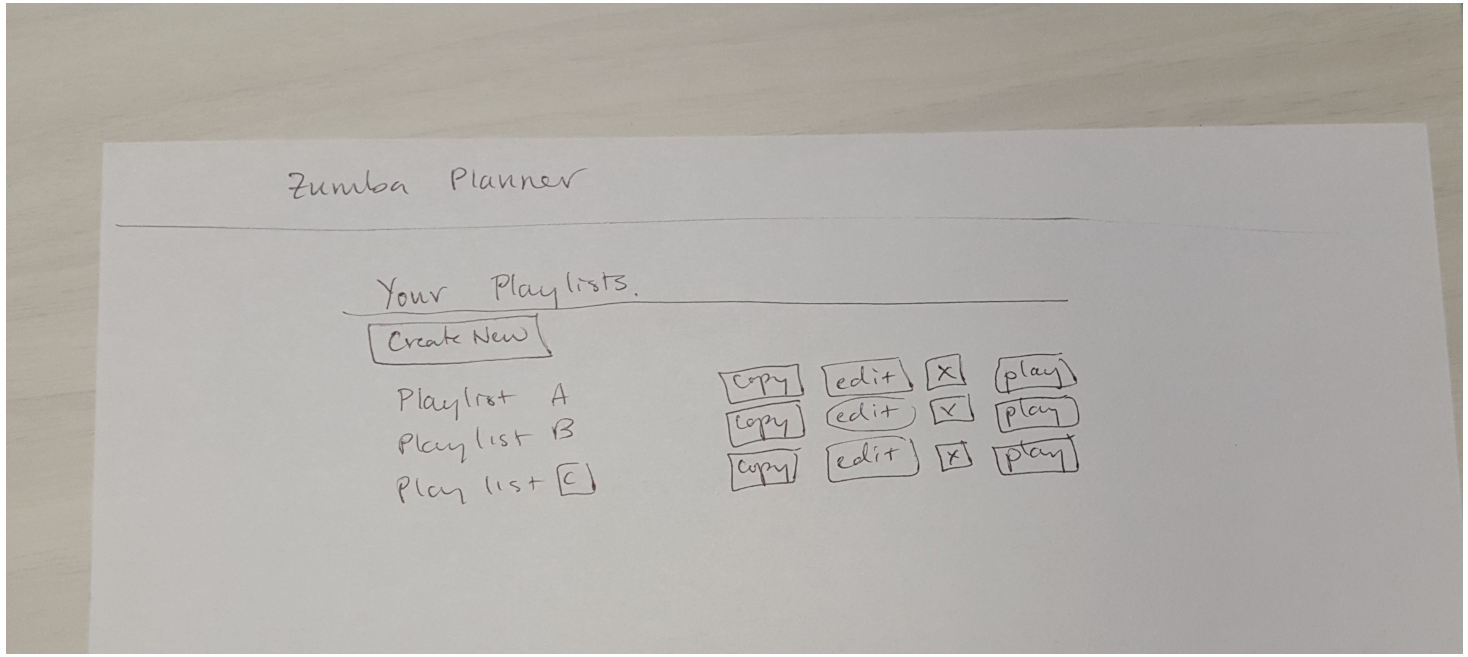
I realized I needed a homepage to create playlists from…. And also probably list the previous ones.



I realized I'd need CRUD operations

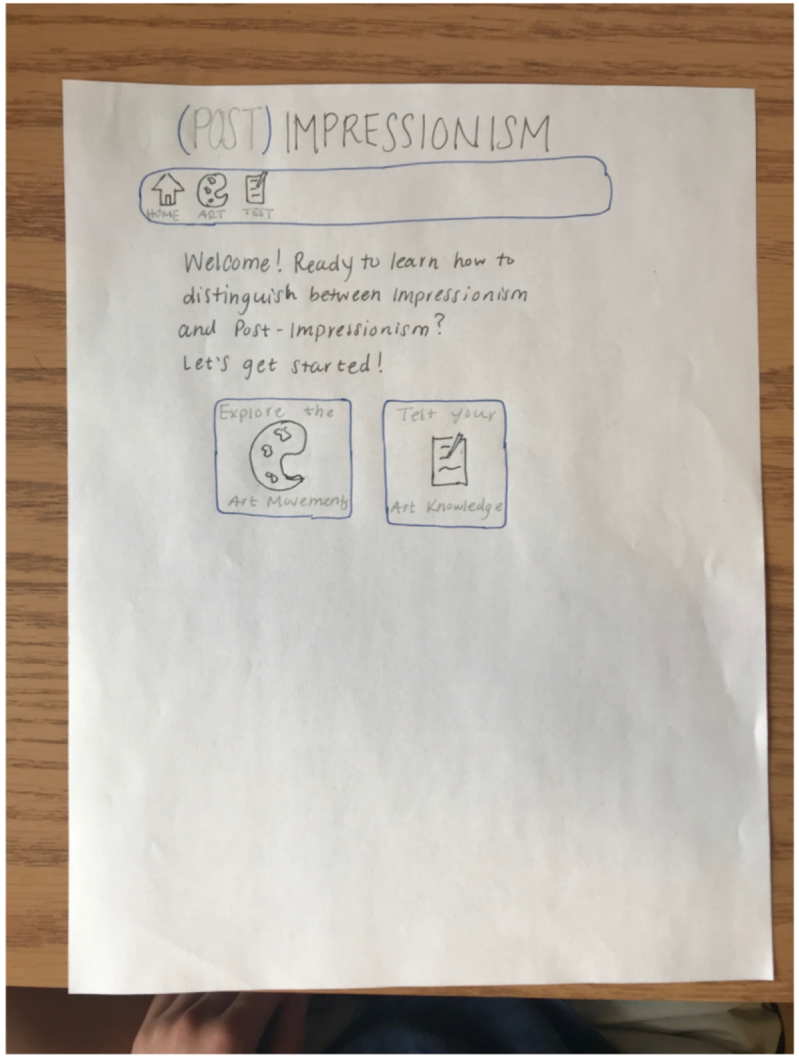
(create, read, update and delete)

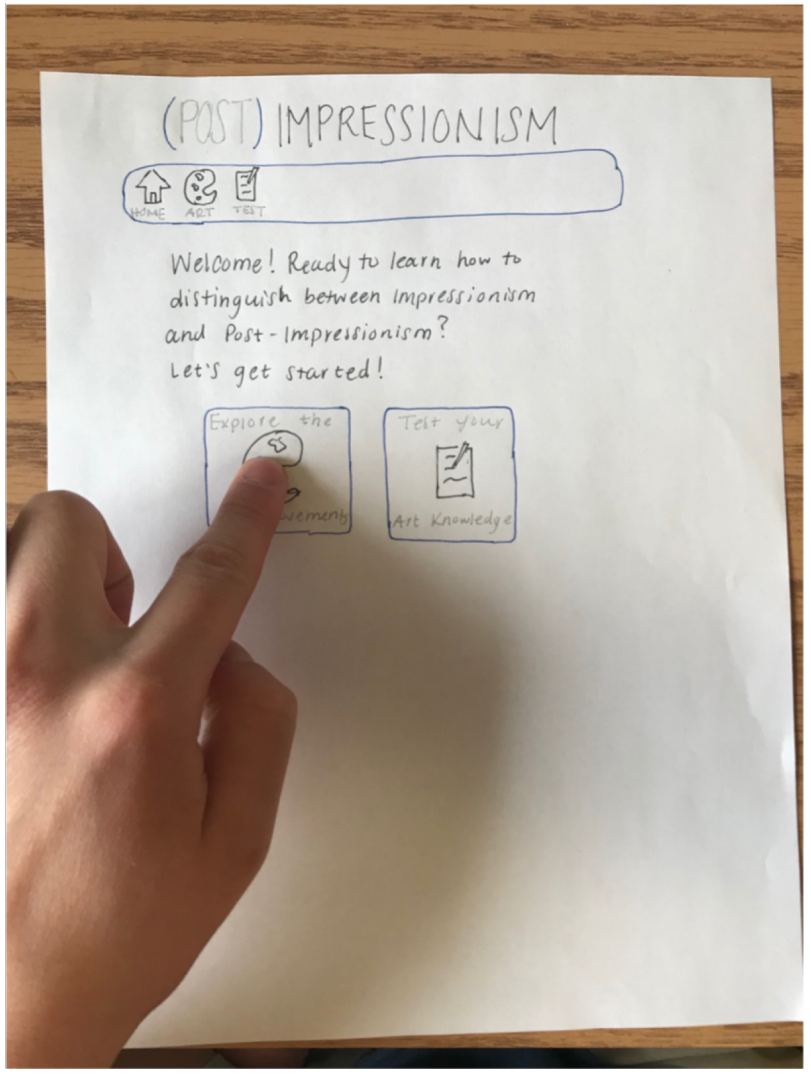
on the list of playlists



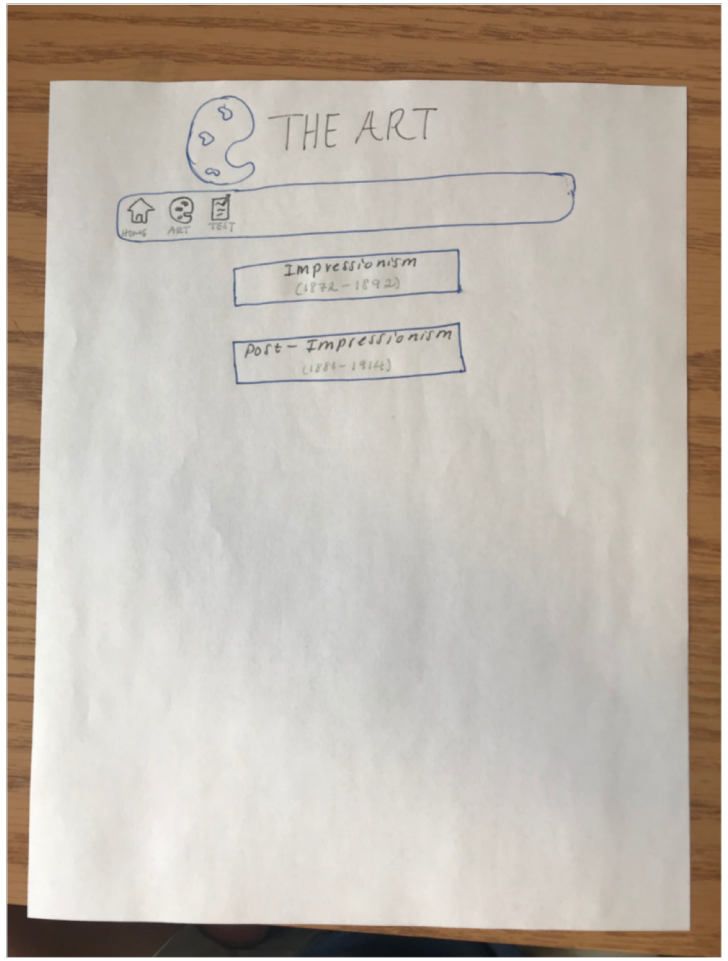
Sam’s Paper Prototype

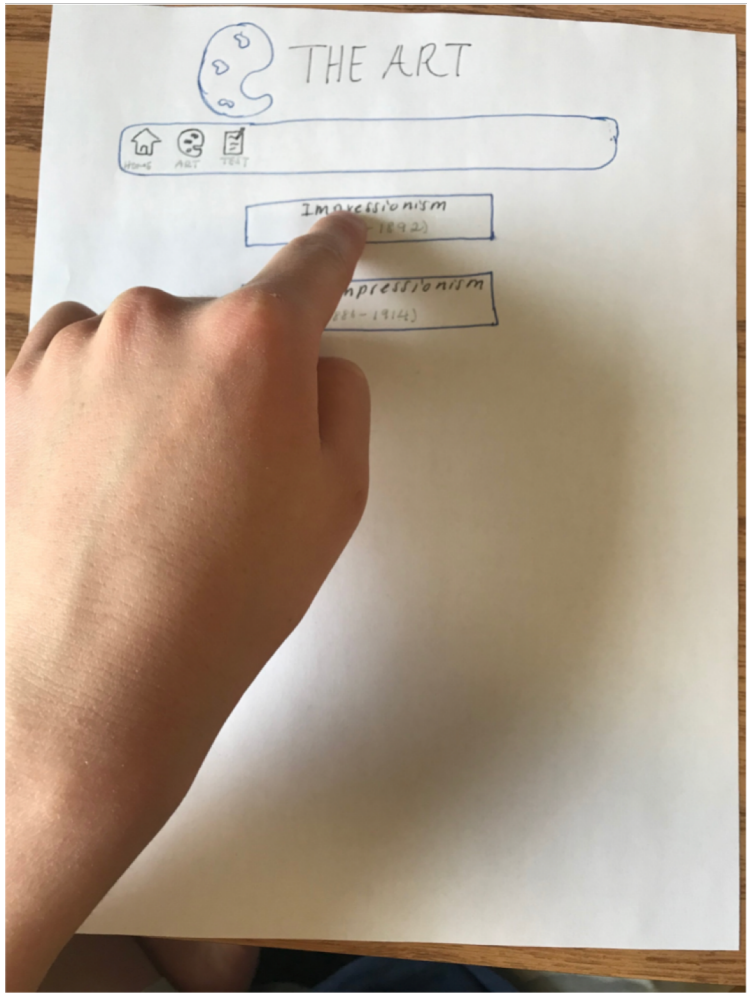
1. Home Screen





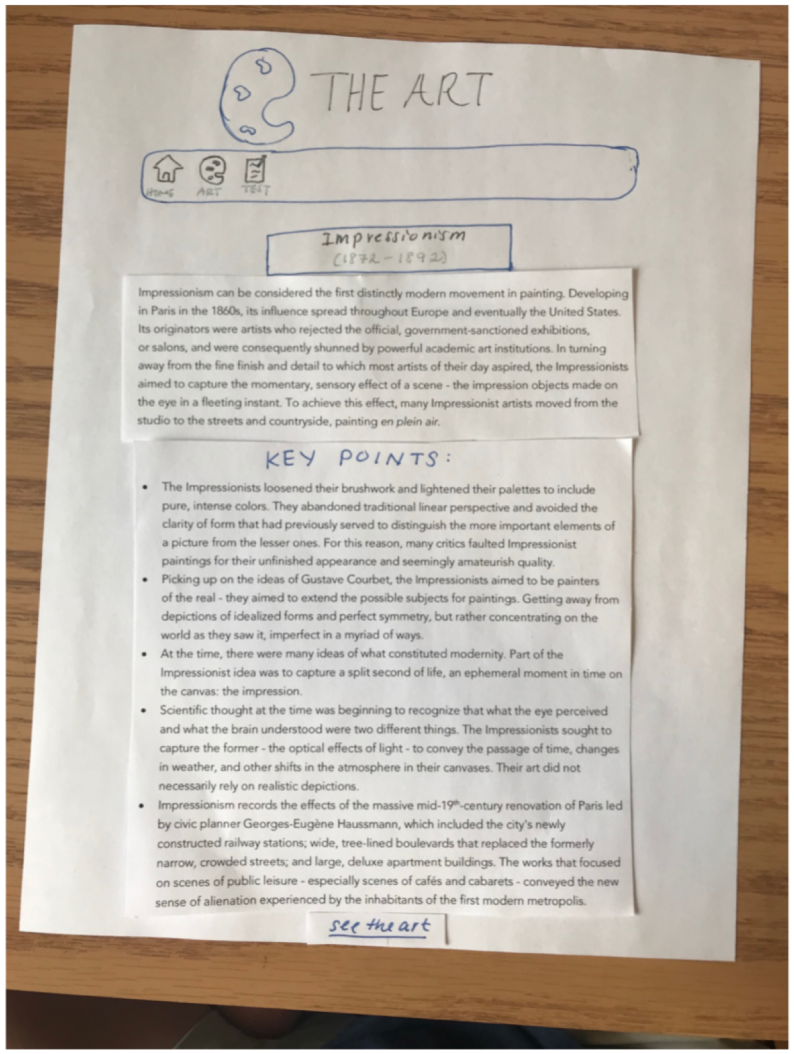
Select a lesson

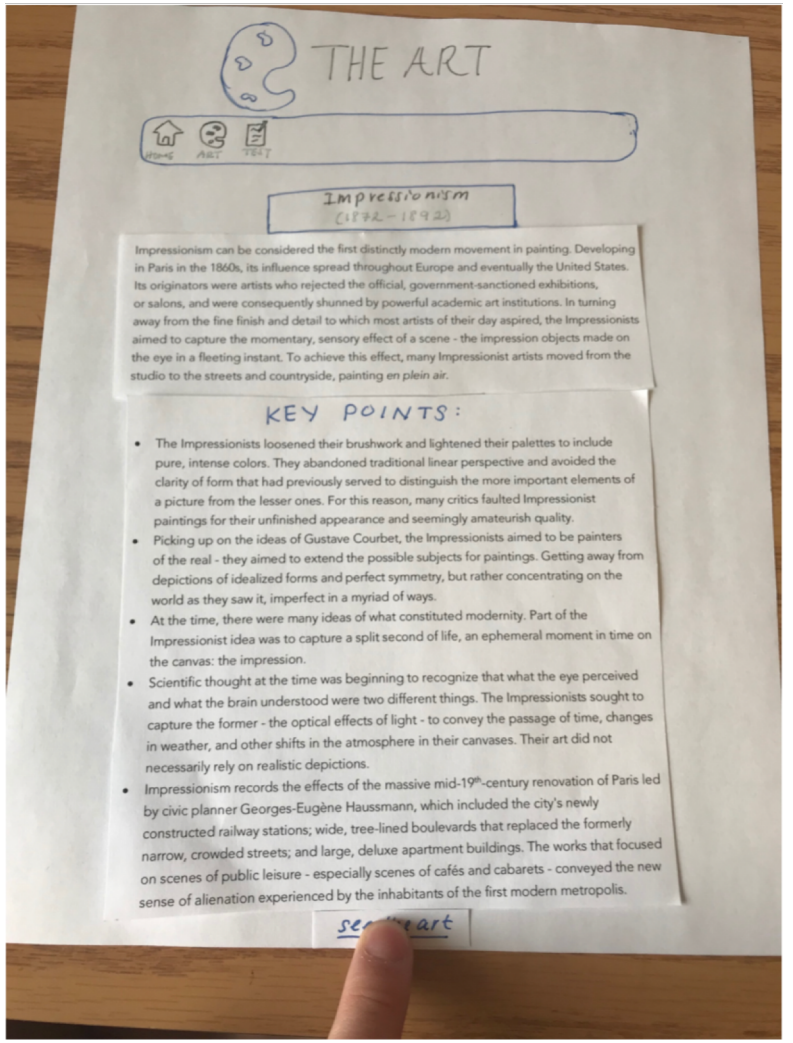




Note: this page is weirdly sparse

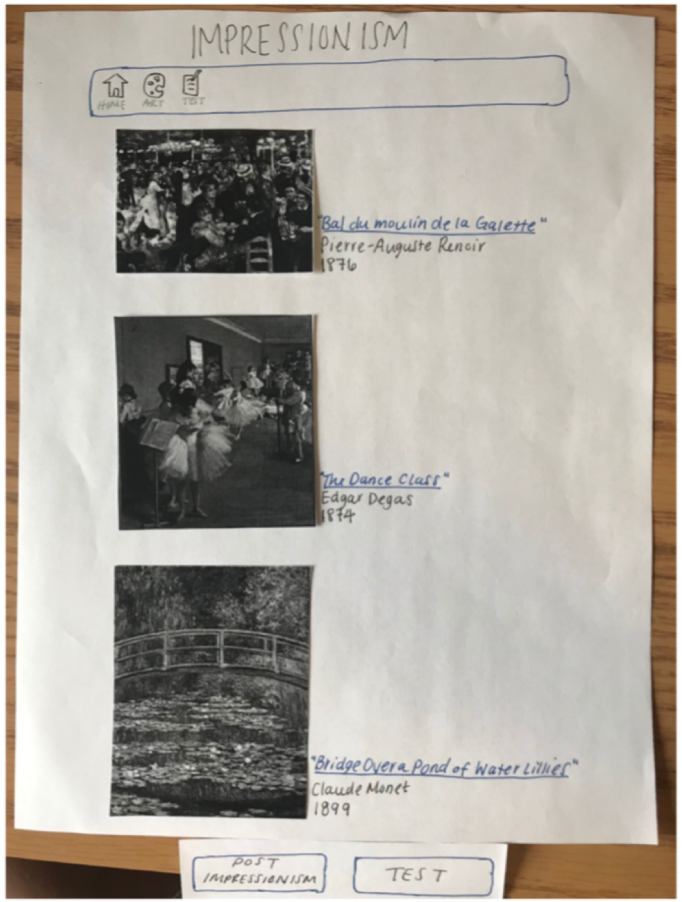
Learn Impressionism

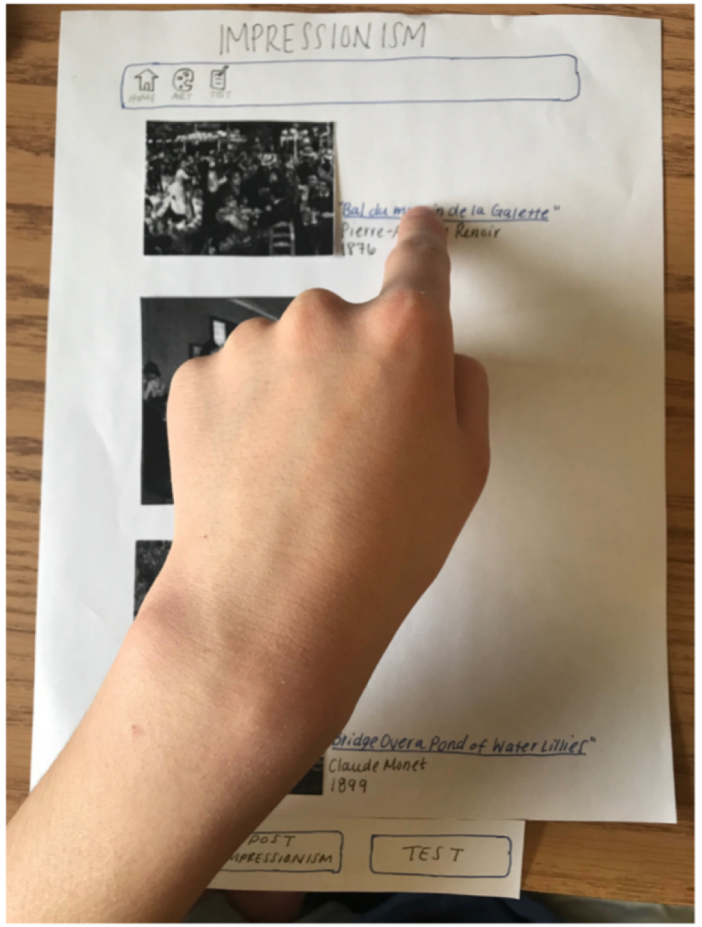


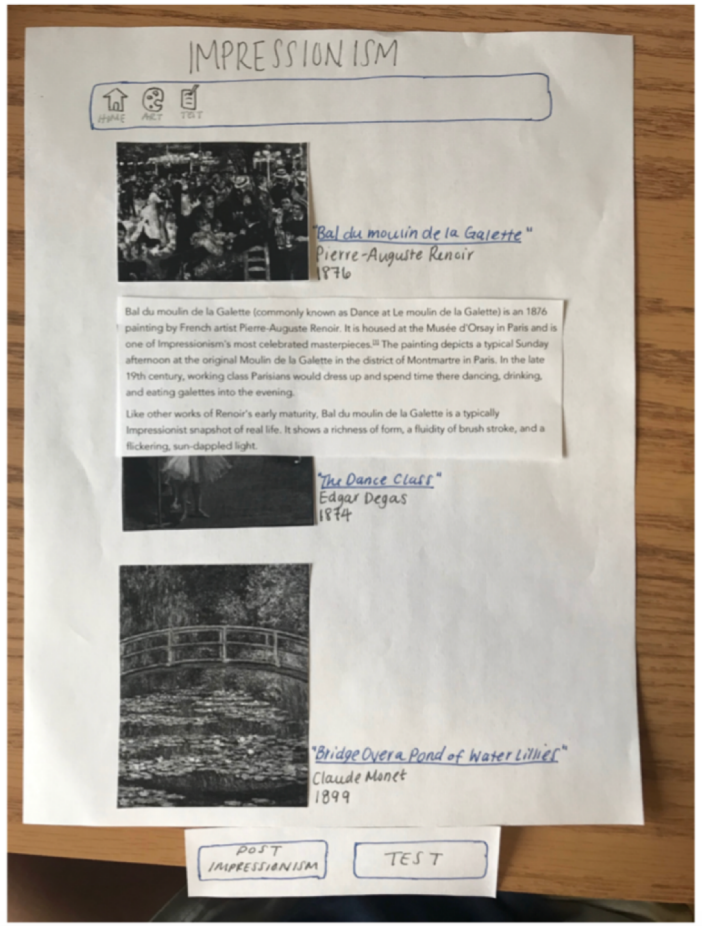


Hmm.. People aren't really reading this… maybe they need to see art as they read

See art examples

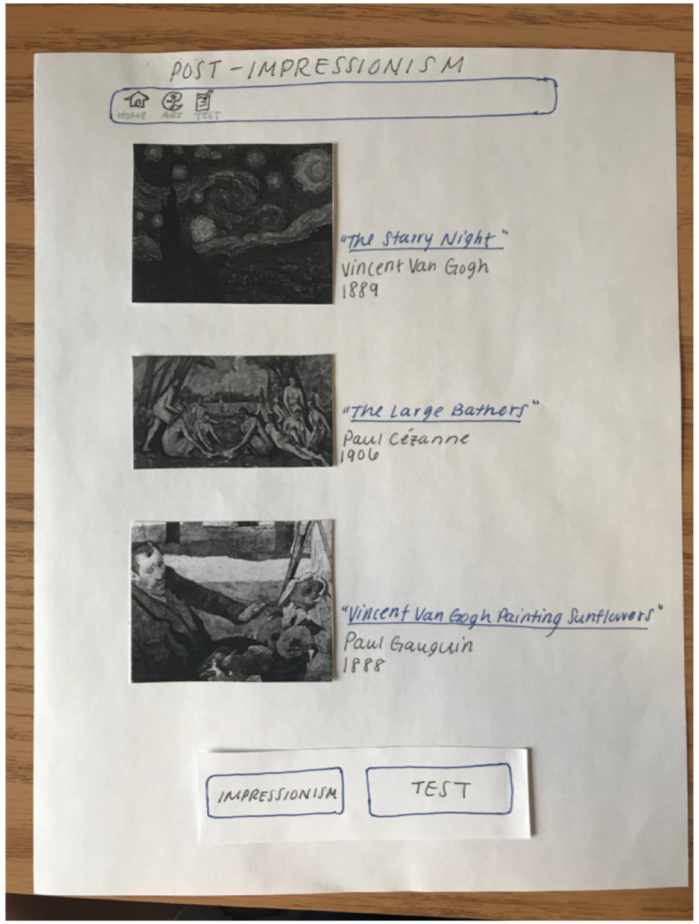


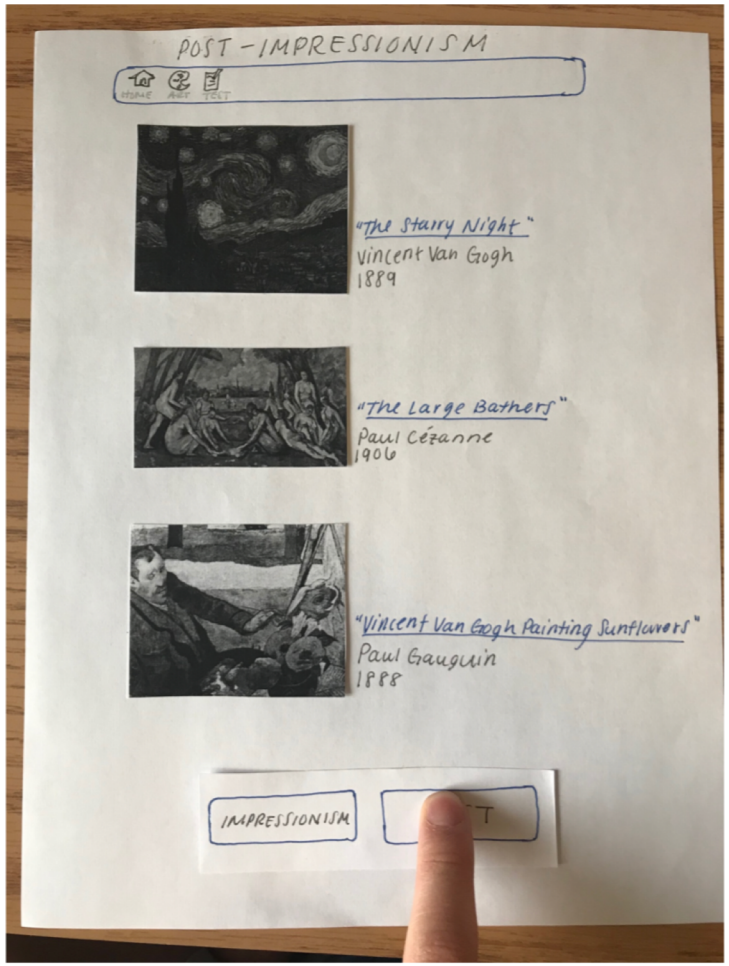




I didn't know you could click that!

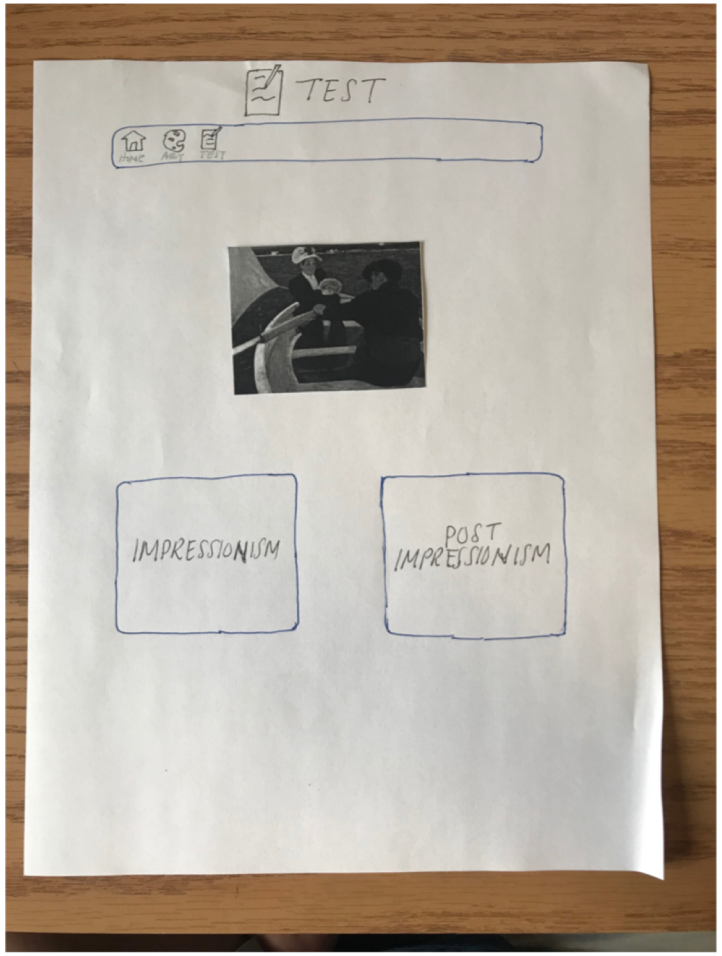
Learn post-impressionism

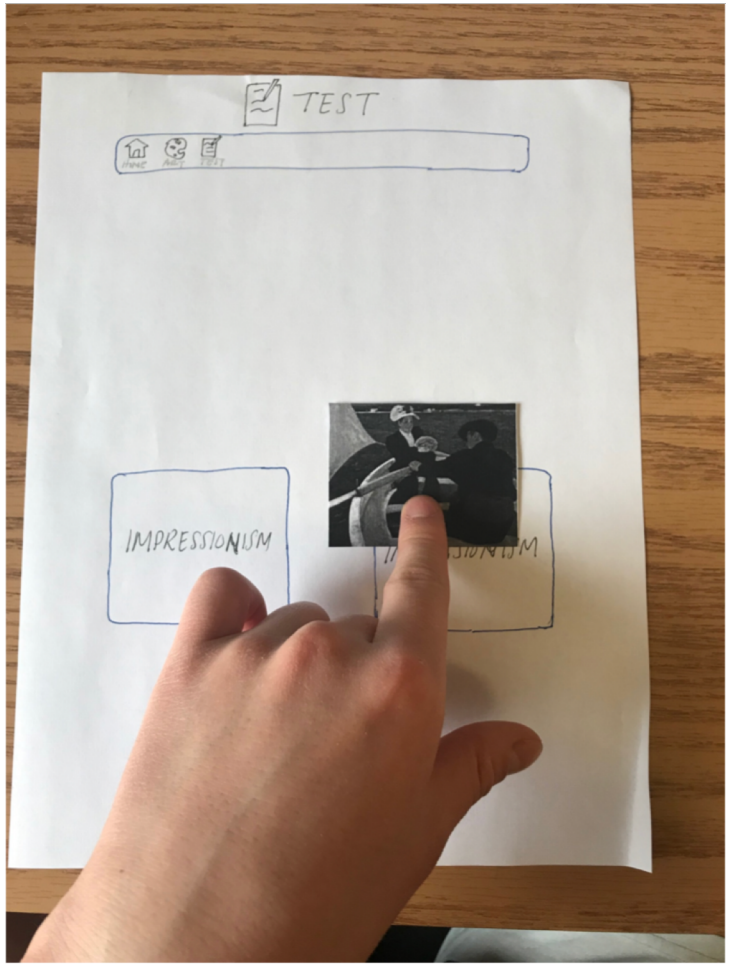




Oh shit! I forgot the overview!

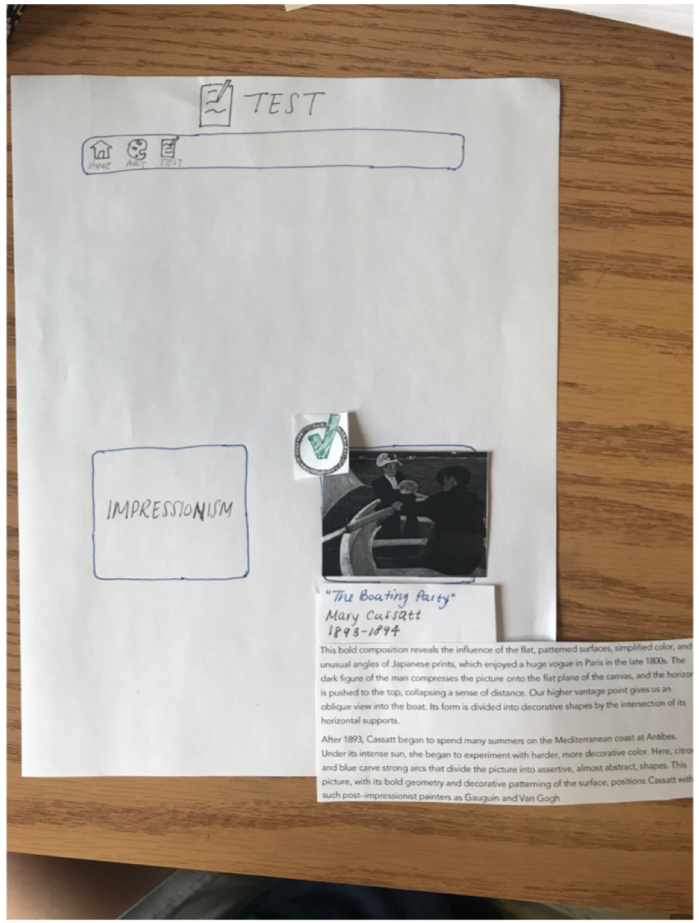
First Quiz Question





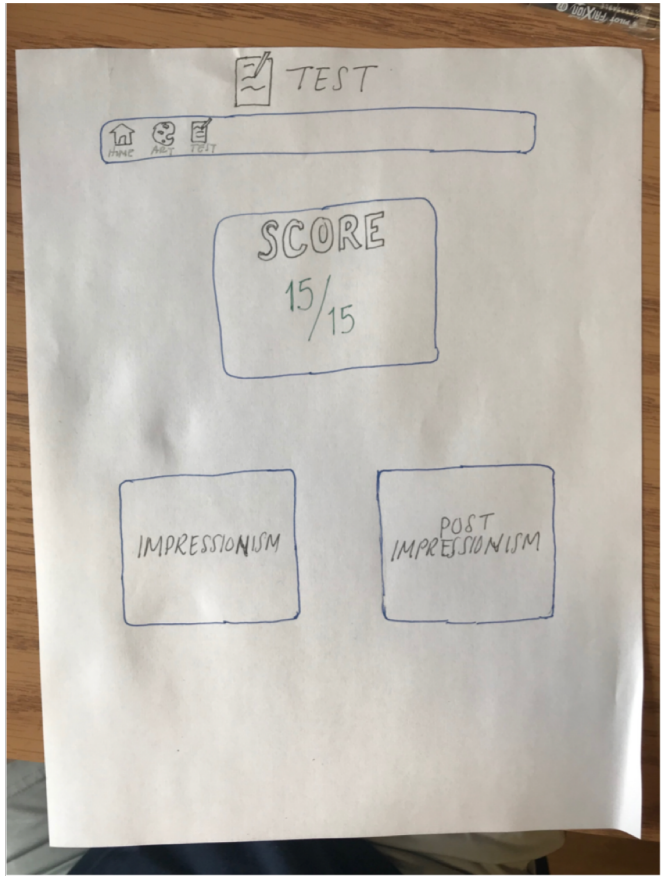
People like dragging!

Feedback



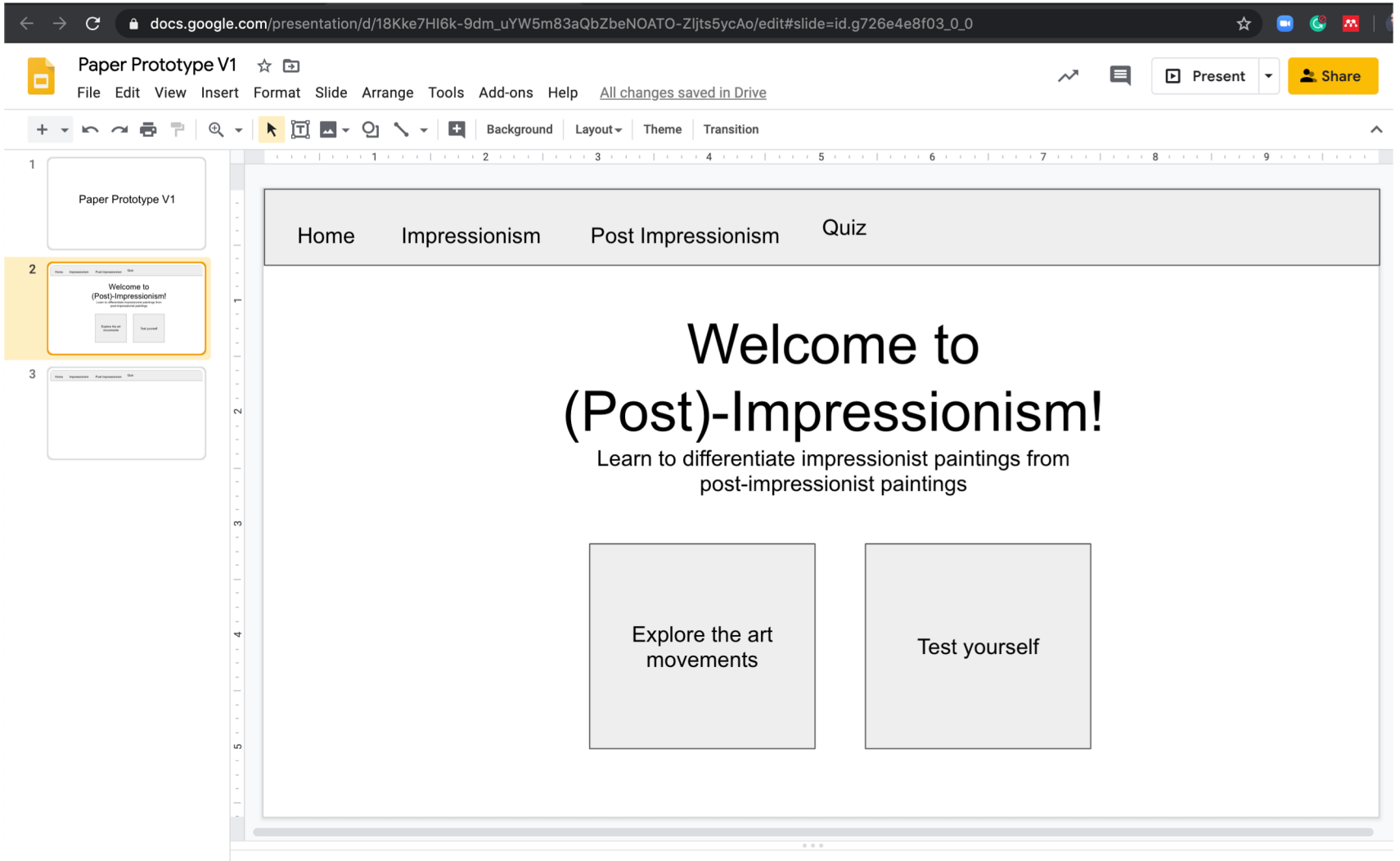
People like immediate feedback, but don’t read the text

Final feedback.

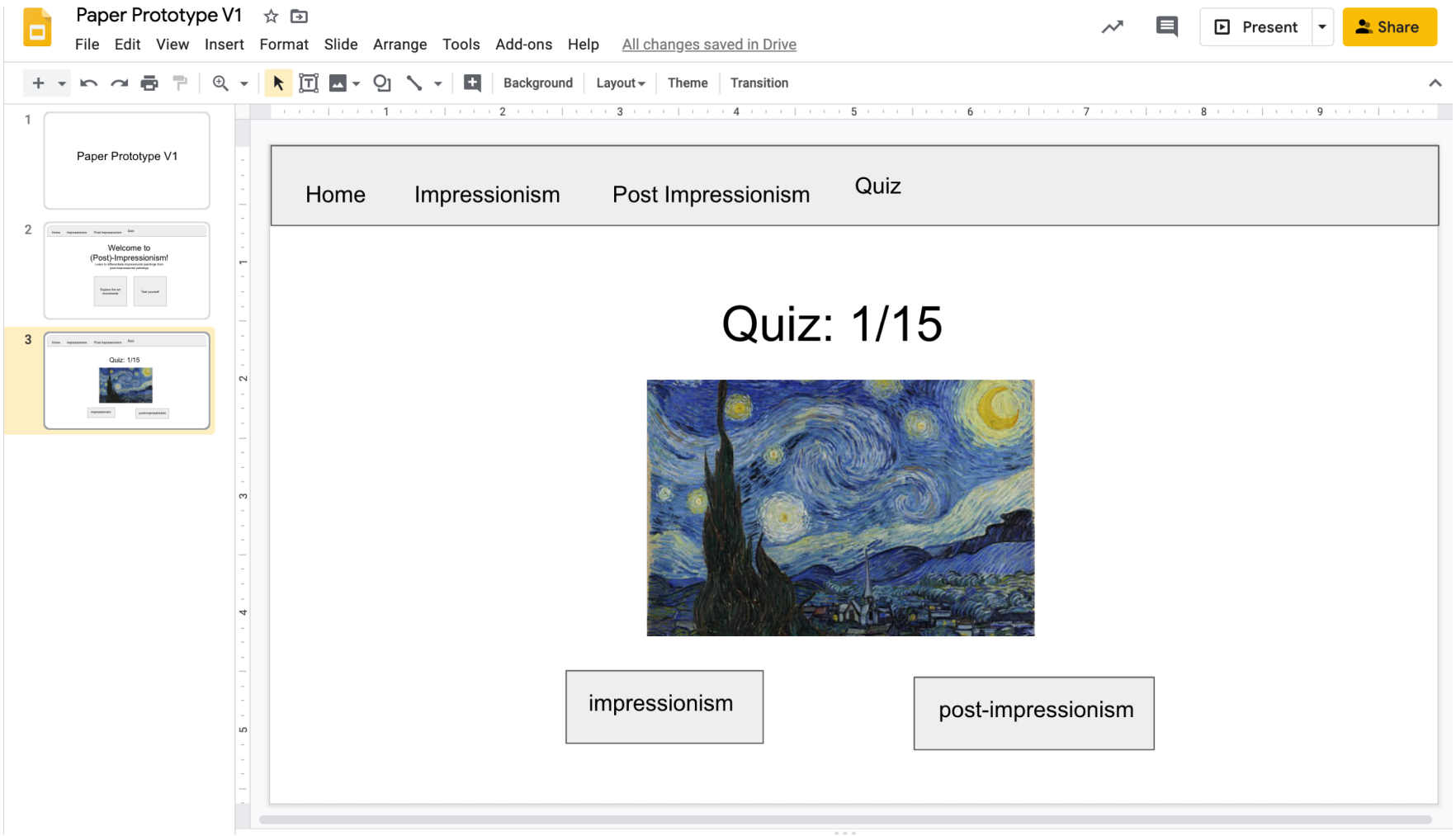


Where do I go next?

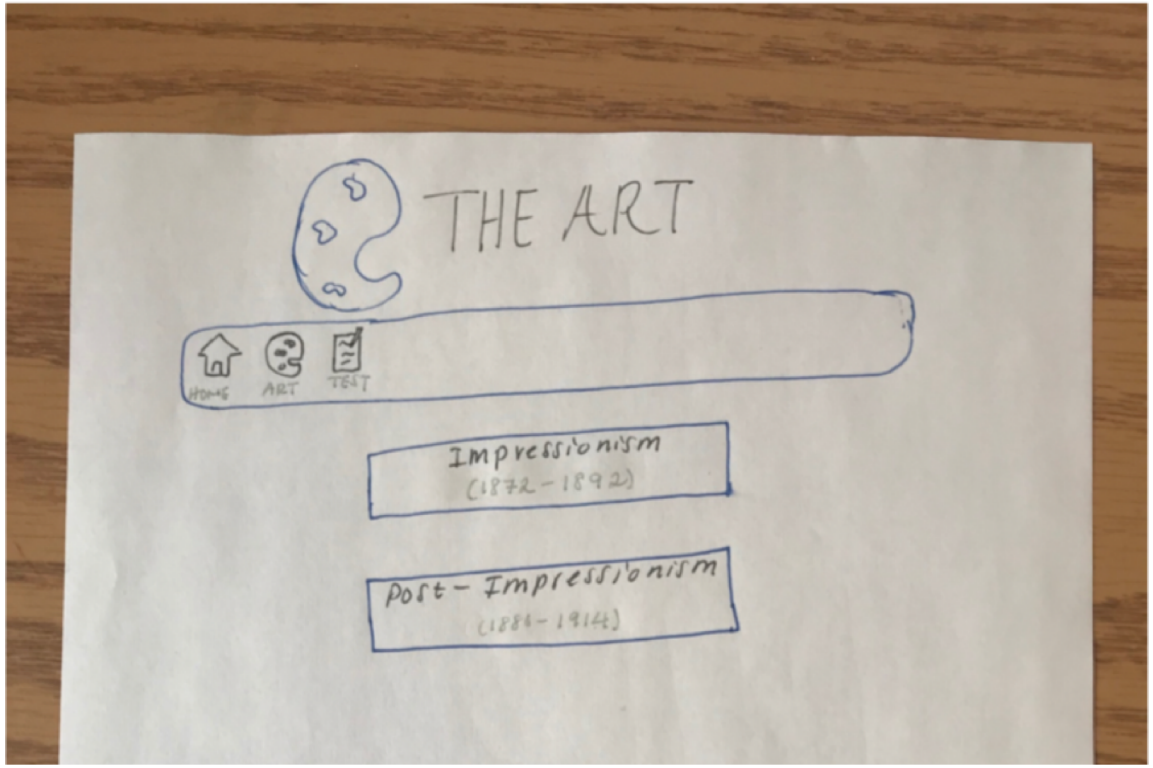
In this class, instead of a paper prototype, we will use a Google Slides prototype



Use real examples of media in your Google Slides Prototype



Good default options on “Select a lesson” state

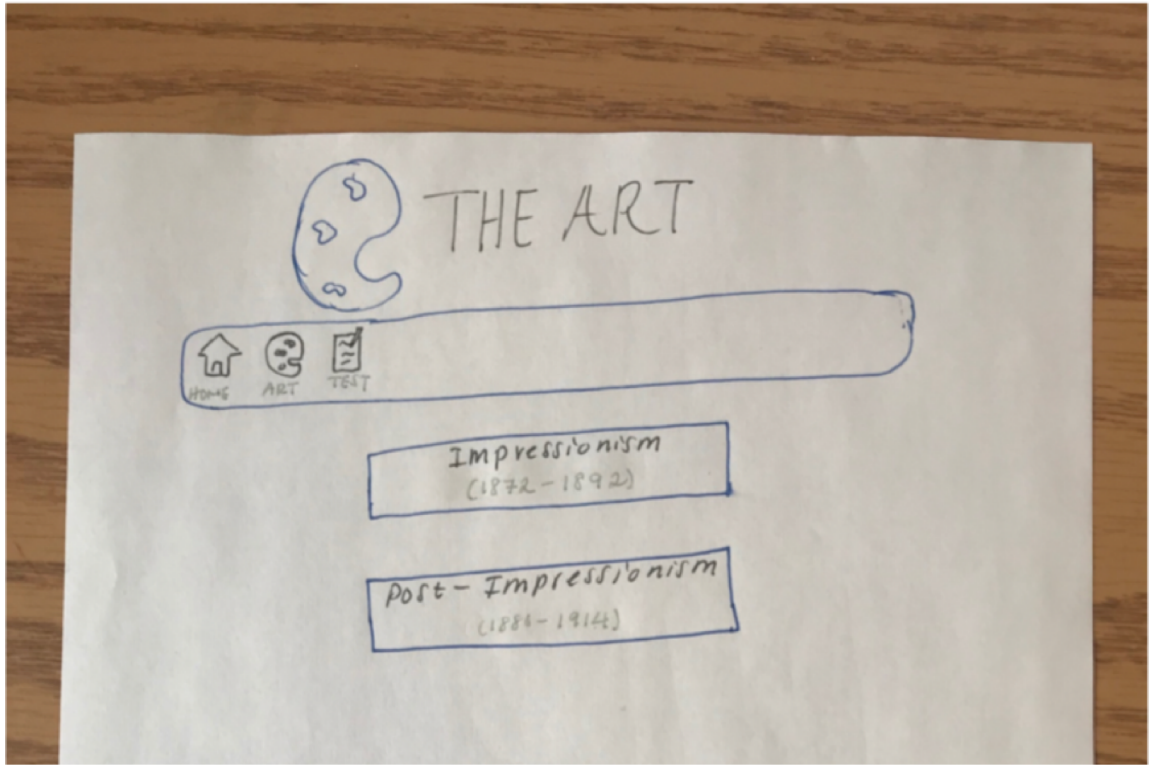


What do you want to learn first: impressionism or post impressionism?

Bad: (I don’t know… let’s the user choose.

Good: For most users, I think they’re going to learn the mos
from contrasting post-impression with impressionism.
Thus, it’s best if they need to know what impressionism is fi
So the default workflow will start with impressionism. (plus
comes first in time)

What should be the default art to learn first: Impressionism or Post-Impressionism?

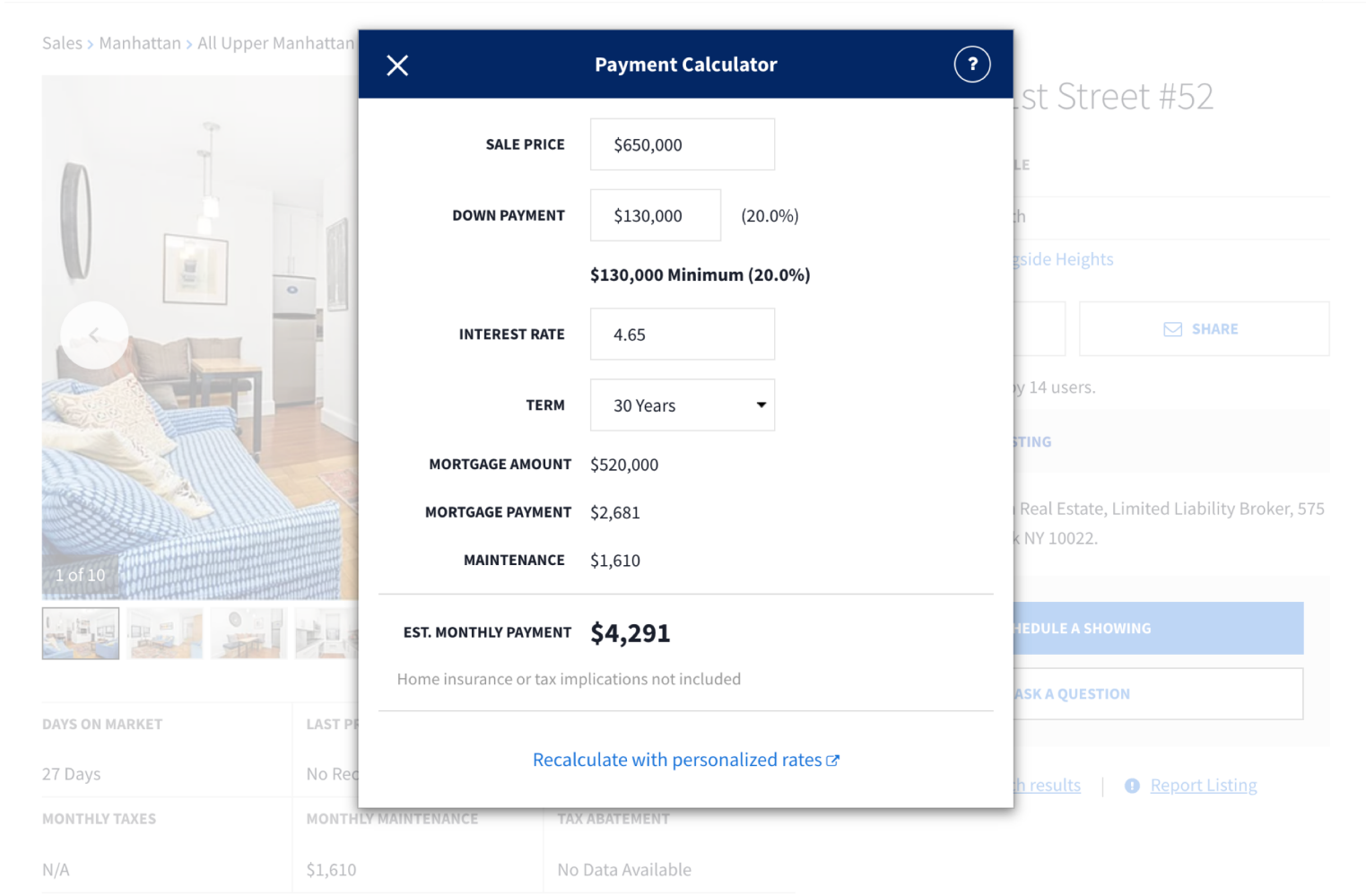


Bad: I don't know, so… let's let the user choose.

Good: Impressionism. For most users, I think they're going to learn the most from contrasting post-impression with impressionism. Thus, it's best if they need to know what impressionism is first.

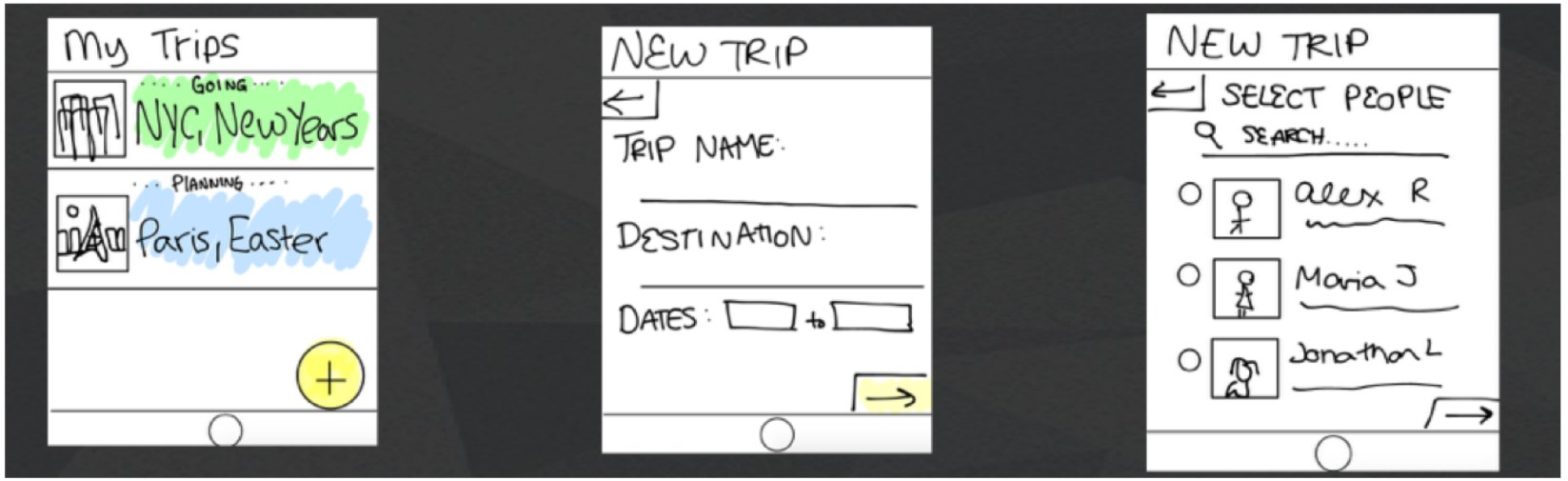
Prevent Errors in Options: Provide good defaults

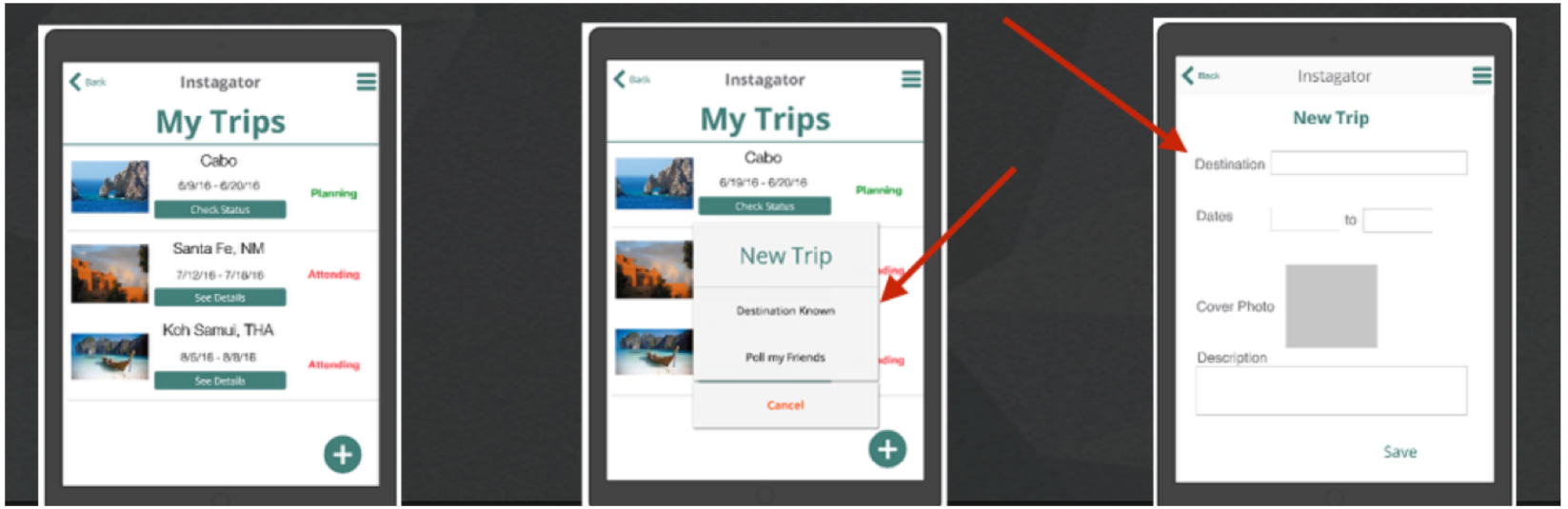
Good defaults will help to guide the user away from making a mistake because they will be given a context to work from.



Why is low-fidelity better than hi-fidelity at early stages?

What if the prototype is too polished?





1. It takes too long to make.

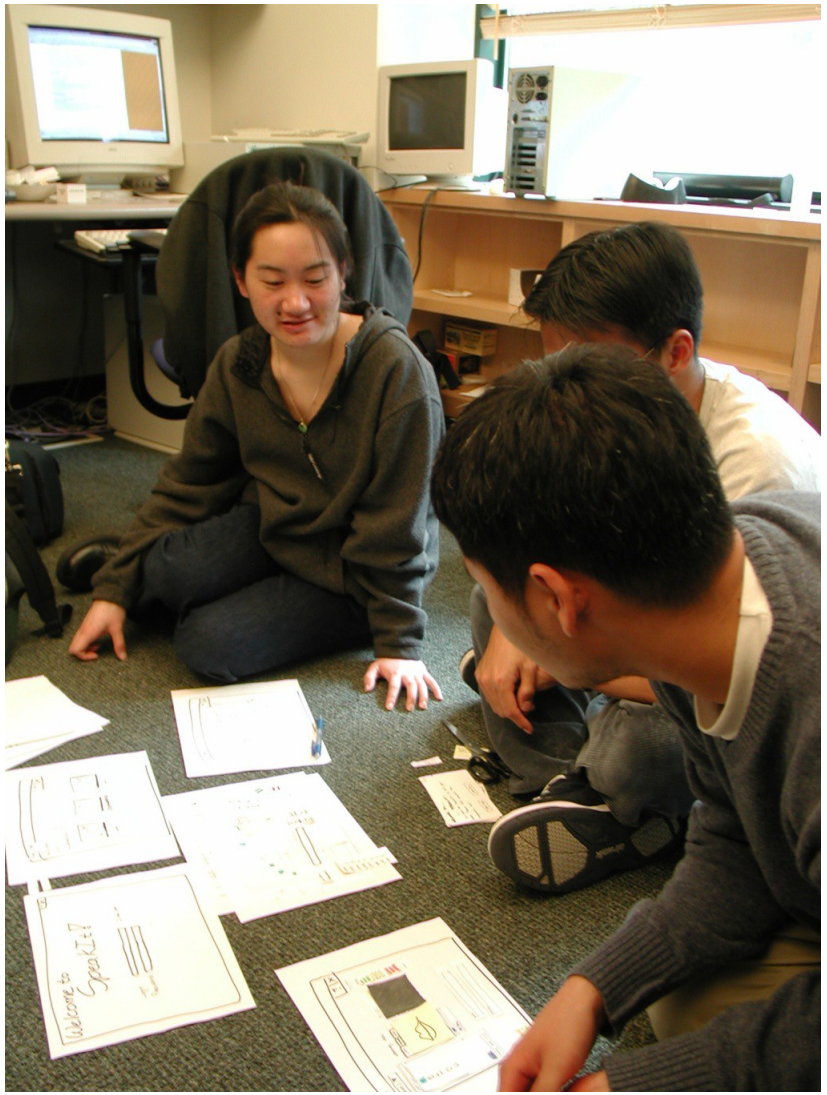
2.Designers become attached to designs the spent to most time on.

3.You get feedback on the wrong thing:

- **color,**
- **Images**
- **fonts,**
- **wording**

Running a Prototype

Running Prototypes



- Put your low-fi prototype in front of users.
- Read them their goal, and ask them to
- Ask them to think out loud as they do the task
- Don’t interrupt them.
- Don’t lead them.
- Observe **“critical incidents”**
  - Times they are unsure
  - Times they did something you did not intend
- Write it down, take screen shots.

You get the best feedback when you are observing and listening. Not instructing:

- Give the user a **goal**:
  - “Create a playlist”
  - “Learn about the difference between impressionism and post-impressionism”
- **Observe** what they do
  - Encourage people to think-aloud
  - Look for “critical incidents.”
    - Times were users are unsure what to do, do the wrong thing
  - Resist the temptation to “rescue” them or tell them what to do.

Your role when running a prototype:

Shut up and listen.

Just take notes.
Don’t explain your prototype.
Don’t guide the user.
Don’t help the user (unless they are truly stuck).
Learn all the things you did right and wrong.

Pretend you’re the TA…

Prototype 1:
Learn the Arabic Alphabet

Pronounce the Arabic Alphabet

With **28 letters** each letter has **3 Pronunciations**

Arabic is read
from **right** to **left**

Start Learning Now

Home Alphabet Quiz

خ	ح	ج	ث	ت	ب	أ
ص	ش	س	ز	ر	ذ	د
ق	ف	غ	ع	ظ	ط	ض
ي	و	هـ	ن	م	ل	ك

Click a **letter** to start

Alif

The letter is pronounced "ah"

Back to Alphabet

Next Letter

Alif

The letter is pronounced "oh"

Back to Alphabet

Next Letter

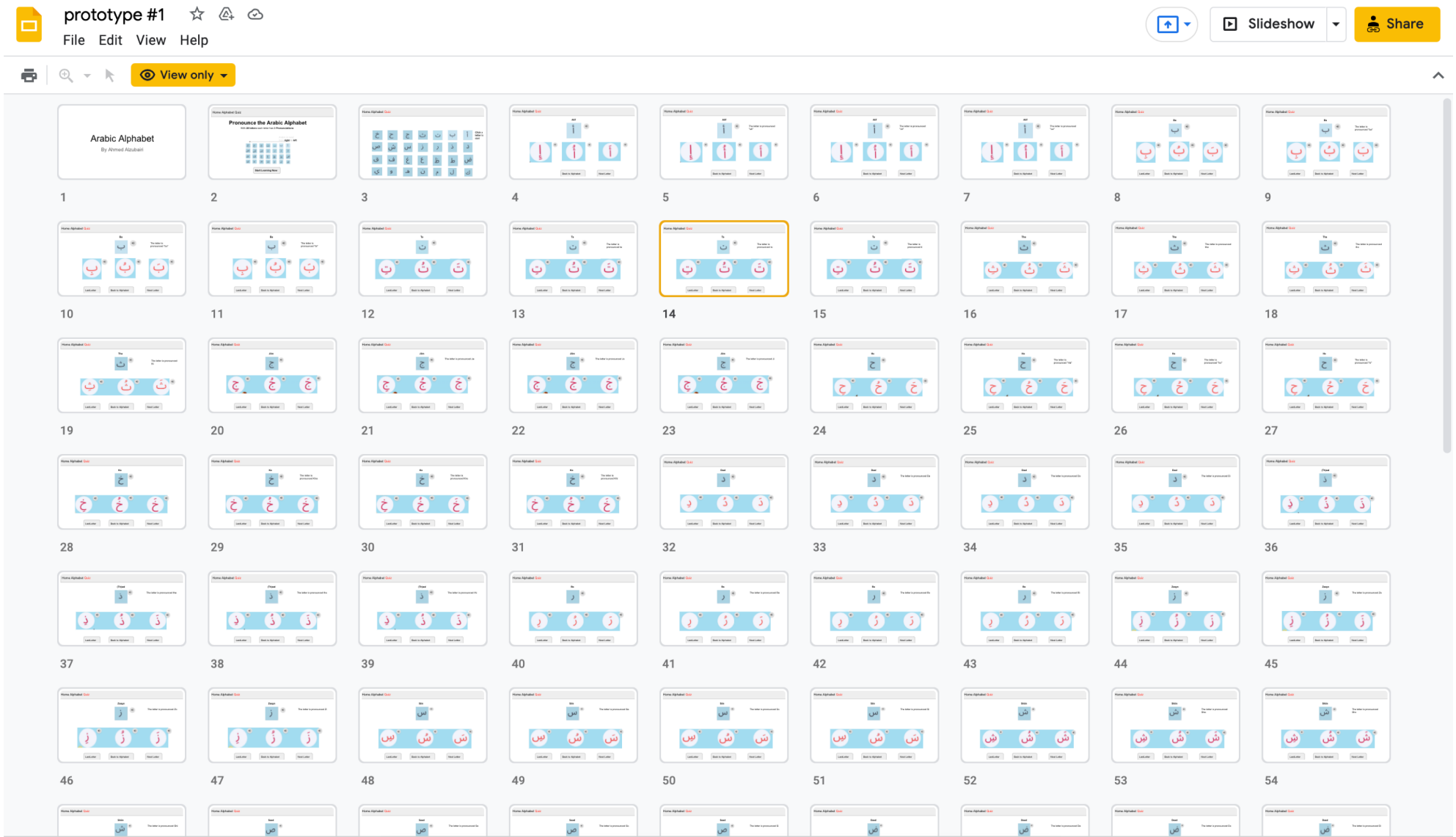
Alif

The letter is pronounced "ee"

Back to Alphabet

Next Letter

How many of these are there?



Drag and Drop Letters

Match the letter with the correct location

Submit

'Ayn	Kh	Nuun	Haa'	Saad	Faa'	Waaw	Raa'	Alif

ر ن و ف هـ أ ص خ ع

Home Alphabet Quiz

Congrats, You scored 9/9

Return to Alphabet Main Screen

Lessons from Prototype 1: Learn Arabic Letters

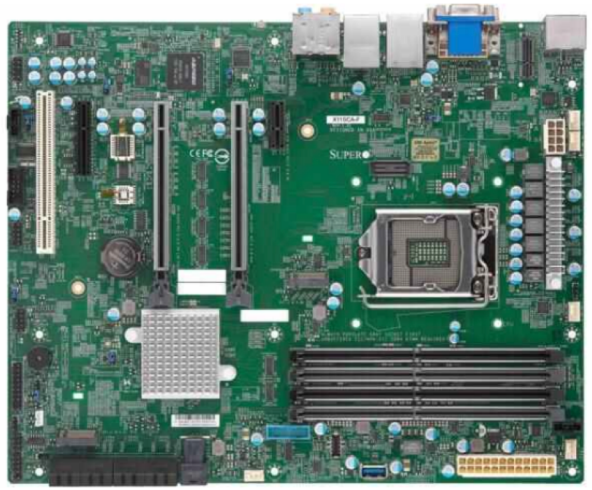
- Good topic
  - Interesting, introductory topic for this audience
  - media is good
- Too long
- Need stronger default for first letter to select
- Perhaps “next” button needs to be on the left, no the right.
- Not entirely satisfying to just memorize a bunch of letters

TA suggestion

- Pick fewer letters (maybe 5?) for the user to memorize
- Then show how they’re combined into words.
- Topic pivot: how to read Arabic words.

Prototype 2:
How to build a computer

Welcome to Build a Computer, where we teach you how to build a computer. First, we'll show you through the different parts of a computer and what to look for. Next, we'll show you walk you through the process of building it, step by step. After that, we'll explain some common problems that you could face while building. Finally, we'll do a quick quiz on you to make sure you paid attention.



START BUILDING!

Parts

One of the most daunting tasks to building a computer is learning what all the different components are and what they do. We'll display an image of each one, along with what to look out for when buying one. We'll link info for a budget, regular, and high-power option for each part, so you have the ability to build as we go along.

NEXT
(Graphics Card)

Graphics Card

If you're gaming or video editing, the graphics card is probably the most important piece of hardware in your PC. The important specs to look out for are **Video Memory** and **Clock Speed**, higher numbers are better.

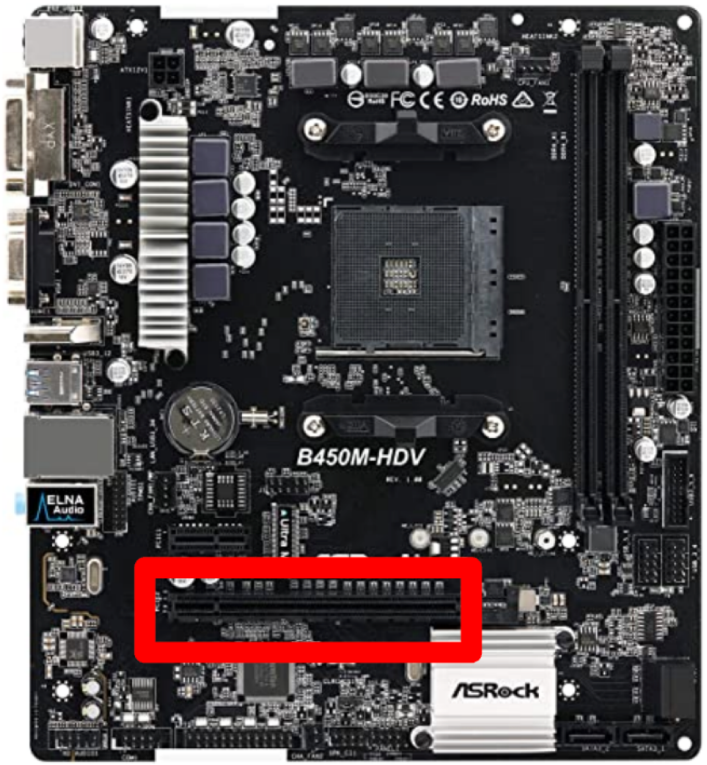
	Name	Link	Price	Memory	Clock Speed
Low					
Medium	Zotac GeForce GTX 1660 Ti Twin Fan	ZOTAC Gaming GeForce GTX 1660 Ti 6GB GDDR6 192-bit Gaming Graphics Card Super Compact - ZT-T16610F-10L	279.99	6 GB DDR6	1770MHz
High					

NEXT
(CPU)

Building Time - Graphics Card

Alright, now it's time to put in the card! Just push it into the slot in the motherboard, and wait for the click. After it's in, screw it into the case using the screws from the mounting.

NEXT (CPU)



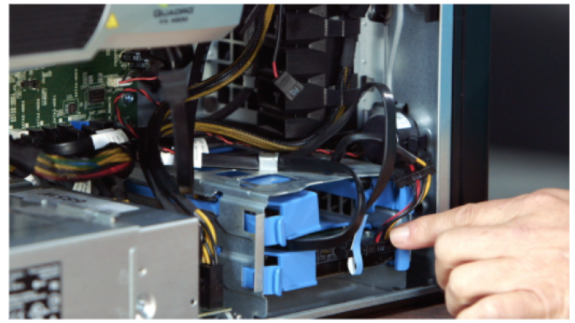
Troubleshooting

Screen won't turn on
- Reseat your graphics card

Computer turning on and off
- Check RAM

Fans really loud
- Check power connections, thermal paste on CPU

Quiz your knowledge!



Quiz - Parts

If you're trying to build a PC for gaming, what is the most important part?

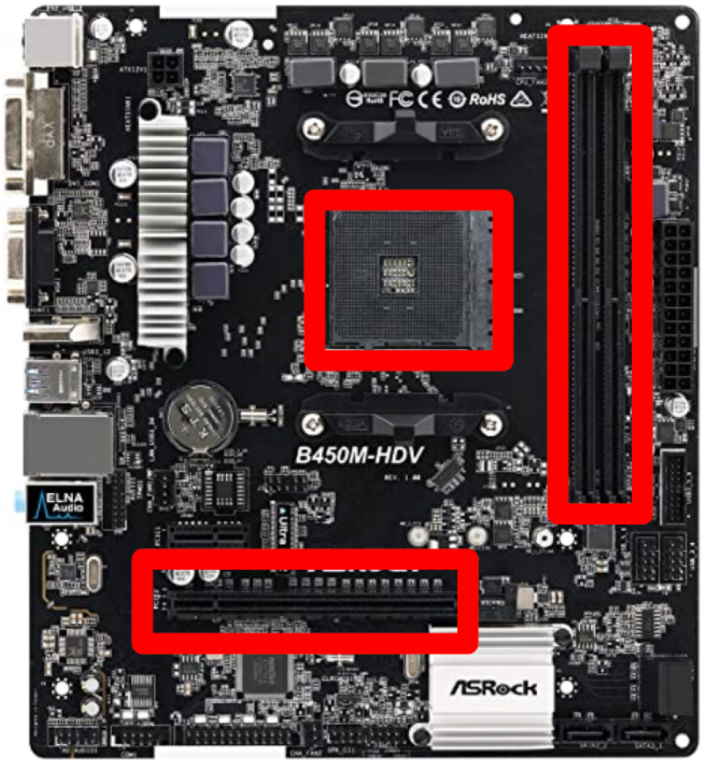
- ○ RAM

- ○ CPU

- ○ Graphics Card

Quiz - Building Time

Time to test your building knowledge. Drag the component to the correct slot and click submit when you think you have it.



Lessons from Prototype 2: “How to build a computer”

- Interesting topic, but the material is too easy
- The quiz can be passed without using the learning material
- From the quiz, it’s not clear you’re learning how to build a computer. Perhaps you’re learning to identify the parts?

TA feedback

- Pick a different prototype (or redo this one with a clearer goal)
- The instructional goal and strategy isn’t clear, and thus as a whole, the prototype isn’t coherent.

Prototype 3:
The Police are at your Door

YOU AND THE POLICE

This site serves to inform you about the laws in a police encounter as well as strategies for having a good experience.

Select a scenario

Police are at your door

Pulled over by police

Stopped by police in public

Arrested by the police

Police are at your door

Next section

Your Rights

- To remain silent
  - This means xyz
- To see a warrant
  - This means you do not have to let them in until you see a warrant

What are warrants?

Tips to reduce risk to yourself

DO

- **Ask the officer if you can see a warrant and ID**
  - Ask the officer to slip the warrant under the door or hold it up to the window so you can read it
- Write down everything officers do if you are searched

DO NOT

- **Invite the officer into your house without seeing ID and warrant**
- Speak to the officers about anything

Police are at your door

Next section

Your

- To remai
  - T
- To see a
  - T
    n
    in

What are warrants?

Search Warrant: A search warrant allows police to enter the address listed on the warrant, but officers can only search the areas and for the items listed. It must be signed by a judicial officer and lists your address as a place to be searched

Arrest Warrant: An arrest warrant allows the police to make lawful arrest. It must have your name on it as the subject of an arrest warrant .

o reduce risk to yourself

k the officer if you can a warrant and ID

Ask the officer to slip the warrant under the door or hold it up to the window so you can read it

te down everything

cers do if you are

rched

- **nvite the officer into your house without seeing ID and warrant**
- Speak to the officers about anything

Next section

Pulled over by police

Your Rights

- As a passenger
  - To remain silent
    - This means xyz
  - You can ask if you're free to leave. If yes, you may silently leave.
- As the driver
  - To remain silent

Tips to reduce risk to yourself

DO:

As a driver

- **Stop and turn off the car in a safe place as quickly as possible.**
- Turn on the internal light, open the window part way, and place your hands on the wheel.
- **Upon request**, show police your driver's license, registration, and proof of insurance.

As a passenger

- Put your hands on the dashboard.

DO NOT

- Make **sudden movements**, and **keep** your **hands where the officer can see them.**

Stopped by the police in public

Your Rights

- To remain silent
- To not have to consent to a search of yourself or your belongings
  - BUT, the police may pat down your clothing if they suspect a weapon.
- To not have to answer questions about where you were born, whether you are a U.S. citizen, or how you entered the country.

Tips to reduce risk to yourself

DO

- **Stay calm**.
- Keep your **hands where the police can see them.**

DO NOT

- Lie or give false documents.
- Run, resist, or obstruct the officers.

Take test!

Arrested by police

Your Rights

- To remain silent
- To a lawyer
- To make a local phone call

Tips to reduce risk to yourself

DO

- Say you wish to remain silent
- Ask for a lawyer immediately.

DO NOT

- Sign anything
- Make any decisions without a lawyer
- Allow the police to listen to phone call only if you call a lawyer.

Test-Part ¼ “Police are at your door”

Stuck? Click to review!

1. What is a right that you do not have?
   a. Right to stay silent
   b. Right to call a lawyer
   c. Right to read the search warrant
   d. Right to close the door

2. What should you do if the police ask to come in?
   a. Ask the officers to show identification
   b. Ask the officers to show you the warrant
   c. Allow the police to come in
   d. Ask the officers to say your name

Next

Test-Part ¼ “Police are at your door”

Stuck? Click to review!

1. What is a right that you do not have? ❌
   - **a. Right to stay silent**
   - b. Right to call a lawyer
   - c. Right to read the search warrant
   - d. Right to close the door

2. What should you do if the police ask to come in?
   - **a. Ask the officers to show identification** ✅
   - b. Ask the officers to show you the warrant
   - c. Allow the police to come in
   - d. Ask the officers to say your name

Next

Test-Part ¾ “Stopped in public”

Stuck? Click to review!

5. What can the police legally do in this situation?
   a. Force you to answer about your birthplace
   b. Force you to answer about your citizenship status
   c. Force you to answer how you entered the US
   d. Pat down your clothing to check you

6. The police has a gun on you what should you do?
   a. Confront the police officer about the gun
   b. Run away fast so that you don’t get hurt
   c. Keep your hands in the air
   d. Keep your hands hidden

Next

Test-Part 4/4 “Arrested by police”

Stuck? Click to review!

7. If you call your _____ the police can listen to your conversation.

8. You should not ___ any documents that the police give you

Next

Test-Review

Your score: X/8

Want to learn more? See https://www.aclu.org/know-your-rights/stopped-by-police/

Lessons from Prototype 3: “The police are at your door”

- Great topic, just the right amount of information
- Good states and transitions
- Information on each page is not so easy to read
  - Organize information
  - Split it up into two states if there’s too much

Second iteration

You and the police

This site serves inform you about the laws in a police encounter as well as strategies for having a good experience.

Police Are at Your Door

Police Pull You Over

Police Stop You in Public

Police Arrest You

Police are at Your Door

Your Rights

To remain silent: This means you can say you want to exerciise the 5th ammendment if you want to

To see a warrant: This means you do not have to let them in until you see a warrant

DO

Ask the officer if you can see a warrant and ID

Ask the officer to slip the warrant under the door or hold it up to the window so you can read it
Write down everything officers do if you are searched

DO NOT

Do not Invite the officer into your house without seeing ID and warrant

Do not Speak to the officers about anything

Next

Test-Part 1/4 “Police at Door”

1. What is a right that you do not have?

(a) Right to stay silent

(b) Right to call a lawyer

(c) Right to read the search warrant

(d) Right to close the door

Stuck? Click to Review!

Next

Test-Part 1/4 “Police at Door”

1. What is a right that you do not have?

(a) Right to stay silent

(b) Right to call a lawyer

(c) Right to read the search warrant

(d) Right to close the door

Stuck? Click to Review!

Next

Test-Part 4/4 “Arrested”

7. If you call your _____ the police cannot listen to your conversation.

Stuck? Click to Review!

Next

Test-Part 4/4 “Arrested”

7. If you call your lawyer the police cannot listen to your conversation.

Stuck? Click to Review!

Next

The End. Thank you!

Your Score: X/8

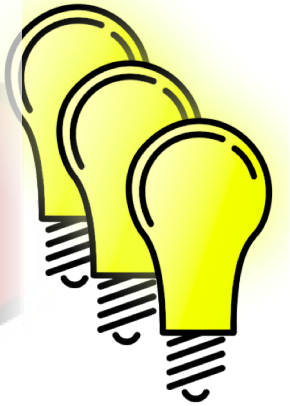
Want to learn more?
See:
https://www.aclu.org/know-your-rights/stopped-by-police

Summary

Homeworks 9-13: Iteration and Testing

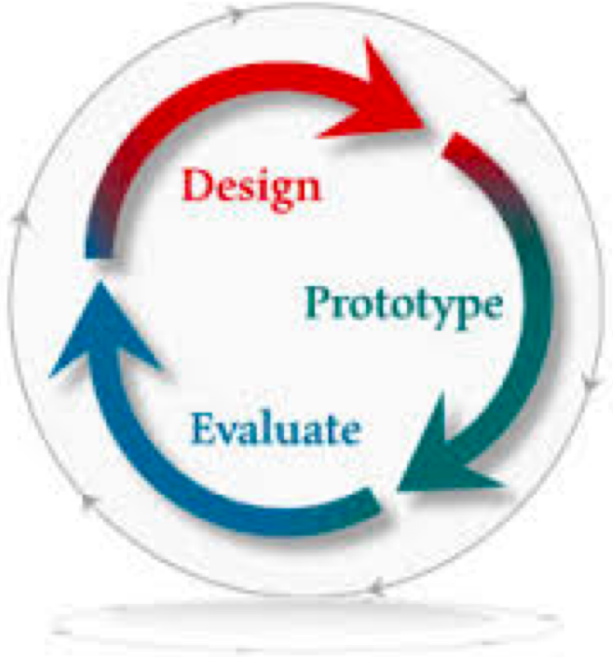
Challenge

Ideas



Ideas

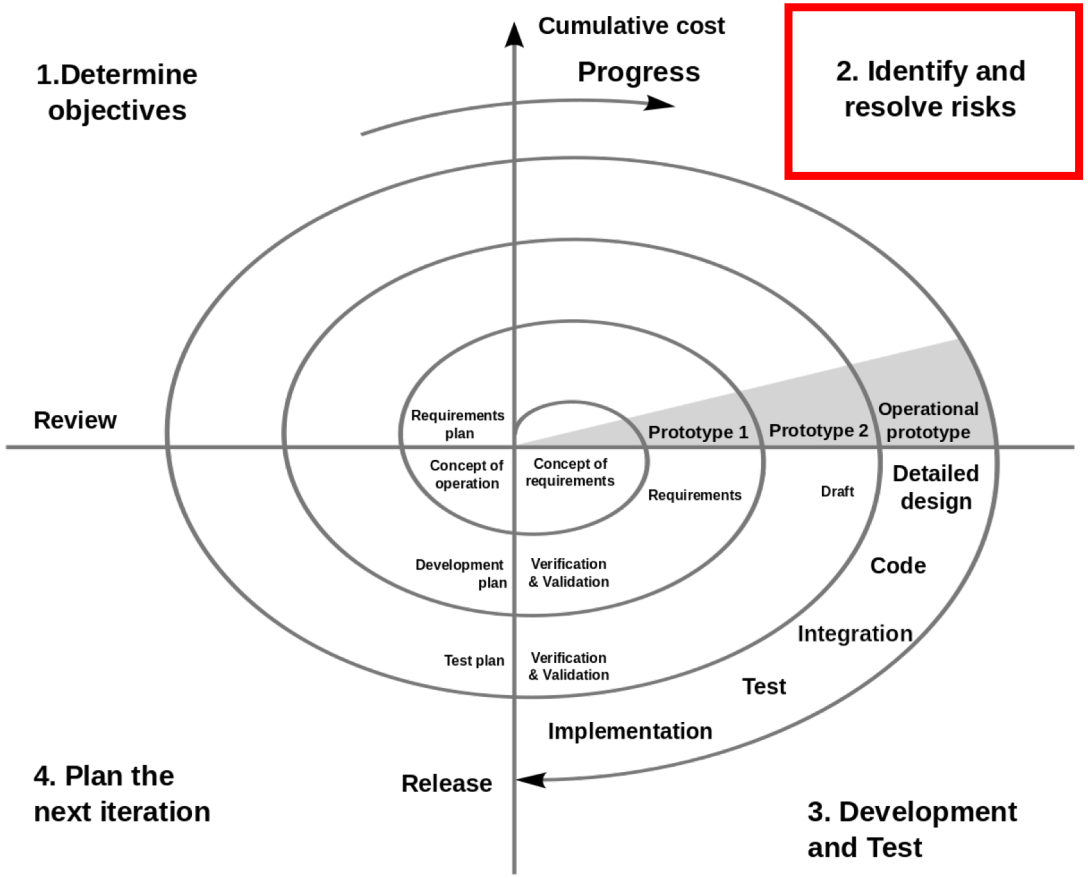
Reality



Implementation

Product

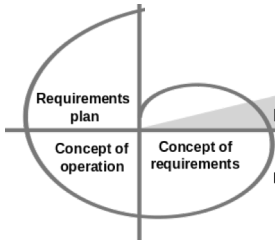
Iterative Design is good because it minimizes risk



The first iteration should be as **low-fidelity** as possible

1.Determine objectives

2. Identify and resolve risks



4. Plan the next iteration

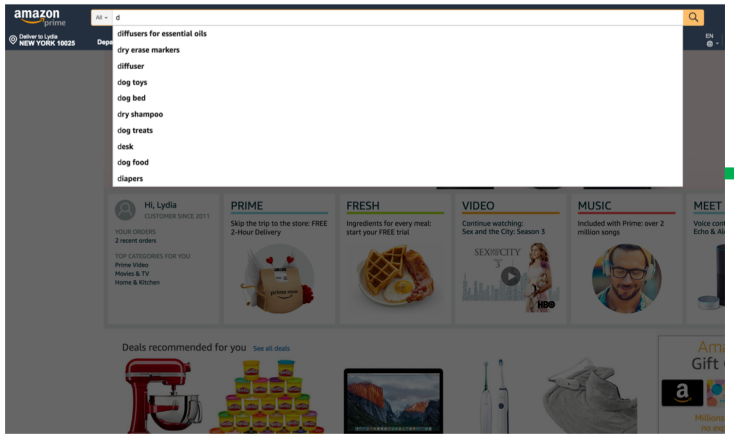
3. Development and Test

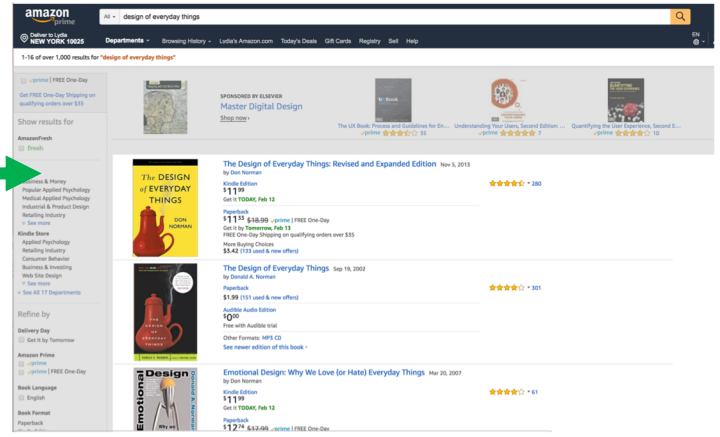
Main Prototype Goal:

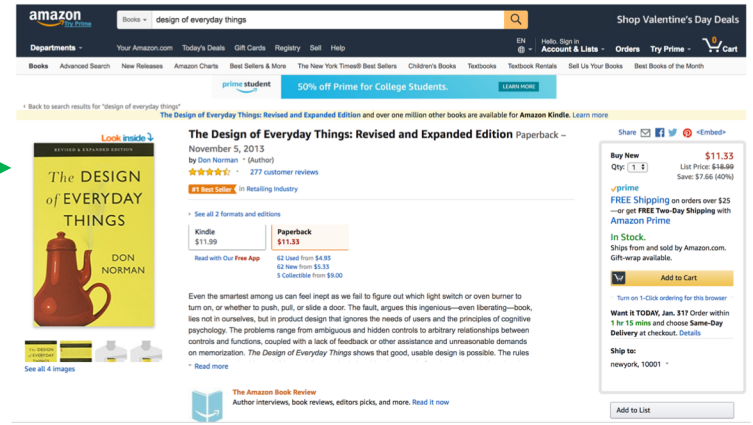
Coherence

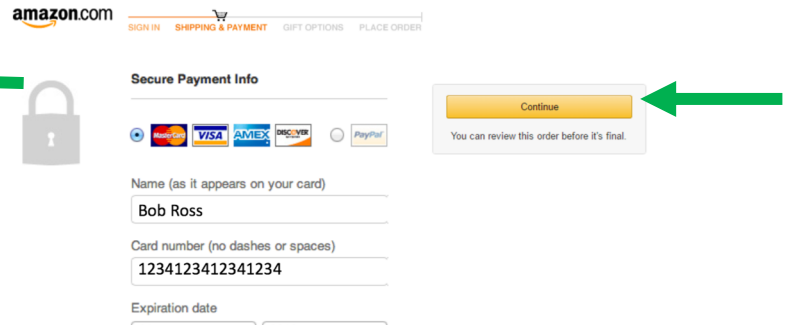
Is there a path through the system by which the user can accomplish their goal?

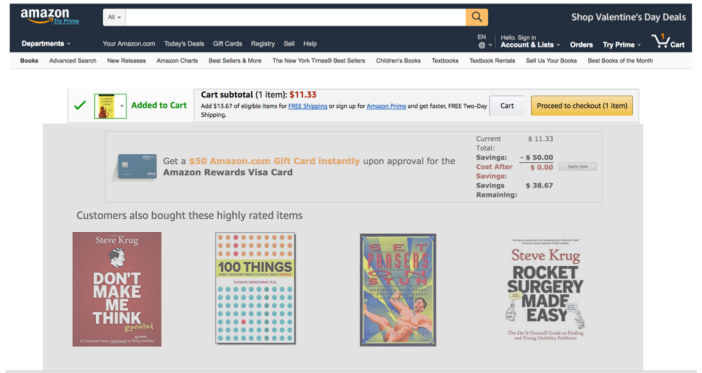
Focus on breaking the task into **states**, **options**, and **transitions**





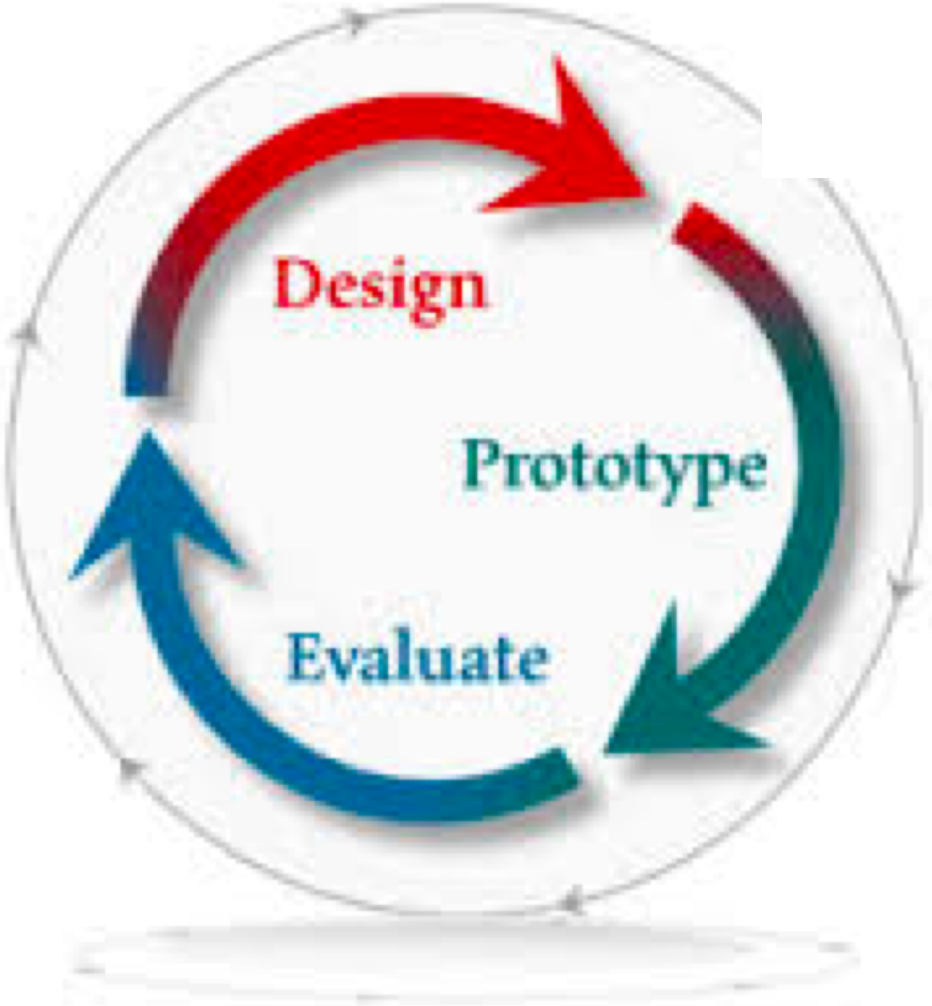


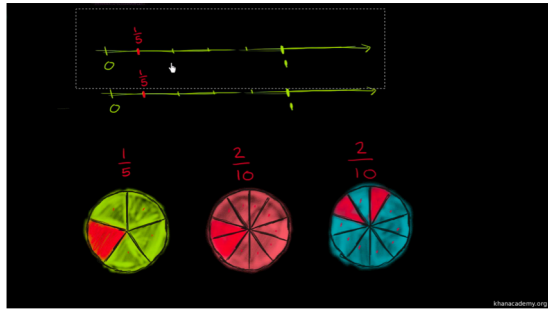




Translating an idea into a prototype is HARD.

Teach fractions by working through problems slowly.

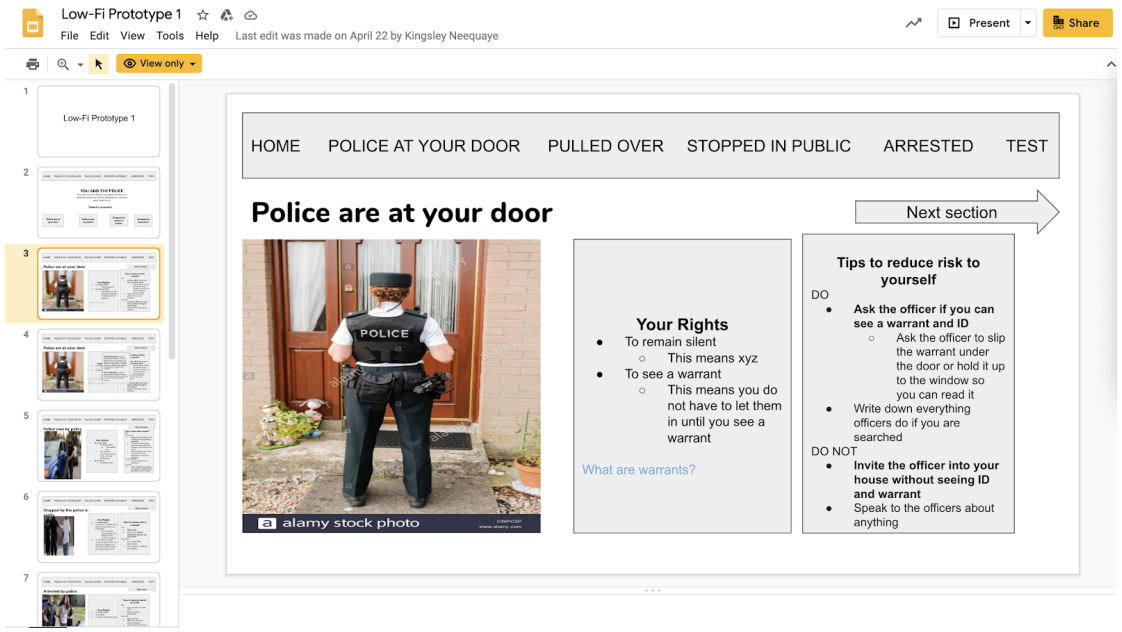


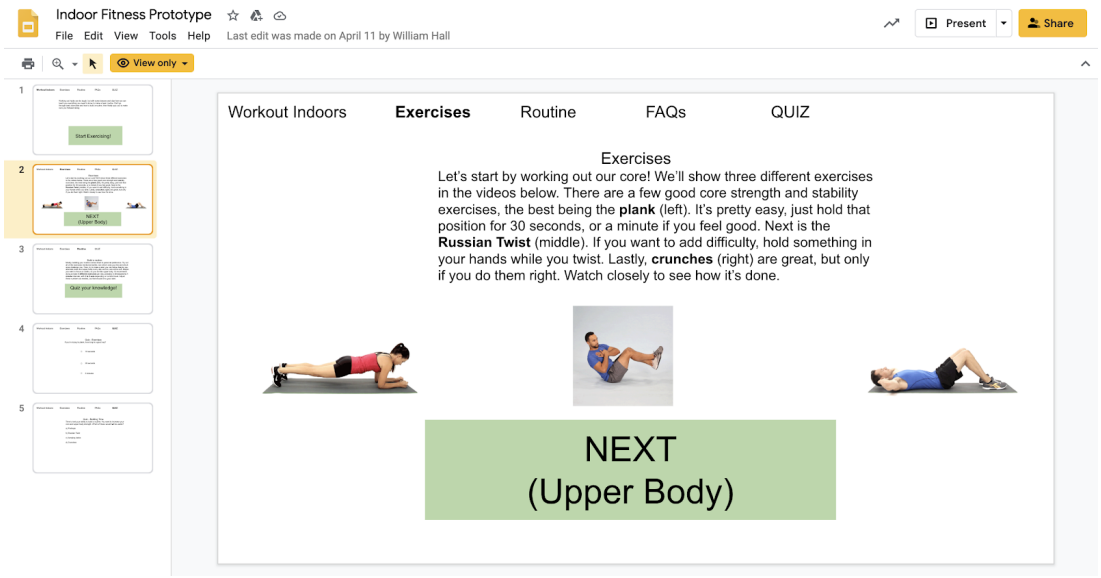


Low-Fi Prototype

You will probably learn as much from
making the prototype,
as you will from running it.

HW9: Low-fidelity Prototypes in Google Slides





Every team member will make their own.
You'll get TA feedback on Monday.