Digital Tie Printer

Design Vision

Form & Behavior Specification

By Team Manhattan

Alex Pineda, Fiona Au, Nilsu Duran, Yifan Jiang, Ziyao Zhu

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PART 1: Design Vision

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Project Summary and Expectations

About this Project

Digital Tie Printer is a device that prints out user-customized designs onto tie canvases. Users are allowed to choose a design for their tie from a preset number of designs or create their own design using their phone or computer. Users can upload the design to the tie printer, insert a blank tie that comes with the product, and print the design onto said tie. When the users grow tired of the tie, they can wash the tie using a special function in the printer and then print another design on it.

Key Personas and Requirements

Major Requirements

Rob Timothy (User)

- Find a tie appropriate for different settings
- Allowing more than one design on the same tie
- Garnering attention in return of investment
- Easy to navigate interface

Tequila Anderson (User)

- Allow user to express individuality
- Able to be used in multiple situations or settings
- A good investment
- Durable

Harry Styles (Designer)

- A platform where people can see/use his work
- Want to hear feedback for his designs
- Want to gain a following that admires his designs
- Should be easy to upload designs

For detailed personas' information, please go to the U&D analysis document and visit the section, Personas.

Big Ideas and Major Anatomy

Major Anatomy

Platform Overview
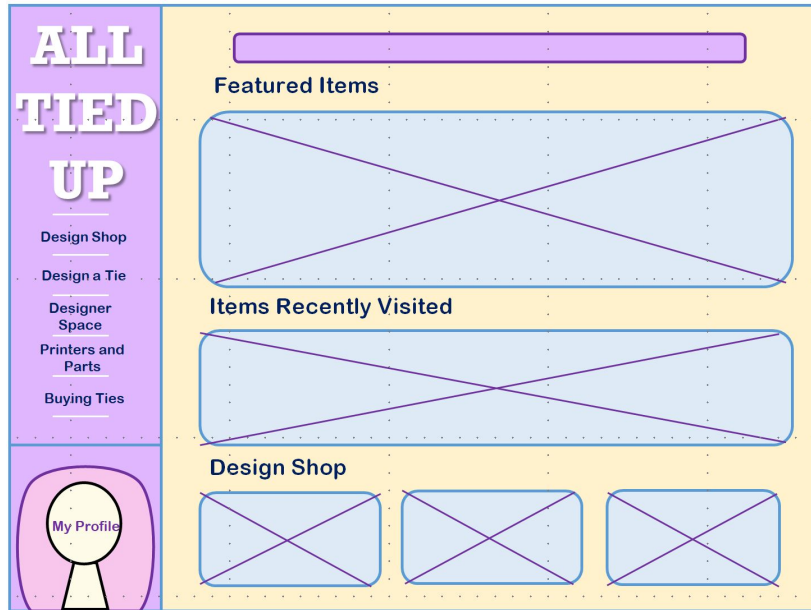
One of the problems that a designer persona has is getting the publicity that he or she needs in order to grow their brand or advertise their items. To make it easier for these designer personas to do so, the main site will show users the featured items such as the newest tie designs from the most popular designers, as well as show the designs of designers that users can choose to "follow." This makes it so that the best designers will get the publicity that they deserve. These featured items section will also show new items such as newest printer models or parts. Next, in order to address an interface that's easy to navigate, the next section shows users the items they most recently visited so that it is easier for them to find something they looked at and liked. After those two sections, it smoothly transitions into the tie design shop for users to start shopping immediately, but they can always navigate to other sections using the left sidebar, or search for any item in the search bar. To access their closets, cart, or connection to their tie printer, users can go to their profile on the bottom left.

Unique Data Objects

- Canvas
    - The tie itself that users buy and can print designs onto
    - Can be inserted back into the printer to be cleaned, ironed, and for a new design to be printed onto
- Printer
    - Cleans and irons the tie canvas before printing new design
    - Users can choose which closets they connect to the printer, so that the printer screen itself will not be so cluttered when the user goes to print out the tie design.
- Closets
    - A file/folder organization type where users can store the ties they want to buy (like a wishlist) or ties that they have already purchased
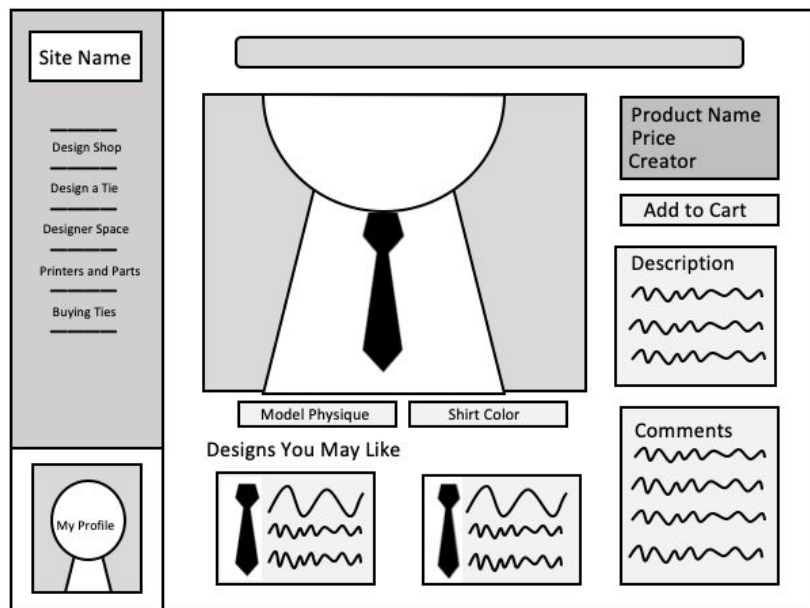   - Can put multiple files to separate by occasion

Key Paths

- Tie Wearer
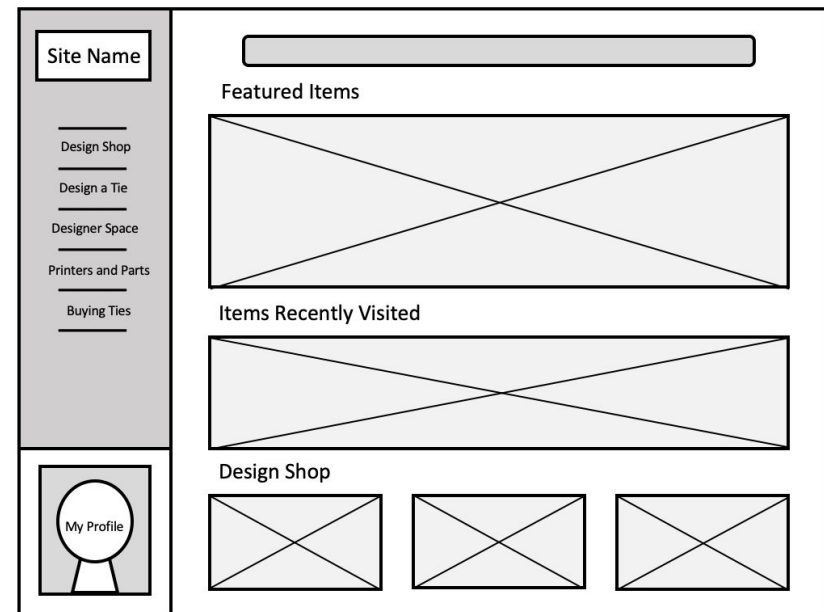
The user will get to the site and then click the "Design Shop" on the left sidebar.
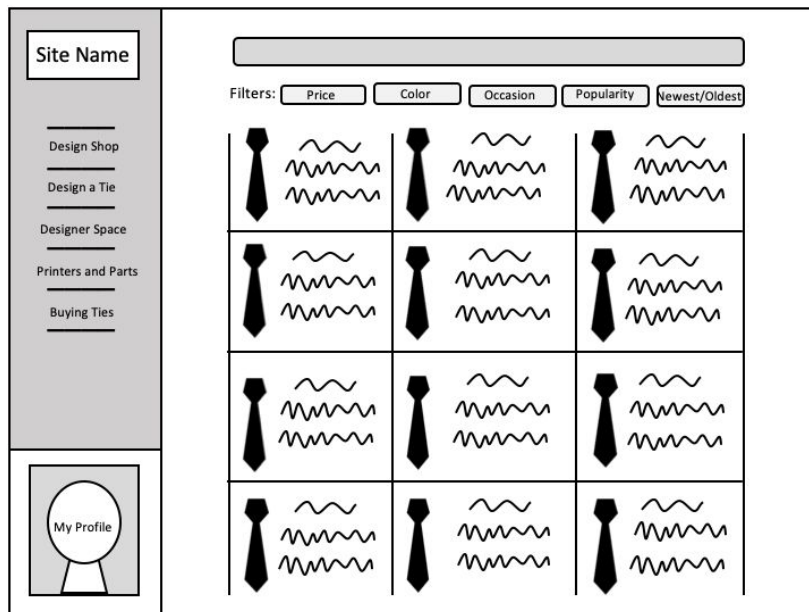
From there, they will get the many tie options that will show up, which they can scroll through and can click on an item that they want.


Users can choose to add an item to cart if it suits their needs. When they are ready to buy the items in their cart, the user can then click "My Profile," which will give two options: "My Closets," and "Cart." The user will then click on "Cart" to check all the items they want to buy.
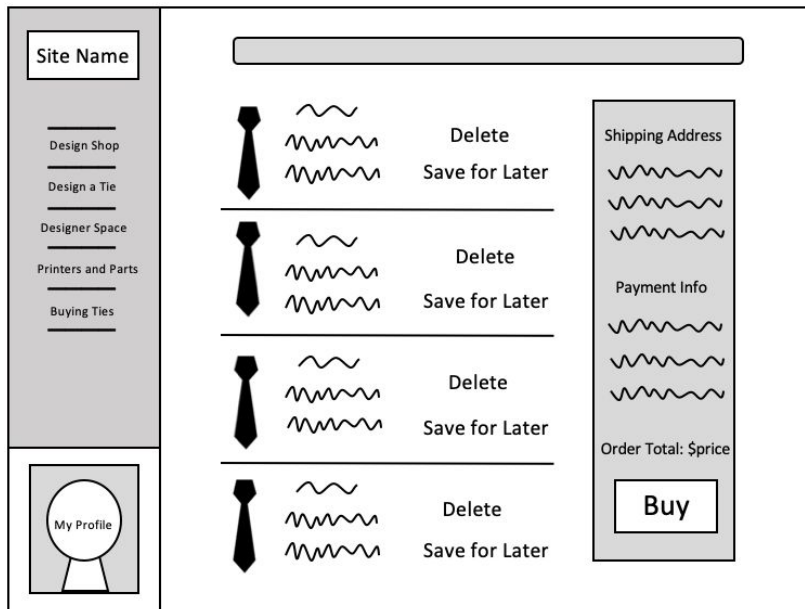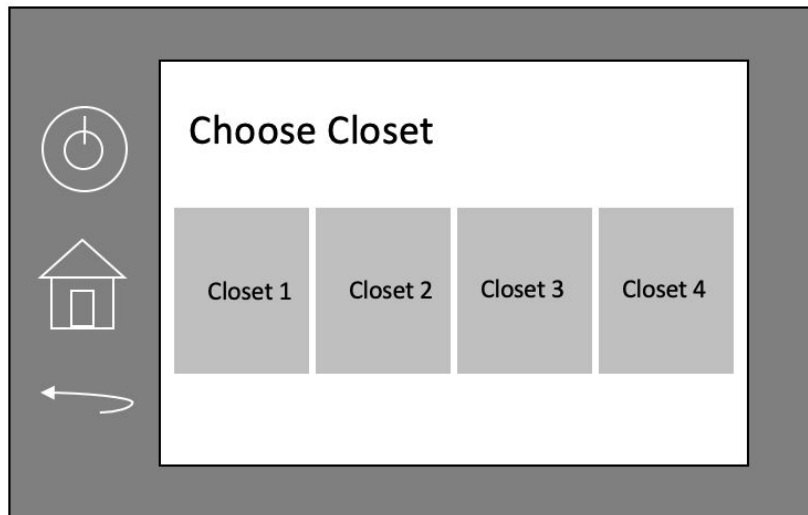
Users can confirm the items they want to buy and finalize the purchase in their cart.
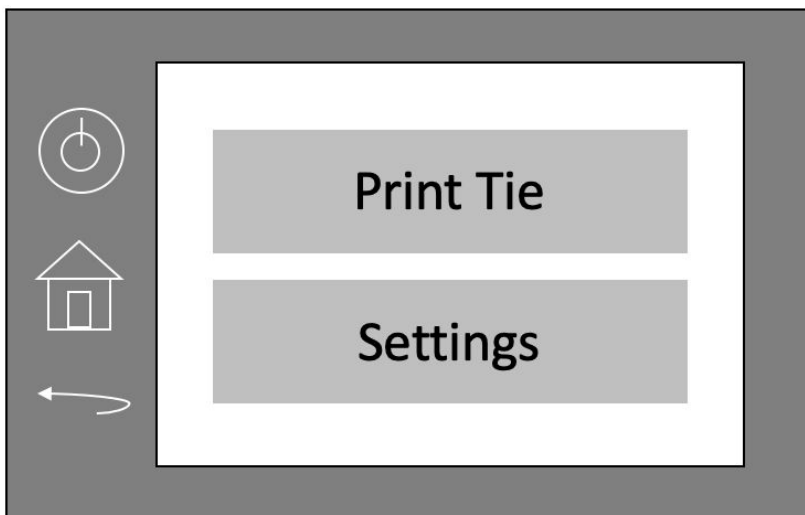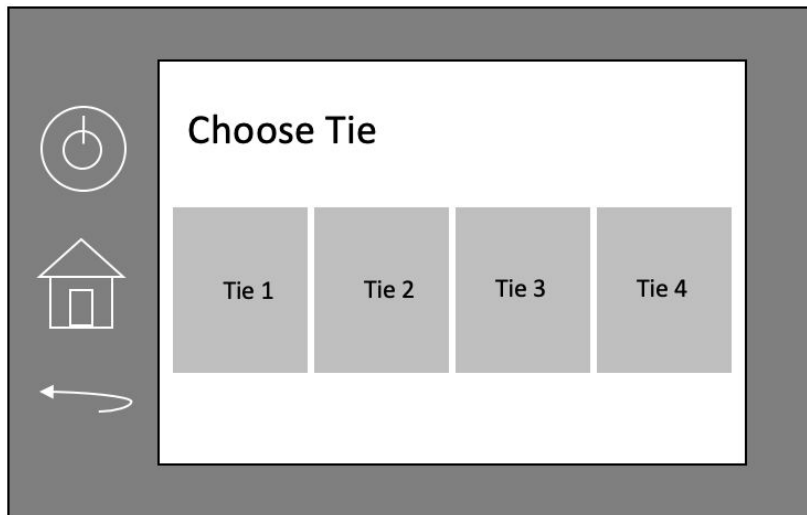

Then, when they finally want to print the design out, users can go to their printer and choose the 'Print Tie" option.
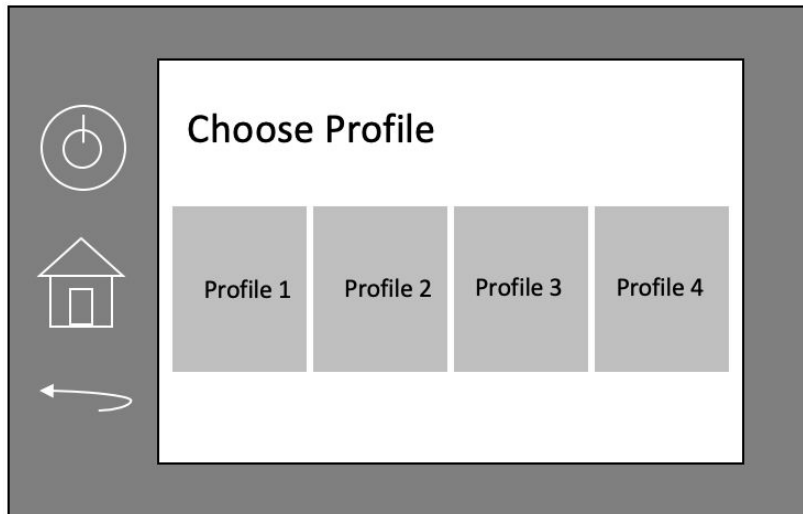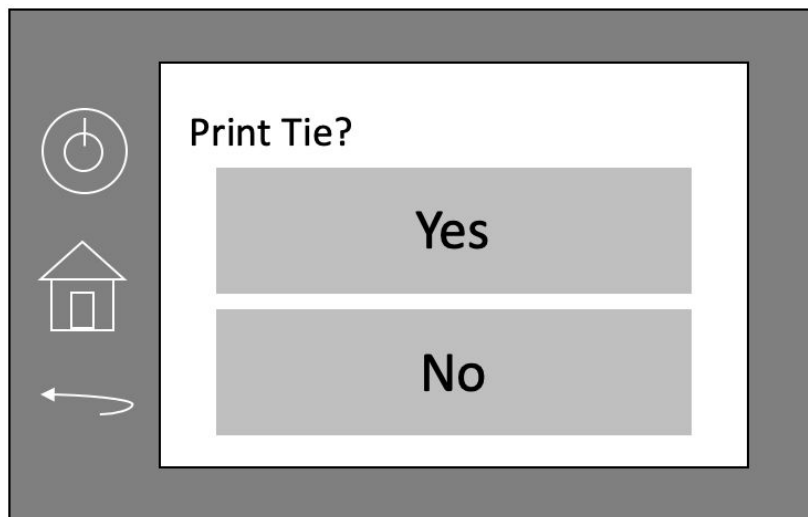
Then, users choose their profile, because more than one person may use the same printer.

Next, users choose the closet they want.

Choose Tie

| Tie 1 | Tie 2 | Tie 3 | Tie 4 |

After, users choose the tie they want.

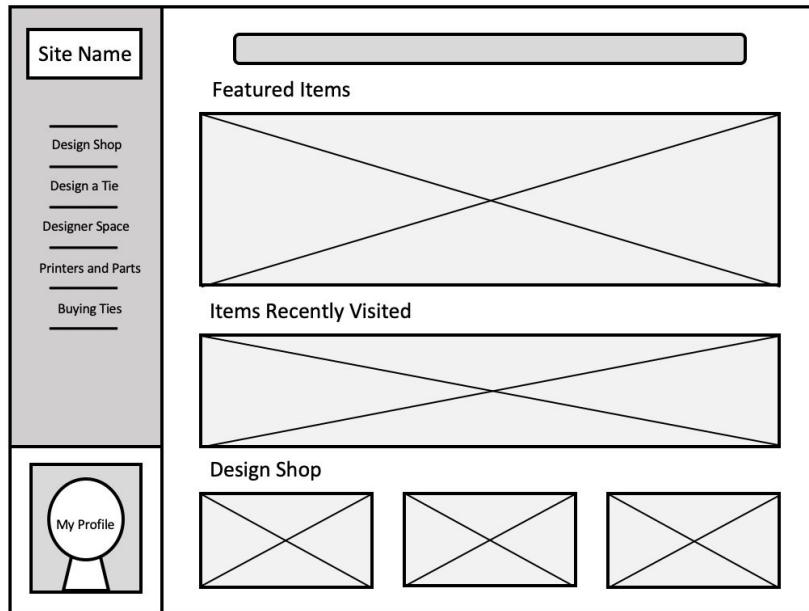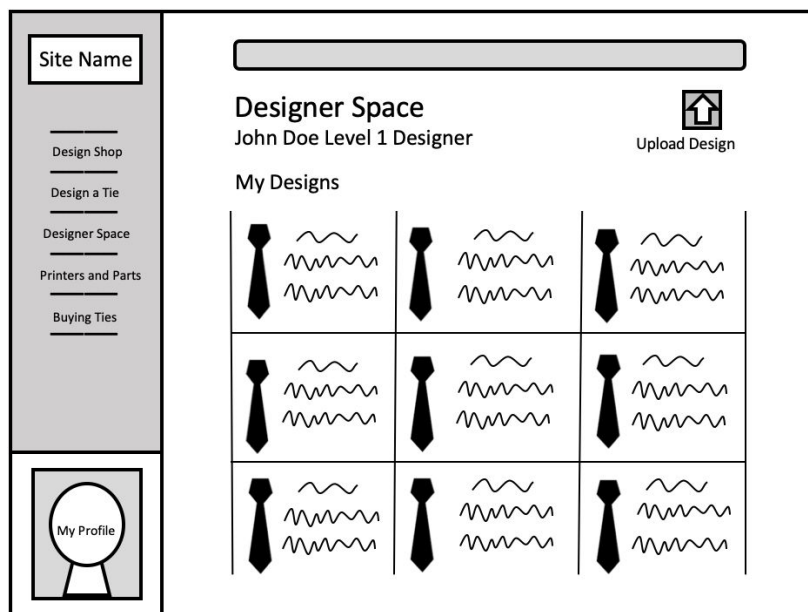**Print Tie?**

Yes

No

Finally, users confirm that they want to print the tie.

- Tie Designer
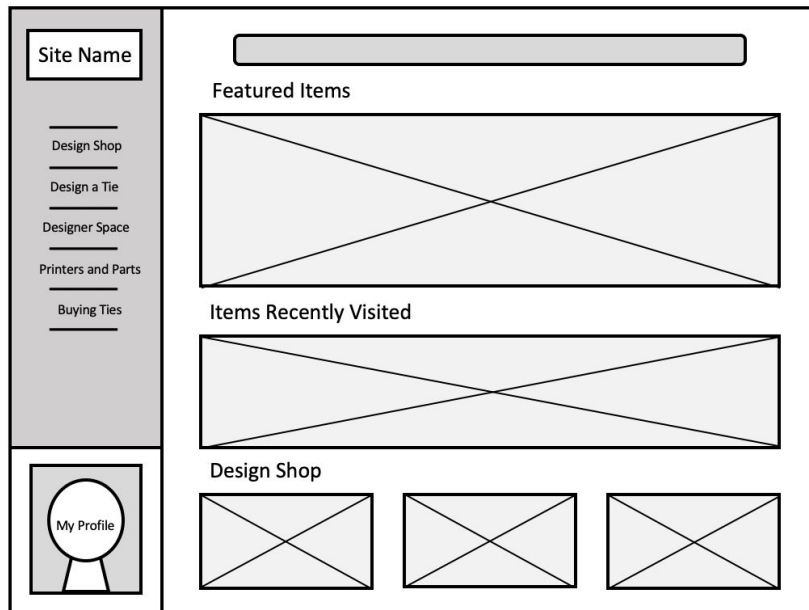

Designers go from the main site to the Designer Space.

In the designer space, they can upload their tie designs and then submit their design to the store.

Scenario Storyboards

Rob has his tie printer set up and now goes onto the website to look for designs that could gain the favor of his students.
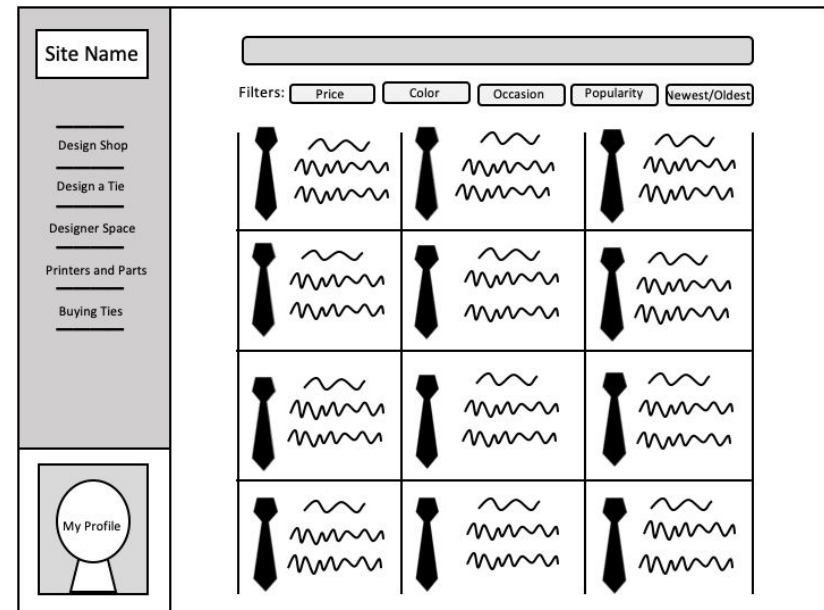

Rob Timothy

Rob Timothy wants to easily find a tie that will be popular with his students that will also be a good investment.

He navigates to the tie design shop to find ties that he thinks his students will like. To help with this, he uses the filter at the top to find the most popular ties circulating the store at the moment.
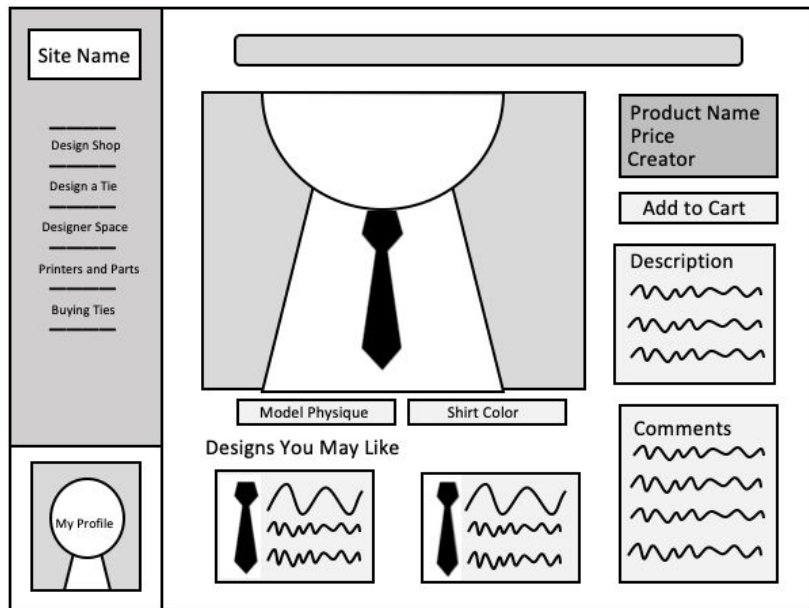
He finds a few ties he very much likes and adds them to his cart. Rob is now ready to check out.
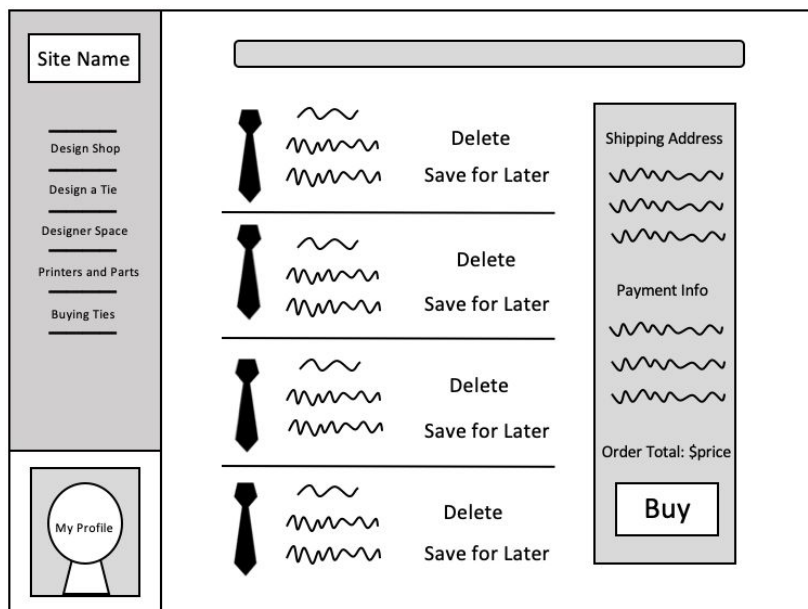
Rob is happy with his picks and goes to his cart to buy them by clicking on his profile, which will have a drop down menu. After he puts in his information and clicks "Buy," he gets to use those designs for his ties.

Print Tie
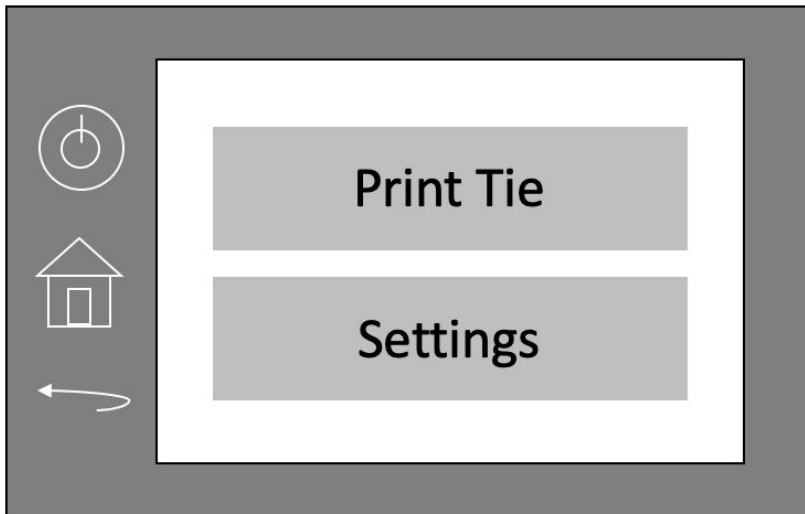
Settings

Next, he turns on his printer and goes to Settings to connect his printer to his account.

Settings

Add Profile

Delete Profile

Check Ink

Check Canvases
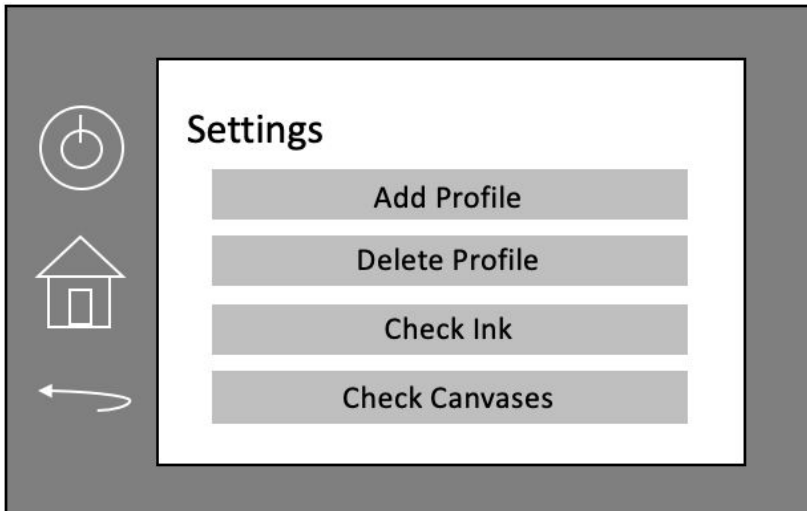
He clicks "Add Profile" to add his profile onto the printer one time so that he can access the closets and ties from his account forever until he deletes his profile from that printer.

Profile Username

Profile added.
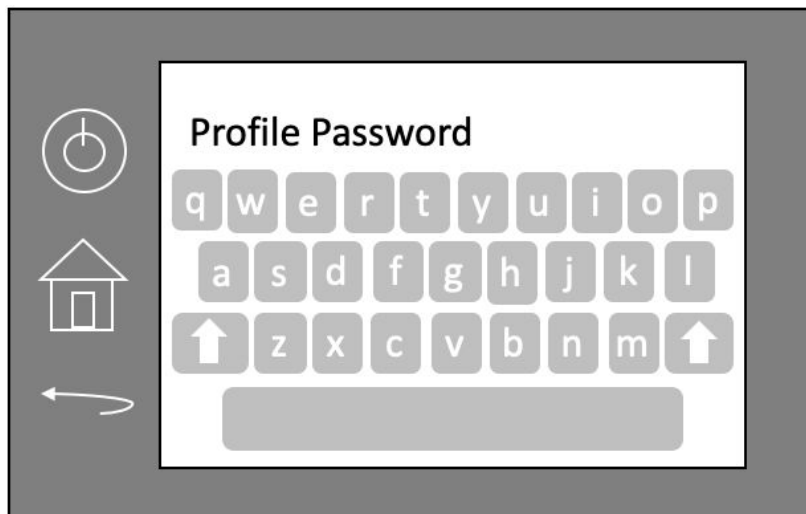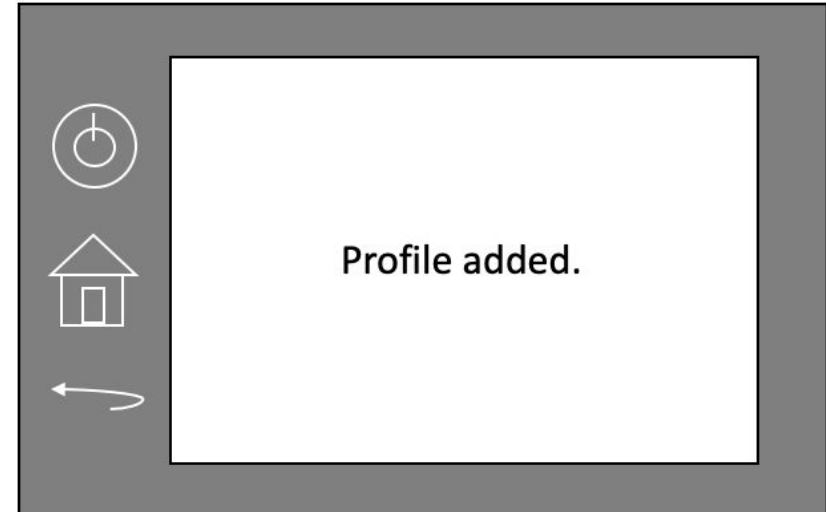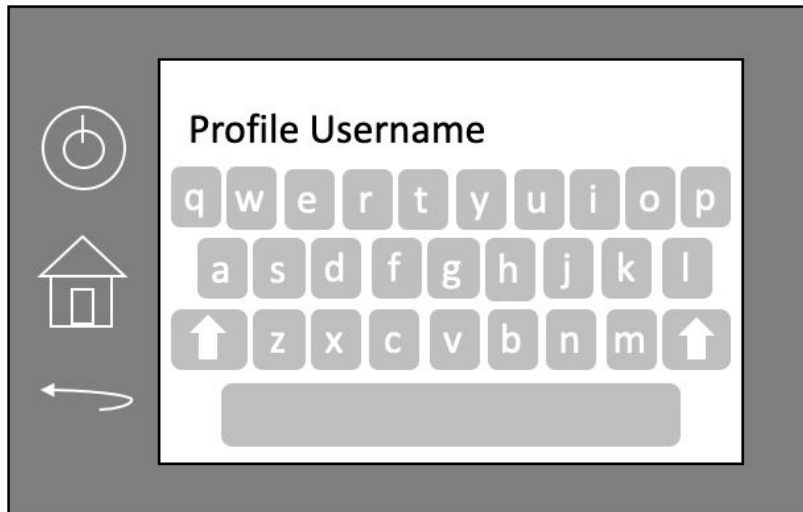
Profile Password

Rob then enters his username and password to connect his profile onto the printer that he shares with his wife. Now, both he and his wife can access the closets and ties linked to their own accounts.
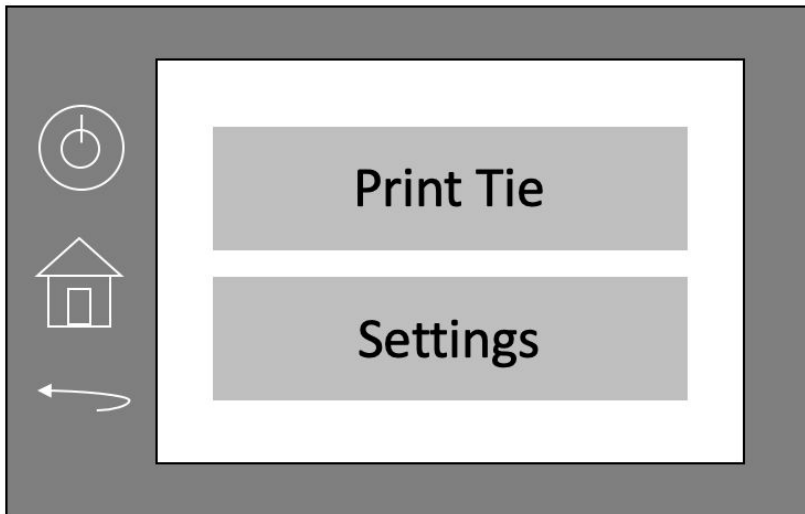
Rob clicks the home button on the left to return to the main screen. This time, he clicks "Print Tie."
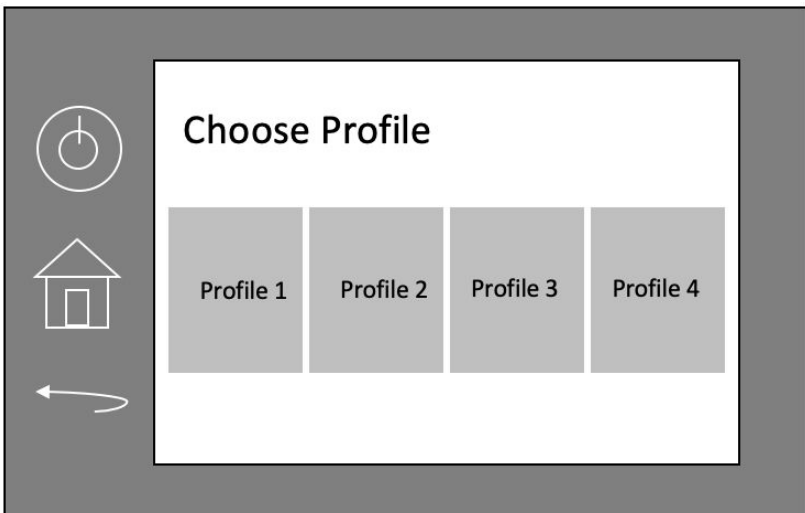
Rob will choose his own profile, not his wife's.
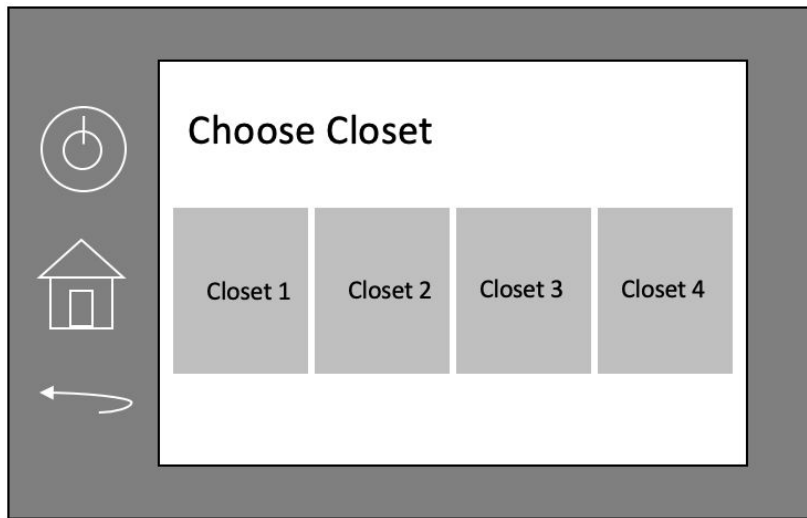
Rob will choose the closet that he has to keep ties for school in.
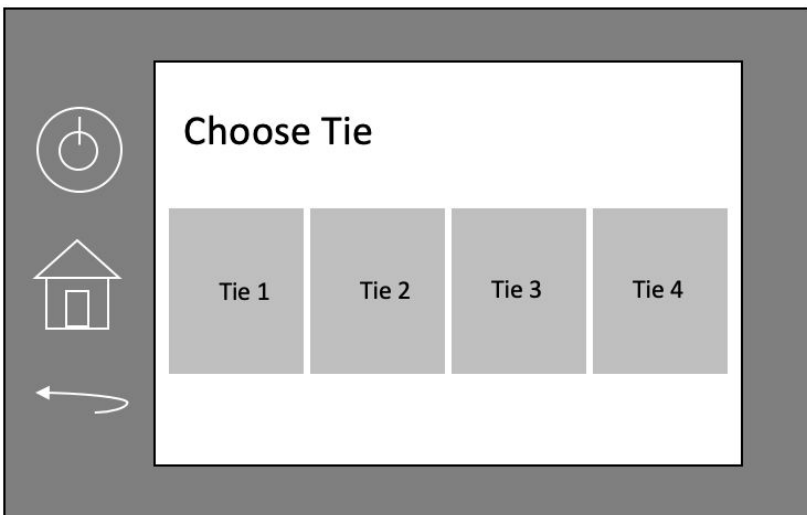
Rob will choose his newest buy—a custom Rick and Morty tie with Dan Harmon's and Justin Roiland's signatures.
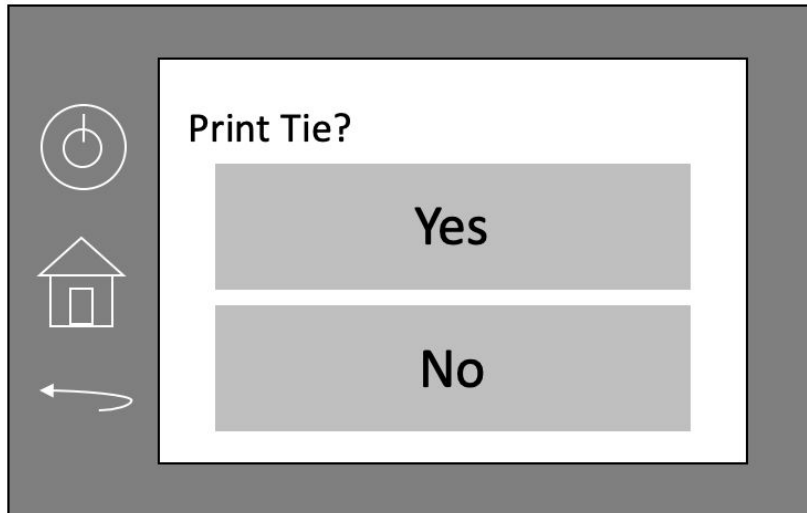
Finally, Rob makes sure that he has at least one canvas in the printer and confirms that he wants to print the design onto the canvas by clicking "Yes."

A few days later, Rob decides that he wants to change it up. He goes back to the Tie Design Store to buy a new tie and add it to his closet. Once again, he chooses the design he wants to print, and loads the old tie into the printer. Now, the printer will clean off the ink for him and iron the tie before printing the new design onto the tie. This way, Rob didn't have to buy a whole new tie, just an affordable design, and he also didn't have to dry clean or iron his tie by himself.

Tequila Anderson

Tequila Anderson wants a tie that no one else has to express herself. She paints a design onto a piece of while paper and takes a photo of it.
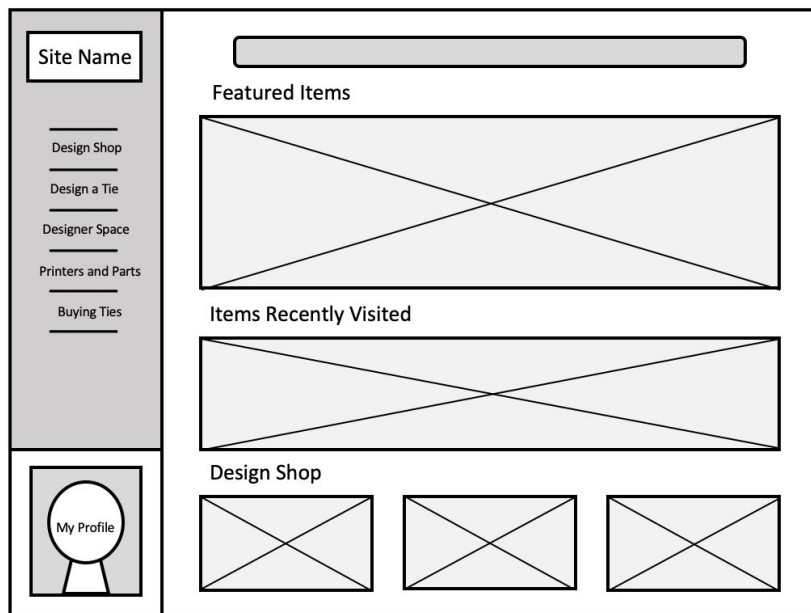
She starts off by going to the main site.
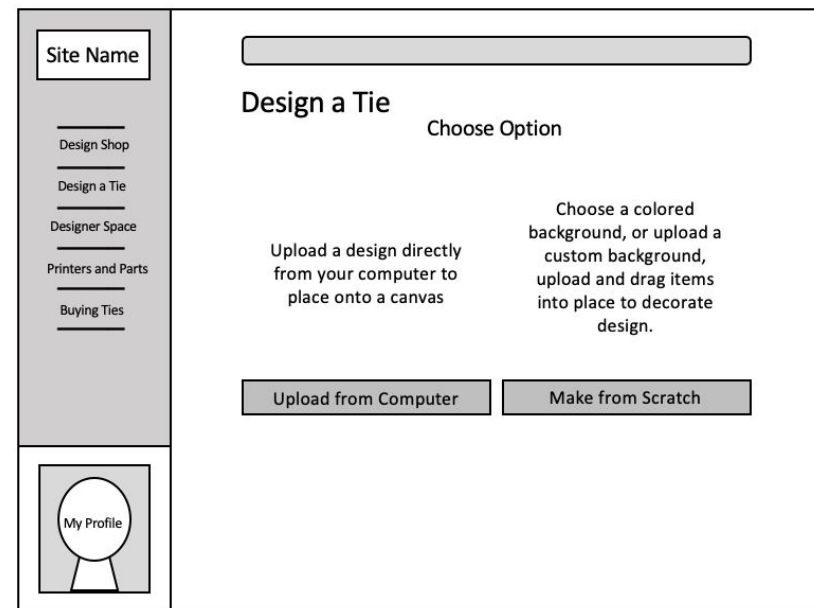
Next, she clicks the "Design a Tie" section and decides she wants to make a tie from scratch, so she clicks "Make from Scratch."

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Site Name

Design Shop

Design a Tie

Designer Space

Printers and Parts

Buying Ties

My Profile

Design a Tie
Make from Scratch

| Brush | Color | Image | Text |

Save Design

Site Name

Design Shop

Design a Tie

Designer Space

Printers and Parts

Buying Ties

My Profile

Design a Tie
Make from Scratch

| Brush | Color | Image | Text |

Save Design

Site Name

Design Shop

Design a Tie

Designer Space

Printers and Parts

Buying Ties

My Profile

Design a Tie
Make from Scratch

| Brush | Color | Image | Text |

Upload from Computer

Save Design

Then, Tequila goes through the multiple design options to make a one of a kind tie that only she will have.

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Harry Styles

Harry Styles wants people to see his work and wants to gain a following that will continue to admire his work and purchase his merchandise long term. He also wants to know what people think of his work so he knows how to adjust his creations for the future.
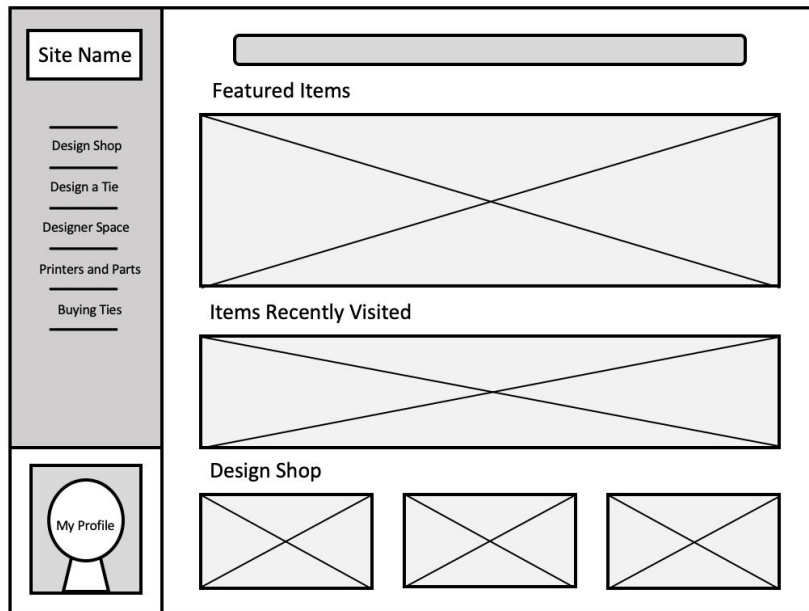
He starts off by going to the main site. Then, he goes to "Designer Space."
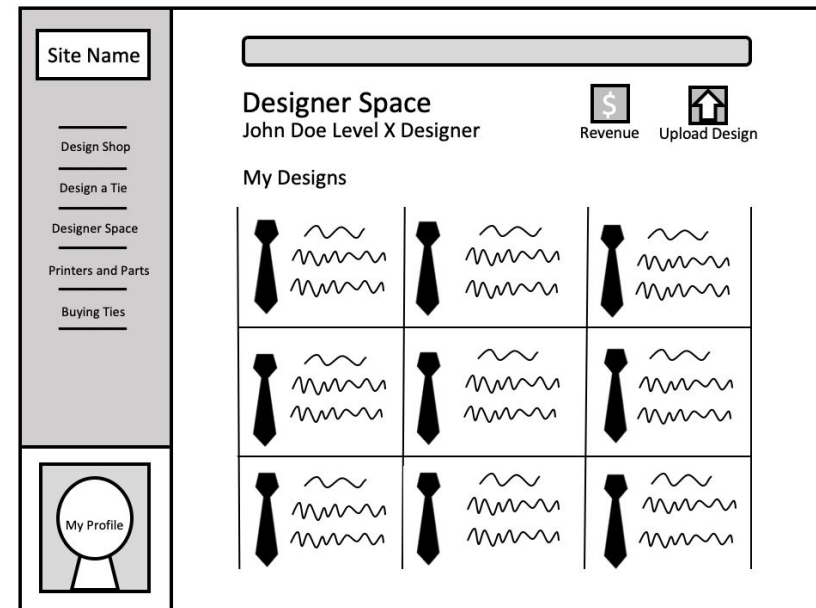
In his Designer Space, Harry Styles will see all the ties that he's designed.
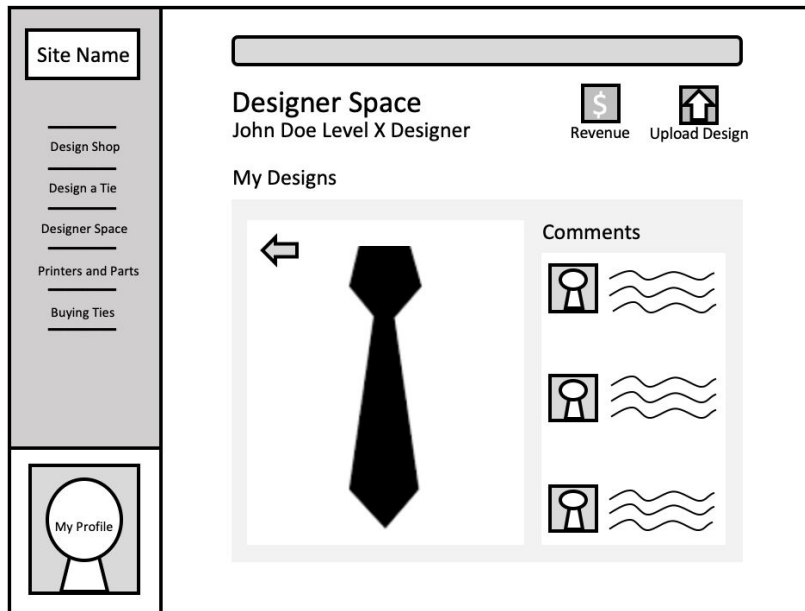
He clicks on a few of his designed ties to see what comments people have left. By seeing people's comments, he sees that people generally like his work, and advise him to create a design that has all his lovable characters together. Seeing this, Harry Styles gets to work creating his design on a third party app.
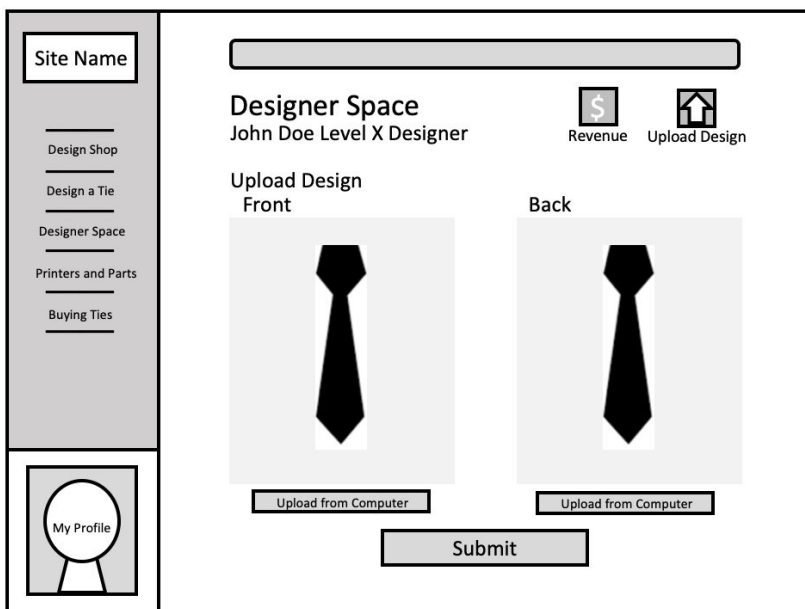
After creating and saving the design onto his computer, Harry clicks "Upload Design" to upload his designs from his laptop onto the site, and submits the designs to the store.
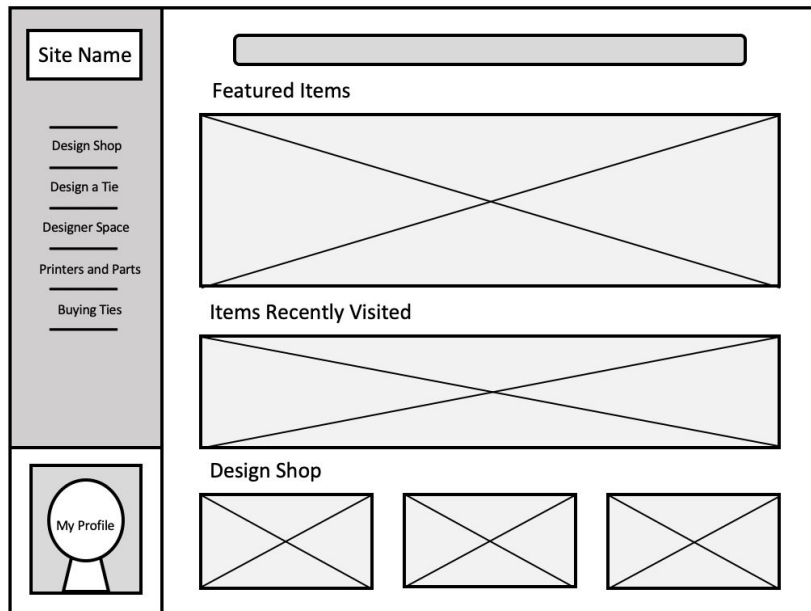
After many months of hard work and listening to constructive criticism as well as refining his design skills and continuing to put his work out, Harry has risen to become a Level 1 Designer. Now, his tie designs are often featured on the main site so that everyone who goes to the website can see his work right away.

How the Design Serves Persona Needs

Rob Timothy (User)

Find a tie appropriate for different settings ——

Tags such as "meeting" "party" are applied in the app to help Rob find the most suitable ones for different events.

Allowing more than one design on the same tie ——

Cotton tie with excellent quality & decomposable organic ink(thermal sensitive)：One tie can be printed on over and over

Garnering attention in return of investment ——

Variety of unique designed ties will eventually catch students eyes

Easy to navigate interface ——

Navigated step by step, easy for Rob to follow.

Tequila Anderson (User)

Allow user to express individuality ——

Free to design system & variety of existing designs

Able to be used in multiple situations or settings ——

Designs on one tie can be changed as user wishes, designs of different tags serve different situations

A good investment ——

There's many options from buying the printer and canvas

Durable ——

High quality reusable cotton tie

Harry Styles (Designer)

A platform where people can see/use his work ——

Users can upload their designs to the store where others can access it.

Users can add comments and add designs to "closet"\

Want to hear feedback for his designs ——

Designers can be followed

Want to gain a following that admires his designs ——

It only takes few steps to upload a tie, designers can use other drawing softwares that they are familiar to deal with pictures on ties

Should be easy to upload designs ——

Design Language

In the U&D document, our research result told us that users would like a "clean" interface. For detailed information, please go to the U&D analysis document.

Directions: Our directions consist of the following experience attributes:

Youthful & cool (focusing on the young)
- Round corners of notification tabs (Apple-wise)
- Avatar choices, such as Bitmojis on Snapchat
- Light color choices for the physical machine and the store such as white, yellow, baby blue, or pink to attract younger people

Functional software (Over simpler ones)
- Categorizing designs based on price, color, pattern, etc.
- Allowing more customization and manipulation, tweaks
- Design website and design store intertwined

Modern
- Using fonts such as Arial Rounded MT Bold. Nowadays, many tech companies go for rounded, easy on the eye, bold fonts for their products (ex. Google's logo change from a sleek design to a bold font)

An example look for the design section of the website. It has a pastel theme. The tabs are round and there are many visuals on the screen for the user. The avatar is at the lower left side of the screen. The interface may look simple at first, but the design tools allow any manipulation with color wheels and the slider.
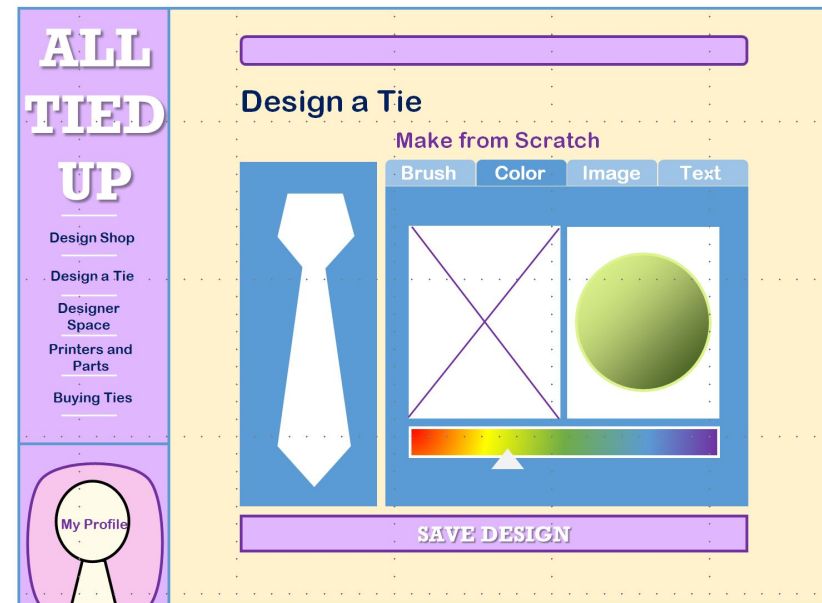
Premium & Metallic

- ○ The Printer will use metallic decoration (Main body will still be plastic, just to make it look metallic)
- ○ The Ironing part cannot use metal due to safety concerns. But we could make it transparent, letting users see what is going on inside the Ironing machine.
- ○ High quality cotton can be reused for different designs.
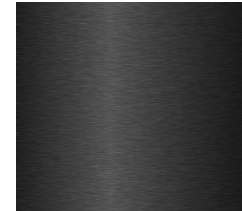
brushed steel surface
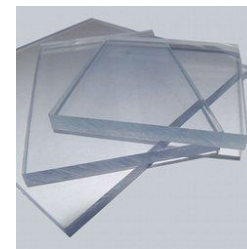
transparent plastic

Physical Harm - Hot Steam (The Ironing part)

- ○ Water tank of the ironing machine will be placed in between the printing and ironing parts so that heat generated during ironing won't affect the printing process.
- ○ We can have a pallet. Users can fix the tie onto the pallet and insert the whole pallet into the ironing and printing machine. And since the ironing machine is transparent, users can see clearly how it is going on inside. It will be much safer. Also it makes it easier to print something on a soft surface (ease of use!)
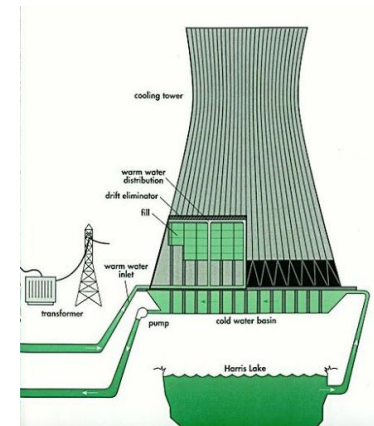
Water will absorb the heat generated by an ironing machine, just like how it works in nuke stations.

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Accessible and Ease of Use
- ○ Connected to LAN so that every device connected to WIFI can send tasks to the printer.
- ○ Providing a basic design tab for everyone(common users) allow them to design their ties easily on any platform (PC, smartphones, tablets)

A rubber wheel with a chock inside. It is both rubber and wheel!

Physical Harm - The machine itself
- ○ Rubbers under printer for safety
- ○ The 2 parts of the machine can be separated to be placed in different rooms if necessary.
- ○ Wheels for mobility, and handles at the sides for safely carrying it around.

PART 2: Form & Behavior

Specification

Digital Tie Printer

By Team Manhattan

Alex Pineda, Fiona Au, Nilsu Duran, Yifan Jiang, Ziyao Zhu

Introduction

About this Project

Digital Tie Printer is a device that prints out user-customized designs onto tie canvases. Users are allowed to choose a design for their tie from a preset number of designs or create their own design using their phone or computer. Users can upload the design to the tie printer, insert a blank tie that comes with the product, and print the design onto said tie. When the users grow tired of the tie, they can wash the tie using a special function in the printer and then print another design on it.

About this Part

With the help of the designers, interviewees, and many other resources our team finally came out a design that fits our first few needs.

In this form & behavior specification, we will introduce our product, *Digital Tie Printer* in three areas: the interface, the visual properties, and the physical properties.

Interface

Form factor and Physical behaviors

The printer is rather large with dimensions of L74.0cm x W55.0cm x H100.0cm. With a rather large form factor, the printer comes equipped with wheels for ease of use if the consumer wishes to relocate the printer. In our User and Domain Analysis, some of the experience attributes we gathered from potential user data were that the printer needed to be practical and it also needed to have a sleek modern look.

To attain the sleek modern look we minimize the number of moving parts. When the consumer is using the printer the only physical component that moves is the tray holding the tie. Any other movement is contained within the printer, such as the ironing and movement of ties within the printer.

Number and Functions of Key Screens For Website

The site has a total of 19 individual pages including pages that the user has constant access to. From the Homepage the user can visit six different key screens, Design shop, Design a Tie, Designer space, Printers and Parts, Buying Ties, and My Profile. The sidebar grants users easy access to all six key screens at all times if they wish to switch in between.

Website Navigation Map
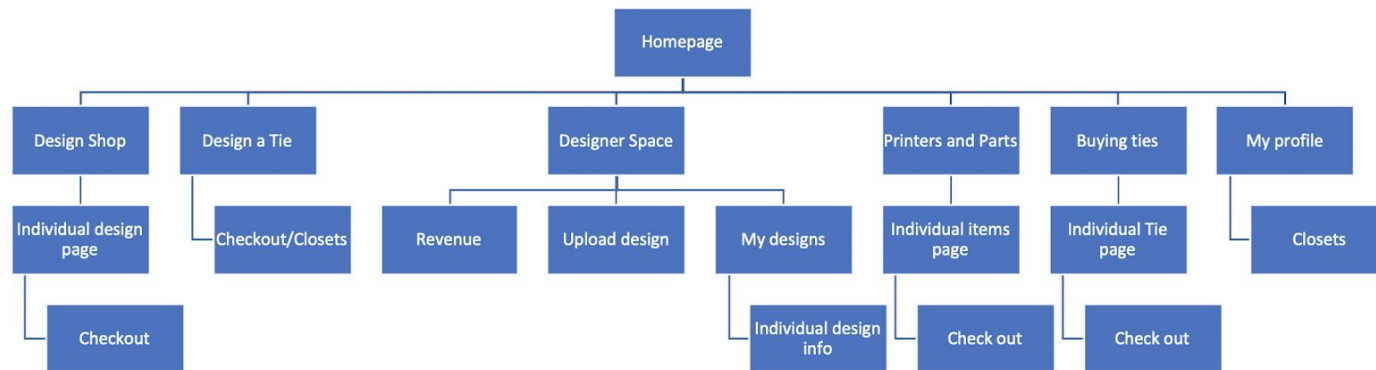
Constant Access to Search Bar and Side Bar (Design shop, Design a Tie, Designer Space, Printers and Parts, Buying ties, my profile)

Framework Overview for Website

Search bar that allows user to browse through designs and Artist

The **design shop** can be accessed through the side bar or at the bottom of the page. **Design a tie** is the page the user looking to make their unique tie. **Designer space** is the page dedicated to our designers and their catalogs. **Printers and Parts** as well as **buying ties** are shops for our physical products.

ALL TIED UP

Design Shop

Design a Tie

Designer Space

Printers and Parts

Buying Ties

My Profile

Featured Items

Items Recently Visited

Design Shop

Shows users popular Featured ties

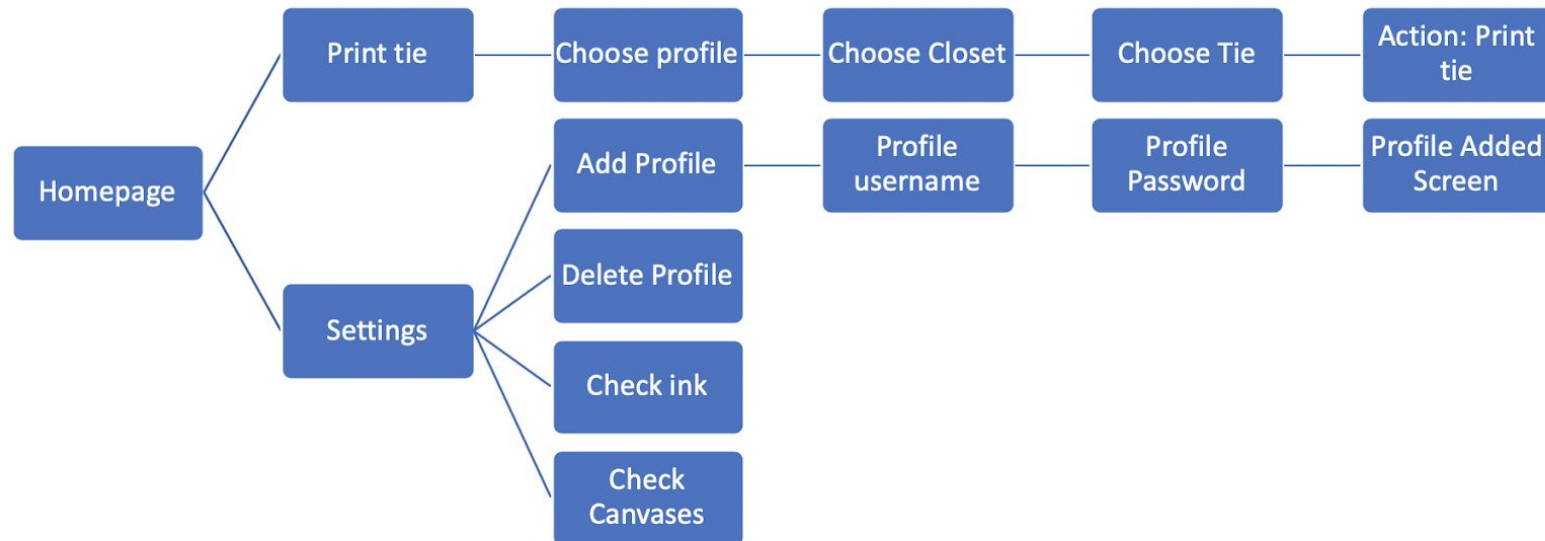Shows list of items the user had previously taken an interest in

Number and Functions of Key Screens for Printer
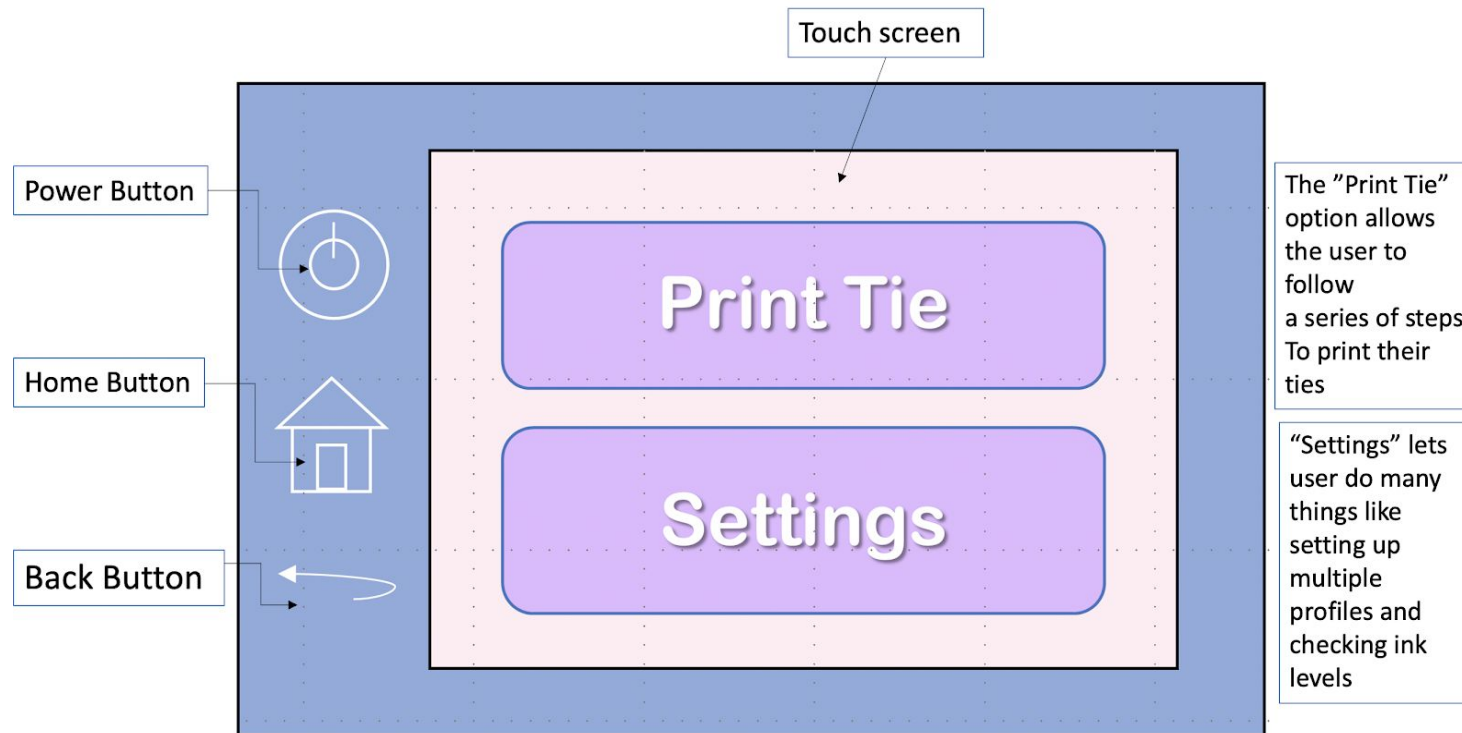
The printer has 14 different pages the user has access to, but there are no key screens the user always has access to. However, there are physical buttons that could be used to navigate through the printer. THe power button turns the device off and on. The Home button redirects you to the home screen no matter what other page you're currently in.

Printer Navigation Map

Framework Overview For Printer

Touch screen

Power Button

Home Button

Back Button

Print Tie

Settings

The "Print Tie" option allows the user to follow a series of steps To print their ties

"Settings" lets user do many things like setting up multiple profiles and checking ink levels

Data Objects relevant to Interface

Closets

- Storage Space for already owned designs

Web Design

- Easy to operate while still remaining practical

Visual Properties

Theme colors

The website interface, the printer interface, and the physical machine all use pastel colors. This ties with one of our experience attributes in our U&DA, youthful. We aim to attract younger users into using our product, and pastel/light colors seem to be popular among other tech products.
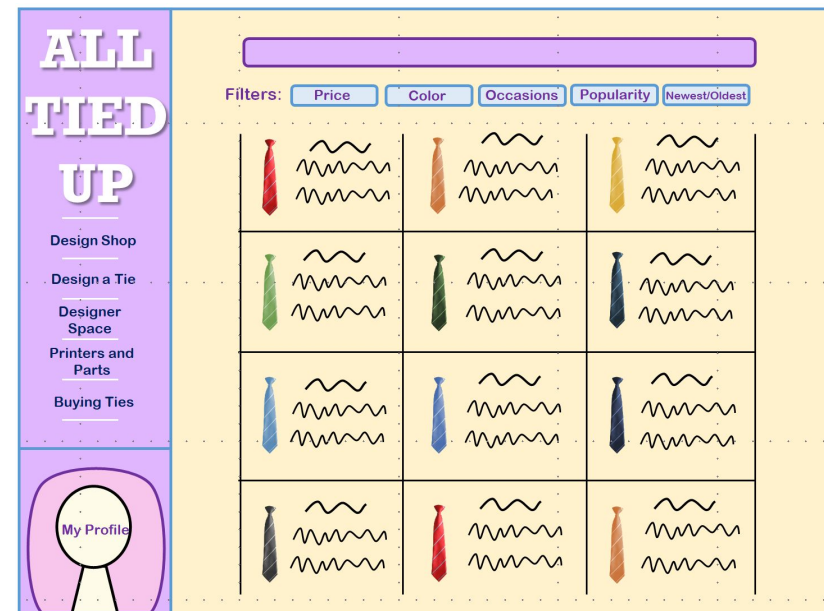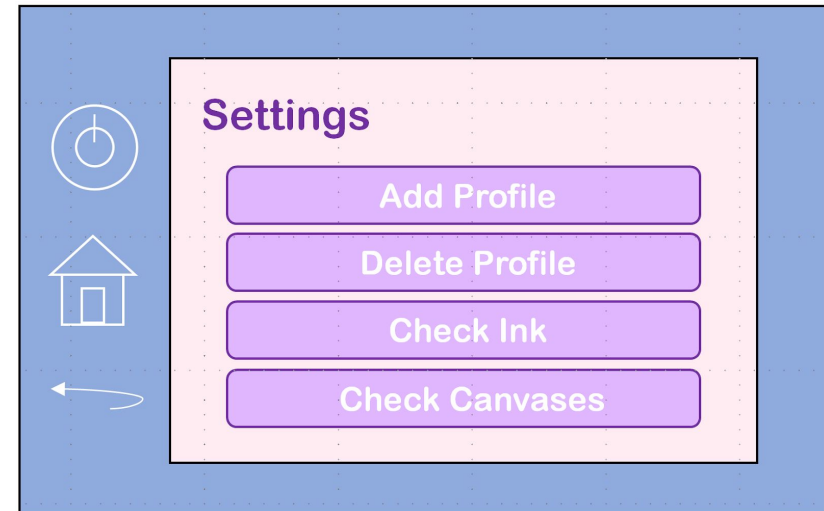
Round corners

Rounded corners are easier on the eyes than a rectangle with sharp edges because they take less cognitive effort to visually process.
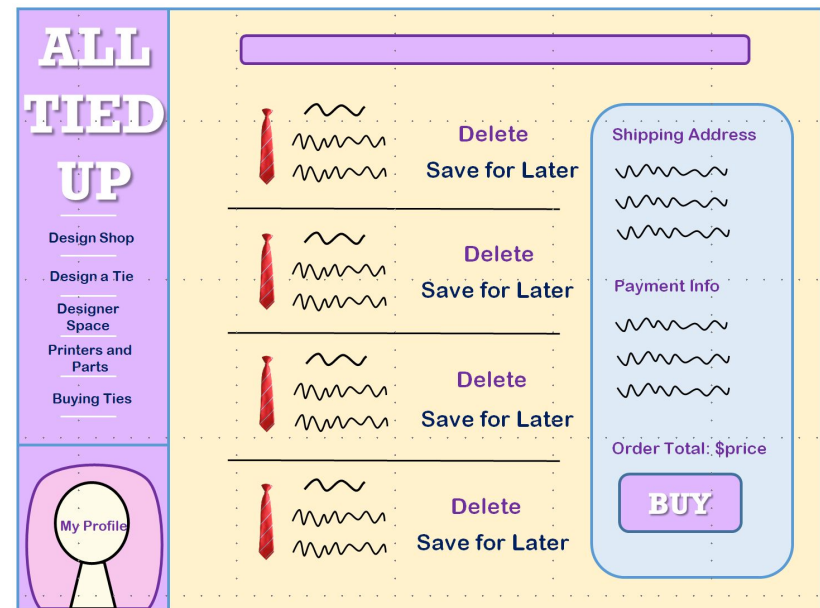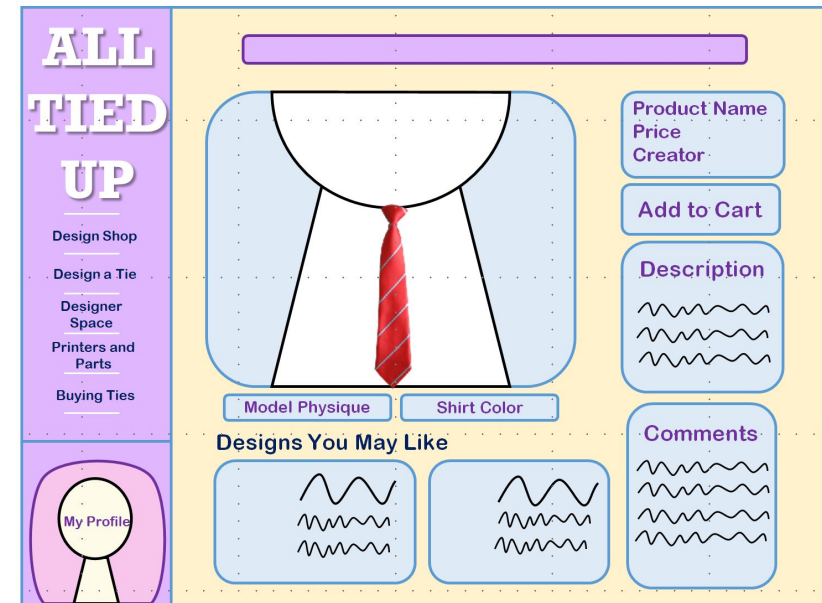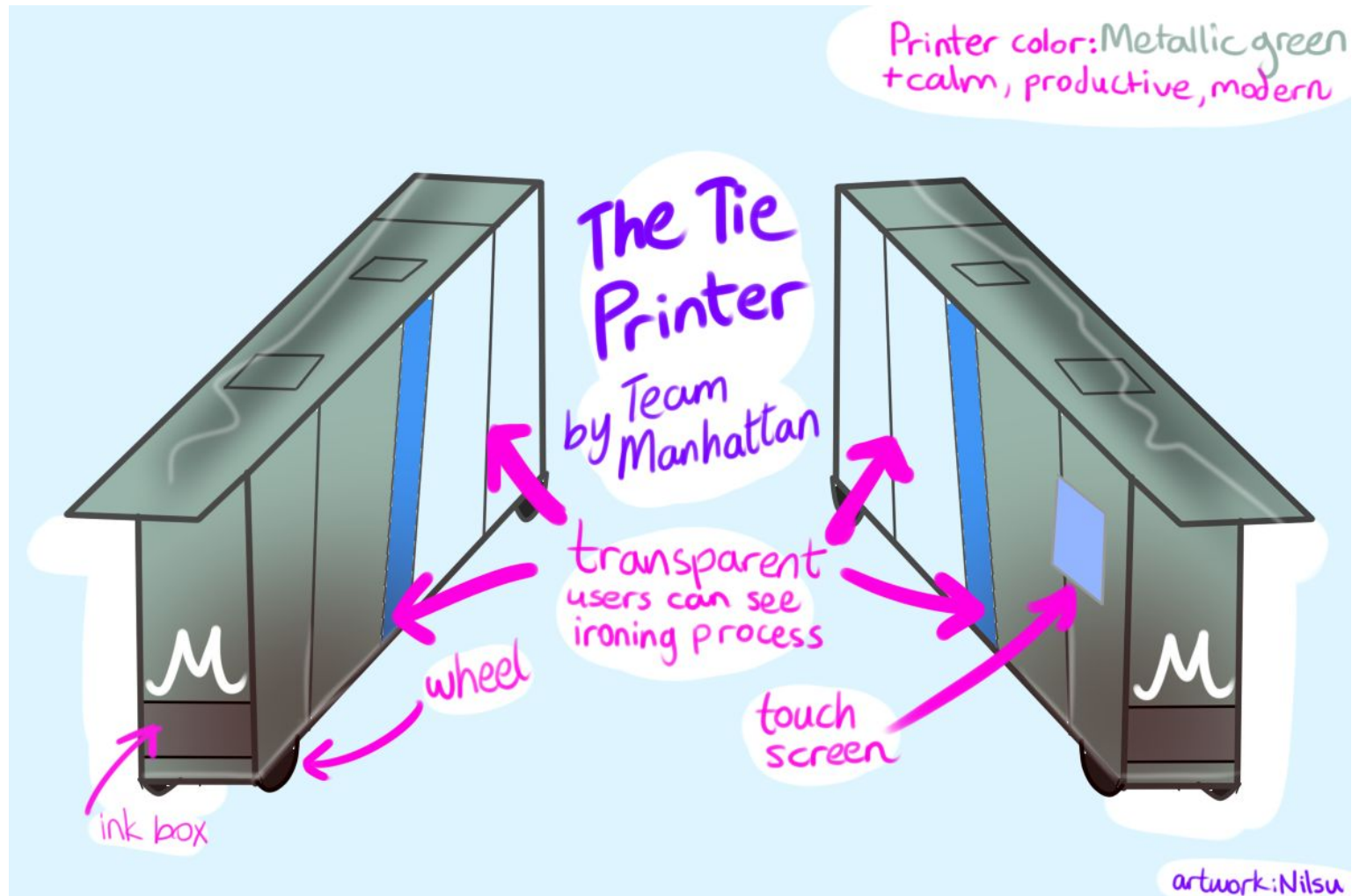
Easy to read font

The main font for the website and the printer interface is Arial Rounded MT Bold, which matches with round corners and is an easy font to read. The round and bold shape of the letters also give the youthful look we aimed to achieve.
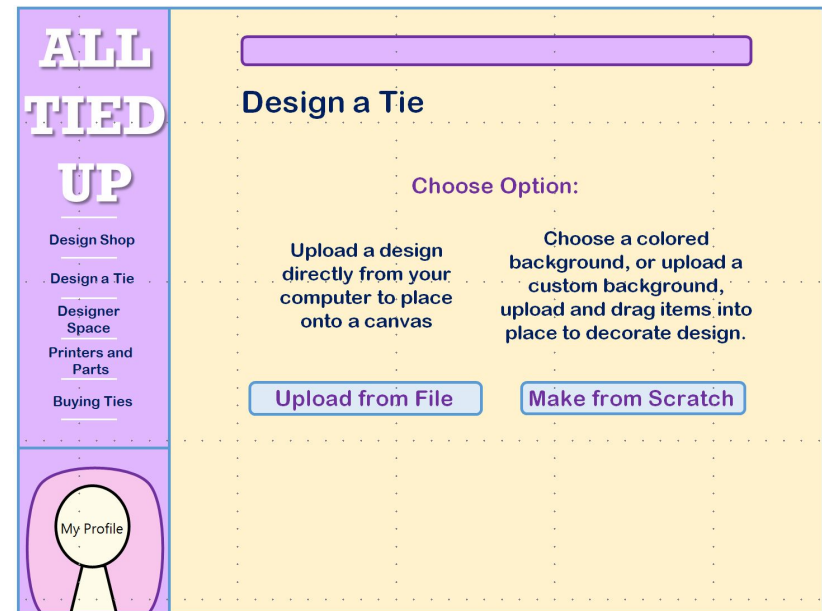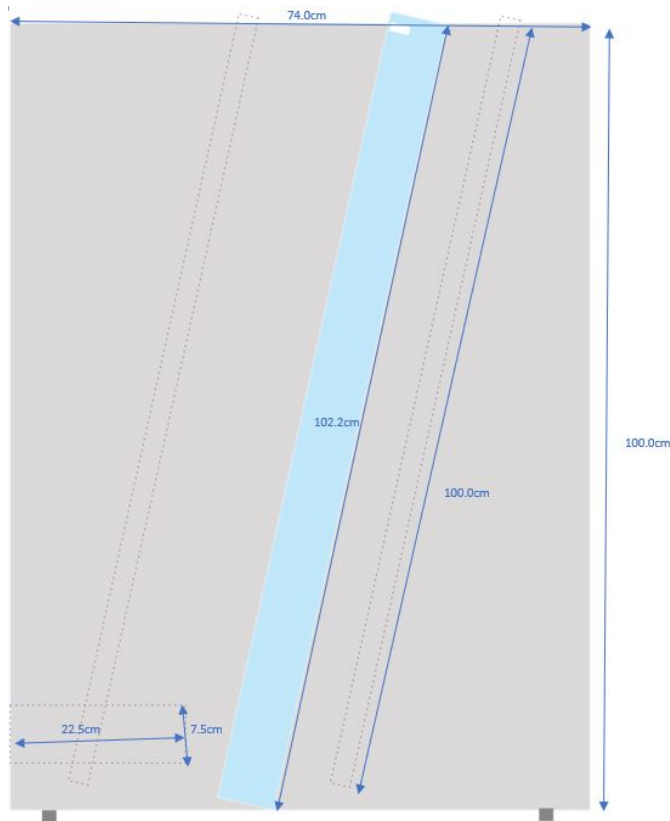
Template outlook for the printer

Physical Properties

*handles(grooves) will be on the left and right sides

*As mentioned above, the wheel and rubber are the same thing.

tie printer - left side of the whole machine, the whole surface of this printer is made by brushed steel. Inside is a printer that can print on the tie from two side. The screen and ink box are also in this left part of machine.

water tank - stores water needed for ironing machine. This part is the connector of printer and ironing machine. It is made by transparent plastic. On the top of this tank there is a groove for users to grab. The cap to refuel is also on the top of this tank.

ironing machine - right side of the whole machine. the whole surface is made by transparent plastic: users can see the process inside.

74.0cm

102.2cm

100.0cm

100.0cm

22.5cm 7.5cm

Ink box - a specially designed ink box. the outside surface of this ink box is also brushed steel.

tie plate - tie plates are inserted in this two places. user can use one plate to print and another to iron at the same time.

plug - it is a safe one.

42

handle - the part that users hold when inserting and pulling out

plastic board - effectively blocks heat and steam

plastic bar - users fold the tie and suspend it here

plastic plate - main body of the plate

Manhattan tie - tie that designed by Team Manhattan. There are 6 soft magnets inside each tie, which help when printing and ironing and will not affect users' experience when wearing.

metal bars - helps to fix the tie onto plate. Soft magnets inside tie should be fixed here.

guide rail - helps to insert the plate to machines properly

11.0cm

80.0cm

75.0cm

100.0cm

15.0cm

43

screen - a touchable screen. by clicking on the outside steel layer, users can activate this screen.

cap - the cape of water tank

74.0cm

15.7cm

13.0cm

16.5cm

18.2cm

16.5cm

55.0cm

ink box -the ink box

tie plate- the tie plate
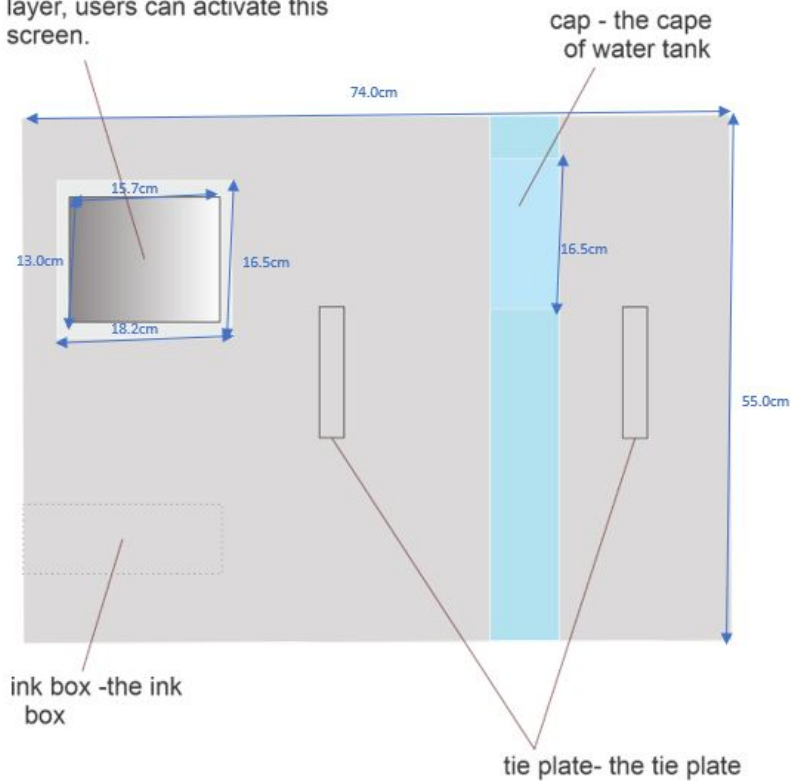
ink box - an exact cuboid, both of the side faces are squares

no handle to pull out this ink box, but users can send command with the screen to pump it out

Manhattan ink - special ink developed by Team Manhattan, the organic ink will fade after heating

22.5cm

7.5cm

6.6cm

11.0cm

guide rail – helps to insert the ink box to machines properly

44

2.5cm

37.5cm

150.0cm

Manhattan tie - a white tie designed by Team Manhattan. made by high quality cotton

soft magnets - magnets inside the tie. it is soft to provide good user experience. these magnets are useful when ironing.

37.5cm

6.35cm
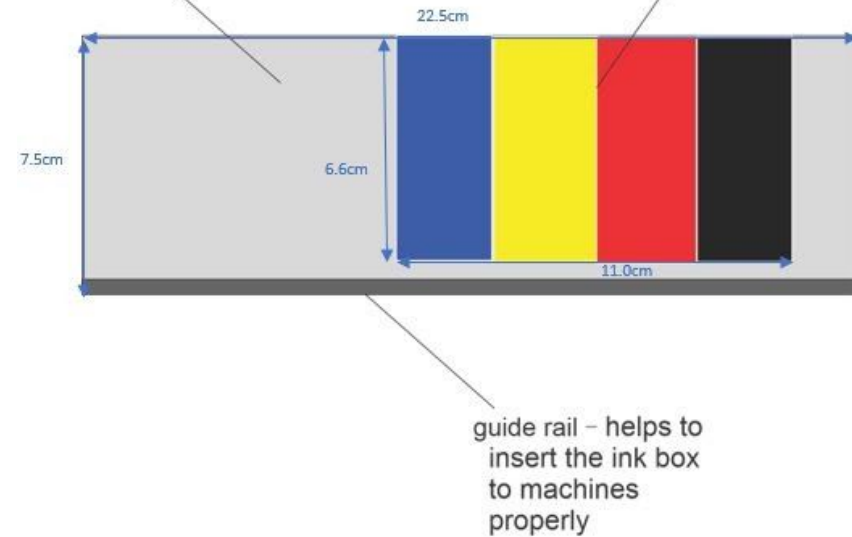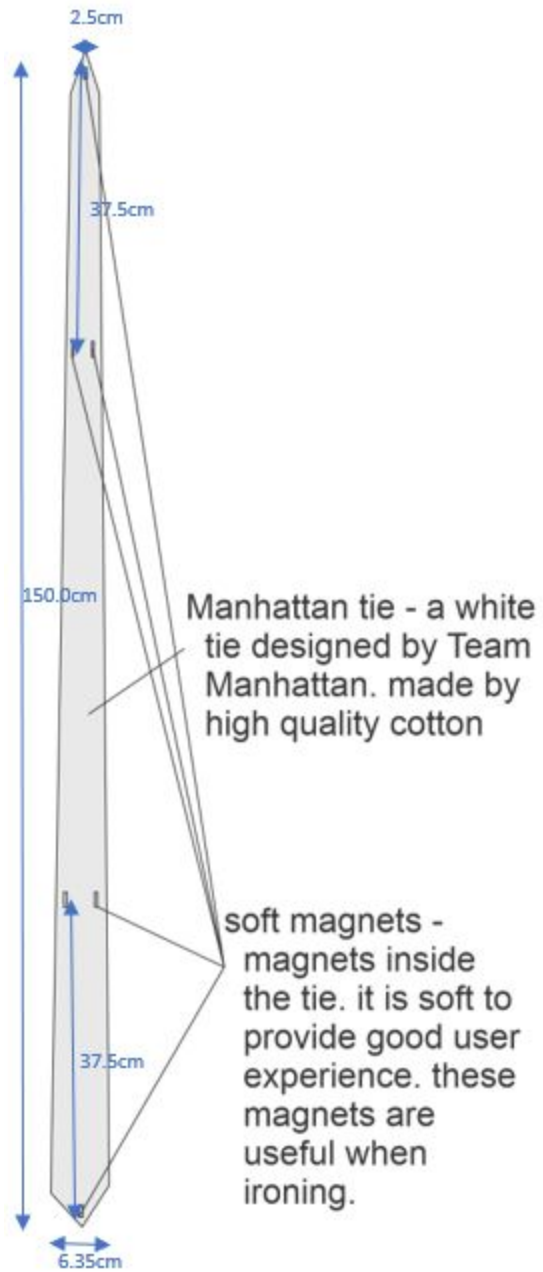
Part3: Colophon

Team Members :

Team Lead: Yifan Jiang

IxDG: Fiona Au

IxDS: Alex Pineda

VisD: Nilsu Duran

ID: Ziyao Zhu

Project Summary and Expectations by:

Yifan Jiang

Key Personas and Requirements by::

Yifan Jiang

Big Ideas and Major Anatomy by:

Fiona Au

Scenario Storyboards by:

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How the Design Serves Persona Needs by:

Nilsu Duran, Ziyao Zhu

Design Language by:

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F&B Specification Introduction by:

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Interface by:

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Visual Properties by:

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Physical Properties by:

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