Hello!

My name is Lyss and I'm a student at Cornell studying information science and urban studies. Foremost, thank you for your interest in this packet. Upon taking my first class in app design, I was shocked at how much I enjoyed it. I felt that I learned a lot and thought that this would be an interesting topic to share with others. The material in this packet is largely adapted from the first course I took on this subject. While I'm truthfully not planning a career as a UX designer, the skills I have learned from this area have been quite useful for me in pursuing my dream of doing research/getting a Ph.D.

No prior design experience is required– this packet solely focuses on the creative design process of app creation, excluding programming concepts. We will cover the life cycle of the human-centered design process, from user research (learning about your audience) to design (exploring design solutions) and prototyping (creating interactive prototypes of your design). Each step of the process is its own unit. At the end of each unit, there are questions for you to think about and/or answer about the concepts you've learned and activities to do as well!

Introduction

What are "apps"?

Apps, short for applications, are software programs designed to perform specific tasks for those who use them. Here's an excerpt on app history from Britannica[1]:

> "Mobile apps were introduced in the 1980s with the release of the first personal digital assistants (PDAs). However, such apps did not evolve far past the most basic and utilitarian of functions (e.g., clocks and calculators) until the 21st century, when smartphones evolved to run larger programs. Additionally, third-generation (3G) mobile networks made it possible to download files larger than e-mail and text message apps. Once smartphone manufacturers allowed downloads of mobile apps created by third parties in the 2000s a new industry was born. The resulting explosion in mobile app options for consumers revolutionized how people work, play, shop, and travel."

Platforms like Apple's App Store and Google Play allow people to download various apps.

What are Human-Computer Interaction (HCI), Human-Centered Design (HCD), and User Experience (UX)?

These are useful concepts for you to know as you embark on your design process:

HCI: "[This] is what happens when a human user and a computer system, in a broad sense, get together to accomplish something" (Hartson & Pyla, The UX Book, 2012). HCI combines elements from computer science, cognitive psychology, design, and ergonomics to understand the needs and behaviors of users. This interdisciplinary approach is crucial in creating user-friendly systems that align with human capabilities and limitations.

[1] (Source: https://www.britannica.com/technology/mobile-app)

HCI researchers and practitioners work on a wide array of technologies, from traditional desktop interfaces to modern innovations like touchscreens, voice assistants, and virtual reality. Prominent examples of HCI in action include technologies like Apple's Siri, a voice recognition system that allows users to interact with their devices using natural language. Another example is eye-tracking technology, which monitors a user's gaze to understand how they interact with a screen, enhancing accessibility for users with physical limitations and providing valuable data on user engagement and behavior.

In broader terms, HCI concerns itself with the user experience in any digital technology. This includes understanding user needs, designing functional and aesthetically pleasing interfaces, evaluating how well users can interact with these systems, and refining these systems based on user feedback and performance.

HCD: This is one design/problem-solving process that focuses on human needs, preferences, and behaviors when designing. Typically it's a four-step process that involves **user research**, **design**, **implementation**, and **evaluation**. It's also an iterative process, meaning that when we finish going through the cycle once, we go back and do it all again to understand the users better. We iterate so that we can continuously gather feedback and evaluate our design. Iteration also sometimes takes place within the cycle itself (ex. when you're in the process of implementing a prototype, you think of a new design idea, so you have to go back to the sketch board and iterate over your design idea).

UX/UX Design: Don Norman, the father of UX, states that it encompasses all aspects of a person's interaction with the company, its services, and its products.[2] For this packet, we can just think of UX as the experience a person has when interacting with your design. UX Design is a verb and a noun. You design (verb)– ideate, plan, change– things that affect the user experience (noun) (Briggs & Interaction Design Foundation). For example, think about a time when you were using a computer or a phone. How does it fit in your hand? How heavy is it? How easy is it to use? These are some factors that contribute to your experience.

UX Design(ers): The Job and Industry

The number of UX designers has grown immensely over the past few years, and the profession is forecasted to grow to about 100 million people in 2050. In their day-to-day life, general UX designers will be designing new products. They focus "on all aspects of a product's development, including design, usability, function, and even branding and marketing"[3]. You can also choose to specialize in one aspect of the process. I personally prefer to focus on user research rather than the whole process.

This is a really multidisciplinary field that I've seen multiple people shift to. Many people who work in UX don't even have a degree in UX or a related field. It's also possible to work in UX without having a degree at all. I think what's more important is that you work hard to develop your skills and have some projects to showcase.

Further Thinking and Activities

[2] If you ever have the chance, I highly recommend reading Don Norman's book *The Design of Everyday Things.*

[3] (Source: BrainStation https://brainstation.io/career-guides/what-does-a-ux-designer-do#:~:text=A%20UX%20Designer%20is%20focused,for%20the%20product%20and%20business.)

1. What are some other examples of HCI can you think of?
2. Why is it important to focus on either the user experience or the user's needs, preferences, and behavior in the design process?
3. How can HCD positively impact the overall user experience of a product or service?

✂ Activity: Redesigning a Paper Plane

Let's practice iteration through this activity. Consider the modifications we can make to improve the experience of flying a paper plane.

Baseline: Start by creating a baseline (standard) paper plan design. What was the experience like? Consider: did your plane fly smoothly? How did the outcome make you feel?

Iteration 1: **Make one change to the original design**. Fly the plane with the new design. Evaluate the effects of this change: did your experience improve? Get worse?

Iteration 2: **Refine the design**. Based on your feedback from Iteration 1, make another modification to the paper plane's design. Fly the plane with the new design. Evaluate the effects of this change: did your experience improve? Get worse?

Iteration 3: **Make final tweaks**. Make one final adjustment, fine-tuning aspects that show the most promising results in the previous iterations. Fly the plane with the new design. Evaluate the effects of this change: did your experience improve? Get worse?

Reflection: What does your new plane look like? How did it evolve over three iterations? What's the new experience like? Which is "better"? Is it the original or the new one?

Unit 1: User Research

✎ **Vocab**
- **User**: The person you're designing for and will use your product.
- **Pain Points:** Problems or challenges that users experience or find frustrating when interacting with the product.

1.1. What is User Research?

The first step is understanding your users: what are their needs and behavior? We'll conduct **research** on our **users** to find out :)

1.2. Ethics

Why is this important? In the HCD process, we continuously interact with people. Hence, it's important that we behave ethically so that we can build stronger relationships with those involved in the product and ensure the reliability of our findings.

Key Components:

Obtaining Informed Consent: As researchers, we must obtain explicit consent from participants, providing clear information about the research purpose, the data collection process, and how the data is being used. In turn, the participants will provide us with their explicit consent, usually through a form on paper, online, or verbally.

In a paper/online consent form, the participant will read the information given and sign. For verbal consent, the researchers will tell the participants the information and have them verbally consent.

When creating a consent form, use easy-to-understand and concise language and avoid technical terms. When creating a consent form online or on paper, ensure the font is easy to read (style and size-wise).

Things to Include in a Consent Form:

- ☐ Who you are (ex. name, contact info)
- ☐ What the study is about and why you're conducting it
- ☐ What they will be asked to do
- ☐ How long will it take
- ☐ A statement saying that participation is voluntary
- ☐ Potential risks or benefits to the participant (if any)
- ☐ Whether or not they're getting compensated
- ☐ How data is being collected
- ☐ How confidential data is being handled
- ☐ A signature and date box or a recording of their consent

!

Remember to ask participants if they have any questions before starting the session

Confidentiality: Users' identities and confidential/sensitive information should be kept anonymous and confidential, and data should be anonymized whenever possible (ex. use a pseudonym)! Some examples of information types include:

Type of Information	Examples
Identifying	Anything that can be used to identify someone: name, email, ID number, phone number, voice recording, photo of their face
Confidential	Any information that is intended to be kept secret and that people shouldn't have access to: grades, income, medical records[4]
Sensitive	Any information that the participant may be uncomfortable sharing

When you're thinking of collecting these types of information, consider whether it's really needed. Why do you need it? How does this information connect to the goals of your design? If you do need to collect that information, make sure that the information is only accessible to you (and your team) and that the participants know why you need the information.

1.3. Methods

We can use many different methods to conduct user research, but for this packet, I decided to focus on two methods: non-contextual interviews and autoethnography. You can do both of these methods or just one for your project. See the table below for a brief overview/comparison of the methods:

	Non-Contextual Interviews	Autoethnography
Participants	Selected based on criteria determined by the researcher	Yourself! Other participants can be included if relevant to your experiences
Location, Time, & Logistics	Typically conducted in controlled environments like an online meeting or an office, around 30-60 minutes	It can take place wherever or whenever it's just based on your own experiences and preferences
Data Collection Method	Notes taken on laptop or notebook: This is a more personable approach Audio/Video: This captures everything a participant is saying/doing, so no separate note-taker is needed Photos: This is a supplementary data collection technique	Observing, noting, and reporting on personal encounters or engagement with technology (Lucero et al. 2019)
Materials	Interview guides, consent forms, recording devices (if any)	Your personal notes, journals, or documents of your lived experiences

[4] Remember that things that are considered confidential often vary from one's culture!

Interview

Contextual interviews are a great way to gather information on users in the context of where the interaction will take place. For example, if you are designing an app to improve students' experience at the dining hall, you would interview students there. For this packet, I will discuss non-contextual interviews for flexibility reasons.

Planning/To-Do List:

1. **Define the research objective:** Think about what the goal of the interview is. What is your objective in the interview?
2. **Identify participants:** Who will be the participants and how many of them will there be? Some ideas of potential participants include potential users, other people who are impacted by the product, and subject-matter experts.
3. **Prepare interview questions:** Create questions that align with your objectives. See the table below for information on types of questions to avoid:

Type of Question	Information	Example	How To Avoid
Short-Answer Questions	These can be answered in 1-2 words	Yes/No questions	Use open-ended phrases like "Tell me about.."
Leading Questions	These guide and bias participants toward a particular answer. This includes assumptions that might not necessarily be true	"When you struggle with [X], what do you do?"[5]	Consider assumptions and ask questions in a non-biased way
General Questions	These questions ask the participant about typical activities, behaviors, or interactions they have in their life	"When do you typically have breakfast?"	Ask about specific events instead and follow up with questions that can give you specific details
Double-Barreled Questions	These are questions in which multiple questions are lumped together	"What kind of pets do you have and how many?"	Split up the question into multiple questions, asking them one by one

4. **Plan logistics:** Where will the interview take place and when?
5. **Create an interview guide:** Plan out what you'll do during the interview, how you'll collect data, and write down the questions you will ask.
6. **Conduct interviews:** Get the consent form first, then start collecting data.
7. **Summarize your notes:** This will be helpful when you start analyzing the data.

[5] This leads the participant to only think about challenges, not about successes– It assumes that the participant struggles with X.

Autoethnography

Autoethnography is a method where the researcher examines and reflects on their personal experiences and cultural context to gain insights into broader societal or cultural phenomena. You deeply reflect and critically analyze your experiences to understand how cultural norms, societal expectations, and historical influences shape them.

Planning/To-Do List:

1. **Define research focus:** Identify the specific research focus or topic you want to explore through your personal experiences.
2. **Gather personal data:** Collect relevant personal data, such as journals, diaries, photographs, or artifacts, related to your experiences and research focus.
3. **Reflect and self-interrogate:** Engage in self-reflection to recall significant experiences and emotions, considering how they connect to broader cultural or societal contexts.
4. **Interpret experiences:** How do cultural norms, historical influences, and broader societal factors shape your personal experiences?

Autoethnography and New Data:

If you'd like, you can also collect NEW data using the autoethnographic method. This method is primarily reflective, so you don't necessarily have to conduct new activities or interactions to gather data. If you choose to do so, there are various ways to do it.

For example, you can conduct informal interviews with others in the shared experience. Moreover, when researching information for this packet, I came across an interesting study where a researcher decided to write an auto-ethnography of his experiences living without a mobile phone:

> "I collected reflections in action consisting of biweekly handwritten and digital notes taken on a notebook or iPad, respectively. These reflections in action were complemented by emails, photographs, and tweets. In addition, whenever traveling I recorded field notes, which I tried to write on the spot, or as soon as possible after the event" (Lucero et al. 2021).

By immersing himself in this experience, he became the participant-researcher, closely observing and reflecting on his daily life without a phone. You don't have to go as far to live the experience as it may not be feasible for some of your ideas, but if it is, I would try it out to see if you find anything interesting :)

1.4. Data Analysis

✎ **Vocab**

- **Activity Notes:** These are physical or digital Post-it notes of data points. Each note should have one data point: a concept, topic, fact, or idea from your user research data.
- **Affinity Diagramming:** A general technique for organizing and categorizing data into clusters. It allows researchers to identify common threads, connections, and insights within the data that are then used to inform the design process.

Our next step is to analyze our data. Before we analyze anything, we need to create **activity notes** from the data we collected. Here are some examples and tips on how to create a good activity note:

- Data points should be a complete sentence, short and clear: 5 - 10 words
- The statement should communicate your observation/understanding of the experience
- You can paraphrase the data but keep the participant's perspective
- Include a participant ID to keep track of who said what

Examples: (Source: Devon Bain)

User 1 I wish I had more counter space	User 2 I occasionally forget to put items away	User 1 I eat almost all my meals at home	User 3 I eat lunch at work because it's convenient

If you don't have sticky notes to create your activity notes, that's okay! You can just use paper and rip it up into squares. You can even create sticky notes digitally with access to a digital device. I recommend using Google Jamboard, Miro, or even something like PowerPoint to create your notes because then you can also do the next step on those sites/applications.

After creating our notes, we can start **affinity diagramming**. See an example of one group of notes of an affinity diagram my group and I created for one of my projects below:[6]

Materials:

- ☐ A large empty surface (ex. wall, whiteboard, table, floor)[7]
- ☐ Your activity notes

Steps:

1. Start by forming groups of notes, such that each group has activity notes that share a similar topic or idea.
2. Continue creating groups until all activity notes have been placed in a group.
3. Start adjusting the group:
    a. Consider if some notes don't belong where they should be, if you can combine any of the groups or separate them into two groups if it's too big.[8]
4. Label your groups:
    a. write a caption above the group that represents the group's main theme. Double-check whether or not the notes in each group match the caption you've decided on.
5. Re-organize again!:
    a. Look at your diagram as a whole and tidy things up to visualize it better. Make sure things are aligned and in their proper place.

After you finish your diagram, you can extract insights from your created groups.

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[6] It's a little hard to tell, but the activity notes are different colors. This affinity diagram was created online using a platform called Miro for a project that aimed to improve the student experience in dining halls. My team and I used different colors for each activity note, so that's why we don't have participant IDs on the notes :)

[7] Unless you're doing this online, then you don't need this.

[8] There shouldn't be a miscellaneous group, try your best to put everything in a specific group!

1.5. Persona Creation

✎ **Vocab**

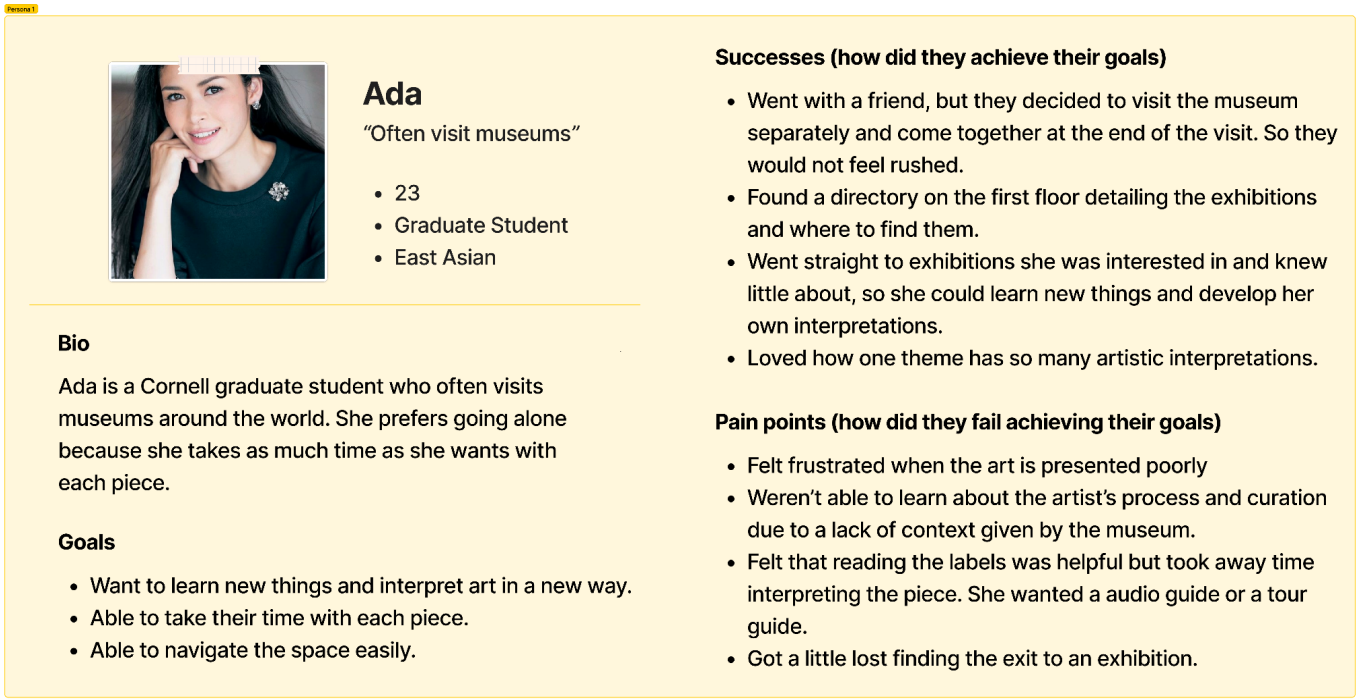
- **Persona:** This is a fictional and generalized representation of a target user group. They are created using the data that you've gathered during user research.

Creating personas can help you better understand and empathize with your users. Your personas aren't assumptions you have but are based on the data you've gathered in your user research.

Each persona should have the following[9]:

- ☐ Demographics (ex. name, age, occupation)
- ☐ Descriptor (usually a few words to represent the persona)
- ☐ Optional: Photo
- ☐ Biography (a paragraph explaining the broader context of the user, a bit about their background and experience, etc.)
- ☐ Motivations (a bulleted list of 3-5 goals—what does this persona care about most? What are they trying to accomplish?)
- ☐ Pain Points & Challenges (a bulleted list of 3-5 main pain points—these can be specific to the product or service they are using or frustrations the user has that could be solved by a new/improved product/service)
- ☐ Successes (a bulleted list of 3-5 main points—these are cases in which they were successful in achieving their goals)

Here's an example of a persona I made for a project I did on enhancing interactivity in a museum:



[9] (Source: OUTWIT*LY - https://outwitly.com/blog/designing-user-personas-in-5-steps/)

1.6. Further Thinking and Activities

1. How might the presence of an interviewer influence participants' responses during the interview process?
2. Why must we obtain informed consent for user research?
3. How can you ensure the confidentiality of participants' data and identities during the research process?
4. What are some other reasons it may be important or helpful to create a Persona?

✂ Activity: Fixing Interview Questions

Let's practice identifying and fixing bad interview questions.

Read the following questions and identify them:

Q1. What do you usually eat for breakfast?
Q2. How many classes are you taking this semester?
Q3. Do you prefer cooking healthy and nutritious food?
Q4. What did you eat for dinner and when did you eat dinner?

Next, choose one of the questions above and rephrase it in a way that changes the question so it's suitable but doesn't change the meaning.

Answers to the exercise are at the bottom of the page.[10]

[10] Q1. General | Q2. Short-Answer | Q3. Leading | Q4. Double-Barrelled | Answers for the second part may vary.

Unit 2: Design

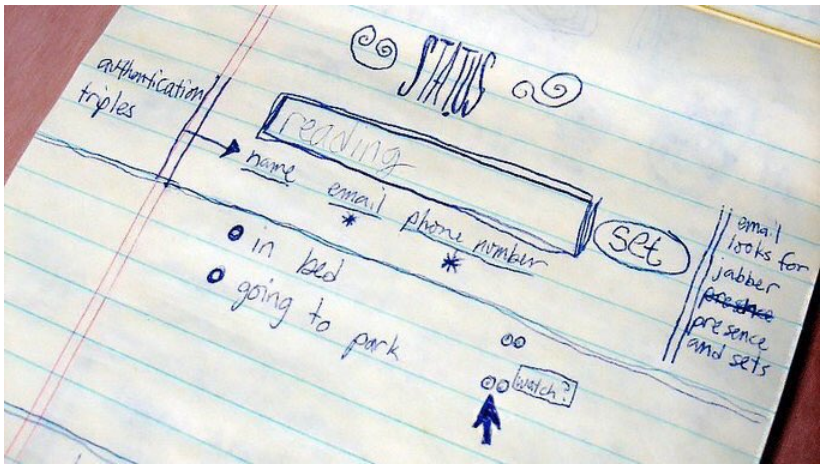
✎ **Vocab**

- **User Interface:** The part of a technological device that people can interact with to give commands and/or get information. Examples include buttons, menus, and screens!
- **Storyboard:** A set of drawings that communicates a story through images displayed in a sequence of panels that chronologically maps the story's main events.

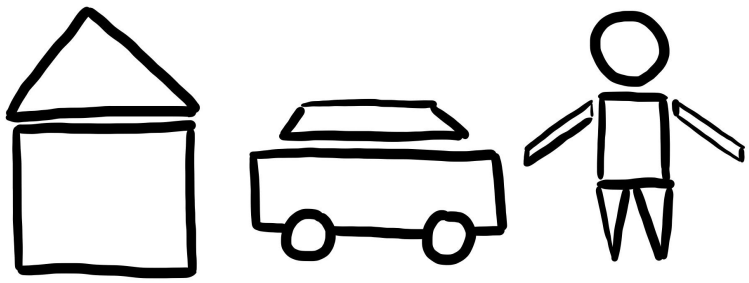
2.1. Sketching

"Sketching is at the core of our design process. We use sketching as a way to explore multiple design options quickly and efficiently and identify those ideas that work, and as importantly, those that don't. When we sketch, we're allowing for possibilities that were previously unimagined." - Todd + Associates[11]

Foremost, let me say that you don't need to be a talented artist to sketch designs! The point of the sketch is to visualize an idea, not create art. Take a look at Jack Dorsey's first sketch of Twitter in 2001:



All you really need to know is how to draw simple shapes and lines. These are the building blocks of user interface (UI) elements. You can combine shapes and lines to create objects! See the picture below as an example of how I combined shapes to create a house, car and person:



[11] (Source: Todd + Associates: https://toddassoc.com/the-role-of-sketching-in-the-design-process/#:~:text=%E2%80%9CSketching%20is%20at%20the%20core,possibilities%20that%20were%20previously%20unimagined.%E2%80%9D)

2.2. Storyboarding and Scenarios

You can now also put your sketching skills to use through storyboarding! You might be thinking: What does storyboarding have to do with design? Well, it's useful as it helps visualize and communicate the user's journey through a system.

Scenario

Before even drawing out your storyboard, you should plan out the steps/actions that will take place during the story. The scenario should be specific and correspond to a single user path. This means that there is only one possible course of action that the user takes. Here are the steps you should follow:

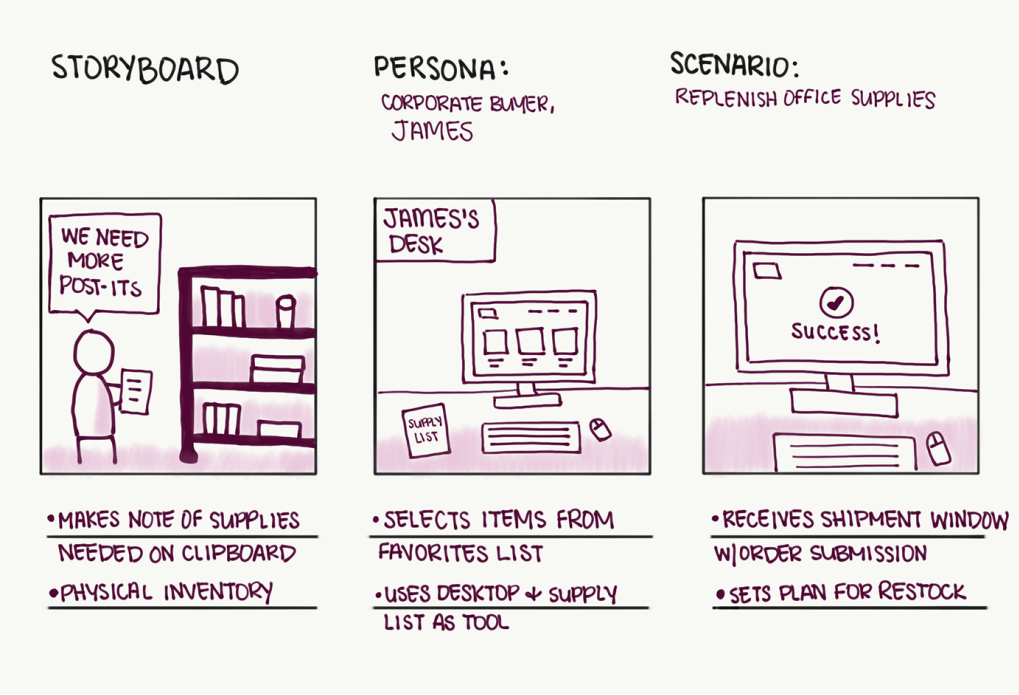
1. Define the scenario objectives. What specific user experience or task are you trying to address?
2. Define the user goal. What is the user trying to achieve in the scenario?
3. Set the context. When and where does the interaction take place?
4. Plan out the steps. What's the plot of the scenario? How does it start, transition, and end?

TIP ! You can transition between frames through triggers. This could include decisions made by the character, actions they take, emotions they feel, or even outside events.

Storyboarding

Now that you've planned out your scenario, you can start storyboarding. Start off by drawing your frames and then go from there!

After you are finished, write your captions. Your captions can be brief phrases or bullet points. The purpose of the caption is to describe additional context that you may not understand at first glance. If you would prefer, you can also write your captions as you go. See an example of storyboarding below:



Storyboarding doesn't have to be complicated. It always consists of 3 elements: your persona, the scenario, and the corresponding captions. You can have as many frames as you want in a storyboard, but you should aim to be concise and use around 3 - 6 frames.

Each frame should showcase a different action done by the user (most likely your persona) or the product. You don't have to be super detailed in your storyboard, but it's important to include the details you need, such as facial expressions that show how your user is feeling and the details of the product that they are interacting with. The scenario you are creating should be related to your app. For example, if you are designing a pizza delivery app, your scenario could be the user successfully ordering a large pizza.

2.3. User Interface (UI) Sketching

Usability Guidelines

Taken from Don Norman's book, these design principles help you create interfaces that are intuitive and functional.[12]

Principle	Definition
Visibility	When functions are easy to see and find, users are more likely to know what to do next. But when functions are hidden or hard to find, it becomes difficult for users to figure out how to use them.
Feedback	Feedback means giving information about what you've done and achieved so that you can keep doing what you're doing. Interaction design has different types of feedback, like sound, touch, words, or a mix of these.
Affordance	"Affordance" is a fancy word for the feature of an object that shows you how to use it. For example, a mouse button is designed in a way that makes you want to push it, which is how you click. When an object's affordances are clear, it's easy to figure out how to use it because it gives you clues about what to do.
Mapping	Mapping is about how things you control are connected to what happens in the real world. Whether a simple object like a flashlight or something complex like a car or computer, there's usually a connection between what you do and what happens. For example, when you press the up arrow on a keyboard, it makes the cursor go up, which is a good and clear connection between the control and its effect.
Constraints	Constraints in design mean setting limits on what users can do at a given moment. For example, think of a vending machine. The constraint would be the physical design of the buttons and slots. You can ensure that users can only insert bills into the designated slots, and they can only press the buttons corresponding to the available products.
Consistency	Consistency in design means making sure that similar tasks are done in the same way using the same elements. For example, if you always click the left mouse button to select things, that's consistent. Inconsistent design is when there are exceptions to the rules, like sometimes you click the left mouse button, but other times you do something else to select things.

[12] (Source: https://principles.design/examples/don-norman-s-principles-of-design)

Examples of Good and Bad UI/UX Design

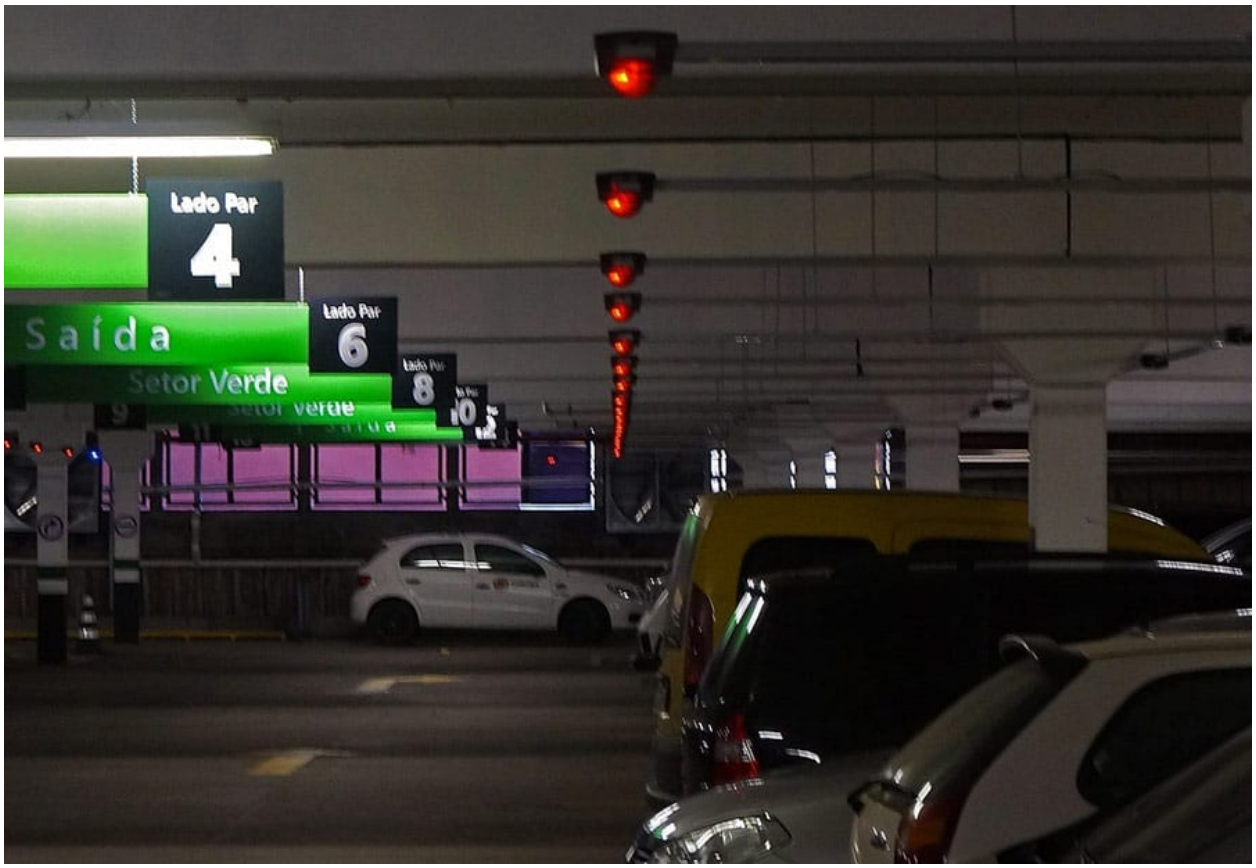
Bad UI/UX

Norman Doors
A Norman Door is any door that's confusing or difficult to use (ex. you can't figure out whether to push or pull). It was named after Don Norman! He talks a little bit about this in his book. See an example below:

This example represents a usability problem where the design doesn't match the user's expectations, leading to user frustration and errors. To improve the usability of Norman doors, you would add visual cues like labels to make it more obvious whether or not you should push or pull.

Apple Mouse
Although sleek, Apple's computer mouse is an example of bad design. The charging port is located at the bottom of the device. Thus, you can't use the mouse while charging it.

Indoor Ultrasonic Sensors in Parking Lots
This is a great example. Each parking space has these sensor lights. If the sensors detect a car underneath, they turn red. If there's no car, the light will be green. This makes the parking experience way easier.



Drawing UI Elements

As I mentioned, all you need to know how to draw are lines and shapes. With that, you can turn it into the following UI elements:[13]

- Lines - Text, Annotation indicators, Shading, Patterns, etc.
- Squares - Buttons, Elements, Containers, etc.
- Circles - Tap indicators, Left/Right controls, Icons, Zoom technique, etc.
- Ovals - Rounded-corner buttons, Speech bubbles, etc.
- Triangles - Arrowheads, Parts of multiple icons, etc.

Here are some useful links for you to check out:
https://m3.material.io/components
https://m2.material.io/design/layout/responsive-layout-grid.html#columns-gutters-and-margins

[13] (Source: https://uxdesign.cc/ui-ux-sketching-techniques-101-7e91d854ae3d)

Don’t worry if you can’t access those links. I also provided some images of common elements and tips on the next page. I also wanted to take this page to explain what UI elements are in deeper detail for those who might not be as familiar with apps.

Imagine looking at a machine's control panel, like a car dashboard or a microwave. This panel has various buttons, dials, and displays that let you operate the machine. This is like the user interface, or UI, for apps.

UI elements are like these buttons and displays but for digital devices like smartphones and computers. They are the parts of the app or website that you can see and interact with. Here are a few common examples:

- **Buttons**: Just like buttons on a remote control, these are areas you can 'press' (with a click or tap) to make something happen, like sending a message or opening a new page.

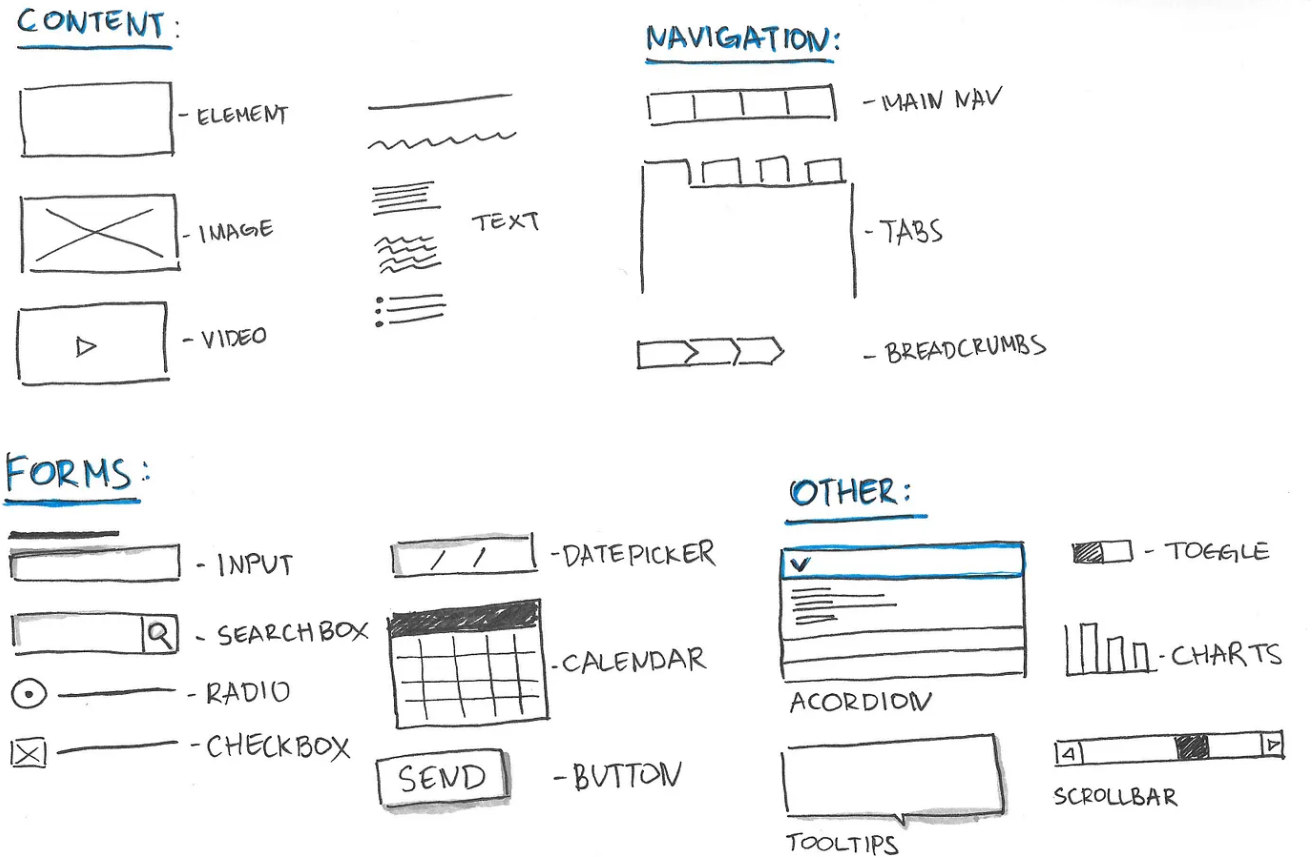
- **Icons**: These are small pictures that represent a function or content, similar to symbols on a road sign. For example, a trash can icon might be used for deleting something.

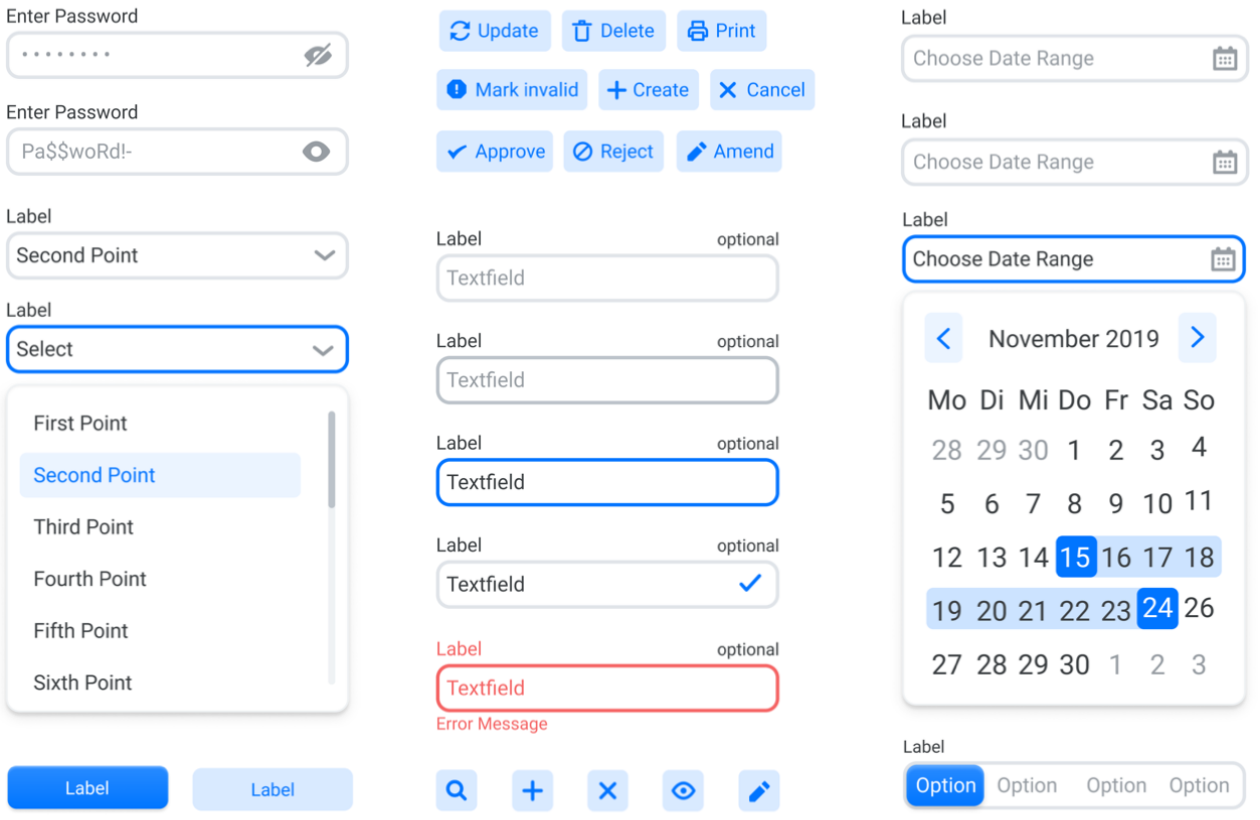
- **Menus**: Imagine a list of options in a vending machine. In digital interfaces, menus are lists that drop down or pop up, giving you choices like settings or different pages to visit.

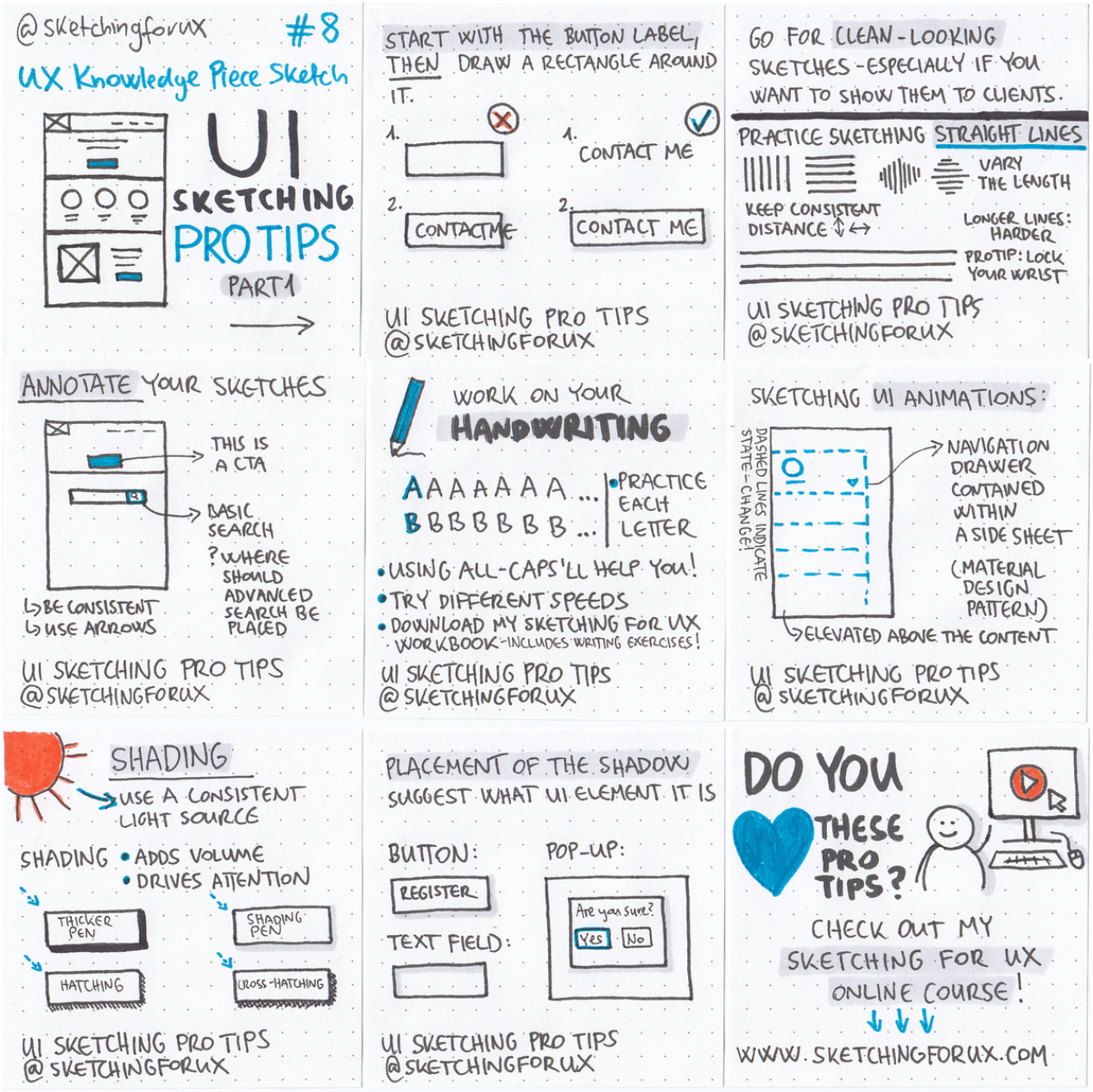
- **Text fields**: These are areas where you can type information, like a search bar or a form to fill out your details.

- **Sliders and dials**: Similar to a volume knob on a stereo, these let you adjust settings, like brightness or volume, in an app.

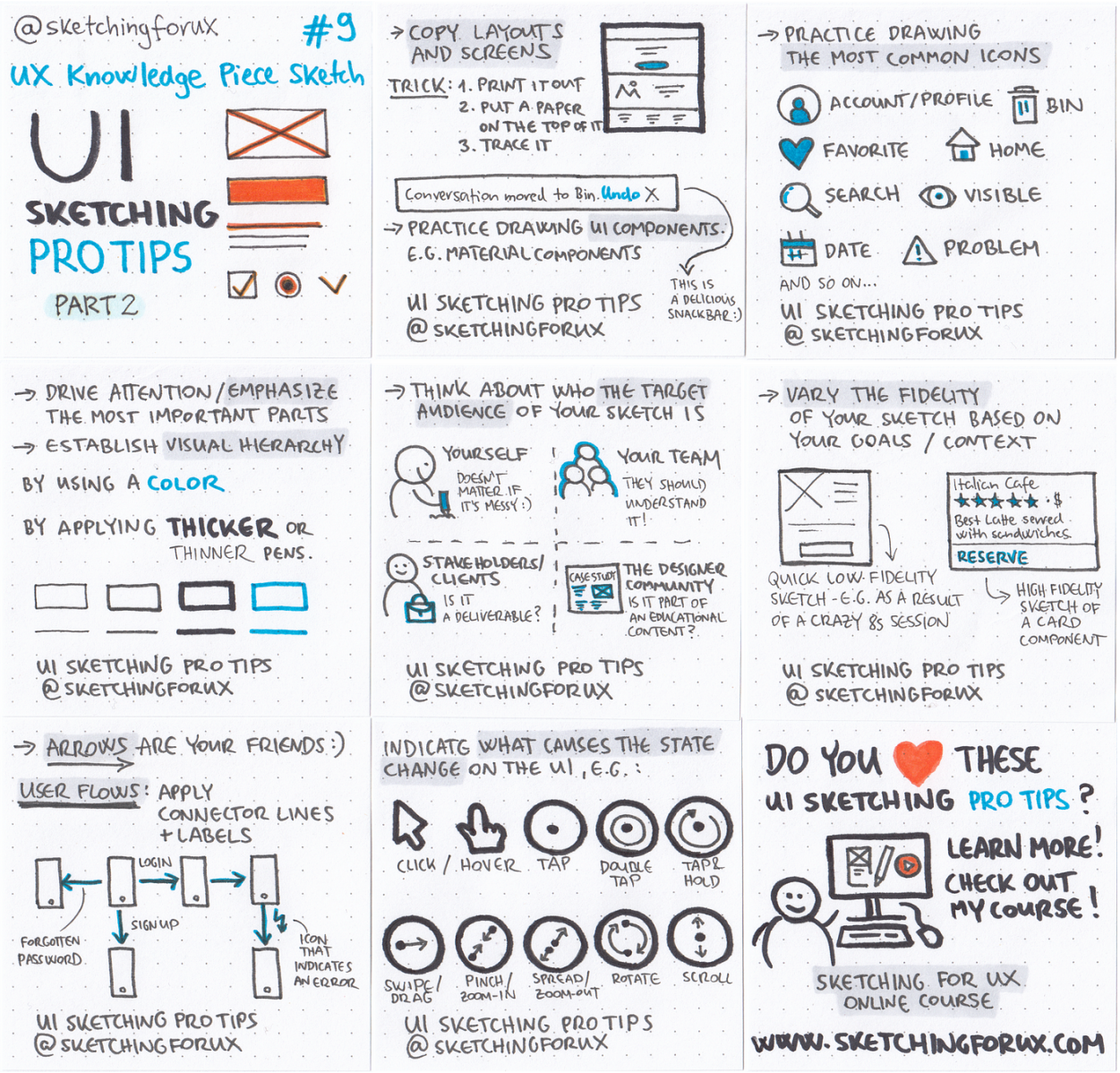
Just like learning to use a new household appliance, understanding these digital controls becomes easier with practice. They're designed to be intuitive, helping users easily navigate and use an app or website's features.

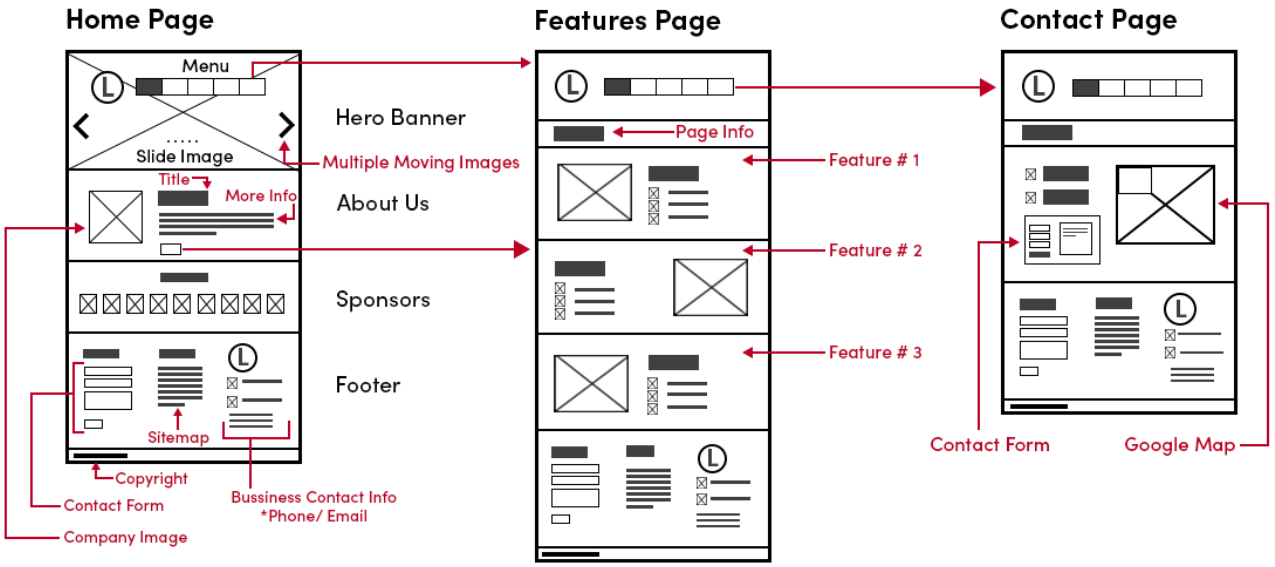

CONTENT:
- ELEMENT
- IMAGE
- VIDEO
TEXT
NAVIGATION:
- MAIN NAV
- TABS
- BREADCRUMBS
FORMS:
- INPUT
- SEARCHBOX
- RADIO
- CHECKBOX
-DATEPICKER
-CALENDAR
SEND
-BUTTON
OTHER:
ACORDION
- TOGGLE
- CHARTS
SCROLLBAR
TOOLTIPS


Enter Password
Enter Password
Pa$$woRd!-
Label
Second Point
Label
Select
First Point
Second Point
Third Point
Fourth Point
Fifth Point
Sixth Point
Label
Label
Update
Delete
Print
Mark invalid
Create
Cancel
Approve
Reject
Amend
Label
optional
Textfield
Label
optional
Textfield
Label
optional
Textfield
Label
optional
Textfield
Label
optional
Textfield
Error Message
Label
Choose Date Range
Label
Choose Date Range
Label
Choose Date Range
November 2019
Mo Di Mi Do Fr Sa So
28 29 30 1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 26
27 28 29 30 1 2 3
Label
Option
Option
Option
Option

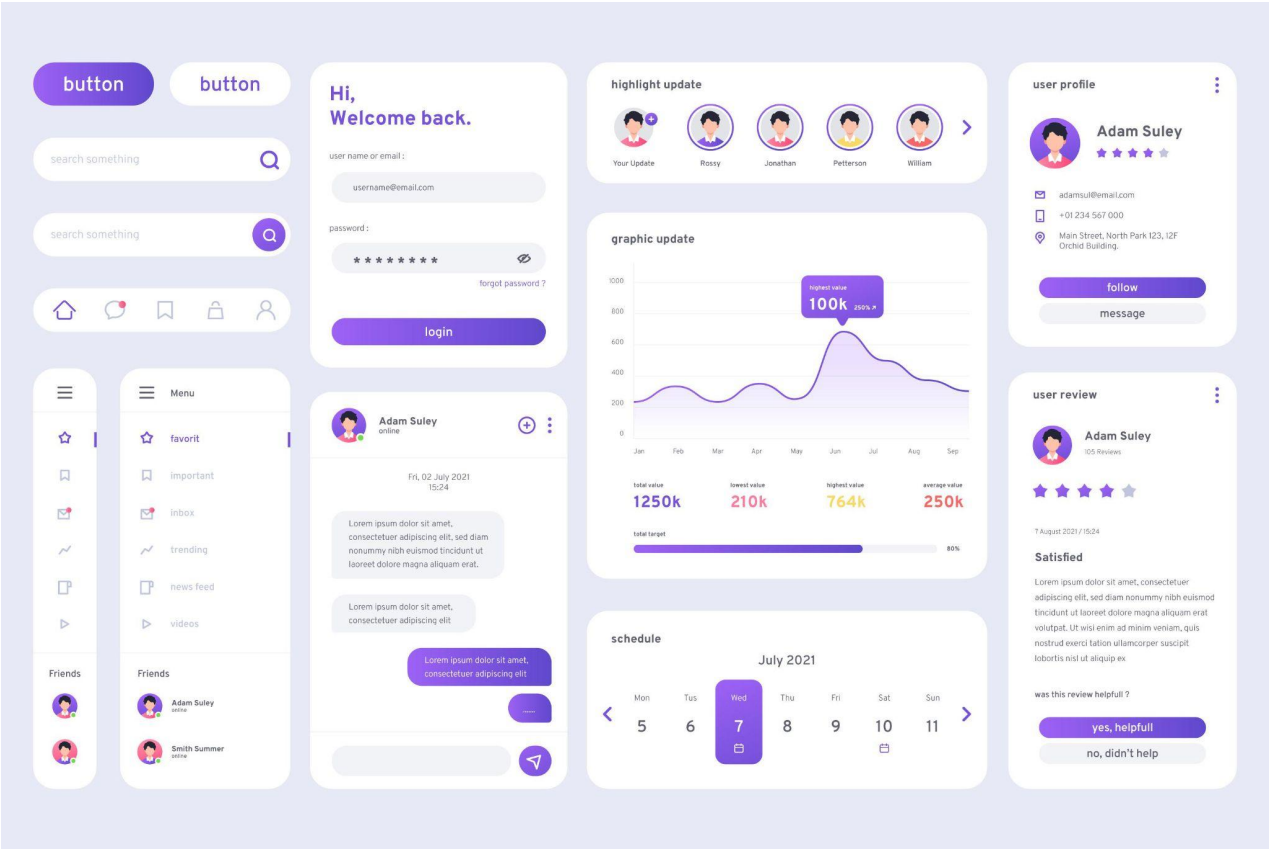


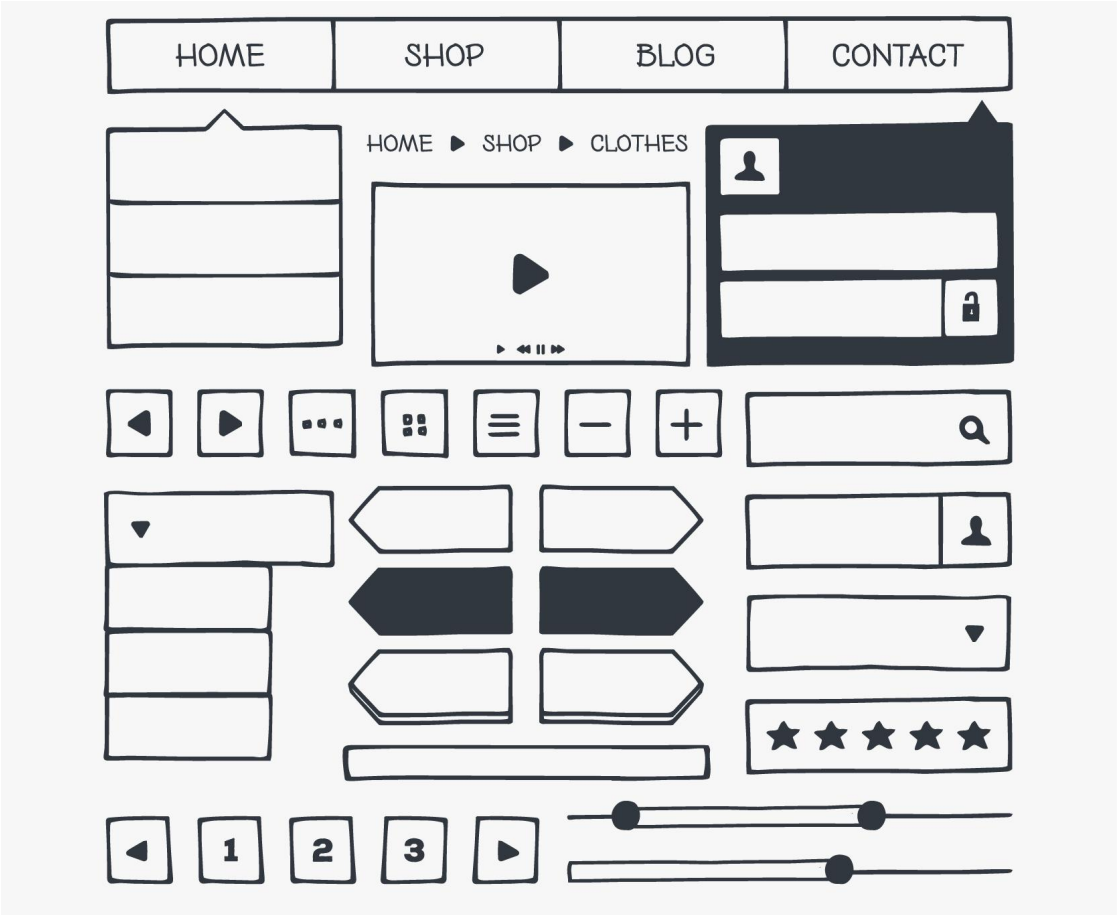
TIP ! Keep your sketches simple and use placeholders for text and images! You can move on to make things more complicated later, but you keep it basic for your first sketches.


@sketchingforux
#9
UX Knowledge Piece Sketch
UI SKETCHING PRO TIPS
PART 2
→ COPY LAYOUTS AND SCREENS
TRICK: 1. PRINT IT OUT
2. PUT A PAPER ON THE TOP OF IT
3. TRACE IT
Conversation moved to Bin. Undo X
→ PRACTICE DRAWING UI COMPONENTS.
E.G. MATERIAL COMPONENTS
THIS IS A DELICIOUS SNACKBAR :)
UI SKETCHING PRO TIPS @SKETCHINGFORUX
→ PRACTICE DRAWING THE MOST COMMON ICONS
ACCOUNT/PROFILE
BIN
FAVORITE
HOME
SEARCH
VISIBLE
DATE
PROBLEM
AND SO ON...
UI SKETCHING PRO TIPS @SKETCHINGFORUX
→ DRIVE ATTENTION / EMPHASIZE THE MOST IMPORTANT PARTS
→ ESTABLISH VISUAL HIERARCHY
BY USING A COLOR
BY APPLYING THICKER OR THINNER PENS.
UI SKETCHING PRO TIPS @SKETCHINGFORUX
→ THINK ABOUT WHO THE TARGET AUDIENCE OF YOUR SKETCH IS
YOURSELF
DOESN'T MATTER IF IT'S MESSY :)
YOUR TEAM
THEY SHOULD UNDERSTAND IT!
STAKEHOLDERS/ CLIENTS
IS IT A DELIVERABLE?
CASESTUDY
THE DESIGNER COMMUNITY
IS IT PART OF AN EDUCATIONAL CONTENT?
UI SKETCHING PRO TIPS @SKETCHINGFORUX
→ VARY THE FIDELITY OF YOUR SKETCH BASED ON YOUR GOALS / CONTEXT
Italian Cafe
Best Latte served with sandwiches
RESERVE
QUICK LOW-FIDELITY SKETCH - E.G. AS A RESULT OF A CRAZY 8S SESSION
HIGH FIDELITY SKETCH OF A CARD COMPONENT
UI SKETCHING PRO TIPS @SKETCHINGFORUX
→ ARROWS ARE YOUR FRIENDS :)
USER FLOWS: APPLY CONNECTOR LINES + LABELS
LOGIN
SIGN UP
FORGOTTEN PASSWORD
ICON THAT INDICATES AN ERROR
UI SKETCHING PRO TIPS @SKETCHINGFORUX
INDICATE WHAT CAUSES THE STATE CHANGE ON THE UI, E.G.:
CLICK / HOVER
TAP
DOUBLE TAP
TAP & HOLD
SWIPE/ DRAG
PINCH/ ZOOM-IN
SPREAD/ ZOOM-OUT
ROTATE
SCROLL
UI SKETCHING PRO TIPS @SKETCHINGFORUX
DO YOU ♥ THESE UI SKETCHING PRO TIPS?
LEARN MORE! CHECK OUT MY COURSE!
SKETCHING FOR UX ONLINE COURSE
WWW.SKETCHINGFORUX.COM

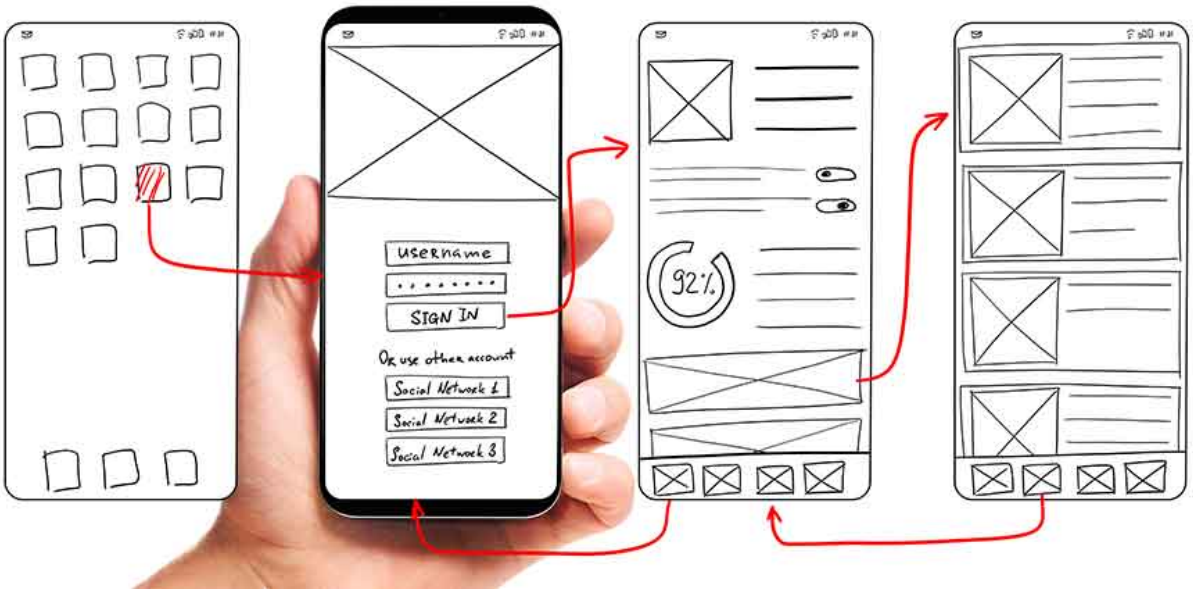

Home Page
Features Page
Contact Page
Menu
Slide Image
Title
More Info
Hero Banner
Multiple Moving Images
About Us
Sponsors
Footer
Sitemap
Copyright
Contact Form
Company Image
Bussiness Contact Info
*Phone/ Email
Page Info
Feature # 1
Feature # 2
Feature # 3
Contact Form
Google Map

button
button
button
button
search for
share
50%
lorem ipsum
3/5
lorem ipsum good
dolor ipsum excelent
sit amet not bad
lorem ipsum
lorem
$ 24
Hi!
what I can help you?
Hi! there


button
button
search something
search something
Hi,
Welcome back.
user name or email :
username@email.com
password :
forgot password ?
login
highlight update
Your Update
Rossy
Jonathan
Petterson
William
graphic update
highest value
100k
1250k
210k
764k
250k
user profile
Adam Suley
adamsul@email.com
+01 234 567 000
Main Street, North Park 123, 12F
Orchid Building.
follow
message
Menu
favorit
important
inbox
trending
news feed
videos
Friends
Adam Suley
Smith Summer
Adam Suley
online
Fri, 02 July 2021
15:24
schedule
July 2021
Mon Tus Wed Thu Fri Sat Sun
5 6 7 8 9 10 11
user review
Adam Suley
105 Reviews
Satisfied
was this review helpfull ?
yes, helpfull
no, didn't help



I provided a lot of detailed images, but I would just keep your sketches simple. The images are just supposed to give you an idea of what components you can draw. Here's an example of a standard UI sketch:



I've also included some templates to sketch your designs at the end of the packet

2.4. Further Thinking and Activities

1. In what scenarios is it essential to give users more control, and when should designers make decisions on their behalf?
2. How can we make sure that interactive elements in our design, such as buttons or links, clearly communicate their intended actions or functions?
3. In what ways can we provide immediate feedback to users when they perform an action or make a choice within our application or website?

✂ Activity: Sketching Practice

Let's practice combining different shapes into various objects through sketching. You can use the space below to practice!

Here are some things you can try sketching:

- Bicycle
- Book
- Jacket
- Plane
- Hat

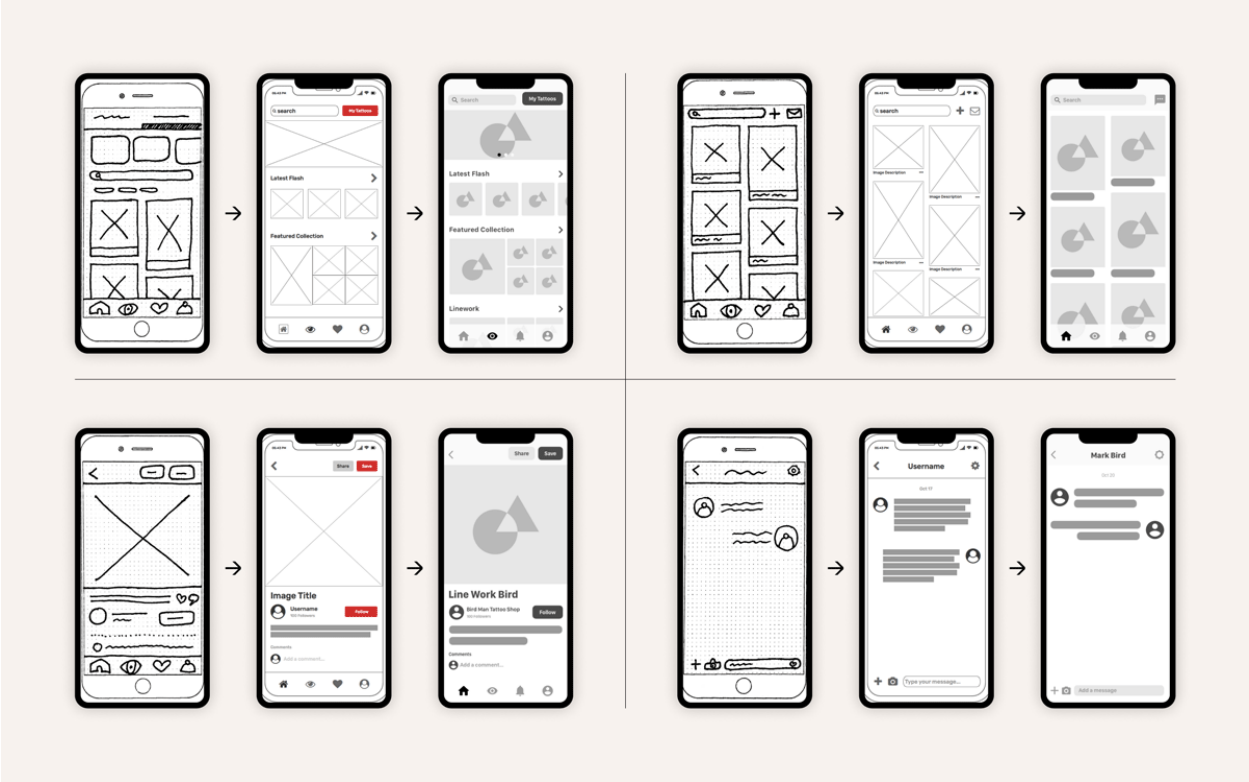
Unit 3: Prototyping

✎ **Vocab**

- **Low-Fidelity (Lo-Fi):** This refers to design prototypes or mockups that are simple, basic and less detailed. They are typically created quickly and with minimal effort, using simple shapes and or placeholder elements.
- **High-Fidelity (High-Fi):** This refers to design prototypes or mockups that are more detailed, polished, and closely resemble the final product. They often include realistic graphics, accurate content, and interactive elements that mimic the actual user experience. High-fidelity designs are used for user testing, usability evaluations, and as a final representation of the product's visual and functional aspects.

3.1. Paper Prototyping

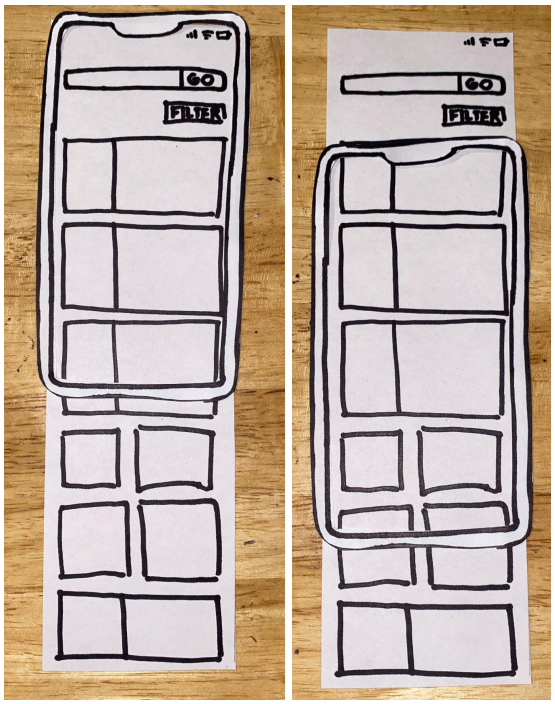
For this packet, we will focus on paper prototyping. Paper prototyping is a great way to quickly test and refine your app's design concepts. Paper prototyping creates low-fidelity prototypes. See the image below for an example of different fidelity prototypes:



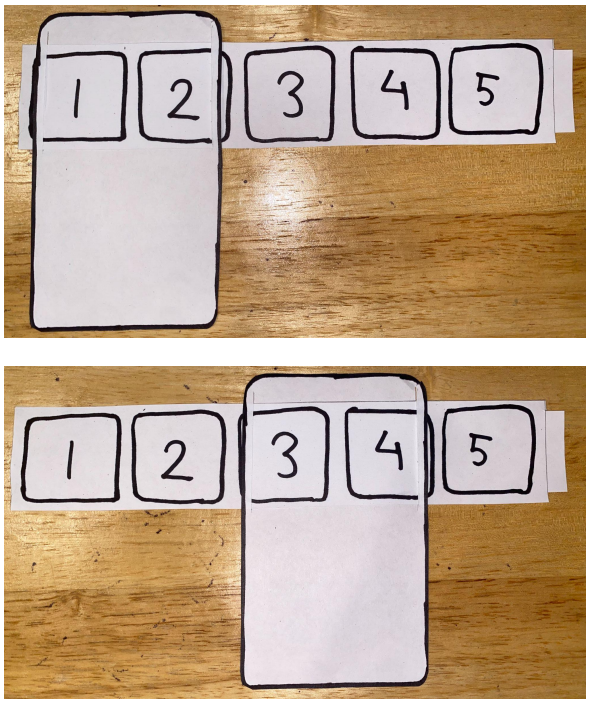
Notice how the prototypes get more and more complex and refined. Some great applications to prototype are Figma, Balsamiq, and Adobe XD. I would recommend Figma as it's easy to use and I believe it's the most used tool in the industry right now.

If you get a chance, I would also recommend getting transparency film for your prototypes. You can use transparency film to avoid having to replicate primary screens multiple times. Post-it notes work too.

You can also get really creative with paper by creating complex effects. For example, you can create a scrolling effect on a mobile. See some examples below:



Example 1

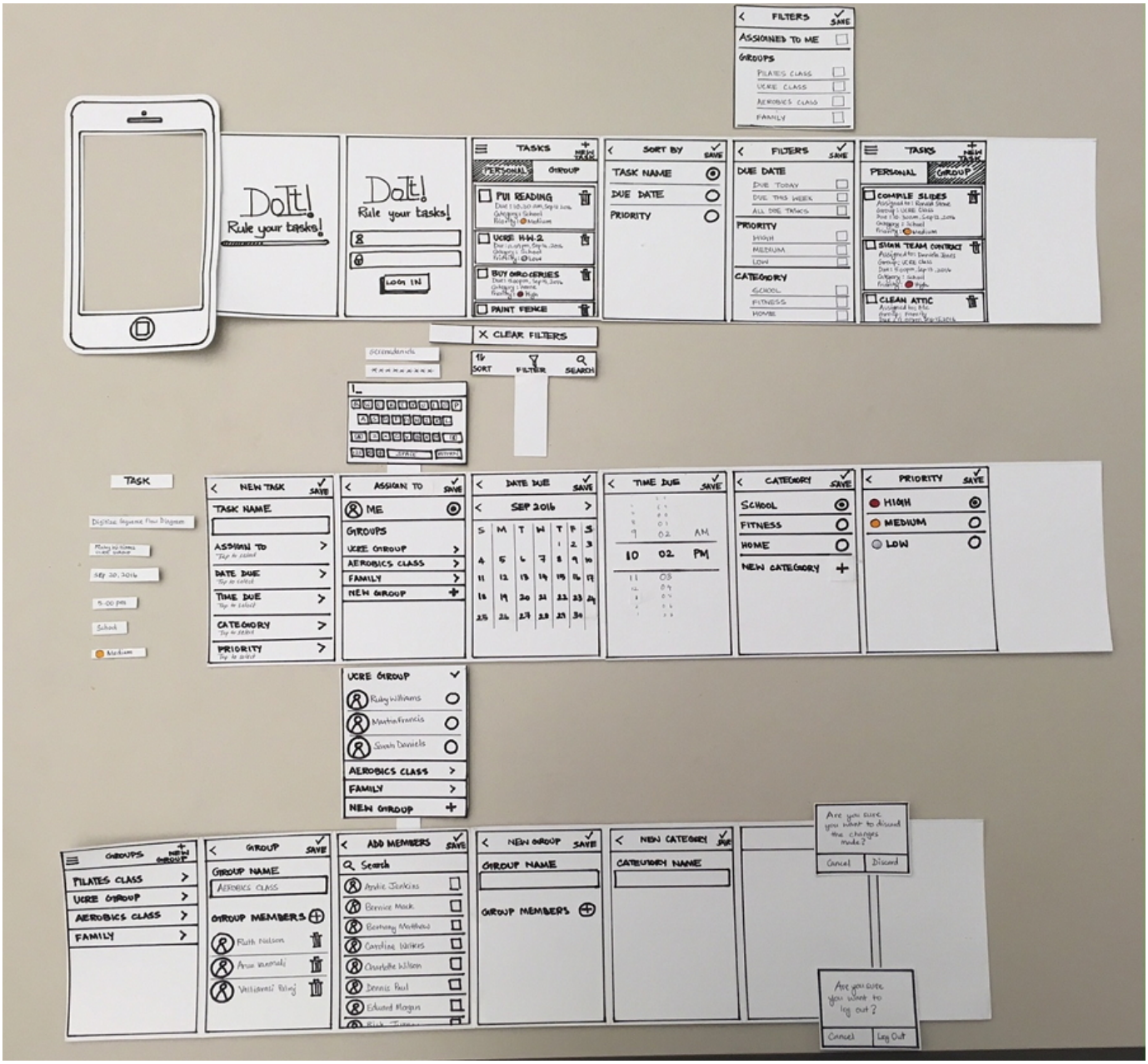


Example 2

In Example 1, I prototyped an example where you can simulate scrolling up and down the phone. I created a frame of a smartphone and cut out the screen. Then I placed it on top of my drawing of the UI drawing. When showcasing your prototype, you can move the frame up and down to simulate scrolling. In Example 2, I prototyped an example where you can simulate scrolling left to right. I made two slits in the "screen" and slipped another piece of paper in the slits to act as one of the UI components. To simulate scrolling, you would pull the piece of paper to the part of the screen you want to see.

Example 3

Example 3 is not a photo of mine, but I thought I should include it as it also showcases a useful technique you can use. You can see that for the login screen they used tiny strips of paper to simulate the user typing in their username and password. You can also use something like sticky notes to achieve the same effect!



Example 4

The image might be a little difficult to make out, but what I really wanted to emphasize is that they made a paper prototype that can be interacted with. There are different screens that a user can interact with. As the designer, you would act as the app and respond to user actions by changing the screen toward completing the task.

TIP ! Remember that you don't know what the user's choices will be, so you can't create pre-defined paths for their choices. Instead, you should create a flexible prototype that responds to all possible choices.

3.2. Further Thinking and Activities

✂ Activity: Paper Prototyping

For this activity you will practice UI sketching and paper prototyping. You'll design and make a paper prototype for an app for ordering cakes.

Here are the requirements:

- Allow the following cake flavors to be chosen:
    - Vanilla ($32.00)
    - Red Velvet ($34.00)
    - Funfetti ($36.00)
- Allow the following sizes to be chosen:
    - 4-inch round cake (Base price)
    - 5-inch round cake (add $10.00)
    - 6-inch round cake (add $12.00)
- Allow for multiple cakes in the same order
- Request a confirmation of each cake before adding it to the current order
- Calculate and display the total amount of each cake and the total order
- Issue a confirmation of the total order before the order is placed

Step 1: Do the UI sketches

1. Understand what the app needs to do and break it up into smaller, manageable tasks
2. See how these tasks relate to each other, whether they follow a step-by-step sequence or have a hierarchy
3. Identify the main screens that will be at the core of the user experience
4. Determine what actions and features will be available on each of the main screens
5. Map out how users will move between the primary screens
    a. Visualize the navigation and how users will progress through the app to complete the defined tasks
6. Create a rough sketch of the primary screens and their functions for supporting the task you have identified.

Step 2: Construct your paper prototype

1. Prepare your materials. All you really need is paper and a marker/writing utensil. Other option supplies include glue, post-it notes, and tape!
2. Use the materials to create the paper prototype. Make it interactive!

Step 3: Get feedback *OPTIONAL*

1. Recruit someone to act as your user
2. Provide the user with the following task to complete using the paper prototype. Also provide them with info about how to interact with the prototype:
    a. Task: You want to order some cake for a party. Use the app to order your cake.
    b. Instructions: This is a paper prototype. When you touch the paper, it is like a touchscreen and we will change the "screens" accordingly. To enter text, write using a marker in the places that accept text input.

Unit 4: Evaluation

Hooray! We've reached the final unit. The final unit is evaluation. This allows us to examine how users interact with the design and what they think about it. We can also find the problems in the design and thus use this feedback to improve this design for the next iteration.

The method I will explain to test the usability of your design is called "heuristic evaluation"!

4.1. Heuristic Evaluation

Heuristic evaluation is a method for identifying design problems in a user interface. Evaluators judge the design against a set of guidelines (called heuristics) that make systems easy to use.[14] See the next page for the list of heuristics. The list was developed by Jakob Nielsen in collaboration with Rolf Molich in 1990.

Poor designs often violate multiple heuristics. Complying with several heuristics can also be a design tradeoff so you will have to decide what is best for your design. Usually heuristic evaluation is done with 3-5 people, but you can also practice on your own! It's usually done with multiple people as the more evaluators, the more usability problems can usually be found.

When completing a heuristic evaluation, it's important to note and or think of the following:

- ☐ Where is the issue located?
- ☐ What's the issue? How does it violate the heuristic?
- ☐ What heuristic is being violated? Sometimes it's more than one, but you pick the one that is violated the most.
- ☐ What's the severity of the violation? Is it only a visual issue or is it so bad that the user cannot proceed with the interaction?
- ☐ What can you change to fix this issue?

I recommend creating a table to jot down your notes while performing the evaluation. The table could look something like this:

Location	Problem Description	Severity	Recommendation
Home page	Links are not clickable	Super severe	Fix the links

[14] (Source: https://www.nngroup.com/articles/how-to-conduct-a-heuristic-evaluation/)

Nielsen Norman Group

Jakob's Ten Usability Heuristics

1 Visibility *of* System Status

Designs should *keep users informed* about what is going on, through appropriate, timely feedback.

Interactive mall maps have to show people where they currently are, to help them understand where to go next.

2 Match between System and the Real World

The design should speak the users' language. Use words, phrases, and concepts *familiar to the user,* rather than internal jargon.

Users can quickly understand which stovetop control maps to each heating element.

3 User Control *and* Freedom

Users often perform actions by mistake. They *need a clearly marked "emergency exit"* to leave the unwanted action.

Just like physical spaces, digital spaces need quick "emergency" exits too.

4 Consistency *and* Standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. *Follow platform conventions.*

Check-in counters are usually located at the front of hotels, which meets expectations.

5 Error Prevention

Good error messages are important, but the best designs carefully *prevent problems* from occurring in the first place.

Guard rails on curvy mountain roads prevent drivers from falling off cliffs.

6 Recognition Rather Than Recall

***Minimize the user's memory load* by making elements, actions, and options visible. Avoid making users remember information.**

People are likely to correctly answer "Is Lisbon the capital of Portugal?".

7 Flexibility *and* Efficiency of Use

Shortcuts — hidden from novice users — may *speed up the interaction* for the expert user.

Regular routes are listed on maps, but locals with more knowledge of the area can take shortcuts.

8 Aesthetic *and* Minimalist Design

Interfaces should not contain information which is irrelevant. Every extra unit of information in an interface *competes* with the relevant units of information.

A minimalist three-legged stool is still a place to sit.

9 Recognize, Diagnose, *and* Recover from Errors

Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.

Wrong-way signs on the road remind drivers that they are heading in the wrong direction.

10 Help *and* Documentation

It's best if the design *doesn't need* any additional explanation. However, it may be necessary to provide documentation to help users complete their tasks.

Information kiosks at airports are easily recognizable and solve customers' problems in context and immediately.

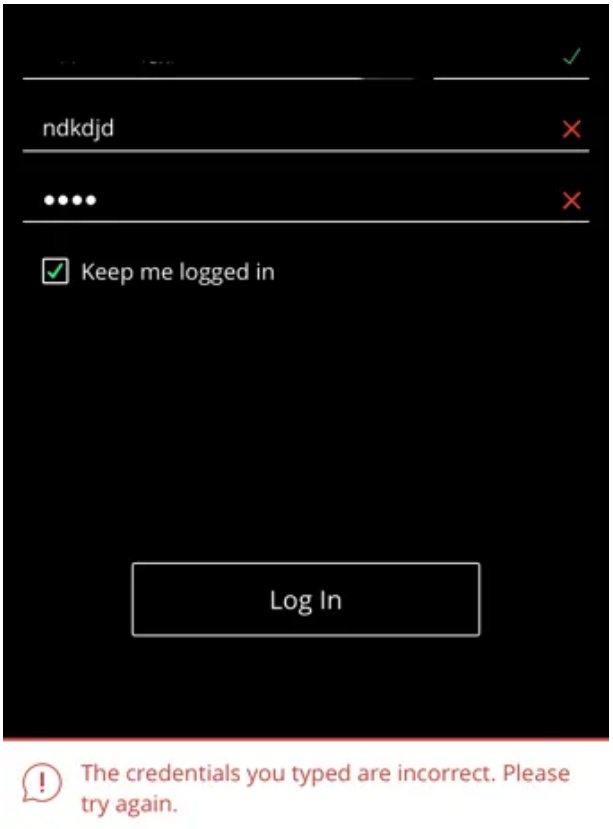
NN/g

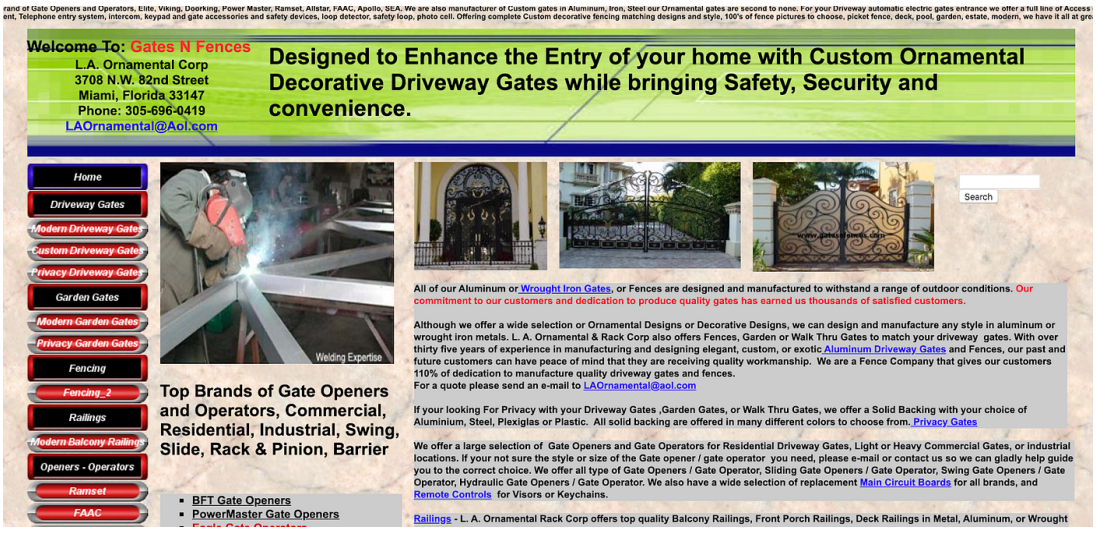
www.nngroup.com/articles/ten-usability-heuristics/

4.2. Further Thinking and Activities

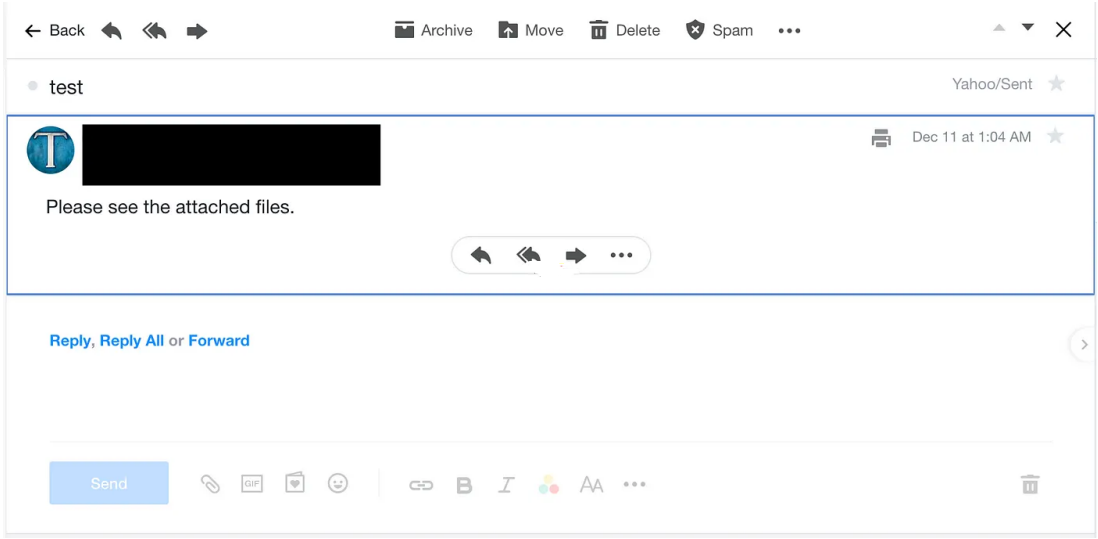
✂ Activity: Heuristic Evaluation Practice

For this activity you will practice evaluation heuristics. Take a look at the following images on the next page and identify which heuristic is being violated or being followed.

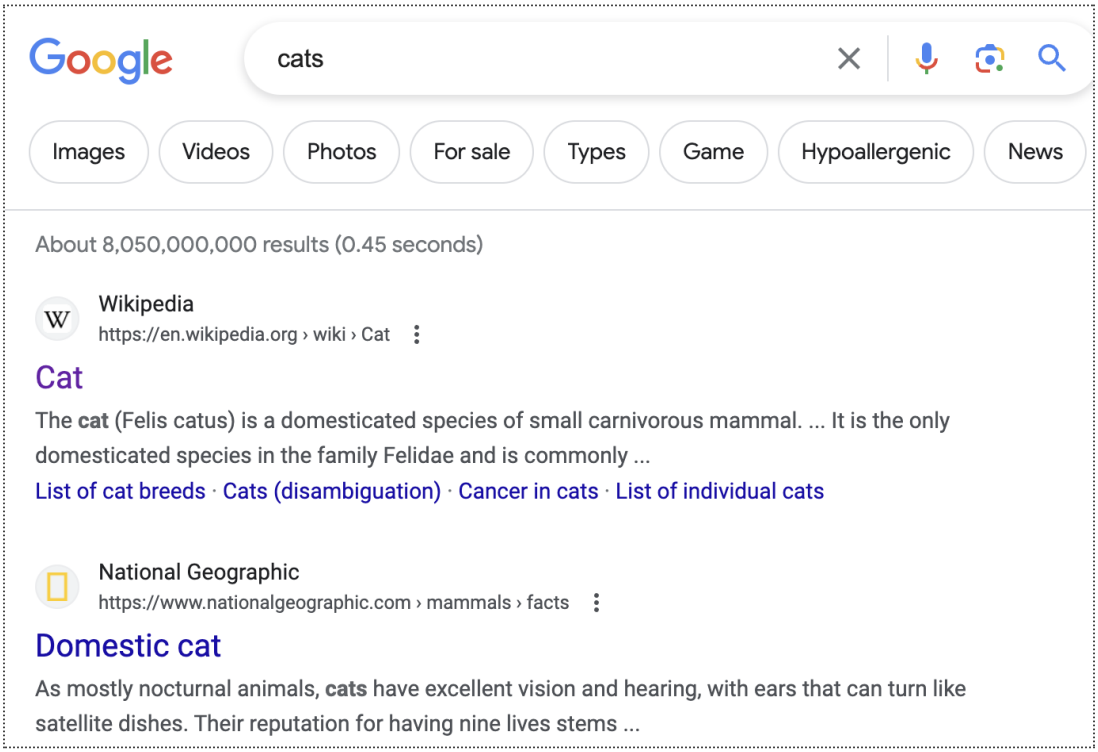
1. 

2. 

3.

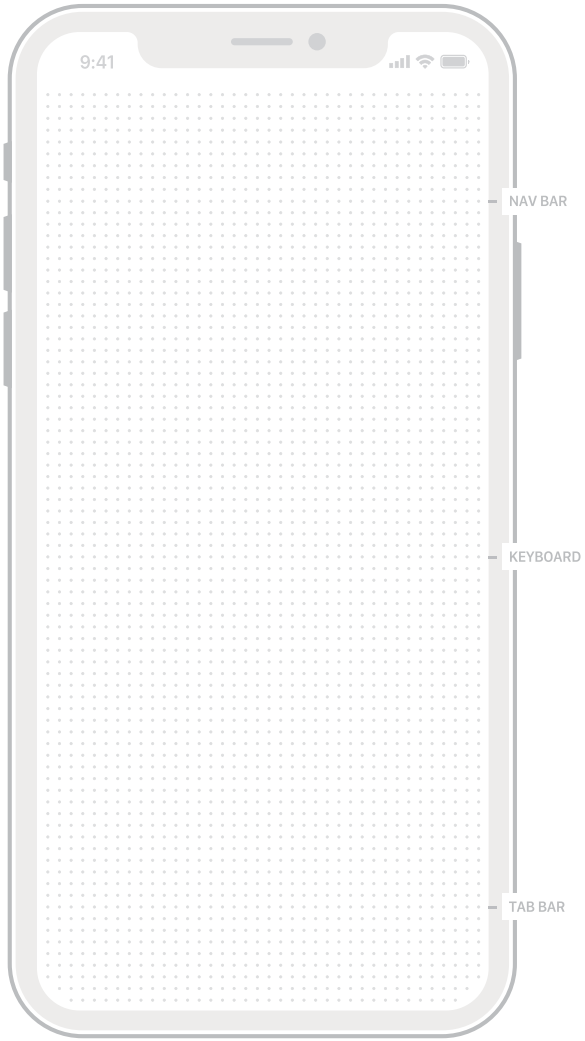


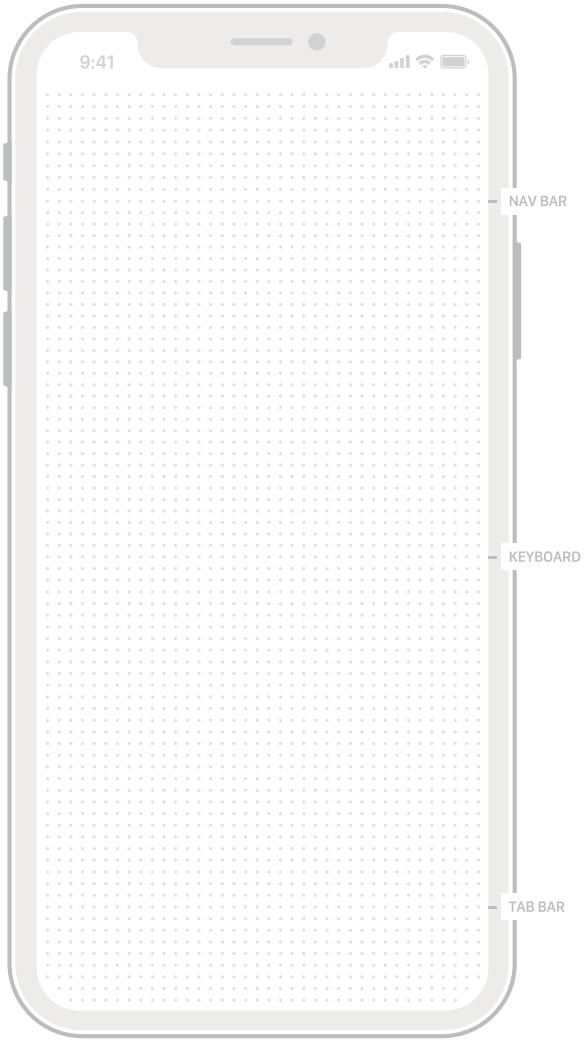
4.

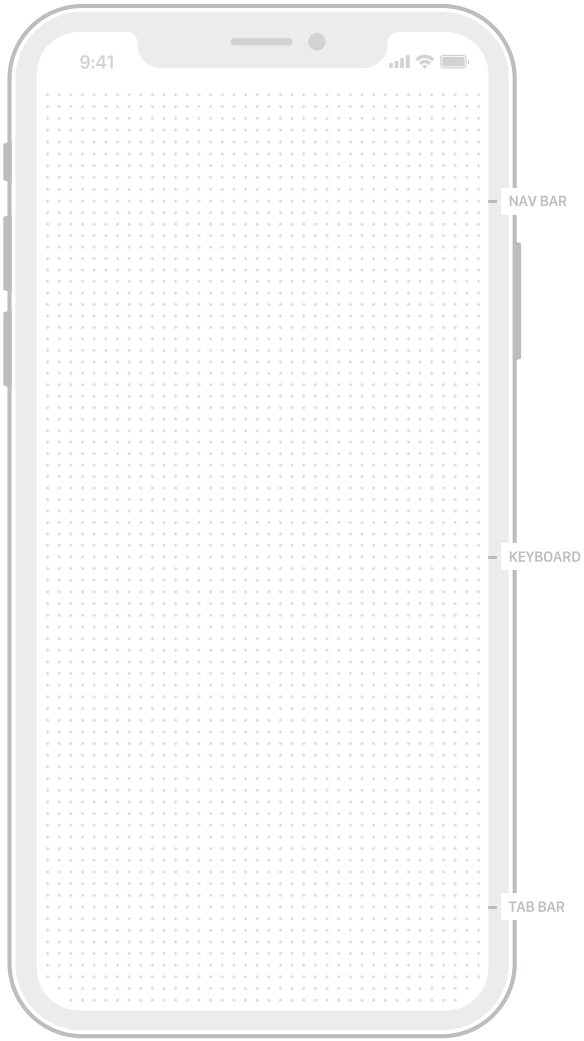


Answers to the exercise are at the bottom of the page.[15]

[15] Q1. Violating "Visibility of System Status" → The message at the bottom confuses users as it doesn't tell you whether or not the email or password is wrong. This forces them to redo the entire process without clearly knowing what went wrong. | Q2. Violating "Aesthetic and Minimalist Design" → This website is cluttered and ugly. Too much information is on the page as well. | Q3. Violating "Error Prevention" → Yahoo Mail doesn't tell you if you forget to attach a file to your email. Thus users can err by sending an email without attaching the file they needed to attach. | Q4. Following "Recognition Rather Than Recall" → Google tells you if you've already clicked on a link before by changing the color of the link from purple to blue. Google also remembers your previous searches and makes it accessible by showing it to you when you bring up the search bar.







Template Created by Matthew Stephens (matthewstephens.com)

Wrapping Up + E-Messaging PSA

It's my first time doing something like this, so I hope that the experience was enjoyable or at the very least educational for you. I also want to thank you again for choosing this packet, it means a lot. I'm sorry if some terms or instructions were confusing, as I have a hard time explaining things sometimes and may have missed a few things. I wish I could have included more, but then the packet would be way too long :(I'd love to hear your thoughts on this packet and to see your work too. Please feel free to send that over along with any questions that you may have :) If you choose to do so, please address your response as "APP Res" so that the person sorting the mail can ensure that your response gets to me.

Moreover, thank you for those who have filled out the survey in the Summer newsletter! Your answers have been very helpful. We are now on the following e-messaging apps: GettingOut and CorrLinks. You may send us your poetry, journal entries, essays, and responses there. We're having some problems responding, but rest assured that your messages are being received on those platforms. We will try our best to get back to you through physical mail.

Optional Survey

I want to create a new project for my portfolio so that I can apply for jobs. I was thinking of doing something Prisoner Express-related to showcase my skills, like designing a hypothetical app for inmates to use. I'd like to ask everyone a few questions as part of my user research phase. This is entirely optional; you do not have to answer if you wish not to!

Consent Form

You must be 18 years old or older to participate.

Who am I. This survey is being distributed by Lyss, an employee of Prisoner Express.

Purpose. The purpose of this survey is to find out what types of apps inmates are interested in using while incarcerated. The findings of the survey will be used solely to develop an app concept that will possibly be showcased in my portfolio. I do not aim to create an app, just to create a project that can demonstrate my own skills in UX design and research. This survey is not affiliated with Prisoner Express.

The Task. If you agree to participate, you will be asked to answer a few survey questions. Your participation should take no longer than 10 minutes.

Risks. I do not anticipate any risks or discomforts from participating in this survey. However, if any of the questions make you uncomfortable or upset, you are free to discontinue at any time.

Taking part in this survey is completely voluntary. If you decide to participate, you are free to withdraw at any time for any reason. Your responses will be completely anonymous. De-identified data from this survey may be shared with Prisoner Express to improve programming, but no one will be able to identify you personally from the information shared.

If you have any questions about the survey, you may write back to me. Please address your response to "APP Res" on the envelope.

By signing this form, you consent to participate in the above-described survey. **Date**: _____

Participant's Name (Print): _____ **Participant's Signature:** _____

Survey

1. What are some challenges or frustrations you face daily that you think an app could help alleviate?

2. Please circle the answer choice that best describes your access to the internet.

No internet access	Limited internet access (e.g., only certain times/websites)	Full internet access but with monitoring or restrictions	Unrestricted internet access

Please specify any restrictions or monitoring experience when using the internet if any:

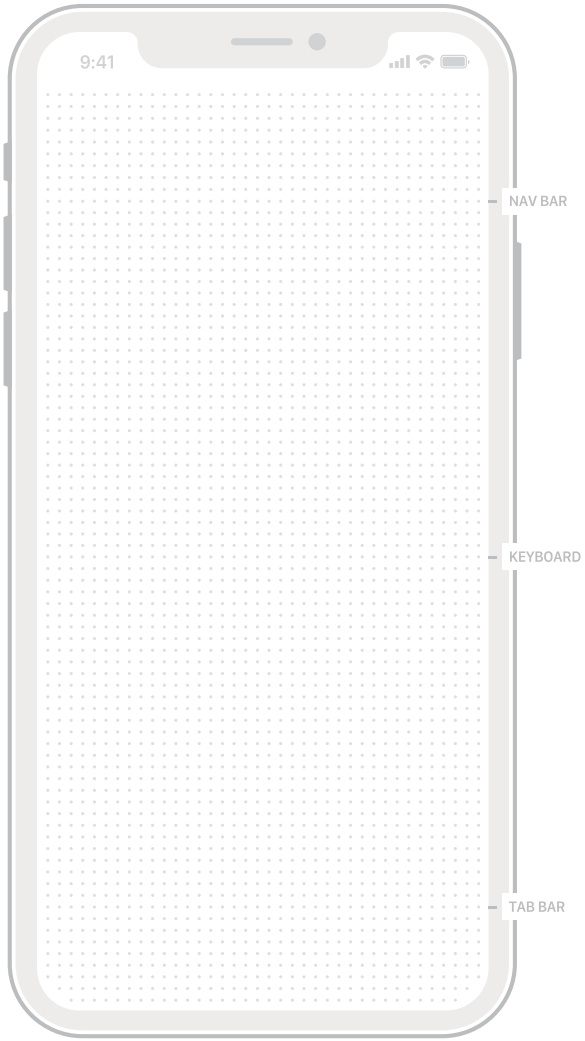
3. If you have access to apps, how do you receive content on them? Please select all that apply and feel free to elaborate

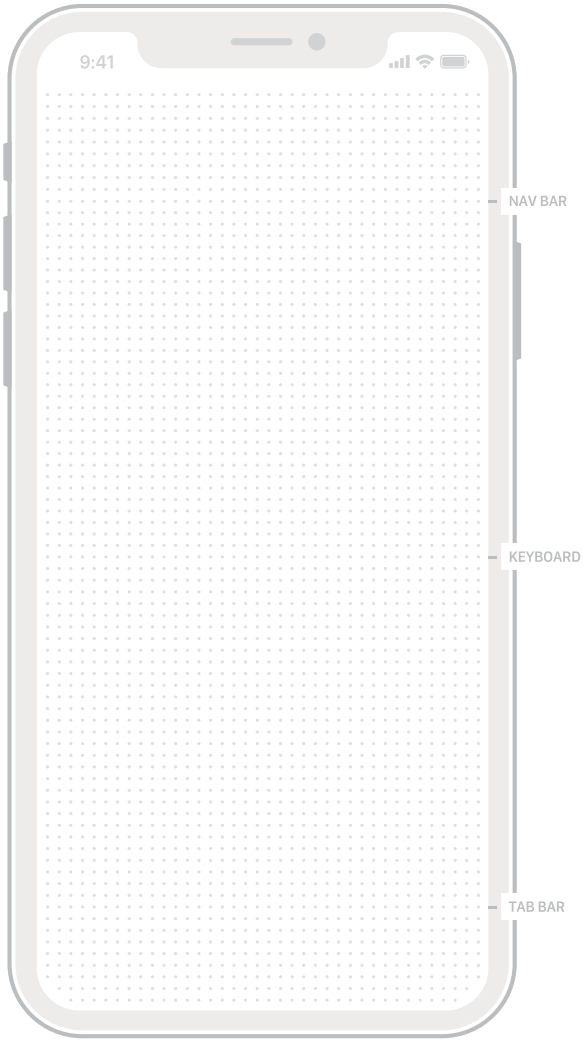
Content is pre-loaded and not updated	Content is updated periodically by the app developer or prisoner administration	I can download or request specific content within certain restrictions
Content updates automatically via internet connection	Other (please specify):	

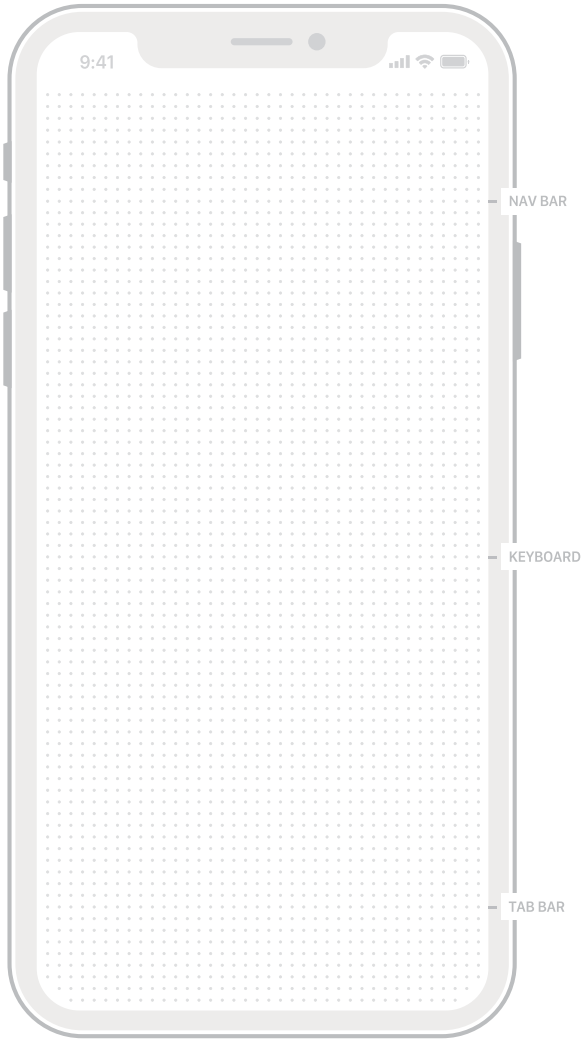
4. Below is a list of potential functions of an app. Please rank your top three choices, with ‘1’ being the most preferred function. For example, if 'Educational Content' is your most preferred function, write '1' next to it. Choose '2' and '3' for your second and third choices, respectively. If you have a preference not listed here, write it in the 'Other' section and rank it accordingly.

    1. **Mental Health Support:** Resources and tools for mental health management, including stress and anxiety relief.
    2. **Educational Content:** Access to online courses, tutorials, and educational materials.
    3. **Vocational Training:** Job skills training, resume building, and career planning resources.
    4. **Entertainment:** Movies, TV shows, music, podcasts, and games.
    5. **Fitness and Wellness:** Exercise routines, nutrition guides, and wellness resources.
    6. **Communication Tools:** Messaging, email, and video calling services (subject to regulations).
    7. **Legal Resources:** Info about legal rights, access to legal forms, and contact info for legal assistance.
    8. **Healthcare Information:** Healthcare guides, telemedicine services, and health tracking tools.

    9. **Other (Please Specify)**:







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