Screen & Navigation Design

by Eva Scholl
CODE University of Applied Science
Spring 2022
Wordcount: 4027

Screen Design
Navigation Design

About the project

During the spring semester, I collaborated on the project “Spacey”. It is a spaced repetition learning progressive web application. We are two developers Moritz Eich and Kerem Ali Kaynak and me, the designer. Between us, we split up the role of the product manager. Together we pursue our vision

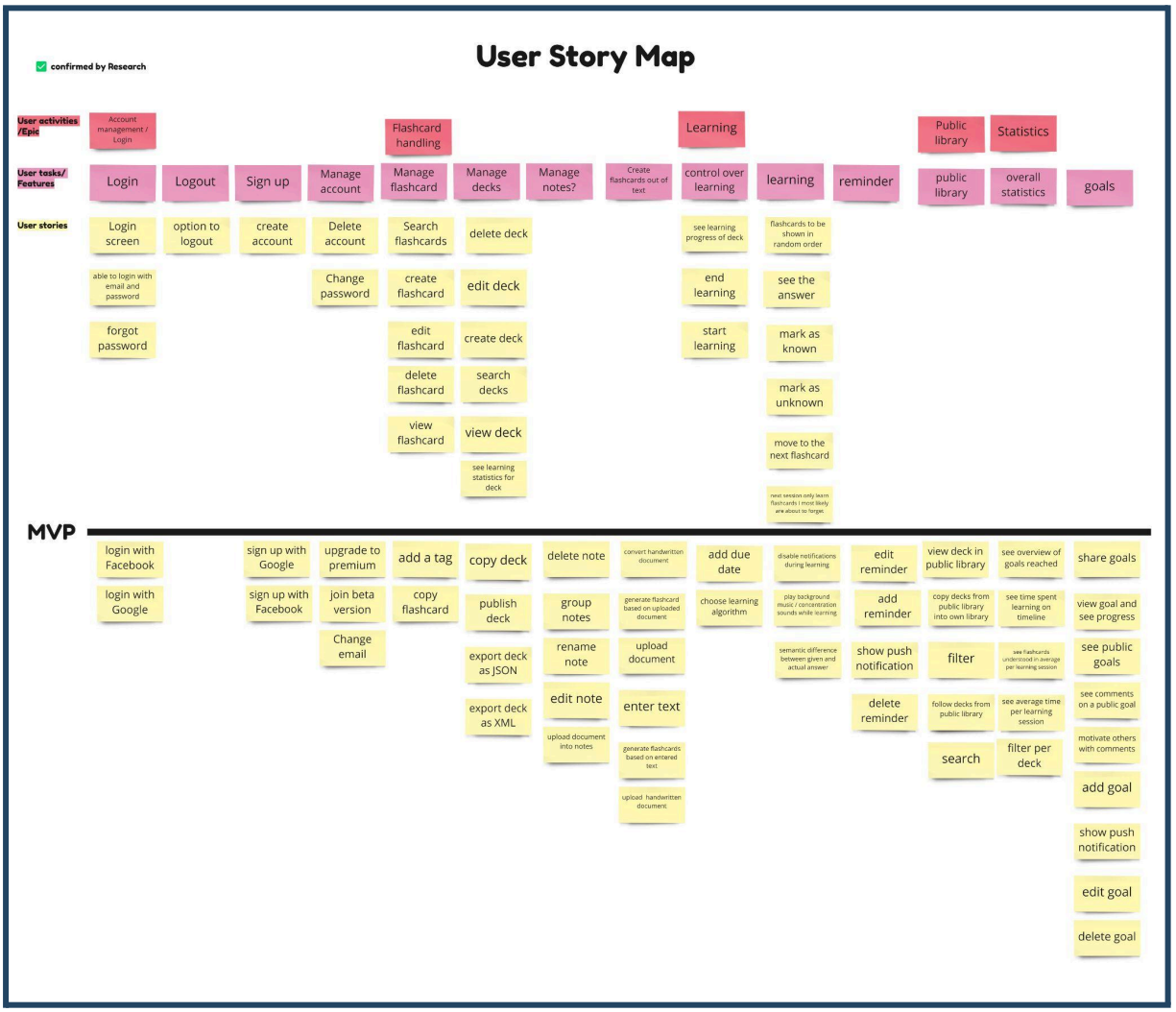
“We make learning fun and effortless for everyone”

which we try to achieve by providing the user a platform for creating and learning flashcards. Spaced repetition learning means, that the content is repeatedly memorized and the interval of the learning sessions is increased based on the probability of internalization. The goal is to save the content in the long-term memory of the brain.

Moritz started the project as his capstone project this semester and soon acquired me to help him out with the user research and design. Kerem joined us a few weeks into the semester to support us with software development. For me, the motivation to join Spacey was to get started with the basics of design in a small team where my work is valued and impactful. At the same time, I believe in the vision and feel passionate about the goals we want to achieve together.

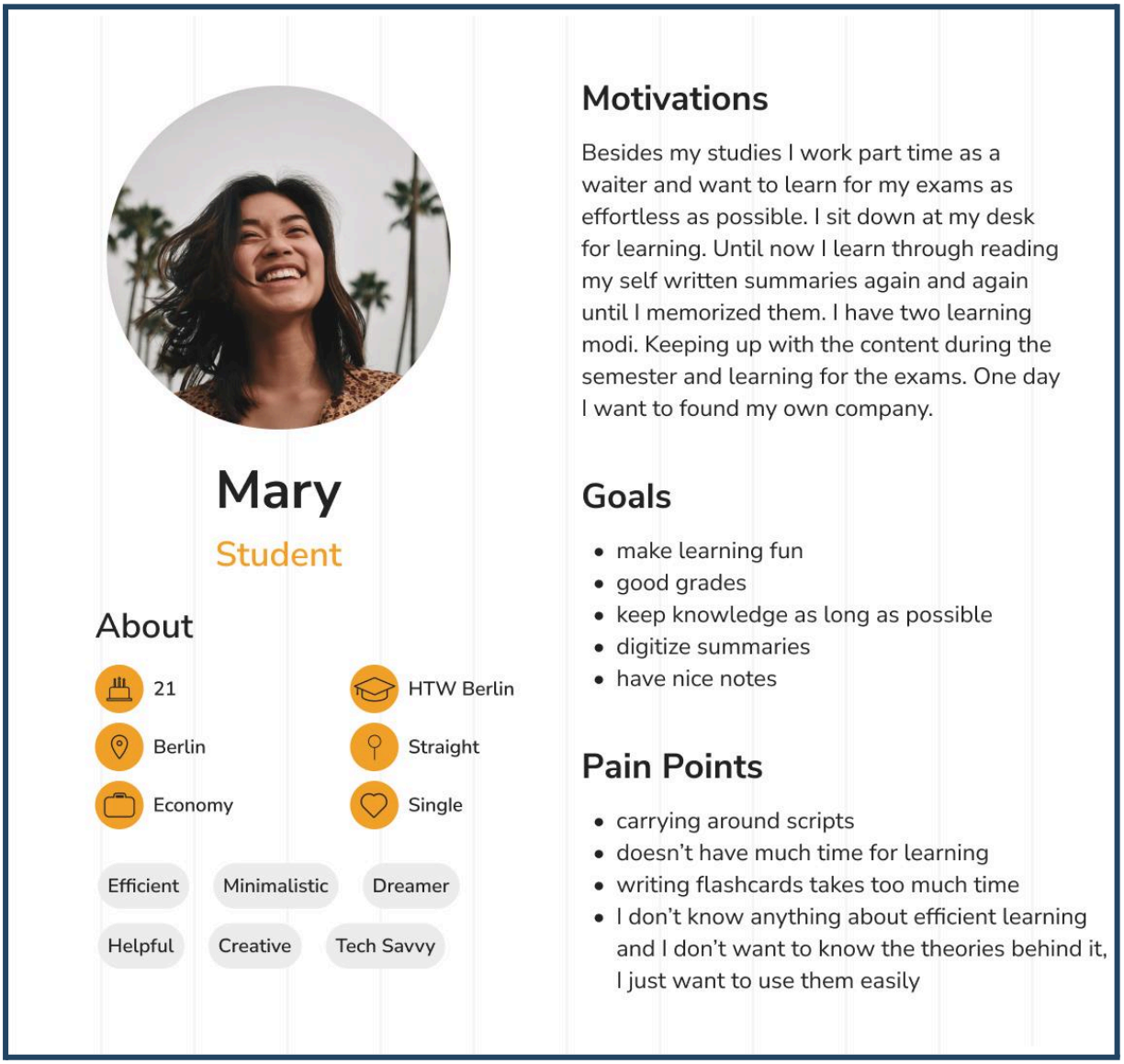
User stories and Persona

After I conducted the user research in two rounds by interviewing students in public universities in Germany, I had a solid understanding of the user needs and what our persona would look like. We collaboratively created a user story map to have a plan for what we would want to develop. Also, for making a cut for what the minimal viable product would look like. So to say to also prioritize the stories based on importance to the users. We grouped them by activity (epic) and task (feature).



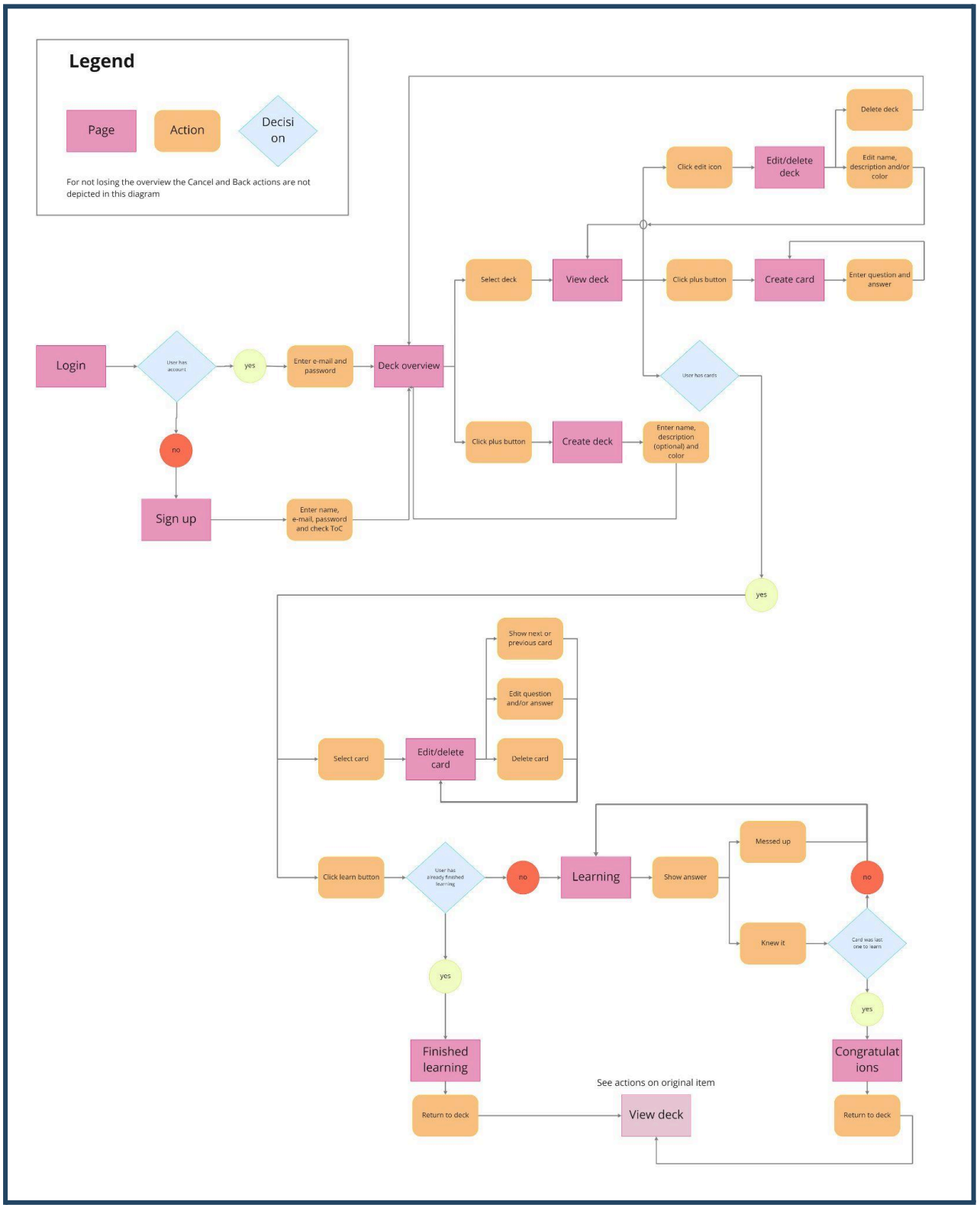
A lot of the stories did not make it above the MVP line, but we still plan to implement them in future versions.

Starting at the beginning with a persona based on our assumptions, it evolved during the research phase and the current version of it represents a quite accurate representation of the average user in my opinion. We named her Mary and it helps us to empathize with and understand our users better.



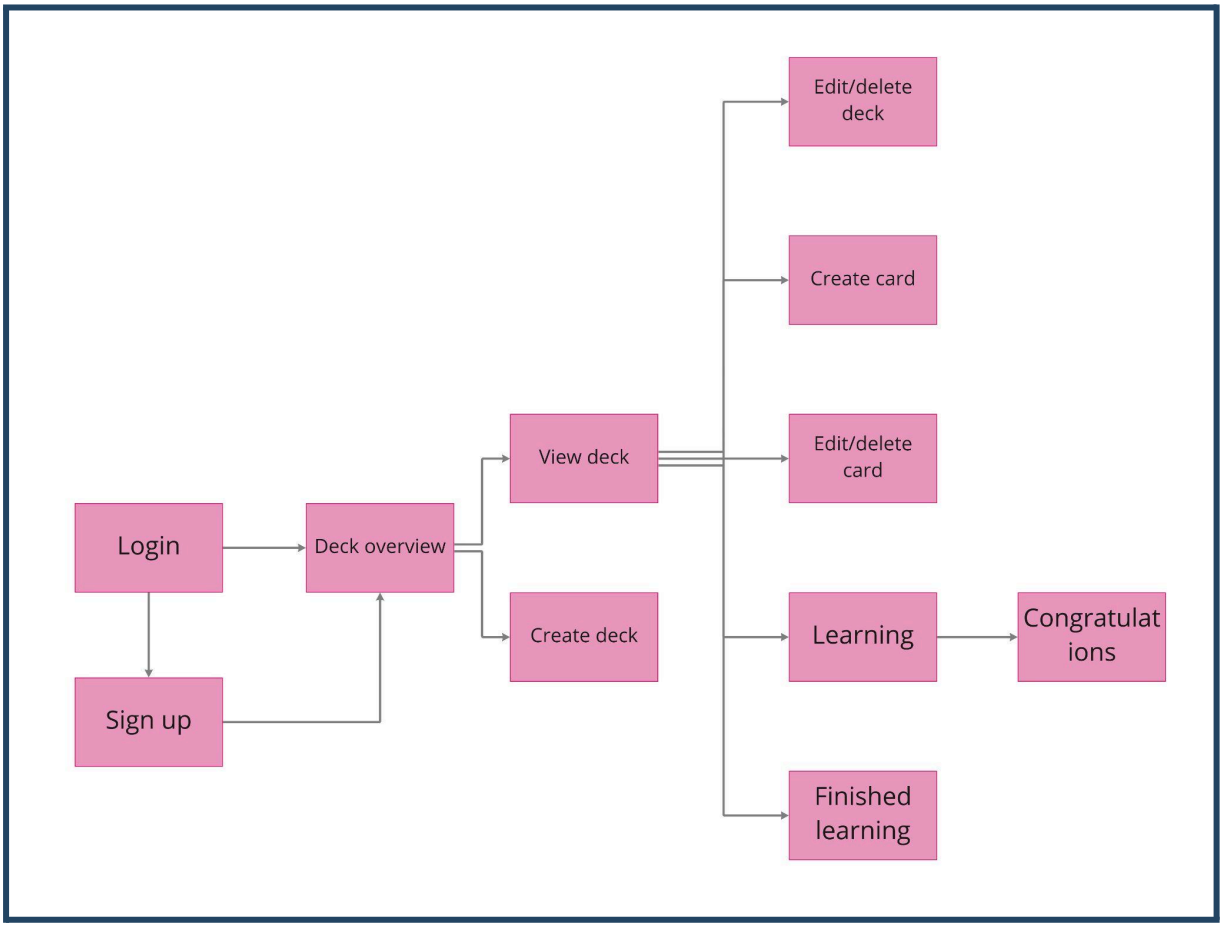
Task flow

With the user stories and the persona we clearly defined the project and were able to move on to the next phase - the first half of the second diamond of the double diamond model, which is the ideation phase. (Aquino, 2017) For that, I at first translated the user stories into pages, actions, and decisions. Out of that, I could create a task flow diagram, to get a better overview of the information architecture.



I put a lot of thought into it and iterated on it together with the rest of the team a lot. The learning flow in particular was an opening point for a long discussion.

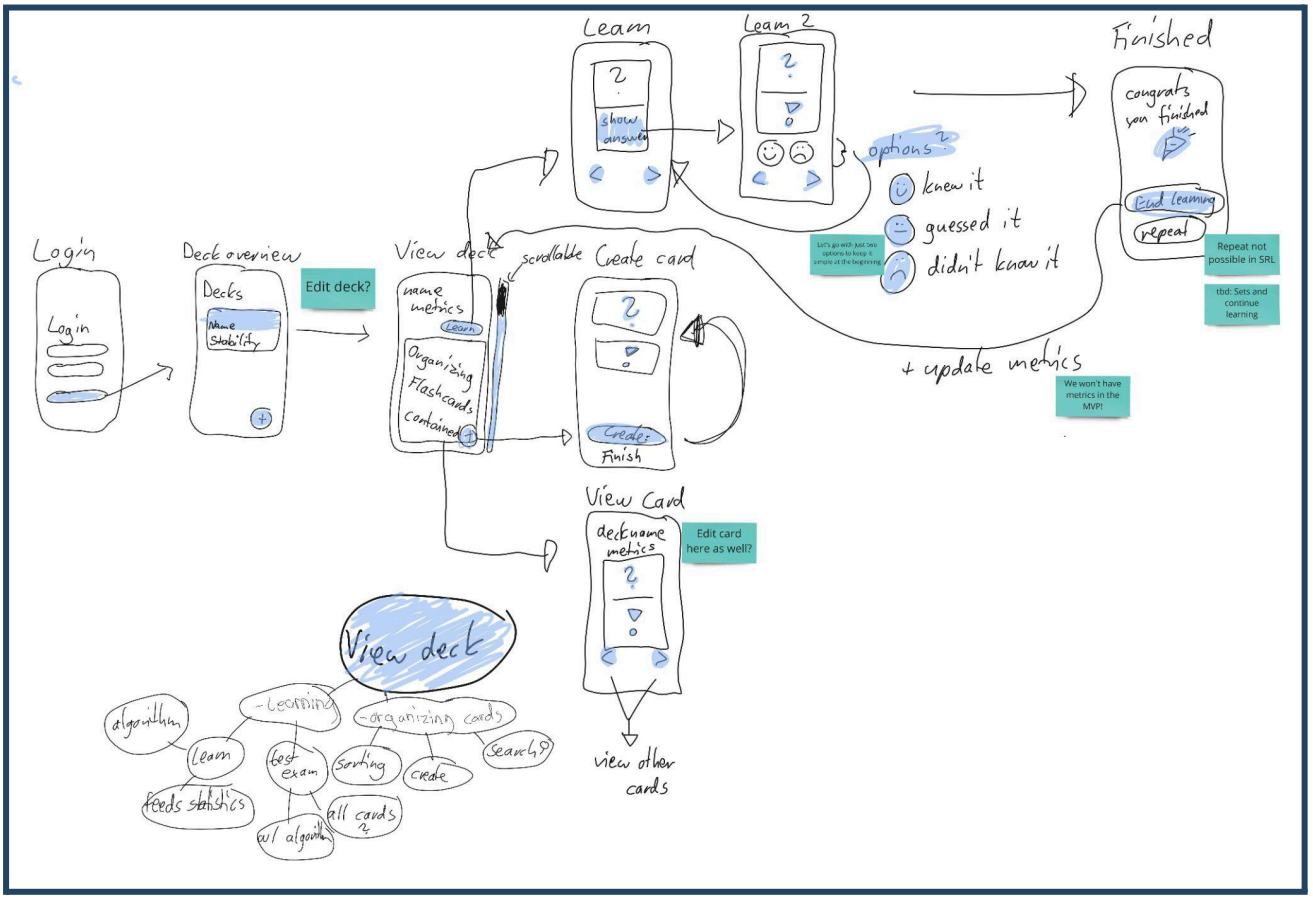
We, for example, debated intensively over the number of actions a user will have when the answer is shown during the learning process. Looking at the competition, we couldn't find a standard and most used amount of actions. It varied between two and up to five options to choose from. For the MVP we then decided to go for just two actions, to keep it simple and test it with the users. To move forward I extracted the pages out of the diagram and created a simpler version of it, to make it easier to sketch pages based on it.



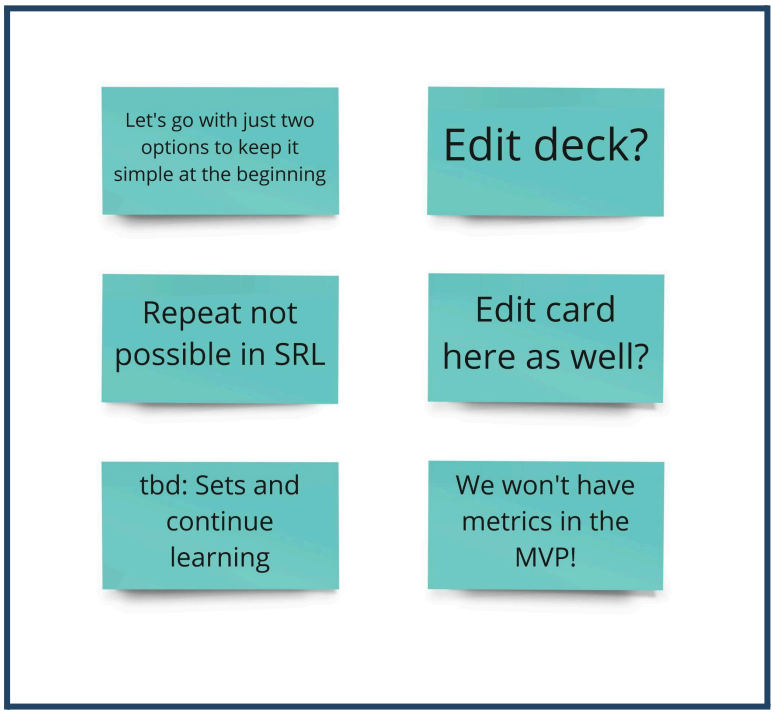
Wireframes

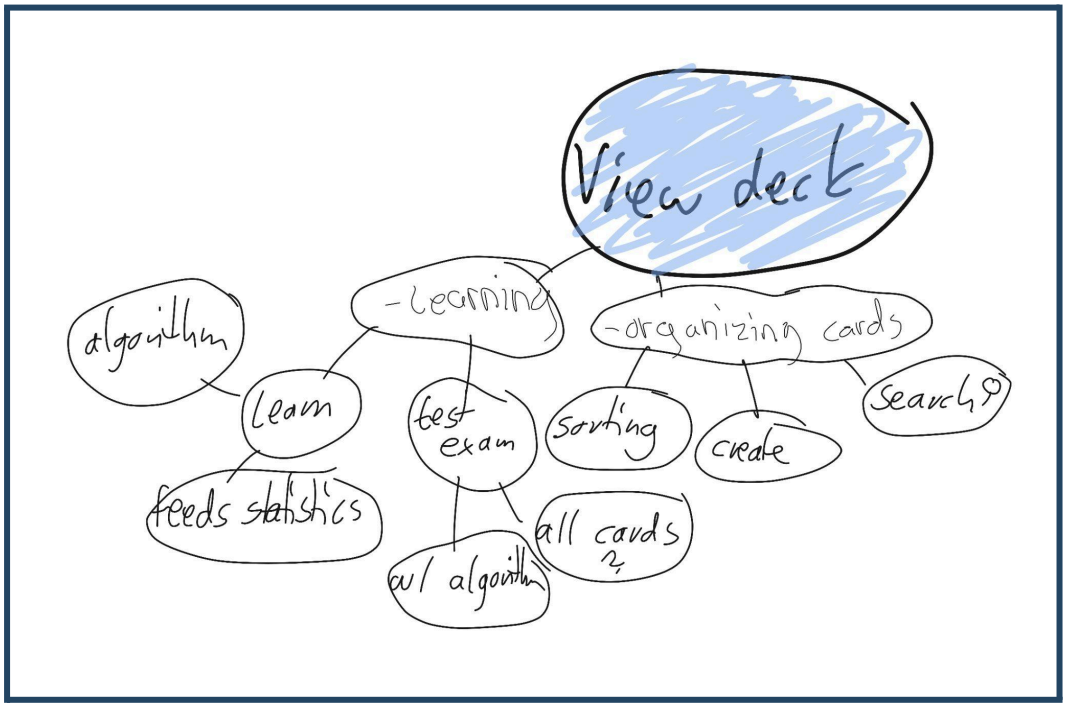
To start the actual design process I did some ultra low fidelity wireframes. The goal was to establish the layout, content, functionality, and flow of possible design solutions. For me personally, it has always been helpful in my life to go back to the basics with just a pen and paper. I used to learn for exams with my

hand-written notes way better than from computer fonts. That was one reason, why I chose this very simple and basic form of wireframing. Also, holding a pen and being free to just scribble something and delete it again afterward, helps for inspiration and lets the creativity flow. That's why I normally draw some very unrelated pictures first before getting into the task. In this case, e.g. I drew a tree with apples and birds flying around. For your own good, I will spare you the sight of it. The wireframes were a foundation for a discussion between the team members. Our app idea is not too complex, so the screens and the flow were quite clear and straightforward. Nevertheless, there were some discussion points. The sticky notes added in this picture are said points.



For better readability, I extracted the sticky notes into an extra image, as well as the brainstorming bubbles for the content of the view deck page.





The view deck screen is the center of the app's flow. That's why we dedicated a specific amount of time just for the discussion of all the possible actions that could be taken from this screen.

Gestalt principles

For me it is important to define a solid base, on which the designs are being developed. The Gestalt principles are a group of rules, developed by German psychologists in 1920. Even though they are quite old, they still are valid and became more important than ever when screen devices arose. The principle on which they are built is

“an organized whole, is perceived as greater than the sum of its parts”.

I wanted to make this application appealing to the human eye and understand, what is going on in the user's head when looking at it. That’s why I used the following principles in my designs.

- Similarity
- Symmetry
- Continuation
- Proximity

To follow the principle of “**Similarity**”, I used an asset for the buttons, text fields, and popups. Also for all the cards, that were going to be in one deck, I used the same design characteristics. Something similar-looking, always automatically is considered related by the brain.

Another way of visualizing for the brain, that something belongs together, is “**Symmetry**”. In this case, it doesn’t matter if two elements are close together. I used that principle for example for the “view next card” and “view last card” buttons. They are on the opposite sides of the screen, but it is clear, through their symmetric characteristic, that they run similar actions.

Through the principle of “**Continuation**”, the brain can understand the fact, that some content continues outside of the shown area. If there are more cards in a deck, I designed the view deck screen, so that one card is cut off at the bottom of the screen. Thanks to that, the users can easily understand, they can scroll down for more.

The principle that is followed throughout the whole screen flow is “**Proximity**”. Elements, that are presented close together are automatically considered as

belonging together by the brain. I, for example, used that with the primary and secondary buttons, which are represented on almost every screen. Also, I placed the fields “password” and “confirm password” closer together on the sign-up screen than the other text fields, because the content of them should be the same. (Gkogka, 2018)
In conclusion, the Gestalt principles helped me to create an easier understandable design.

Usability heuristics

To make the product even better in terms of usability, I followed these usability heuristics particularly.

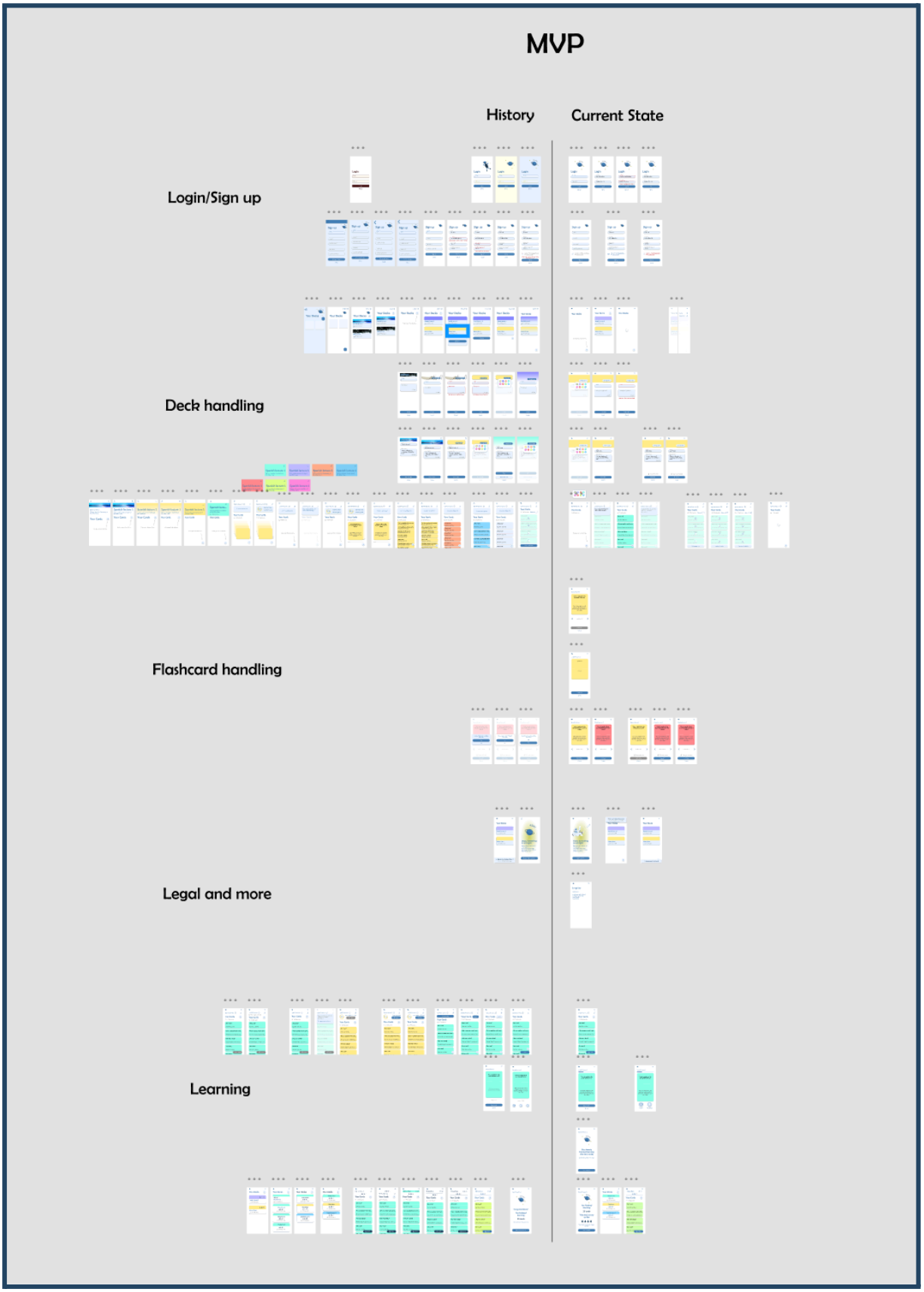
- Match between system and the real world
- User control and freedom
- Recognition rather than recall
- Aesthetics and minimalist design
- Help users recognize, diagnose, and recover from errors

As spaced repetition learning was established as an efficient way of learning way before digital products came along, I tried to make it as convenient for the users as possible to switch **from the real world into our product**. The terms that describe UI elements in the design are the same, the user knows from the analog world. For example, flashcards are also added to decks. I even made the cards look like real cards and used a font, that reminds of human handwriting.
Also, the users are **free to control** the application. On every screen, there is a possibility to go back, whether in the form of a cancel button or a back button. The controls are easily recognizable and give the user the feeling of having power over the flow.
To make it easier for the user to use the website, I tried to show all information needed on each page. The user **doesn’t have to recall or memorize anything**. The deck's name, in which an action is executed as an example, is always visible on the top of the screen. Through the prominent style of the primary button, it is easy for the user to see their options and possible actions on every screen.

To obviate the confusion of the user, I kept the design and content of each page **minimalistic**. Each element, that is visible on the screen contains important information. Therefore, the user is not overwhelmed by unnecessary info and playful design. The primary goal of each page is always represented by a huge button on the bottom of the screen to make it easy for the user to focus on the essentials.
One last topic is the fact, that users will make mistakes. To help them **recover from error states**, I prevented a design for a 404 page, with the option to go back to the previous page, in case a user clicks on a link, whose target does not exist anymore. Also, whenever the user has to input text, I let them know through a clear message in red, what to change to proceed. (Nielsen, 2020)

Minimal Viable Product

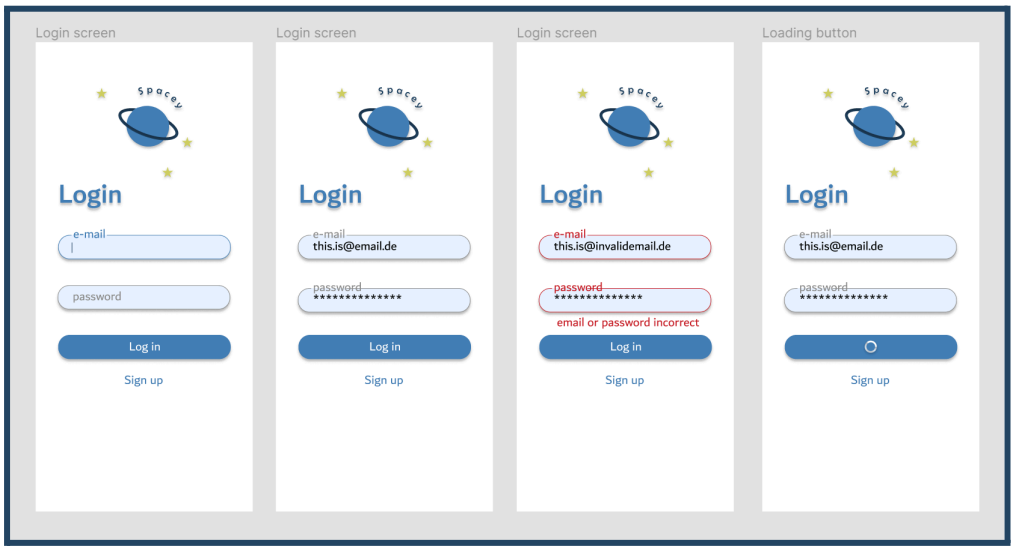
The time has come to design the screen for the MVP. With the user research, the persona, the task flow, and wireframes, I created a good and broad understanding of the project. With the Gestalt principles and the usability heuristics in mind, I started designing the screens. I defined the colors and typography and prepared some assets to use throughout the project. For some of the screens, I went through more iterations than others. Just to give you a brought overview, I will present you my Figma file in the following image, before I get into details.


MVP
History
Current State
Login/Sign up
Deck handling
Flashcard handling
Legal and more
Learning

There are a few screens, which history is worth showing in this document. An overview of all the screens is provided in a later chapter as a prototype. The first screen I approached was the login screen, from which I extracted the assets for the text fields and buttons.

Login screen

I played around with the background color and the logo at first, which then brought me to the design, which was then used in the MVP.

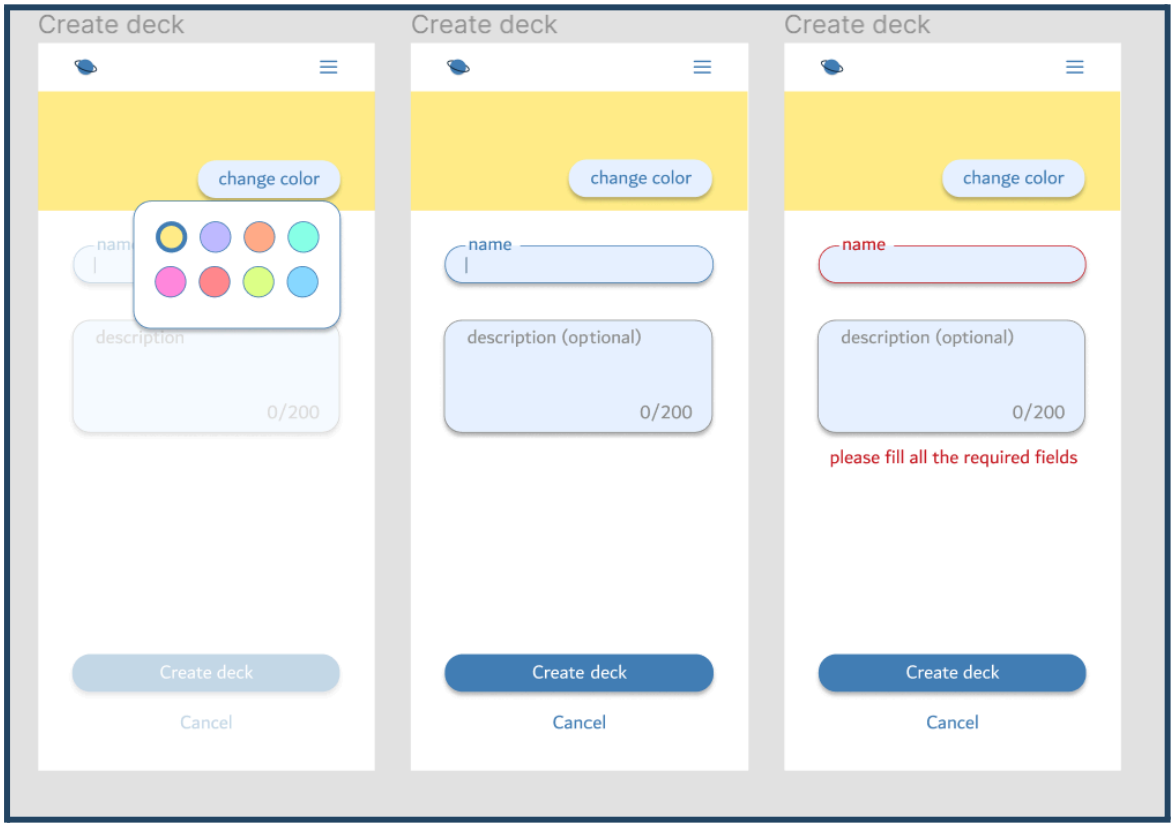


I went with the white background because it was the clearest and most appealing option. The inspiration for the design of the text fields came from a competitor's design. Because of the name Spacey, I went with blue colors and round elements, which remind, like the name itself, of the outer space.

Create deck screen

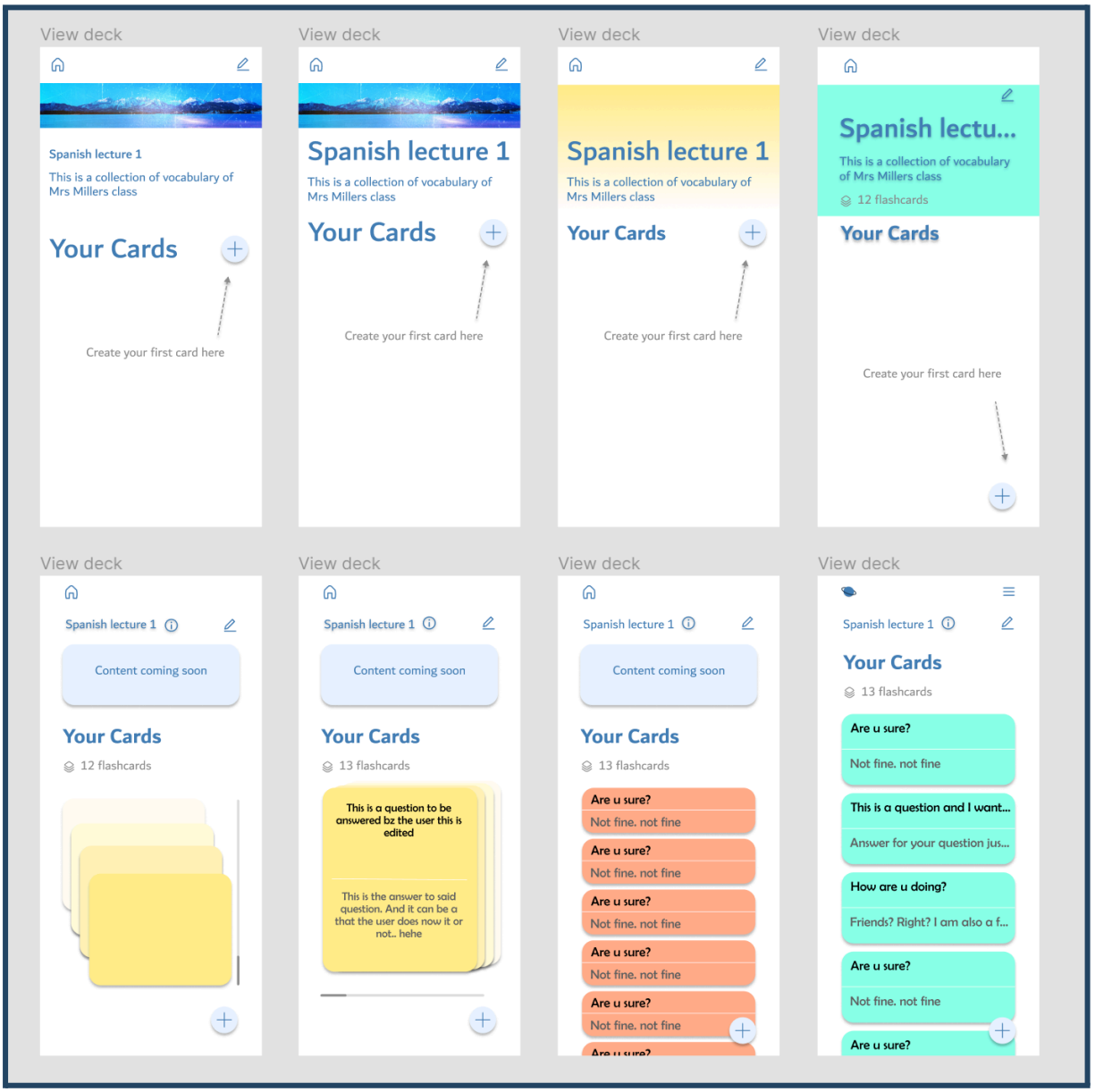
Here again, I went through some aesthetically reasoned iterations. At first, I wanted to provide the possibility of choosing an image as the deck's recognition value. But, because it was easier to implement and users were not likely to have more than five decks based on our research, I changed my mind and provided a pallet of pastel colors to choose from instead. The colors also were the background colors of the cards in the deck.

After all these iterations, the result looked like in the following image.

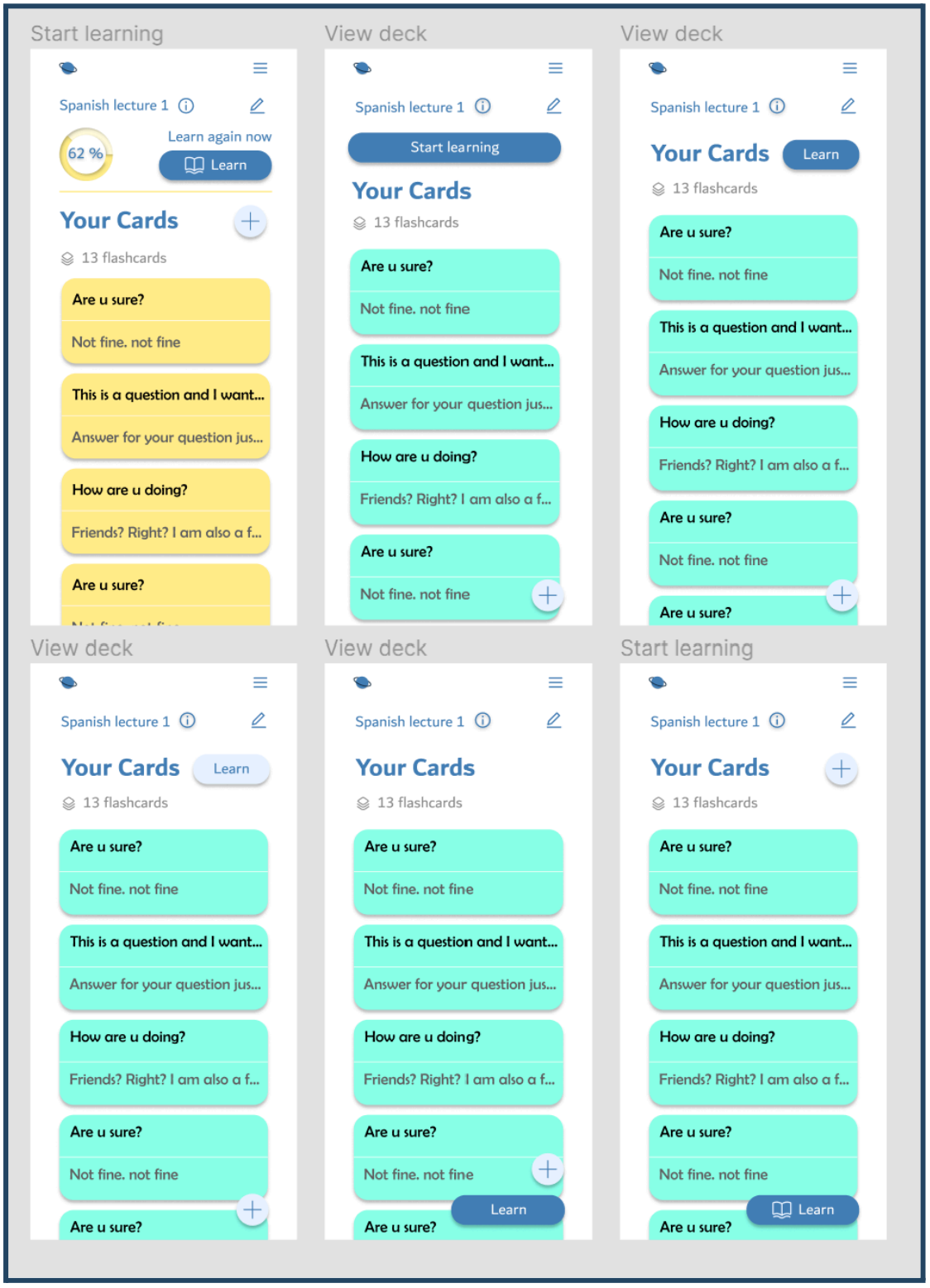


View deck screen

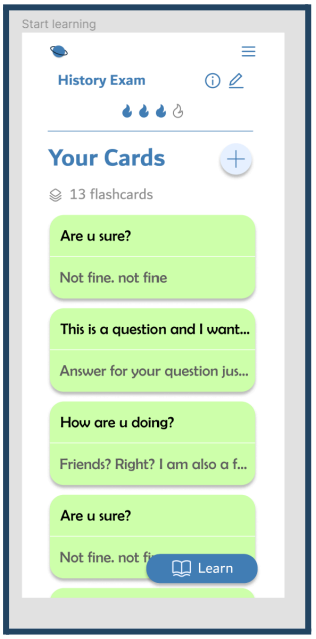
As I already mentioned before, the view deck screen is the most important one in the project. For this one, I used the most time and tried a lot of different approaches.



With more features, there were, came also more content that I needed to place on the page like the learning button, which again started a lot of iterations. Through all the cycles, I got more and more confident and learned a lot about design myself.



The last added feature for the MVP, the probability indicator, lead to the final version of the view deck screen, which can be seen in the following image.



Feedback MVP

Unfortunately due to my lack of experience, I did not do decent user testing at this point. Looking back, I should have taken the time. The MVP was ready, but up to this point, no user ever saw the app. I am very aware of the mistake I made. Collecting feedback from users is important to create a good product. I wanted to create a “perfect” app, before showing it to potential users, which is a wrong thought as I realize now. At least, I showed the MVP to fellow design students and collected feedback from them for the designs and the flow. They gave me some valuable insights and food for thought. I listed some of them here.

- The primary blue could have more contrast to the background.
- On some screens, the headlines are a little too big.
- Drop shadows are quite outdated
- There is a lot of unused white space at the sides
- The navigation needs to be improved
- Better group the information on the finished learning screen

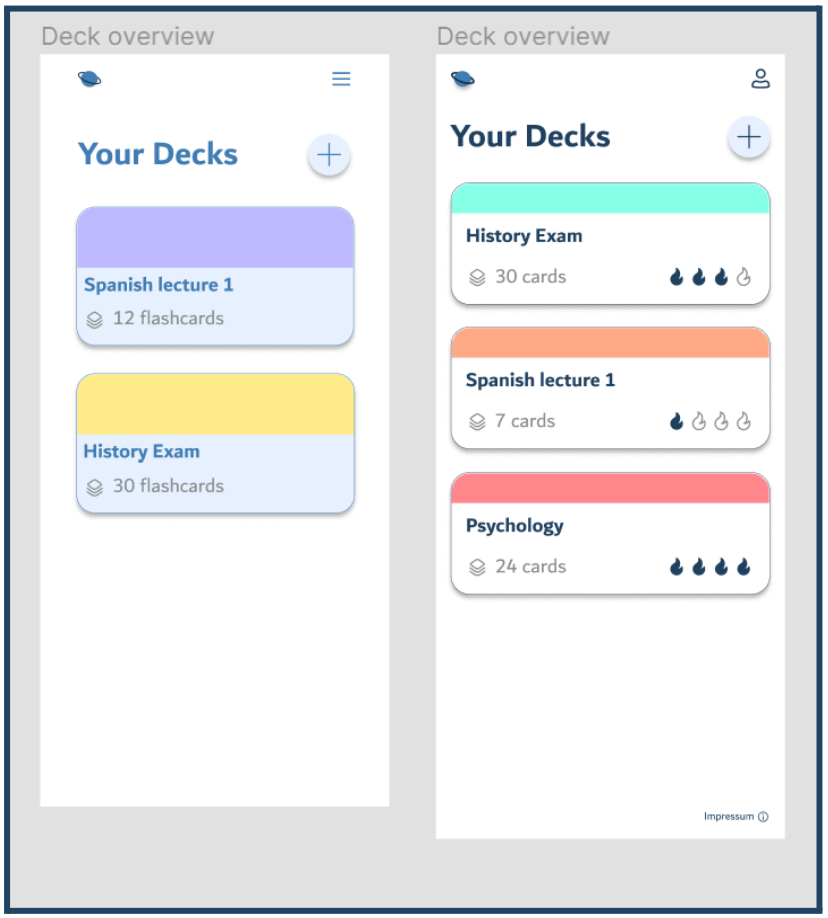
All these points made me decide to start a new version and make some new design decisions.

Version 1

In this version, there were no major feature changes, but mostly design changes based on the feedback I mentioned earlier. I am going to show some of the new styles, but a complete overview can be found in the link provided in the chapter prototype.

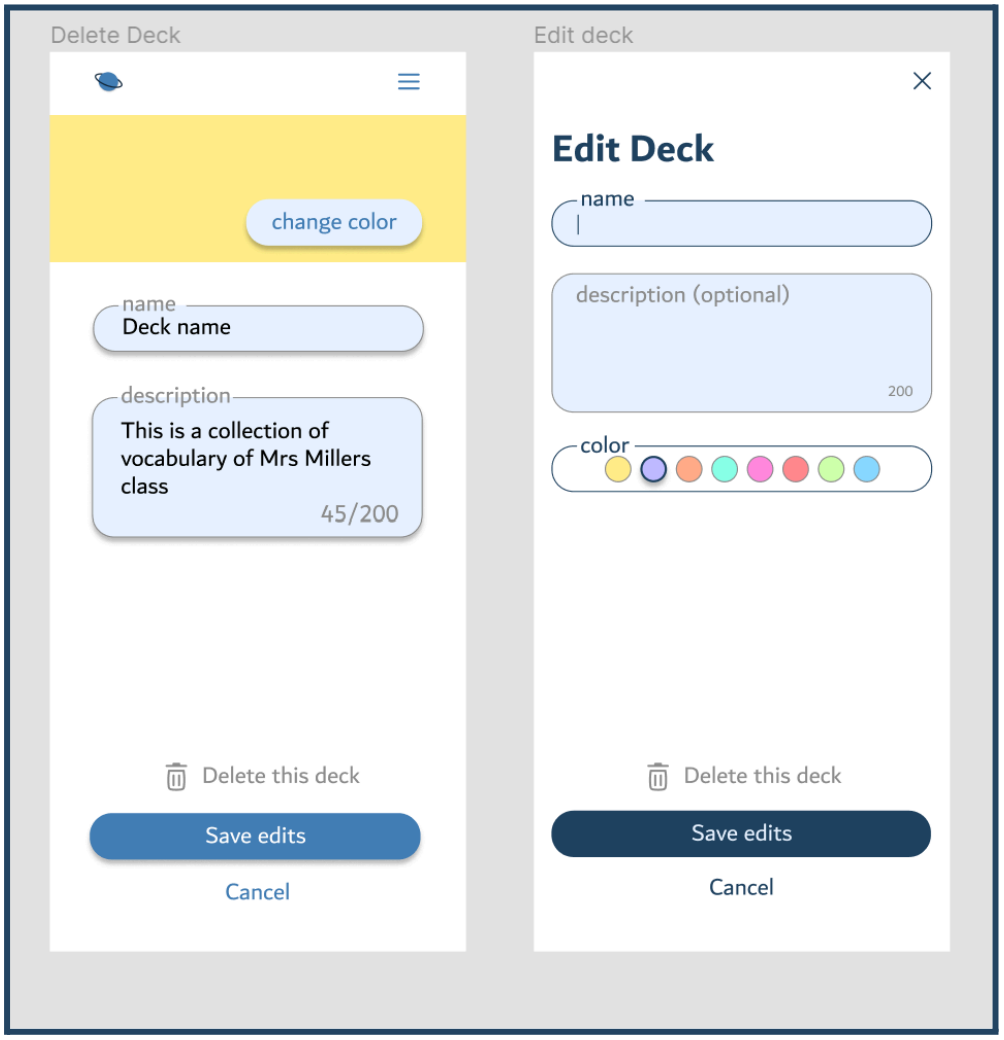
Deck overview screen

Based on this screen the main design changes can be best seen. On the left side is the MVP version of the page and on the right one is the current version. I removed unnecessary white space and set the primary color to a darker blue.



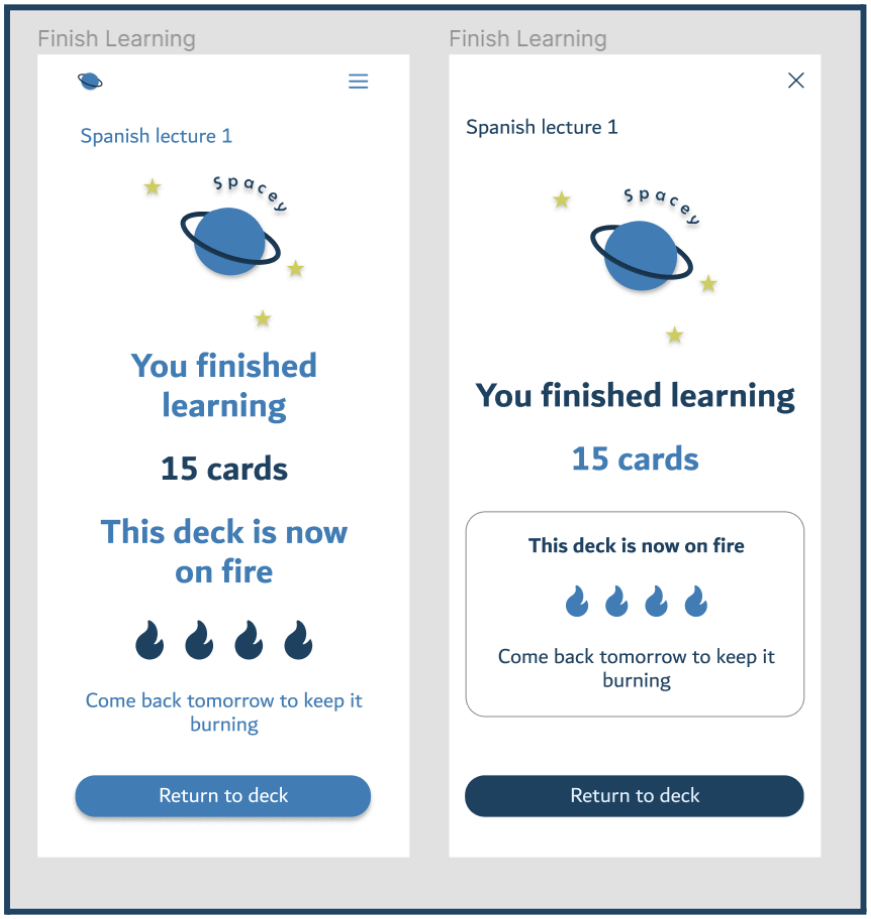
Edit deck screen

The edit deck screen also significantly changed in the new version. It is now easier to understand and more aesthetically pleasing than before. Here is visible, that I removed the drop shadows from the elements to create a more modern style.



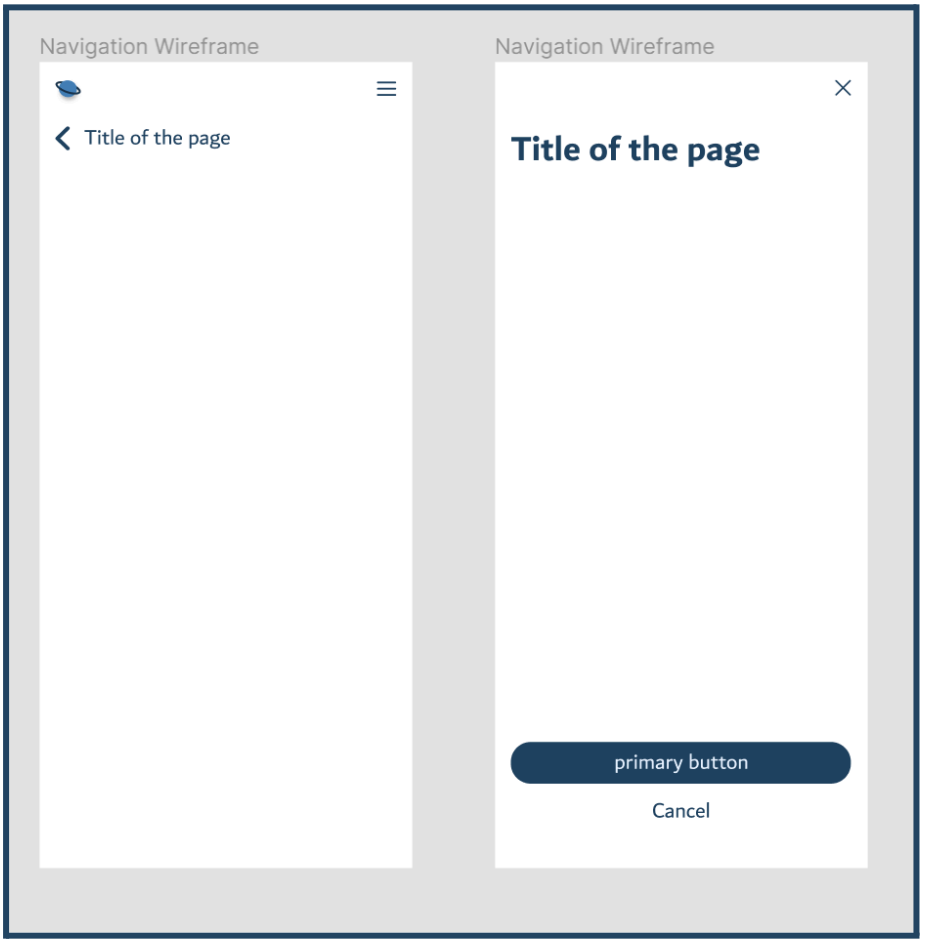
Finished learning screen

This screen got a lot of negative feedback because the information was just “floating” around. I tried to fix the problem with a surrounding container as you can see in the image below.



Navigation

Another huge change in version one was the improvement of the navigation. Most of the navigation from now on should take place at the header, but there should be a second option to move back on every screen. Some of the screens from now on function like dialogs with an X-button on the top right corner and the option to cancel at the bottom. All the other screens are containing a back button to navigate and the Spacey logo at the top left corner to move back to the home screen, the deck overview screen. Here are some wireframes, of what the navigation looks like in both cases.



To decide which screen would get which navigation design, I split them up into two categories. The main screens and the additional screens. The main screen basically was the view deck screen. Every action taken from there was given the additional screen navigation design. The deck overview screen is a huge exception because it is the home screen and there is no going back from there. That's why it has the main screen layout, but without the back button on top.

Design system

I added the design system as an appendix at the end of the file. I divided the content into these main sections.

- Colors
- Typography

- Assets
- Icons
- Logo
- Grids

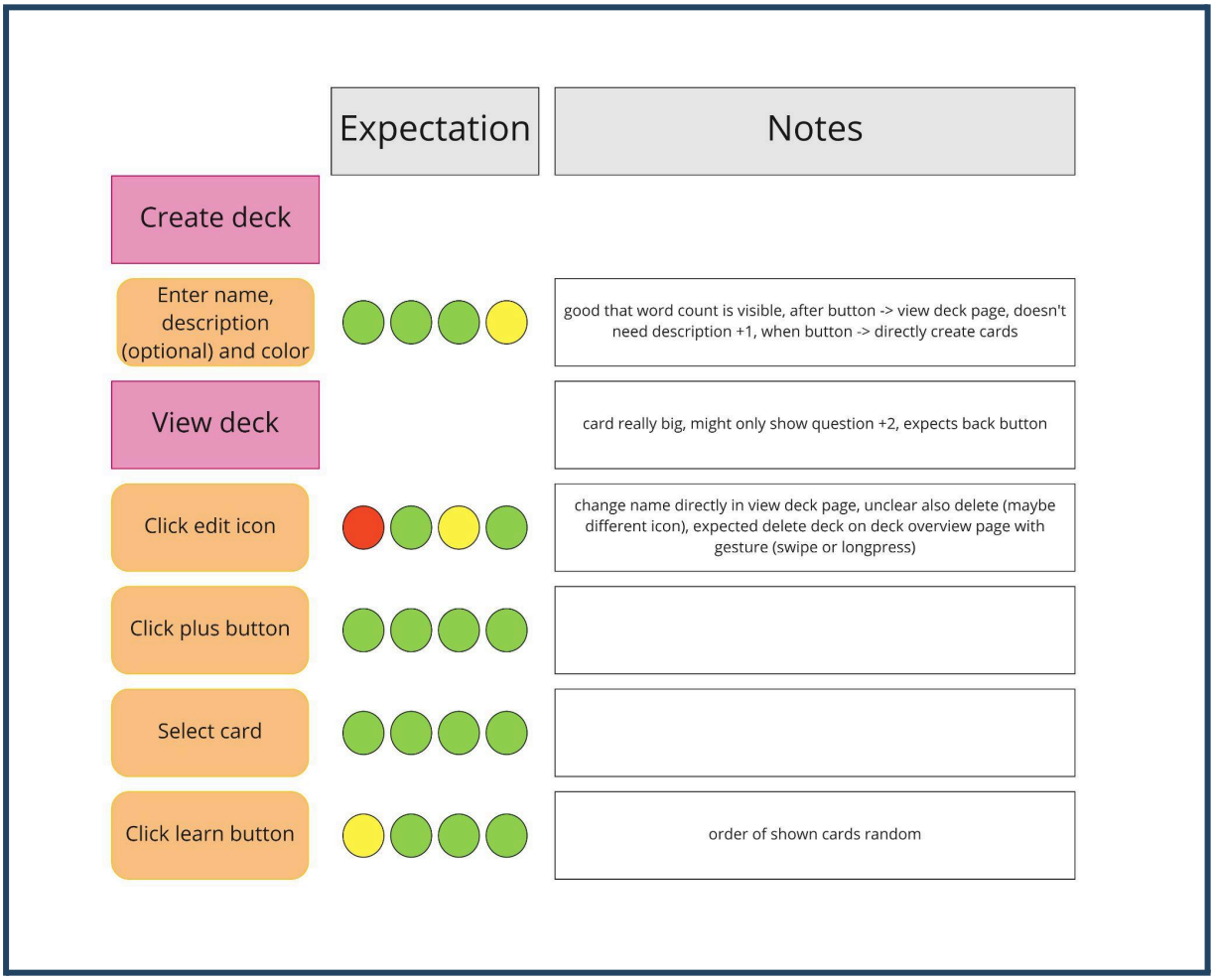
The design system helps the developers because it provides them one point where all the standards and information are stored. It also helps onboarding new team members and especially new designers.

User testing Version 1

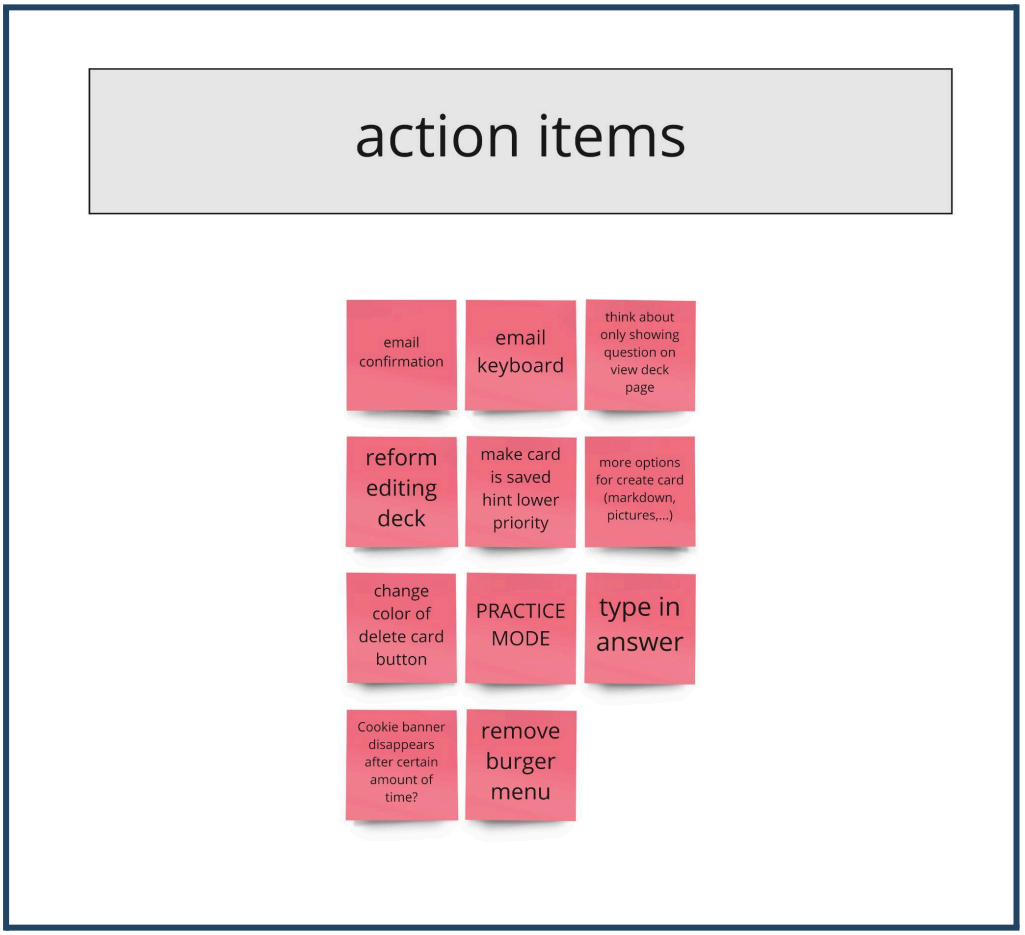
Learning from my mistakes, I planned a user testing session. In total four participants, that fitted our average user description, volunteered to try out the app. They all were students and had already used spaced repetition learning apps before. I took some notes during the sessions and later polished them on a table, to present to my team members. To easier understand the process they are going through, I asked them to think out loud. Before clicking on a button or performing an action, they should tell me their assumption about what's about to happen. The validation of the design then could be done based on the accuracy of the assumptions. I gave the following instructions and let them do the task, without further interruptions.

- Create a deck with four cards.
- Learn your deck.
- Delete one card.
- Delete one deck.
- Feel free to try out anything else you would like to.

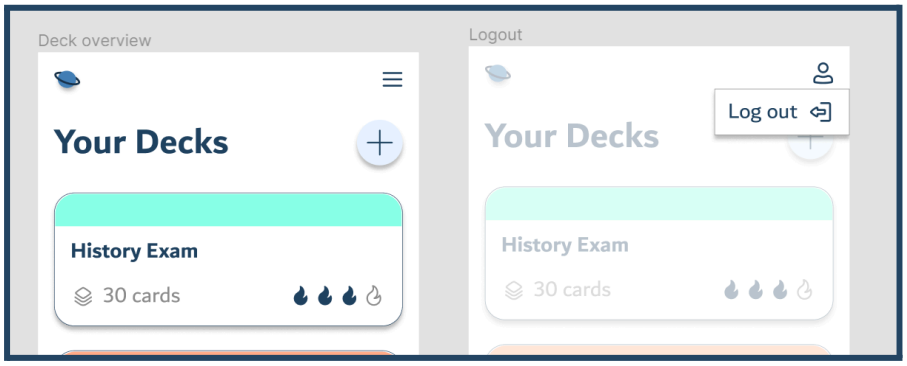
Here are some of the most insightful parts of the table I created afterward.



Overall the app was understood well by the participants. I could just gain some minor, but valuable insights for improvement. As you can see in the image above, the edit icon was not understood as expected. For two of the testers, it was not clear, that the delete function was on the edit screen at first. Also, the general feedback was, that the cards on the view deck screen should only show the question, to not allow a peek at the answer before learning. Here are the actual action items, I could take away from the testing sessions:



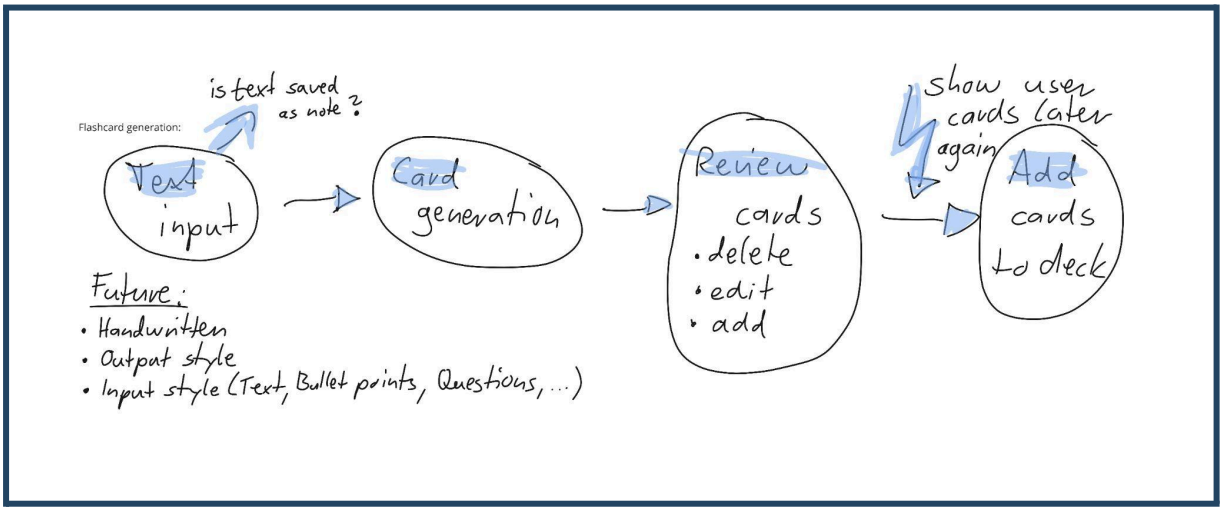
There are two main takeaways I want to specifically highlight. At first, the need for a **practice mode**, for when there is only a short amount of time available to study before an exam. Also, the users seem to need **more options for creating a card** like adding pictures or creating bullet points, etc. Currently, it is only possible to type in plain text. One change I already implemented in the design is, that I exchanged the burger menu icon with a profile icon because the only item in the menu is currently “logout”. I added an image below, covering it.



Card generation

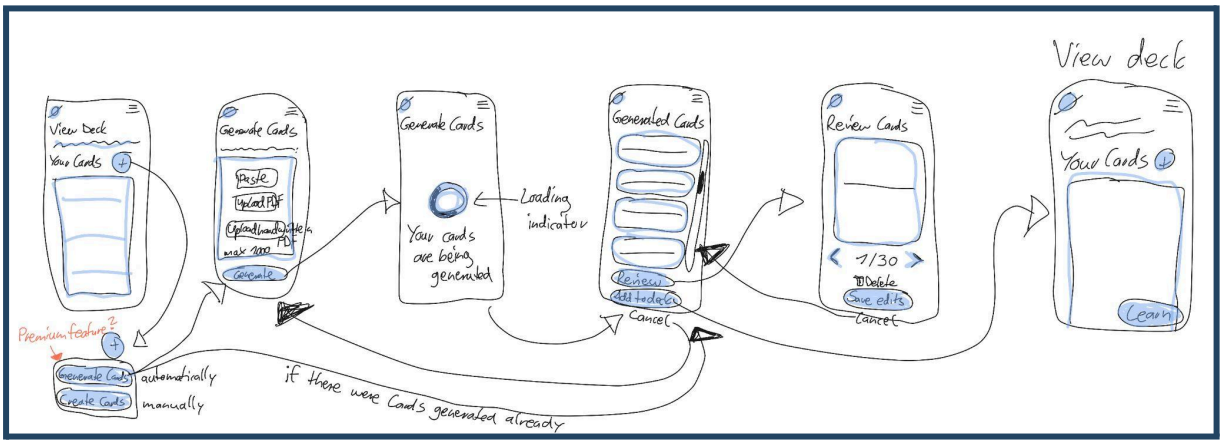
One insight we gained from the initial user research was that there is a need for automating the card generation process. Most of the interviewees we asked, said that they would only consider using an app like this if they did not need to create the cards themselves. Also, there is no competitor out there, who already implemented a feature like that. It could be a USP for Spacey. Here is how I approached the design process of card generation.

Task flow



It helped to create a task flow again for just the feature. There is no reference out there on the market and therefore no source for inspiration. In the image above, my thought process is quite visible. I even had some ideas for the future but wanted to focus on the basic functionality for now.

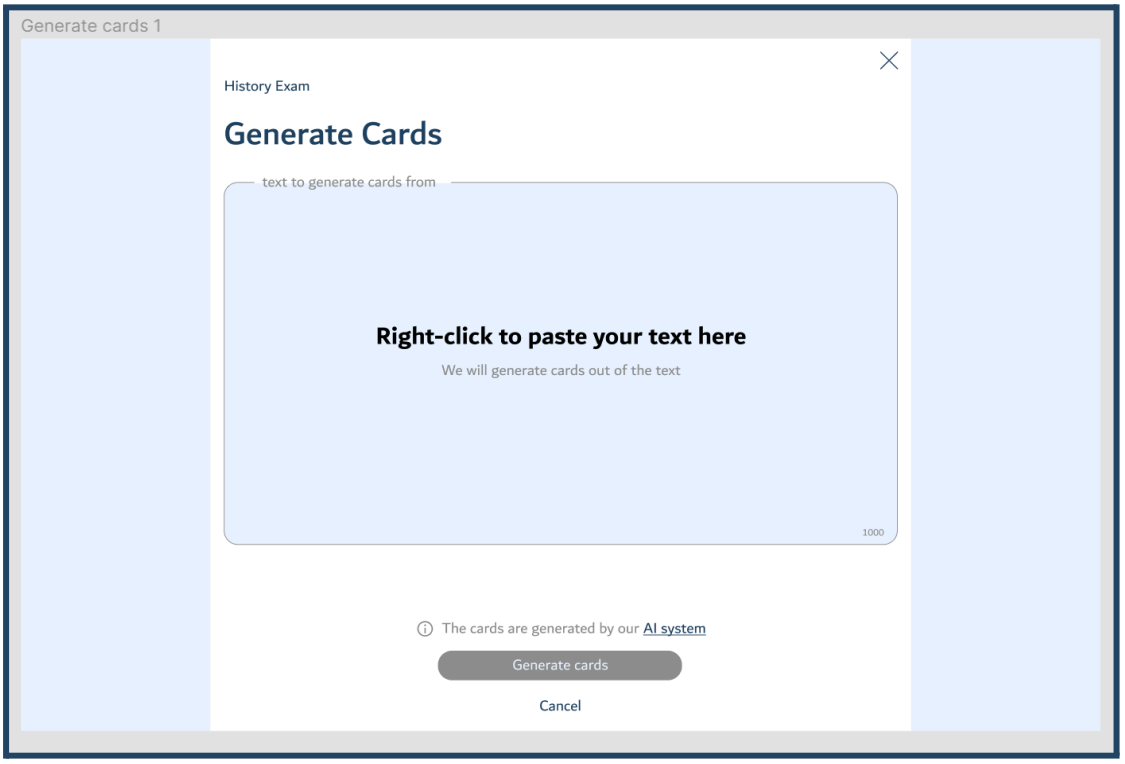
Wireframes



Again, for reasons, that I already mentioned earlier, I created ultra low fidelity wireframes. Only after they were finished we, as a team, decided to publish the feature for desktop, because in our research we found out, that most users will create cards, sitting on their desk at a PC, rather than on a mobile device. Based on the wireframes, I could continue with creating the designs.

Design

Of course, for the designs I orientated myself on the design system, the Gestalt principles, and the heuristics I defined earlier. The only difference was, that I had to design for desktop now. Here is one screen as an example, and the whole flow can be viewed in the link provided in the chapter prototype.



Prototype

For the developers, to not just have a template for each screen, but also for the whole flow, I created prototypes. Also, the user testing I conducted, was with the prototype. Here are the links to the three different flows, I created.

MVP prototype

Go to Figma file here

Version 1 prototype

Go to Figma file here

Card generation prototype

Go to Figma file here

Future of the project

In the future, we want to continue working as a team and maybe even found a

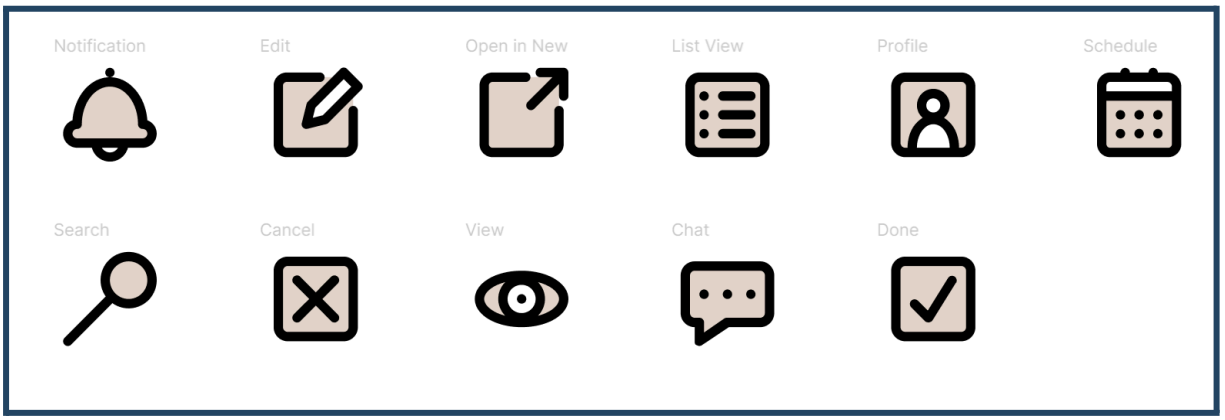
company together. From all our research, in form of interviews and user tests, as well as from talking to friends and fellow students, we learned that we are up to something with the automatic card generation feature. With the machine learning algorithm we used in the software implementation, we can even taggle more text-based automation problems. That's also what we want to focus on from now on. I was really glad that I chose Spacey as my first core semester project because it gave me the opportunity to find myself as a designer.

Icon design

Aside from the work I did for Spacey, I also attended the icon design workshop, offered by Gianluca Corpino. We learned how to design and create our very own icon set. I created an Adobe Illustrator file and at first prepared a template containing a grid and keyline shapes for reference. For creating the icons it was important to keep following guidelines in mind.

- Icons should be bold and geometric
- Use consistent instead of organic shapes
- Icons should be pixel perfect
- Consistency, consistency, consistency
- Simple items for clarity
- Don't mix filled and unfilled icons

I decided to go with some two-toned icons. (*System Icons*, n.d.) The results of the workshop can be seen in the image below.



Reflection

It was my first core semester, studying interaction design. I am proud of myself, that I managed to carry out a project as the only designer on the team with basically no experience. It was an opportunity to learn the basics of screen and navigation design. Thanks to the learning units, I attended, I learned a lot about task flows, wireframes, sketches, and design systems. Also, I could get to know the Gestalt principles and usability heuristics. All of this gained knowledge, I could use and implement in practice in this project. I now know, that studying this subject was the right choice for me and that I have exactly the fun, that I hoped for. The diversity of the topics from user research to creating a product and user testing is making me hungry for more.
In the end, I just hope, that it is appreciated that I pointed out my mistake of not doing proper user testing at the beginning of the project. I could have faked the data but decided against that because I think the culture at CODE is healthy enough that it is not necessary to cover up failures.
The design tools I learned to use this semester were Figma, Adobe Illustrator, and Miro. I am looking forward to deepening my knowledge and skills in interaction design.

References

Aquino, A. (2017, June 3). *What is the Design Process?. A detailed overview for designing... | by Andrew Aquino | Intro to Digital Product Design*. Medium. Retrieved April 29, 2022, from https://medium.com/intro-to-digital-product-design/lecture-2-accidentally-uploaded-from-phone-c23ef4aca05c

Gkogka, E. (2018, January 16). *Gestalt principles in UI design.. How to become a master manipulator of... | by Eleana Gkogka | Muzli*. Muzli - Design Inspiration. Retrieved May 2, 2022, from https://medium.muz.li/gestalt-principles-in-ui-design-6b75a41e9965

Nielsen, J. (2020, November 15). *10 Usability Heuristics for User Interface Design*. Nielsen Norman Group. Retrieved May 5, 2022, from https://www.nngroup.com/articles/ten-usability-heuristics/

System icons. (n.d.). Material.io. Retrieved May 3, 2022, from https://material.io/design/iconography/system-icons.html#icon-themes