Interaksjonsdesign report

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DS3302

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23.09.2022

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Figma's proof of concept link

https://www.figma.com/file/Uj1gX06nXerSFtUG75YoZx/Bitwise-Proof-of-concept?t=hB8pKBpLJHoPfRuP-1

Background

For most of the people who want to start their career as developer or programmer in general with little technical background, things might be messy and chaotic right off the bat. If you are not familiar nor have been exposed to any code until now, everything looks pretty much cryptic at glance. Even a line of code written with the shortest syntax looks scary, not to mention all the terminology behind it. Praise the advancement of technology of what we have today, we can pretty much learn about almost everything. The resources are online and with the right will and mind you can become a self-proclaimed developer. There are many platforms and tutorials online which you can choose from that have pros and cons. Most if not all will become more confused and stuck on the verge of choosing which application or tutorials to follow, which most likely ends up in a “tutorial hell”, if this was an easy task, everyone would become a developer by now.

Goal

The goal for our solution is simple and clear. Ironically, it is yet another learning resource for students, but made by students. We empathize, we understand what students need, simply because we’ve been there. The objective is oriented with the student as center, creating a solution with good user experience in mind, implementing design methodologies with best practices.

As a user, identified as a student, but not limited, by using analytical strategy we want to give our take by modifying an already existing platform such as "*Memrise*", "*Anki*" or "*Quizlet*". This is not meant to be replacing any platforms, nor inventing a game breaking learner academy fully backed by documentations, simply a complementary resource with good user experience in mind.

We are to make a platform tailored for IT students. The purpose of the product is to assist Freshman to get the grasp of algorithms, common paradigms and logic control flow. Programming is hard, how can you manage to remember all the syntaxes, functions, methods and being logical at the same time. How can you get the abstract idea of the concept you are taught every day while maintaining your sanity. We believe by breaking down heavy topics into digestible form, such as visualization with practical examples along with spaced repetition technique, will boost their rate of knowledge in the shortest amount of time. This is especially true for the average Joe that just want to pass the exam or probably the most hard-working guy but not working smart

The issues - understanding Users and why it works

What are the users need, how can we solve their problems, can we make their life easier, not harder? Technology is constantly evolving, how can we find the balance between efficiency and flexibility for reaching your ultimate learning goal.
Using myself as an example, during my years of studying a foreign language, we were given weekly and monthly tests filled with new grammars and syntax. I remember our Japanese teacher introduced to us something called "*Anki*" - a Japanese word for memorization, a learning technique that is about rehearsal to recall information spread out through multiple

mini sessions. It may be 10 minutes, 5 or even 1 minute review per day. This is an intelligent way to work around cognitive constraints without overloading ourselves with tedious rote memorization methods. In context to programming, we can leverage this spacing effect to retain dozens of Array methods, syntaxes or even all Linux commands.

Issues and beyond

We are not built to memorize, our brains are designed to think, imagine and hold onto what is more important. It is strange to say from memory you remember to run when you see a wild puma pounce on you, rather you imagine if you don't run it will be fatal.

"Every act of perception, is to some degree an act of creation, and every act of memory is to some degree an act of imagination."(Oliver Sacks).

From the beginning, we want to teach ourselves how to adapt by implementing all methods and functionalities quickly as possible. Eventually as time passes by, you start repeating this paradigm until you see it occur over again until it becomes like a second nature, then things will fall into pieces just like a puzzle. The technical part is way too mind-numbing to begin with. You don't necessarily have to understand the mechanics of a bicycle and the physics behind it in order to ride a bicycle. With this analogy, we can form a symbolic link behind this learning effect.

Collecting of data

For this project, we started by making forms and asking students and teachers alike about different facets of both practicing and honing skills and how they wish to improve. We put extra questions into understanding how much time people want to spend on honing their skills and what kind of reaction/feedback they want from the service.

Looking through the data, we learned that a lot of students in particular like to use more than 4 hours on learning outside their allotted time. This may be due to the test mainly being sent to IT students, who already do use quite a lot of time to study and practice quite complex technical issues. Which in turn requires quite a lot of time from the individual.
We also observed that most individuals would like to see not only a kind of progression in their learning, but also quite a lot of feedback in how they are doing in their studying.
All of this feedback we took into consideration when we created the newer revision of our app.

User groups & audiences

Students, hobbyists, curious people. We are looking to capture the individuals who are maybe struggling with their studies, trying to learn a new skill or wanting to fine-tune their skills and challenge themselves. We are looking to help people reach their goals in learning and mastery of a certain skill, and our app is focusing on the IT crowd of students and people wanting to learn more about methods and syntax relating to programming languages and such.
As this topic is quite broad and difficult to learn without actually doing coding, we are looking towards students and people who already know what they want to practice and want to hone that skill even more.

Personalis

Personalia

Synnøve

Lokasjon: Oslo, Grunerløkka

Yrke: Student innenfor interaksjonsdesign

Hobbyer: Sosiale gatherings, film og webside skaping

Om Synnøve:

Synnøve bor i kollektiv og har i andre året på studie fått litt flere oppgaver som krever kommunikasjon med programmerere, og kode snakk. Hun føler seg frustrert over at hun ikke kan være mer til hjelp for dem og vil lære mer om det. Hun har brukt tjenester som memrise for pugge til prøver og ønsker derfor en løsning som er ganske lik, men ikke alt for annerledes fra det.

Synnøve skal gjennom hennes ønske til å lære mer kunne velge Bitwise ved at hun ønsker en lett og kjapp løsning som skal løse problemet, å kunne lære mer om programmering, gjennom repetisjon og pugging.

Personalia

Thomas

Lokasjon: Oslo, Grønnland

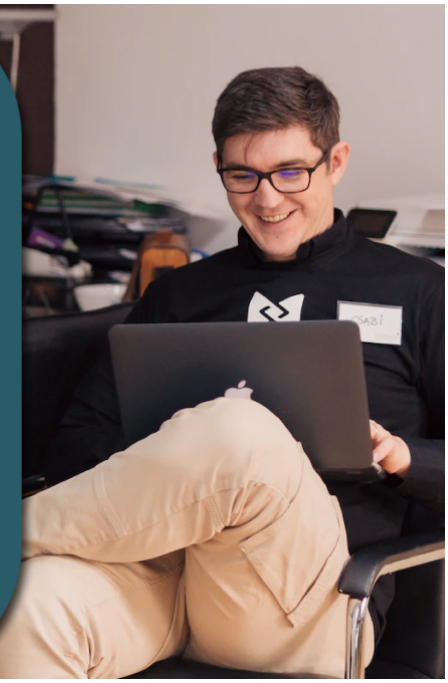
Yrke: Student innenfor infomatikk

Hobbyer: Gaming, koding og film.

Om Thomas:

Thomas bor i studenthybel og er fersk student på IT studie.
Han er ikke kjempe kjent med alle konseptene som faller innenfor alle kodespråkene han må lære, men han er villig til å lære mer. Han ønsker en lett løsning som ikke tar for mye tid ut av dagen hans. Han har brukt duolingo for å lære seg ett språk og liker den form for app som hjelper med å lære litt hver dag om koding og metoder.

Ettersom problemet til Thomas har med tid å gjøre så skal bitwise være den perfekte løsning, grunnet dens lette metode for å øve kjapt og i eget tempo.



Design thinking & Principles

We want to design a good user experience for our service. So what the heck is user experience? The interaction between a product and a human. The engagement when a feature provokes your senses that conclude your overall impression of a product, based on the visual design, does it look appealing, how is the quality, is it responsive, how intuitive was it to use, does it cause frustration. Because humans are different, all user experience is based on subjective qualities and differs from our objective usability goals. We may describe the usability goals rather than asserting a product's usefulness from its own perspective. It's also worth to note that according to Preece etc., "one cannot design a user experience, only design for a user experience"(Interaction Design: Beyond Human-Computer Interaction, 5th edition, pp. 15) But what we can do as a designer is to set a goal for the user experience to be helpful and do as intended, not cause frustrations or wasting resources. The general idea is to design a product using design principles backed by theory-based knowledge, experience, and adequate feedback from the users to make adjustments with common sense.

Principles

We can design a good solution if we follow some fundamental rules which are based on psychology and thoughts of how humans perceive, learn and remember things(Introduksjon til Interaksjonsdesign, pp. 37). The elements and interface will be designed on the basis of this principle by implementing one or several rules.

Visibility - when designing we have to make the functionalities visible, it may be a button, input form and contrast ratio that separate background color and text.

Mapping - is about relation between things, for instance it's natural to map a button to submit a form. You could also design an input form by modularizing into steps and map a button for each input to reduce cognitive overload. This will limit how much information our brain needs to process at the same time.

Feedback - it can be in tactile, visual, auditory or a mix of all. When the user is successfully logged in, they may get a prompt to notify what happened, it can be a green checkmark paired with a success sound.

Consistency - is about being consistent with the design of its functionalities. One would expect a main menu button to show the same information every time, with no Easter eggs around.

Constraints - having constraints is a design solution to assist the user in occasions where some options are not available, we can disable or simply hide the unwanted attention.

Ockham's Razor - when designing for a thing, simplicity is the best.

Fitt's law - the time it takes to reach a target, when designing something important like a button, makes it larger.

Hick's law - The more options we have, the longer time we evaluate for making a decision. This will lead to inefficiency. These are the guidelines in the progress of making a good design.

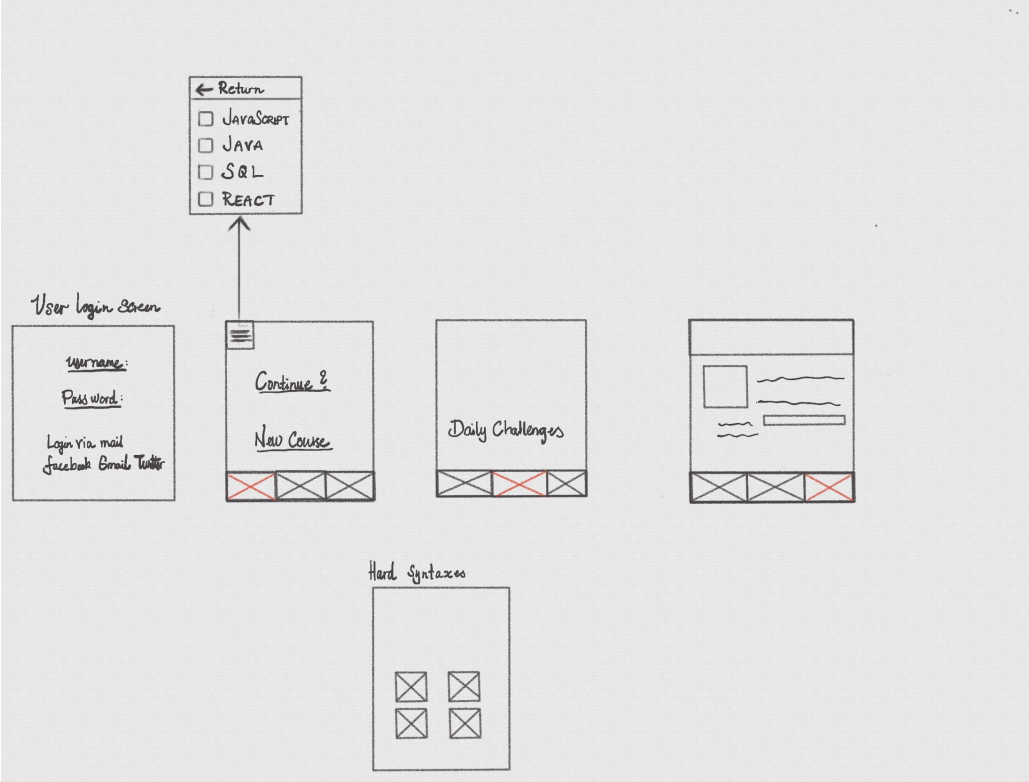
User Centered Design - Iterations

The principles are with users in focus, understanding their needs is the reason behind a product development. The early focus is to understand most students will spend plenty of time on their mobile phone. According to Statista, the annual mobile data usage worldwide, in the survey shows that from 2020 till 2022 recorded 831.87 traffic in Petabyte and by 2025 will reach 1,866 Petabyte. We can observe that most people will spend a lot of time on their handheld devices. In the early development process, we can study their performance with an initial release of a

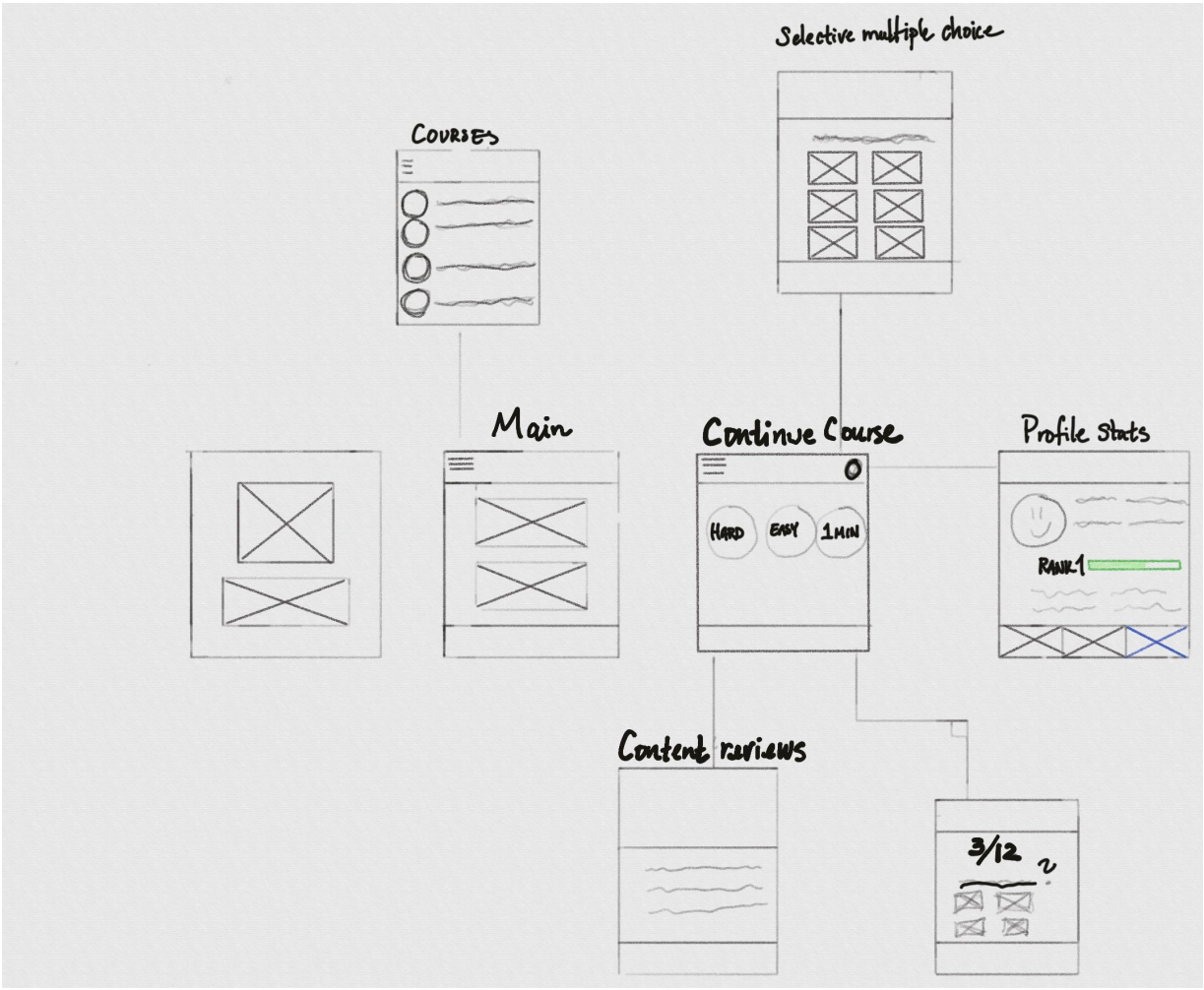
prototype. Once a product has been released, we have the possibility to gather data and user feedback, particularly reviews. The most common types include privacy, interface and features. With customer reviews, we may improve our product, but it is very time-consuming.

Prototyping & Tools

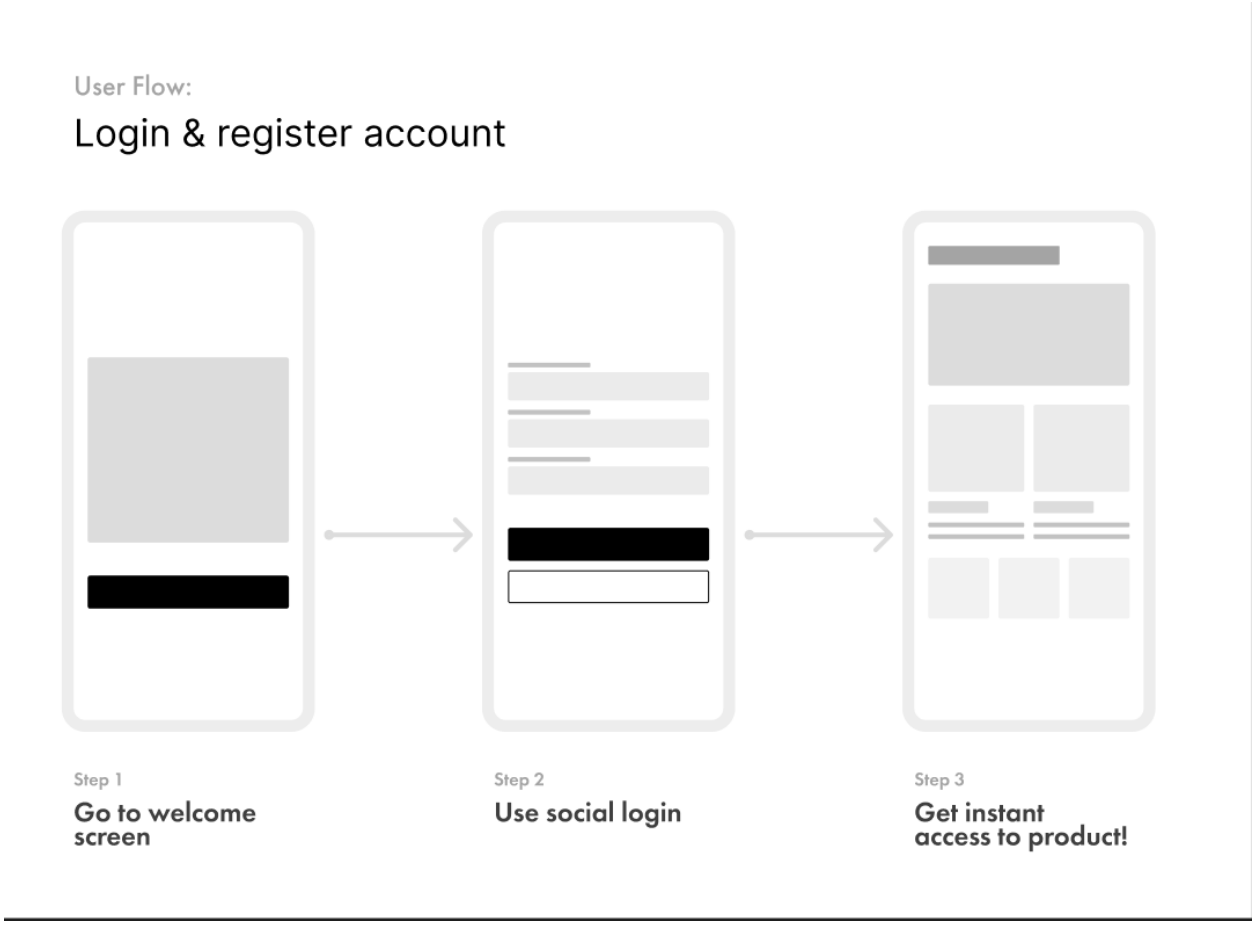
Now that we have a plan, we need to realize this with prototyping. Prototype in this context is a way to visualize the product or components. The general idea is to give a simulation and test the solution if it works, and then decide how it will be used. We also divide between low-fidelity and high-fidelity prototypes. In a low prototyping phase, one would usually draw ideas on a paper that is to get the thing started and don't focus on the quality.



This is an early sketch of our solution, by following a basic designing system. It is a mix of low-fidelity and wireframes, like a template for each layout and components of what we will be making. These wireframes contain components, which we illustrated with boxes, lines or texts. We chose to sketch the wireframes digitally rather than sketch by hand as we need to understand the fact that not everyone may understand your drawings, we can't expect someone to accept your hand drawn presentations. Thus, we have to be minimal and precise to use real text in placeholders for important values, mark the box as icons or use dummy text for placeholders where it's necessary. It will be easier to transit into high-fidelity when making the design, where you will replace the detailed sketch with an actual element.



Wireframes may be used to show user flow. Suppose you want to show the interactions between layouts and options, it is a great solution to implement these static frames.



Inside Figma, we can make a high-fidelity solution with a graphical interface that includes all essential elements in the form of images, buttons, icons or texts.

Universal Design

The goal with universal design is to increase the accessibility for all people and find an alternative solution for people with impairments. Some countries are required by law to design with this solution. In 2014 Norway adopted a law that is about accessibility for people with disabilities. Before we start to design a solution, we need to understand their problem, referring to Preece "*Accessibility can be achieved in two ways: first, through the inclusive design of*

technology, and second, through the design of assistive technology. When designing for accessibility, it is essential to understand the types of impairments that can lead to disability, as they come in many forms."(Interaction Design: Beyond Human-Computer Interaction, 5th edition, pp. 15)

We can be classified into different types of impairments such as sensory, physical whether it's temporary or permanent and cognitive impairments. In this task, we will focus on sensory, cognitive and to a degree physical inclusiveness.

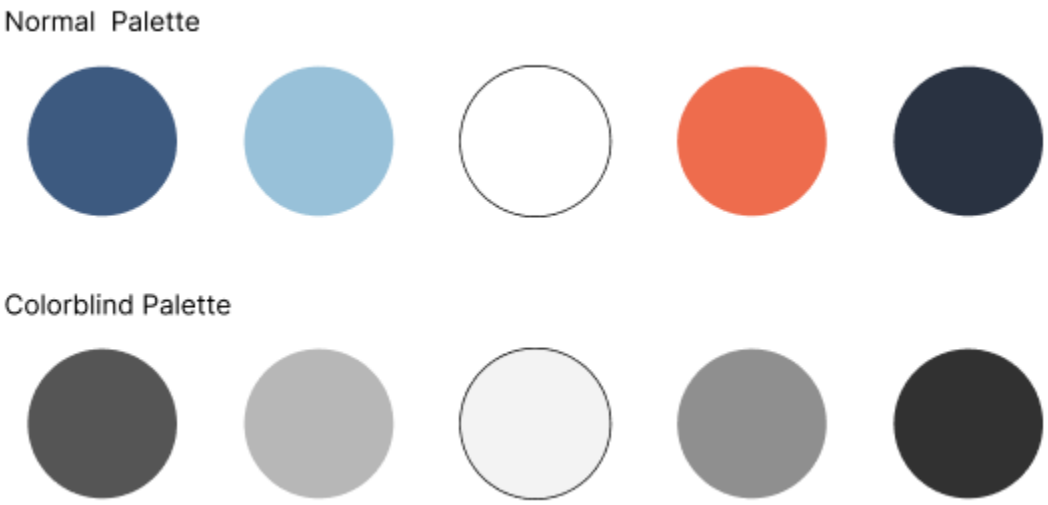
Color

Choosing a good color harmony is a really important step

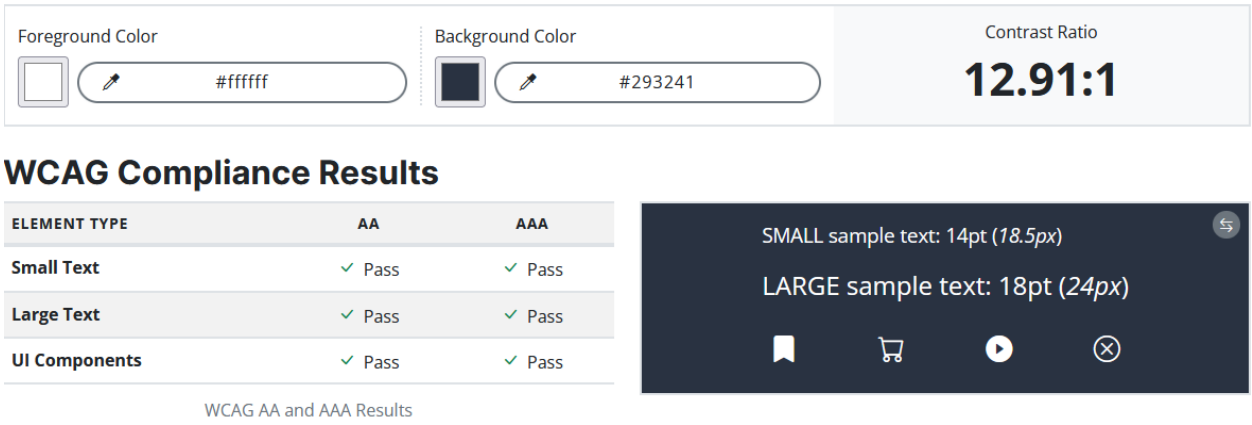
In a typical scenario where you get to work with a very strict color palette, the options become limited. Most often it will be about the brand colors. We want to simulate a case by asking ourselves if we have enough colors for the interface, if yes that's great, otherwise we have to expand the colors, for instance with different shades.

Accessibility and Inclusiveness

We have designed an alternate color scheme for people with color blindness, a form of sensory impairment. Users may choose to switch to the theme based on their needs. The color palette will be generated based on complementary, which is the opposite of each other on the color wheel. Complementary will make the things brighter and "pop" where they stand out, and also used to mix for a more neutral hue and shadow.



The color contrast will also create a hierarchy and ensure accessibility in terms of wanting to read a darker color before you would read a lighter color to improve the readability. According to the World Wide Web Consortium(W3C) the luminosity ratio should be minimum at 4.5:1, here the luminosity and contrast are used interchangeably. We also have access to online tools to check the ratio, to check if your color palette is creating a good harmony.

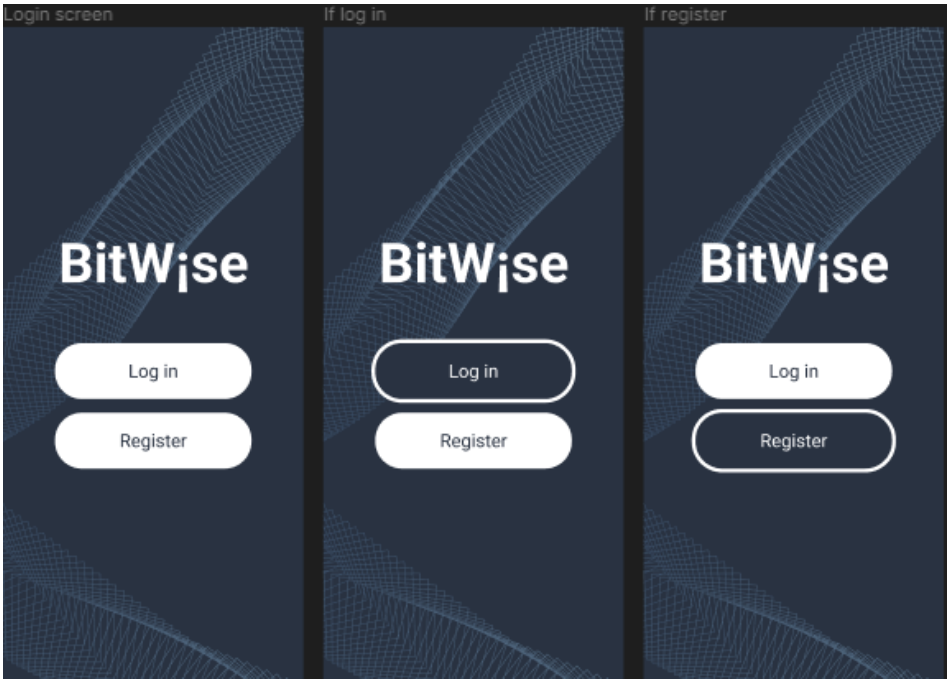


When picking a specific color, we want to ask ourselves, do we understand this product and what type of problem is the product trying to solve? This will help influence the color palette choice, it can also help reinforce the personality of the brand.

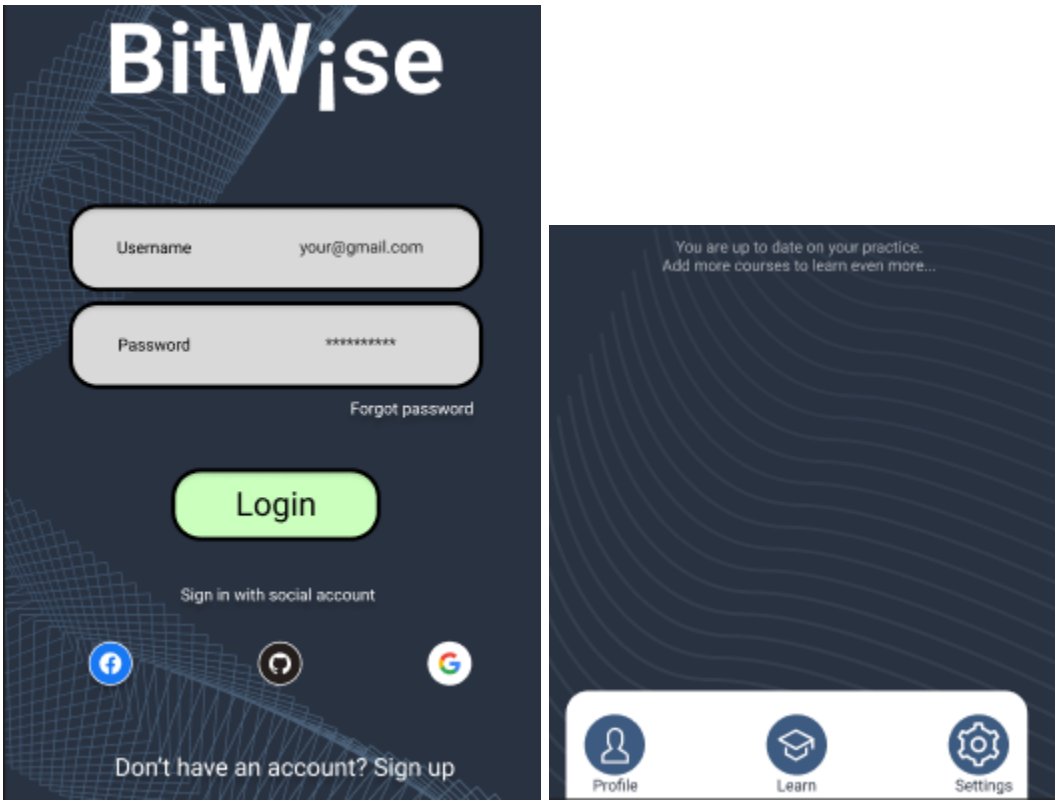
Understanding the user group will also help us with the selection, what is the culture, what is the profession, what does the color mean to you. Ever since we were children, we have been trained to recognize red as a warning sign or stop sign. You feel more relaxed when you see your account balance showing positive decimals in green, like it's naturally embedded how we experience things without extra thought. Colors are instrumental in how we perceive the world, it will guide us how to predict, understand and make decisions. Certain colors have a connotation, maybe blue with fintech, blue is trustworthy and brings serenity, it is seen as a very professional color that evokes trust, which is a popular color used by banks.

The prototype

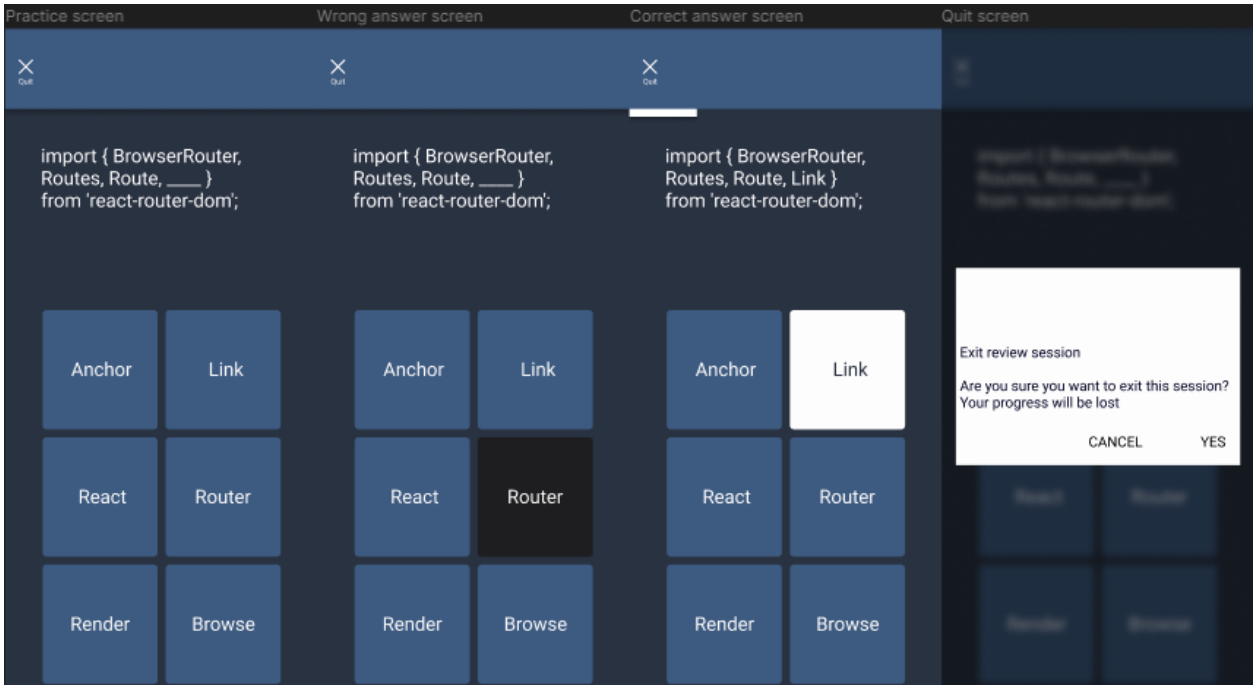
The brand name of this product is "Bitwise", we took the inspiration from computer programming, a bitwise operation based on true or false statement. The user choice in the quiz section will determine a true or false answer, hence the name Bitwise.



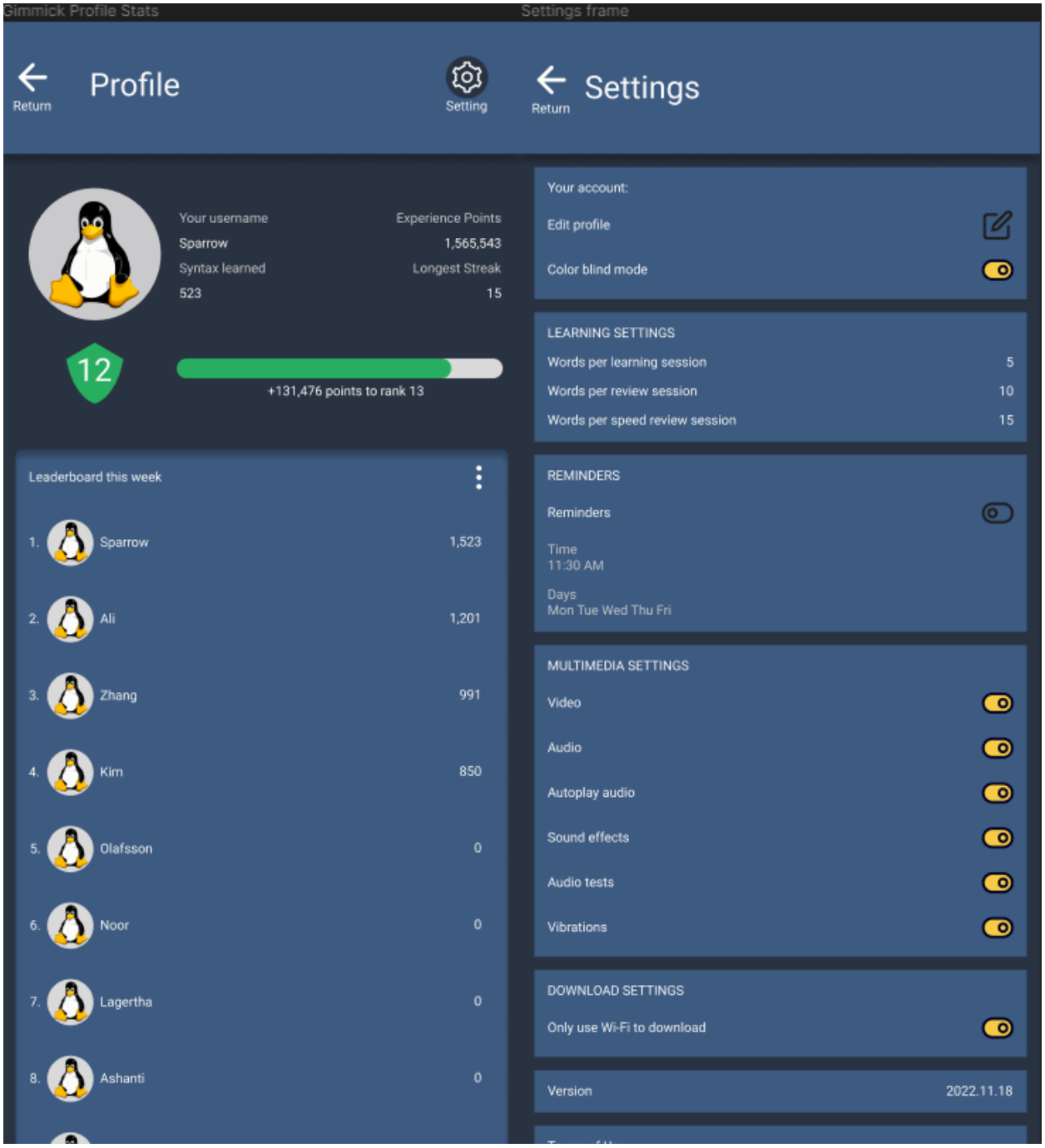
With Jeff Johnson's design principles such as responsiveness as the user pressing the button, they will see which button was pressed. The interface is minimalistic and logical. They are designed big enough for the user to hit the target as intended.



An alternate login interface exists to make variation since many users would like to have instant access by using existing social accounts, skipping the registration process. We also added hints even though the icons are obvious to show the property what it appears to do.



Inside the quiz interface, the user will be prompted with a set of syntax or questions. If the user clicked wrong, the syntax will not be complete and the progress bar will not increase. However, if the user answered correctly, the syntax will be complete and the progress bar is showing at the top edge, the user will be taken to the next set of questions. If the user decided to quit early during the review session, a graphical interface will give the user feedback with information to confirm the choice. The background is also disclosed to avoid progressive overloading.
This will also constraint the user from clicking anywhere but the module, where it only has two options.



The interface is designed with consistency in mind, and all components are kept minimal. The colorblind mode is on by default for those with sensory impairments.

Reflections and thoughts on the project

During the process from coming up with the concept of bitwise, to creating our mockup, there has been a lot to learn and a lot of things that could have been done differently.

At the start of the project, we set out to create an all-in-one service for both learning and increasing the user's knowledge of a certain topic. To understand how we could create such a service, we needed to know more about how people learn. We chose to do surveys and asking questions to already existing students. In hindsight this may have been a little shortsighted considering that there is not only students who are choosing to learn every day. Normal people as well learn a new skill every single day, and not polling more everyday people maybe did cloud our choices on the project.

There are a few pieces of knowledge we want to bring into the next projects we work on. We start by bringing in more of the people we are actually making a solution for. Maybe iterate even more, if the time and scope allows for it. Work towards maybe more solid goals, more than just goals that are made along the way. Know the tools we are working with a 100% and have a solid plan and structure in how we will share assets and project files together.

We do feel that the service we have made together is a great service for the chosen crowd we look to get and that it works well.

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Color emotions

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