

Mobile Apps 2024

Final Project

Due : 19 April 2024 11:59 PM

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1 - Introduction:

I wrote this assignment in French then used DeepL to translate it in English.

As a student navigating the ever-evolving world of technology, I've embarked on an exciting journey to develop a mobile application that not only showcases my skills but also addresses real-world needs in today's digital age. With smartphones becoming an integral part of our daily lives, I've recognized the opportunity to create an app that shows my skill asset building mobiles apps.

Throughout this project, I've poured my passion into every aspect, from the initial concept to the final implementation. With a focus on authenticity and empathy, I've strived to understand the needs of users like me, ensuring that every feature and functionality serves a meaningful purpose.

As I approach the conclusion of my academic career, I am proud to present this final year project as a testament to my growth and potential as a future professional in the field of technology. I hope that this mobile application serves as a reminder of the possibilities that lie ahead and inspires others to pursue their passions with determination and enthusiasm.

Here are the requirements for this assignment:

Each ✓ in a box represents a field that is working / requirement that is fulfilled.

1. Authentication

- [✓] 1.1. Allow User to Signup
- [✓] 1.2. Log In using email and password
- [✓] 1.3. Store userID once logged in to keep the user logged in (even after restarting the app)

2. Product Listing

- [✓] 2.1. List Product Categories
- [✓] 2.2. On clicking a Category, list Products in that Category

- [✓] 2.3. On clicking a Product, show Product description, show buy button and controls to change quantity

3. Cart

- [X] 3.1. Show cart summary
- [X] 3.2. Show total amount
- [X] 3.3. Purchase button to place an order, show order notification

4. Show order history

- [X] 4.1. List users orders
- [X] 4.2. On clicking an Order, show Order details and Products ordered
- [X] 4.3. On clicking a Product, take them to Product description page created for 2.3

5. Show User details

- [✓] 5.1. Use the stored userID to show user details
- [✓] 5.2. Show a random circular profile image
- [✓] 5.3. Show Logout button, on click take back to Signup / Log In page (Restart should not auto login after logout)

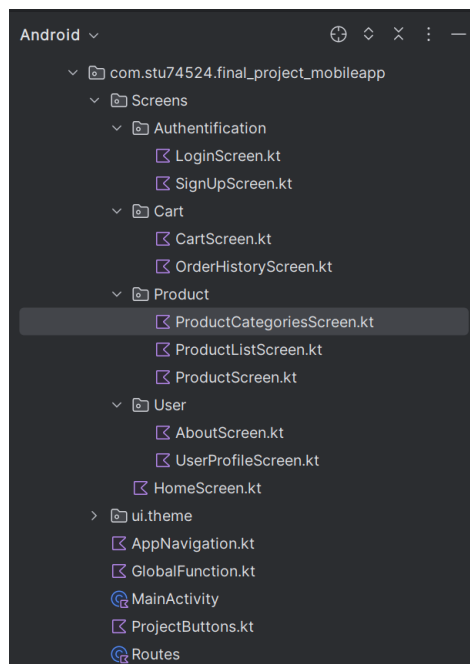
6. UI/Implementational Requirements

- [✓] 6.1. Lazy lists to be used for all Lists: Categories, Products, Orders
- [✓] 6.2. If logged in, attach authentication token to all requests until logout
- [✓] 6.3. Add a small "About this app" button in the profile page, that shows a page on click with your copyright details and credits

2 - Methodology:

The successful completion of a project relies on effective organization of work and workspace. To achieve this, I began by exploring the type of UI/UX I wanted to implement. Initially, I considered creating a wireframe to provide a visual guide for the application. However, I ultimately found it simpler to implement a basic top app bar and bottom navigation bar. Even in my screen layout choices, I opted for simplicity, utilizing boxes or

square buttons. Following this, I structured my file architecture and screens, which allowed me to organize and clearly define my tasks for each screen. This approach ensured a streamlined workflow and improved project management.



Here is how I chose to delineate each of my files in order to navigate in a project as substantial as this one.

Following this, I created a map for navigating between each screen. Here is the final navigation:

LoginScreen -> SignUpScreen
-> HomeScreen

SignUpScreen -> LoginScreen
-> HomeScreen

HomeScreen -> ProductCategoriesScreen
-> UserProfileScreen
-> CartScreen

ProductCategoriesScreen -> HomeScreen
-> ProductListScreen

-> UserProfileScreen

-> CartScreen

ProductListScreen -> ProductCategoriesScreen

-> HomeScreen

-> ProductScreen

-> UserProfileScreen

-> CartScreen

ProductScreen -> HomeScreen

-> ProductListScreen

-> ProductCategoriesScreen

-> UserProfileScreen

-> CartScreen

CartScreen -> HomeScreen

-> OrderHistoryScreen

-> UserProfileScreen

-> ProductCategoriesScreen

OrderHistoryScreen -> HomeScreen

-> UserProfileScreen

-> ProductCategoriesScreen

-> CartScreen

UserProfileScreen -> HomeScreen

-> AboutScreen

-> ProductCategoriesScreen

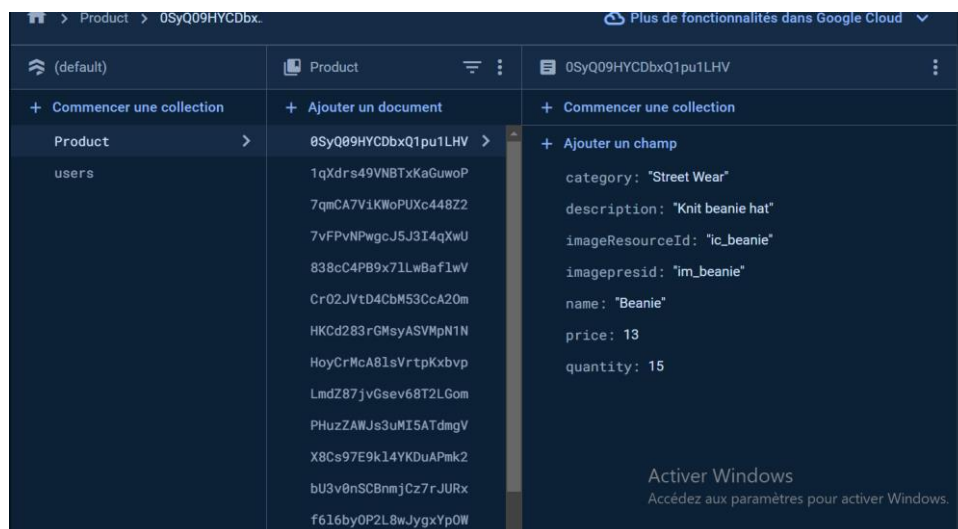
-> CartScreen

AboutScreen -> HomeScreen
-> UserProfileScreen

-> ProductCategoriesScreen

-> CartScreen

Later in the project, as it progressed, I encountered the need to incorporate a database. After careful consideration, I made the decision to opt for the Firebase tool. This choice was motivated by its simplicity and the abundance of available tutorials, which facilitated the learning process. Additionally, the fact that I was already utilizing Firebase for authentication streamlined the integration process and ensured consistency across different aspects of the app. For product management, I devised a system where each product would be meticulously referenced and categorized to enhance organization and accessibility.

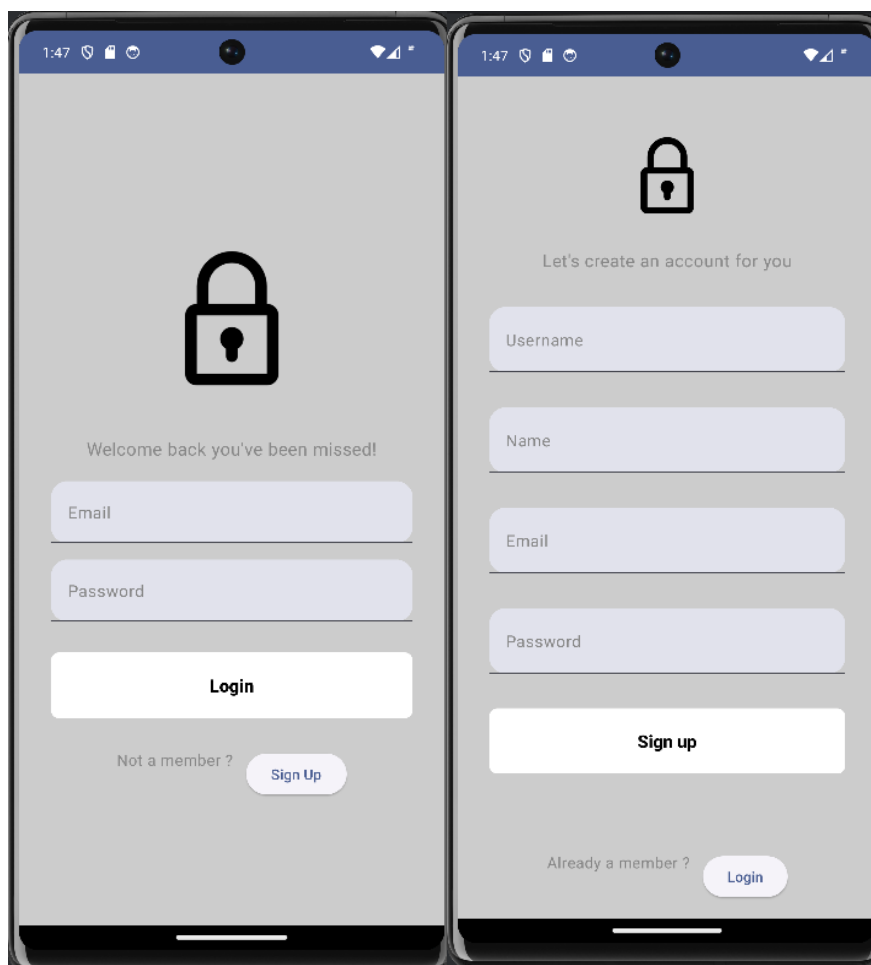


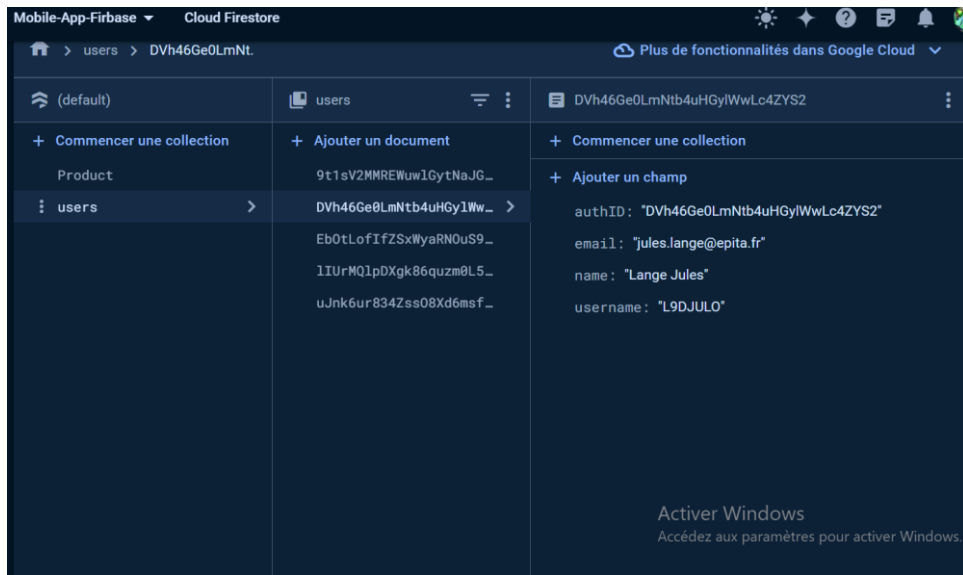
This made the creation and use of my database simpler.

3 - Implementation:

In this segment, I will provide an in-depth exploration of each screen within the application, elucidating the pivotal role each one plays in the overall project. Screens omitted from this discussion will be addressed in the subsequent challenges section, wherein I will delve into the obstacles encountered and the innovative strategies employed to mitigate these challenges.

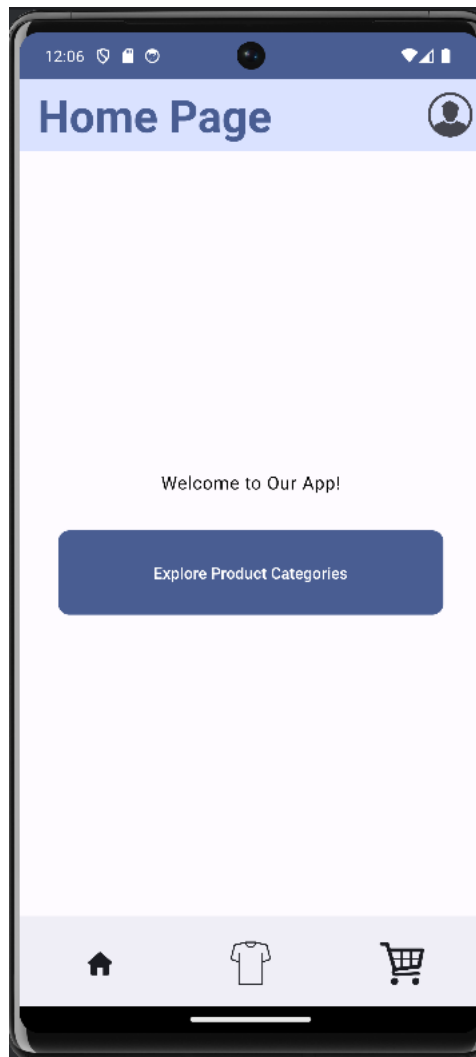
To begin, let's delve into the intricacies of the Login and SignUp Screens, both of which serve pivotal functions albeit with nuanced differences. The SignUp Screen stands as the initial point of interaction for users upon app initiation. Serving as an entry point into the application ecosystem, this screen, adapted from prior project iterations, serves as a conduit for users to either authenticate or establish a new profile. Herein lies the crux of user engagement, as individuals input essential details such as username, name, email, and password, thereby laying the foundation for seamless future interactions. Crucially, all user data is meticulously archived within the database, ensconced within a dedicated user collection. Should a user already possess credentials, the option to navigate to the login screen is readily available, facilitating swift access to the application's core functionalities. In both scenarios, successful authentication grants passage to the HomeScreen, symbolizing the nexus of user experience within the application.





Here is the data structure I'm using for my user Collection

Once the user has successfully logged in, they find themselves on the Homepage, acting as the primary menu warmly greeting the user. This page not only offers the user an encompassing perspective but also furnishes a navigational interface to seamlessly traverse across each of the designated "categories." Following suit with the paradigm of all forthcoming screens, henceforth adorned with a top app bar bearing the illustrious screen title, it serves as a gateway to effortlessly transition to the user's desired screen. Moreover, each screen is meticulously curated to feature a bottom navigation bar, facilitating swift access to the diverse array of screens housed within the application's ecosystem. It is worth reiterating that my design ethos remains rooted in the principles of simplicity and refinement, ensuring an intuitive user experience throughout.



This particular screen serves as a comprehensive display hub, presenting an array of distinct product categories, including but not limited to: "Accessories," "Casual Wear," "Street Wear," and "Formal Wear."

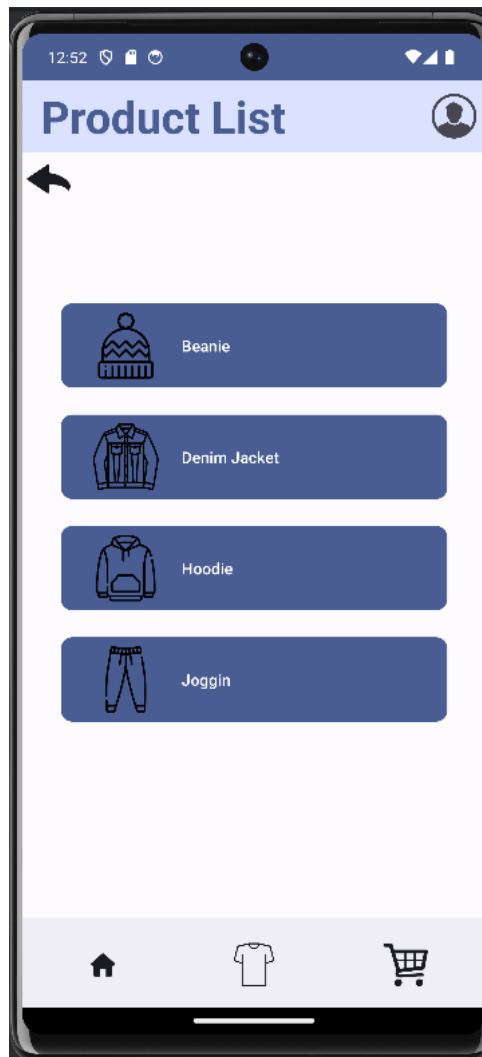
Positioned conspicuously at the top left corner of the interface, a back arrow graciously accommodates the user's navigational needs, allowing for effortless retracement. It is noteworthy that this ubiquitous back arrow, while initially introduced on the home screen, extends its presence across a multitude of pages within the application, ensuring continuity and ease of navigation. Central to the screen layout, a quartet of buttons is meticulously arranged, adopting the guise of a lazy list. While it's pertinent to acknowledge that these lazy lists may not possess a scrollable functionality owing to the limited number of categories, it is imperative to underscore their intrinsic adherence to the lazy list paradigm. For definitive validation, one need only delve into the code repositories encapsulated within the files: `ProductCategoryScreen`, `ProductListScreen`, `CartScreen`, and `OrderHistoryScreen`. Each button within this discerningly crafted lazy list is adorned with both an expressive icon and a descriptive category title, thereby imparting a seamless and intuitive navigation

experience, empowering users to effortlessly navigate towards their preferred category selections.



Here is what the ProductCategoriesScreen look like

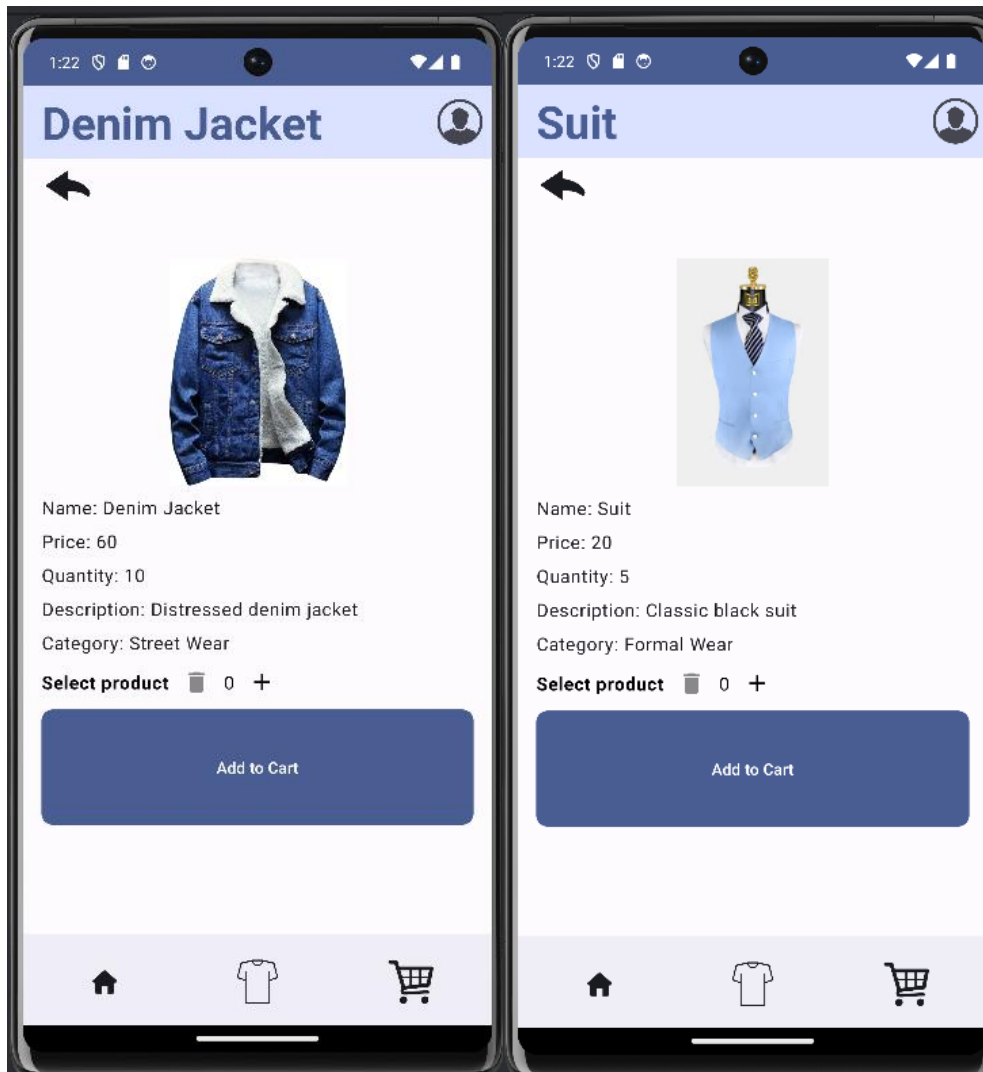
Upon the user's selection of a category, the pathway unfolds toward the ProductListScreen. True to the established design ethos, this screen seamlessly integrates the familiar top app bar and bottom navigation bar, complemented by the previously introduced back arrow, serving as a beacon of navigational reassurance. In harmony with its antecedent, the ProductListScreen boasts a meticulously curated lazy list, unveiling an assortment of diverse products meticulously arranged in a list format. Each product listing, meticulously embellished with a succinct title and a corresponding icon, serves as a beacon guiding the user's journey through the realm of offerings. By bestowing users with this lucid representation, ambiguity is banished, and the path to exploration is illuminated, facilitating uninhibited navigation and informed decision-making.



Here is an image of the product list screen for the “Street Wear” Category

Now, let's delve into the details of a specific product from the list, such as the denim jacket, for instance. Here lies the quintessential product screen, adorned once more with the familiar top app bar, bottom navigation bar, and the ever-present back arrow, seamlessly guiding the user back to the product list. This screen serves as a gateway, presenting the user with a detailed exposition of the product. Initially, an image of the product captivates the user's attention, followed by essential details including the name, price, and quantity.

Moreover, users are empowered to specify the desired quantity of the product, thereby tailoring their shopping experience to their preferences. This system bears semblance to the methodology employed in our previous endeavor (the movie app), wherein the decrement button is grayed out and disabled when the selected quantity reaches zero, preventing negative values. Conversely, the increment button facilitates the addition of units, thus effecting a direct modification in the product quantity within the database. The final button affords users the opportunity to seamlessly add the selected products to their cart. However, it is pertinent to note that this button is currently non-functional, a matter elucidated in the subsequent section (challenges), wherein I shall expound upon the intricacies of unimplemented features.

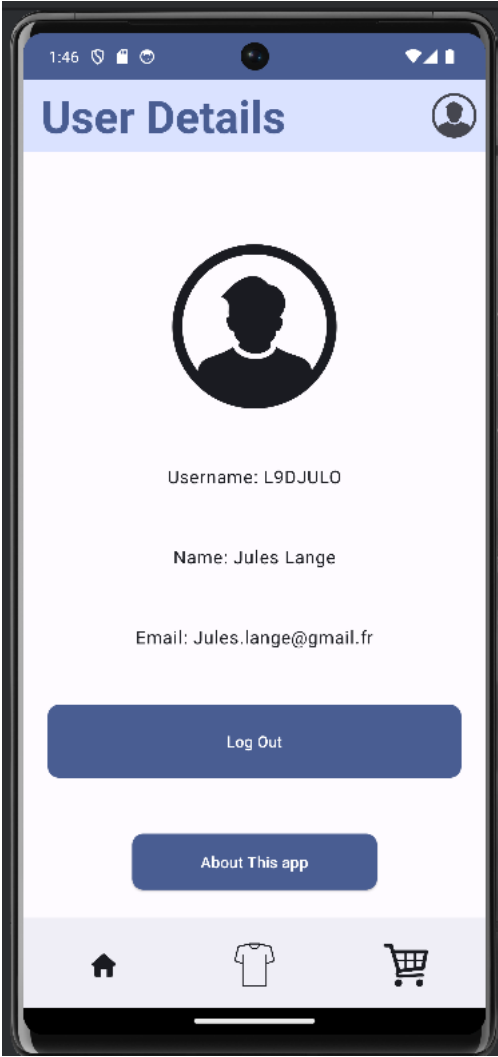


Here is a preview of 2 items in 2 different categories

Here we have the user profile page, showcasing the information provided during the account creation process. True to form, this screen is adorned with the requisite top app bar and bottom navigation bar, alongside an image representing the user. For illustration purposes, a sample image is utilized.

In addition to the visual elements, this screen features two buttons. The first button facilitates user logout, redirecting them to the LoginScreen. Behind the scenes, this action also triggers the removal of the user's ID, which was locally stored since the initial login. The second button grants access to the AboutPage, enabling users to delve into supplementary information about the application.

This page serves as a comprehensive portal, encapsulating essential user details while providing seamless navigation options for enhanced user experience and functionality.



Here is the UserProfileScreen

<div><div>> users > uJnk6ur834Zss..</div><div>Plus de fonctionnalités dans Google Cloud</div></div>	
<div>(default)</div> <div>Commencer une collection</div> <div>Product</div> <div>users ></div>	<div>users</div> <div>Ajouter un document</div> <div>9t1sV2MMREWuwlGytNaJG...</div> <div>DVh46Ge0LmNtb4uHGylWw...</div> <div>Eb0tLoIfZSxWyaRN0uS9...</div> <div>lIUrmQlpDXgk86quzm0L5...</div> <div>uJnk6ur834Zss08Xd6msf... ></div>
	<div>uJnk6ur834Zss08Xd6msf8Sw3tw1</div> <div>Commencer une collection</div> <div>Ajouter un champ</div> <div>authID: "uJnk6ur834Zss08Xd6msf8Sw3tw1"</div> <div>email: "Jules.lange@gmail.fr"</div> <div>name: "Jules Lange"</div> <div>username: "L9DJULO"</div>

Here is the item in the collection that is linked to this user with all the user data

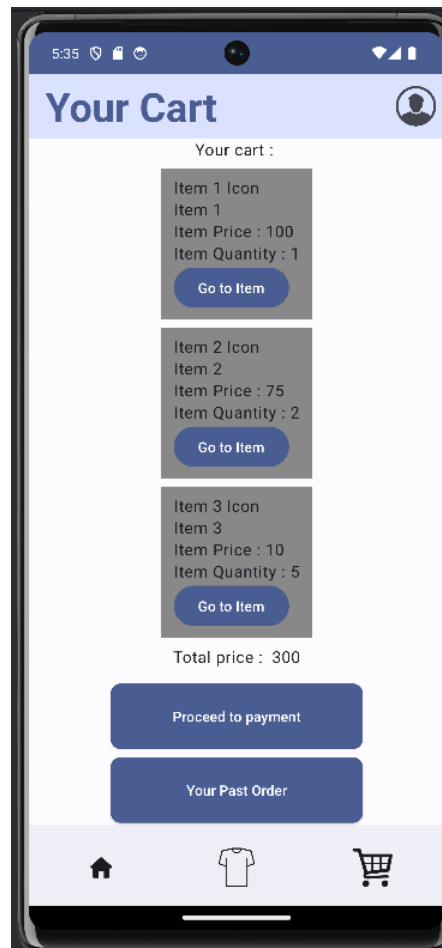
Here is the About Me / About This App page. Similar to other pages in the application, it is equipped with the top app bar and bottom navigation bar to facilitate navigation within the application. Additionally, it includes a back arrow, enabling users to return to the UserProfile Page seamlessly. This page features a cropped image of myself and a concise explanation of the project. It serves as a platform to introduce myself and provide a brief overview of the project's objectives and scope. Furthermore, there is a credits section acknowledging the resources utilized for the application's images. Additional resources will be detailed in the Resources section of the report.



4 – Challenges:

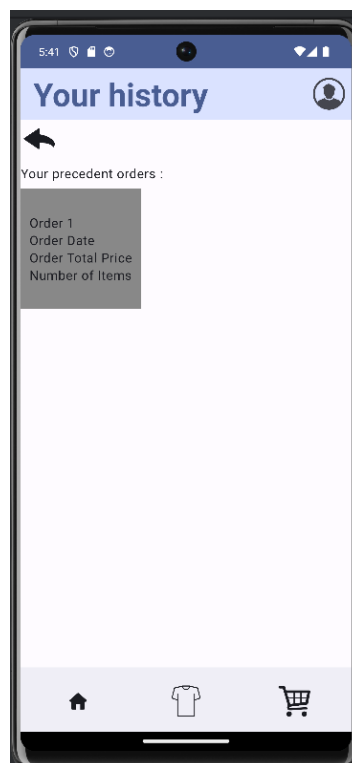
In this section of the report, I will present to you the aspects of the project that I have not managed to accomplish and how I have succeeded or replaced the functionalities. I must say that I encountered quite a lot of difficulties with the database, as I had never worked with it before, so I was not familiar with these tools. However, through perseverance and extensive research, I was able to overcome most of the problems I faced regarding the database. Despite this progress, I still struggled with implementing the client's cart and order history functionalities due to my limited knowledge of databases. I succeeded in gathering information and overcoming most of the issues I encountered with the database. However, implementing the client's cart and order history functionalities remained beyond my reach

due to my inadequate understanding of database concepts. In this section, I will present how I would have envisioned implementing these required functions and what I have created to represent them. My approach involves thorough research and exploration of potential solutions to address these challenges effectively. Through this process, I aim to provide insights into alternative strategies for implementing the cart and order history features, despite my initial setbacks.



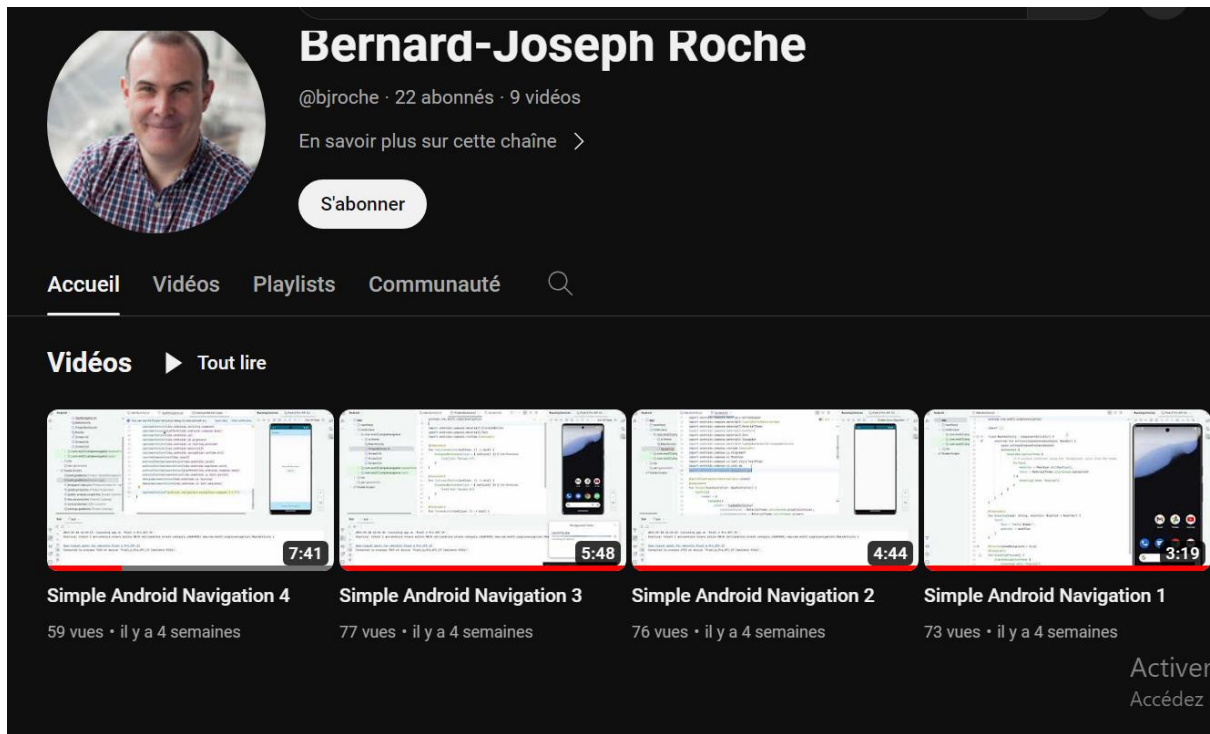
Here is the Cart screen as I envisioned it. It naturally includes both the top app bar and bottom navigation bar, essential for user navigation. In the center of the screen, there is a list of boxes representing the items previously selected. These items are implemented as lazy lists as well. Each box would specify the name of the item, its price, quantity, and an associated icon or image. Finally, there would be a button redirecting directly to the Product Screen for each item. Below this list of items, the total price of the cart would be displayed, automatically adjusting based on the prices and quantities of each product. Additionally, there are two buttons below this list of products. The first button, labeled "Proceed to Payment," symbolizes the action of paying within the application. It clears the cart while simultaneously adding the list of articles to the user's order history. Below this button, there is another button allowing access to the user's order history. This provides users with quick and convenient access to their past purchases, enhancing their overall shopping experience.

Here is the OrderHistory screen, complete with the top app bar, bottom navigation bar, and back arrow, all of which facilitate navigation between screens. This screen should be used to display the information about the user's recent orders. Since the cart function has not been implemented, the order history function has also not been implemented. Despite this, I attempted to create a box representing what the order history should have looked like. In this box, there is the order number, the date the order was placed, the total price of the order, and finally, the number of items in the order. Although the functionality is not fully operational, presenting this mock-up provides a visual representation of how the order history feature would have appeared, enhancing the user's understanding of the intended functionality.



5 – Resources:

In this section, I will enumerate the various tools and sources of information and data that I have used for this project. Firstly, I utilized Jetpack Compose, Kotlin, and Android Studio for coding this project. For the authentication and database part, I employed Firebase and Firestore. As I was not well-versed in the subject, I had to rely on numerous tutorials and guides explaining the functioning of Firebase coupled with Android Studio. Here are the reference videos that I utilized:



The 4 videos on navigation in Android Studio by Bernard Joseph Roche.

The 2 official videos published by the Firebase channel explaining how to do authentication and how to manage a database :

<https://www.youtube.com/watch?v=wm626abfMM8&t>

<https://www.youtube.com/watch?v=jbHfJpoOzkl>

I also used the EasyTuto video on how to link Android Studio to Firebase:

https://www.youtube.com/watch?v=KSW5jyWXs_Y

All icons were found on the GoogleFont website (<https://fonts.google.com/icons>) and all cloth images were found on : Pexels (<https://www.pexels.com/search/cloth>) , Shutterstock (<https://www.shutterstock.com/fr/search/cloth>) or Unplash (<https://unsplash.com/fr/s/photos/cloth>)

6 – Conclusion:

Embarking on this journey of mobile app development for the year 2024 has been an enriching and transformative experience. Through the culmination of this final project, I've not only showcased my technical prowess but also honed my problem-solving skills and resilience in the face of challenges. As a student dedicated to navigating the dynamic landscape of technology, I've embraced the opportunity to create a mobile application that not only reflects my capabilities but also addresses the evolving needs of users in the digital era.

From the outset, I approached this project with a steadfast commitment to authenticity and user-centric design. Each aspect of the application, from the intuitive user interface to the seamless navigation experience, has been meticulously crafted to enhance user engagement and satisfaction. Leveraging tools such as Jetpack Compose, Kotlin, and Firebase, I've strived to create a robust and functional application that exemplifies the best practices in mobile app development.

Despite encountering challenges along the way, particularly in the realm of database integration and feature implementation, I persevered with determination and resourcefulness. Through extensive research, experimentation, and collaboration with online resources and tutorials, I successfully navigated through obstacles and emerged with valuable insights and skills.

As I reflect on this journey, I am proud of the strides I've made and the knowledge I've gained. This final project serves as a testament to my growth and readiness to embark on a career in technology. I am confident that the skills and experiences gained throughout this endeavor will serve as a solid foundation for future endeavors in mobile app development and beyond.

In conclusion, I am grateful for the opportunity to undertake this project and am excited about the possibilities that lie ahead in the ever-evolving landscape of technology. With a passion for innovation and a commitment to excellence, I look forward to continuing my journey as a tech enthusiast and contributing positively to the field.