

Abstract

My graduation project comprises developing both a management dashboard and a mobile application for searching and visualizing of natural, bio, vegan, eco, and allergen free products. Based on personal preferences such as skin type, allergens, and personal search history, the app users can search for their desired products.

I developed this project in 7 sprints. First, a mobile application using Flutter, the open-source Google's UI toolkit, that manage different screen interfaces for the app. And second, I created a back-end web server with NodeJS in order to manage the client search requests and others different functionalities. And Last the Management Dashboard using AngularJS to manage the content of the mobile app.

Working in this project started from interviewing natural and allergen free real consumers, product manufacturers, product retailers, and consultants to gather information about their right needs in the eco-friendly environment and to optimize their user-experience, then the development and implementation of the requested solution and finished with ambition hopes to optimize this project for better user-experience of the app users and further features.

I analysed, designed, and developed this project within L'Atelier, the Marketing, training and merchandising division of Kilani Group.

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Dedication

Sadok Laouissi

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I would like also to extend my thanks to the product consultant of L'Atelier Mrs. Dhahri Olfa for her help in providing the professional information about the skin type, ingredients and allergies and also helping in the interview process.

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General Introduction

Nowadays, many people are thinking about environmental issues and the environmental condition of the Earth. People understand that their irresponsibility hurts the natural environment. Our planet suffers from many problems, which results from excessive human activity.

The entire planet is enduring contamination, worldwide warming, deforestation, and imperilling natural life species. These issues are exceptionally pertinent and require quick and comprehensive arrangements. The arrangement for these problems is the alter within the demeanour of humankind towards nature and the natural assets that are being used unrestrictedly. Individuals got to esteem the environment and nature for their survival. Put, individuals ought to "go green" to spare the Soil.

More and more people are "Going Green" in recent years. The primal inspirations for this development have been the diminished presentation to chemicals additionally natural, bio, and allergen-free items are better for the environment. Hence, this new concept has developed the way buyers see the items they use and purchase. Products producers are driving toward a supportability aim and getting to be "Green Manufacturer". Product Buyers needs more transparency about the ingredients used in making each product and are more willing to advise approximately this rising concept. Thus, taking part in this global movement comes with a part of struggles, the information about allergies, ingredients, allergen.... A few customers brag about the product's quality and harmful ingredients, and others brag about the diversity of products.

The overarching goal of this project is to set up an innovative solution for searching and visualizing of natural, bio, vegan, eco, and allergen free products based on personal preferences such as skin type, allergies, and personal search history.

During the realization of this project, I used a method of fairly efficient development, resulting from the Agile method, namely the SCRUM. I will try through this report to highlight the steps taken, in which I have used the advantages of said method, in particular the plan of productivity and efficiency.

I composed this report of eleven major chapters. First, I am going to present the situation analysis of the project. Then, the second is about specifications and method. The third chapter is the state-of-the art. The fourth chapter describes the work environment, which is Sprint Zero. And the rest seven chapters are the sprints implemented to develop this application.



Chapter I: Situation analysis of the project



Chapter I: Situation analysis of the project

1. Introduction

In this chapter, I am going to present the host organization first. Then I am going to expose the subject of the project and the work environment. And finally, I will conduct a solution for this problematic.

2. Presentation of the host organization

2.1. Introduction

This is a report of the graduation project within the engineer degree majoring in Web & Mobile Software Development at the Private Higher School of Engineering and Technology (ESPRIT). I carried this project out within Kilani Group, the Marketing, training and merchandising department L'Atelier.

3. Presentation of the organization

A leading actor in the fields of health, beauty, well-being and hygiene in Tunisia and abroad, Kilani Group is driven by the passion of the profession, the ethics as well as the satisfaction of customers and partners.

Since its creation, Kilani Group has expanded its activities around the world of pharmacy and drugstore including the manufacturing of pharmaceuticals, the import and distribution of healthcare, cosmetics & hygiene brands and medical and paramedical devices. Within a spirit of synergy, a range of service activities have been developed for partners operating in the fields of health & beauty.

The Group is thus well positioned in all sectors: industry, wholesale, direct distribution, retail and services.



Figure 1: Kilani Groupe Logo

3.1. Subsidiaries of Kilani Groupe

Kilani Group started its activities in the distribution sector in 1986. Today, the Group is operating in the import, wholesale and direct distribution. Through dedicated sales teams specialized by sector and a logistic network extended all over Tunisia, the group is specialized in pharmaceuticals, paramedical products, surgical equipment and accessories, reagents and laboratory robots, cosmetics, dermo-cosmetics as well as hygiene products.

- ARGANIA
- KIPROPHA
- PROCHIDIA

Leading actor in Tunisia in the pharmaceutical industry, Kilani Group is a drug manufacturer since 1996 with production sites in Tunisia and abroad. The group innovates by constantly investing in research and cutting-edge technology in order to be at the service of health and participate in the development of the pharmaceutical sector.

- TERIAK

Kilani Group is a leader in retail sales in the beauty sector through a network of self-service outlets throughout Tunisia under its own brand. The Group then expanded into the retail of natural beauty and fashion through franchised brands.

- FATALES
- L'OCCITANE EN PROVENCE
- NINE WEST

KILANI Group also offers a range of complementary services to the medical industry, the distribution and the retail channels. One company is specialized in medical detailing, the management of proprietary and partner brands of drugs and the second company offers consulting in Retail marketing, shops layout; Trade Marketing Activation and Digital Marketing for Retail, entities and brands.

- L'Atelier
- Medicis

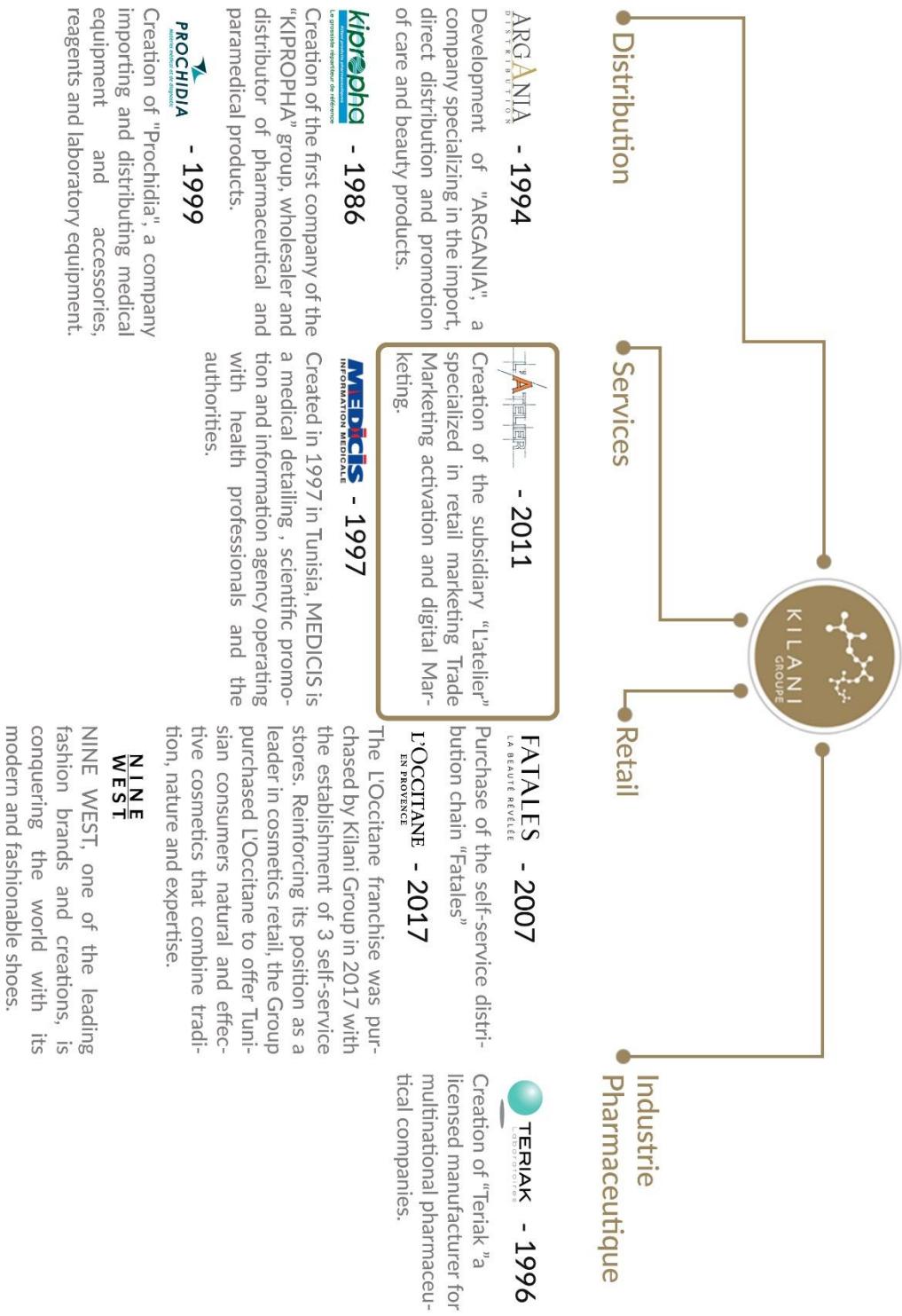


Figure 2: Kilani Groupe Organizational chart

3.2. Missions of Kilani Groupe

Providing well-being and better health to everyone through the development of our brands and those of our partners in drugs, medical devices, care, beauty, hygiene and well-being as well as through our support services for healthcare professionals.



Figure 3: Kilani Groupe Missions & Activities

3.3. Core values of Kilani Groupe

PASSION



We are driven by a passion, the passion of life. A better life for everyone. Kilani Group has successfully passed on this passion to its subsidiaries and employees who endeavour every day to satisfy all their partners and customers by offering or proposing the best brands, products and services in the fields of health, beauty and well-being.

We adhere to the highest ethical standards. This ethics is that of well performed work and a product that meets the highest quality and safety standards. Ethics that is also based on respect and a sense of responsibility towards our partners, our employees and our customers.

ETHICS



INNOVATION



As our main ambition is to satisfy our partners and customers, we do our utmost to innovate through cutting-edge processes to bring out the best in all our fields of activity.

EXCELLENCE

Excellence is our leitmotiv and is embodied through our shared vision with our employees and partners to deliver high quality products and reliable services that meet the requirements of our customers.



3.4. L'Atelier's Presentation

L'Atelier, a subsidiary of Kilani Group, is specialized in the marketing and communication of brands and outlets.

Composed of a **team of experts**, it supports brands and outlets at all the stages of their projects **from ideation, to launching and marketing activation, in store, out of store as well as digitally**.



Figure 4: L'Atelier's Activities

L'Atelier's areas of expertise include Marketing Concept Ideation, Outlet Layout and Optimization, Trade Marketing Activation for brands, Marketing and Digital Communication for brands and entities, and Customer Experience Training.

4. Study of the existing

4.1. Problematic

After several interviews with customers, producers and retailers in nutriment and cosmetic fields which use, sell, buy or produce natural or bio products, we concluded that currently, there is a strong diversification of organic consumers. Thus, distributors must put in place marketing strategies in order to remain competitive in their market.

The multiple food crises have encouraged the development of the organic market. Indeed, in recent years, demand has grown steadily. Since the early 1990s, the behaviour of these consumers has changed dramatically. Combined with a feeling of uncertainty about the quality of the products they buy, they are now turning to certified products, including organic products.

4.2. Presentation of the existing

Based on running tests on the coming concurrent apps, we realized few problems for each one of them and based on Play Store users' reviews.

1.1.1. Yuka

Yuka decrypts the labels of your products food and cosmetics and their impact on health.

- Not suitable for people with special needs such as allergies or diabetes



Figure 5: Yuka Logo

1.1.2. INCI Beauty

INCI Beauty is an app that allows you to search and scan a product and consult its ingredients.

- Fetching data errors
- Unidentified products
- Complicated to use



Figure 6: INCI Beauty Logo

1.1.3. PharmaPocket

The app allows you to scan the barcodes of cosmetic products and decrypt their composition using simple pictograms.

- Last update 2017
- App doesn't start



Figure 7: PharmaPocket Logo

1.1.4. Think Dirty

Think Dirty app allows us to learn ingredients in our beauty, personal care and household products.

- Exploit the lucrative potential of its proposed service by "Verified Brand"



Figure 8: Think Dirty App Logo

4.3. Project Solution

Considering this problematic, I propose to develop a platform (web Dashboard and a mobile app) to resolve all of these challenges.

The mission of this project is to provide a responsive mobile app that allows its users to search and filter natural, bio, vegan and allergen-free products with a friendly user interface to inform the users about various information. Then, create a simple and easy form to identify the skin type of the user with a setting page to select its allergies. And last is to implements an algorithm that assist the user in further researches based on his selected preferences. The Website main purpose is to maintain the data shown in the mobile app.

5. Conclusion

My graduation project scope is to develop a website and a mobile application to assist products consumers in their research for the perfect product based on their preferences.



Chapter II: Specifications and methodology



Chapter II: Specifications and methodology

1. Introduction

In this chapter, we're going to tackle in the first section the modelling language UML, software requirements specifications in the second part, and in the last part, the project management.

2. Modelling Language

2.1. Introduction

UML is a standard language for writing software blueprints [4]. UML may be used visualize, construct, and document the artifacts of software. UML is appropriate for modelling systems ranging from enterprise information systems to distributed Web-based applications.

The vocabulary of the UML encompasses three basic terms: **Things**, **Relationships** and **Diagrams**. Things are the abstractions that are firstly build in a model; relationships tie these things together and diagrams group collections of things.

2.2. Unified Modelling Language

A modelling language is a way of expressing building a model, which has been produced during the developing process.

Modelling language defines a collection of model elements. UML, the Unified Modelling language, is the most popular -that will be either by hand or drawing by the tool- needs a number of things that a modelling tool can provide; such as: reporting, integrating with other process model, synchronizations of models and code. Today there are several UML tools on the market that describe the semantics, notations and constructs of UML.

Chapter II: Specifications and methodology

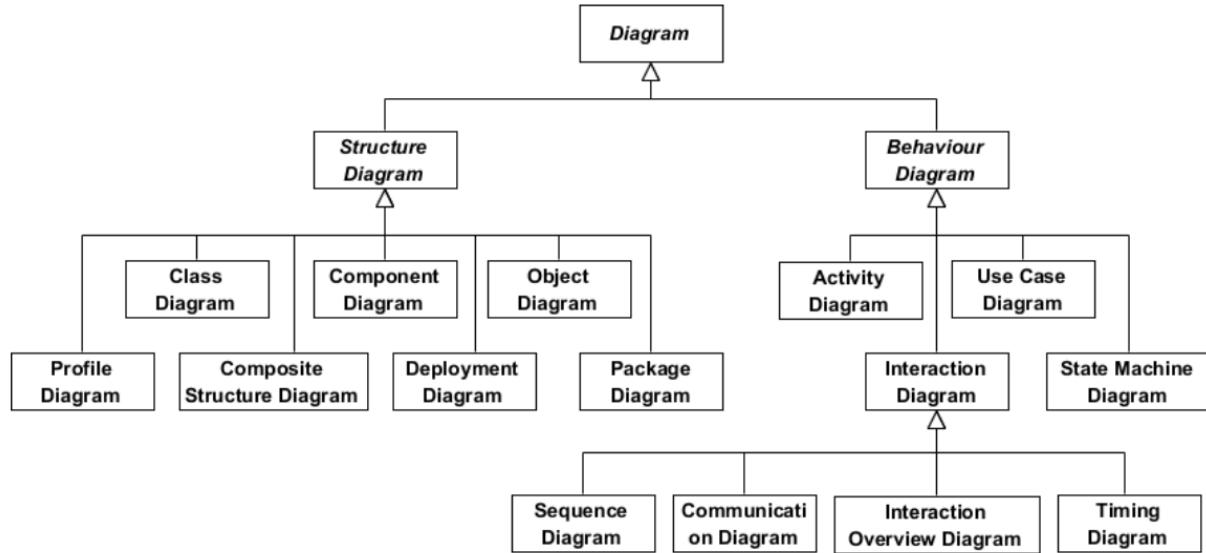


Figure 9: UML Diagrams Overview [5]

3. Software Requirements Specifications

3.1. Non-Functional Requirements

Non-functional requirements (NFR's) cover all the remaining requirements which are not covered by the functional requirements. They specify criteria that judge the operation of a system, rather than specific behaviours.[6]

In other words, NFS define system attributes such as security, reliability, performance, maintainability, scalability, and usability. They serve as constraints or restrictions on the design of the system across the different backlogs.

- Reliability and synchronization
- Extensibility
- Friendly user experience

Chapter II: Specifications and methodology

3.2. Functional Requirements

The projects functional requirements features are shown as below:

- Users' management
- Allergens Management
- Complaints Management
- Products Management
- Categories Management
- Ingredients Management
- Search History Management
- Product Suggestion
- Favourite Management

4. Global Use Case Diagram

The following figure is the global use case diagram of this project which contains the functional requirements with their actors.

Chapter II: Specifications and methodology

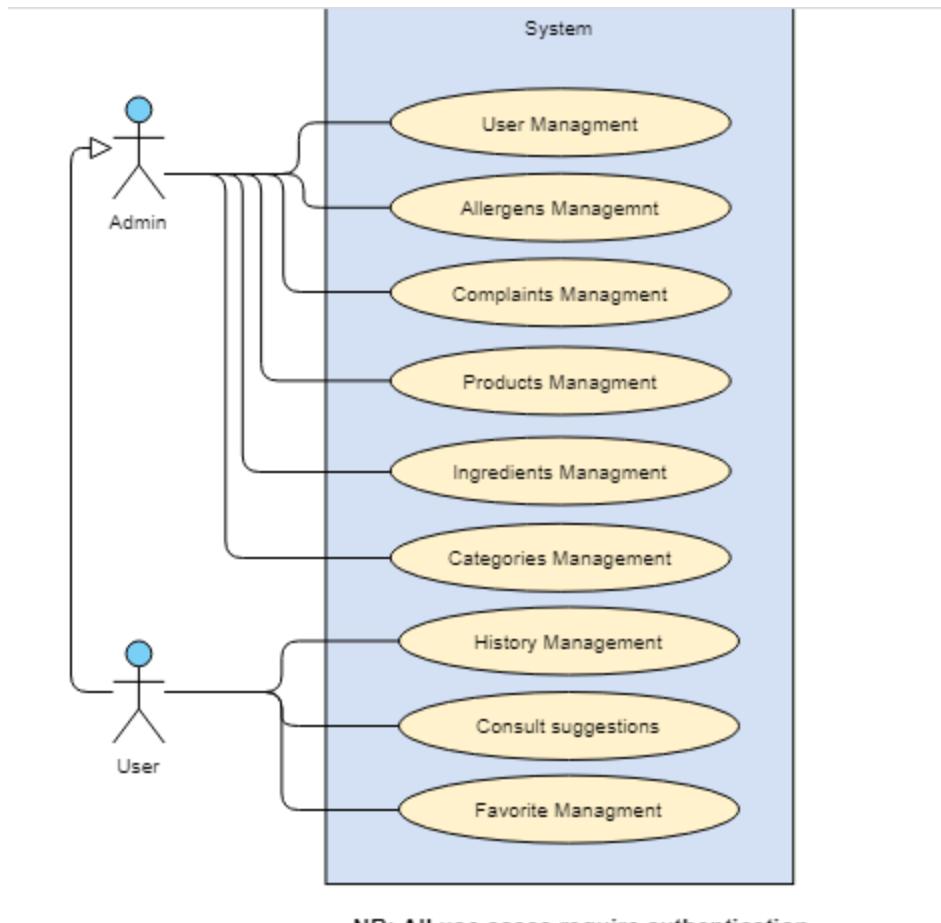


Figure 10: Global Use Case

5. Global Analysis Class Diagram

In the following figure, I present the global analysis class diagram of this project which present the main elements to implement in this project and their object-oriented data model.

Chapter II: Specifications and methodology

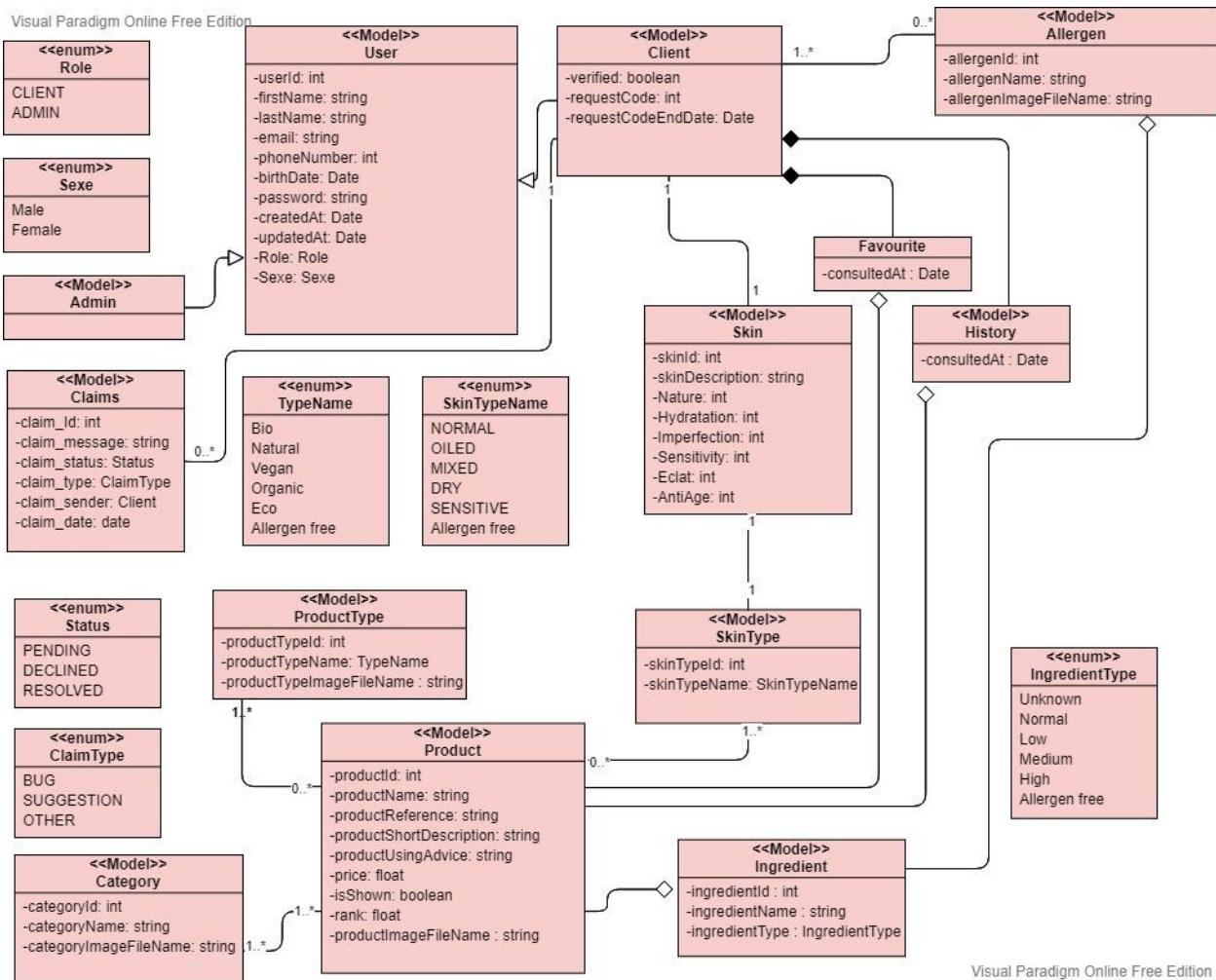


Figure 11: Global Analysis Class Diagram

6. Software Development Methodology

Introduction

A software development methodology or system development methodology in software engineering is a framework that is used to structure, plan, and control the process of developing an information system.[7]

There are the following methodologies:

- Agile Software Development

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- Crystal Methods
- Dynamic Systems Development Model (DSDM)
- Extreme Programming (XP)
- Feature Driven Development (FDD)
- Joint Application Development (JAD)
- Lean Development (LD)
- Rapid Application Development (RAD)
- Rational Unified Process (RUP)
- Scrum
- Spiral
- Systems Development Life Cycle (SDLC)
- Waterfall

6.1. Agile Methodology

Agile software development is a conceptual framework for undertaking software engineering projects. There are several agile software development methodologies e.g., Crystal Methods, Dynamic Systems Development Model (DSDM), and Scrum.[8]

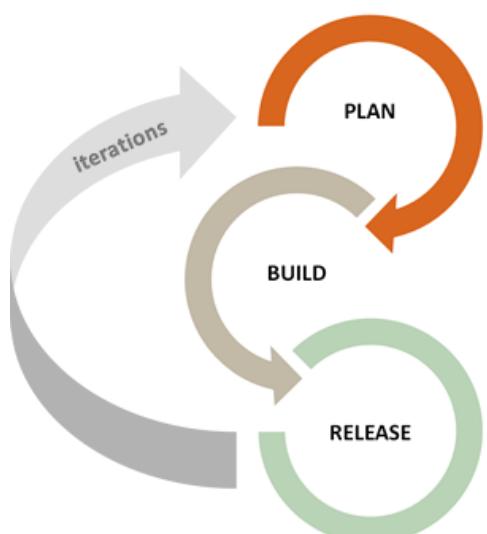


Figure 12: Agile Methodology workflow

We can view agile methods such as Extreme Programming (XP) and Scrum as a reaction to plan-based or traditional methods, which emphasize a "rationalized, engineering-based approach, incorporating extensive planning, codified processes, and rigorous reuse.

In contrast, agile methods address the challenge of an unpredictable world, emphasizing the value competent people and their relationships bring to

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software development. To clarify the effectiveness of agile methods, we reviewed the agile development literature and conducted a systematic study of what we know empirically about its benefits and limitations.

6.2. Scrum Methodology

When Jeff Sutherland created the scrum process in 1993, he borrowed the term "scrum" from an analogy put forth in a 1986 study by Takeuchi and Nonaka, published in the Harvard Business

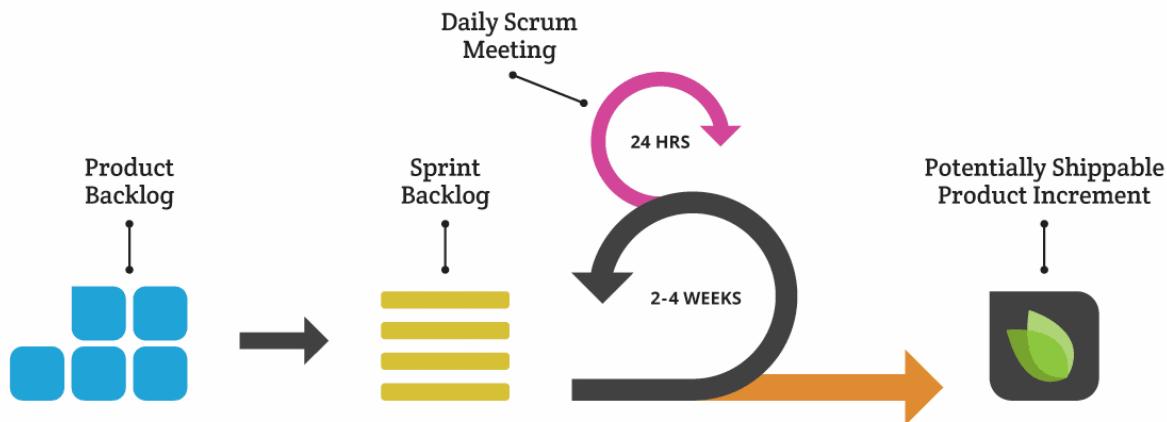
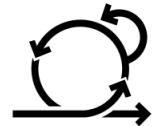


Figure 13: Scrum Methodology Overview

Review. In that study, Takeuchi and Nonaka compare high-performing, cross-functional teams to the scrum formation used by Rugby teams. Scrum is the leading agile development methodology, used by Fortune 500 companies around the world.[9]

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The Scrum Alliance exists to transform the way we tackle complex projects, bringing the Scrum framework and agile principles beyond software development to the broader world of work.[10]



Figure 14: Scrum Values

6.2.1. The Scrum Team

Product Owner: Mrs. Ridha Leila

Product owner is the champion for his product. He is focused on understanding business and market requirements, then prioritizing the work to be done by the engineering team accordingly.

Product owner is not a project manager. Product owner is not managing the status of the program. He focusses on ensuring the development team delivers the most value to the business.

Scrum Master: Mr. Ben Ahmed Zied

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An effective scrum master deeply understands the work being done by the team and can help the team optimize their delivery flow. As the facilitator-in-chief, they schedule the needed resources (both human and logistical) for sprint planning, stand-up, sprint review, and the sprint retrospective.

Scrum masters also look to resolve impediments and distractions for the development team, insulating them from external disruptions whenever possible.

Development Team: **Sadok Laouissi**

Development team is the champion for sustainable development practices. The most effective development team is tight-knit and co-located. Team members have differing skill sets, and cross-train each other so no one person becomes a bottleneck in the delivery of work. All members of the team help one another to ensure a successful sprint completion.

Table 1: The Scrum Team

6.2.2. Scrum Events

Prescribed events are used in Scrum to create regularity and to minimize the need for meetings not defined in Scrum.[11]

• Sprint Planning:

Sprint Planning is time-boxed to a maximum of eight hours for a one-month Sprint. For shorter Sprints, the event is usually shorter.

Sprint Planning answers the following:

Topic One: What can be done this Sprint?

Topic Two: How will the chosen work get done?

• Daily Scrum Meeting

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The Daily Scrum is a 15-minute time-boxed event for the Development Team to synchronize activities and create a plan for the next 24 hours.

During the meeting, the Development Team members explain:

What did I do yesterday that help the Development Team meet the Sprint Goal?

What will I do today to help the Development Team meet the Sprint Goal?

Do I see any impediment that prevents me or the Development Team from meeting the Sprint Goal?

- Sprint Review

A Sprint Review is held at the end of the Sprint to inspect the Increment and adapt the Product Backlog if needed. Based on that and any changes to the Product Backlog during the Sprint, attendees collaborate on the next things that could be done to optimize value.

- Sprint retrospective

The Sprint Retrospective is an opportunity for the Scrum Team to inspect itself and create a plan for improvements to be enacted during the next Sprint.

The Sprint Retrospective occurs after the Sprint Review and prior to the next Sprint Planning.

The purpose of the Sprint Retrospective is to:

Inspect how the last Sprint went with regards to people, relationships, process, and tools.

Identify and order the major items that went well and potential improvements.

Create a plan for implementing improvements to the way the Scrum Team does its work.

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6.2.3. Scrum Artifacts

- Product Backlog

The Product Backlog is an ordered list of everything that might be needed in the product and is the single source of requirements for any changes to be made to the product. The Product Owner is responsible for the Product Backlog, including its content, availability, and ordering.

- Sprint Backlog

The Sprint Backlog is the set of Product Backlog items selected for the Sprint, plus a plan for delivering the product Increment and realizing the Sprint Goal. The Sprint Backlog is a forecast by the Development Team about what functionality will be in the next Increment and the work needed to deliver that functionality into a “Done” Increment. The Sprint Backlog makes visible all the work that the Development Team identifies as necessary to meet the Sprint Goal.

7. Project Management

7.1. Product Backlog

ID	As a(n)	I want to	So that I can	Priority
1.	Administrator	Authenticate	access the platform	17
2.	Administrator	Recover password	authenticate	45
3.	Administrator	Add categories	Add its products	1

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4.	Administrator	Edit categories	Maintain the app design & functionalities	2
5.	Administrator	Delete Categories	Restrict categories shown	3
6.	Administrator	View Categories	Chose which to update/delete	4
7.	Administrator	View Complaints	Update complaint state	39
8.	Administrator	Update complaint state	(user) Visualize complaint progress	40
9.	Administrator	View Users	View users' global data	18
10.	Administrator	View Allergens	Visualize allergens data	6
11.	Administrator	Add Allergens	Add allergens to products	7
12.	Administrator	Associate allergens to ingredients	(user) Visualize allergens in ingredients	8
13.	Administrator	Edit Allergens	Change allergens data	9
14.	Administrator	Delete Allergens	Disable allergen	10
15.	Administrator	View Products	Visualize Products data	24
16.	Administrator	Delete Products	Delete unwanted Products	25
17.	Administrator	Enable/disable Product	Un/Restrict for users	26

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18.	Administrator	Add Product	(user) Gets latest products	27
19.	Administrator	Update Product	Update products data	47
20.	Administrator	Associate ingredients to products	(user) Gets product's ingredients	28
21.	Administrator	Add ingredients	Associate ingredients to products	12
22.	Administrator	View ingredients	View ingredients' data	13
23.	Administrator	Edit ingredients	Edit ingredients' data	14
24.	Administrator	Delete ingredients	Delete unused ingredients	15
25.	User	Authenticate	Access the mobile App	19
26.	User	Sign up	Create an account	20
27.	User	Validate account	Enable account	21
28.	User	Take diagnosis	Associate to a skin type	41
29.	User	Add personal allergens	Check product's compatibility	11
30.	User	Update profile information	Edit user's profile	22
31.	User	Update password	Secure account	23
32.	User	Recover password	authenticate	46

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33.	User	Add search history	View account history	36
34.	User	Delete search history	Remove unwanted search	37
35.	User	View search history	Track account activity	38
36.	User	Add complaint	Adapt user experience	43
37.	User	View complaints	Visualize complaint progress	44
38.	User	Add to favourite	Save preferred products	34
39.	User	Delete from favourite	Remove unwanted products	35
40.	User	View Favourite List	Get favourite products	48
41.	User	View all categories	Get products based on selected category	5
42.	User	View all products types	Get products based on selected types	31
43.	User	View all products	View products data	30
44.	User	Search all products	Find wanted products	29
45.	User	Filter products	Get products based on selected filters	32
46.	User	View product details	View product's data	33

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47.	User	View product ingredients	Visualize ingredients	product's	16
48.	User	View suggestions	Get similar, popular and newest products		42

Table 2: Product Backlog

7.2. Sprint Planning

Sprint Number	Duration	Start Date	Finish Date
<i>Sprint 1 : Categories Management</i>	15 days	18/03/2021	02/04/2021
<i>Sprint 2 : Allergens Management</i>	17 days	05/04/2021	22/04/2021
<i>Sprint 3 : Ingredients Management</i>	21 days	23/04/2021	14/05/2021
<i>Sprint 4 : Users Management</i>	25 days	17/05/2021	11/06/2021
<i>Sprint 5 : Products Management</i>	25 days	14/06/2021	09/07/2021
<i>Sprint 6 : Favorite & History Management</i>	26 days	12/07/2021	09/08/2021
<i>Sprint 7: Complaints & Suggestions Management</i>	27 days	10/08/2021	08/09/2021

Table 3: Sprints Planning

(To see Gantt Diagram of this project, see **Appendix A : Gantt Diagram**)

8. Conclusion

During this sprint, I described the functional and non-functional requirement of the project as well as the Software methodology chosen to implement it. I presented both the

Chapter II: Specifications and methodology

global use case diagram and class diagram of the project and finally the product's Backlog and the sprint adapted for the project.

On the next chapter, I am going to present the state of the art of the cosmetic field.



Chapter III: State of the art



Chapter III: State of the art

1. Introduction

On this part, we are going to explore the cosmetic field, types, packaging and the current situation worldwide and in Tunisia.

2. Cosmetic Field

2.1. Chemical Products

Definition:

Any substance or preparation intended to be put in contact with the superficial parts of the human body (epidermis, looting system, nails, lips, eyes, ...) for the sole or principal purpose of cleaning them, perfume, alter their appearance and protect them and keep them in good condition. (Manu, 2019)

What exactly is a chemical in cosmetics?

This expression is often used by the general public to designate a product of synthesis or in the broader sense, something that would have undergone a transformation by Man. Yet chemical reactions also occur in contact with several natural products that are not processed. For example, by mixing lemon and chalk (which is a limestone rock), you can get CO₂. (Manu, 2019)

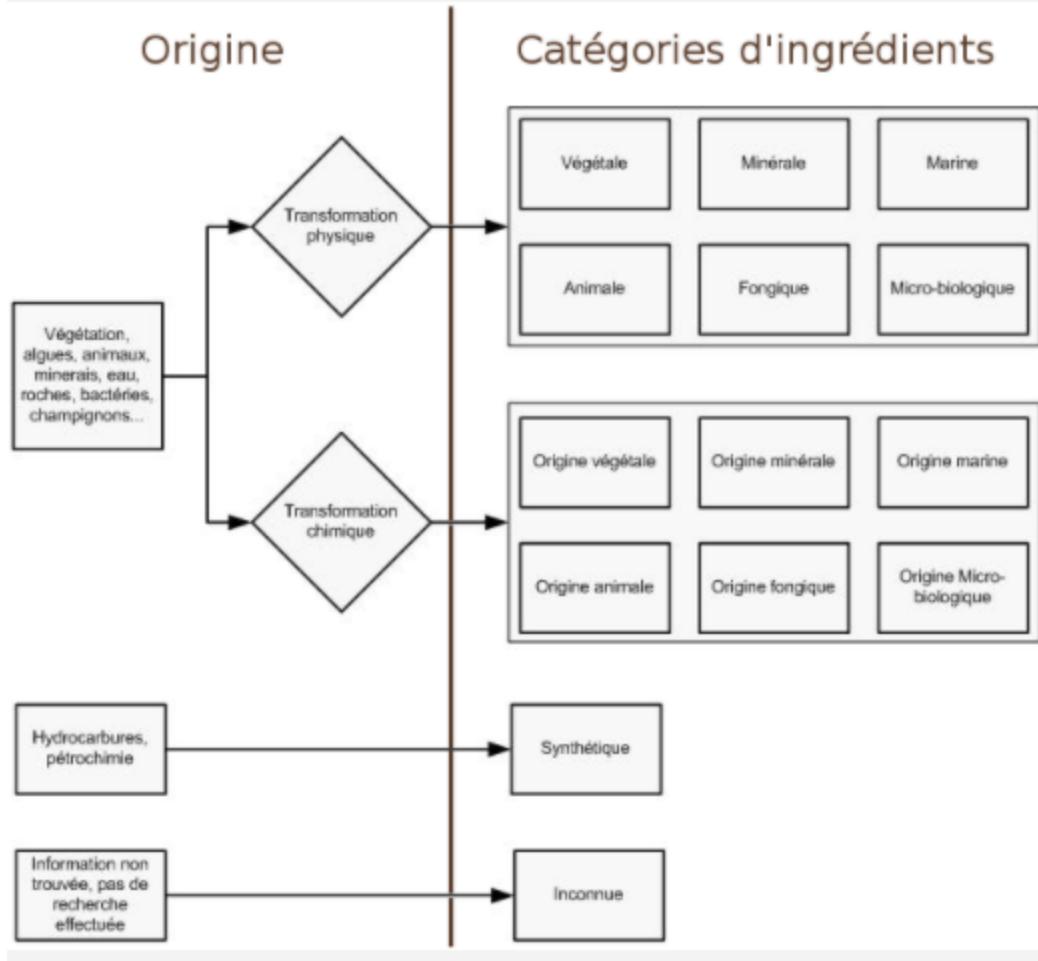


Figure 15: Ingredient Transformations Categories

2.2. Natural Products

Natural cosmetics are very close to “native” products, such as traditional herbal medicine, which uses raw materials that are almost raw. They undergo mainly primary mechanical and chemical transformations, such as distillation, extraction, cooking or filtration, fermentation and oxidation, percolation, desiccation, leaving few residues, which are easily recyclable and biodegradable. Schematically, natural and organic cosmetic products by extension contain a majority of ingredients from the plant world (plants, fruits, flowers, etc.) exploited in different forms (essential oils, vegetable oils, powders, etc.), but also substances of animal origin produced naturally and without

mistreatment to obtain them (honey, beeswax, milk, eggs) and some mineral resources (clay, silica, etc.).

2.3. Bio Products

There is no official definition of organic cosmetics. What is commonly referred to as “organic cosmetics” refers to a family of products composed of natural or natural ingredients (in varying proportions depending on the brand), unlike “conventional” cosmetic products. made in large part from synthetic ingredients. Organic cosmetics limits or excludes the use of substances that may cause harmful effects on the user (allergies, cancer, etc.) or on nature (testing on animals, use of polluting manufacturing processes, etc.). (F, 2008)

“Organic cosmetics” are derived from organic farming which is based on the rational management of the soil fraction, respecting the biological cycles and the environment, taking into account ecological knowledge, for quality production, balanced, more autonomous, more economical and non-polluting. (Techno-science, s.d.)

3. Packaging

Packaging is the first in contact with the consumer, an indispensable link for establishing a bond of trust and quality. Its primary role is to allow the protection, transport, and storage of creams and other perfumes. It must also embody the product it contains, its brand, and trigger the act of purchase. In addition to these technical and marketing functions, its use as a vector of information to the customer (regulatory information in particular). For all these reasons, packaging development is integrated from the first stages of development of a cosmetic product. Innovation is everywhere: choice of materials, choice of format, design, decor, process etc. The constraints are numerous since the designer must integrate in the development: the use of the product by the consumer, the production and logistics stages and the recyclability of materials. (Masson, 2020)

4. Current Situation

4.1. Cosmetic sector worldwide

The global cosmetics market is growing rapidly, on average double the world's GNP over the past two decades. 4500 USD of beauty and cosmetic products are sold worldwide every second, the equivalent of 138 billion dollars per year. France is the world leader in cosmetics with exports of \$4.7 billion outside the European Union.

The cosmetics industry includes perfumery (perfumes, eau de toilette, toiletries), toiletries (soaps, shower gels, deodorants, toothpastes...), hair products (shampoos, lacquers, gels, styling foams, colouring...) and cosmetics (makeup, skincare creams, baby products, sunscreens...)¹. The global cosmetics market remains dynamic despite a difficult economic context. A market particularly stimulated by the makeup segment that is constantly innovating to offer new trends and new "looks" to consumers. The global makeup market is worth \$55 billion in 2018. Asia and Western Europe still dominate the market by more than 50% of its overall value, closely followed by North America. Europe is in 2nd position and represents a value of more than 12 billion dollars.²

(For further explanation view **Appendix B : Cosmetic Sector Worldwide**)

4.2. Cosmetic sector in Tunisia

Over the past 10 years, the perfumery and cosmetics sector has been a booming market: the growth in demand for finished cosmetic and dermo-cosmetic products is around 12% per year.³

¹ <https://chroniques.tn/2014/11/le-secteur-des-industries-cosmetiques-en-tunisie/>

² <https://makeup-in.com/05-tendances-fr/le-maquillage-continue-de-tirer-le-marche-des-cosmetiques-dans-le-monde/>

³ <https://www.businessfrance.fr/les-cosmetiques-en-tunisie>

The cosmetics industry includes all manufacturers of products used for body, beauty and toilet care. These include perfumes, shampoos, gels, make-up, toothpastes, sunscreens, foams, gels, colorations, etc. These are toiletries, hair products and cosmetics.

In Tunisia, the participation of this sector in the economy is still low, representing only 2% of the exports of the chemical industries sector and the sector includes 83 companies divided into several segments of activities including 10 totally exporting.

The cosmetics sector Tunisia is currently facing problems and difficulties resulting in particular from the tax measures decreed by the Finance Act of 2018 and the non-tariff barriers that the Ministry of Commerce continues to impose, as well as some business practices outside of regular channels (smuggling, counterfeiting, and parallel market). To this is added a parallel trade that continues to develop.

The age group of women aged between 18 and 35 is the largest consumer of these products to meet the needs of social valorisation and importance of look. They buy perfumes, moisturizing creams, shampoos and skincare products. Regarding the dominant preference for the brand, Tunisian women express a trend for the products of major brands specializing in cosmetics regardless of their price. But for the majority of the population, the budget for these products is still very limited.

Tunisians generally allocate a monthly budget between 20DT and 30DT per month. This shows that the budget devoted to the consumption of hygiene and beauty products remains relatively low in the structure of Tunisian spending. Cosmetics are still perceived as "secondary" compared to commodities.⁴

Despite rising commodity prices, the price of perfumes remains relatively affordable. Tunisian manufacturers want to impose themselves on the local market by drawing the

⁴ <https://chroniques.tn/2014/11/le-secteur-des-industries-cosmetiques-en-tunisie/>

attention of consumers to the products offered at the expense of expensive foreign brands. It is a laborious adventure that is not always successful. The Tunisian manufacturer is called upon to make huge sums of money in order to be able to carve out a place for itself in a vast and diversified market that is experiencing stiff competition from all sides.

5. Conclusion

We discovered the cosmetic field on this chapter as well as its ingredients, packaging and the current situation worldwide and in Tunisia. This field's potential is increasing drastically, and most consumers are tending to use natural and bio products.

On the next chapter, we are going to present the work environment, Hardware and software and the technologies used for the implementation.



Chapter IV: Sprint Zero – Work Environment



Chapter IV: Sprint Zero - Work Environment

1. Introduction

In this chapter I am going to present the different tools and technology used. First, I am going to describe the development environment (Hardware and Software) as well as the implementation features. Then, I am going to present the application's physical and logical architecture.

2. Work Environment

2.1. Hardware Environment

To develop the application, we used as hardware environment 2 laptops and 2 desk-computers which have the following characteristic:

Hardware	Laptop	Desktop
Mark	HP-Pavilion Gaming 15	Dell
Processor	2.2 GHz Intel Core i7	2.5 GHz Intel Core i7
Storage	250 To SSD & 1 To HDD	1 To HDD
RAM	20 Go	16 Go
Operating System	Windows 10	Windows 10

Table 4: Hardware Environment Characteristics

2.2. Software Environment

2.2.1. Android Studio v4.2

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. (DBpedia, s.d.)



Figure 16: Android Studio Logo

2.2.2. Visual Studio Code v1.55.2

Visual Studio Code is a lightweight but powerful source code editor. It comes with built-in support for JavaScript, TypeScript and Node.js. (Microsoft, s.d.)



Figure 17: VS Code Logo

2.2.3. Postman v8.3.1

Postman is a collaboration platform for API development. Postman's features simplify each step of building an API and streamline collaboration so we can create better APIs—faster. (Postman, s.d.)



Figure 18: Postman Logo

2.2.4. WampServer v3.2.0

WampServer refers to a software stack for the Microsoft Windows operating system, created by Romain Bourdon and consisting of the Apache web server, OpenSSL for SSL support, MySQL database and PHP programming language. (Wikipedia, s.d.)



Figure 19: WampServer Logo

2.2.5. Visual Paradigm Online

Visual Paradigm is a leading and globally recognized provider for Business and IT Transformation software solutions. It enables organizations to improve business and IT agility



Figure 20: Visual Paradigm Online Logo

and foster innovation through popular open standards. (Visual Paradigm Online, s.d.)

2.2.6. Adobe XD

Adobe XD (also known as Adobe Experience Design) is a vector-based user experience design tool for web apps and mobile apps, developed and published by Adobe Inc. (Wikipedia, s.d.)



Figure 21: Adobe XD Logo

2.2.7. Adobe Photoshop

Photoshop is a computer-assisted editing, processing and drawing software, launched in 1990 on MacOS and then in 1992 on Windows. Published by Adobe, it is mainly used for the processing of digital photographs, but also for the ex-nihilo creation of images. (Wikipe, s.d.)



Figure 22: Adobe Photoshop Logo

2.3. Project Management Tools

2.3.1. GitHub Desktop

GitHub Desktop is an application that enables you to interact with GitHub using a GUI instead of the command line or a web browser. GitHub Desktop encourages you and your team to collaborate using best practices with Git and GitHub. (Github, s.d.)



Figure 23: GitHub Desktop Logo

2.3.2. TeamGantt

TeamGantt's free gantt chart software lets you keep all your tasks, documents, and conversations in a single centralized hub. (TeamGantt, s.d.)



Figure 24: TeamGantt Online Logo

2.4. Choice of implementation

2.4.1. Programming language

Dart

Dart is a programming language designed for client development, such as for the web and mobile apps. It is developed by Google and can also be used to build server and desktop applications. (Gentile, 2020)



Figure 25: Dart Logo

TypeScript

TypeScript is a strongly typed programming language which builds on JavaScript giving us better tooling at any scale.



Figure 26: TypeScript Logo

TypeScript may be used to develop JavaScript applications for both client-side and server-side execution (as with Node.js).

(Tutorials Point, s.d.)

2.4.2. Database

MySQL

MySQL is a freely available open-source Relational Database Management System (RDBMS) that uses Structured Query Language (SQL).



Figure 27: MySQL Logo

SQL is the most popular language for adding, accessing and managing content in a database. (Site Ground, s.d.)

2.4.3. Framework

Angular

Angular is a platform and framework for building single-page client applications using HTML and TypeScript. Angular is written in



Figure 28: Angular Logo

TypeScript. It implements core and optional functionality as a set of TypeScript libraries that you import into your applications. (Angular, s.d.)

Node JS

Node.js is an open-source, cross-platform, back-end JavaScript runtime environment that runs on the V8 engine and executes JavaScript code outside a web browser. Node.js lets developers use JavaScript to write command line tools and for server-side scripting – running scripts server-side to produce dynamic web page content before the page is sent to the user's web browser. (Wikipedia, s.d.)



Figure 29: Node JS Logo

Flutter

Flutter is Google's free and open-source UI framework for creating native mobile applications. Released in 2017, Flutter allows developers to build mobile applications for both iOS and Android with a single codebase and programming language. This capability makes building iOS and Android apps simpler and faster. (Perfecto, 2021)



Figure 30: Flutter Logo

The Flutter framework consists of both a software development kit (SDK) and their widget-based UI library. This library consists of various reusable UI elements, such as sliders, buttons, and text inputs. (Perfecto, 2021)

Developers building mobile applications with the Flutter framework will do so using a programming language called Dart. With a syntax like JavaScript, Dart is a typed object programming language that focuses on front-end development. (Perfecto, 2021)

2.4.4. Data Format

JSON (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate. JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others. These properties make JSON an ideal data-interchange language. (JSON, s.d.)



Figure 31: JSON Logo

3. Application Architecture

3.1. Physical Architecture

My application is based on 3-tiers Architecture as explained in the following figure. The first part is the Website. It's the project's operation room. Only Admins have access to the website through his own credentials. It can manage the main parts shown in the mobile app. The second part is the Server which contains the servers web and the application's back office and contains all the controller. It is also the link between the application's different parts. The third and the last part is the mobile app which contains products & categories stored in the web server and created through the administration website. The web server communicates with both parts through its own routes.

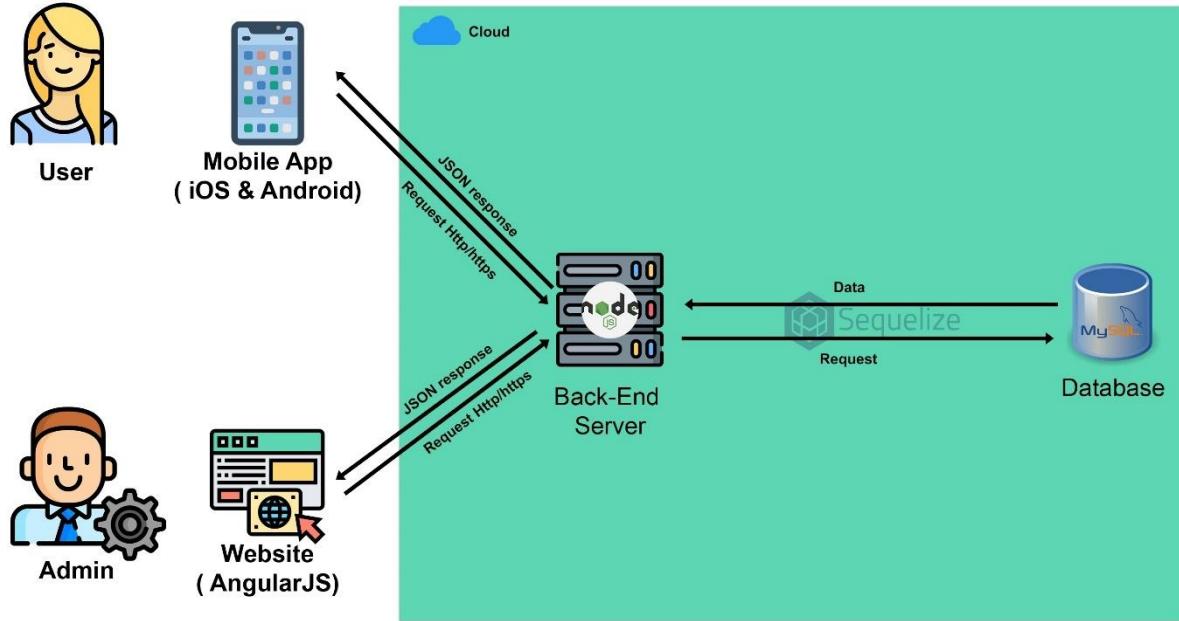


Figure 32 : Application's Physical Architecture

3.2. Logical Architecture

In this project I used MEAN Stack but instead of MongoDB I used MySQL (MySQL, ExpressJS, Angular, NodeJS) for the back-office part and Flutter for the front-office.

First, I used MVVM (Model, View, View Model) for the administration dashboard (Angular Project) which allows us to enable the two-way data binding between the View and the View Model.

Second, I used “BloC” architecture for the mobile app (Flutter) which helps organize data flow. It allows us to keep different layers of our application separate which makes it easy to test and reuse elements in different parts of code.

And last, I used “Single Threaded Event Loop” architecture for the web server (NodeJS) which allows us to handle multiple concurrent clients based on its JavaScript event-based model.

The following figure explains the Pattern used in my situation.

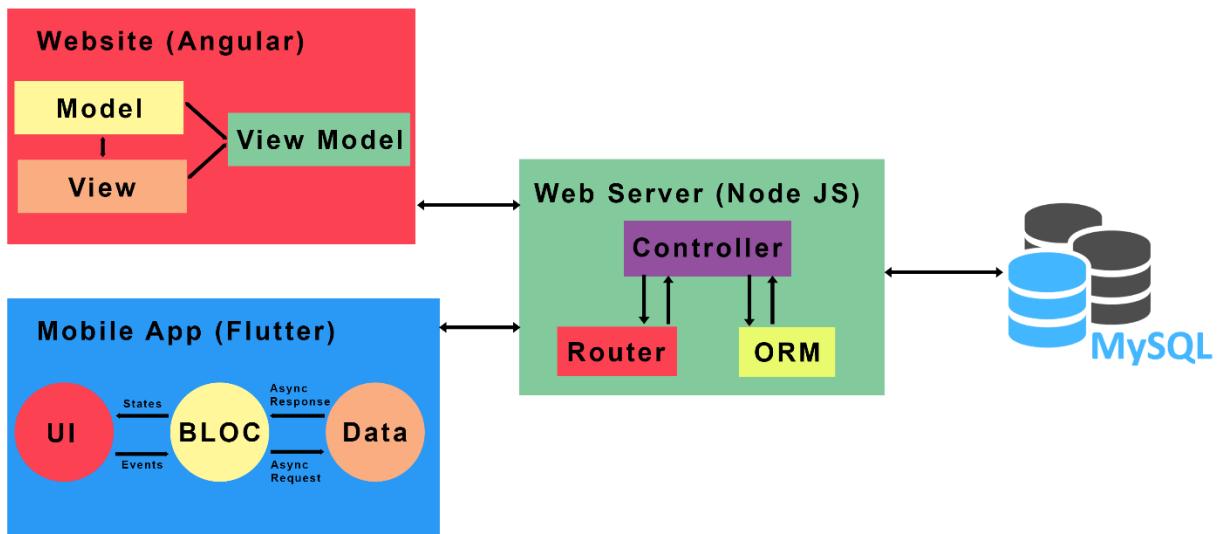


Figure 33 : Logical Architecture

The following figure describe the security middleware used in the Node.js server.

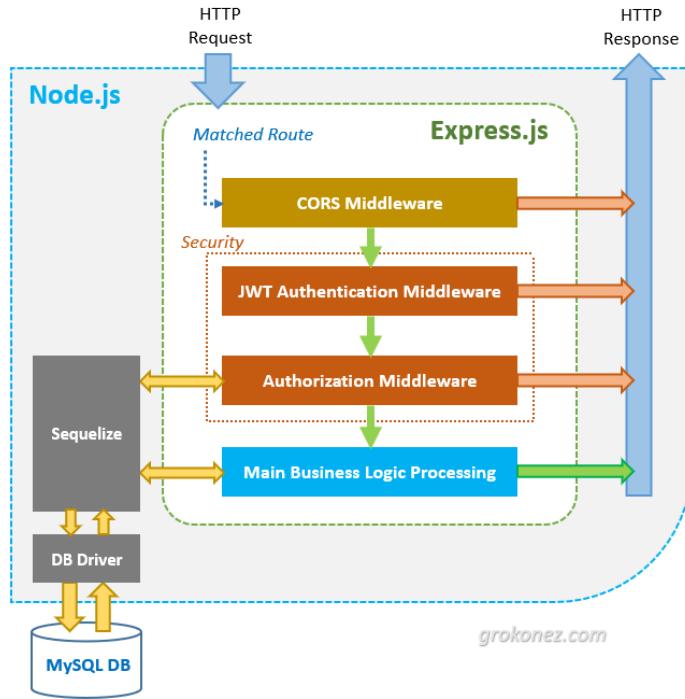


Figure 34: Security Middleware

4. Conclusion

In this chapter, I described the hardware and software platforms on which I built our applications. Then, I presented the different technologies used in the realization. Also, I presented the application's physical and logical architecture.

On the next chapter, I am going to start the development of the first sprint.



Chapter V : Sprint 1 - Category Management



Chapter V: Sprint 1 – Category Management

1. Introduction

The purpose of this sprint is to discover, design, develop and test all features related to Categories.

2. Sprint Backlog

2.1. Sprint Scope

In this sprint, our main goal is to implement category service which allows the user to search for products based on their categories and it also allows the administrator to add, edit and delete categories.

2.2. Tasks Planning

User stories#	Tasks	Day number									
		1	2	3	4	5	6	7	8	9	10
3 & 4 &0 &0	Database design and implementation	6	0	0	2	0	0	2	0	0	0
	API implementation	0	6	2	2	0	2	4	2	2	0
	Persistence development	0	0	4	2	5	1	2	0	0	0
	Front end development	0	0	0	2	2	3	0	4	2	4
	Test	2	2	2	0	1	2	0	2	2	0
	Documentation	0	0	0	0	0	0	0	0	2	4

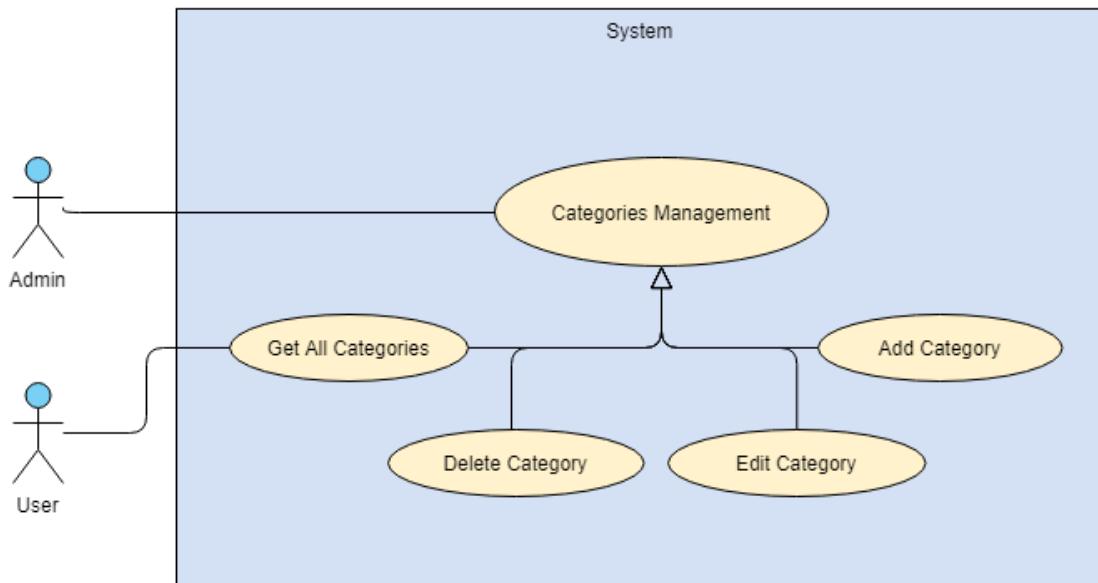
Chapter V: Sprint 1 – Category Management

User stories#	Tasks	11	12	13	14	15
0	Database design and implementation	4	4	0	2	0
	API implementation	2	2	4	2	3
	Persistence development	0	0	2	2	2
	Front end development	0	0	0	2	1
	Test	2	2	2	0	2
	Documentation	0	0	0	0	0

Table 5: Tasks Planning - Sprint 1

3. Analysis

3.1. Categories Management Use Case Refinement



All cases requires authentication

Figure 35: Categories Management Use Case Refinement

Chapter V: Sprint 1 – Category Management

3.1.1. Use case “Add Category”

Textual description of the use case “Add Category”

The below table explain the “success” scenario of adding a new category.

Use Case	Add Category
Actor	Admin
Pre-condition	The administrator must be authenticated.
Post-condition	New category inserted.
Nominal Scenario	<ul style="list-style-type: none">• The admin clicks on “Categories” dropdown on the sidebar.• The admin clicks on “Add Category” button on the sidebar.• The system shows the desired interface.• The admin fills the form and clicks on “Confirm” button.

Table 6: Textual description of the use case “Add Category”

(View Appendix C: Add Category to see realisation)

Sequence diagram of the use case “Add Category”

A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. Sequence diagrams are sometimes called **event diagrams** or **event scenarios**.

Chapter V: Sprint 1 – Category Management

A sequence diagram shows, as parallel vertical lines (*lifelines*), different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.

The below figure is the sequence diagram of add Category:

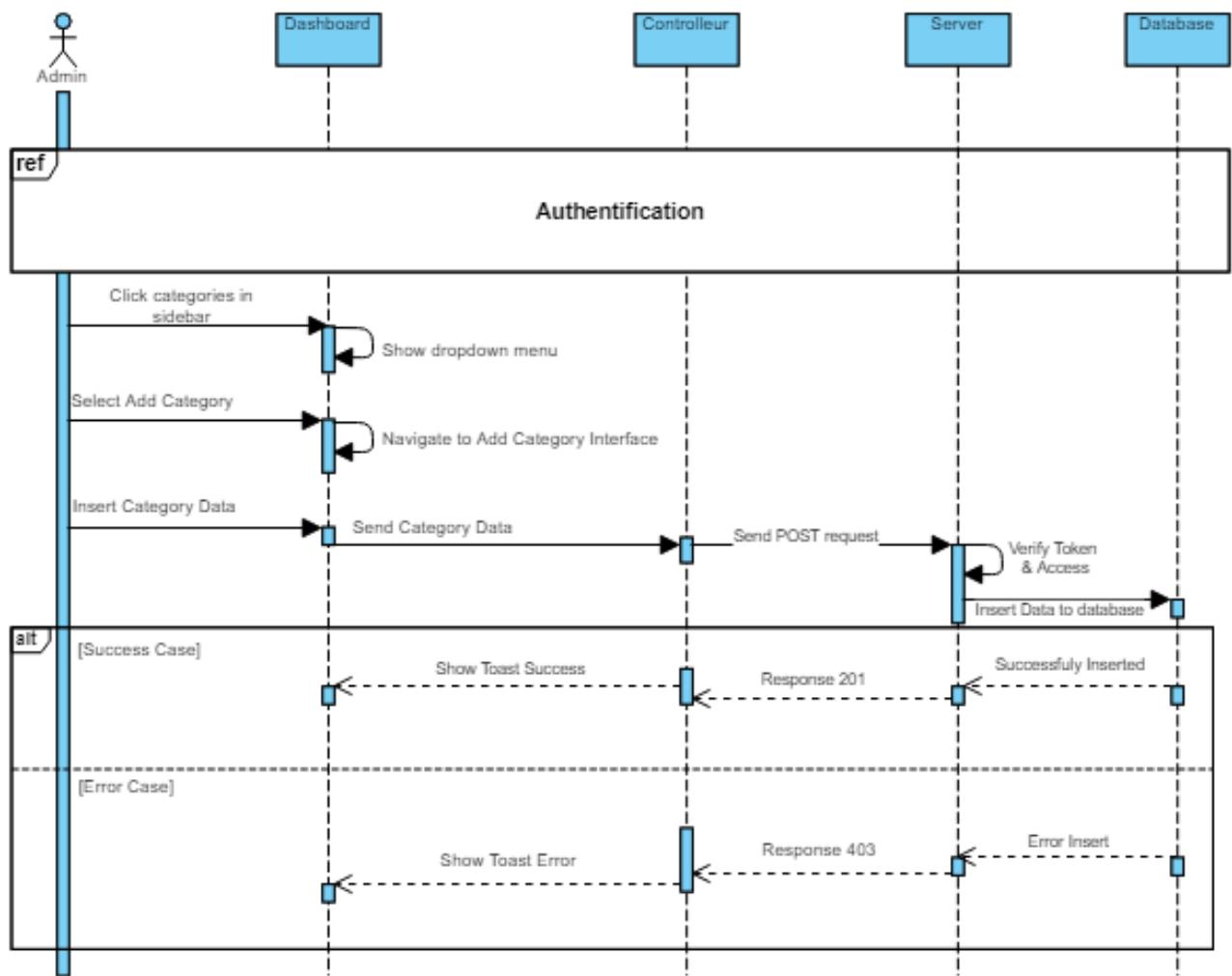


Figure 36: Add Category Sequence Diagram

Chapter V: Sprint 1 – Category Management

3.1.2. Use case “Edit Category”

Textual description of the use case “Edit Category”

The below table explain the “success” scenario of editing a category.

Use Case	Edit Category
Actor	Admin
Pre-condition	The administrator must be authenticated.
Post-condition	Category updated.
Nominal Scenario	<ul style="list-style-type: none">• The admin clicks on “Categories” dropdown on the sidebar.• The admin clicks on “List Categories” button on the sidebar.• The system shows the desired interface.• The admin clicks on “pencil” button on the desired category.• The admin fills the form and clicks on “Check-mark” button.

Table 7: Textual description of the use case “Edit Category”

(View Appendix C: Edit Category to see realisation)

Sequence diagram of the use case “Edit Category”

The below figure is the sequence diagram of Edit Category:

Chapter V: Sprint 1 – Category Management

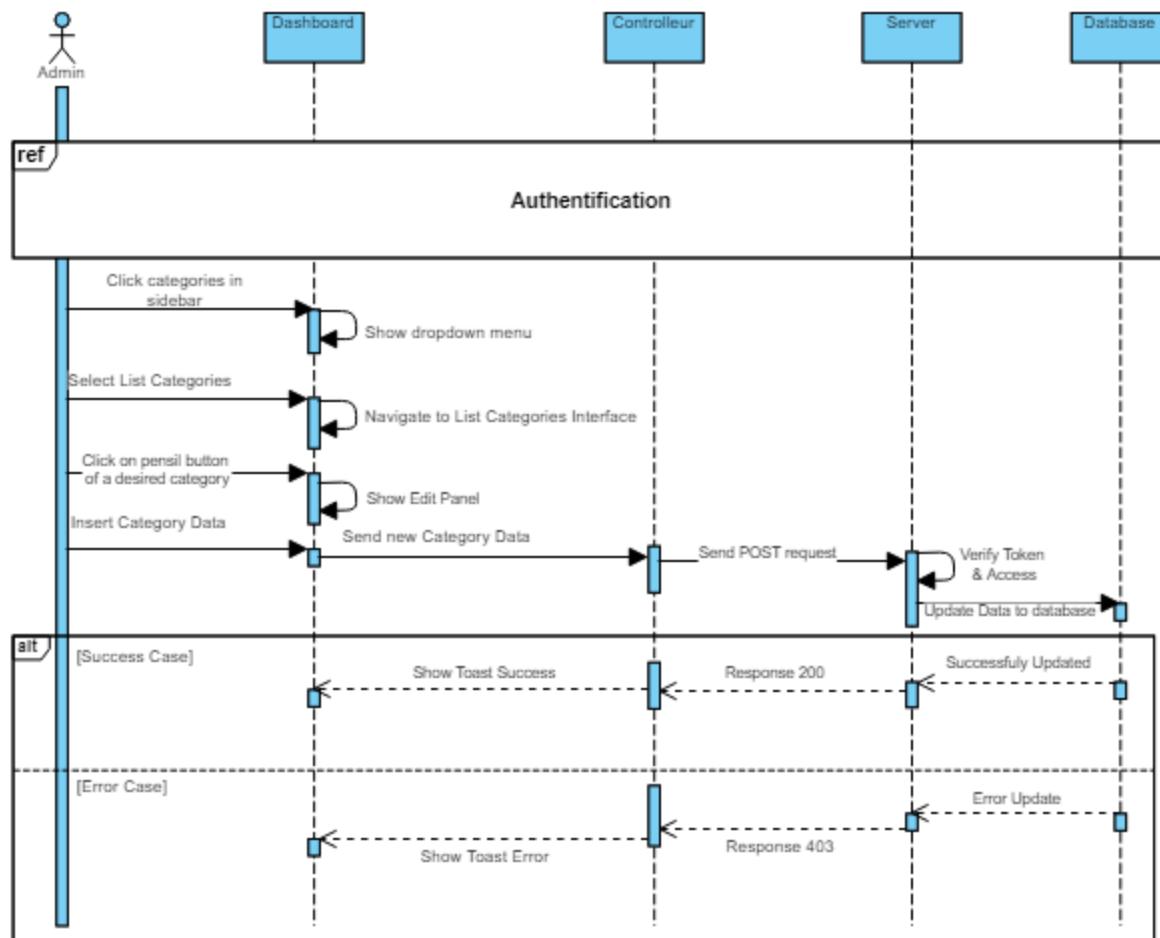


Figure 37: Edit Category Sequence Diagram

3.1.3. Use case “Delete Category”

Textual description of the use case “Delete Category”

The below table explain the “success” scenario of deleting a category.

Use Case		Delete Category
Actor	Admin	
Pre-condition	The administrator must be authenticated.	

Chapter V: Sprint 1 – Category Management

Post-condition	Category deleted.
Nominal Scenario	<ul style="list-style-type: none"> The admin clicks on “Categories” dropdown on the sidebar. The admin clicks on “List Categories” button on the sidebar. The system shows the desired interface. The admin clicks on “close” icon on the desired category. The admin confirms delete request.

Table 8: Textual description of the use case “Delete Category”

(View Appendix C: Delete Category to see realisation)

Sequence diagram of the use case “Delete Category”

The below figure is the sequence diagram of Delete Category:

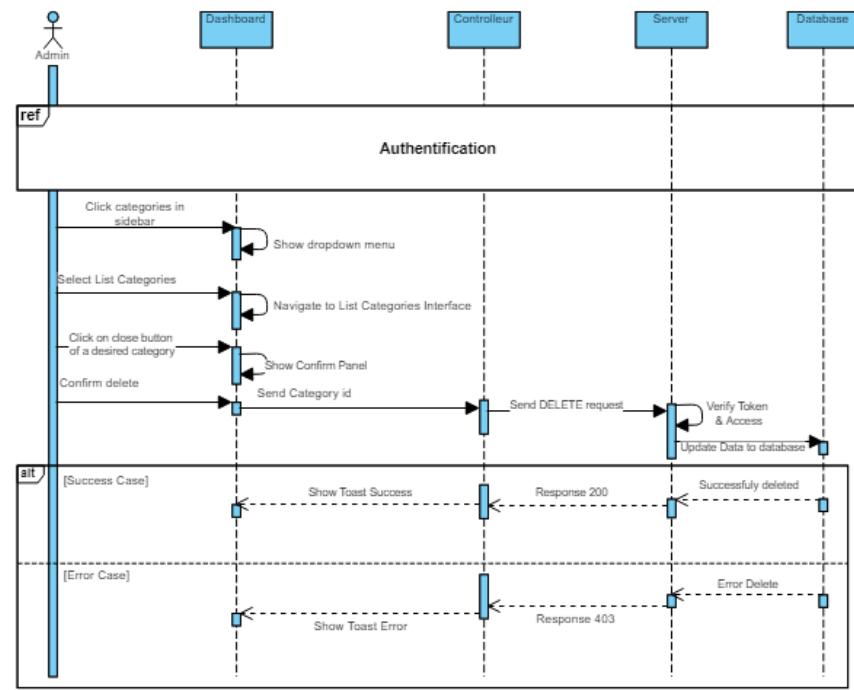


Figure 38: Delete Category Sequence Diagram

Chapter V: Sprint 1 – Category Management

3.1.4. Use case “List All Categories (Admin)”

Textual description of the use case “List All Categories (Admin)”

The below table explain the “success” scenario of get all categories.

Use Case	List All Categories
Actor	Admin
Pre-condition	The administrator must be authenticated.
Nominal Scenario	<ul style="list-style-type: none">• The admin clicks on “Categories” dropdown on the sidebar.• The admin clicks on “List Categories” button on the sidebar.• The system shows the desired interface.

Table 9: Textual description of the use case “List Categories”

(View Appendix C: List Categories (Admin) to see realisation)

3.1.5. Use case “List All Categories (User)”

Textual description of the use case “List All Categories (User)”

The below table explain the “success” scenario of get all categories.

Use Case	List All Categories
Actor	User
Pre-condition	The user must be authenticated.

Chapter V: Sprint 1 – Category Management

Nominal Scenario	<ul style="list-style-type: none">• The system shows all categories on home screen.
-------------------------	---

Table 10: Textual description of the use case “List Categories (User)”

(View Appendix C: List Categories (User) to see realisation)

4. Conclusion

All categories' features are now implemented and tested.



Chapter VI : Sprint 2 - Allergens Management



Chapter VI: Sprint 2 – Allergens Management

1. Introduction

On this sprint our main objective is to implement all allergens methods such as Create, Update, Delete, View... Allergen's service is very important for this project because it allows users to select their personal allergens which help them with the search for products.

2. Sprint Backlog

2.1. Sprint Scope

On this sprint, our main task is the management of allergens and their association with ingredients.

2.2. Tasks Planning

		Day number																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
User stories#	Tasks																	
10—14 & 29	Database design and implementation	4	4	2	0	0	0	1	1	0	0	0	0	0	0	0	0	
	API implementation	2	2	4	2	2	4	3	1	4	5	2	2	0	0	1	0	
	Persistence development	0	0	0	4	4	2	2	3	1	3	1	0	0	0	4	1	
	Front end development	0	0	0	0	0	0	0	0	1	0	2	2	3	4	2	3	
	Test	2	2	2	2	1	2	2	3	0	0	3	2	1	1	4	1	
	Documentation	0	0	0	0	0	0	0	0	0	0	0	2	4	3	1	0	

Table 11: Tasks Planning - Sprint 2

3. Analysis

3.1. Allergens Management Use Case Refinement

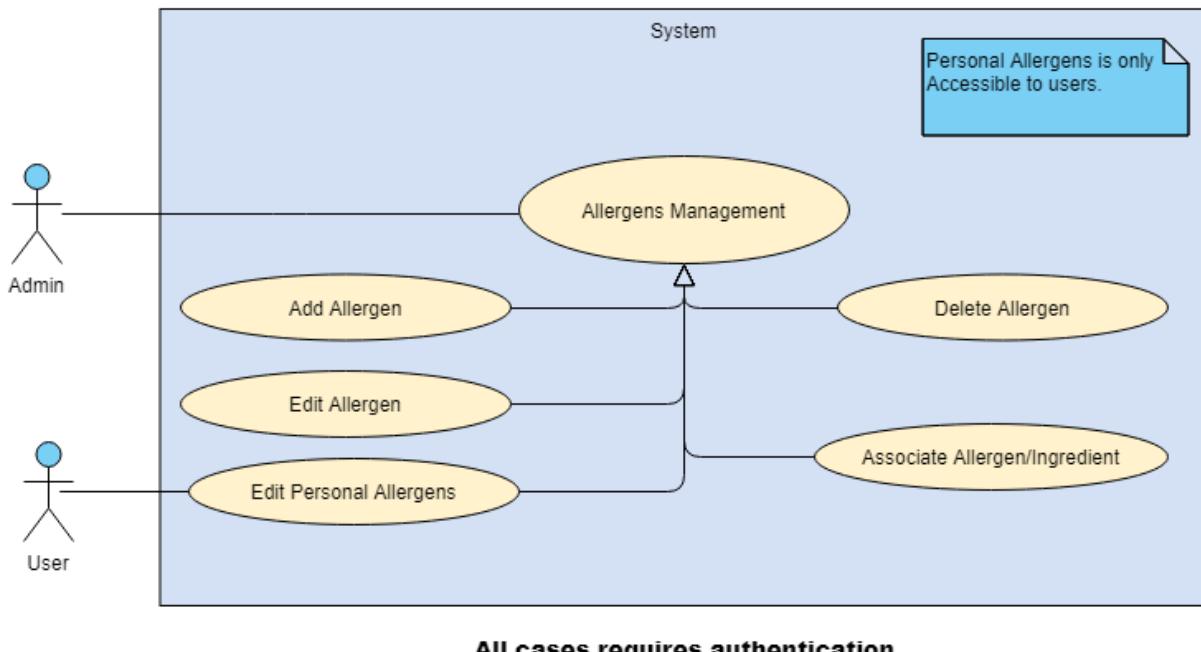


Figure 39: Allergens Management Use Case Refinement

3.1.1. Use case “Add Allergen”

Textual description

The below table explain the “success” scenario of adding a new allergen.

Use Case		Add Allergen
Actor	Admin	
Pre-condition	The administrator must be authenticated.	

Chapter VI: Sprint 2 – Allergens Management

Post-condition	New Allergen inserted.
Nominal Scenario	<ul style="list-style-type: none"> The admin clicks on “Allergens” dropdown on the sidebar. The admin clicks on “Add Allergen” button on the sidebar. The system shows the desired interface. The admin fills the form and clicks on “Confirm” button.

Table 12: Textual description of the use case “Add Allergen”

(View Appendix D: Add Allergen to see realisation)

3.1.2. Use case “Edit Allergen”

Textual description

The below table explain the “success” scenario of editing an allergen.

Use Case	Edit Allergen
Actor	Admin
Pre-condition	The administrator must be authenticated.
Post-condition	Allergen updated.
Nominal Scenario	<ul style="list-style-type: none"> The admin clicks on “Allergens” dropdown on the sidebar. The admin clicks on “List Allergens” button on the sidebar. The system shows the desired interface. The admin clicks on “pencil” button on the desired allergen. The admin fills the form and clicks on “Check-mark” button.

Chapter VI: Sprint 2 – Allergens Management

Table 13: Textual description of the use case “Edit Allergen”

(View Appendix D: Edit Allergen to see realisation)

3.1.3. Use case “Delete Allergen”

Textual description

The below table explain the “success” scenario of deleting an allergen.

Use Case	Delete Category
Actor	Admin
Pre-condition	The administrator must be authenticated.
Post-condition	Allergen deleted.
Nominal Scenario	<ul style="list-style-type: none">• The admin clicks on “Allergens” dropdown on the sidebar.• The admin clicks on “List Allergens” button on the sidebar.• The system shows the desired interface.• The admin clicks on “trash” icon on the desired allergen.• The admin confirms delete request.

Table 14:Textual description of the use case “Delete Allergen”

(View Appendix D: Delete Allergen to see realisation)

Chapter VI: Sprint 2 – Allergens Management

3.1.4. Use case “Associate Ingredient/Allergen”

Textual description

The below table explain the “success” scenario of association an ingredient to an allergen.

Use Case	Associate Ingredient/Allergen
Actor	Admin
Pre-condition	The administrator must be authenticated.
Post-condition	Ingredient associated to/removed from allergen.
Nominal Scenario	<ul style="list-style-type: none">• The admin clicks on “Allergens” dropdown on the sidebar.• The admin clicks on “Associate Ingredient/Allergen” button on the sidebar.• The system shows the desired interface.• The admin clicks on “Select Allergen” dropdown and select the desired allergen.• The system shows its provoking ingredients and all other ingredients.• The admin clicks on plus icon to add other ingredients or trash icon to remove from its current ingredients.

Table 15: Textual Description Associate Ingredient/allergen

(View Appendix D: Associate Ingredient/ Allergen to see realisation)

Chapter VI: Sprint 2 – Allergens Management

Sequence diagram of the use case Associate Ingredient/Allergen

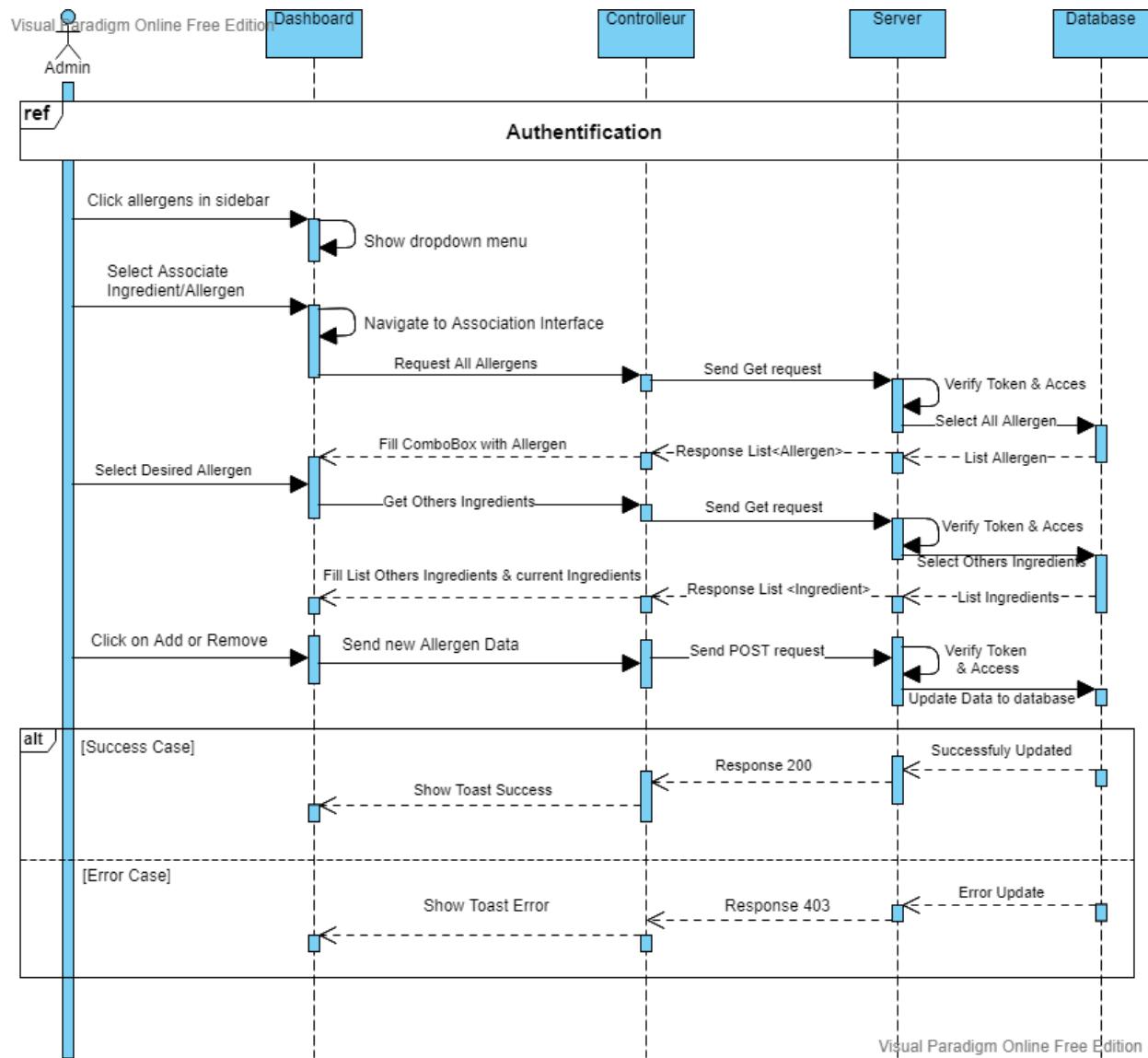


Figure 40: Sequence diagram of the use case "Associate Ingredient/Allergen"

3.1.5. Use case “Edit Personal Allergen”

Textual description

The below table explain the “success” scenario of association an ingredient to an allergen.

Chapter VI: Sprint 2 – Allergens Management

Use Case	Edit Personal Allergen
Actor	User
Pre-condition	The user must be authenticated or new account verified.
Post-condition	User's allergens updated.
Nominal Scenario 1 (Case Authenticated)	<ul style="list-style-type: none"> • The user clicks on “Drawer Icon” button. • The system shows the drawer. • The user clicks on “Parameters” button. • The system shows the Parameters Interface. • The user clicks on “Mon Compte” button. • The system shows the Account Interface. • The user clicks on “Modifier allergens” button. • The system shows Allergen Interface. • The user clicks on “clipboard” icon. • The system shows All Allergen with select box. • The user selects its own allergen.
Nominal Scenario 2 (Case Account Verified)	<ul style="list-style-type: none"> • The system shows All Allergen with select box. • The user selects its own allergen.

Table 16 : Textual description Edit Personal Allergen

(View Appendix D: Edit Personal Allergen to see realisation)

Chapter VI: Sprint 2 – Allergens Management

Sequence diagram

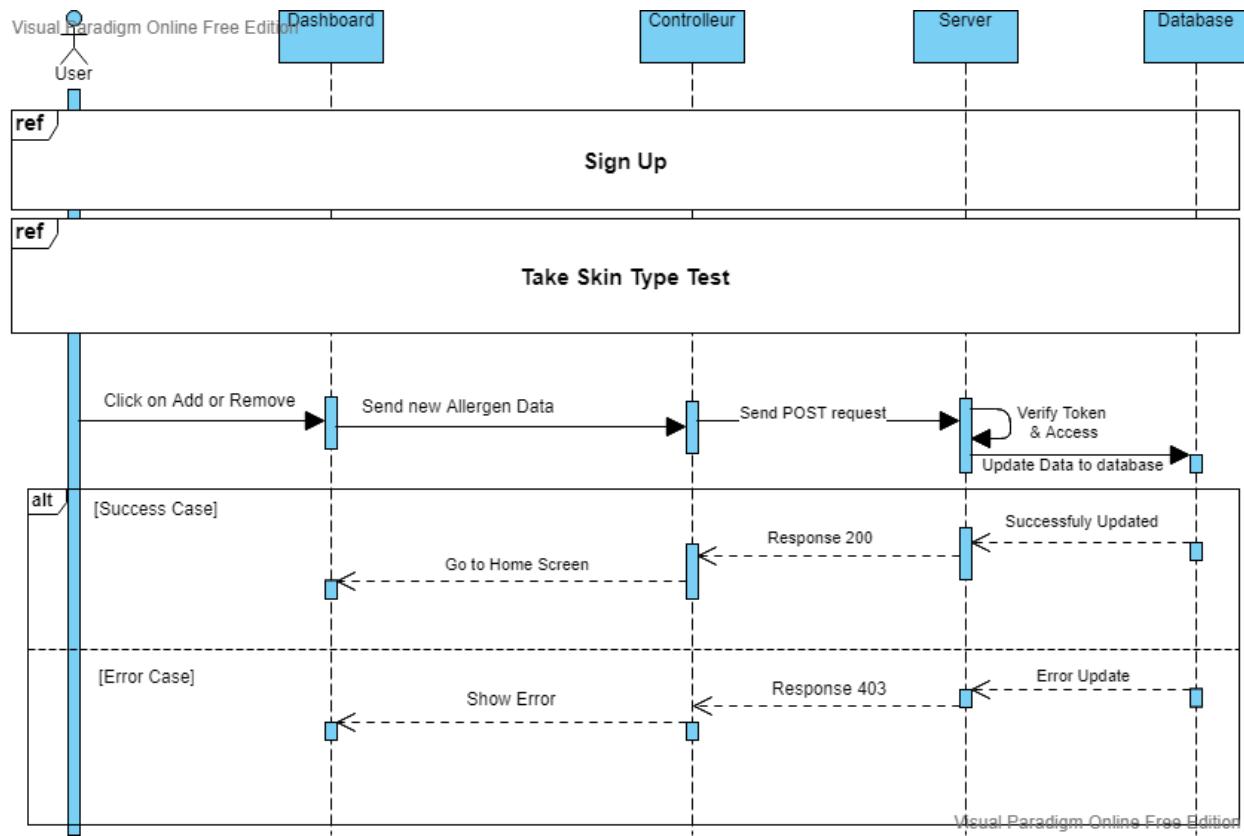


Figure 41: Sequence Diagram Edit Personal Allergen Scenario 2

4. Conclusion

In this sprint, we made it possible to users to edit their personal allergies so they can see which product is convenient for them based on allergens in product's ingredients. On the next sprint, we are going to implement ingredients management.



Chapter VII : Sprint 3 – Ingredients Management



Chapter VII: Sprint 3 – Ingredients Management

1. Introduction

The search by personal allergens is based on ingredients' allergens so this sprint is important for the rest of the project.

2. Sprint Backlog

2.1. Sprint Scope

The main goal of this sprint is to implement the management of the ingredients for the back office and the visualisation for the app users.

2.2. Tasks Planning

		Day number									
		1	2	3	4	5	6	7	8	9	10
User stories# 21 -- 24	Tasks										
	Database design and implementation	0	0	0	2	2	0	2	0	0	0
	API implementation	6	6	2	2	0	2	4	2	2	0
	Persistence development	0	0	4	2	5	1	2	0	0	0
	Front end development	0	0	0	2	2	3	0	4	2	4
	Test	2	2	2	0	1	2	0	2	2	0
	Documentation	0	0	0	0	0	0	0	0	2	4

Chapter VII: Sprint 3 – Ingredients Management

User stories#	Tasks	Day number										
		11	12	13	14	15	16	17	18	19	20	21
46	Database design and implementation	2	0	0	2	0	2	0	0	0	0	0
	API implementation	0	2	2	2	6	4	2	2	2	0	0
	Persistence development	5	1	4	2	0	2	0	0	0	0	0
	Front end development	2	3	0	2	0	0	4	4	2	4	4
	Test	1	2	2	0	2	0	2	2	2	0	0
	Documentation	0	0	0	0	0	0	0	0	2	4	4

Table 17: Tasks Planning - Sprint 3

3. Analysis

3.1. Ingredients Management Use Case Refinement

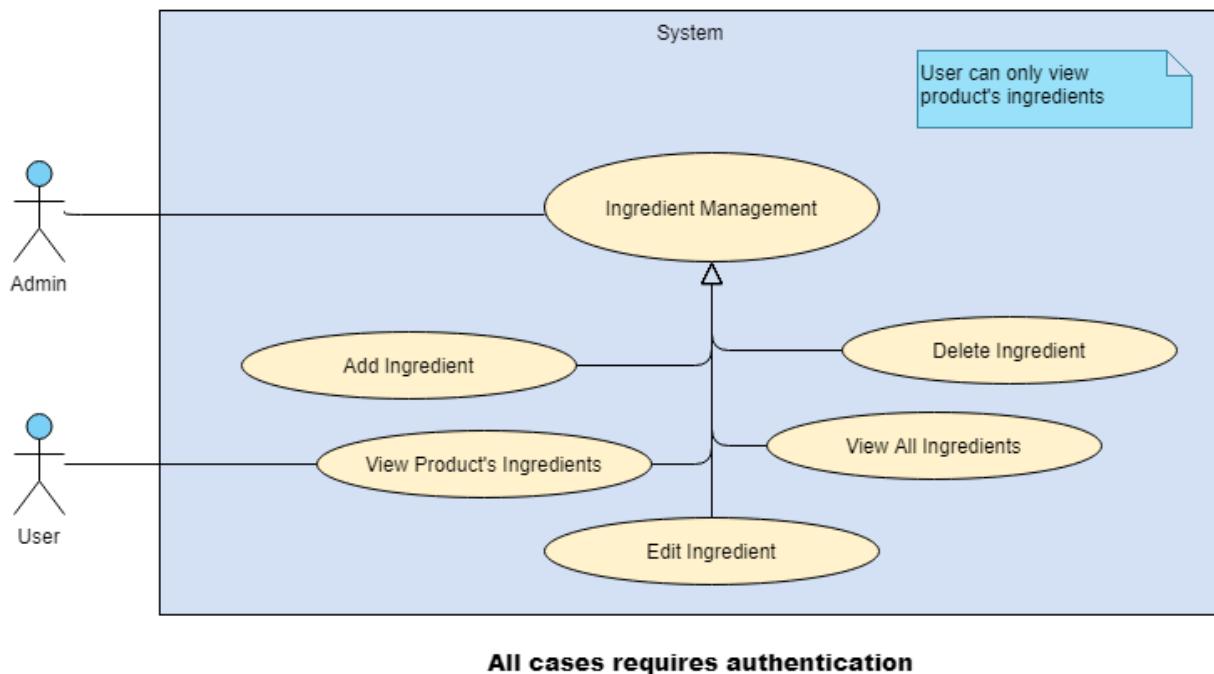


Figure 42 : Ingredients Management Use Case Refinement

3.1.1. Use case “View All Ingredients”

Textual description

The below table explain the “success” scenario of visualising ingredients.

Use Case		Add Allergen
Actor	Admin	
Pre-condition	The administrator must be authenticated.	

Chapter VII: Sprint 3 – Ingredients Management

Nominal Scenario	<ul style="list-style-type: none"> The admin clicks on “Ingredients” on the sidebar. The system shows the desired interface.
-------------------------	--

Table 18: Textual description of the use case “View All Ingredients”

(View Appendix E: View All Ingredients to see realisation)

3.1.2. Use case “Add Ingredient”

Textual description

The below table explain the “success” scenario of adding ingredient.

Use Case	Add Ingredient
Actor	Admin
Pre-condition	The administrator must be authenticated.
Post-condition	New ingredient added.
Nominal Scenario	<ul style="list-style-type: none"> The admin clicks on “Ingredients” on the sidebar. The system shows the desired interface. The admin clicks on plus button. The system shows a new field data The admin inserts ingredient name and select the type. The admin confirms insert. The system shows a toast based on result.

Table 19: Textual description of the use case “Add Ingredient”

(View Appendix E: Add Ingredient to see realisation)

Chapter VII: Sprint 3 – Ingredients Management

Sequence diagram

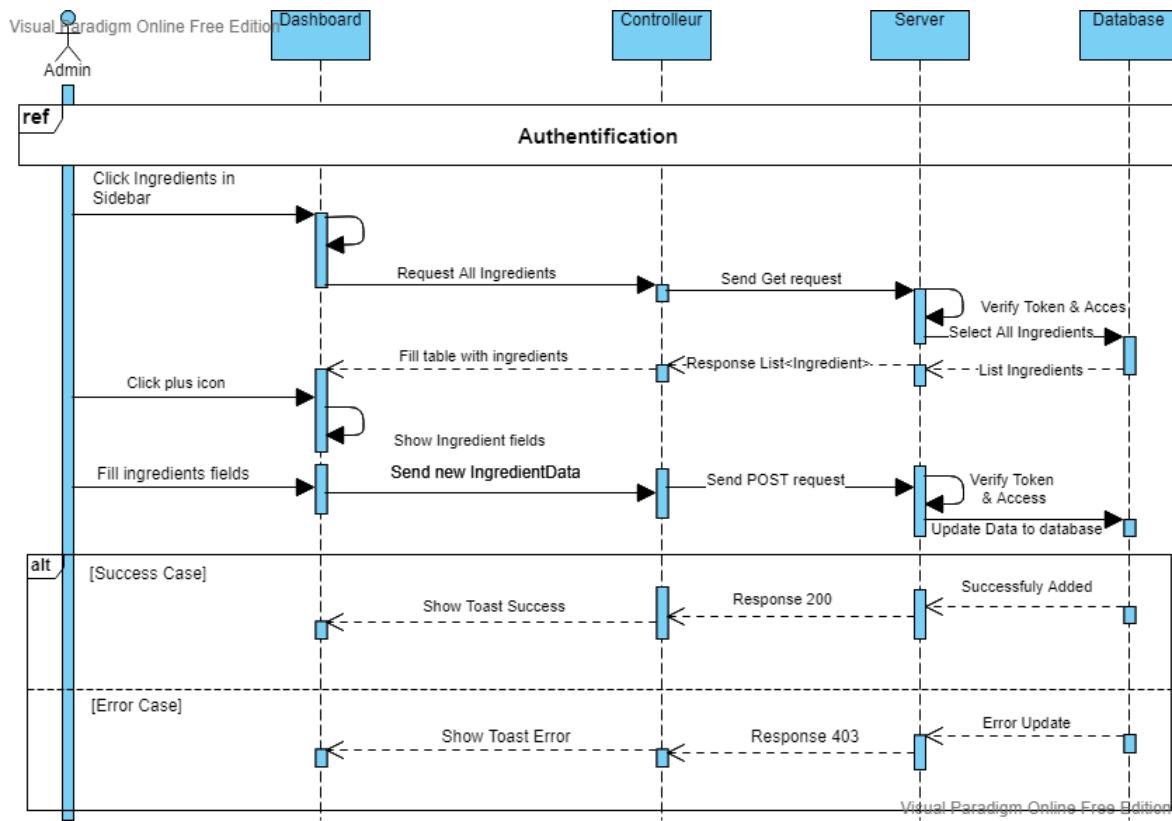


Figure 43: Sequence diagram Add Ingredient

3.1.3. Use case “Edit Ingredient”

Textual description

The below table explain the “success” scenario of editing an ingredient.

Use Case	
Edit Ingredient	
Actor	Admin
Pre-condition	The administrator must be authenticated.

Post-condition	Ingredient edited.
Nominal Scenario	<ul style="list-style-type: none"> The admin clicks on “Ingredients” on the sidebar. The system shows the desired interface. The admin clicks on pencil icon on desired ingredient. The system shows a current field data The admin edits ingredient name and select the type. The admin confirms editing. The system shows a toast based on result.

Table 20: Textual description of the use case “Edit Ingredient”

(View Appendix E: Edit Ingredient to see realisation)

3.1.4. Use case “Delete Ingredient”

Textual description

The below table explain the “success” scenario of deleting an ingredient.

Use Case		Delete Ingredient
Actor		Admin
Pre-condition		The administrator must be authenticated.
Post-condition		Ingredient deleted.
Nominal Scenario		<ul style="list-style-type: none"> The admin clicks on “Ingredients” on the sidebar.

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	<ul style="list-style-type: none">• The system shows the desired interface.• The admin clicks on trash icon on desired ingredient.• The system shows confirmation popup.• The admin confirms delete.• The system shows a toast based on result.
--	---

Table 21: Textual description of the use case “Delete Ingredient”

(View Appendix E: Delete Ingredient to see realisation)

3.1.5. Use case “View Product Ingredients”

Textual description

The below table explain the “success” scenario of viewing product’s ingredients.

Use Case	View Product Ingredients
Actor	User
Pre-condition	The user must be authenticated.
Nominal Scenario	<ul style="list-style-type: none">• The user clicks on desired product.• The system shows product details.• The user swipe left on “Plus Informations”.• The system shows product’s ingredients.

Table 22: Textual description of the use case “View Product’s Ingredients”

(View Appendix E: View Product’s Ingredients to see realisation)

4. Conclusion

Ingredients management is now done and users will be able to view product's ingredients. The next sprint we are going to implement user's services.



Chapter VIII : Sprint 4 – Users Management



Chapter VIII: Sprint 4 – Users Management

Chapter VIII: Sprint 4 – Users Management

1. Introduction

On this chapter, our main goal is to implement all user's management functions. This is the most crucial sprint on this project.

2. Sprint Backlog

2.1. Sprint Scope

In this sprint, our sprint backlog's scope is to implements major function such as authenticate and sign up, as well as other functions. By the end of this sprint, Users management should be completed. This sprint backlog has 10 stories for 25 days. There is a detailed descriptive table below to explain the process.

2.2. Tasks Planning

		Day number											
		1	2	3	4	5	6	7	8	9	10	11	12
User stories# 1 & 2 & 9	Database design and implementation	0	0	0	2	2	0	2	0	0	0	1	0
	API implementation	3	4	2	2	0	2	4	2	2	0	0	0
	Persistence development	5	0	4	2	5	1	2	0	0	0	1	0
	Front end development	0	0	0	2	2	3	0	4	2	4	3	4
	Test	0	4	2	0	1	2	0	2	2	0	0	0
	Documentation	0	0	0	0	0	0	0	0	2	4	3	4

Chapter VIII: Sprint 4 – Users Management

User stories#	Tasks	Day number												
		13	14	15	16	17	18	19	20	21	22	23	24	25
25 – 28 & 30 – 32	Database design and implementation	2	0	0	4	0	7	0	1	0	0	0	0	0
	API implementation	0	0	0	2	6	0	2	6	2	0	3	7	0
	Persistence development	5	0	2	0	0	0	0	1	0	0	0	0	1
	Front end development	2	4	4	0	0	0	4	0	2	4	4	1	5
	Test	1	0	2	2	2	1	2	0	2	0	1	0	0
	Documentation	0	4	0	0	0	0	0	0	2	4	0	0	2

Table 23: Tasks Planning - Sprint 4

Chapter VIII: Sprint 4 – Users Management

3. Analysis

3.1. Users Management Use Case Refinement

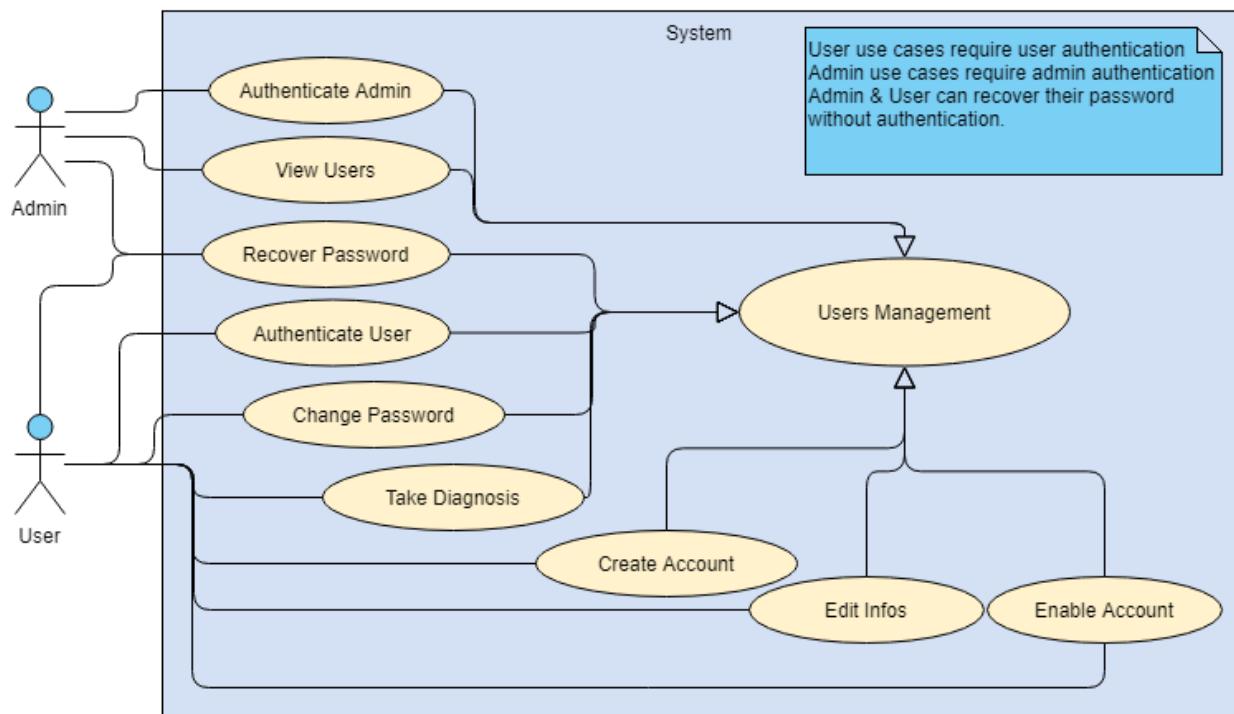


Figure 44: Users Management Use Case Refinement

3.1.1. Use Case “Authenticate User”

Activity Diagram

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system.

Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system.

Chapter VIII: Sprint 4 – Users Management

The control flow is drawn from one operation to another. This flow can be sequential, branched, or concurrent. Activity diagrams deal with all type of flow control by using different elements such as fork, join, etc (tutorialspoint, s.d.)

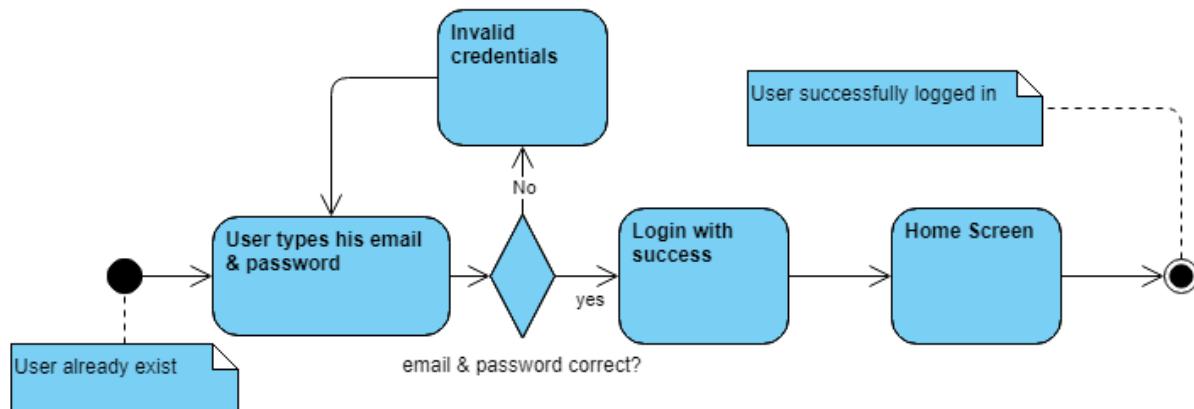


Figure 45: Authentication Activity Diagram

Sequence Diagram

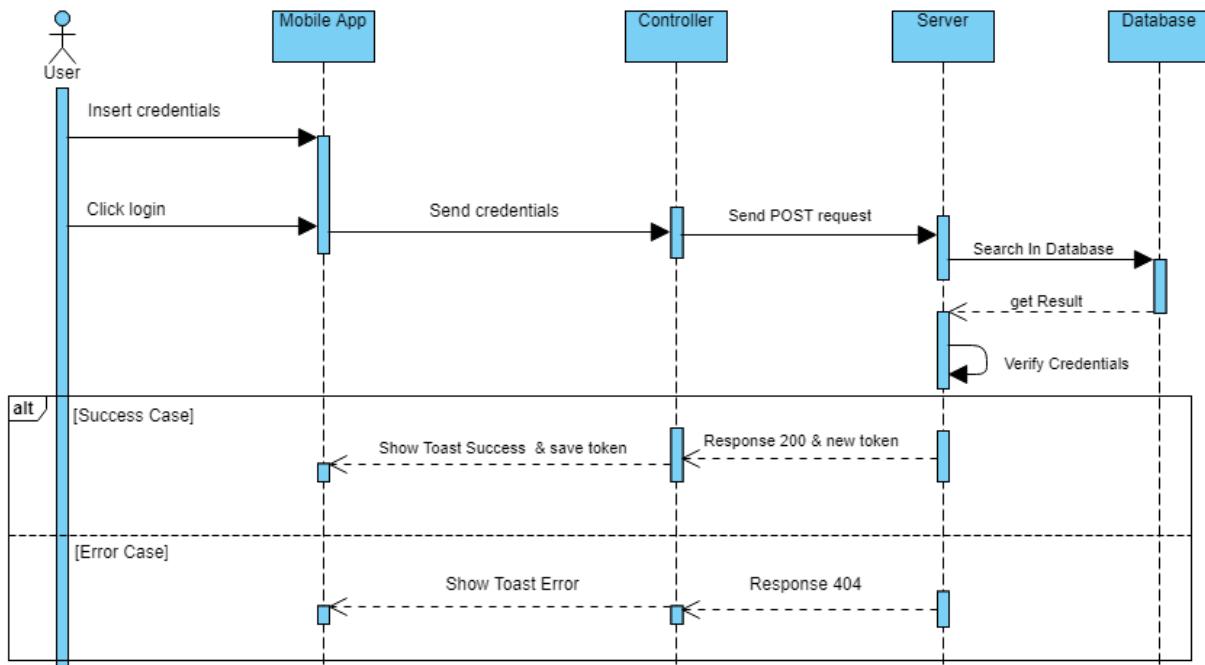


Figure 46: User Authentication Sequence Diagram

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(View Appendix F: Authenticate User to see realisation)

3.1.2. Use Case “Authenticate Admin”

Sequence Diagram

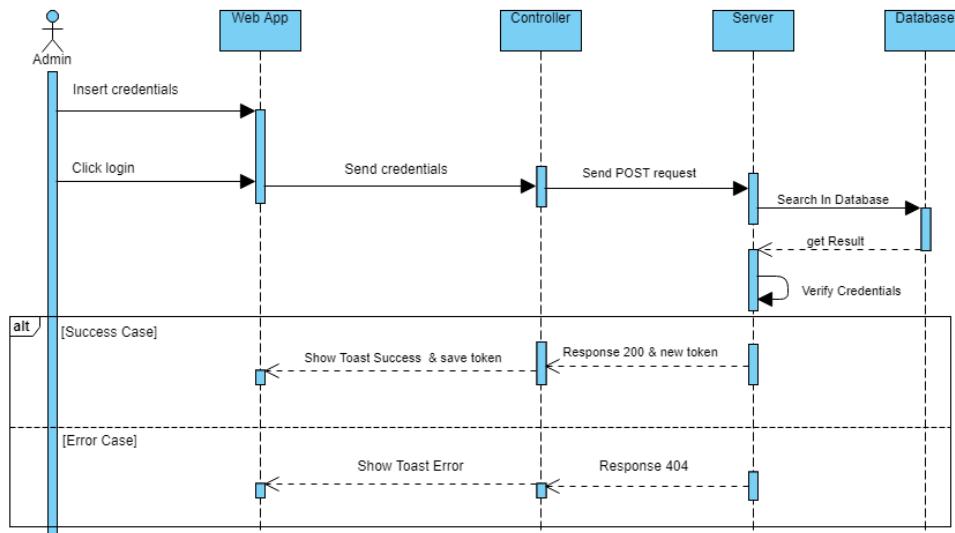


Figure 47: Sequence Diagram Authenticate Admin

(View Appendix F: Authenticate Admin to see realisation)

3.1.3. Use Case “Create Account”

Textual description

The below table explain the “success” scenario of creating a new account.

Use Case	
Create Account	
Actor	User
Post-condition	New invalid account created.

Chapter VIII: Sprint 4 – Users Management

Nominal Scenario	<ul style="list-style-type: none"> The user clicks on “Sign Up” on login screen. The system shows the desired interface. The user fills the form and confirm. The system creates a new account and move to the next step.
-------------------------	---

Table 24: Textual description of the use case “Create Account”

(View Appendix F: Create Account to see realisation)

Sequence Diagram

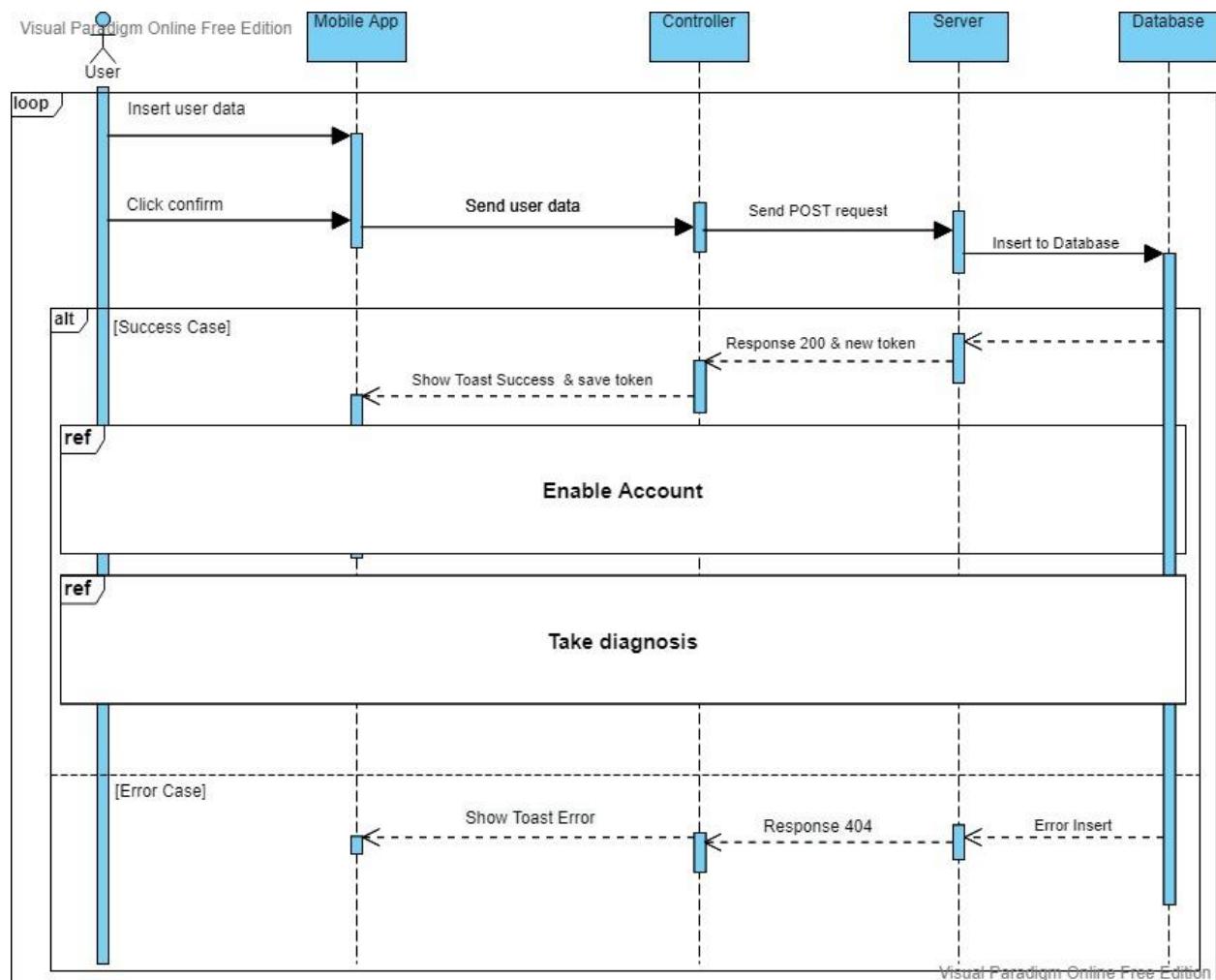


Figure 48: Sequence Diagram Create Account

Chapter VIII: Sprint 4 – Users Management

Activity Diagram

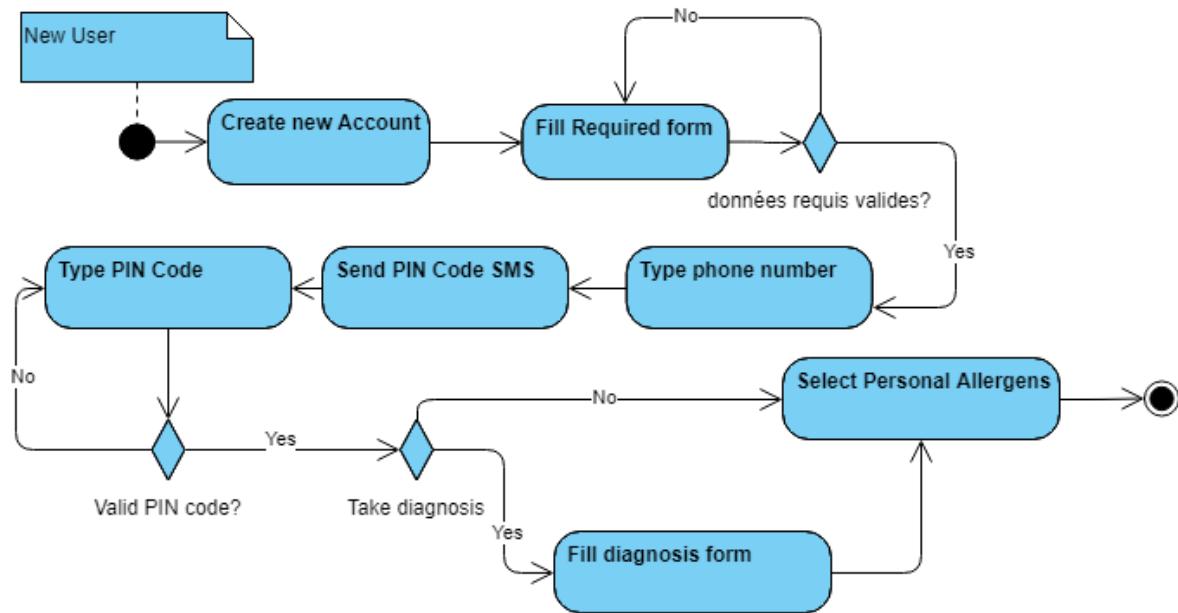


Figure 49: Activity Diagram Create Account Scenario

State Transition Diagram

A state-transition diagram presents a sequence of states that an object goes through during its lifecycle. It is used to describe the changes of states for an object or for a component.

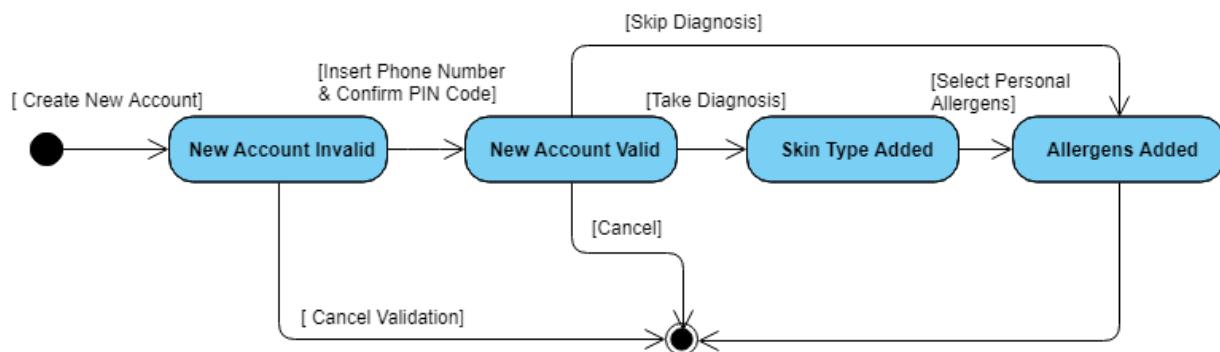


Figure 50: State Transition Diagram Account

Chapter VIII: Sprint 4 – Users Management

3.1.4. Use Case “Enable Account”

Textual description

The below table explain the “success” scenario of enabling an account.

Use Case	
Enable Account	
Actor	User
Pre-condition	Invalidated new account.
Post-condition	Valid account.
Nominal Scenario	<ul style="list-style-type: none">• The system shows the phone number screen.• The user inserts his phone number.• The system shows the PIN Code interface and send the PIN Code to user's phone inserted.• The user inserts the PIN Code.

Table 25: Textual description of the use case “Enable Account”

(View Appendix F: Enable Account to see realisation)

Chapter VIII: Sprint 4 – Users Management

Sequence Diagram

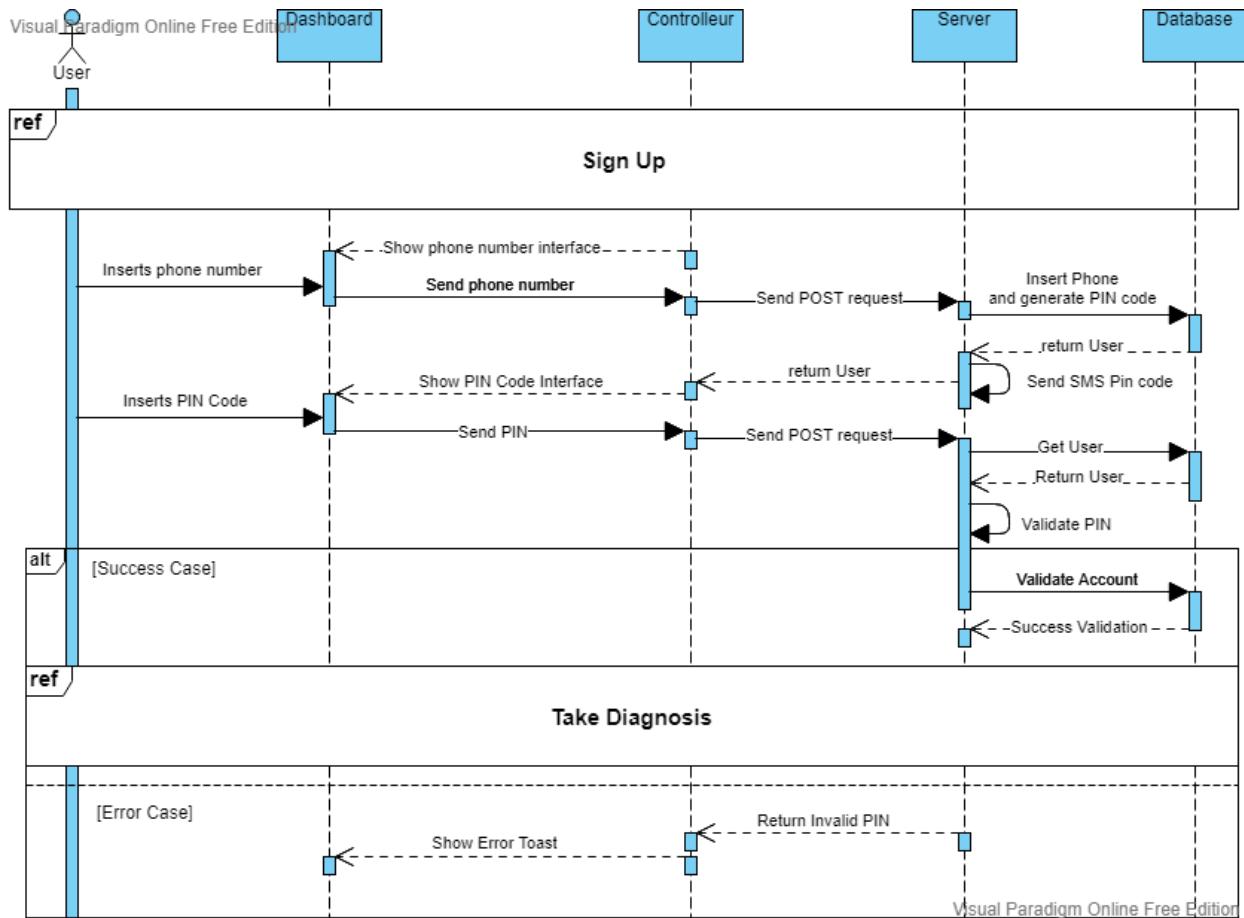


Figure 51: Sequence Diagram Enable Account

3.1.5. Use Case “Edit Info”

Textual description

The below table explain the “success” scenario of editing account info.

Use Case	
Actor	Edit Info
User	

Chapter VIII: Sprint 4 – Users Management

Post-condition	User data edited.
Nominal Scenario	<ul style="list-style-type: none"> • The user open drawer. • The system shows drawer. • The user selects “Parameters”. • The system shows drawer. • The user selects “Mon Compte”. • The system shows Account options. • The user selects “Modifier Profile”. • The system shows Edit profile interface. • The user update data and confirms.

Table 26: Textual description of the use case “Edit Info”

(View Appendix F: Edit Info to see realisation)

3.1.6. Use Case “List Users”

Textual description

The below table explain the “success” scenario of Listing users.

Use Case		List Users
Actor		Admin
Pre-condition		The administrator must be authenticated.
Nominal Scenario		<ul style="list-style-type: none"> • The admin clicks on “Users” on the sidebar. • The system shows the desired interface.

Chapter VIII: Sprint 4 – Users Management

Table 27: Textual description of the use case “List Users”

(View Appendix F: List Users to see realisation)

3.1.7. Use Case “Change Password”

Textual description

The below table explain the “success” scenario of Listing users.

Use Case	Change Password
Actor	User
Post-condition	User password edited.
Nominal Scenario	<ul style="list-style-type: none">• The user open drawer.• The system shows drawer.• The user selects “Parameters”.• The system shows drawer.• The user selects “Mon Compte”.• The system shows Account options.• The user selects “Changer mot de passe”.• The system shows Change Password interface.• The user update data and confirms.

Table 28: Textual description of the use case “Change Password”

(View Appendix F: Change Password User to see realisation)

Chapter VIII: Sprint 4 – Users Management

3.1.8. Use Case “Recover Password Admin”

Textual description

The below table explain the “success” scenario of recovering password.

Use Case	Recover Password Admin
Actor	Admin
Post-condition	Admin password edited.
Nominal Scenario	<ul style="list-style-type: none">• The user clicks on “Forget Password”.• The system shows Recover Password Screen.• The admin fills email.• The system checks admin with email and send pin code.• The system shows Pin Password Screen.• The admin inserts the pin code.• The system checks pin code inserted and redirect to New Password Screen.• The admin update password and confirms.

Table 29: Textual description of the use case “Recover Password Admin”

(View Appendix F: Recover Password Admin to see realisation)

3.1.9. Use Case “Take Diagnosis”

Textual description

The below table explain the “success” scenario of taking skin type test.

Chapter VIII: Sprint 4 – Users Management

Use Case	
Take Diagnosis	
Actor	User
Pre-condition	Valid Account.
Post-condition	User skin type updated.
Nominal Scenario	<ul style="list-style-type: none">• The user clicks on “Take Test”.• The system shows Take Test Form.• The user fills information.• The system shows test result.

Table 30: Textual description of the use case “Take Diagnosis”

(View Appendix F: Take Diagnosis to see realisation)

4. Conclusion

In this chapter, I managed to create a system that allows users to create, secure and access their accounts as well as to estimate their skin type based on a form which will be used to suggest products.

In the next chapter, I am going to implements products services.



Chapter IX: Sprint 5 – Products Management



Chapter IX: Sprint 5 – Products Management

Chapter IX: Sprint 5 – Products Management

1. Introduction

The goal of this chapter is to facilitate the management of products for admin and also to allow users to view inserted products.

2. Sprint Backlog

2.1. Sprint Scope

The main purpose of this sprint is to implement a system that allows admins to add, edit, and delete products... which will be shown in the user app. The app user can view search and filter products. This sprint has 11 tasks in 25 days.

2.2. Tasks Planning

		Day number												
User stories#		Tasks	1	2	3	4	5	6	7	8	9	10	11	12
15 – 20	Database design and implementation	0	0	0	2	2	0	2	0	0	0	1	0	
	API implementation	3	4	2	2	0	2	4	2	2	0	0	0	
	Persistence development	5	0	4	2	5	1	2	0	0	0	1	0	
	Front end development	0	0	0	2	2	3	0	4	2	4	3	4	
	Test	0	4	2	0	1	2	0	2	2	0	0	0	
	Documentation	0	0	0	0	0	0	0	0	2	4	3	4	

Chapter IX: Sprint 5 – Products Management

User stories#	Tasks	Day number												
		13	14	15	16	17	18	19	20	21	22	23	24	25
41 – 45	Database design and implementation	2	0	0	4	0	7	0	1	0	0	0	0	0
	API implementation	0	0	0	2	6	0	2	6	2	0	3	7	0
	Persistence development	5	0	2	0	0	0	0	1	0	0	0	0	1
	Front end development	2	4	4	0	0	0	4	0	2	4	4	1	5
	Test	1	0	2	2	2	1	2	0	2	0	1	0	0
	Documentation	0	4	0	0	0	0	0	0	2	4	0	0	2

Table 31: Tasks Planning - Sprint 5

3. Analysis

3.1. Products Management Use Case Refinement

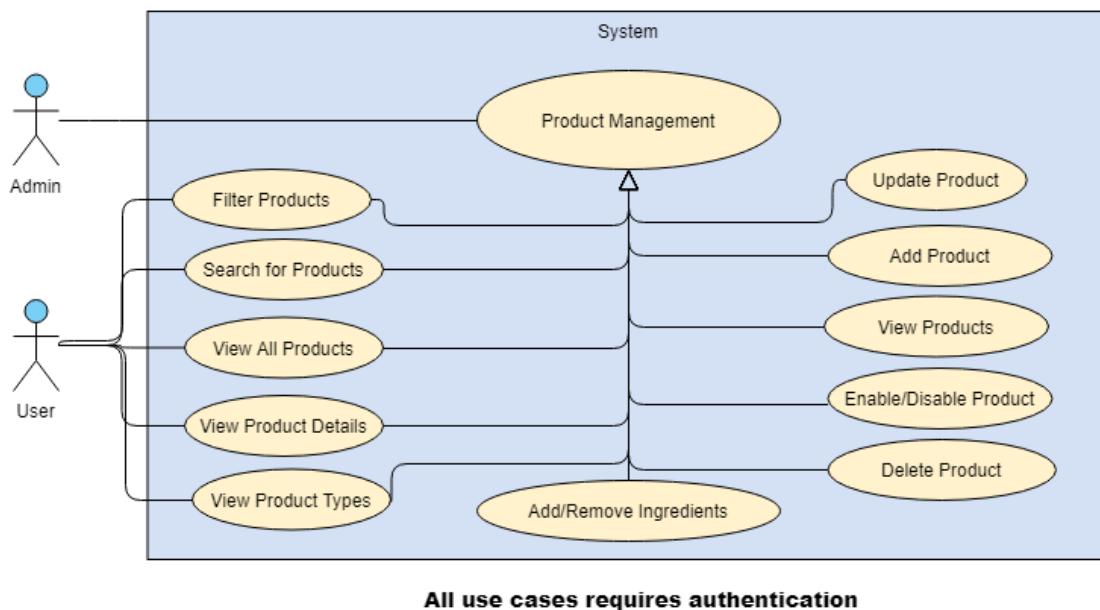


Figure 52: Products Management Use Case Refinement

Chapter IX: Sprint 5 – Products Management

3.1.1. Use Case “Add product”

Textual description

The below table explain the “success” scenario of creating a new product.

Use Case		Add product
Actor	Admin	
Post-condition	New product added.	
Nominal Scenario	<ul style="list-style-type: none">• The admin clicks on “Products” dropdown on the sidebar.• The system shows dropdown list.• The admin clicks on “Add Product” dropdown on the sidebar.• The system shows the desired interface.• The admin fills the general form and submit.• The system redirects to the next step.• The admin fills the specification form and submit.• The system redirects to the next step.• The admin fills the description form and submit.• The system redirects to the next step.• The admin insert image and submit.• The system inserts product and redirect to the next step.• (Optional) the user inserts new products or add inserted product's ingredients	

Table 32: Textual description of the use case “Add Product”

(View Appendix G: Add Product to see realisation)

Chapter IX: Sprint 5 – Products Management

3.1.2. Use Case “View Products (Admin)”

Textual description

The below table explain the “success” scenario of creating a new product.

Use Case		View Products (Admin)
Actor	Admin	
Nominal Scenario	<ul style="list-style-type: none">The admin clicks on “Products” dropdown on the sidebar.The system shows dropdown list.The admin clicks on “List Product” dropdown on the sidebar.The system shows the desired interface.	

Table 33: Textual description of the use case “List Products”

(View Appendix G: List Products to see realisation)

3.1.3. Use Case “Add/remove Ingredients”

Textual description

The below table explain the “success” scenario of editing product’s ingredients.

Use Case		Add/remove Ingredients
Actor	Admin	
Pre-condition	Product Exist.	
Post-condition	Product’s ingredients updated.	

Chapter IX: Sprint 5 – Products Management

Nominal Scenario	<ul style="list-style-type: none">• The admin clicks on “Products” dropdown on the sidebar.• The system shows dropdown list.• The admin clicks on “Edit product's ingredients” dropdown on the sidebar.• The system shows the desired interface.• The admin selects a product.• The system fills product's ingredients list and all others ingredients' list.• The admin selects ingredients to add or remove.
-------------------------	--

Table 34: Textual description of the use case “Add/remove ingredients”

(View Appendix G: Add/Remove Ingredients to see realisation)

Chapter IX: Sprint 5 – Products Management

Sequence Diagram

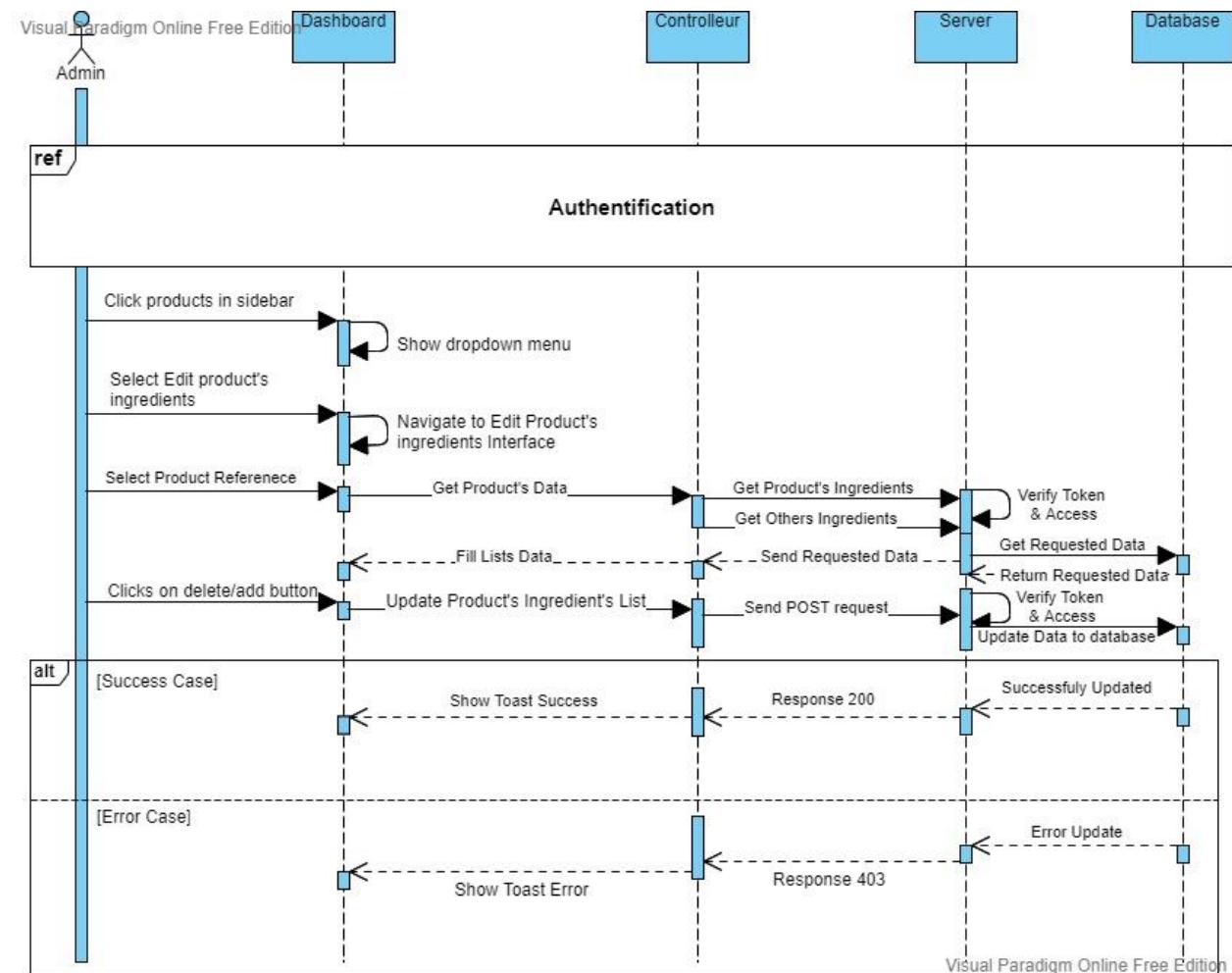


Figure 53: Add/remove Ingredients' Sequence Diagram

3.1.4. Use Case “View Products Details”

Textual description

The below table explain the “success” scenario of viewing product’s details.

Use Case		View Products Details
Actor	User	

Chapter IX: Sprint 5 – Products Management

Pre-condition	Product Exist.
Nominal Scenario	<ul style="list-style-type: none"> The user clicks on a specific product. The system shows product's detail screen.

Table 35: Textual description of the use case “View Products Details”

(View Appendix G: View Products Details to see realisation)

3.1.5. Use Case “Search Products”

Textual description

The below table explain the “success” scenario of searching products.

Use Case		Search Products
Actor		User
Pre-condition		Product Exist.
Nominal Scenario		<ul style="list-style-type: none"> The user clicks on a search bar in home screen. The system shows search delegate. The user inserts the key for search. The system search and return the result.

Table 36: Textual description of the use case “Search Products”

(View Appendix G: Search Products to see realisation)

Chapter IX: Sprint 5 – Products Management

Sequence Diagram

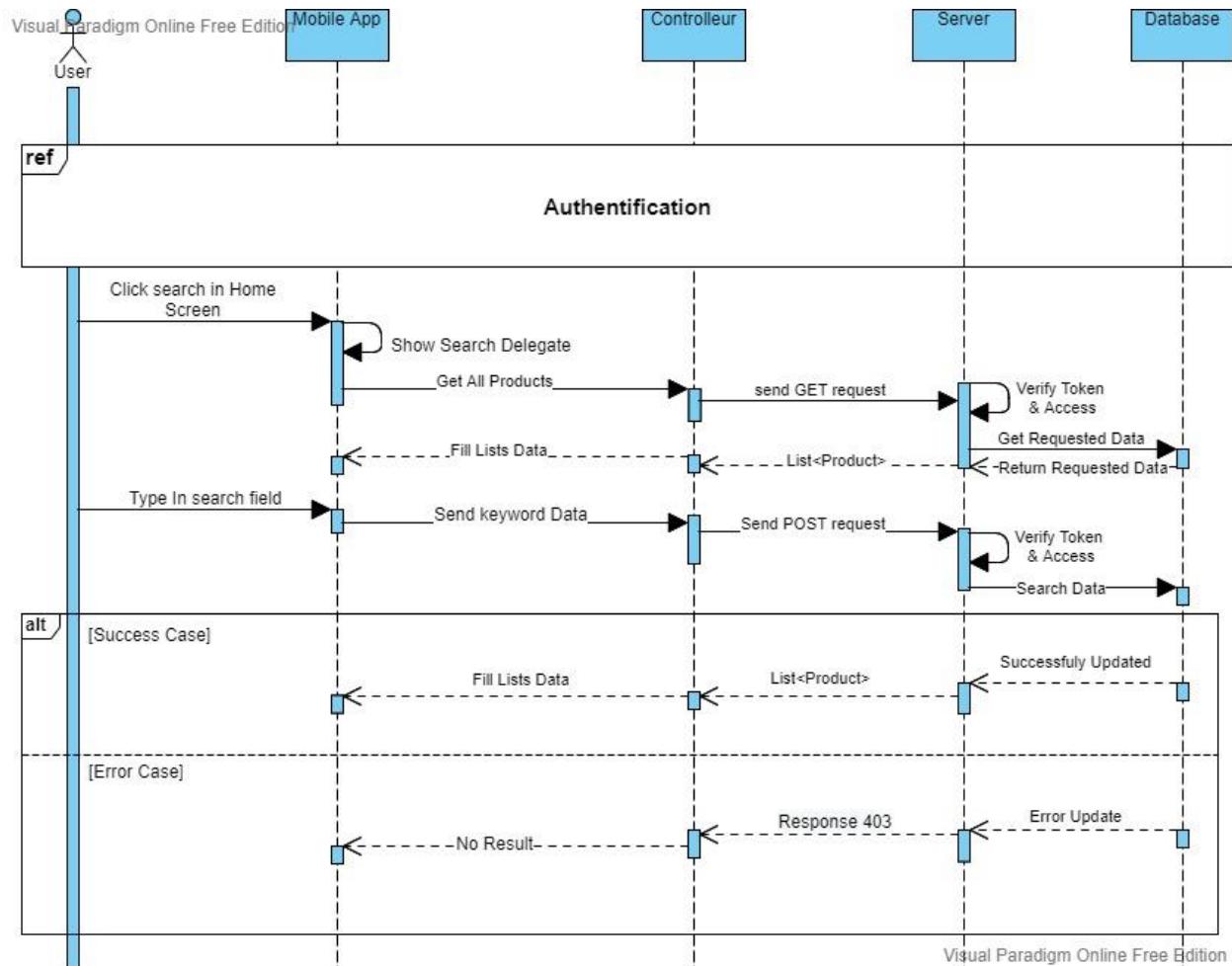


Figure 54: Search Products Sequence Diagram

3.1.6. Use Case “Filter Products”

Textual description

The below table explain the “success” scenario of filtering products.

Use Case		Filter Products
Actor	User	

Chapter IX: Sprint 5 – Products Management

Post-condition	Products Filtered.
Nominal Scenario	<ul style="list-style-type: none">• The user clicks on a search bar in home screen.• The system shows search delegate.• The user clicks on filter icons and selects desired Options.• The system search and return the result.

Table 37: Textual description of the use case "Filter Products"

(View Appendix G: Filter Products to see realisation)

4. Conclusion

After this sprint, admin is now able to view, edit and delete products as well as associate ingredients to products. Users are now able to access, filter and search for products inserted in the back office (Angular Dashboard).



Chapter X: Sprint 6 – Favourite & History Management



Chapter X: Sprint 6 – Favourite & History Management

Chapter X : Sprint 6 – Favourite & History Management

1. Introduction

This sprint's goal is to implement several features about User's products consulted history as well as User's favourite products.

2. Sprint Backlog

2.1. Sprint Scope

In this sprint, our sprint backlog's scope is to implement history and favourite main functions such as Add, edit and view. By the end of this sprint, User should be able to add products to their favourite list and view their search history. This sprint backlog has 6 stories for 26 days. There is a detailed descriptive table below to explain the process.

2.2. Tasks Planning

User stories#	Tasks	Day number												
		1	2	3	4	5	6	7	8	9	10	11	12	13
38 – 40	Database design and implementation	6	0	0	2	0	0	2	0	0	0	1	0	0
	API implementation	0	6	2	2	0	2	4	2	2	0	0	0	0
	Persistence development	0	0	4	2	5	1	2	0	0	0	1	0	1
	Front end development	0	0	0	2	2	3	0	4	2	4	3	4	2
	Test	2	2	2	0	1	2	0	2	2	0	0	0	1
	Documentation	0	0	0	0	0	0	0	0	2	4	3	4	3

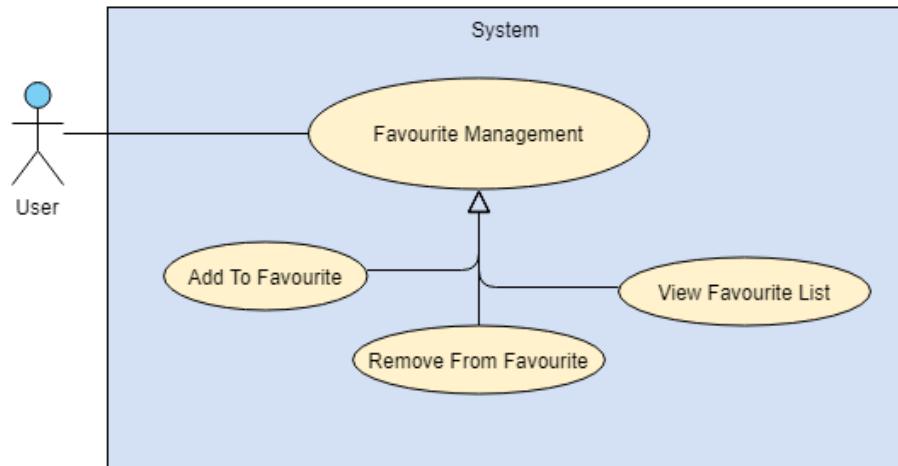
Chapter X: Sprint 6 – Favourite & History Management

User stories#	Tasks	Day number												
		14	15	16	17	18	19	20	21	22	23	24	25	26
33 – 35	Database design and implementation	0	0	0	0	0	0	0	1	0	2	0	0	0
	API implementation	2	0	0	3	7	0	0	6	2	4	2	2	0
	Persistence development	0	0	0	0	0	1	0	1	0	2	0	0	0
	Front end development	2	4	4	4	1	5	4	0	2	0	4	2	4
	Test	2	0	0	1	0	0	0	0	2	0	2	2	0
	Documentation	2	4	4	0	0	2	4	0	2	0	0	2	4

Table 38: Tasks Planning - Sprint 6

3. Analysis

3.1. Favourite Management Use Case Refinement



All use cases requires authentication

Figure 55: Favourite Management Use Case Refinement Diagram

Chapter X: Sprint 6 – Favourite & History Management

3.1.1. Use case “View Favourite List”

Textual description

The below table explain the “success” scenario of viewing favourite list.

Use Case	View Favourite List
Actor	User
Pre-condition	User favourites already set.
Nominal Scenario	<ul style="list-style-type: none">• The user clicks on “Drawer Icon” button.• The system shows the drawer.• The user clicks on “Favoris” button.• The system shows the Users Favourite Interface.

Table 39: Textual Description Use Case "View Favourite List"

(View Appendix H: View Favourite List to see realisation)

3.1.2. Use case “Add to Favourite”

Textual description

The below table explain the “success” scenario of adding to favourite list.

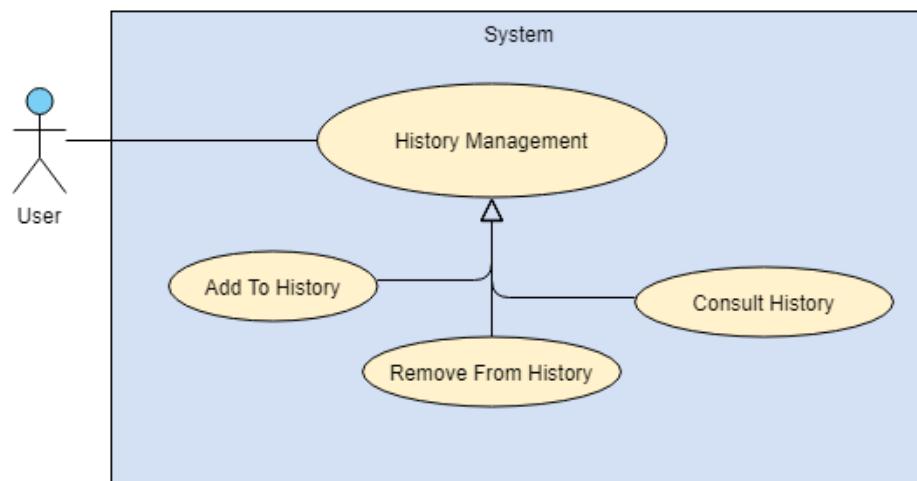
Use Case	Add to Favourite
Actor	User
Post-condition	Product added to favourite list.

Chapter X: Sprint 6 – Favourite & History Management

Nominal Scenario	<ul style="list-style-type: none"> The user clicks on a specific product. The system shows product's detail screen. The user clicks on the heart icon on top right corner. The system adds the product to user's favourites list.
-------------------------	---

Table 40: Textual Description Use Case "Add to Favourite"

3.2. History Management Use Case Refinement



All use cases requires authentication

Figure 56: History Management Use Case Refinement Diagram

3.1.1. Use case “Add to History”

Textual description

The below table explain the “success” scenario of adding to History list.

Use Case		Add to History
Actor	User	

Chapter X: Sprint 6 – Favourite & History Management

Post-condition	Product added to History list.
Nominal Scenario	<ul style="list-style-type: none">The user clicks on a specific product.The system shows product's detail screen.The system adds the product to user's History list.

Table 41: Textual Description Use Case "Add to History"

3.1.2. Use case “View History”

Textual description

The below table explain the “success” scenario of viewing history list.

Use Case	View History
Actor	User
Pre-condition	User history already set.
Nominal Scenario	<ul style="list-style-type: none">The user clicks on “Drawer Icon” button.The system shows the drawer.The user clicks on “Historique” button.The system shows the Users History Interface.

Table 42: Textual Description Use Case "View History"

(View Appendix H: View History to see realisation)

4. Conclusion

In this sprint, I managed to implement Favourite and Search History features.

Chapter X: Sprint 6 – Favourite & History Management

In the final sprint, I'm going to implement Claims management features as well as products suggestions.



Chapter XI: Sprint 7 – Claims Management & Products Suggestions



Chapter XI: Sprint 7 – Claims Management & Products Suggestions

Chapter XI : Sprint 7 – Claims Management & Products Suggestions

1. Introduction

The final sprint is about implementing claims management to allow users to suggest new features or report bugs and also to implement a system that suggest similar products to users based on their preferences.

2. Sprint Backlog

2.1. Sprint Scope

In this sprint, our sprint backlog's scope is to implements claims main functions such as Add, edit and view. By the end of this sprint, User should be able to view similar and suggested products based on their skin type, favourite list and search history. This sprint backlog has 3 stories for 27 days. There is a detailed descriptive table below to explain the process.

2.2. Task Planning

User stories#	Tasks	Day number												
		1	2	3	4	5	6	7	8	9	10	11	12	13
7 & 8	Database design and implementation	6	0	0	2	0	0	2	0	0	0	1	0	0
	API implementation	0	6	2	2	0	2	4	2	2	0	0	0	0
	Persistence development	0	0	4	2	5	1	2	0	0	0	1	0	1
	Front end development	0	0	0	2	2	3	0	4	2	4	3	4	2
	Test	2	2	2	0	1	2	0	2	2	0	0	0	1
	Documentation	0	0	0	0	0	0	0	0	2	4	3	4	3

Chapter XI: Sprint 7 – Claims Management & Products Suggestions

User stories#	Tasks	Day number												
		14	15	16	17	18	19	20	21	22	23	24	25	26
48	Database design and implementation	0	0	0	0	0	0	0	1	0	2	0	0	0
	API implementation	2	0	0	3	7	0	0	6	2	4	2	2	0
	Persistence development	0	0	0	0	0	1	0	1	0	2	0	0	0
	Front end development	2	4	4	4	1	5	4	0	2	0	4	2	4
	Test	2	0	0	1	0	0	0	0	2	0	2	2	0
	Documentation	2	4	4	0	0	2	4	0	2	0	0	2	4

Table 43: Tasks Planning - Sprint 7

3. Analysis

3.1. Claims Management Use Case Refinement

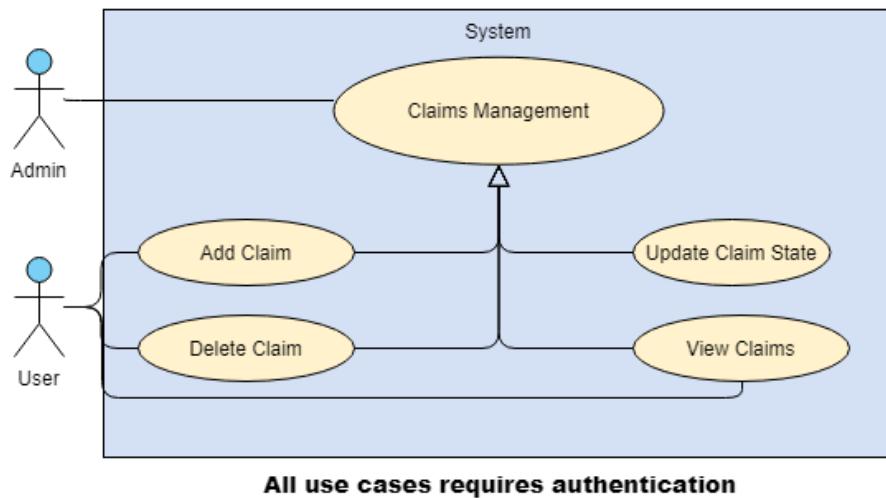


Figure 57: Claims Management Use Case Refinement Diagram

Chapter XI: Sprint 7 – Claims Management & Products Suggestions

3.1.1. Use Case “Add Claim”

Textual description

The below table explain the “success” scenario of adding a new claim.

Use Case	Add Claim
Actor	User
Pre-condition	The user must be authenticated.
Post-condition	New Claim Added.
Nominal Scenario	<ul style="list-style-type: none">• The user clicks on “Drawer Icon” button.• The system shows the drawer.• The user clicks on “Parameters” button.• The system shows the Parameters Interface.• The user clicks on “Réclamations” button.• The system shows Interface.• The user clicks on “Ajouter Réclamation” button.• The system shows New Claim Interface.• The user fills the required data and confirm.• The system inserts the new Claim.

Table 44: Textual Description of use case "Add Claim"

(View Appendix I: Add Claim to see realisation)

Chapter XI: Sprint 7 – Claims Management & Products Suggestions

3.1.2. Use Case “View My Claims (User)”

Textual description

The below table explain the “success” scenario of viewing user’s claims.

Use Case		View My Claims
Actor		User
Pre-condition		The user must be authenticated.
Nominal Scenario		<ul style="list-style-type: none">• The user clicks on “Drawer Icon” button.• The system shows the drawer.• The user clicks on “Parameters” button.• The system shows the Parameters Interface.• The user clicks on “Réclamations” button.• The system shows Interface.• The user clicks on “Mes Réclamation” button.• The system shows User’s Claims Interface.

Table 45: Textual Description of use case "View My Claims"

(View Appendix I: View My Claims to see realisation)

3.1.3. Use Case “View All Claims (Admin)”

Textual description

The below table explain the “success” scenario of viewing all users’ claims.

Use Case		View All Claims
----------	--	-----------------

Chapter XI: Sprint 7 – Claims Management & Products Suggestions

Actor	Admin
Pre-condition	The admin must be authenticated.
Nominal Scenario	<ul style="list-style-type: none"> • The user clicks on “claims” on the sidebar menu. • The system shows the desired interface.

Table 46: Textual Description of use case "View All Claims"

(View Appendix I: View All Claims to see realisation)

3.1.4. Use Case “Update Claim’s State”

Textual description

The below table explain the “success” scenario of updating users’ claims state.

Use Case		Update Claim’s State
Actor		Admin
Pre-condition		The admin must be authenticated.
Nominal Scenario		<ul style="list-style-type: none"> • The admin clicks on “claims” on the sidebar menu.

Chapter XI: Sprint 7 – Claims Management & Products Suggestions

- The system shows the desired interface.
- The admin clicks on pencil icon of the desired claim to change state.
- The system shows edit dropdown field.
- The admin selects the desired state to change.
- The system updates the claim's state and shows a toast.

Table 47: Textual Description of use case "Update Claim's State"

(View Appendix I: Update Claim's State to see realisation)

3.2. View Suggestions Use Case Scenario

Textual Description

To be able to view suggestions, the app user must be already authenticated and for better results he must have taken the online diagnosis and already has a skin type.

Users can access the suggestion feature in two scenarios:

- Through Home Screen: After successfully logged in, below the search bar, users can access popular, new and recommended products based on their general preferences.
- Through Product Details Screen: After selecting to view a product's details and in the bottom of the screen there's a field that shows similar products (Most popular, newest and recommended).

(View Appendix I: View Suggestions Second Scenario to see realisation)

Sequence Diagram

The following figure describes the sequence diagram of the first suggestion scenario:

Chapter XI: Sprint 7 – Claims Management & Products Suggestions

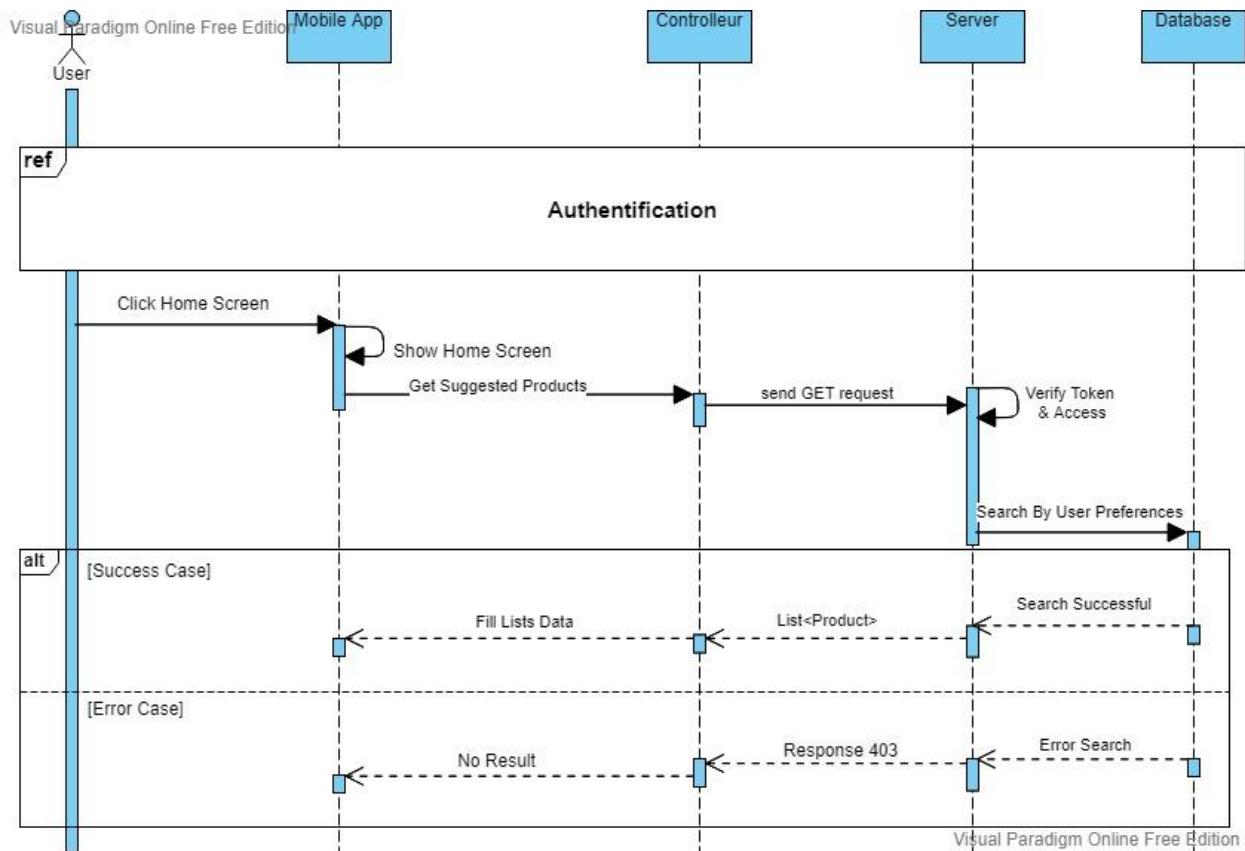


Figure 58: View Suggestion Home Screen Scenario Sequence Diagram

The figure below describes the sequence diagram of the second scenario:

Chapter XI: Sprint 7 – Claims Management & Products Suggestions

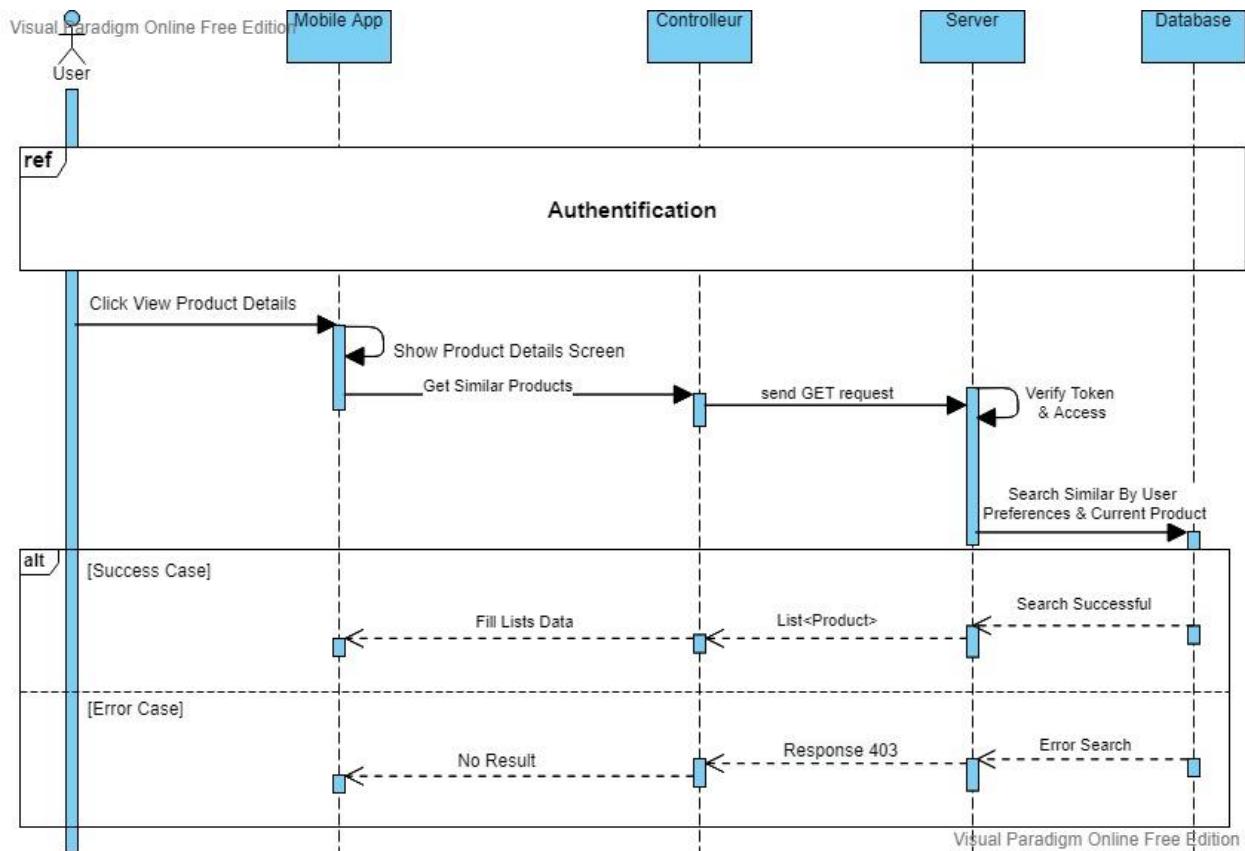


Figure 59: View Suggestion Product Details Screen Scenario Sequence Diagram

4. Conclusion

After this sprint, users are now able to view suggested products based on their skin type, personal allergen and search history as well as visualizing similar products of a selected product. Also, users are now able to add, track and delete claims to update the mobile app for better user experience.

Conclusion & Perspectives

The ignorance of ingredients types and allergens, the lack of transparency over product's ingredients, and especially the time waste during the search for the perfect product could all be resolved using an informative mobile app about products and their ingredients. That's the idea behind this project.

To realize this solution, I used the NodeJS framework to build the server of both apps, and I implemented MySQL database using TypeORM and ExpressJS. I created the admin dashboard using AngularJS to manage all resources and finally I created the mobile app using Flutter which will showcase the resources managed in the Back Office. Both of these apps will communicate with the server through its APIs. These are overall the technologies that I used to build the solution of this project.

For better results and improvements, implementing scanning products service would be a good feature. Users could scan a product's ingredients and it shows the inconvenient ingredients based on their preferences.

Reflection

When I started this project, I knew nothing about Green Products or even the cosmetic field, it was quite challenging to learn about the process and to find the right framework to work with. But here I am now, documenting my work and planning for new features to improve it.

At the beginning, it was tough to understand the concept of cosmetic products, ingredients, allergies and allergens and how to implement it in our work. I spent a lot of time doing researches and interviewing potential users to improve their user experience for their search of cosmetic products. Information wasn't easy at all. The concept of bio and natural products is new in Tunisia, developing it using different technologies wasn't an easy choice.

For sure, I didn't regret my choice, I feel very mature and more confident after achieving this project, I know I did something very challenging. I believe after this experience; I am going to dig more and more in the healthcare and cosmetic field and why not build something very big and innovative for Tunisia.

I can now look back and realize that this experience has helped me both as a student and as a young software engineer.

Table of Acronyms and Abbreviations

API	Application Programming Interface
JEE	Java Platform, Enterprise Edition
JSON	JavaScript Object Notation
IaaS	Infrastructure as a service
SaaS	Software as a service
PaaS	Platform as a service
URI	Uniform Resource Identifier
VM	Virtual Machine
DB	Database
XML	Extensible Markup Language
UI	User Interface
REST	Representational State Transfer

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Appendix A : Gantt Diagram

The following figures represents the gantt diagram of the project.

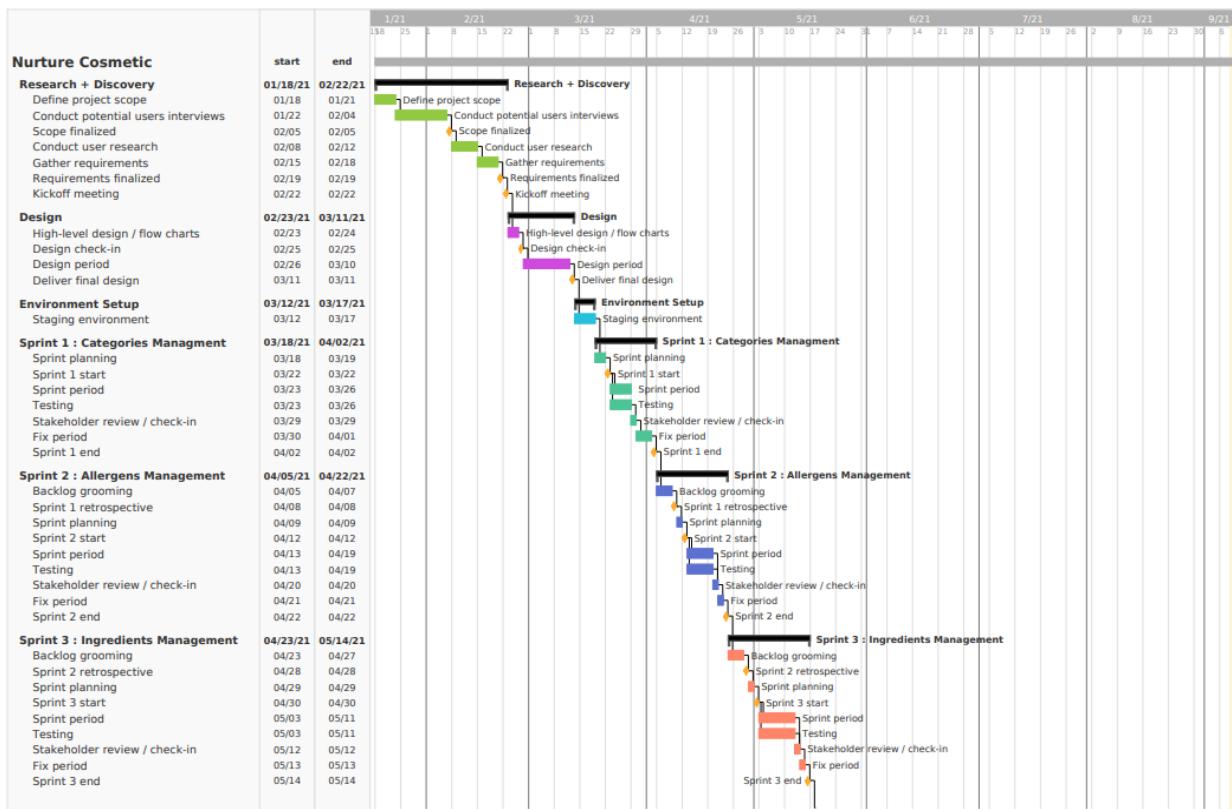


Figure 60: Gantt Diagram Part 1

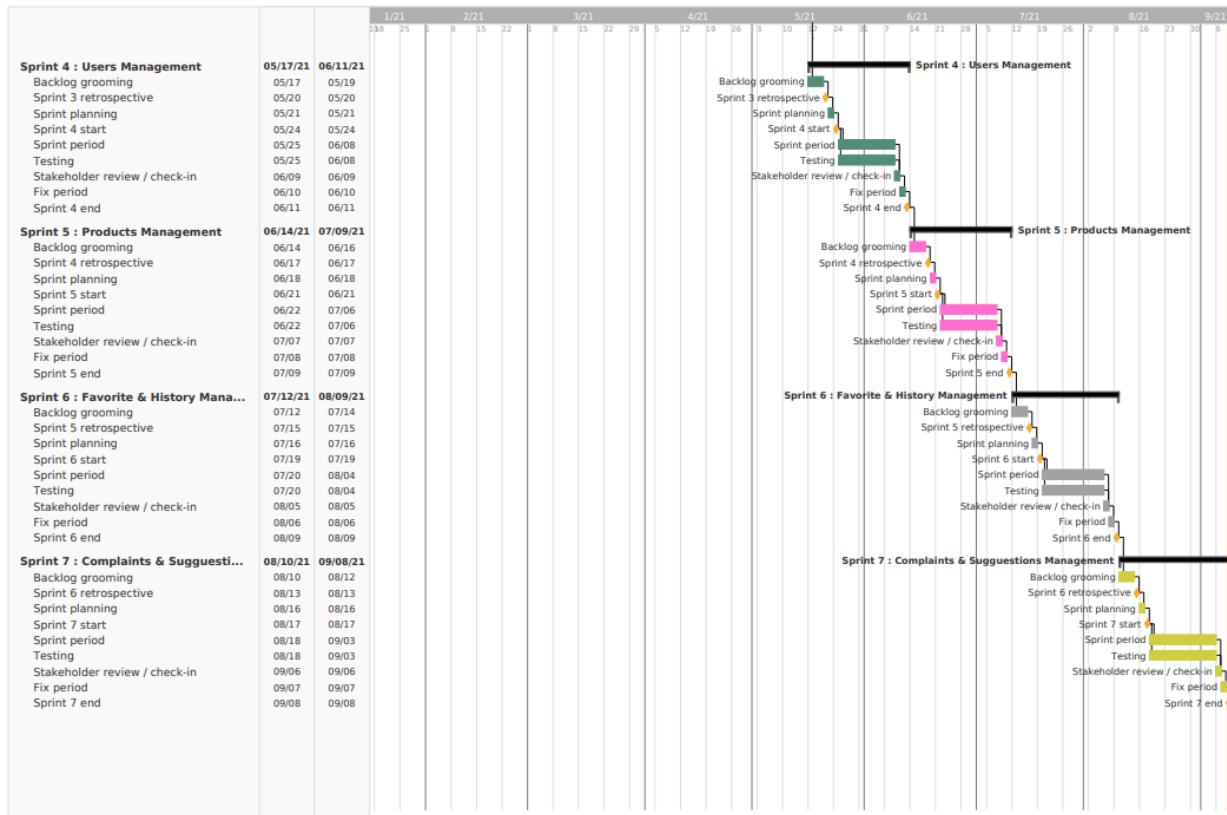


Figure 61: Gantt Diagram Part 2

Appendix B : Cosmetic Sector Worldwide

In the following figure, we will present the major cosmetics brands in the world according to their 2020 valuation.

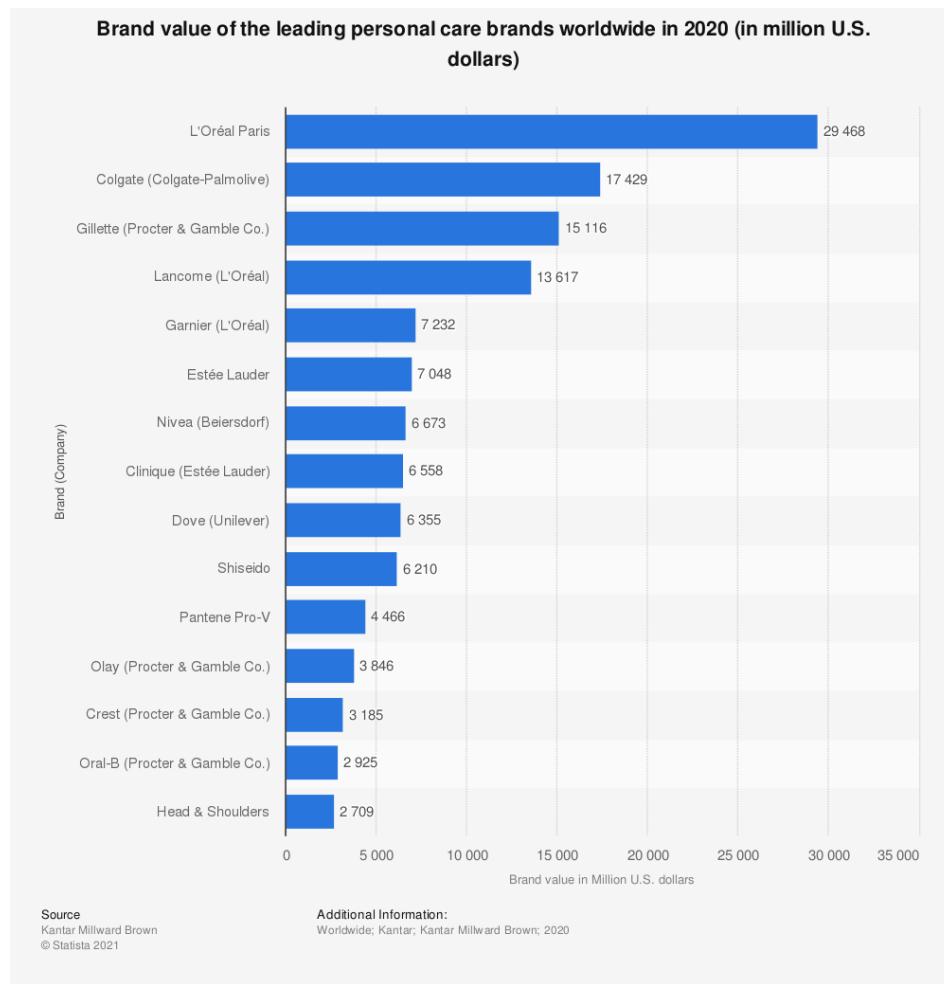


Figure 62: The world's most powerful personal care brands in 2020

The beauty market is divided between the major historical players that shine worldwide, and alongside which many SMEs are developing: L'Oréal is the world leader in the cosmetics market, with a turnover of \$29.4 billion in 2020. Estée Lauder and Nivea ranked sixth and seventh, with revenues of \$7.0 billion and \$6.6 billion, respectively.

In the following figure, we will present the countries where the consumption is significant in terms of the level of use of cosmetic products (Turnover per person generated by the sale of beauty products in 2017).

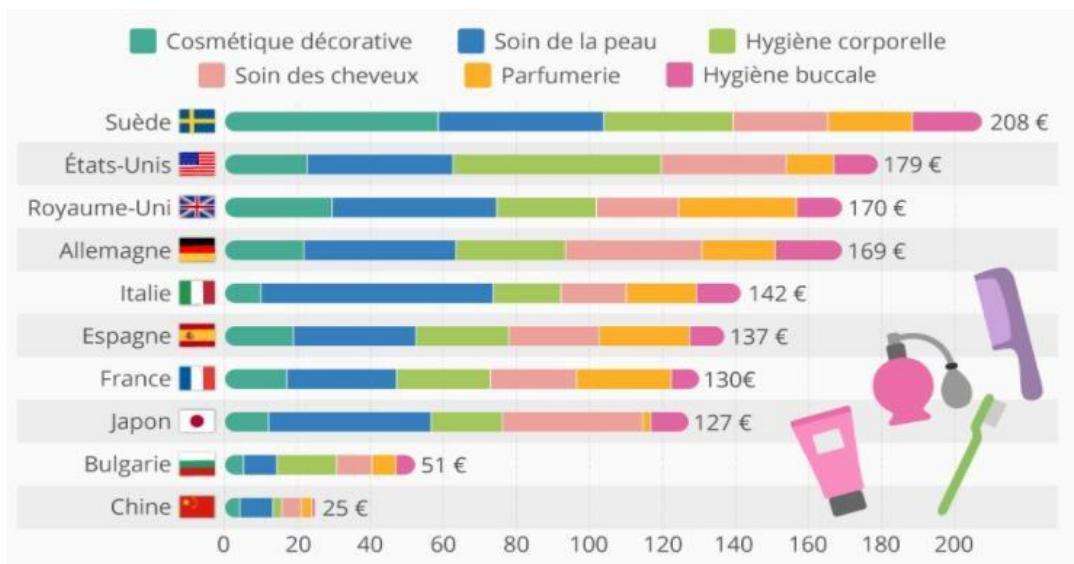


Figure 63: Countries with the highest spending on beauty products in 2017

With the birth of a true ecological consciousness among consumers, the debates on paraben, endocrine disruptors and potentially carcinogenic ingredients, the beauty market is one of the sectors most affected by the wave of «natural» and the “better to use” trend. Thus, although the majority of buyers continue to use conventional cosmetics, they increasingly favour ecological, healthy and natural products, as well as the various certifications (organic, vegan, etc.) that did not exist until 20 years ago: Global revenues for natural cosmetics increased by 8.8% between 2018 and 2019. The global market for natural cosmetics could reach \$48 billion in 2024.

The beauty and cosmetics sector has been booming for several years, especially on the web. Every year, sales of cosmetics in stores decrease in favour of online sales, the beauty sector is the 4th e-commerce market in terms of number of customers.

Online beauty sales increased by 73% in 2020, compared to the previous year, over the same period. In France, online beauty sales account for more than 7% of the market. This is less than in the US and UK where e-commerce accounts for about 15% of sales. Between 2016 and 2017, sales of make-up products on the Internet jumped by 44%, 29% for beauty treatments and 22% for perfumes. 58% of women say they have ordered cosmetics on the web. More than half of them make purchases on their smartphones.

While consumers, and especially “millennials” (18 – 34 years), are increasingly turning to e-commerce to buy cosmetics, the in-store experience is still privileged because it offers the opportunity to test the products on site. As a result, 80.7% of global beauty sales are still in stores.

For example, a 2017 study for Facebook found that 72% of women who buy a beauty product are influenced by their “online experience”, meaning all digital marketing and communication channels: e-commerce, blog and social networks (Instagram and YouTube lead).

The power relationships between traditional players and small independent brands differ greatly on the Internet and at the point of sale. Thus, pure players (companies operating only on the web) do not fail to compete with the behemoths of the beauty industry: In store, the 20 leading brands of the sector share 96% of sales of cosmetics. On the web, they account for only 14% of transactions, with the remaining 86% split between independent brands.⁵

In conclusion, the figures of the beauty sector prove that the market still has beautiful days before it. Driven by very active influencers and listened to on social networks, but also because they save time and energy, online transactions of cosmetics tend to

⁵

<https://www.alioze.com/chiffres-beaute#:~:text=Selon%20les%20chiffres%20du%20cabinet,5%2C25%20%25%20en%202020>

generalize. In-store shopping is still the norm, in that it allows you to test a product before you buy it. But new technologies such as augmented reality, which makes it possible to virtually try a product, could well help reverse the trend. In addition to e-commerce, there are several growth drivers for the beauty market. First, the growing demand for organic and natural products. Then, the personalization that allows to adapt a cosmetic product according to the type of skin, the weather or the state of fatigue of the consumer; a trend strongly linked to the rise of home-made cosmetics. Criteria that encourage brands to be more transparent and traceable in the composition of their products.

Appendix C : Category Management Scenarios

The current appendix represents different scenario implementations of Category Management Sprint.

Add Category

The screenshot shows the 'Add Category' interface. On the left, there is a sidebar with navigation links: 'Catégories', 'List categories', 'Add category', 'Produits', 'Ingrédients', 'Allergies', 'Réclamations', and 'Utilisateurs'. The main area is titled 'Add Category' and contains two input fields: 'Category Name' (with placeholder 'Category Name') and 'Category Image' (with a 'PICK IMAGE' button). Below these is a file selection field showing 'Aucun fichier choisi' and a 'CHoisir un fichier' button. At the bottom is a large 'CONFIRM' button.

Figure 64: Screen Capture Add Category Interface

Edit Category

The screenshot shows the 'List Catégories' interface. The sidebar on the left is identical to Figure 64. The main area is titled 'List Catégories' and displays a table with three rows. The columns are 'Actions', 'Name', and 'Image'. The first row contains a checked checkbox, an 'X' button, and a 'Name' input field containing 'Nettoyant'. The second row contains an edit icon, a delete icon, and the name 'Gommages & Exfoliants'. The third row contains an edit icon, a delete icon, and the name 'Masques'. There is also a small image icon next to the 'foam.png' file name.

Actions		Name	Image
✓	X	Name Nettoyant	Image foam.png
edit	delete	Gommages & Exfoliants	image icon
edit	delete	Masques	

Figure 65: Screen Capture Edit Category Interface

Delete Category

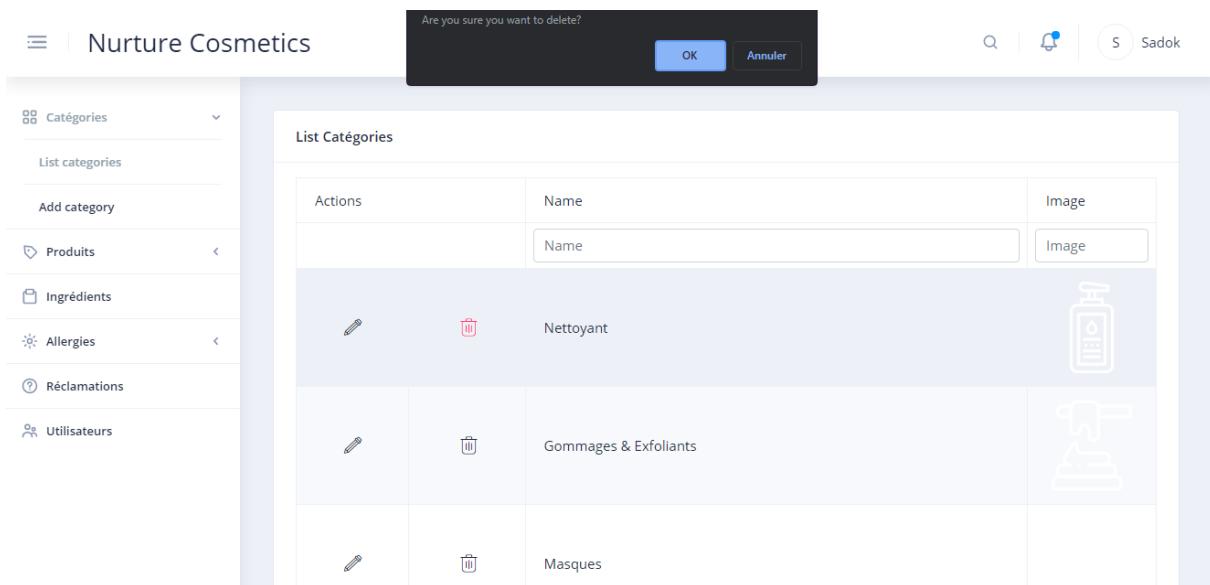


Figure 66: Screen Capture Delete Category

List Categories (Admin)

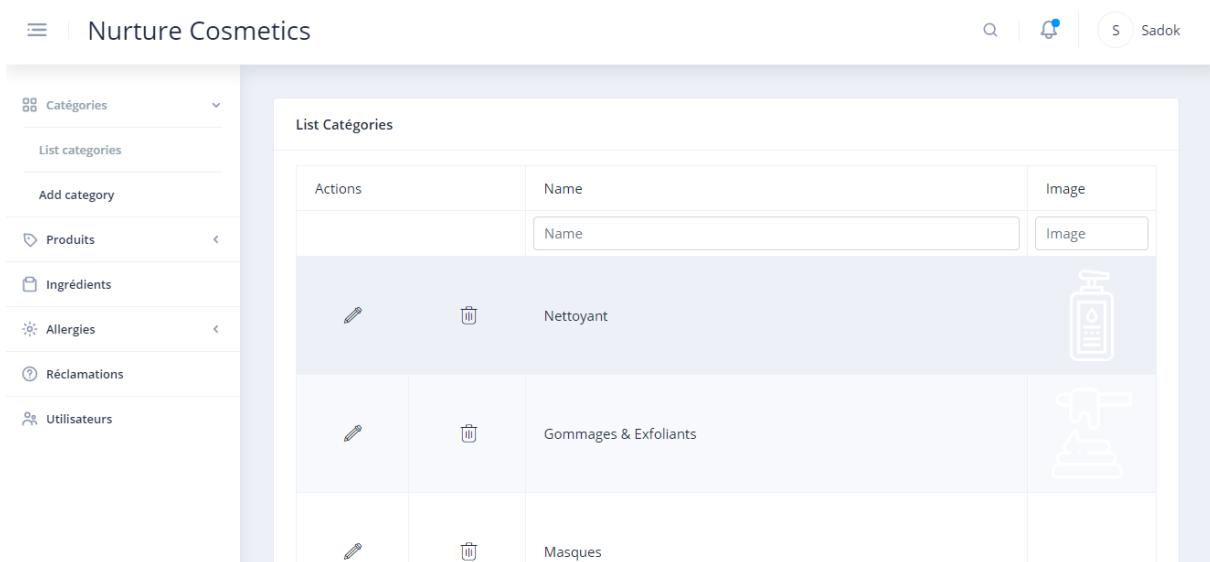


Figure 67: Screen Capture List Categories Interface

List Categories (User)

The pictures below show the design made using Adobe XD and the realisation:

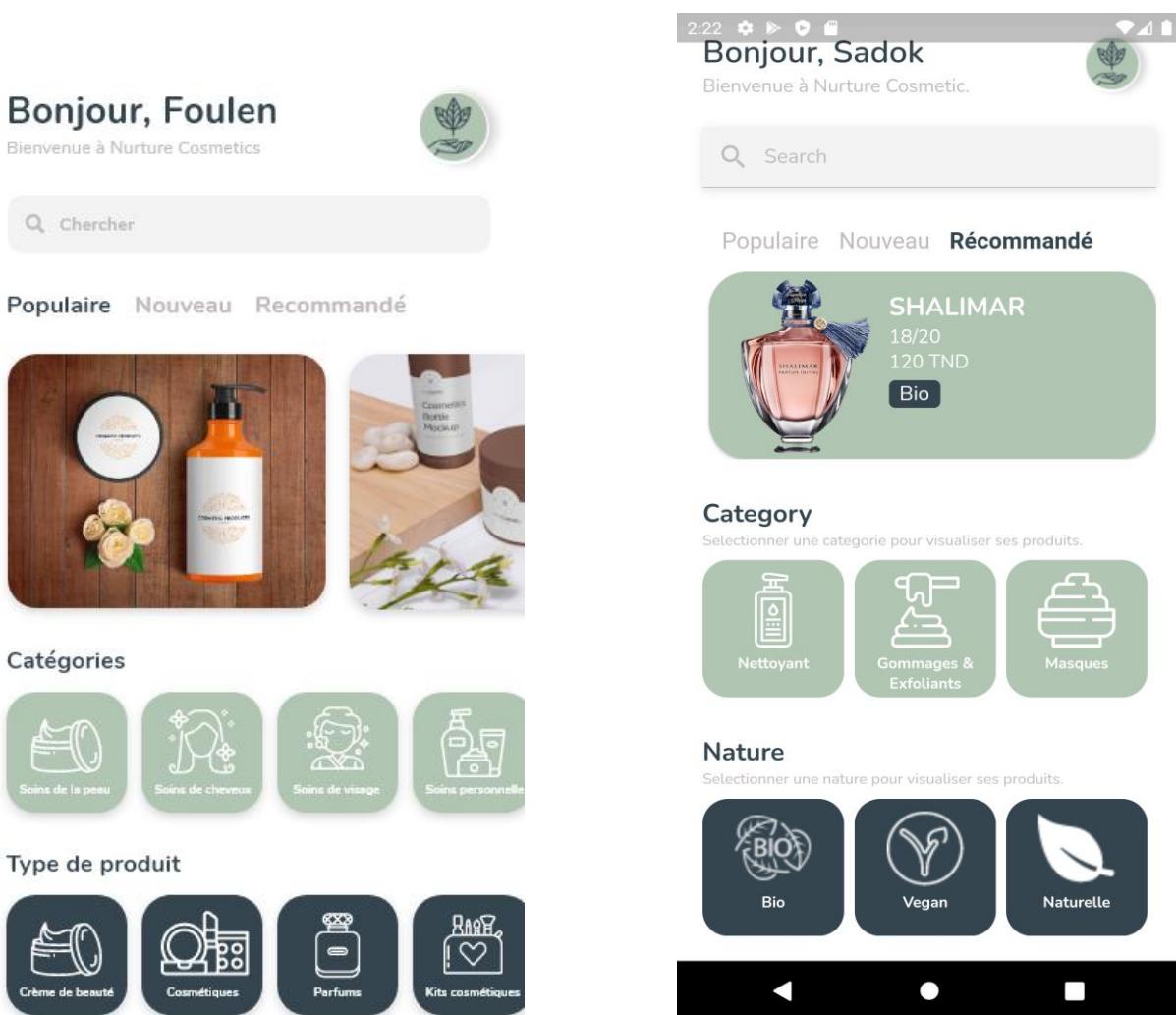


Figure 69: Home Screen Design

Figure 68: Home Screen Implementation

Appendix D : Allergens Management Scenarios

The current appendix represents different scenario implementations of Allergens Management Sprint.

Add Allergen

The screenshot shows the 'Add Allergy' form within the Nurture Cosmetics application. The left sidebar has a 'Allergies' section with 'Add allergies', 'List allergies', and 'Affecter allergies/ingredients'. The main area has fields for 'Allergy Name' (with placeholder 'Allergy Name') and 'Allergy Image' (with a 'PICK IMAGE' button). Below these is a message 'Choisir un fichier Aucun fichier choisi' and a 'CONFIRM' button. At the bottom, it says 'Created by [Sadok Laouissi](#) 2021'.

Figure 70: Screen Capture Add Allergen Interface

Edit Allergen

The screenshot shows the 'List Allergies' table within the Nurture Cosmetics application. The left sidebar has sections for 'Catégories', 'Produits', 'Ingrédients', and 'Allergies' (with 'Add allergies', 'List allergies', and 'Affecter allergies/ingredients'). The main area displays a table with columns 'Actions', 'Name', and 'Image'. It lists four entries: 'Antioxydants' (with image 'antioxy'), 'Biocides' (with image 'biocide'), 'Glycérines' (with image 'glycerine'), and 'Honey' (with image 'honey'). Each row has edit and delete icons.

Actions	Name	Image
✓	Antioxydants	antioxy
✎	Biocides	biocide
✎	Glycérines	glycerine
✎	Honey	honey

Figure 71: Screen Capture Edit Allergen

Delete Allergen

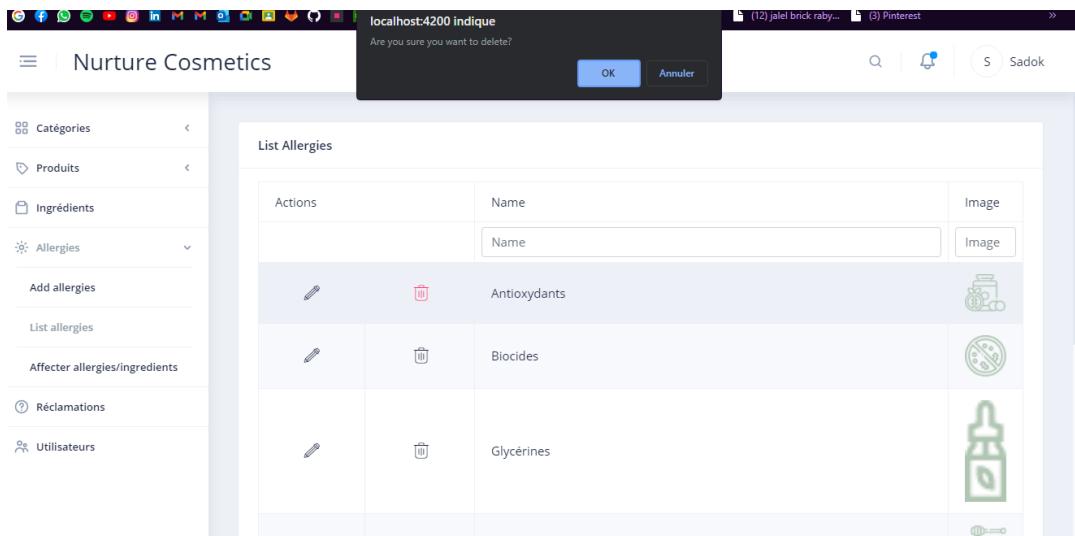


Figure 72: Screen Capture Delete Allergen

Associate Ingredient/Allergen

The screenshot shows the 'Associate Ingredient/Allergen' interface. The sidebar includes: Categories, Products, Ingrédients, Allergens, Add allergen, List allergies, Associate Ingredient/Allergen, Réclamations, and Utilisateurs. The 'Associate Ingredient/Allergen' link is selected. The main area has a title 'Affecter allergie/ingrédients' with the sub-instruction 'Choisissez une allergie pour pouvoir manipuler les ingrédients provoquantes.' Below this, a dropdown menu shows 'Choisi une allergie' and 'Glycérines'. Two lists are displayed: 'Ingrédients Provoquantes' (Amide de Colza PEG-4 NORMAL) and 'Ingrédients Non Provoquantes' (Tartrate de Coco-Glucoside de Sodium NORMAL, Glutamate de Cocoyle Disodique NORMAL, Distearate PEG-150 NORMAL, Sorbitol NORMAL).

Figure 73: Screen Capture Associate Ingredient/Allergen Interface

Edit Personal Allergen

Ajouter Allergie

lorem ipsum is Simply dummy text of the printing and typesetting industry.

Tous les allergies

- Fragences**
Odeur du parfum.
- Biocides**
Détruire les organismes nuisibles.
- Antioxydants**
Protègent les produits contre la dégradation des acides gras insaturés.
- Absorbants d'UV**
Responsables d'allergies de contact et de dermatites photosensibles.
- Glycérine et glycols**
Fréquemment responsables de phénomènes irritatifs.
- Lanoline**
Lorsqu'elle entre dans la composition des médicaments d'application locale, la lanoline est fréquemment sensibilisante.
- Propolis**
Il s'agit d'une résine végétale, recueillie par les abeilles à partir de certains végétaux.

Soumettre



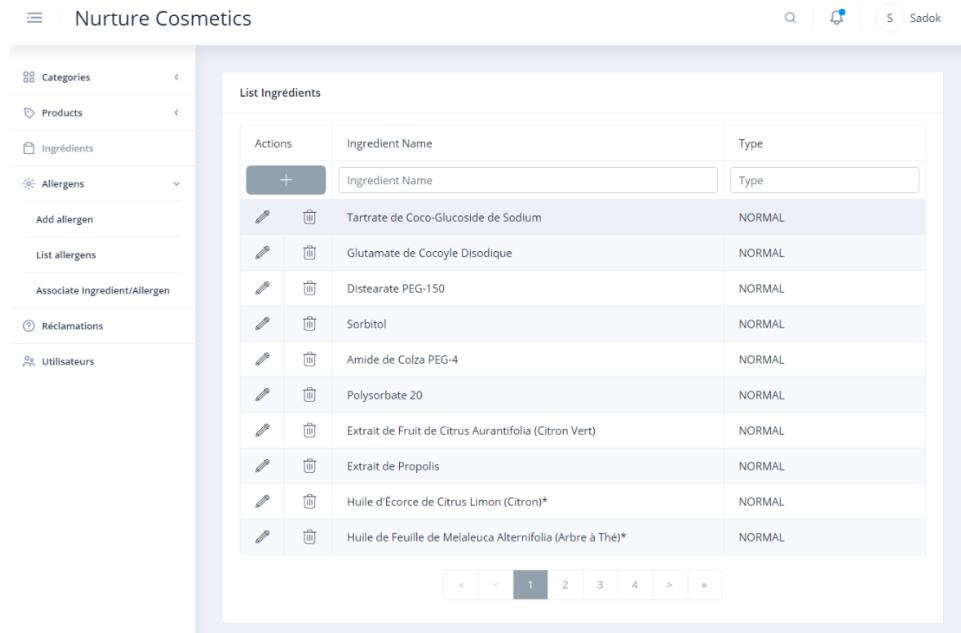
Figure 75: Design Adobe XD: Personal Allergens

Figure 74: Personal Allergen Implementation

Appendix E : Ingredients Management Scenarios

The current appendix represents different scenario implementations of Ingredients Management Sprint.

View All Ingredients



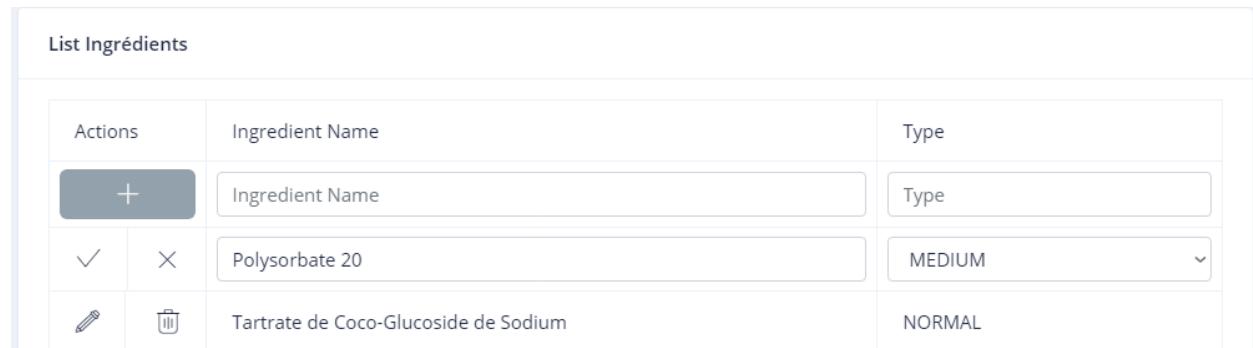
The screenshot shows a web-based application for managing ingredients. On the left, a sidebar menu includes 'Categories', 'Products', 'Ingrédients' (selected), 'Allergens', 'Add allergen', 'List allergens', 'Associate Ingredient/Allergen', 'Réclamations', and 'Utilisateurs'. The main area is titled 'List Ingrédients' and displays a table of ingredients with columns for Actions, Ingredient Name, and Type. The table contains the following data:

Actions	Ingredient Name	Type
	Tartrate de Coco-Glucoside de Sodium	NORMAL
	Glutamate de Cocoyle Disodique	NORMAL
	Distearate PEG-150	NORMAL
	Sorbitol	NORMAL
	Amide de Colza PEG-4	NORMAL
	Polysorbate 20	NORMAL
	Extrait de Fruit de Citrus Aurantifolia (Citron Vert)	NORMAL
	Extrait de Propolis	NORMAL
	Huile d'Écorce de Citrus Limon (Citron)*	NORMAL
	Huile de Feuille de Melaleuca Alternifolia (Arbre à Thé)*	NORMAL

Pagination controls at the bottom show pages 1 through 9.

Figure 76: Screen Capture Ingredients Interface

Add Ingredient



The screenshot shows the 'Add Ingredient' form. It has a header 'List Ingrédients' and a table with columns for Actions, Ingredient Name, and Type. The table currently has one row:

Actions	Ingredient Name	Type
	Ingredient Name	Type

Below the table, there are input fields for 'Ingredient Name' (Polysorbate 20) and 'Type' (MEDIUM). There are also 'Check' and 'X' buttons next to the input fields.

Figure 77: Screen Capture Add Ingredient

Edit Ingredient

List Ingrédients		
Actions	Ingredient Name	Type
<input type="button" value="+"/>	<input type="text" value="Ingredient Name"/>	<input type="text" value="Type"/>
<input checked="" type="checkbox"/> <input type="button" value="X"/>	<input type="text" value="Tartrate de Coco-Glucoside de Sodium"/>	<input type="text" value="NORMAL"/>

Figure 78: Screen Capture Edit Ingredient

Delete Ingredient

List Ingrédients		
Actions	Ingredient Name	Type
<input type="button" value="+"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>	<input type="text" value="Ingredient Name"/> <input checked="" type="checkbox"/> <input type="button" value="X"/>	<input type="text" value="Type"/>
	Tartrate de Coco-Glucoside de Sodium	NORMAL

Figure 79: Screen Capture Delete Ingredient

View Product's Ingredients



Figure 80: Design Adobe XD Ingredients Screen



Figure 81: Ingredients Screen Realisation

Appendix F : Users Management Scenarios

The current appendix represents different scenario implementations of Users Management Sprint.

Authenticate User



Figure 83: Splash Screen Adobe XD

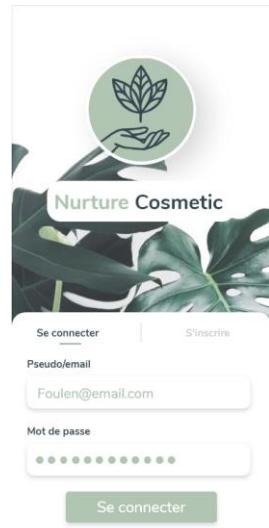


Figure 82: Login Screen Adobe XD



Figure 85: Splash Screen Realisation



Figure 84: Login Screen Implementation

Authenticate Admin

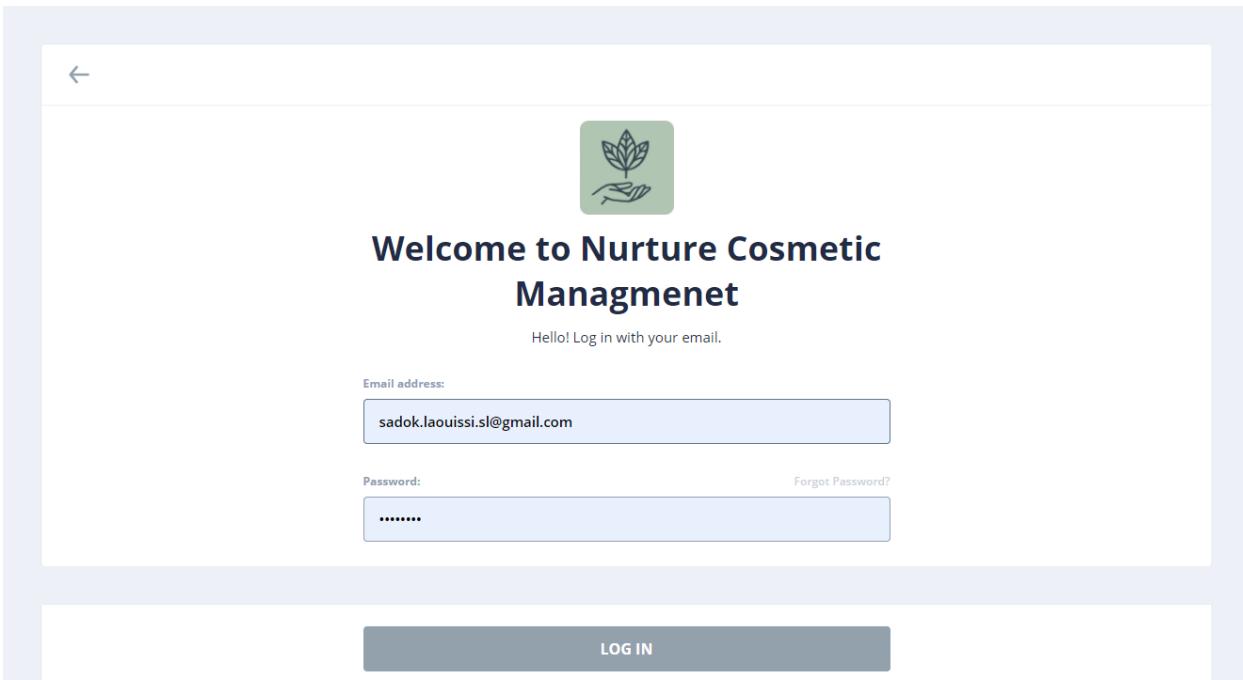


Figure 86: Login Web Realisation

Create Account

This is a wireframe for the 'Créer Compte' (Create Account) screen in Adobe XD. It includes fields for 'Nom*' (Name), 'Prénom*' (First Name), 'Adresse e-mail*' (Email), 'Mot de passe*' (Password), 'Date de naissance*' (Date of Birth), and 'Genre*' (Gender). A note at the bottom states: 'En appuyant sur s'inscrire, vous reconnaisssez que vous avez accepté les conditions générales et la politique de confidentialité.' (By pressing 'S'inscrire', you acknowledge that you have accepted the general conditions and the privacy policy.) A green 'S'inscrire' (Sign Up) button is at the bottom.

Figure 89: Create Account Screen Adobe XD

This is a screenshot of the 'Créer Compte' (Create Account) screen from the mobile application. It shows the same fields as the Adobe XD wireframe: 'Nom*', 'Prénom*', 'Adresse e-mail*', 'Mot de passe*', 'Date de naissance*', 'Genre*', and a note about accepting terms and conditions. The 'S'inscrire' (Sign Up) button is visible at the bottom.

Figure 88: Create Account Realisation Part 1

This is a screenshot of the 'Créer Compte' (Create Account) screen from the mobile application, showing a different layout. It includes fields for 'Adresse e-mail*', 'Date de naissance*', 'Genre*', 'Mot de passe*', 'Confirmer mot de passe*', and a note about accepting terms and conditions. A green 'S'inscrire' (Sign Up) button is at the bottom.

Figure 87: Create Account Realisation Part 2

Enable Account

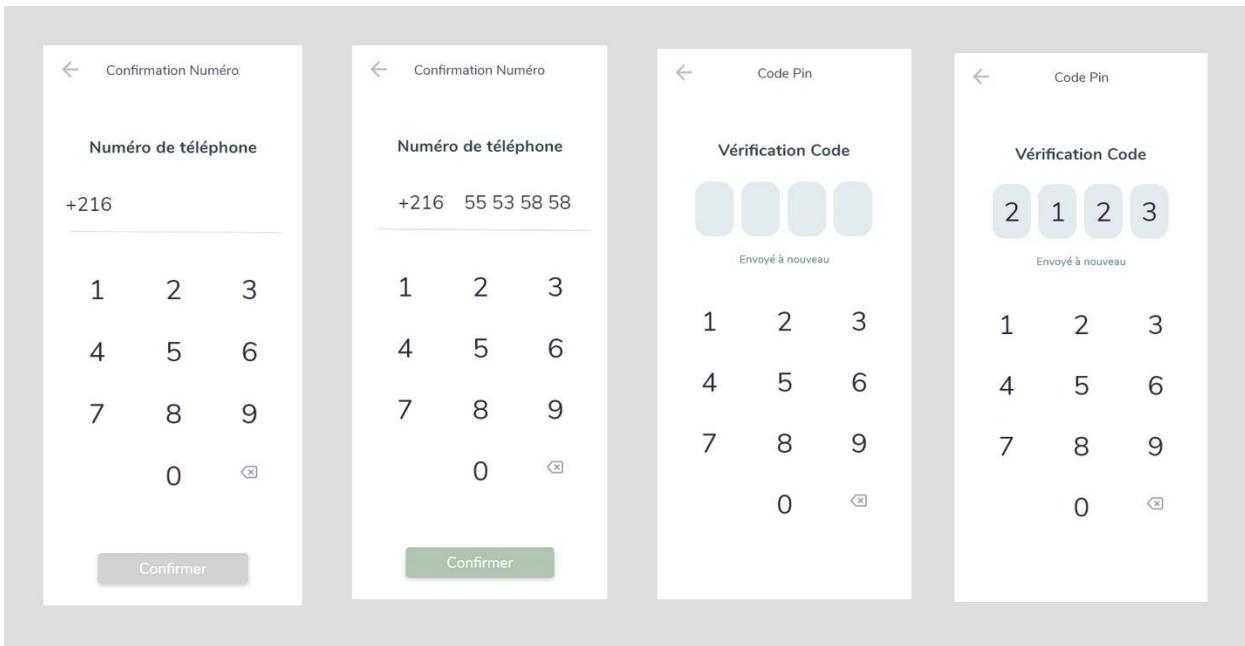


Figure 90: Enable Account Story XD Design

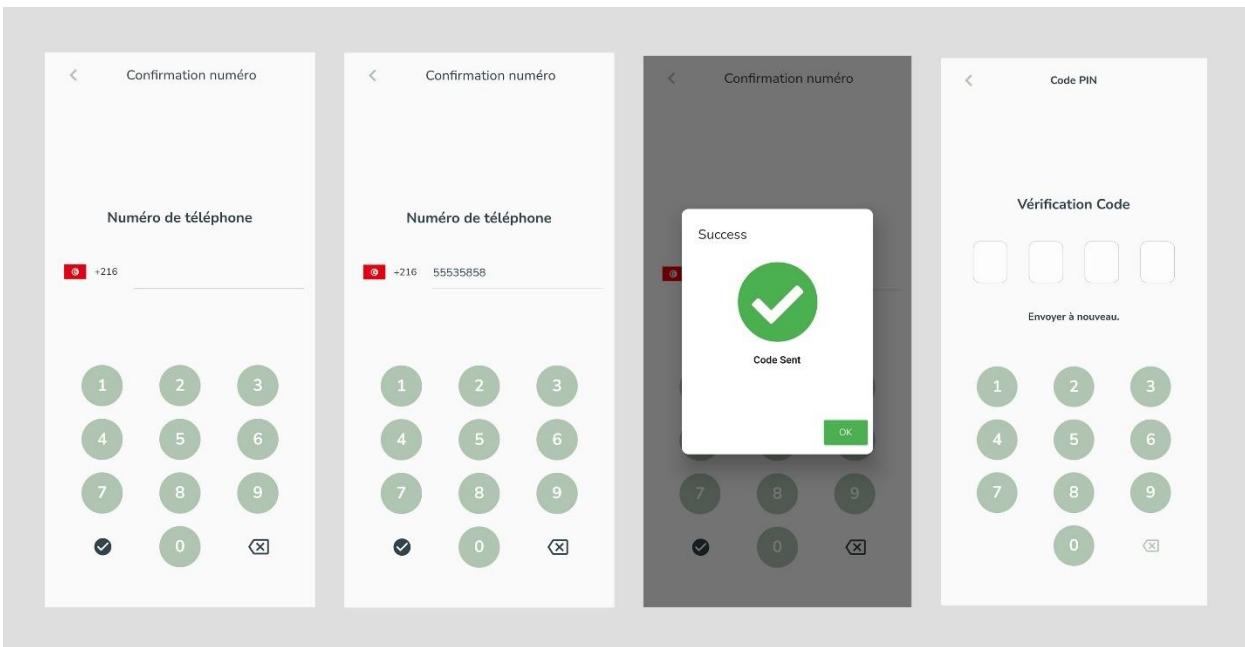


Figure 91: Enable Account Realisation

Edit Info

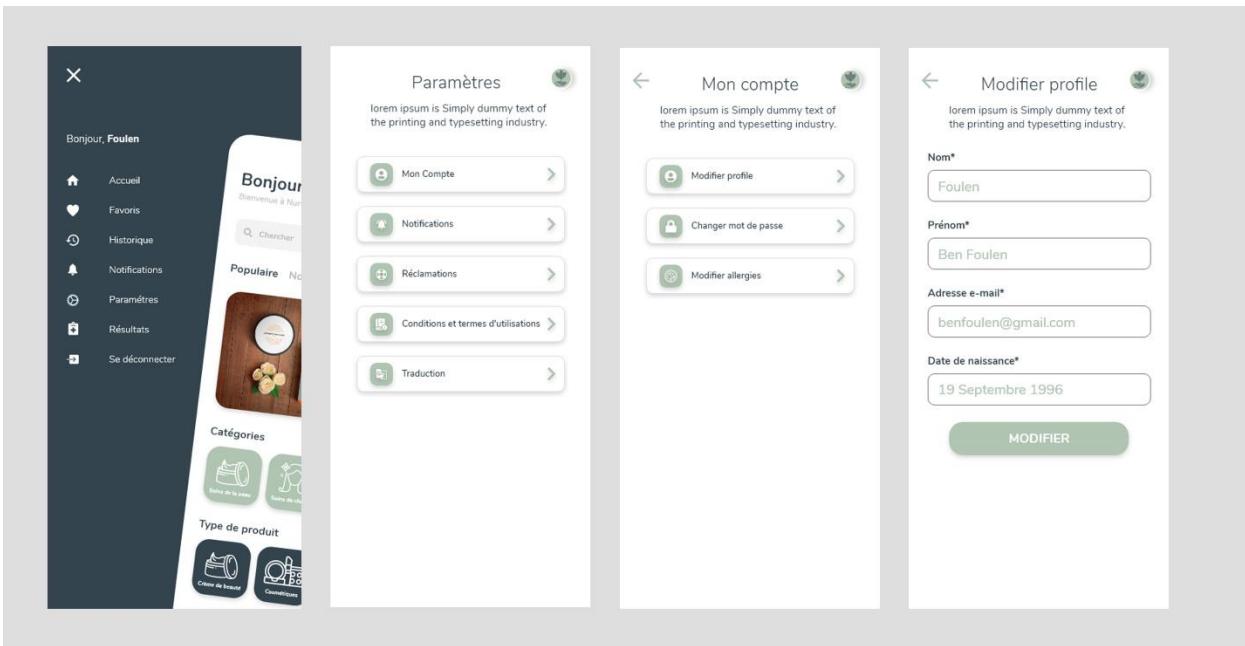


Figure 92: Edit Info Design Adobe XD

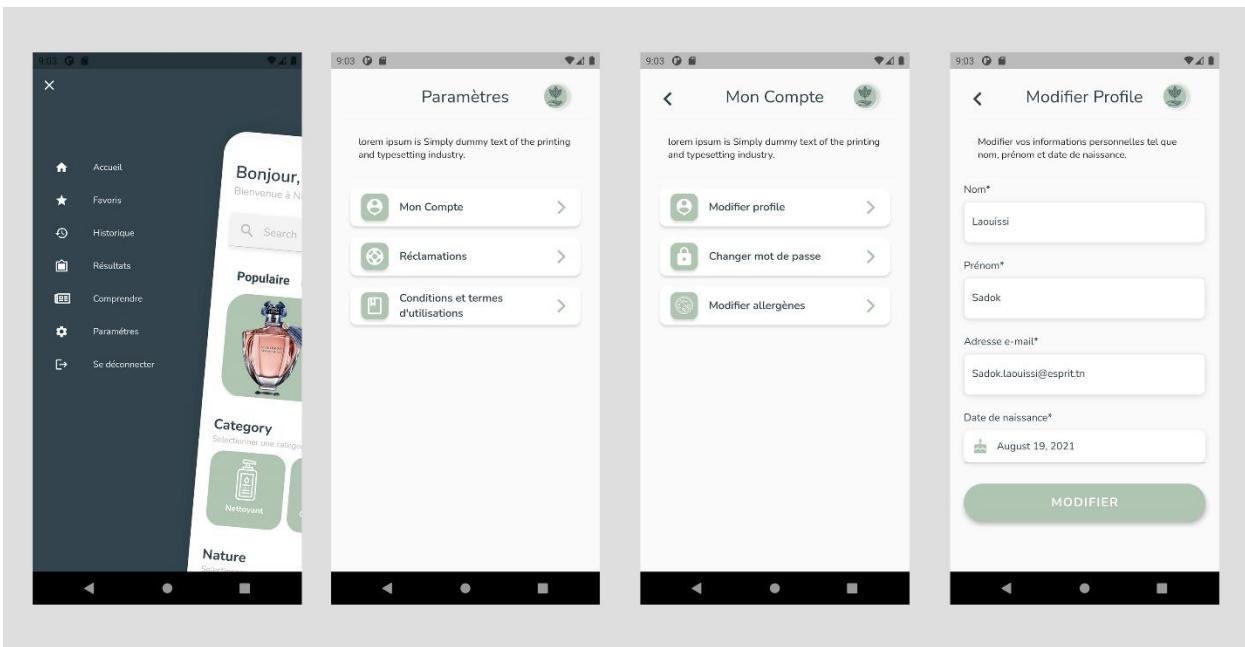


Figure 93: Edit Info Scenario Realisation

List Users

The screenshot shows the 'List Utilisateurs' page in the Nurture Cosmetics application. The main area displays a table with columns: First Name, Last Name, E-mail, Phone, Sexe, Birthday, Created At, and Updated At. Two rows of data are present:

First Name	Last Name	E-mail	Phone	Sexe	Birthday	Created At	Updated At
Foulen	Ben Foulen	Sadok.laouissi@esprit.tn	55535858	HOMME	19/10/1996 12:00 AM	08/06/2021 04:07 PM	15/08/2021 12:15 AM
Sadok	Laouissi	Sadok@esprit.tn	22525791	HOMME	19/09/1996 12:00 AM	13/07/2021 10:10 AM	15/07/2021 06:23 PM

Below the table, there is a search bar with placeholder text: 'First Name', 'Last Name', 'E-mail', 'Phone', 'Sexe', 'Birthday', 'Created At', and 'Updated At'. The sidebar on the left contains links for Allergies, Ingrédients, Produits, Réclamations, Utilisateurs, Dialog, and Catégories. At the bottom, a footer note says 'Created by [Sadok Laouissi](#) 2021'.

Figure 94: List Users Realisation

Change Password User

The image displays four wireframes illustrating the password change process:

- Home screen:** Shows a dark sidebar with navigation icons: Accueil, Favoris, Historique, Notifications, Paramètres, Résultats, and Se déconnecter. The main area shows a mobile app interface with a header 'Bonjour', a search bar, and sections for 'Populaire', 'Catégories', and 'Type de produit'.
- Paramètres screen:** Shows a list of settings options: Mon Compte, Notifications, Réclamations, Conditions et termes d'utilisations, and Traduction.
- Mon compte screen:** Shows a list of account management options: Modifier profile, Changer mot de passe, and Modifier allergies.
- Mot de passe screen:** A form for changing the password. It includes fields for 'Ancien mot de passe*', 'Nouveau mot de passe*', and 'Confirmer nouveau mot de passe*'. A green 'MODIFIER' button is at the bottom.

Figure 95: Change Password Scenario Design XD

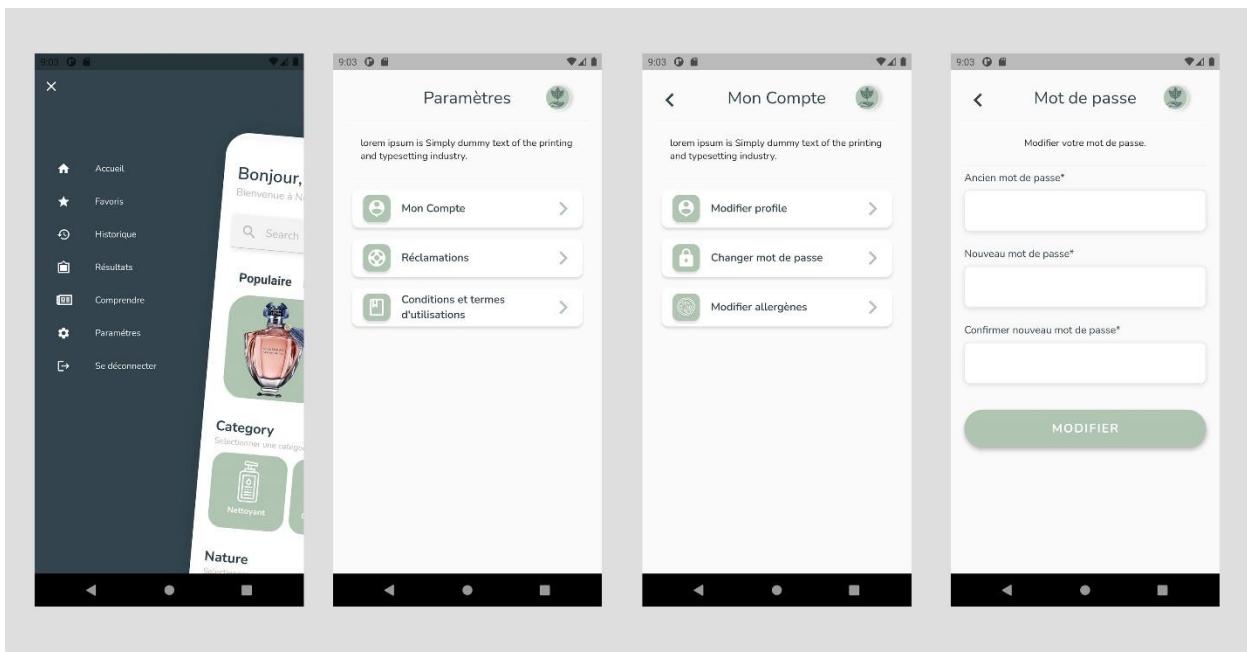


Figure 96: Change Password Scenario Realisation

Recover Password Admin

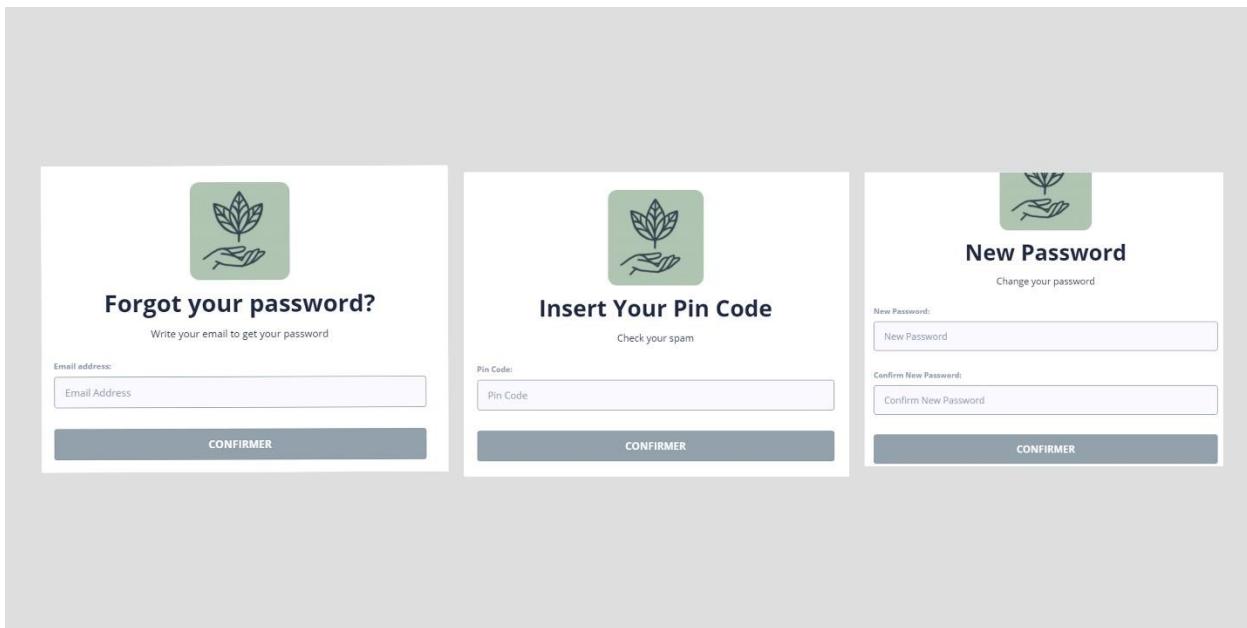


Figure 97: New Password Admin Realisation

Take Diagnosis

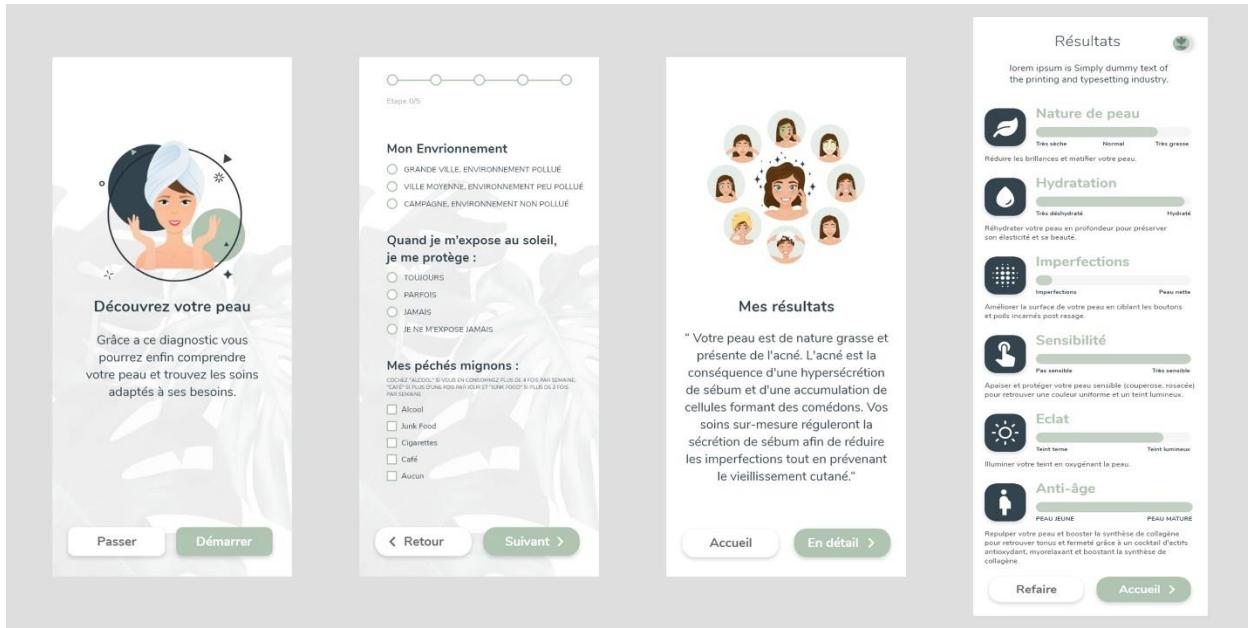


Figure 98: Take Diagnosis Scenario Adobe XD

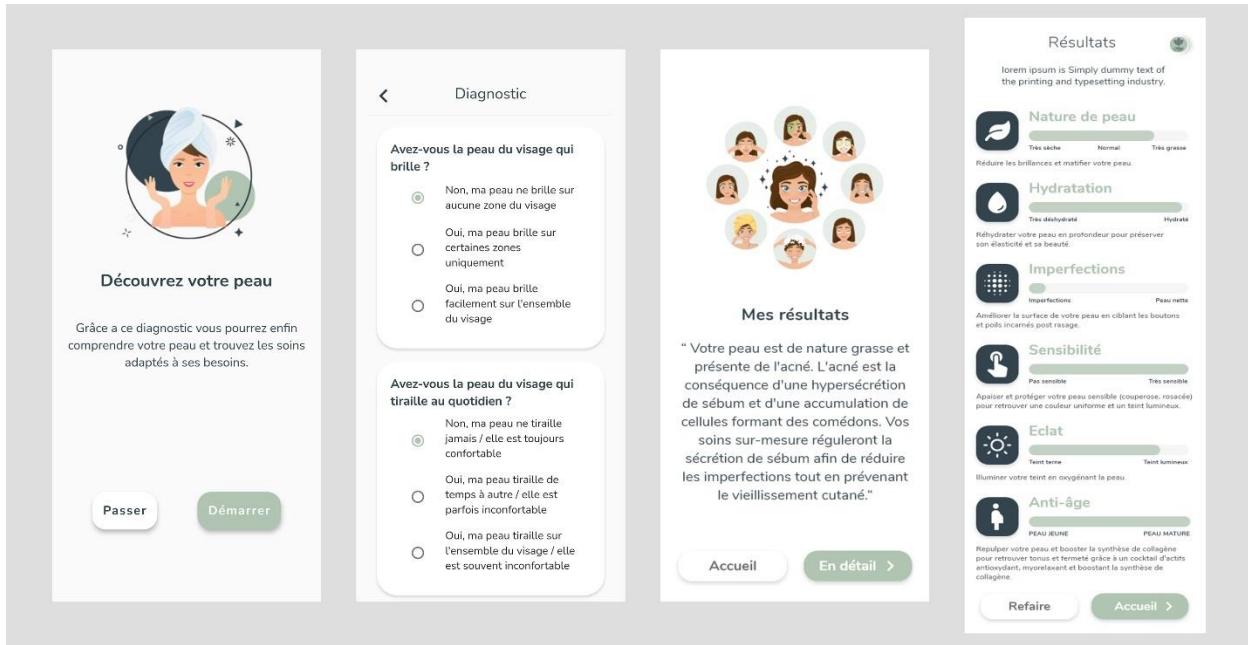


Figure 99: Take Diagnosis Scenario Realisation

Appendix G : Products Management Scenarios

The current appendix represents different scenario implementations of Products Management Sprint.

Add Product

Ajouter Produit

1 Général 2 Spécifique 3 Description 4 Image 5 6 Ingredients

Nom Produit
Eau Micellaire Nettoyante - Visage & Yeux

Référence
RFR-APIVITA-102

Prix
20

Afficher

NEXT

Figure 100: Add Product Step 1

Ajouter Produit

1 Général 2 Spécifique 3 Description 4 Image 5 6 Ingredients

Catégories
Nettoyant, Gommages & Exfoliants

Type
Bio, Vegan

Peau suggérée
NORMAL, MIXED

PREV **NEXT**

Figure 101: Add Product Step 2

Ajouter Produit

Général Spécifique Description Image Ingredients

Short Description

L'eau micellaire est un grand nettoyant quotidien.
Il nettoie et hydrate en même temps, laissant la peau confortable et protégée contre la pollution.

Conseille d'utilisation

Pour le visage et les yeux
Facile à utiliser
Élimine le maquillage et les impuretés en un seul geste
Apaise et laisse la peau propre et confortable avec le miel de thym grec et l'infusion de fruits de rose sauvages.
Offre une action anti-pollution supplémentaire

PREV **NEXT**

Figure 102: Add Product Step 3

Ajouter Produit

Général Spécifique Description Image Ingredients

CHANGER IMAGE

Choose File product_icon.png



PREV **NEXT**

Figure 103: Add Product Step 4

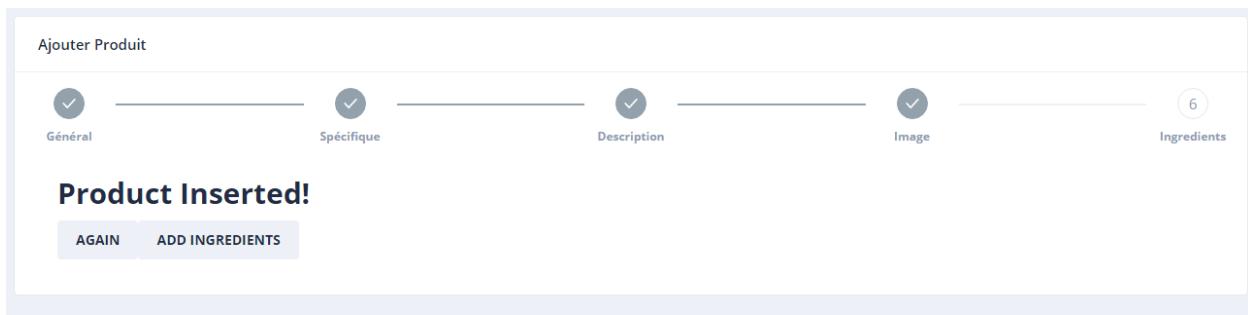


Figure 104: Add Product Step 5

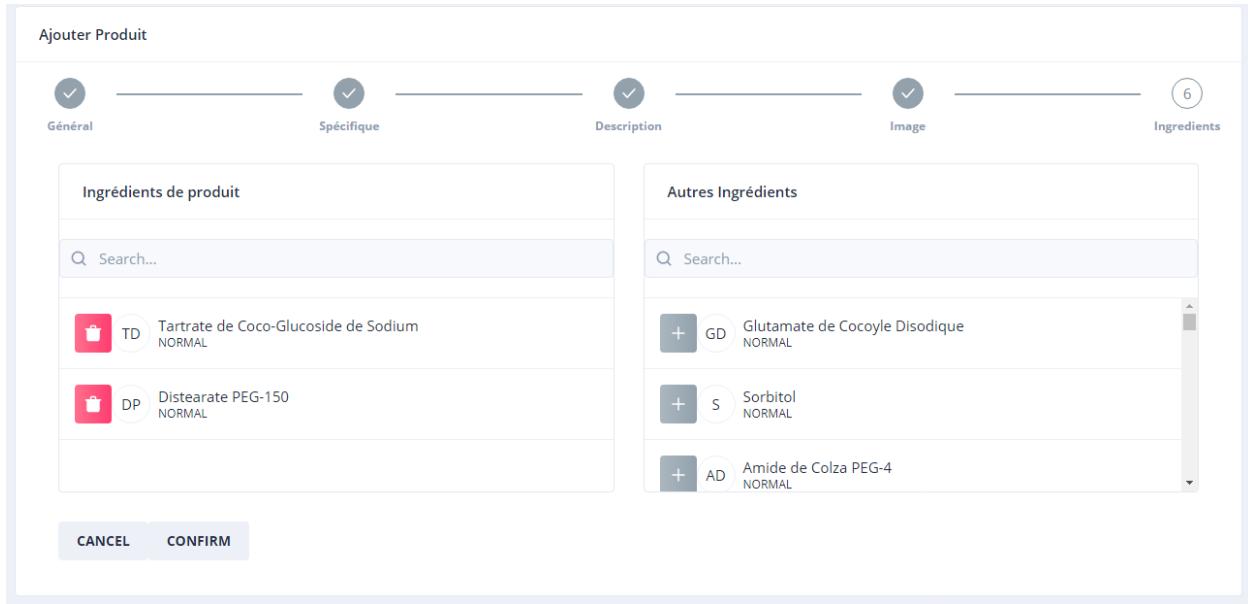


Figure 105: Add Product Step 6 (Optional)

List Products

List Produits				
Actions	Nom Produit	Reference	Prix	Rang
	Nom Produit	Reference	Prix	Rang
	Soin des Lèvres à la Châtaigne	RFR-APIVITA-042	6	10
	Soin des Lèvres BEE PRINCESS	RFR-APIVITA-043	6	10
	Soin des Lèvres au Miel	RFR-APIVITA-044	6	10
	Lip Care Black Currant	RFR-APIVITA-045	5	10
	Hydra Sensitive Soothing Face Cream SPF50+	RFR-APIVITA-046	20	10
	Gel-Crème Hydratant	RFR-APIVITA-047	20	10
	Gel Rafraîchissant et Hydratant pour les Yeux	RFR-APIVITA-048	17	10
	Crème Hydratante Confort - Texture Riche	RFR-APIVITA-049	20	10
	Booster Hydratant Fraîcheur	RFR-APIVITA-050	23	10

Figure 106: List Products Realisation

Add/Remove Ingredients

Affecter produits/ingrédients

Choisissez un produit pour pouvoir manipuler ses ingrédients.

Chez un produit RFR-APIVITA-001

Ingrédients de produit	Autres Ingrédients
<input type="text" value="Search..."/> TD Tartrate de Coco-Glucoside de Sodium NORMAL GD Glutamate de Cocoyle Disodique NORMAL	<input type="text" value="Search..."/> LG Lauroyl Glutamate de Sodium NORMAL LG Lauryl Glucoside NORMAL

Figure 107: Add/Remove Ingredients Realisation

View Products Details

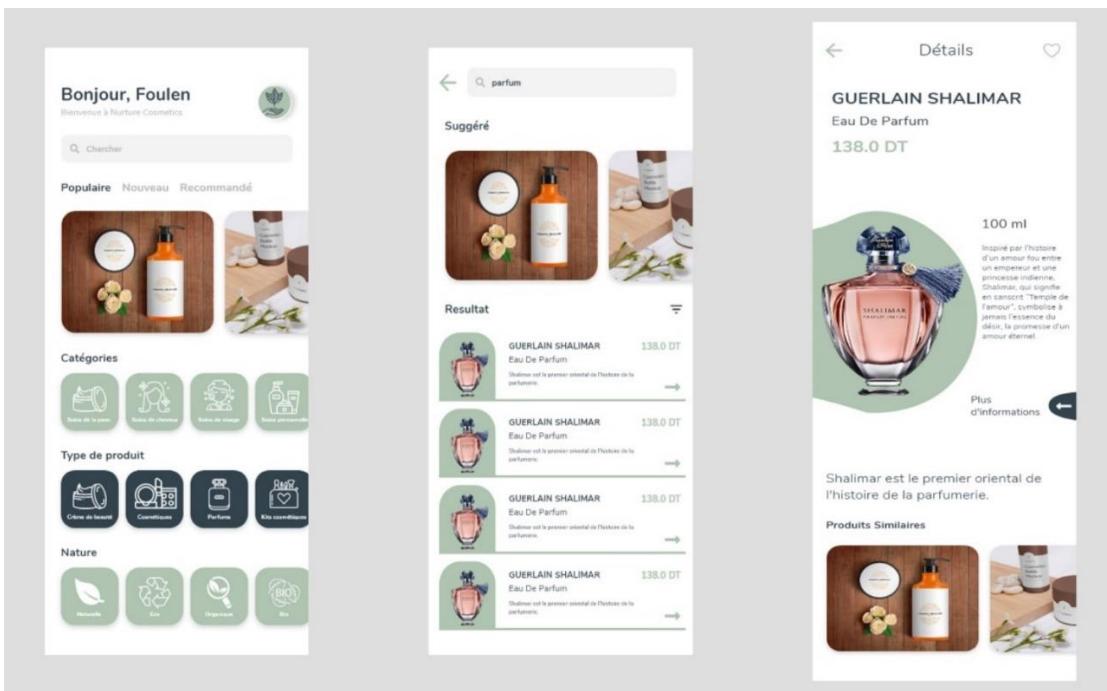


Figure 108: View Product Details Story Adobe XD

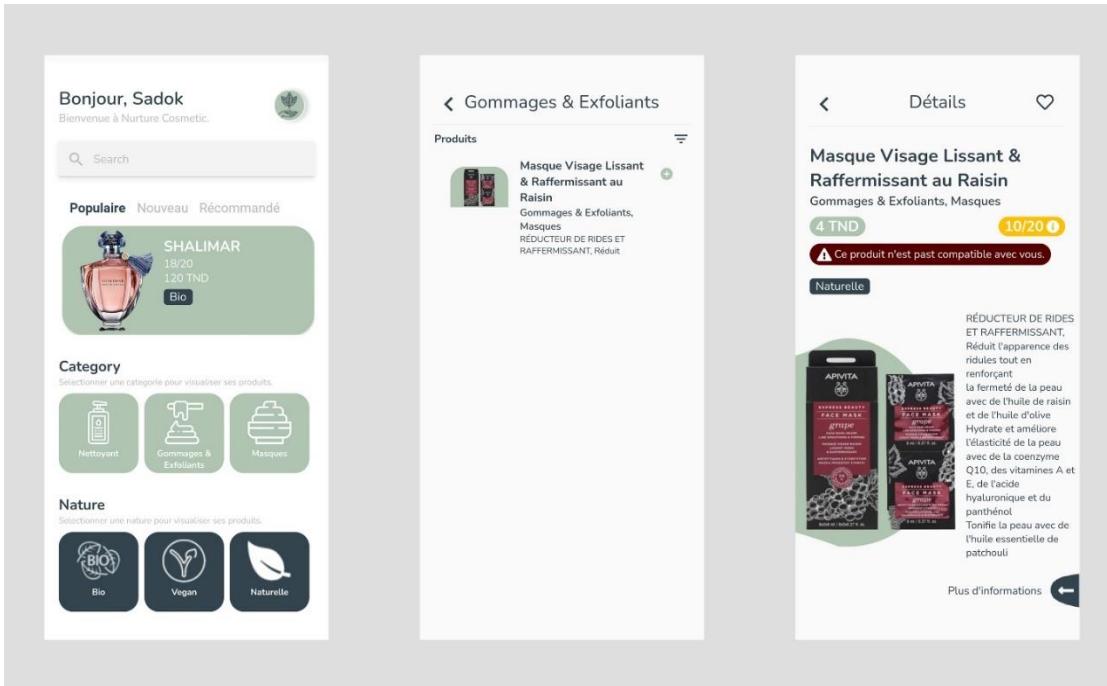


Figure 109: View Product Details Story Realisation

Search Products

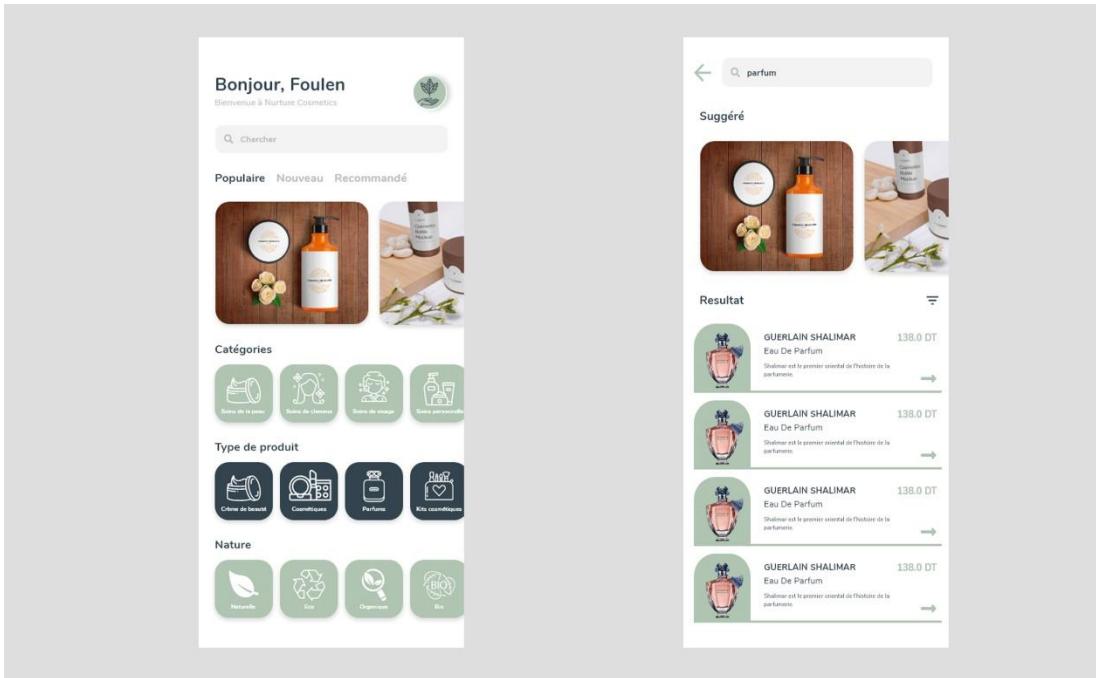


Figure 110: Search Products Story Design XD

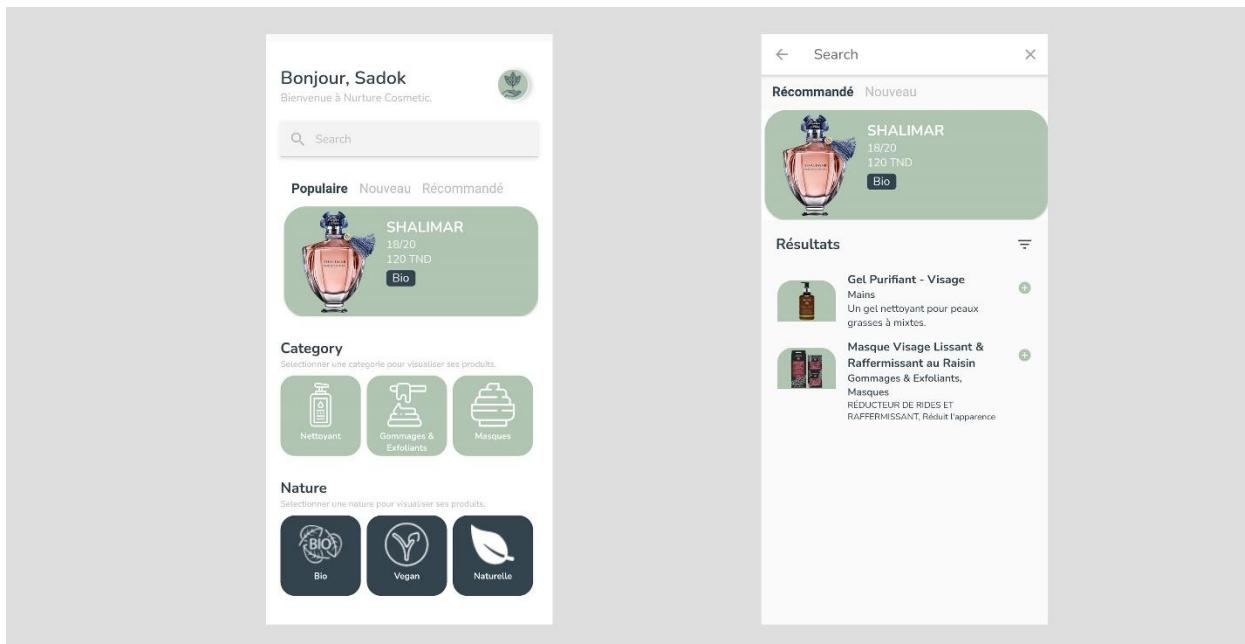


Figure 111: Search Products Realisation

Filter Products

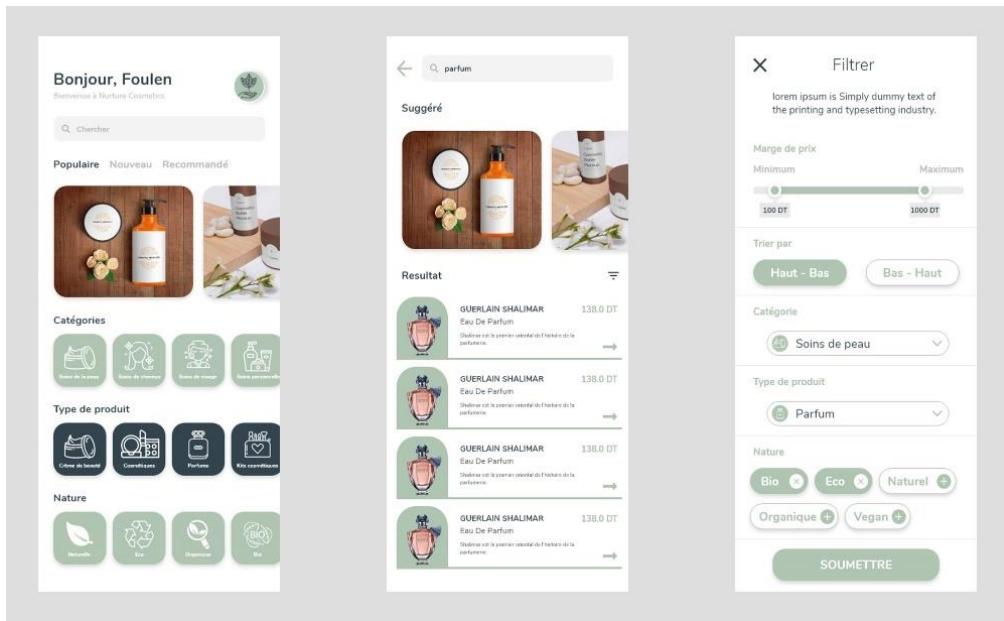


Figure 112: Filter Story Design Adobe XD

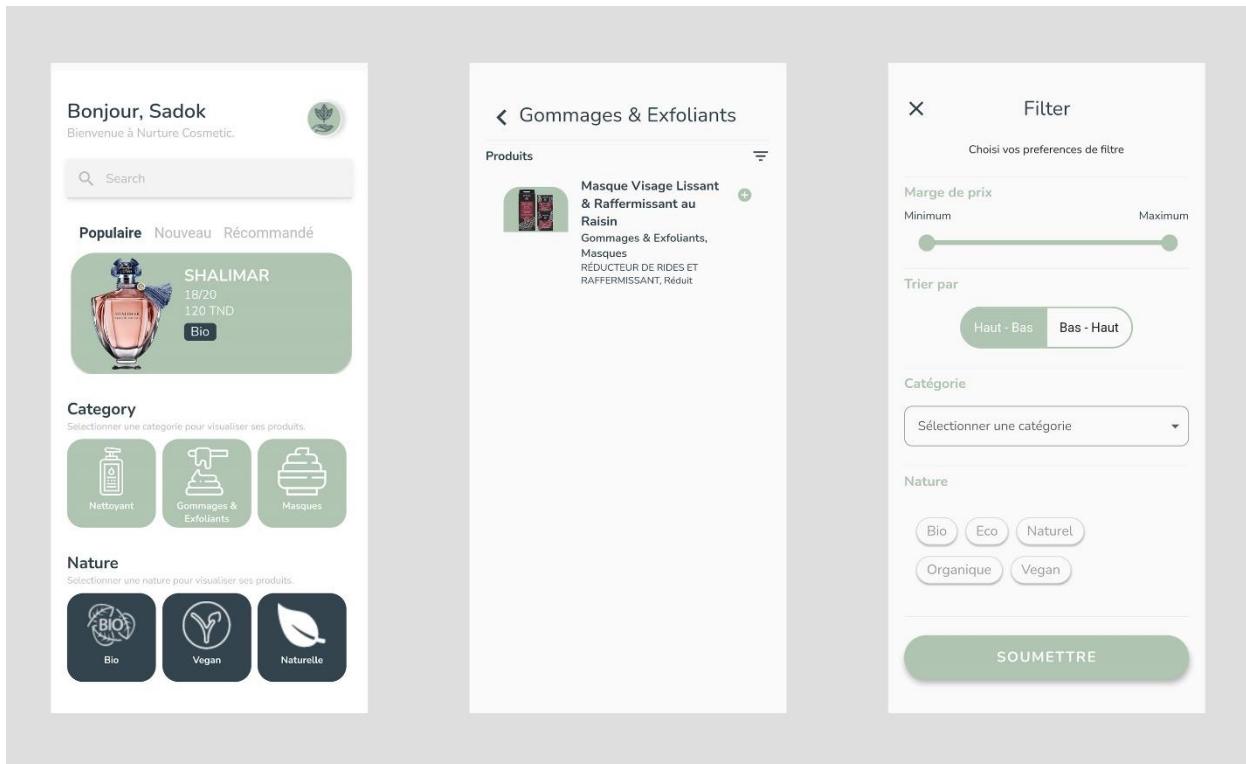


Figure 113: Filter Realisation

Appendix H : Favourite & History Management

The current appendix represents different scenario implementations of Favourite & History Management Sprint.

View Favourite List

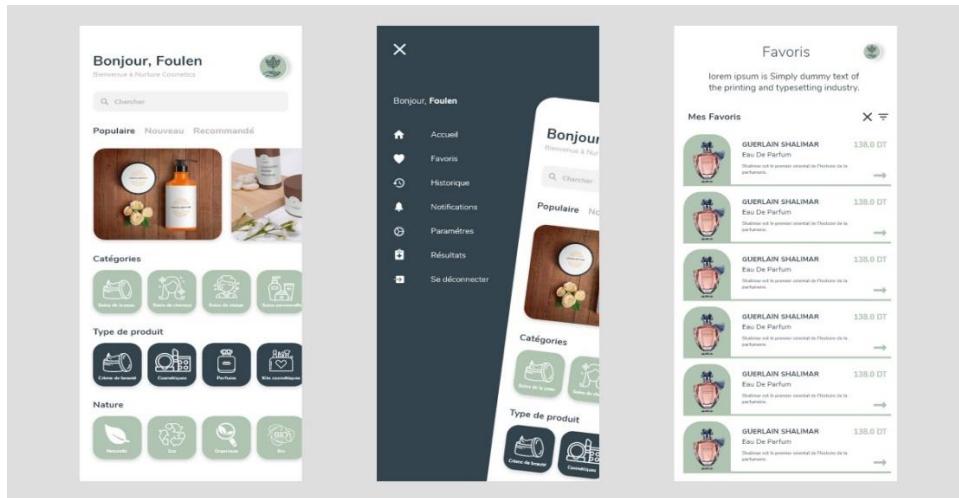


Figure 114: View Favourite Story Design XD

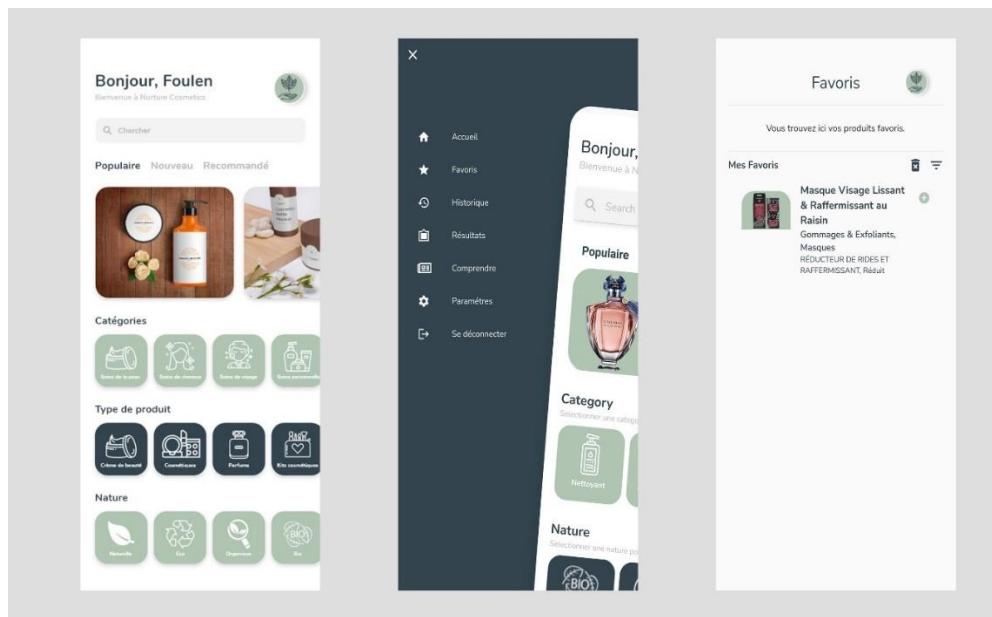


Figure 115: View Favourite Story Realisation

View History

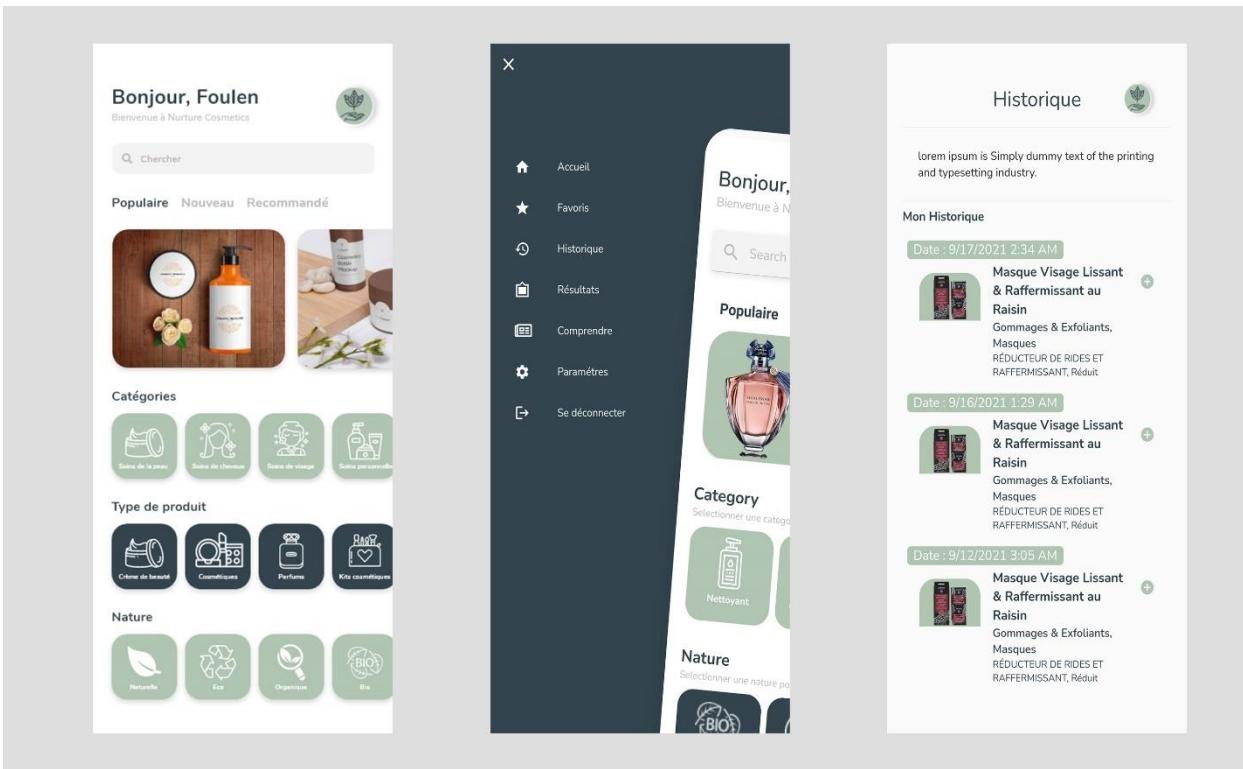


Figure 116: View History Story Implementation

Appendix I : Claims Management & Products Suggestions Scenarios

The current appendix represents different scenario implementations of Claims Management & Products Suggestions Sprint.

Add Claim

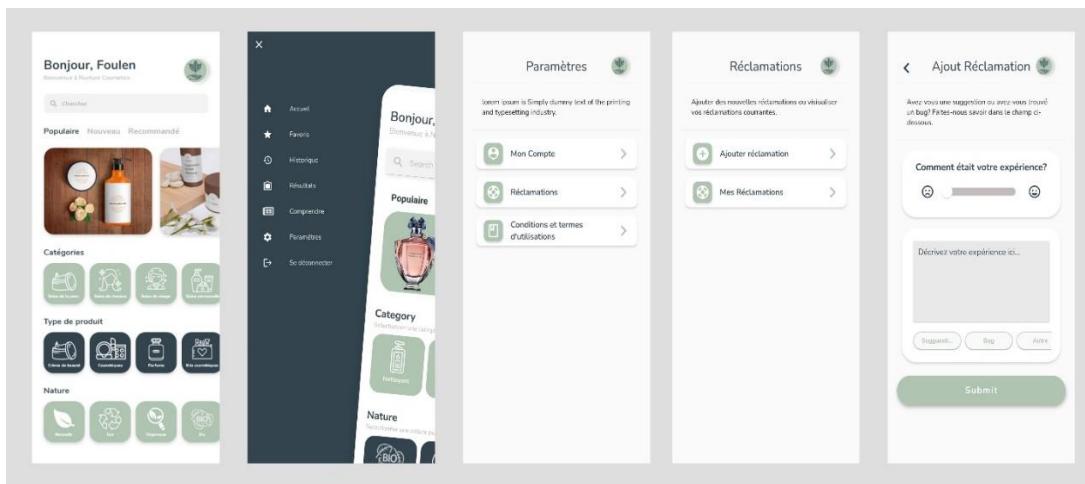


Figure 117 : Add Claim Story Realisation

View My Claims

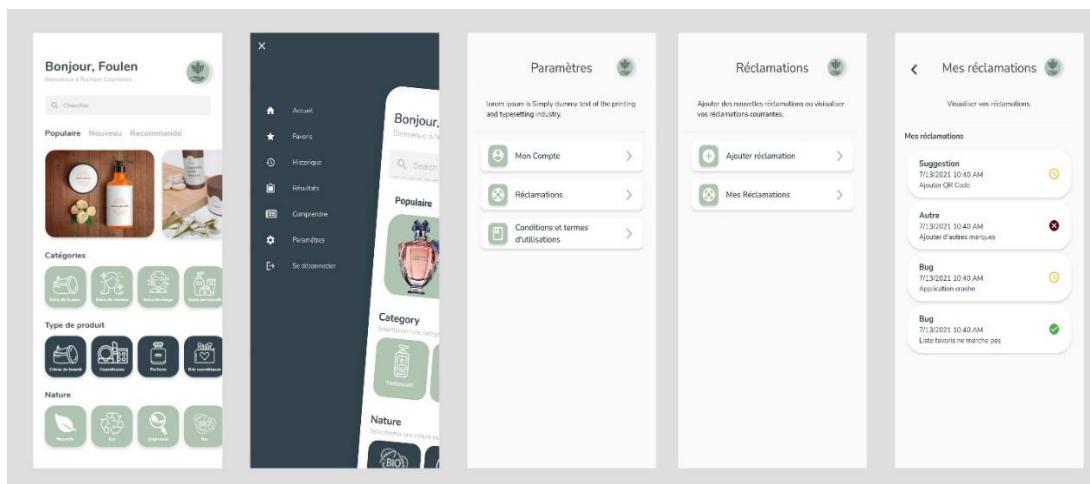


Figure 118: View My claims Story Realisation

View All Claims

The screenshot shows a user interface for managing claims. On the left, there is a sidebar with the following navigation links:

- Categories
- Products
- Ingrédients
- Allergens
- Claims
- Utilisateurs

The main area is titled "List Claims" and contains a table with the following columns:

Actions	Message	Type	Rate	User	Status	Created At
	Ajouter QR Code	Suggestion	10	Sadok Laouissi	PENDING	13/07/2021 11:40 AM
	Application crashe	Bug	10	Sadok Laouissi	PENDING	13/07/2021 11:40 AM
	Ajouter d'autres marques	Autre	10	Sadok Laouissi	DECLINED	05/09/2021 11:22 AM
	Liste Favoris ne marche pas	Bug	2	Sadok Laouissi	RESOLVED	05/09/2021 11:22 AM

Figure 119: View All Claims Story Realisation

Update Claim's State

The screenshot shows a table for updating claim states. The columns are the same as in Figure 119. In the "Status" column for the first row, a dropdown menu is open, showing the following options:

- PENDING
- RESOLVED
- DECLINED

The "PENDING" option is highlighted with a blue background.

Actions	Message	Type	Rate	User	Status	Created At
	Ajouter QR Cod	Suggestion	10	[object Objec]	PENDING	2021-07-13T10:40:40.6
	Application crashe	Bug	10	Sadok Laouissi	RESOLVED	13/07/2021 11:40 AM
	Ajouter d'autres marques	Autre	10	Sadok Laouissi	DECLINED	05/09/2021 11:22 AM
	Liste Favoris ne marche pas	Bug	2	Sadok Laouissi	RESOLVED	05/09/2021 11:22 AM

Figure 120: Update Claim's State Realisation

View Suggestions Second Scenario

Détails

Masque Visage Lissant & Raffermissant au Raisin
Gommages & Exfoliants, Masques

4 TND **10/20**

⚠ Ce produit n'est pas compatible avec vous.

Naturelle



RÉDUCTEUR DE RIDES ET RAFFERMISANT, Réduit l'apparence des ridules tout en renforçant la fermeté de la peau avec de l'huile de raisin et de l'huile d'olive Hydrate et améliore l'élasticité de la peau avec de la coenzyme Q10, des vitamines A et E, de l'acide hyaluronique et du panthéol Tonifie la peau avec de l'huile essentielle de patchouli

Plus d'informations



RÉDUCTEUR DE RIDES ET RAFFERMISANT, Réduit l'apparence des ridules tout en renforçant la fermeté de la peau avec de l'huile de raisin et de l'huile d'olive Hydrate et améliore l'élasticité de la peau avec de la coenzyme Q10, des vitamines A et E, de l'acide hyaluronique et du panthéol Tonifie la peau avec de l'huile essentielle de patchouli

Lisse les ridules Améliore l'élasticité de la peau Revitalise les peaux matures

Produits Similaires

Populaire **Nouveau** **Récommandé**



Masque Visage Hydratant & Apaisant à la Figue de Barbarie
18/20
120 TND
Naturelle

Plus d'informations

Figure 121: View Suggestions Second Scenario Realisation