Acknowledgement

I would like to express my special thanks of gratitude to my In-Plant supervisor Mr. mokhtar harabi, in the head of the IT Department and specialized in embedded systems It. as well as our department manager, Mr adnen rouatbi who gave me the golden accept to have this gorgeous experience in-Plant project in 'ISET Sousse', which provided me an opportunity to apply my abilities in the web field.

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General Introduction

In the last 3 years the all the world suffered from the pandemic of the CORONA Virus this pandemic showed up the non-preparedness for these kinds of cases, the weak health infrastructure and the big need to the equipment. For that, the powers were joined together to invent a cure for this virus and make or repair equipment.

Actually, the Tunisian students and companies were so active by initializing startups inventing new solutions and creating the innovation. Also, Tunisia was of the countries that got a help with a charge of the common cures in the market. However, the Tunisian infrastructure of wasn't ready or even able to stock these cures. Here came a project by ISETSo students to transform the central drug stores refrigerators to smart ones.

This startup is into success but still need lots of ameliorations and one of these ameliorations is the admin dashboard which my project. In this project I'm going to develop a fancy admin dashboard that helps the administrator visualize and handle the project with an effective way.

In this project i'm going to present, in a first part, the project …..which I'm going to demonstrate the enterprise in a first hand, present the project in the other, mention as well the description of the existing ,criticize it ,pose a solution and I'm going finish with setting the goals. In the next part I'm going to Analyze and specify the need, from picking up a method passing by actors' identification, to the need analyze and finish with global use case diagram. For the next chapter, I'm going to show up my designs which are use case diagrams and descriptions bellowed by a class diagram.
Finally, i'm going to focus view projection on the realization by categorizing the hard environment and the soft one. Besides that we're going to discuss about the app interfaces.

Chapter 1 :

PROJECT OVERVIEW PRESENTATION

Introduction

In this chapter we're going to present the ovew view of the project which is divided into three parts: first one presents ISETSo, second one describes the project context and goal and finally the development suggested methodology.

1 Host Entreprise Presentation

Under the law N92-50 of 18 march 1992, the network of the Higher Institutes of Technological studies(ISET) was born. The ISETs network, made up of 25 establishments and placed under the supervision of the Ministry of Higher Education and Scientific Research, is managed by the General Direction for Technological Studies.

The ISETs are authorized to establish partnership relations with the economic environment to ensure the training of qualified middle managers and senior technicians that meet the needs of companies.

After the LMD reform of the higher education system in Tunisia, the ISETs issue their students with an applied bachelor's degree in the fields of technology and management. Holders of this bachelor's degree can enroll in a university establishment with a view to obtaining an applied master's degree in a field equivalent to their course of study.

ISET Sousse is constituted form 4 departments:

- Mechanical Engineering
- Electrical Engineering
- Information Technology
- Economics & Management Sciences

In the IT department we have 4 majors:

- DSI: Information Systems Development
- MDW: Web & Multimedia Development
- SEM : Embedded System & Mobile
- RSI : Network & IT Services

Figure 1 : logo ISET Sousse

2 Project presentation

2.1 Project Context

2.1.1 Internet Of Things(I O T)

The Internet of Things (IoT), sometimes referred to as the Internet of Objects, will change Everything including ourselves. This may seem like a bold statement, but consider the impact the Internet already has had on education, communication, business, science, government, and humanity. Clearly, the Internet is one of the most important and powerful creations in all of human history. Now consider that IoT represents the next evolution of the Internet, taking a huge leap in its ability to gather, analyze, and distribute data that we can turn into information, knowledge, and, ultimately, wisdom. In this context, IoT becomes immensely important.

Already, IoT projects are under way that promise to close the gap between poor and rich, improve distribution of the world's resources to those who need them most, and help us understand our planet so we can be more proactive and less reactive. Even so, several barriers exist that threaten to slow IoT development, including the transition to IPv6, having a common set of standards, and developing energy sources for millions even billions of minute sensors.

2.1.2 industry v4.0 & medical industry

the greatest technological leap forward in the last several decades has been the development of electronic health records, or EHRs. Previously, hospitals had multiple systems that handled different functions, but EHRs roll all of those into a single system. EHRs have just about reached full penetration in US hospitals. And with the rise of health tech, EHRs are moving to become platforms integrated with powerful clinical decision support tools.

2.2 Problematic:

A new startup idea that focusses on the product stock stage in the medicals industry. this IoT application transforms the actual stocking infrastructure from its low quality to a smart one, by solving multiple problems like current cut, drown of temperature level… Besides, this idea proved efficacity and it's time to turn it into a commercial one.
The actual problem is that this startup project doesn't own an administrator dashboard to afford a full control to the admin with a touch of professionality.

3 Describe the existing

The actual used dashboard to control this IoT project was done with HTML, CSS, Java Script in the front-end, PHP that interact with firebase real time data base in the back.
this solution affords some functionalities to the admin like: authentication, add client, delete client, show client list…

4 Criticize the existing

the bad facts about this solution are:

• Limited functionalities provided to the admin

• administrator isn't able to consult, supervise and interact with real time data and status

• there's no ability to consult the history errors of a specific stock to get an idea to conclude problems before they happen again.

• there's no care about the user experience

• there's no much care about the user interface, with a way that the web app don't own a professional view

5 Solution

The solution is to build a professional web app as a admin dashboard that give a care about the ux/ui(user experience and user interface), that afford a bunch of functionalities to give more control to the admin and transform the project idea into the commercial aspect.

6 Goals

Our goal is to concept a custom web app as an admin dashboard and it should allow the administrator to:

• access to the dashboard
• graphics real time
• handle users
• handle refrigerators
• analyze data
• get notifications

CONCLUSION

In this chapter, we've presented the host enterprise, then we've presented the project: the context of the project, posing the problem then we've analyzed the project from multi views: studying the existing, criticized it, propose a solution and of course we've identified and putted the header points of the project's goal.

In the next following chapter, we will present the chosen methodology, the specifications of the actors and the needs (functional and non-functional) of the project.

Chapter 2:

Need Specification
&
Analyze

Introduction

In this chapter we're going to pick up a methodology followed by actors' identification, then we're going to discuss about the need analyze which is constructed from the functional need and the non-functional need. In a second stage we're going to focus on Backlog from the product backlog to the backlog sprints and we're going to finish with a global user case diagram.

1 Picking Up a Methodology

The methodology is a proceed adopted to sub divide the project into steps with a predefined point of start and prefixed point of end.
the methodology helps us to follow the advance of the project, accomplishment of tasks and handle it with a way it responds to the predefined needs.

1.1 Waterfall Methodology

The waterfall model is a linear management model which divide the development processes into successive project phases. On the opposite to the iterative models, every phase should be done one time. The outputs of every phase should be integrated as inputs of the next phase.

1.2 Advantages

- Easy to understand and use
- Suitable for an inexperienced team
- The limits of each step are visible
- Facilitates project management
- The definition of needs is non-scalable
- Quality trumps cost

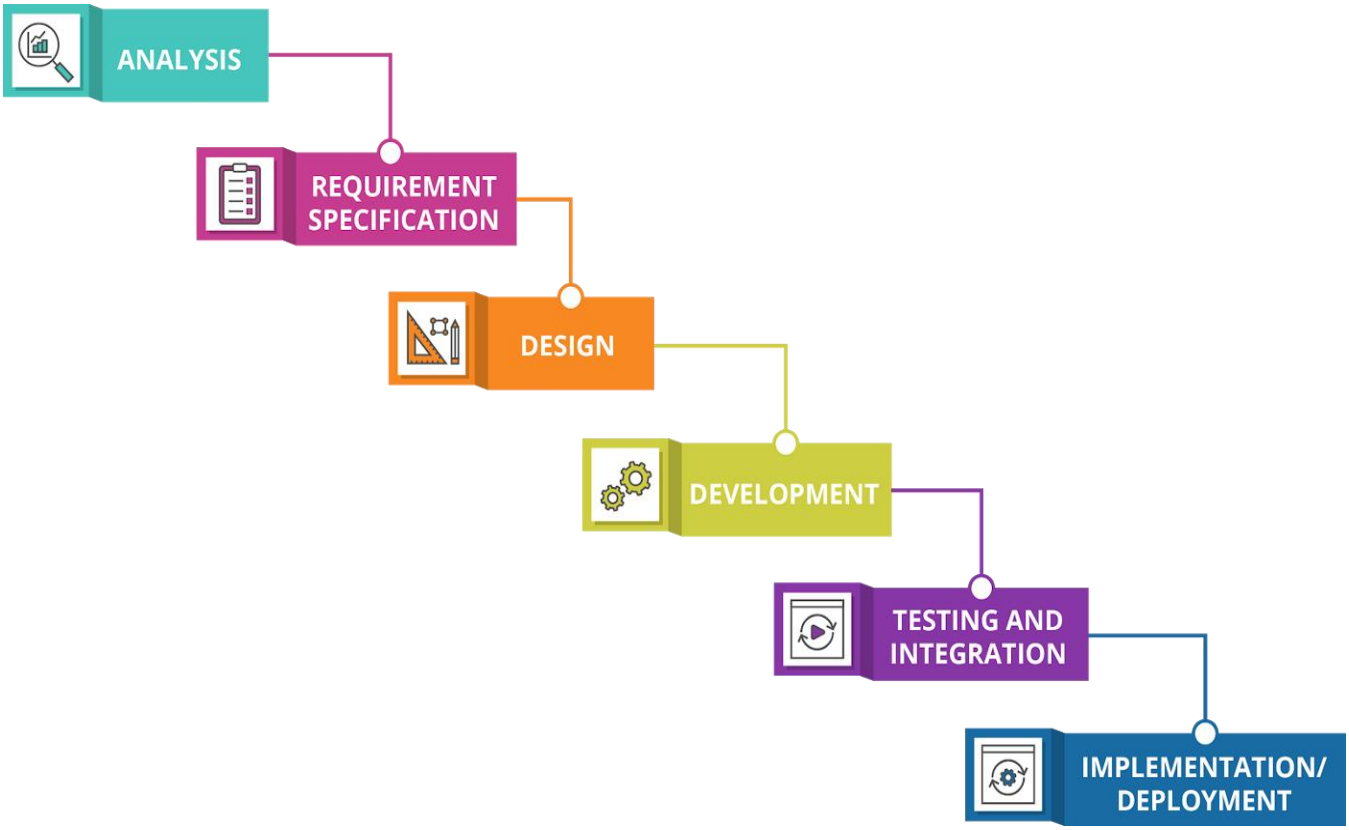


Figure 2: waterfall model.

2 Actors Identification

We're going to present in this part the different actors that can influence on our website

In this project we have only one actor who is:

- **Administrator:** Is the only person that have the ability to access to the dashboard of course after the authentication. This actor can use, modify, manipulate...

3 Need Analyze

In this part which is the need analyze we're going to identify the functional need and the non-functional need.

3.1 Functional need

The specifications of the functional needs consist in studying the system from the user's point of view, therefore in studying the role of the system to be developed. The web application must provide the following functionalities:

- Only Admin can authenticate
- Admin should get notifications about the errors
- Afford the ability to change users 'coordinates
- Afford the ability to add, select and delete users
- Admin can manage and select the refrigerators of every user
- Afford the ability to add, select and delete refrigerators
- Admin can consult real time temperature, door state, battery state, current state
- The supervision of temperature in a chart
- Admin can reach temperature history and errors history
- Possibility to change the refrigerators 'coordinates

3.2 Non-functional need

Like any software project of quality, our application must satisfy all of the following non-functional needs:

- **Performance & speed :** Indeed, given the large number of daily transactions, it is absolutely necessary that the execution time of the processing approaches real time as much as possible.

- **Security:** as this project is administrative dashboard and as it contains lot of sensible functionalities and data, so the security is a big need
- **User experience (UX):** UX refers to the user experience and this means simply to make the experience of using your software, feels more easy, not complicated and without unnecessary additions.
- **User interface (UI):** UI refers to the user interface, which means the professional GUI (graphical user interface) and the attractive graphical side.
- **Clean code & keep dry**: in this step we need to keep our code clean with considering the dry rule(don't repeat yourself) and keep in mind that this code is going to be if ameliorated or maintained.

4 Global use case diagram

The user case diagram is the first step in the UML Analyze with:

- Users'need modelization.
- system functionalities and limits identification.
- interactions between system and users' representations.

The following figure presents the diagram of the general use case of our application:

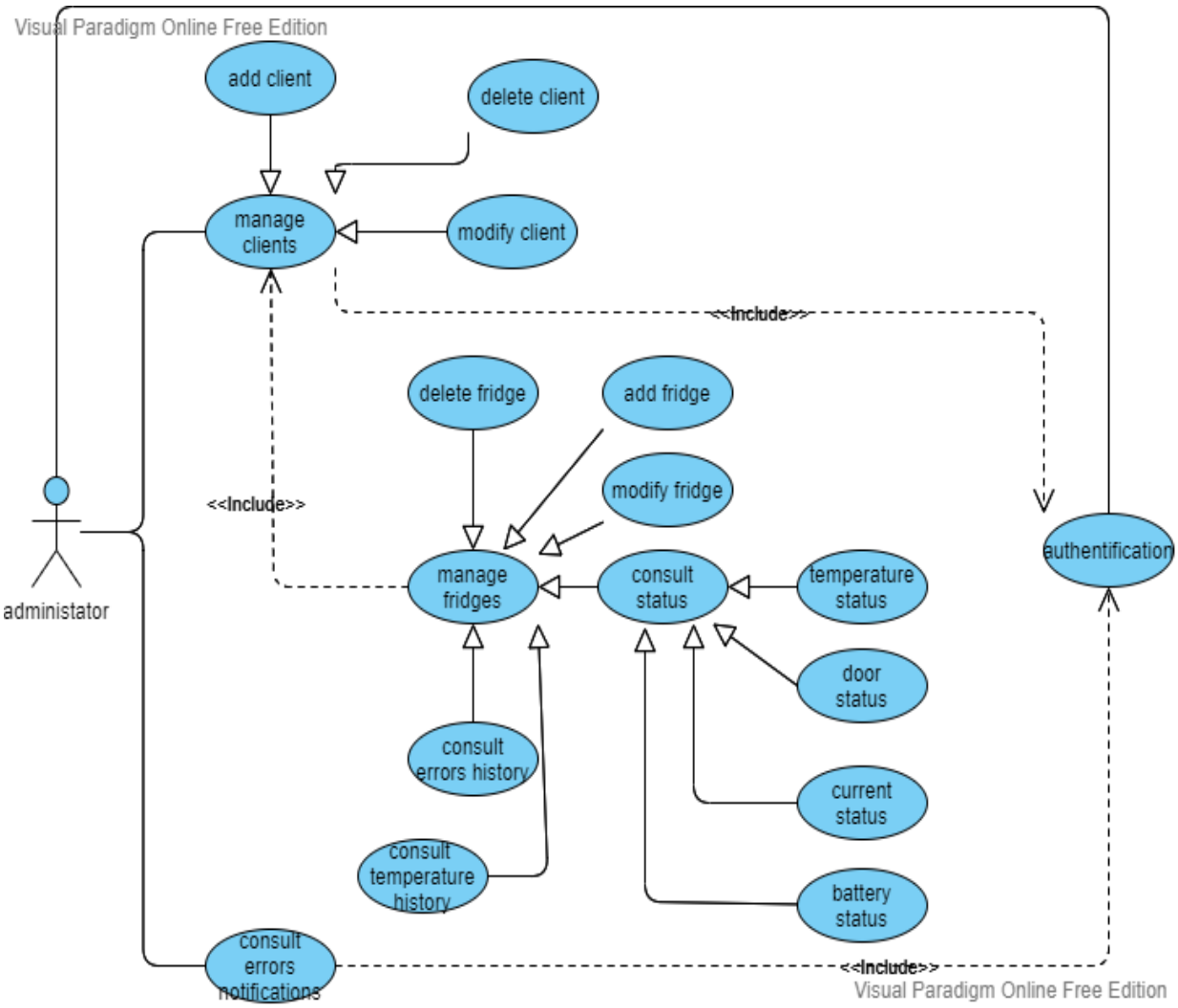


Figure 3: use case diagram.

Conclusion

In this chapter, we have presented the chosen development methodology which is the waterfall method and the different actors in the application that interact with our application. In other stage we have identified the functional needs and non-functional needs of the project. Then we finished by a global use case diagram to demonstrate an overview head map which could be app summary.

The next chapter will be devoted to the detailed design. We're going to put lines on each Part then discuss about it with lot of specification.

Chapter 3 :

Design

Introduction

In this chapter we're going to present the different UML diagrams including use case diagrams, use case descriptions of each sub part then followed in the bellow with sequence diagrams and we're going to finish with class diagrams intending to describe in a more methodological way our specifications.

1 Use case diagrams and descriptions

In this part, we present the use case diagrams and their textual descriptions of the main functionalities of our portal.

1.1 Authentication use case description

Before having an accessibility to the administrative functionalities or even get into dashboard, the admitted person to be the administrator should pass by the authentication process and get a succeed message

Tab 1 : authentication use case description.

Title	Authenification
Actor	Administrator
Goal	Allow the administrator to authenticate to the dashboard
Conditions	Administrator should have email and password
Normal senario	• the admin types email and password • the admin valid the login button • the system access to the dashboard

1.2 Manage clients use case diagram

Figure below presents the manage client use case diagram. Here's the administrator Should be authenticated to be able to do managing clients functionalities which are 3: add client, delete client, modify client.

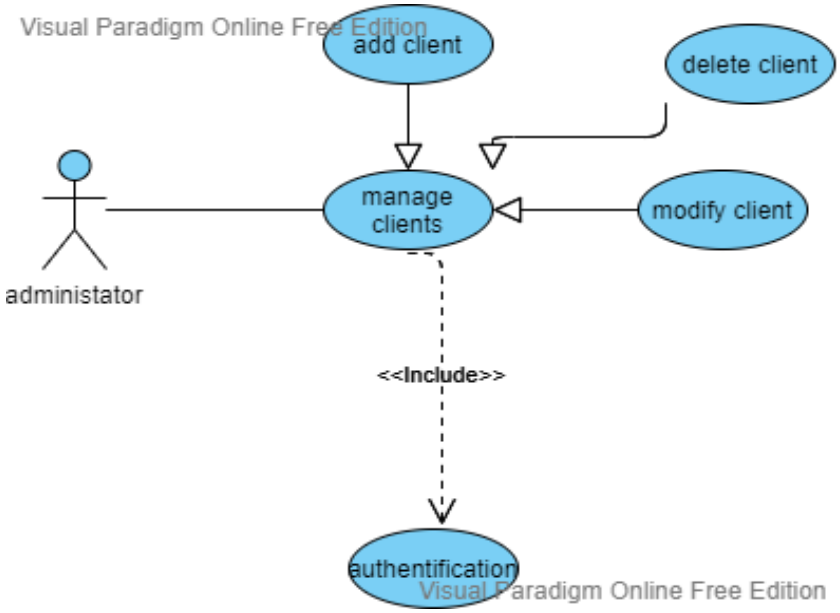


Figure 4: manage client user case diagram.

1.3 Manage clients use case descriptions

Here's our attended scenarios:

Tab 2: Add client user case description.

Title	Add Client
Actor	Administrator
Goal	Allow the administrator to add a new client
Conditions	Administrator should be authenticated
Normal scenario	• the admin requests the form of adding client • the admin full the labels • the admin valid the save of data • the system adds a new client

Tab 3: delete client user case description.

Title	Delete Client
Actor	Administrator
Goal	Allow the administrator to delete a client
Conditions	Administrator should be authenticated
Normal scenario	• the admin requests the form of deleting client • the admin selects a client • the admin valid the delete of the client • the system deletes the client

Tab 4: modify client user case description.

Title	modify Client
Actor	Administrator
Goal	Allow the administrator to modify client's data
Conditions	Administrator should be authenticated and the target client selected
Normal scenario	• the admin requests the form of selecting client • the admin selects the client • the system access to client data form • the admin modifies the data labels • the admin valid the save of modification • the system modifies the client data

1.4 manage fridge use case diagram

Figure below presents the manage fidges use case diagram. Here's the administrator Pass in the first with the manage clients process to be accessable to manage fridges and of course to manage clients, the admin should authenticate first be authenticated .

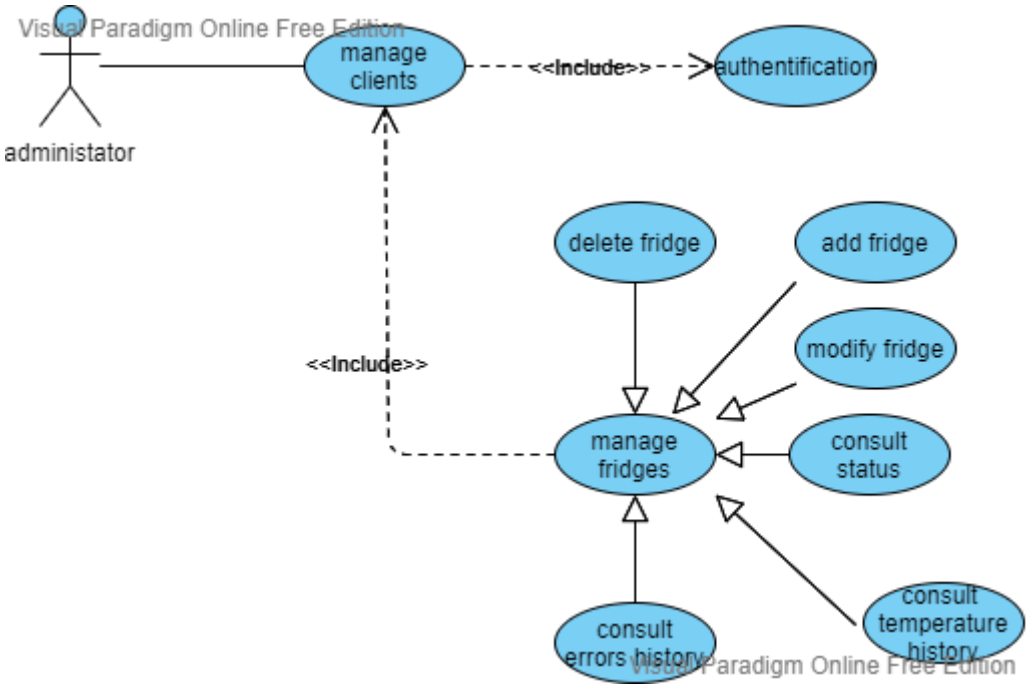


Figure 5: manage fridges use case diagram.

1.5 manage fridges use case descriptions

Here's the attended scenarios:

Tab 5: add fridge use case diagram description.

Title	Add Fridge
Actor	Administrator
Goal	Allow the administrator to add a new fridge
Conditions	Administrator should be authenticated and client selected
Normal scenario	• the admin requests the form of adding a fridge • the admin full the labels • the admin valid the save of data • the system adds a new fridge to the targeted client

Tab 6: delete fridge use case description.

Title	Delete Fridge
Actor	Administrator
Goal	Allow the administrator to delete a fridge
Conditions	Administrator should be authenticated and client selected
Normal scenario	• the admin request the form of deleting a fridge • the admin select a fridge • the admin valid the delete of the fridge • the system delete the fridge of the targeted client

Tab 7: modify fridge use case description.

Title	Modify fridge
Actor	Administrator
Goal	Allow the administrator to modify a fridge's data
Conditions	Administrator should be authenticated the target client selected and the targeted fridge seleted
Normal scenario	• the admin requests the form of selecting fridge • the admin selects the fridge • the system access to fridge data form • the admin modifies the data labels • the admin valid the save of modification • the system modifies the data of the selected fridge of the preselected client

Tab 8: consult errors history use case description .

Title	Consult Errors History
Actor	Administrator
Goal	Allow the administrator to consult the history of errors
Conditions	Administrator should be authenticated the target client selected and the targeted fridge seleted
Normal scenario	• the admin request the form of errors history • the system access to errors history form • the admin close the popup form when he finishes

Tab 9: consult temperature history use case description.

Title	Consult temperature History
Actor	Administrator
Goal	Allow the administrator to consult the history of temperature
Conditions	Administrator should be authenticated the target client selected and the targeted fridge seleted
Normal scenario	• the admin request the form of temperature history • the system access to temperature history form • the admin close the popup form when he finishes

1.6 consult fridges status use case diagram

The consult stage is a sub functionality of the manage fridges. this one is vast one that should be divided into consulting : the temperature status, door status, current status…

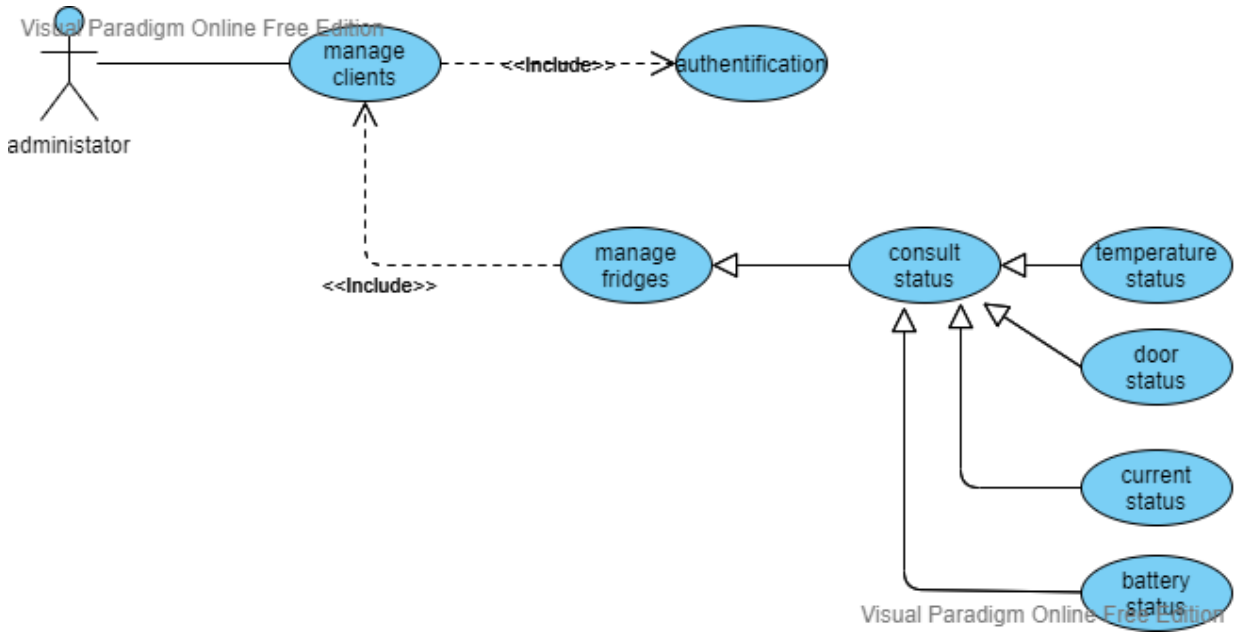


Figure 6: consult fridges status user case diagram

1.7 consult fridges status use case descriptions

Tab 10: consult temperature status use case description.

Title	Consult temperature status
Actor	Administrator
Goal	Allow the administrator to consult the realtime temperature
Conditions	Administrator should be authenticated the target client selected and the targeted fridge seleted
Normal scenario	• the admin request the realtime data • the system access to the realtime data‘s consultation page

Tab 11: consult battery status use case description.

Title	Consult battery status
Actor	Administrator
Goal	Allow the administrator to consult the realtime battery status
Conditions	Administrator should be authenticated the target client selected and the targeted fridge seleted
Normal scenario	• the admin request the realtime data • the system access to the realtime data‘s consultation page

Tab 12: consult door status use case description.

Title	Consult door status
Actor	Administrator
Goal	Allow the administrator to consult the realtime door status
Conditions	Administrator should be authenticated the target client selected and the targeted fridge seleted
Normal scenario	• the admin request the realtime data • the system access to the realtime data‘s consultation page

Tab 13: consult current status use case description.

Title	Consult current status
Actor	Administrator
Goal	Allow the administrator to consult the realtime current status
Conditions	Administrator should be authenticated the target client selected and the targeted fridge seleted
Normal scenario	• the admin request the realtime data • the system access to the realtime data‘s consultation page

1.8 consult errors notifications diagram

Getting notifications a simple use case that depends on the authentication status only

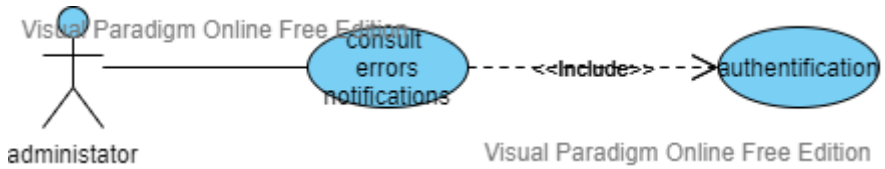


Figure 7: manage fridges user case diagram

1.9 consult fridges status use case descriptions

Tab 14: consult error notification use case description.

Title	Consult errors notifications
Actor	Administrator
Goal	Allow the administrator to get notification about the errors
Conditions	Administrator should be authenticated the target client selected and the targeted fridge seleted
Normal scenario	• the admin authenticate • the system access to the dashboard page • admin gets a notification about the errors

2 Sequence diagrams

The sequence diagram is part of the behavior diagrams(dynamic) and more specifically interaction diagrams. It makes it possible to present exchanges between the different objects and actors of the system as a function of time

2.1 authentication sequence diagram

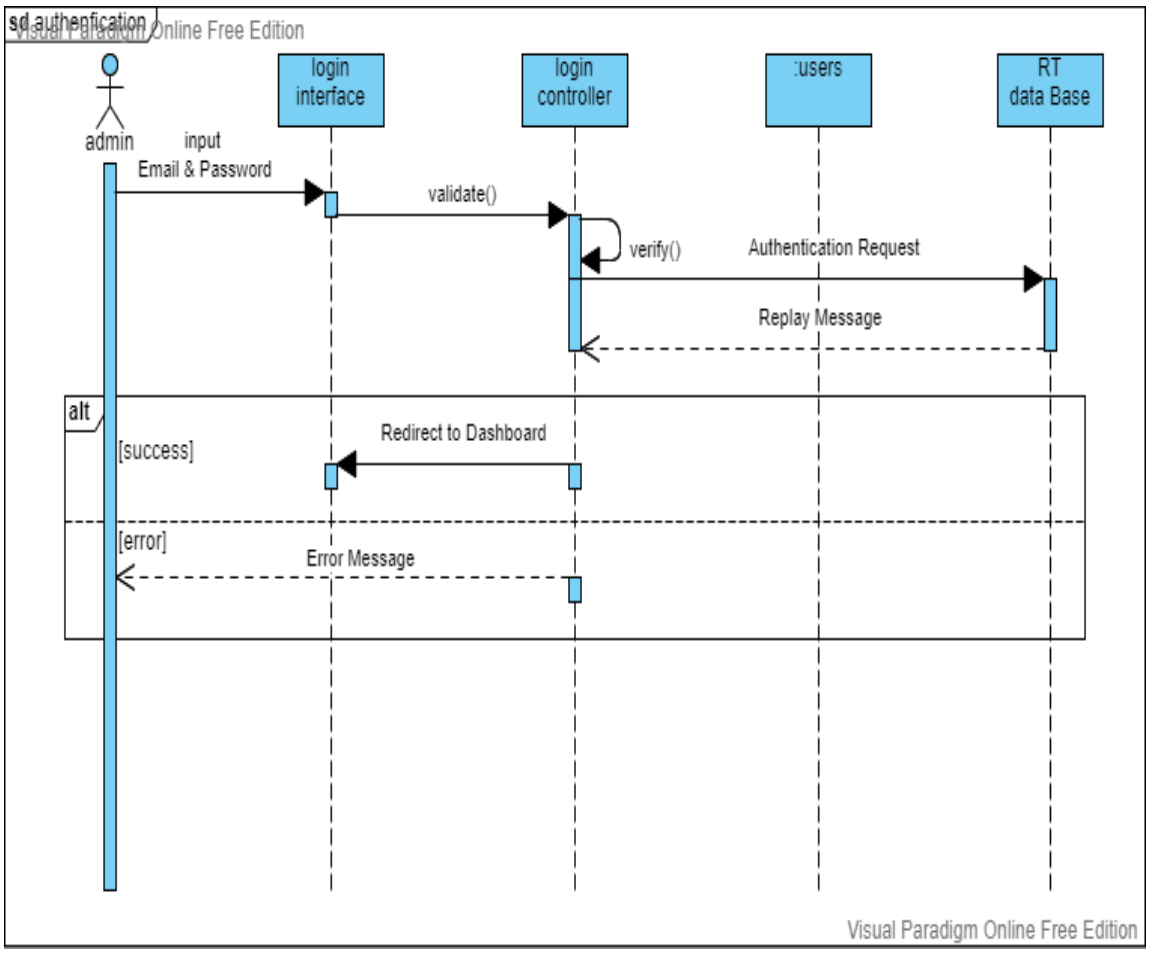


Figure 8 : authentication sequence diagram.

2.2 select client sequence diagram

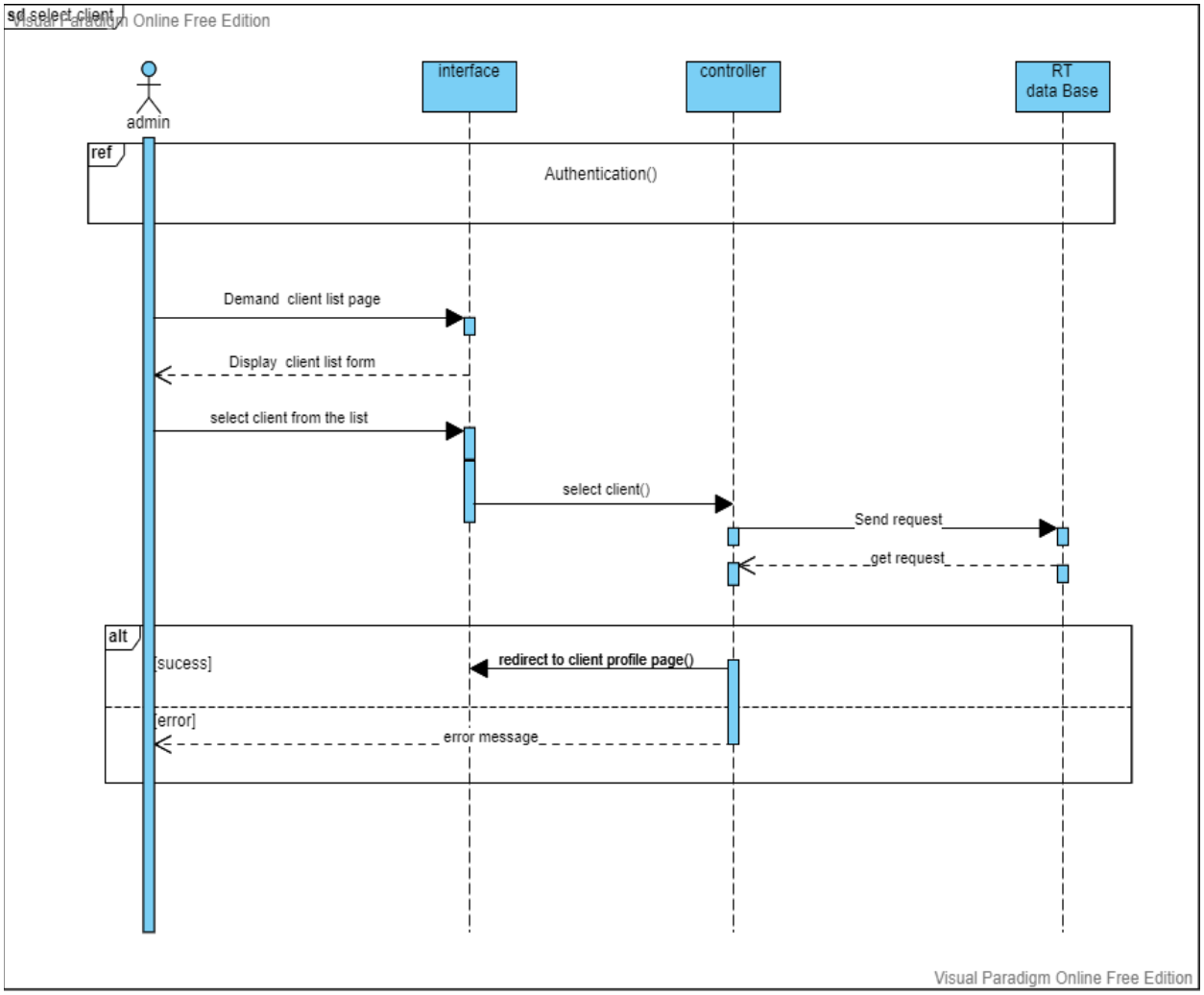


Figure 9: select client sequence diagram.

2.3 select fridge sequence diagram

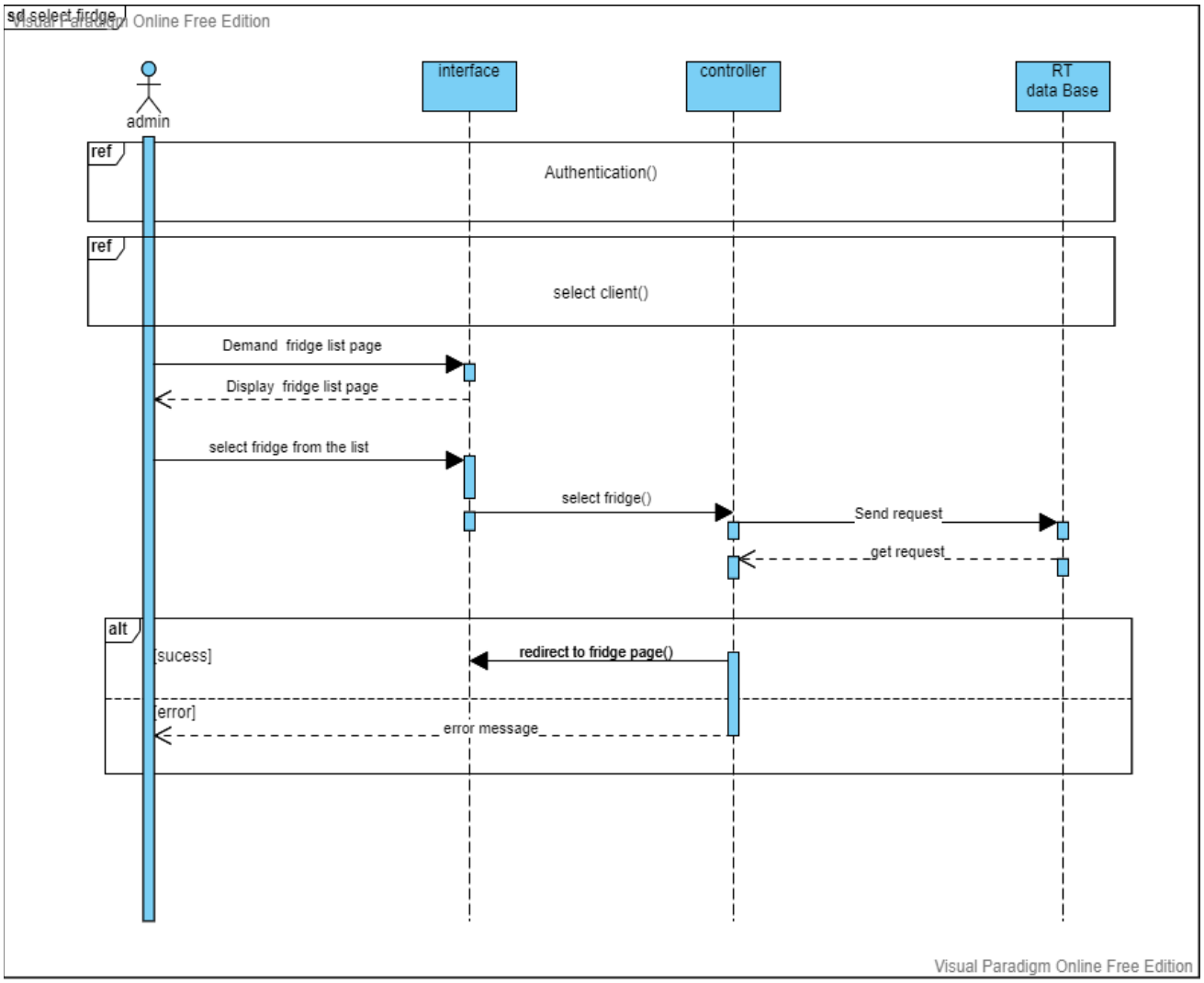


Figure 10 : select fridge sequence diagram.

2.4 add client sequence diagram

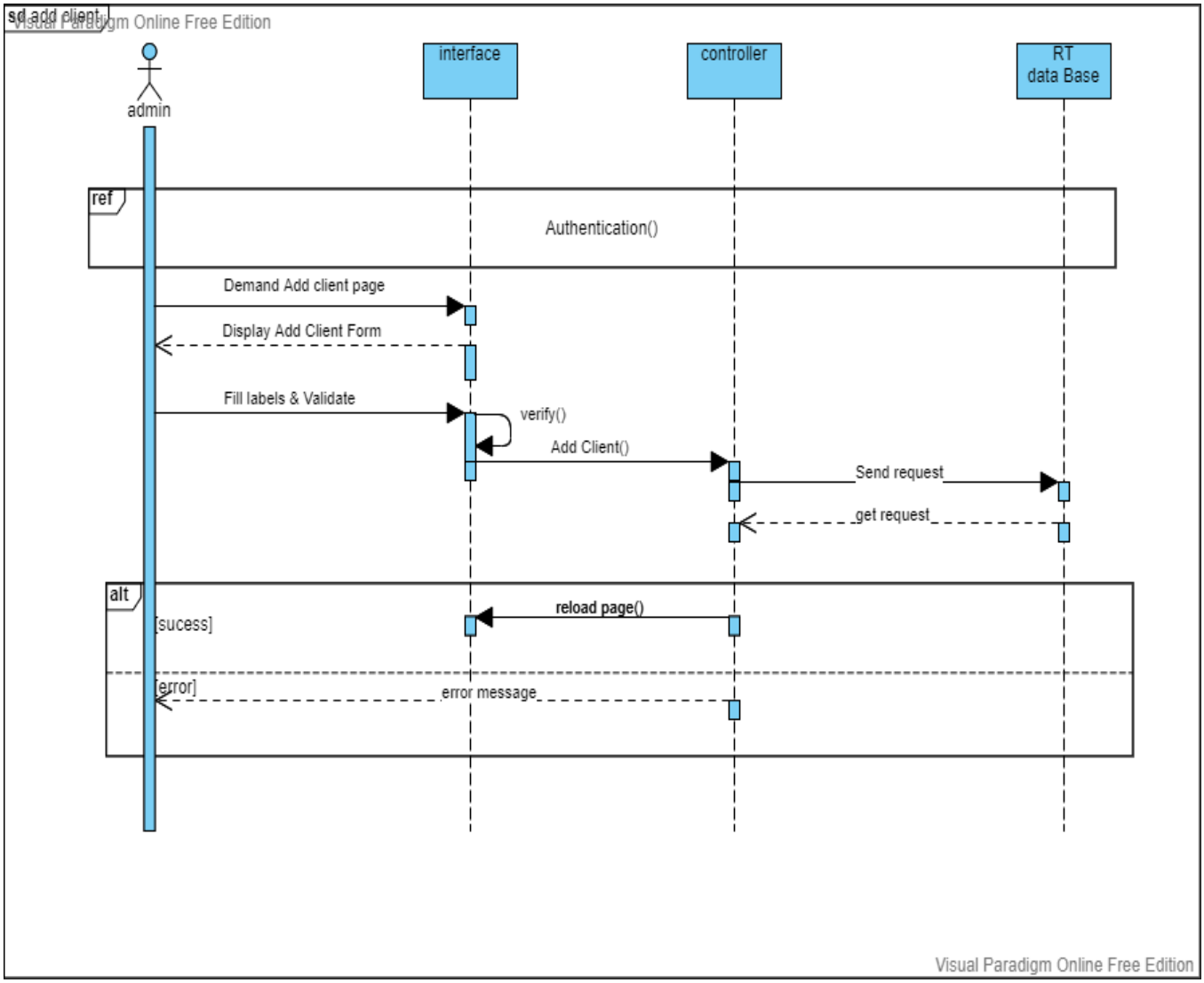


Figure 11 : add client sequence diagram .

2.5 delete client sequence diagram

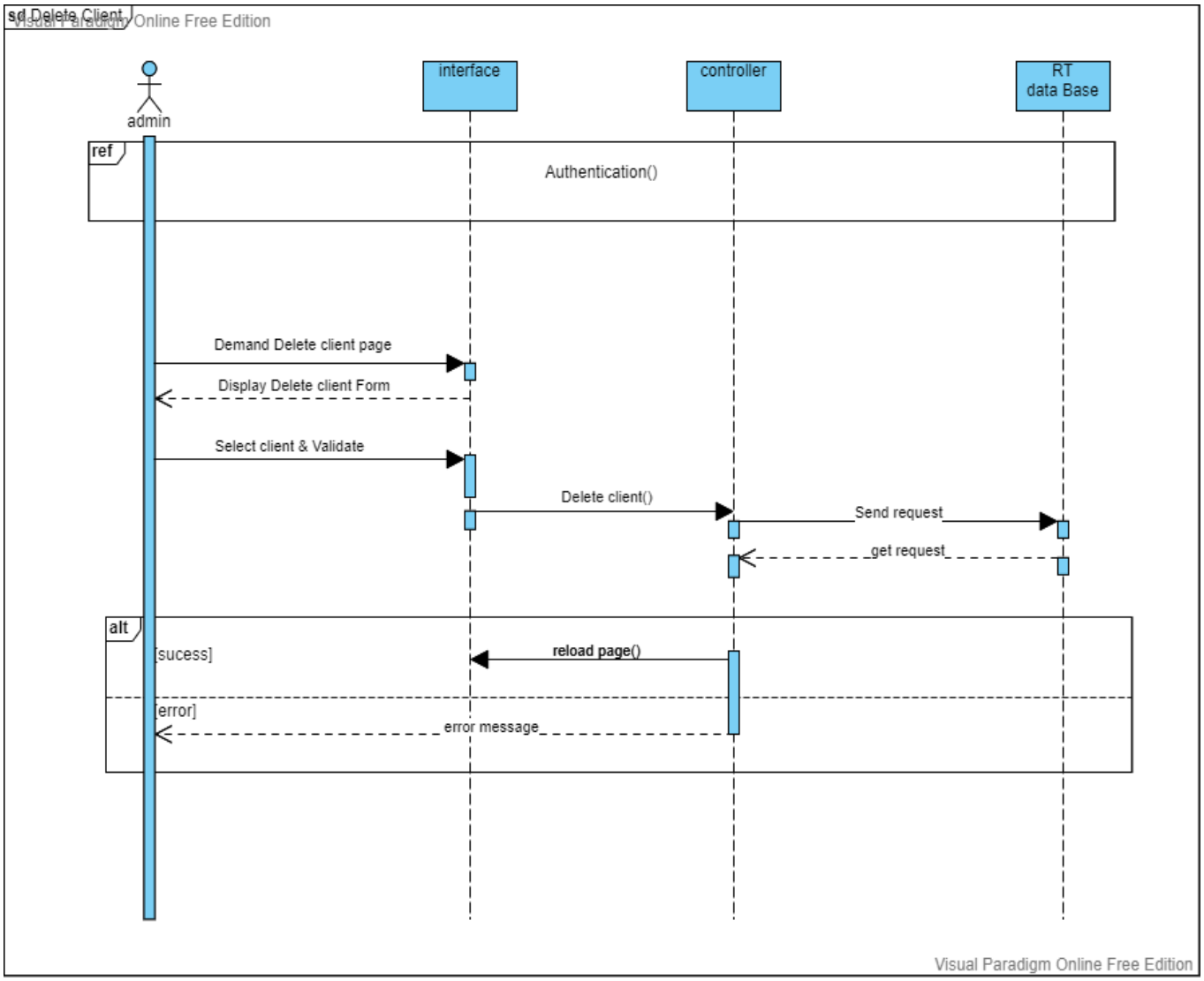


Figure 12: delete client sequence diagram.

2.6 modify client sequence diagram

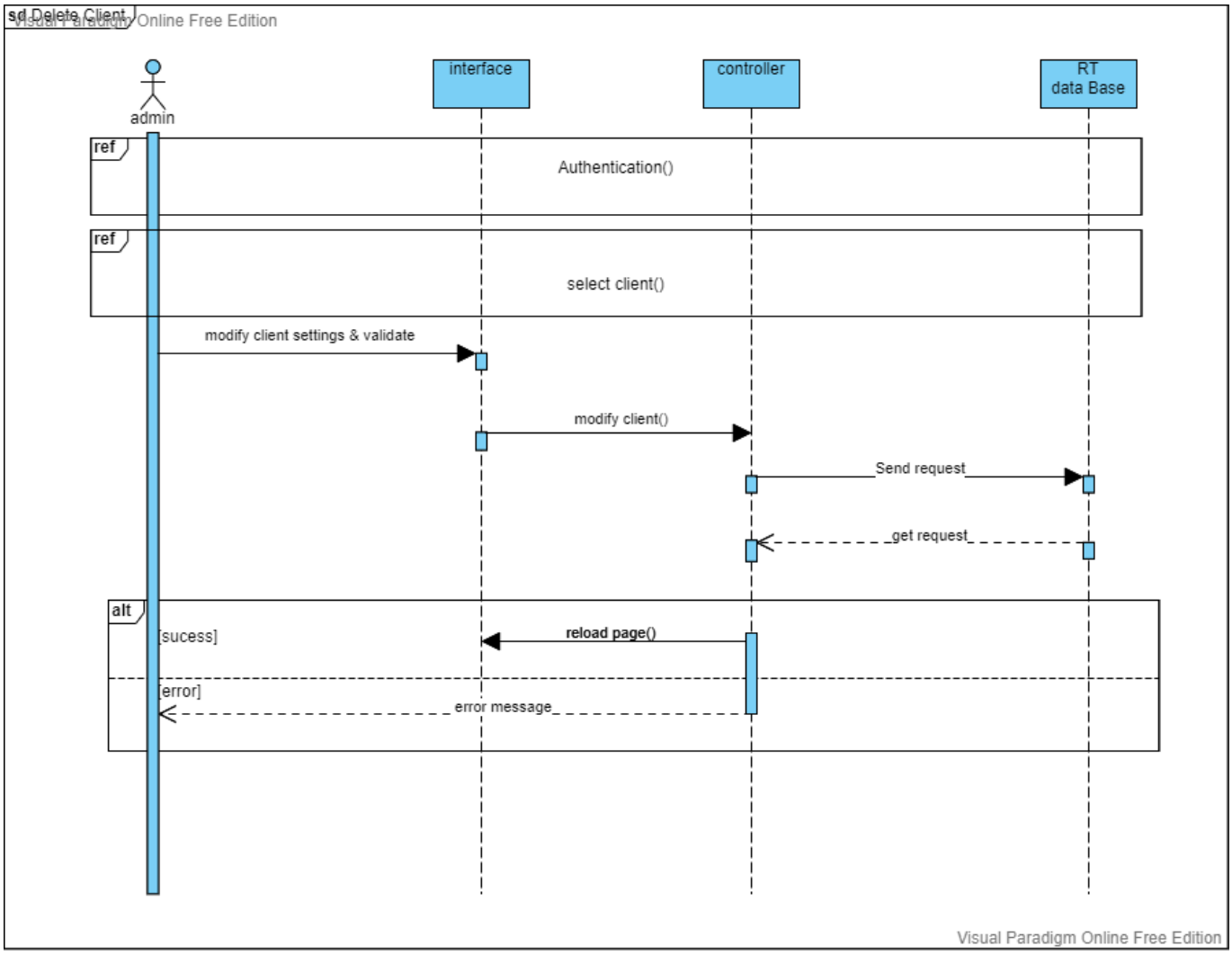


Figure x: modify client sequence diagram.

2.7 add fridge sequence diagram

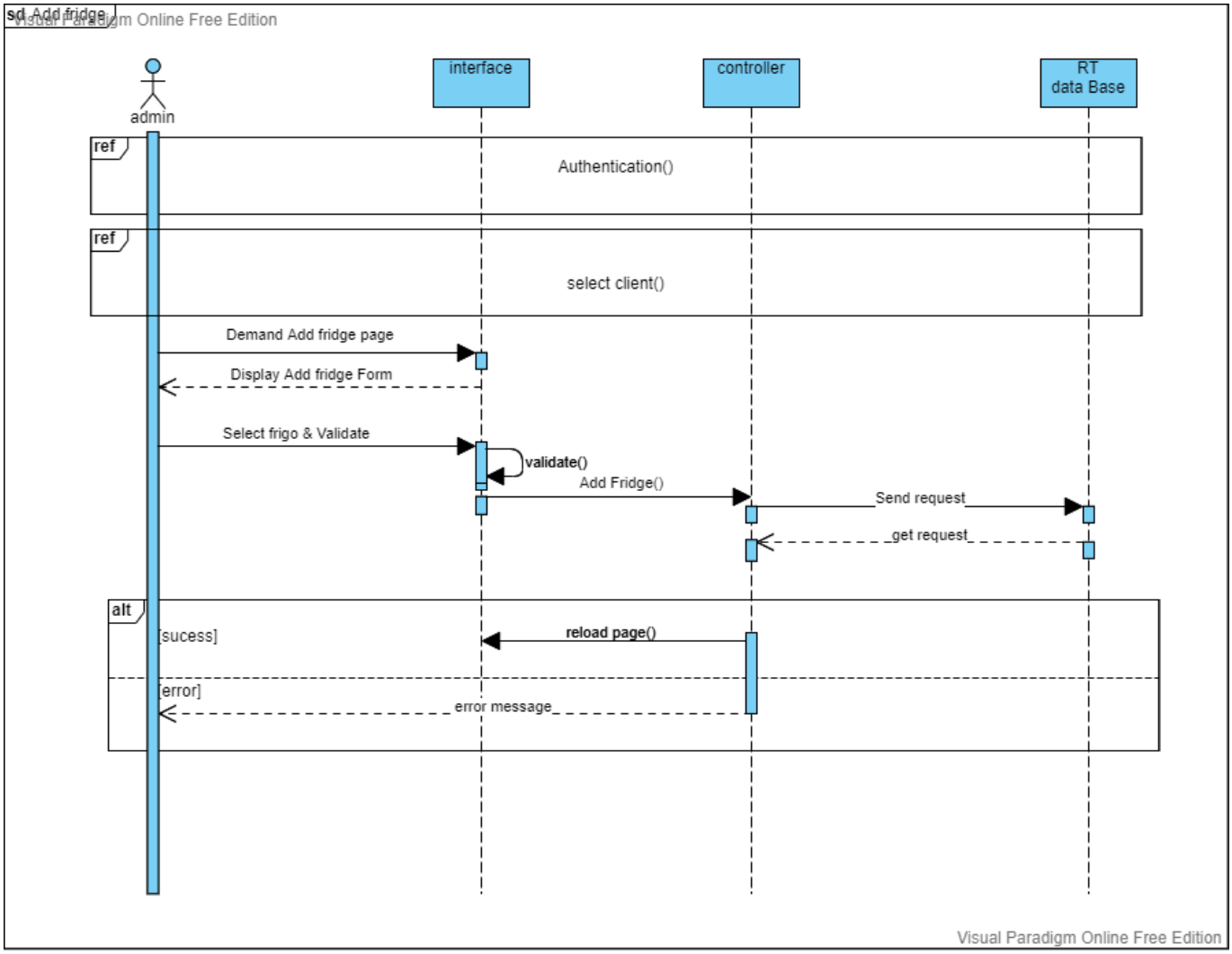


Figure 13: add fridge sequence diagram.

2.8 delete fridge sequence diagram

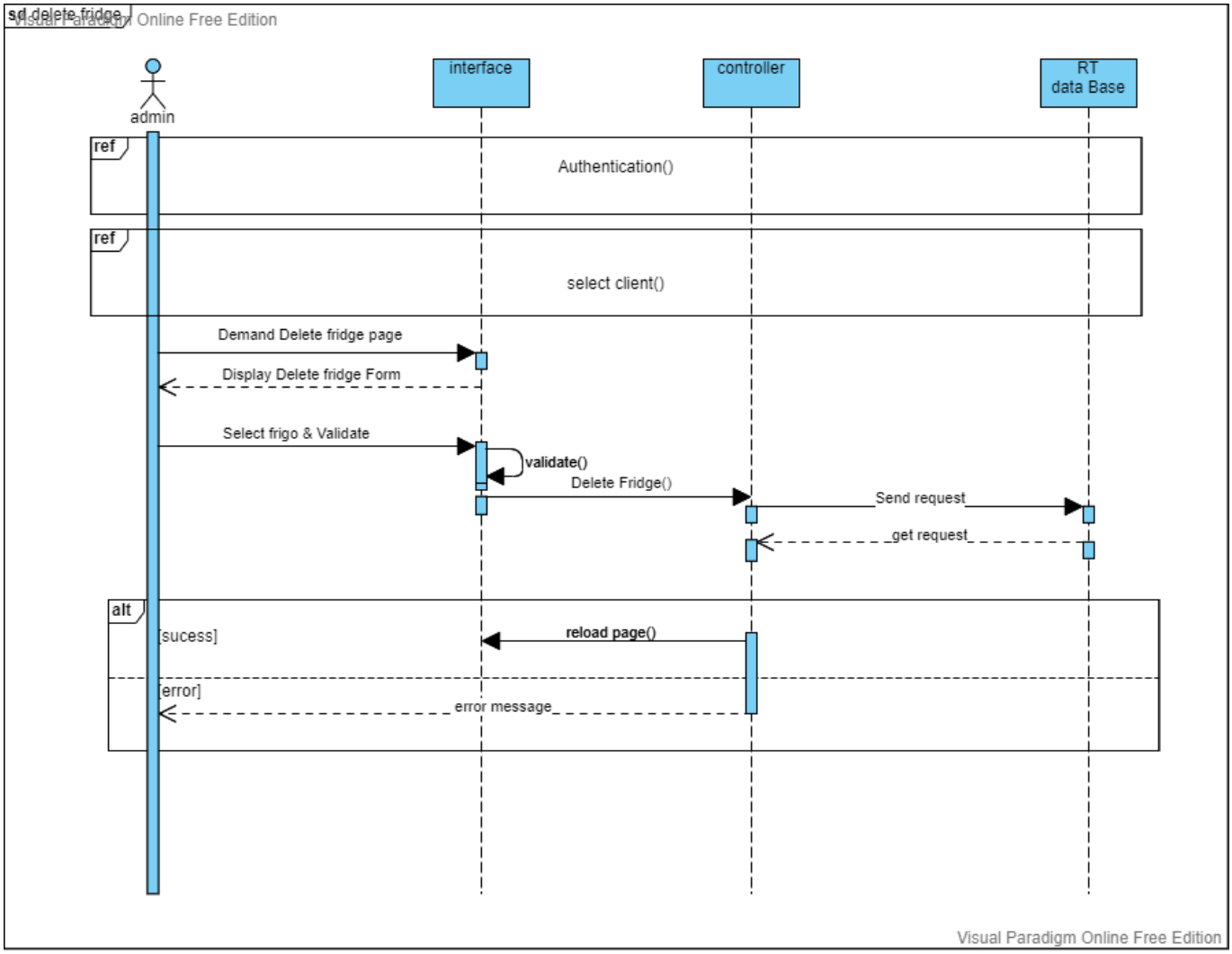


Figure 14: delete fridge sequence diagram.

2.9 modify fridge sequence diagram

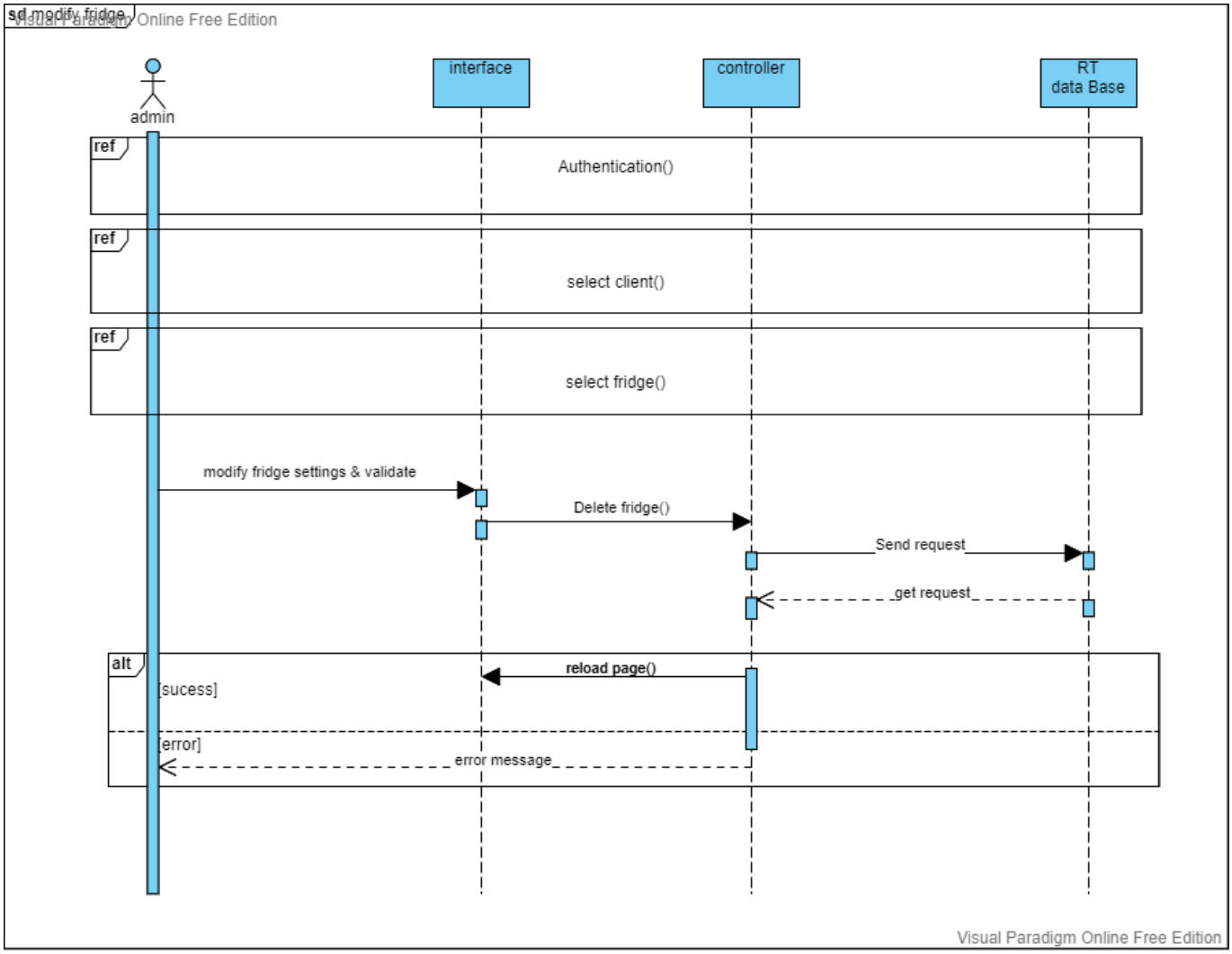


Figure 15 : modify fridge sequence diagram.

2.10 consult fridge errors history sequence diagram

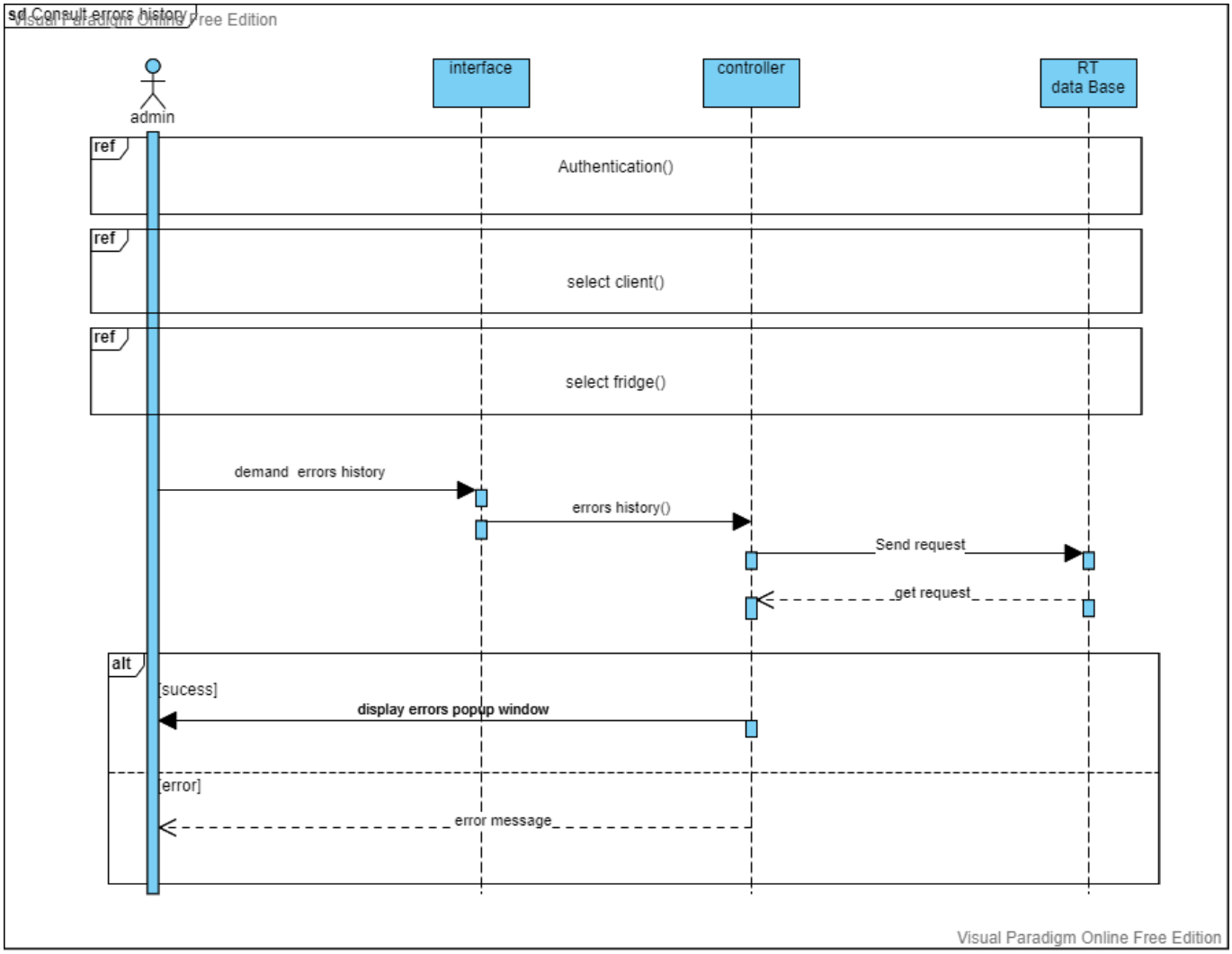


Figure 16 : consult errors history sequence diagram.

2.11 consult fridge temperature history sequence diagram

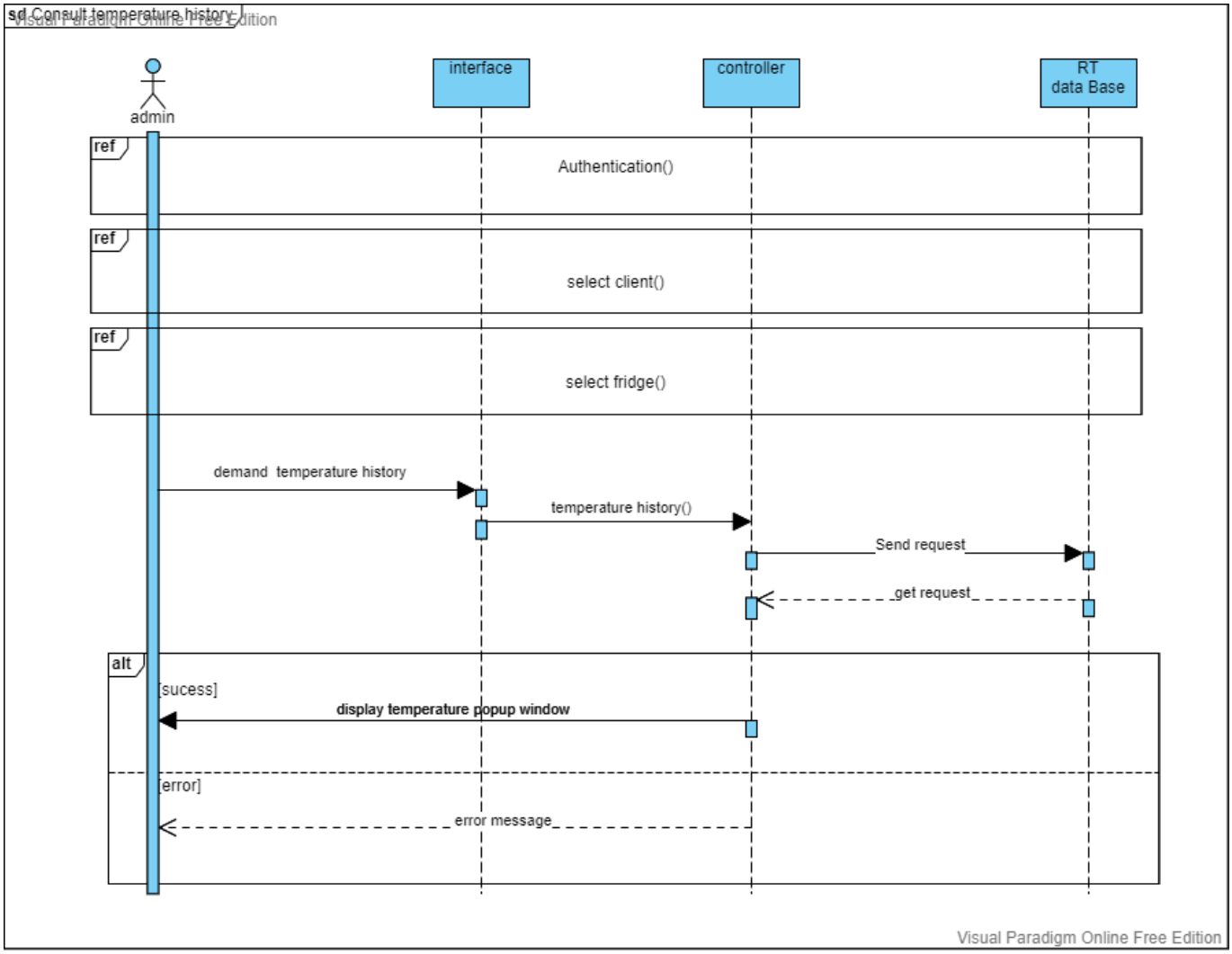


Figure 19 : consult temperature history sequence diagram.

2.12 consult fridge status sequence diagram

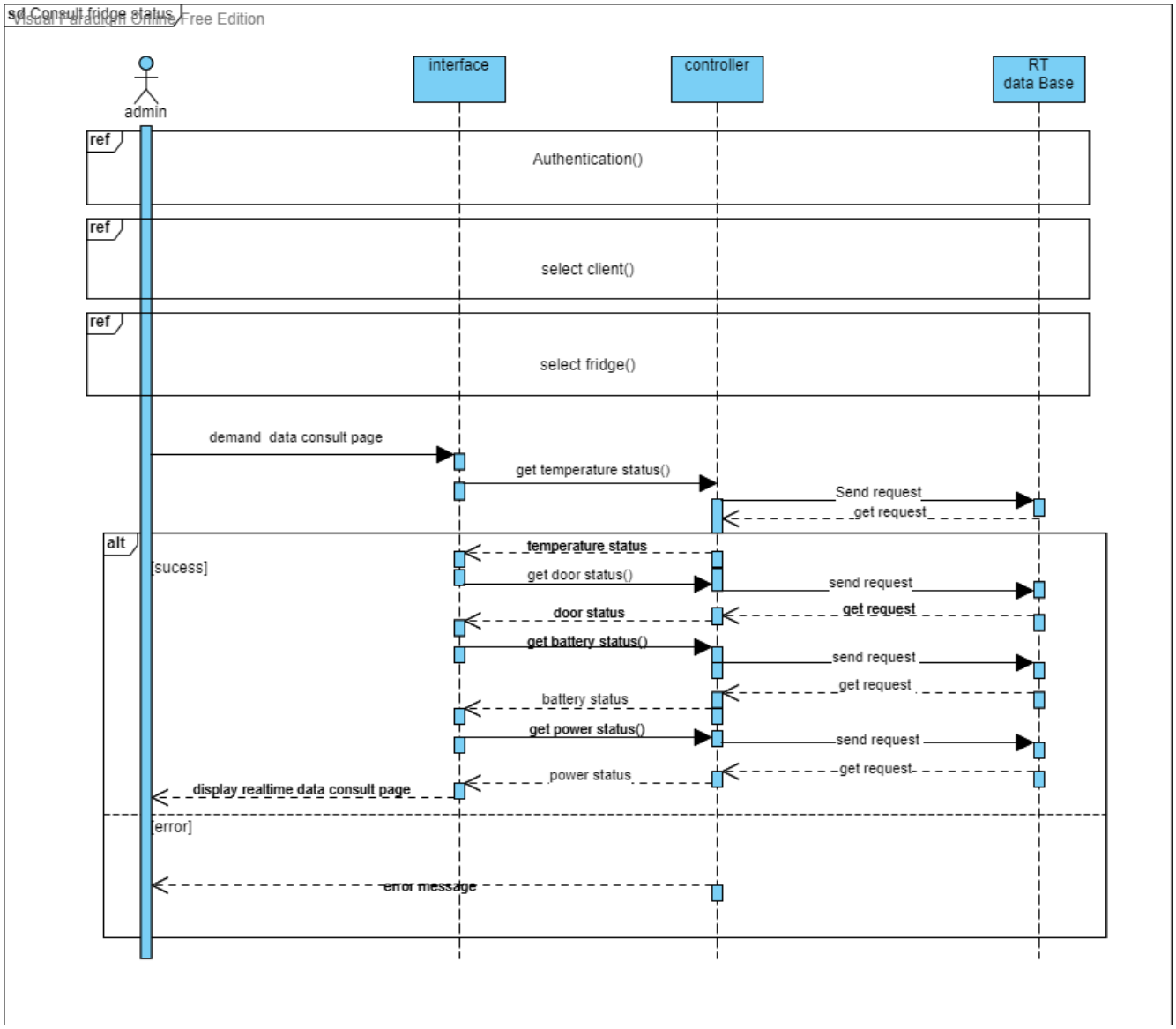


Figure 18: consult fridge status sequence diagram.

2.13 consult errors notification sequence diagram

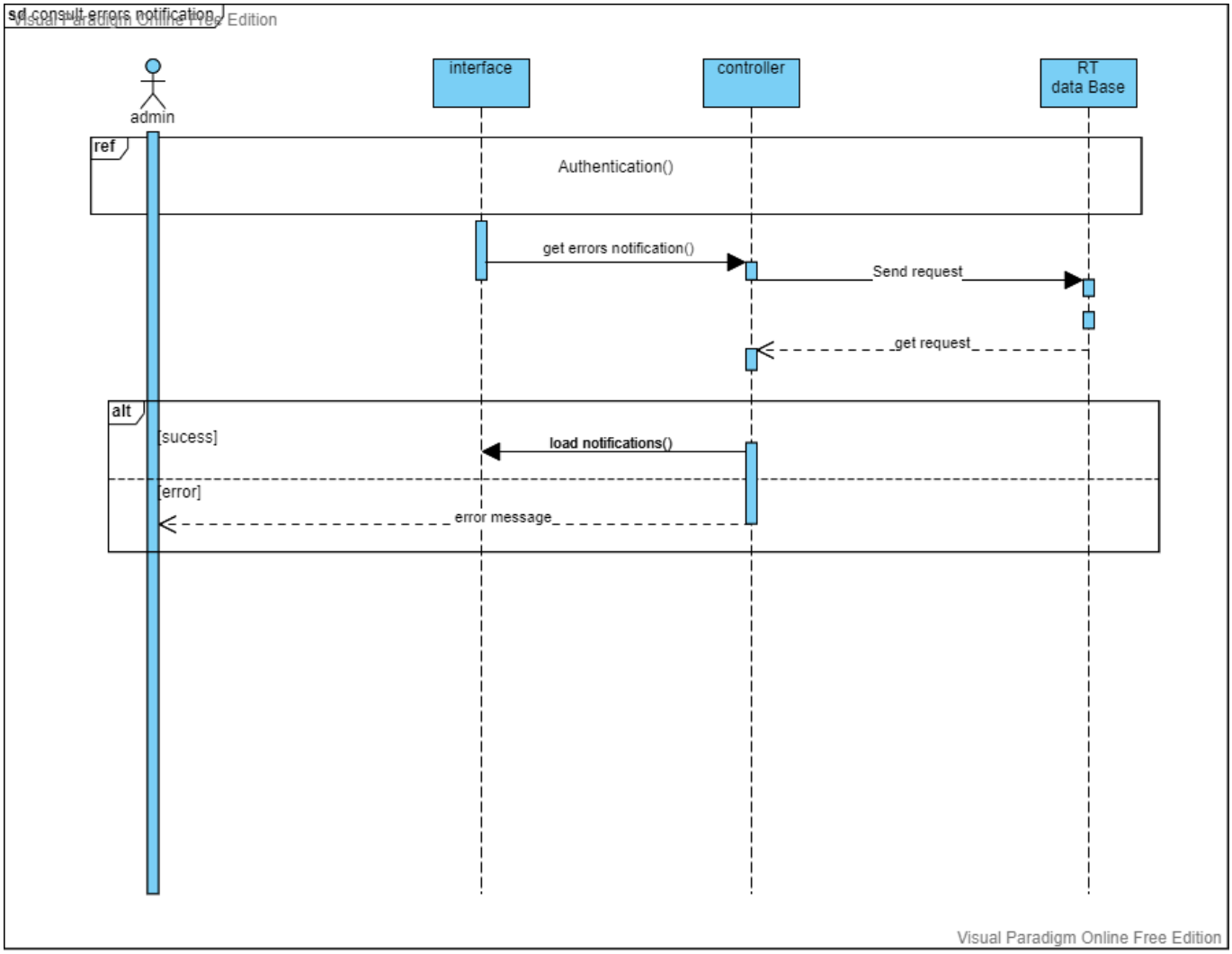


Figure 19: consult errors notification sequence diagram.

3 Class diagram

Class diagram is one of the most important types of UML diagrams because it clearly describe the structure of a particular system by modeling its classes, attributes, operations, and relationships between its objects.

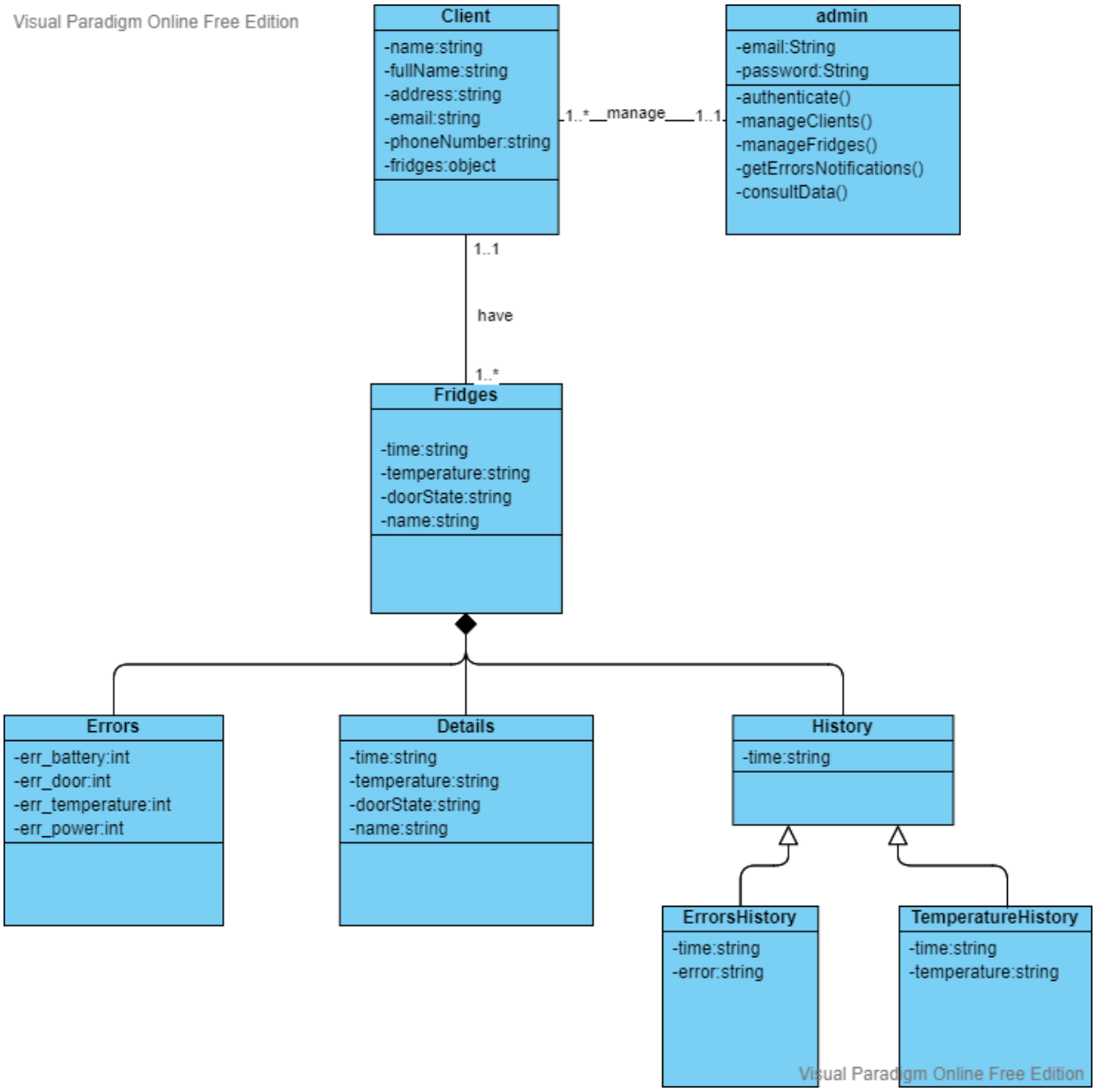


Figure 20: global class diagram .

Our class diagram is composed from 8 classes:
• Administrator: this class defines the administrator, its properties and functionalities.
• Client: presents the clients that the administrator can manage
• Fridges: presents the fridges that every client own and the mother class of Errors, Details, History
• Errors: determinates the errors that can happen in a fridge and one of the constitute of fridge's class
• Details: determinates all the detail about a fridge and one of the constitute of fridge's class
• History: determinates the history's data of a fridge and one of the constitute of fridge's class
• ErrorsHistory: defines the errors' history and inherits History class
• TemperatureHistory: defines the Temperature's history and inherits History class

Conclusion

The detailed design phase provides a good understanding of the different components of our project. The importance of these designs is about the ability of making a good idea about project and changing, handling functionalities with low costs and less time in the development cycle

In the following chapter, we're going to present the stages of realization which enabled us to pass to a functional structuring of the project.

Chapter 4 :

REALIZATION

Introduction

In this chapter, we're going to present in a first place, the technologies used for the realization of the project: the hardware environment and the software environment . In a second part, we're going to present the different interfaces of the web app discuss about the components of each one.

1 Used Technologies

1.1 Hardware Environment:

For the realization of our platform dashboard, I've used a machine with the following characteristics:

Characteristic	PC
Processor	Intel® Core™ i5-3210M CPU @2.5GHz 2.5GHz
Memory	8,00 GO
Hard drive	1000 GO

Tab 15: hardware environment

1.2 Software Environment:

Frameworks	Description	Functionality
	• Hyper Text Markup Language, a markup language used in the web. • affords the structuration of a web page and shape it with the help of tags. •it helps to create multiplatform pages.	structure the web page

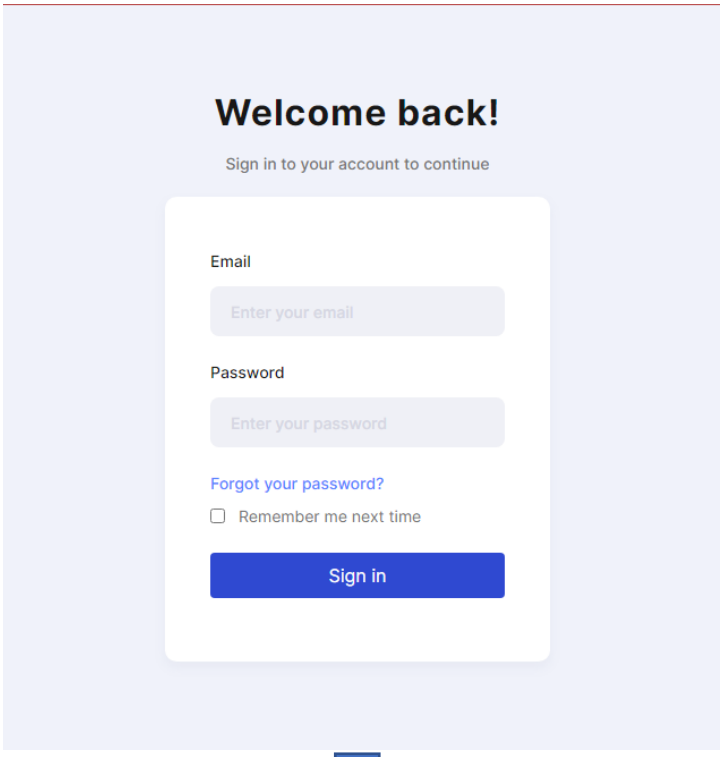
	• Cascading Style Sheets, it's a styling language used mainly in web pages •it helps to design, animate, create, …	styling the layout of web pages
	• Feathers is a lightweight web-framework for creating real-time applications and REST APIs using JavaScript •we have the ability to benefit from the front-end pre-defined features that feather provides	Design the app
	•Java Script is the most popular programing language in the world of the field of the web •it gives the dynamic effects to the web pages and used as the front-end language	Control the page and handle dynamic effects
	• Chart.js is an free JavaScript library for making HTML-based charts • it's going to allow us to make and handle the chart needed in the project	Make and handle charts
	• it's an SDK integrated for web that allow us to use java script as our backend programing language to interact with our real time data base.	Allow us to interact our data base

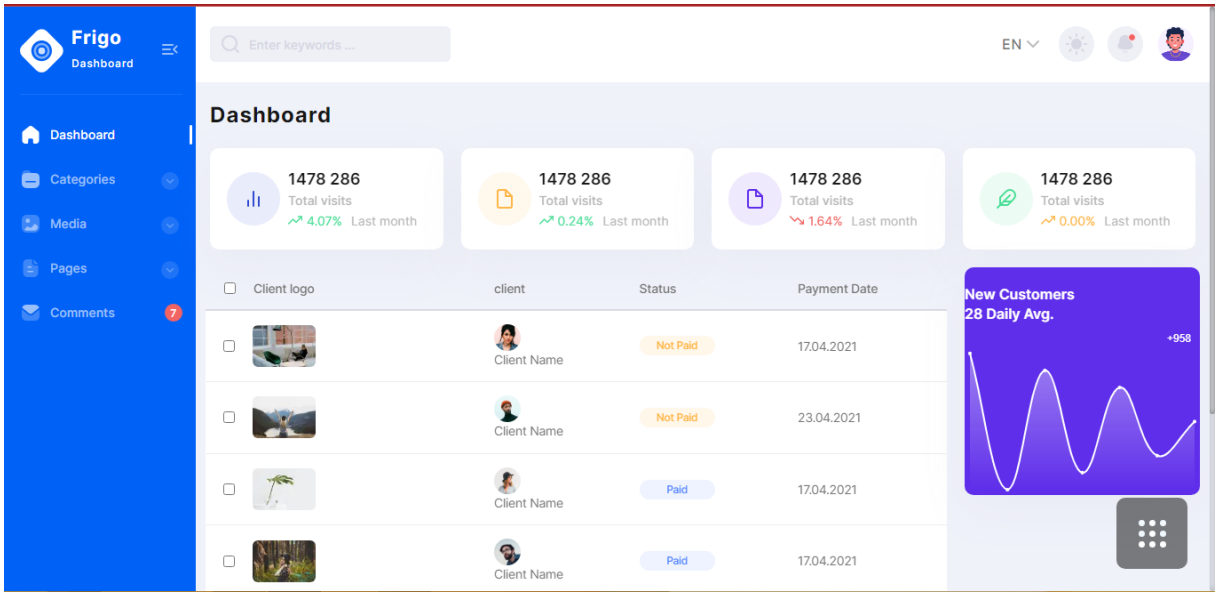
	•a non SQL data base used to stock our data in form the embedded part then to grab data from it	main data base
 	• web pack is a module bundler, Its main purpose is to bundle JavaScript files for usage in a browser • Node.js is a free software platform in JavaScript, oriented towards highly concurrent event-based network applications that must be able to scale	download needed libraries and bundle source js files

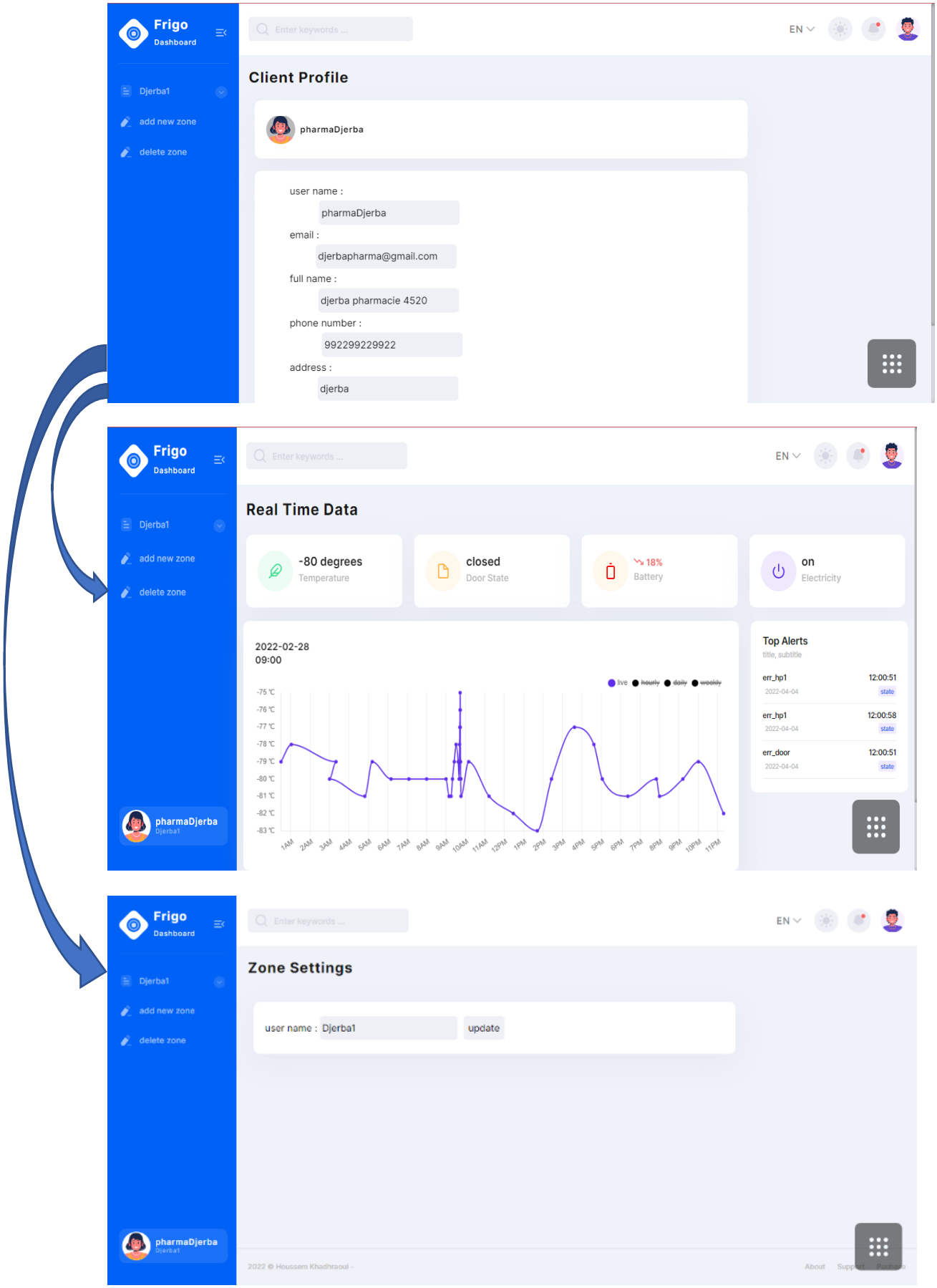
Tab 60: software environment

2 APP INTERFACES

2.1 Navigation:






Frigo
Dashboard
Djerba1
add new zone
delete zone
Client Profile
pharmaDjerba
user name :
pharmaDjerba
email :
djerbapharma@gmail.com
full name :
djerba pharmacie 4520
phone number :
992299229922
address :
djerba
Real Time Data
-80 degrees
Temperature
closed
Door State
18%
Battery
on
Electricity
2022-02-28
09:00
Top Alerts
err_hp1
12:00:51
err_hp1
12:00:58
err_door
12:00:51
Zone Settings
user name :
Djerba1
update

2.2 Login Page

The following figure shows the login page of our app. As much as it's simple but also elegant and attractive.

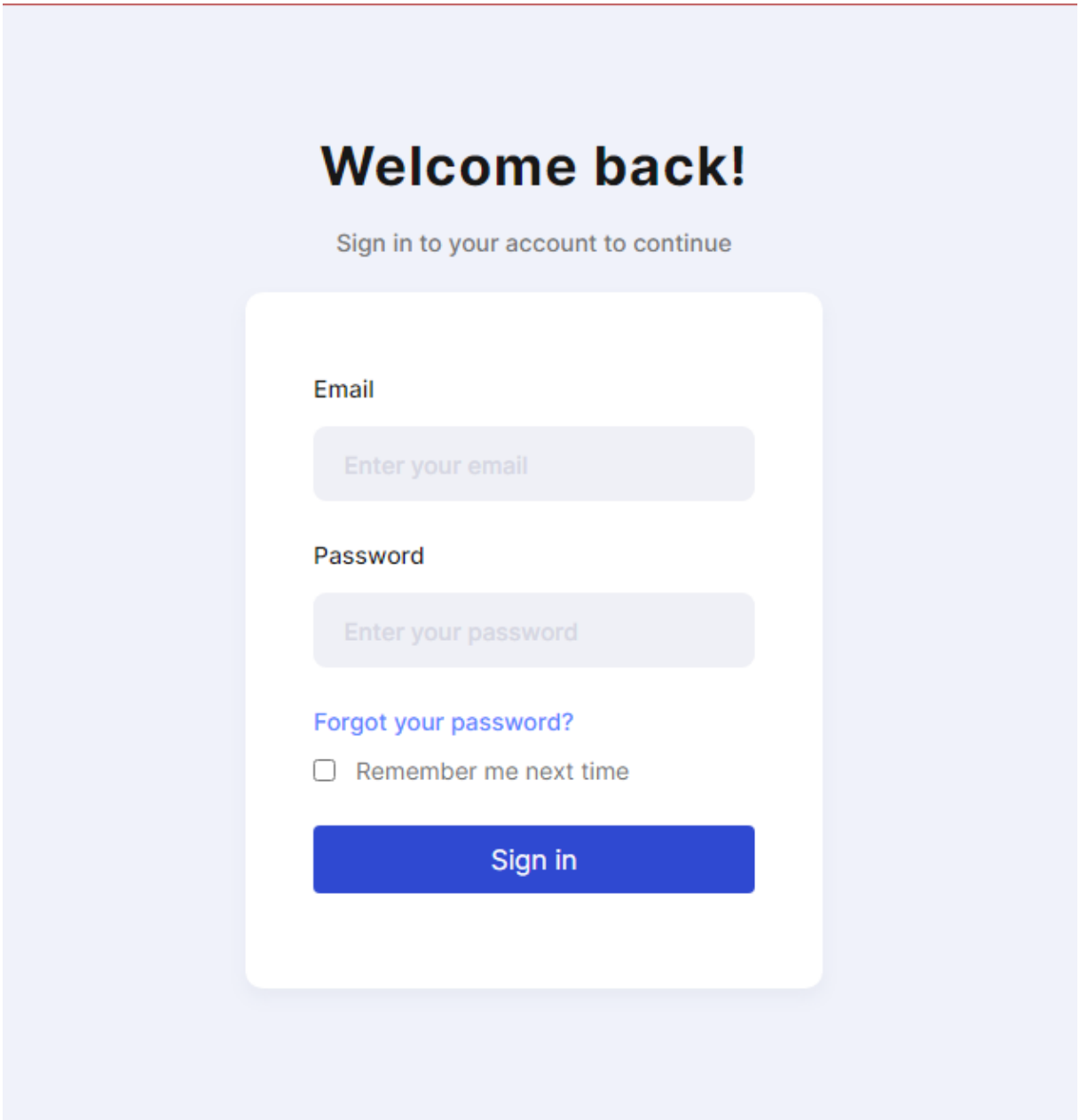


Figure 21: login interface.

2.3 Dashboard Home Page

The following figure shows the main page of our Dashboard website. It is distinguished by its simple ergonomics and clarity of content.

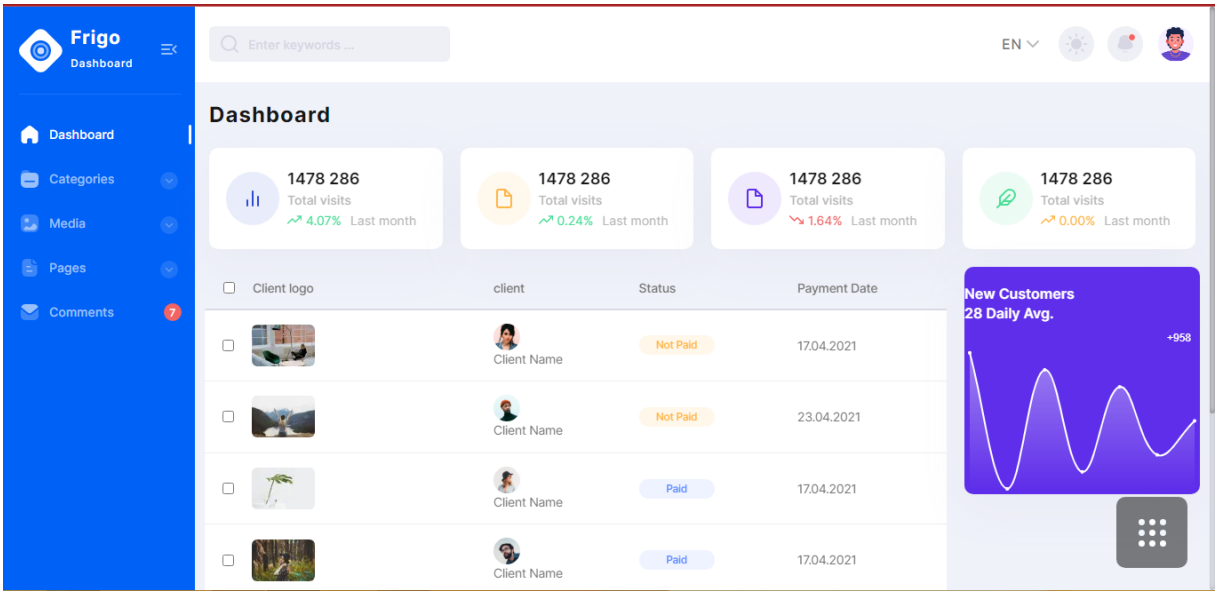


Figure 22: Dashboard Home Light version.

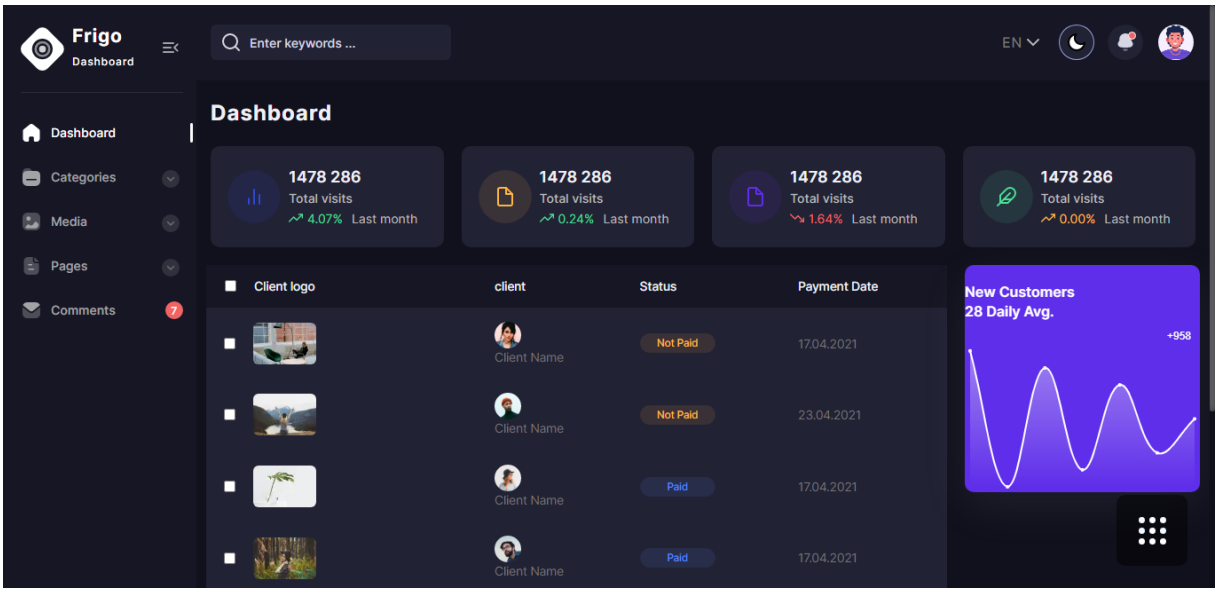


Figure 23: Dashboard Home Dark version.

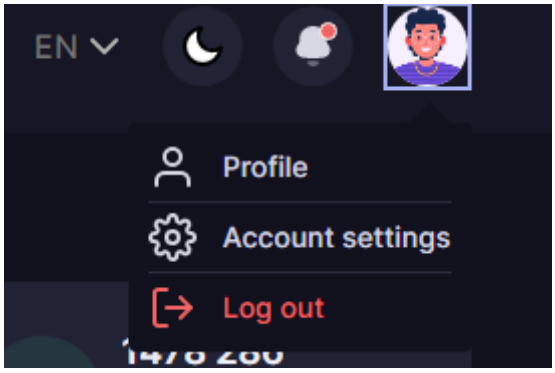


Figure 24: Administrator logout.

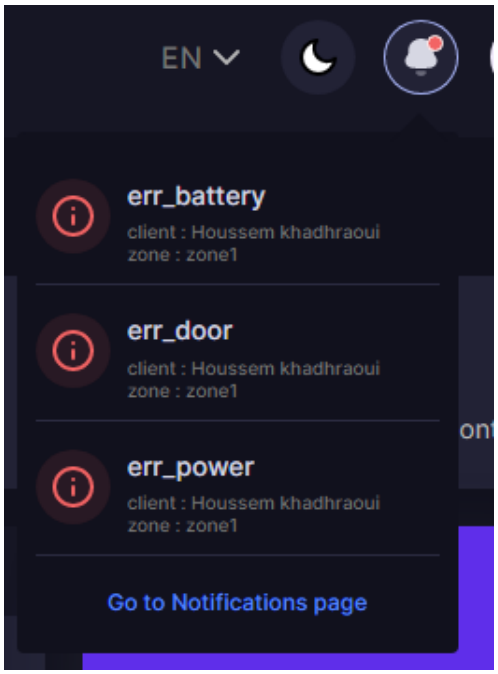


Figure 25: Getting Errors Notification.

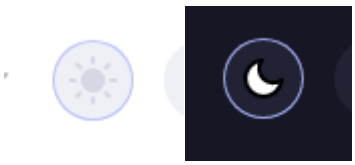


Figure 26: Toggle Light/Dark mode.

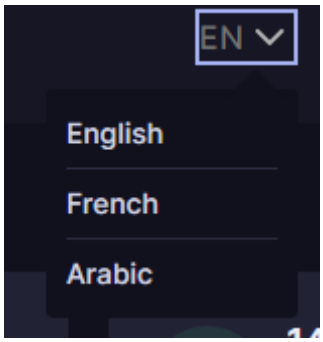


Figure 27: Language Toggling.

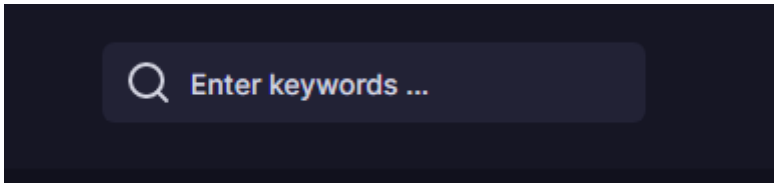


Figure 28: Search Bar.

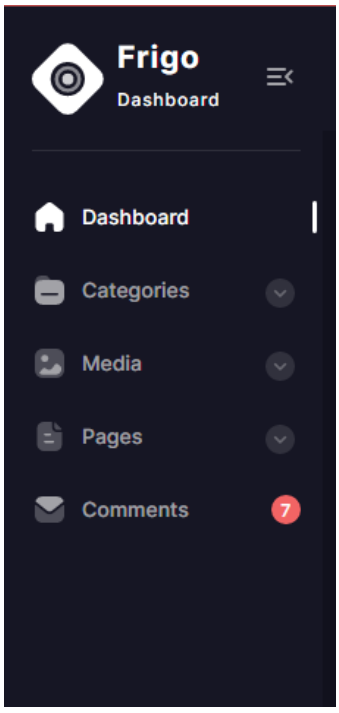


Figure 29: Sidebar Menu.

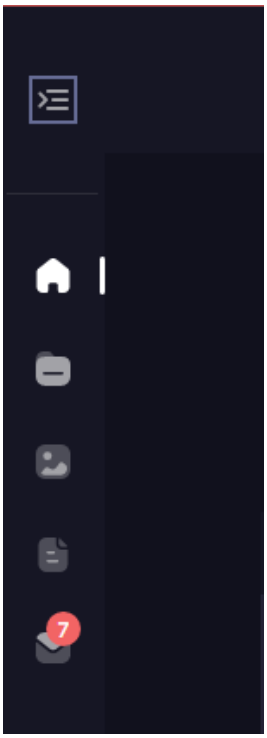


Figure 30: Minimalized Sidebar Menu.

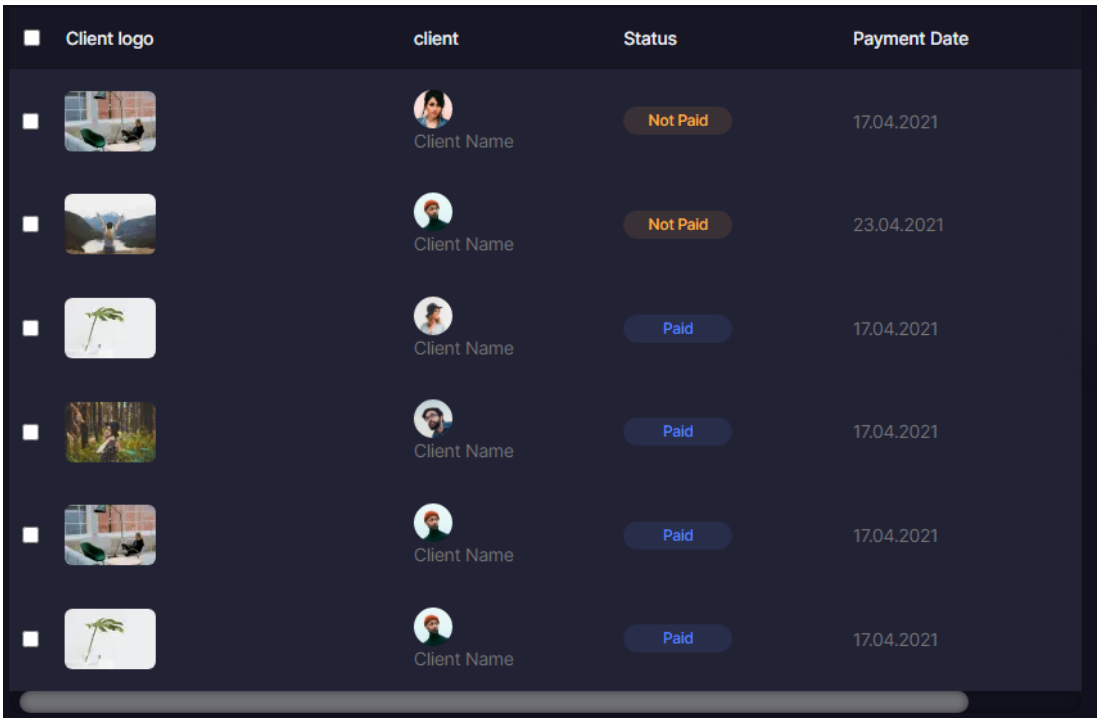


Figure 31: Payment Table.

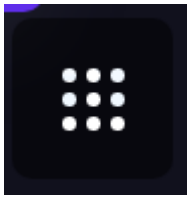


Figure 32: Navigation Menu.

Figure 33: Active Navigation Menu.

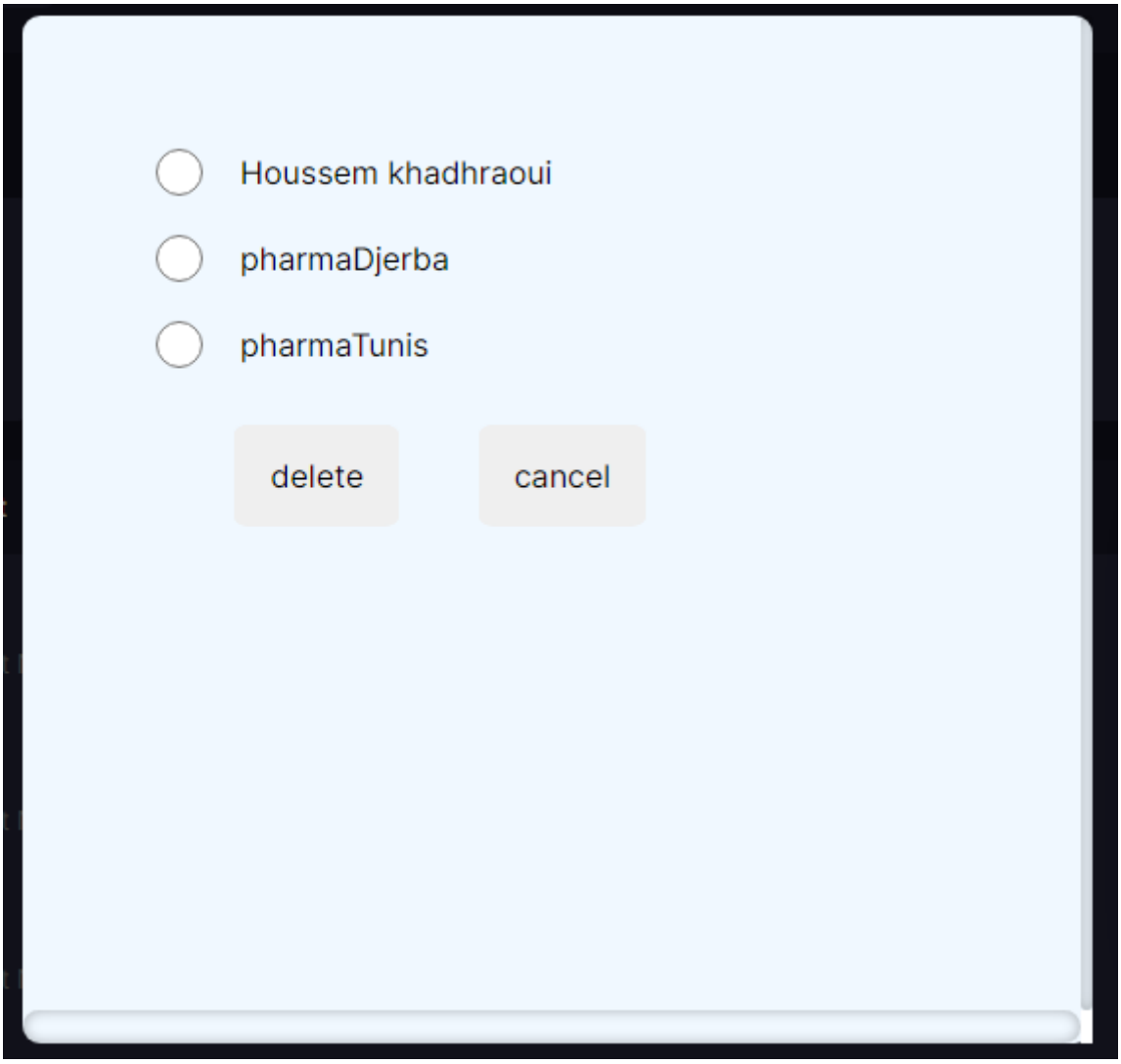


Figure 34: Delete client Popup Window.

Figure 35: Add New Client Popup Window.

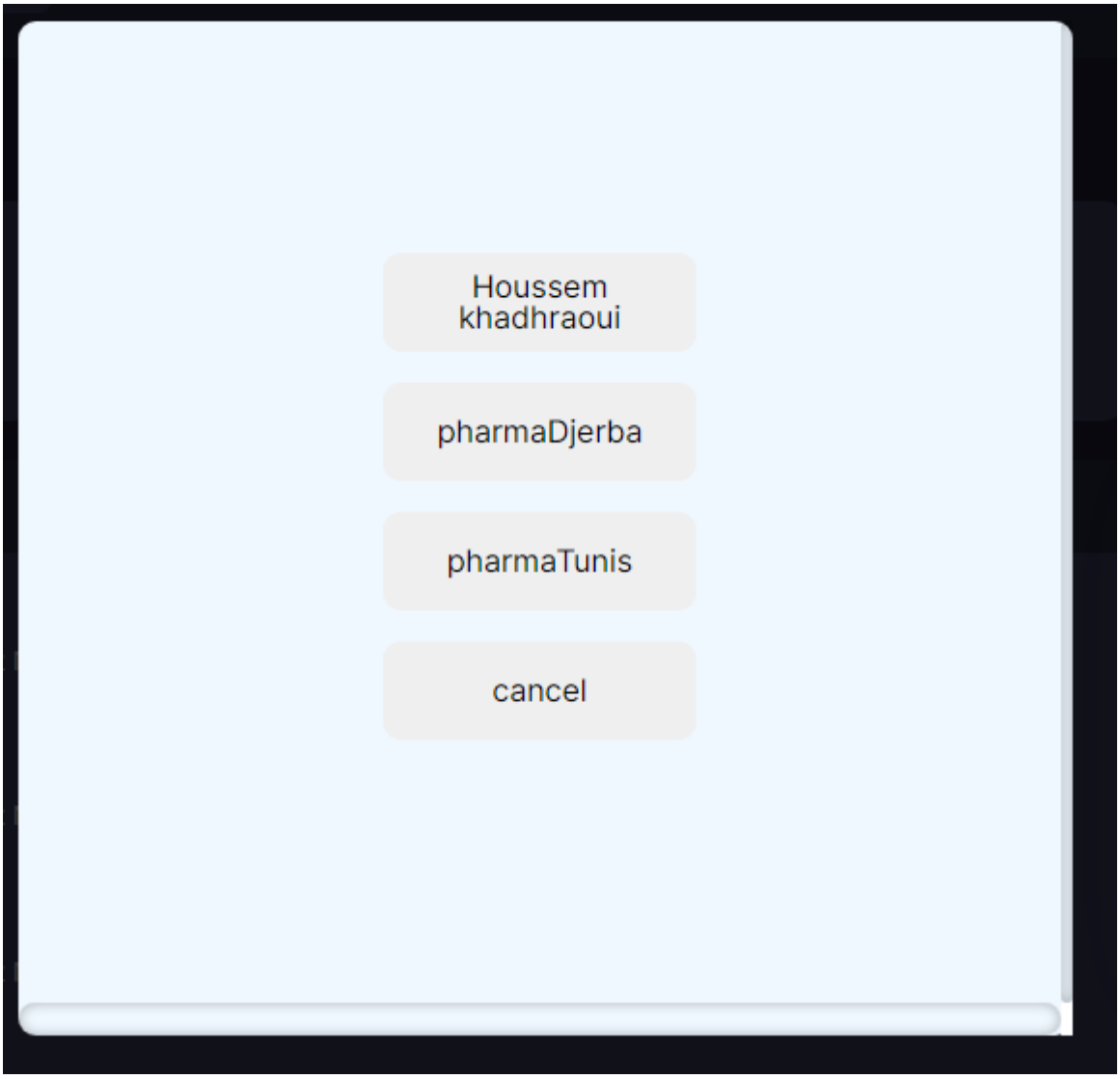


Figure 36: Select Client Popup Window.

2.4 Client Profile Page

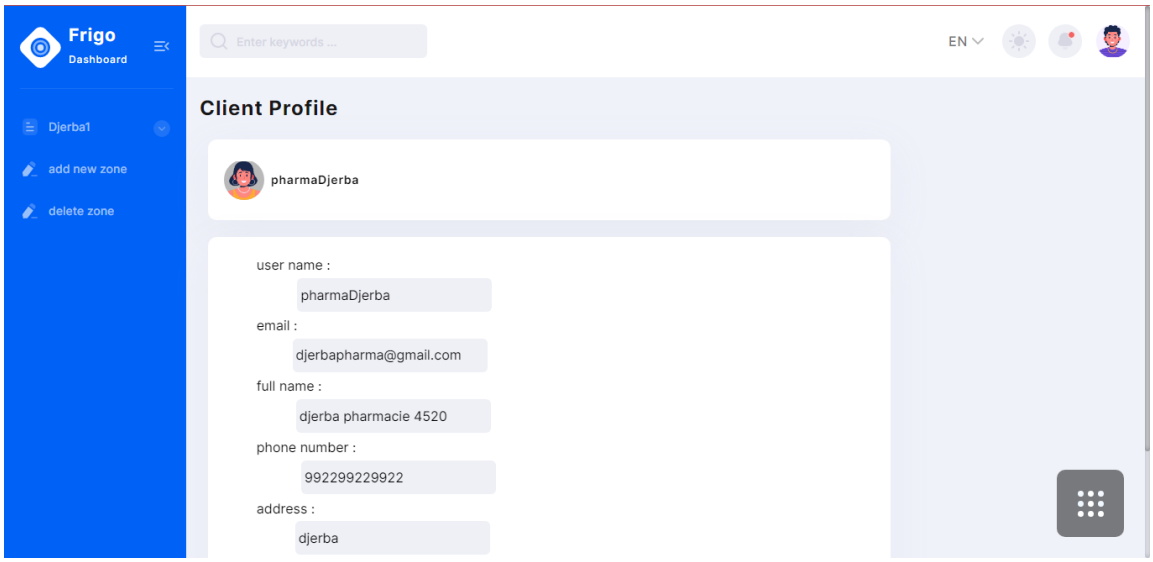


Figure 37: Client Profile Page Light Version.

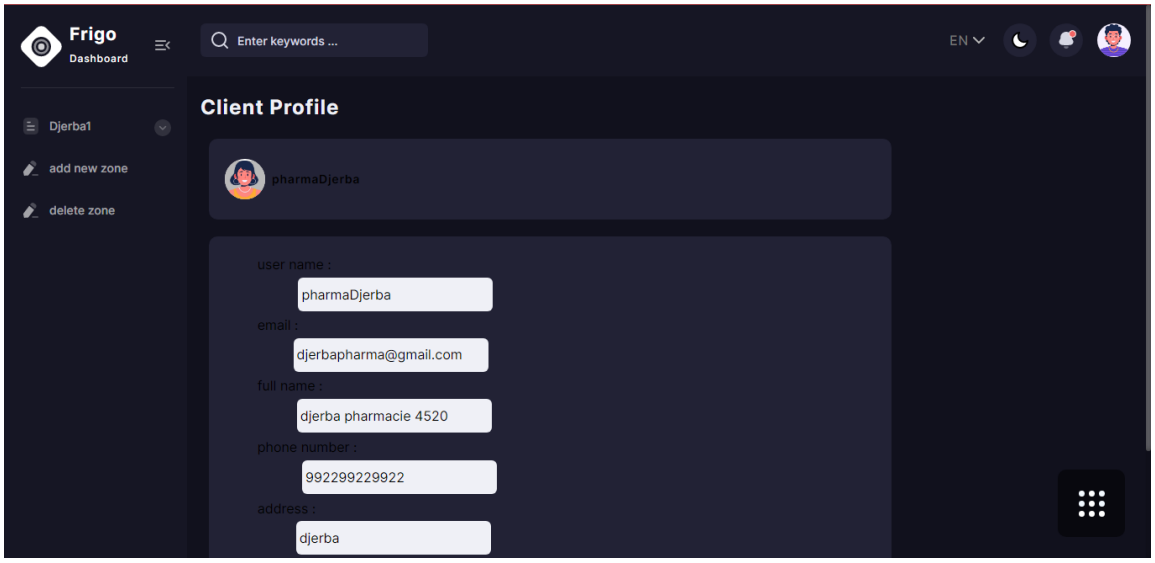


Figure 38: Client Profile Page Dark Version.

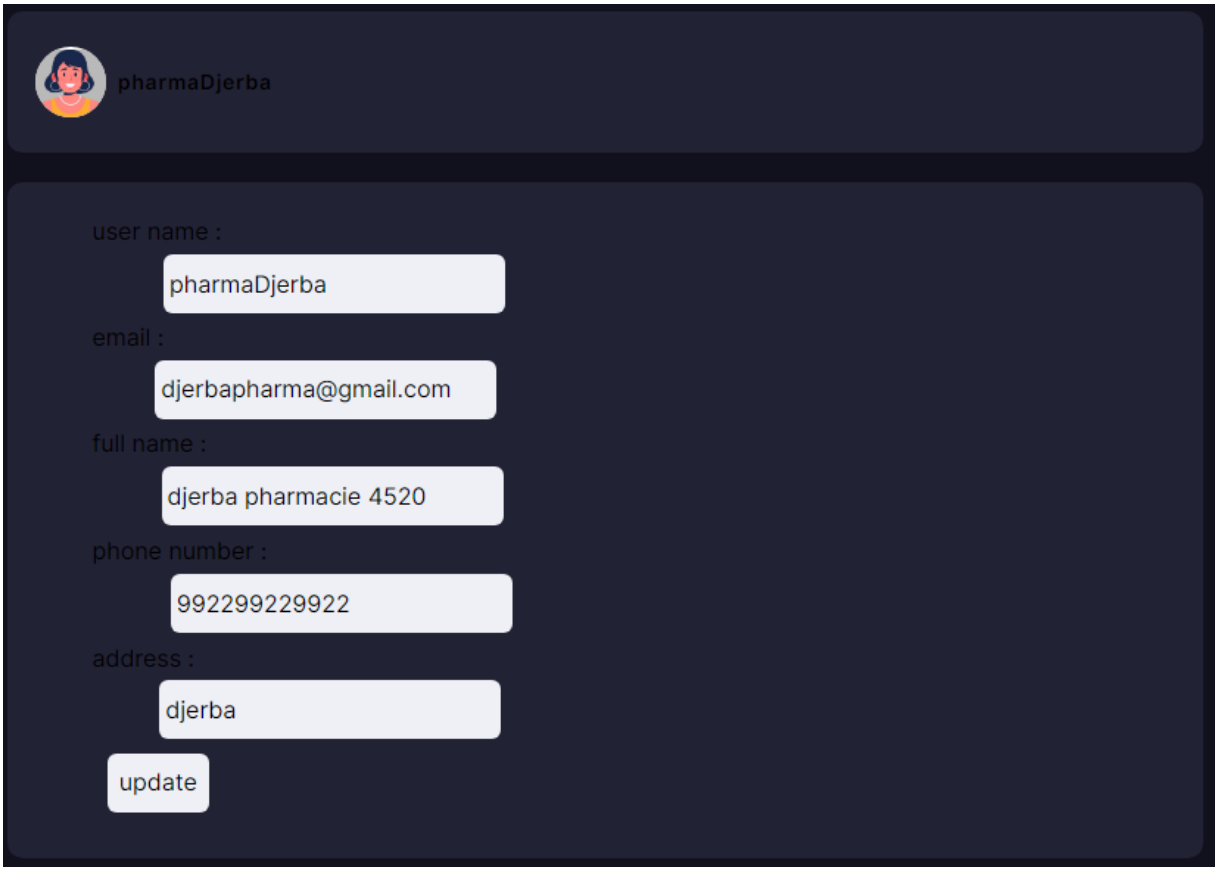


Figure 39: Client Profile Modify Form.

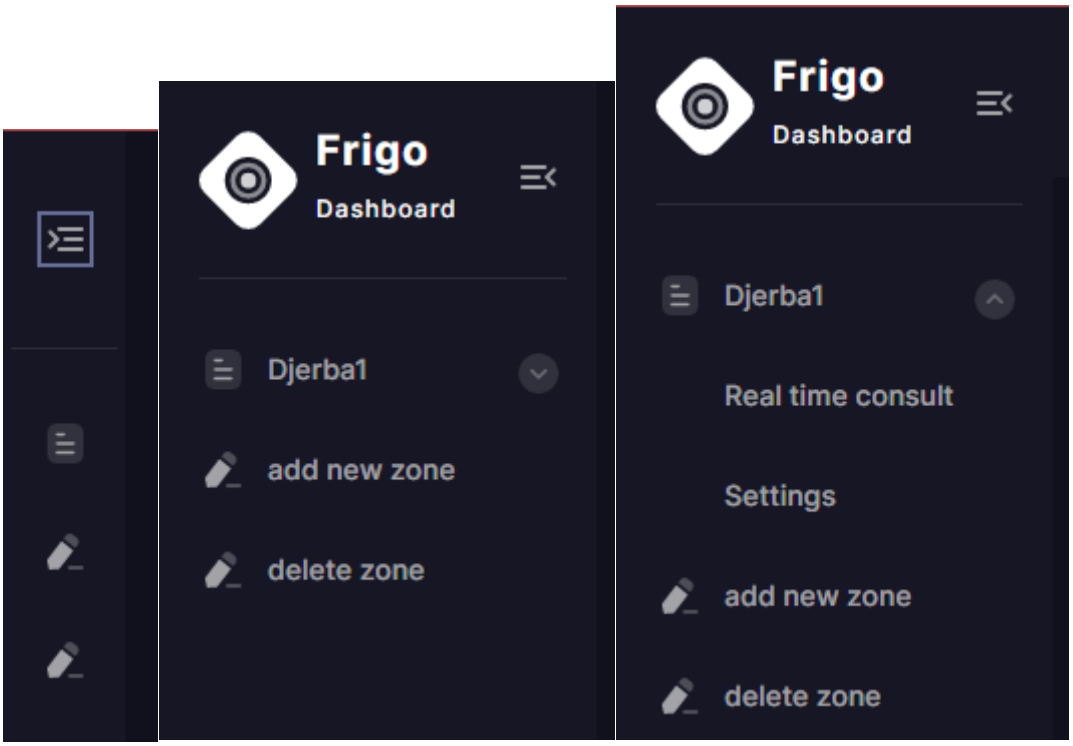


Figure 40: Sidebar Menu.

2.5 Real Time Data Page

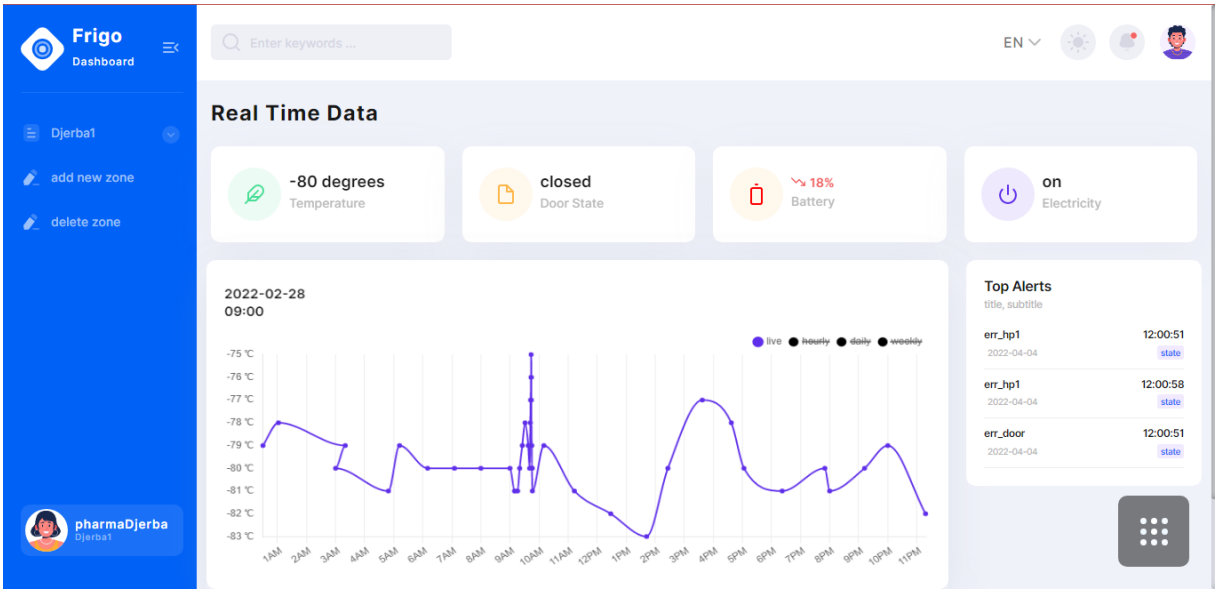


Figure 41: Real Time Data Page Light Version.

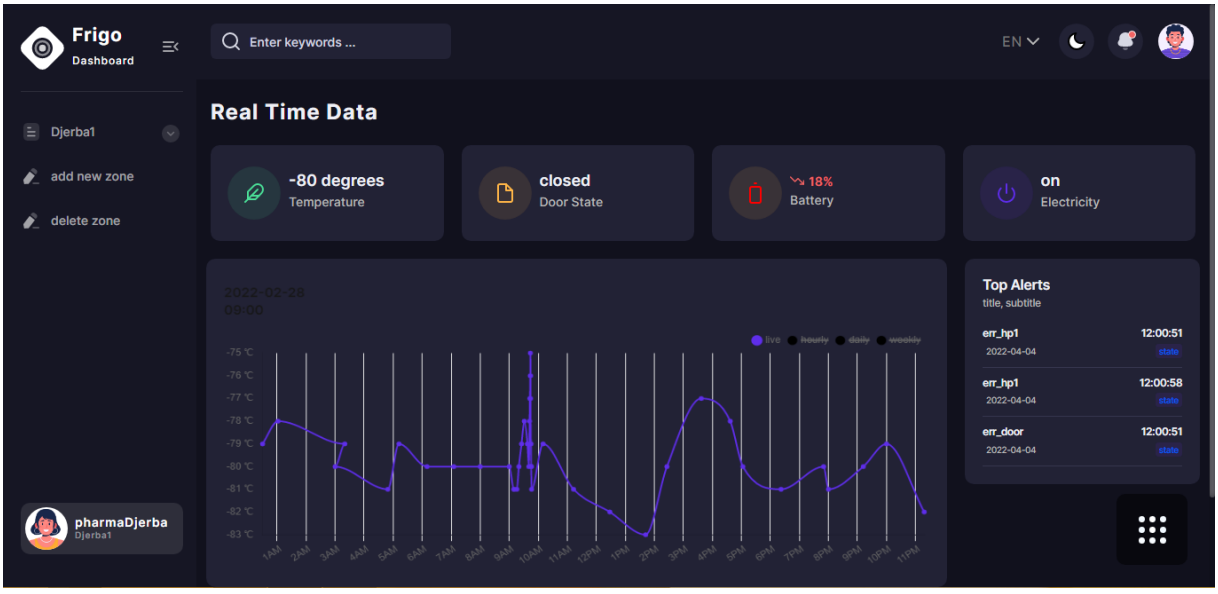


Figure 42: Real Time Data Page Dark Version.

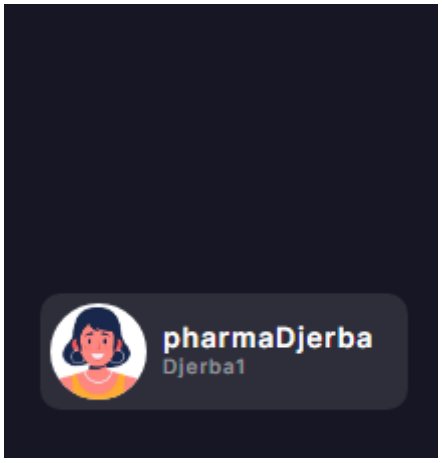


Figure 43: Sidebar Menu 1.

Figure 44: Sidebar Menu 2.

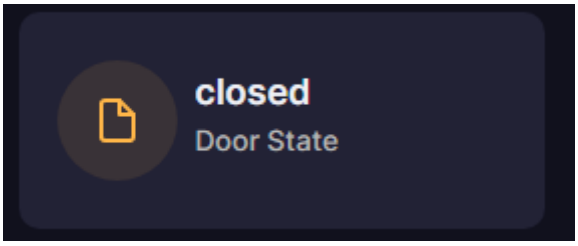


Figure 45: consult Door Status.

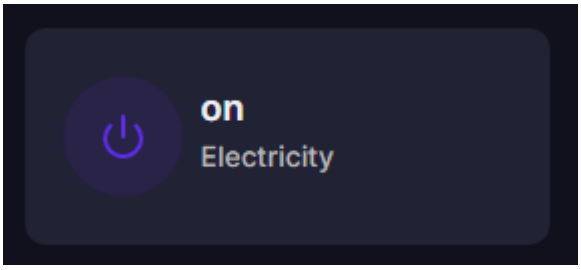


Figure 46: consult Power Status.

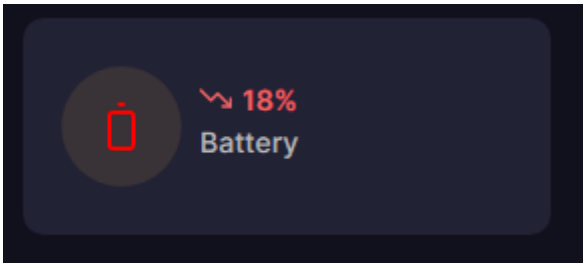


Figure 47: consult Battery Status.

Figure 48: consult Temperature Value.

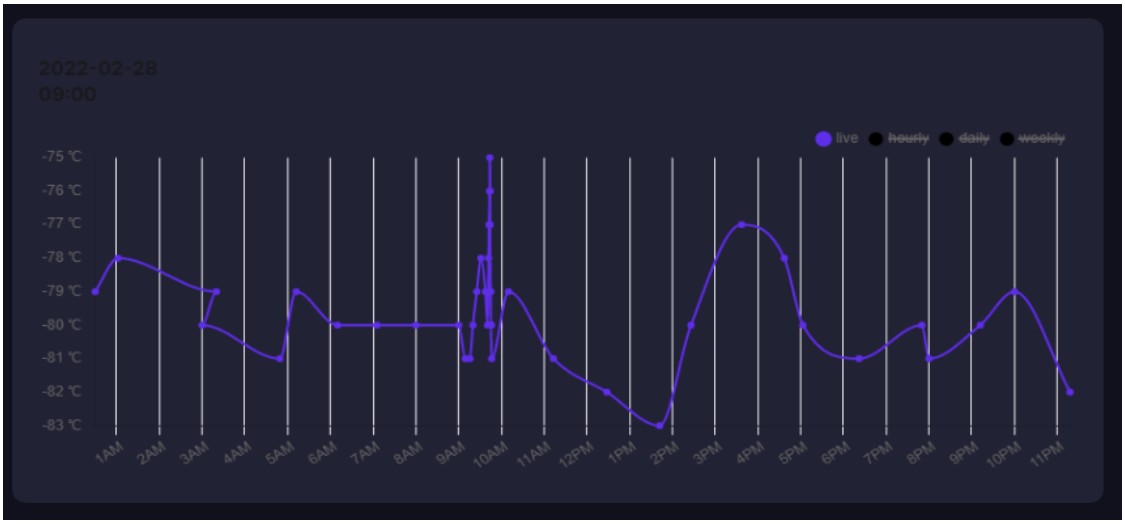


Figure 49: Temperature chart.

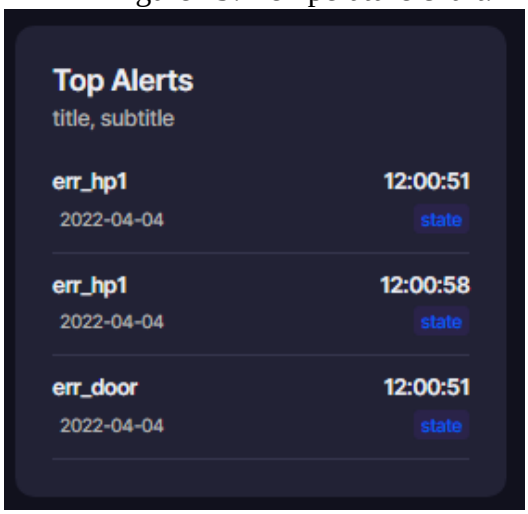


Figure 50: Top Alerts Menu.

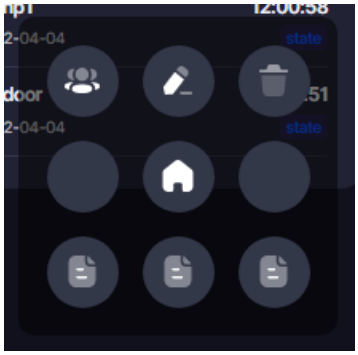


Figure 51: navigation menu 2.

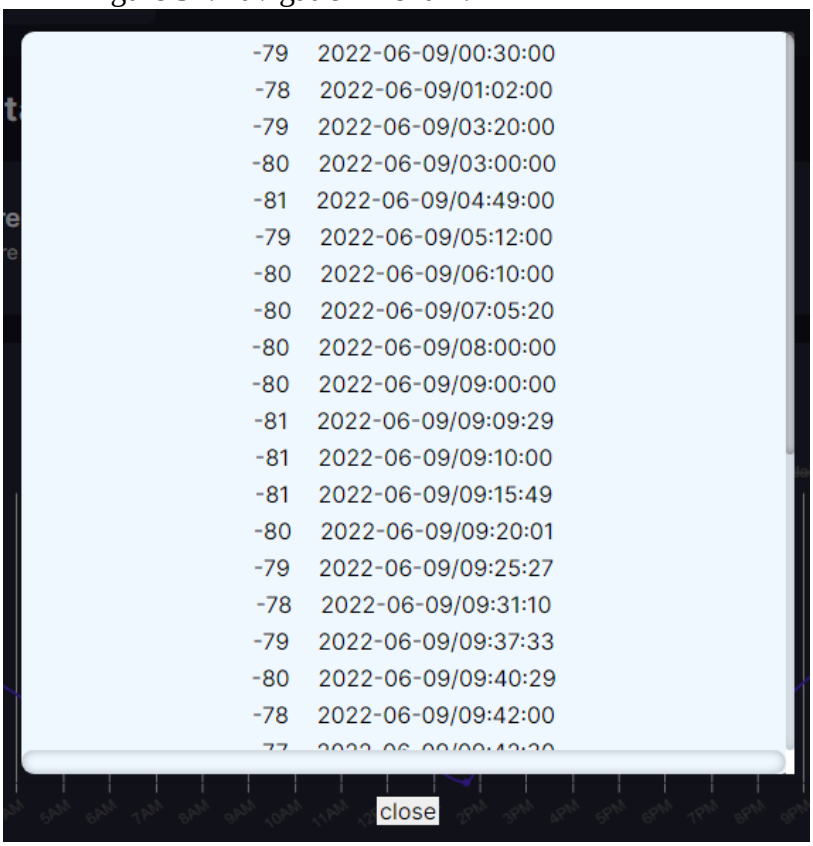


Figure 52: Temperature history

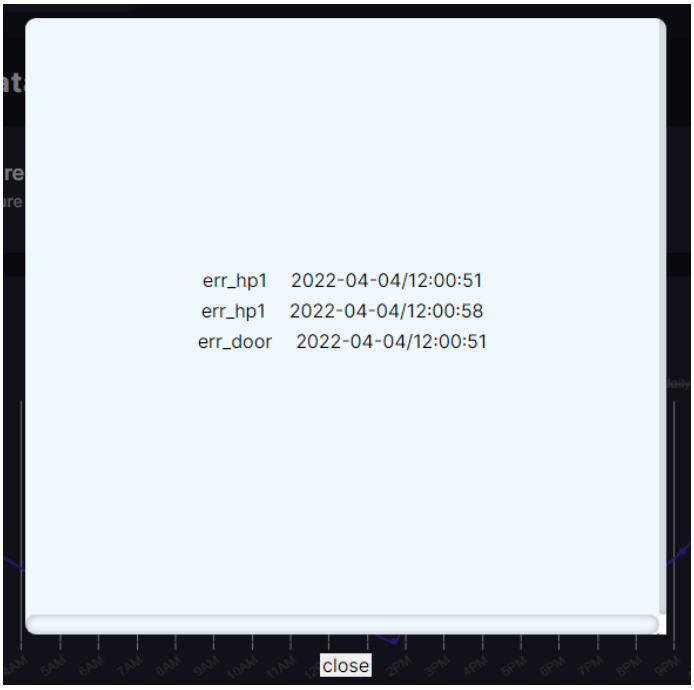


Figure 53: error history

2.6 Fridge settings page

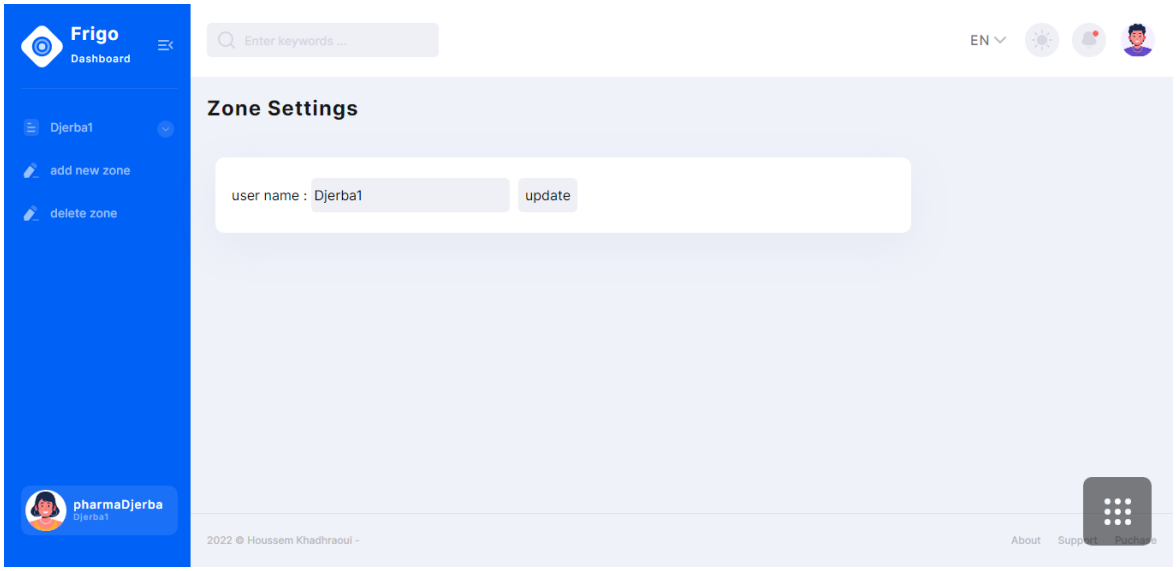


Figure 54: Zone Settings Light Version.

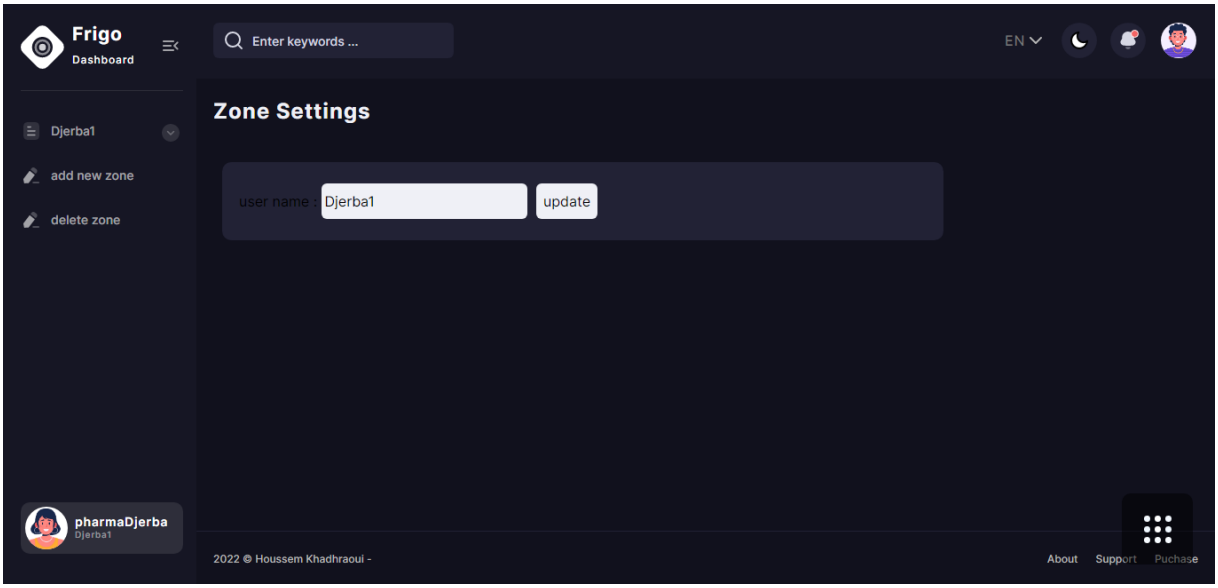


Figure 55: Zone Settings Dark Version.

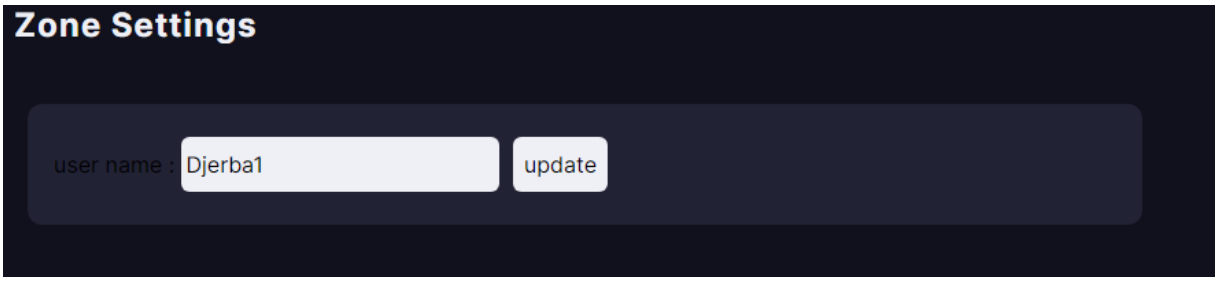


Figure 56: Zone Modify Settings Form.

Conclusion

In this chapter, we've presented the hardware and software environments. We've specified what kind of technologies had been used in this project to success it with the needed specification.

We had presented also the interfaces and their components each by each and their functionalities.

General conclusion

Our entitled project "Conception and realization of a supervision web app" consists in creating a web platform intended mainly for the management and the administration of the startup project. I have created a system that allows both to manage clients and their fridges and in the other hand it allows to real time consult and supervise data.

With regard to approach to the adopted method in this work, i have first carried out a phase of study the existing. Secondly, we discerned the different functionalities according to the possible actors of the portal. Then, we proceeded to its conception as well as to the technological choices for its achievement. Finally, we have proceeded to the realization of the different interfaces of the app.

Our project can be improved by adding other features such as management of the payment and more other functionalities in the home page. It is important to note that the realization of this project has been beneficial on all levels.

Indeed, this project was a good opportunity for me to discover, master and deeper my knowledge of new technologies, conception and development. This project allowed me to apply the knowledge that was taught to me during the degree in Information Technology.

I have done my best to present work that lives up to the training which i had within the higher institute of technological studies of Sousse.

Bibliography and Webography

https://stackoverflow.com/

https://online.visual-paradigm.com/

https://themewagon.com/themes/free-bootstrap-5-html-5-admin-dashboard-website-template-elegant/

https://www.chartjs.org/

https://nodejs.org/en/

https://firebase.google.com/docs/web/setup

Annexes

Real time data base snap shots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