Appreciation

First and foremost, we would like to express our gratitude to Mr. Chawki Zniber (Head of IT Development Department, Poste Maroc) for responding positively to our internship requests within his division.

We also like to thank all of the POSTE MAROC staff, from the security guards to the department head, for their amazing assistance. Their availability and patience were much appreciated. Furthermore, their indisputable IT development talents enabled us to understand the concepts of application management in public institutions. We also want to express our gratitude to the whole personnel of the common means division for their excellent humor, sympathy, and friendliness, which made our transition into the division much easier during our internship.

We would like to warmly thank my teachers at the Essaouira Superior Technology School, who theoretically prepared us for this internship.

In addition, we would like to thank our parents and all the people who brought us support.

General Introduction

THE HIGHER SCHOOL OF TECHNOLOGY OF ESSAOUIRA provides its students the opportunity to spend two months on an internship as part of their educational program. During this period, students learn job-related skills and tactics.

Therefore our choice fell on Poste Maroc. Wish is the company responsible for postal service in Morocco. This internship allowed us to experience a real situation, apply our theoretical knowledge, and touch certain aspects of professional reality, adapt to the group's life, and observe the interactions and mode of operation of the agents' relations between them on the one hand, and hierarchical relations on the other.

We got the opportunity to become acquainted with new work procedures and tools at this period.

As a result, this report will include all of our activities throughout our internship at POST MAROC, including the tasks we completed as well as the practical knowledge we acquired about the various components of our internship, as well as a project we worked on wish is a desktop application 💀💀.

the following pages revolve around 🤨🤨🤨4 axes: starting with a presentation of POST MAROC company, then I will present my project, the analysis, and design toward the tools and the technique that I adopted to carry out this modest work, in the end, I will discuss the realization part of the project

Company Presentation

★ Introduction

BAM (BARID AL MAGHRIB) : Is a public entity with legal identity and financial autonomy that is supervised by the government, with its headquarters being located in Rabat.

★ History

The existence of BARID AL-MAGHRIB dates back to the time of Sultan Hassan 1 who took charge of the organization of a sporadic sector maintained by foreigners in particular. In 1892, the Sultan gave his orders to those responsible for the ports to organize the Moroccan post. This embryonic organization included 13 Moroccan cities which were connected by lines each defined by specific stamps.

In 1911, the Moroccan telegraph company was responsible for organizing the national post office, but above all for starting to use postage stamps as a link between stamps. The company begins its activity in 1912 under the name of the Chérifienne direction of the post, the telegraph, and the telephone which will put the first Moroccan postage stamp on May 22, 1912. After interdependence, the postal and telecommunications services repositioned themselves under the supervision of the Ministry of Post, Telegraph, and Telephone (PPP) until 1998.

Today, Poste Maroc is a multi-service company providing services in the areas of mail, messaging, and financial services. In 2010, the post office entered the banking sector by creating a subsidiary called Al Barid Bank.

Poste Maroc is declining in its traditional activity: The traditional Morocco post activity is gaining ground. It was found that the related turnover now only represents 9% of the group's overall turnover. It is, therefore, no coincidence that it seeks to diversify and strengthen itself in Some other activities to compensate for this lack.

The acquisition of the transport and messaging company (SDTM), which holds 15% of the market, is a guarantee for, for example, to further develop the AMANA messaging activity of Poste Maroc.

★ Morocco Post Organizational Structure

Board of directors :

<u>Skills:</u>

The board of directors sets the company's policies and monitors their implementation. He takes on any subject that pertains to the smooth operation of the organization and does any checks and checks he considers necessary.

It is specifically responsible for:

- To determine the technical and financial operations program, the budget, the depreciation regime, accounting operations, and the result allocation.
- To discontinue taking, extend, or reduce financial involvement.
- To draft staff regulations that are approved within the circumstances set out in the current regulations for public sector employees.
- Defining the contract awarding procedures.
- To figure out how much services cost.

<u>Members:</u>

President: Mr. Head of Government

Administrators:

- The Minister of Trade, Industry and News
- Technologies
- The Minister of the Interior
- The Minister of Economy and Finance
- The Minister of Equipment and Transport
- the Minister of General Affairs and Governance
- The Minister Delegate to the Prime Minister, responsible for
- National Defense Administration
- The Managing Director of the Caisse de Dépôt et de Gestion

Activities

This establishment's activities can be summarized as follows:

-Emission of postage stamps and frankings.

-Processing of national and international postal mail.

-Collect savings through the CEN (National Savings Bank).

-Management of the current accounts service for postal checks (CCP).

-Management of a network of post offices that distribute, in addition to postal products, financial and insurance products from subsidiary companies.

Our role in the company

As a data science and business intelligence student, the first day we came to this society, we realized that the company is divided into numerous classes, each of which serves a certain purpose in the organization, ranging from marketing to business management to security systems, and so on.

Based on our resume, we had two options: database administration or development.

We found that development was the calling, so we joined the team. My supervisor assigned me the responsibility of upgrading the Courier Delivery System.

CONCLUSION

We described Post Maroc from a historical perspective, as well as its general activities (small centers may not have all of these programs), organizational structure, and finished with our role in the company. The next stage is to outline the project's structure.

Chapter II

project framework ⚡

Post Maroc offers a courier delivery service; the client brings the couriers into the agency and fills out his and his resident's information. For many years, this was a great process, but as the service grows, the number of customers grows out of control, and the average time spent waiting for each customer falls between 5 and 20 minutes. As a result, the service requires an update to keep up with the situation.

The project is about this problem; after some analysis, we discovered that the customers are divided into two categories: regular people who use the service to send couriers to their friends and families; they account for about 80% of the customers; and people who use the service in their day-to-day jobs, such as lawyers, writers, doctors, and journalists; they account for about 20% of the clients but use an average of 20 to 30 couriers per day. Considering that the first category sends roughly 0.6 couriers every day, the second category is the primary source of revenue for the service. However, due to the aforementioned reasons (high wait period), the number of these people is dwindling.

Objectives:

The project's objectives are classified into the following categories:

- Customers:
    - They have an account with their information.
    - Creating a delivery order for a courier.
    - Keep track of their courier status.
    - Get a pre-made card with their information, as well as the receiver and courier's information.
- Employees:
    - obtaining any courier information.
    - Scanning courier barcode or manually fill it out, in order to support courier
    - Cancel a courier that isn't legitimate or acceptable.
    - View confirmed courier by the employee

Challenges

- Time management for courier deliveries (ensuring that the specified time is convenient for both employees and clients).
- Payment by the customer.
- Since we're aiming for production, we'll need an online database connection.
- Distributing the couriers over the employees: Employees must be assigned a number of couriers that are appropriate for their role and the city they are delivering to and from.
- Creating a card that contains information about the courier as well as a barcode
- Desktop application since the majority of our customers work with computers.

Project analysis and conceptualization 💢:

We chose the UML modeling language as a software architecture modeling standard because it simplifies the creation of documents required for the development of object-oriented software.

Use case diagram:

The use case diagram is a UML diagram that depicts a software system's overall functional behavior. A use case is a discrete unit of interaction between a system and a user (human or machine).

In a use case diagram, users are called actors, and they interact with the system and manage use cases.

The following images depict a broad use case diagram for the project, which is separated into two parts: client and employee.

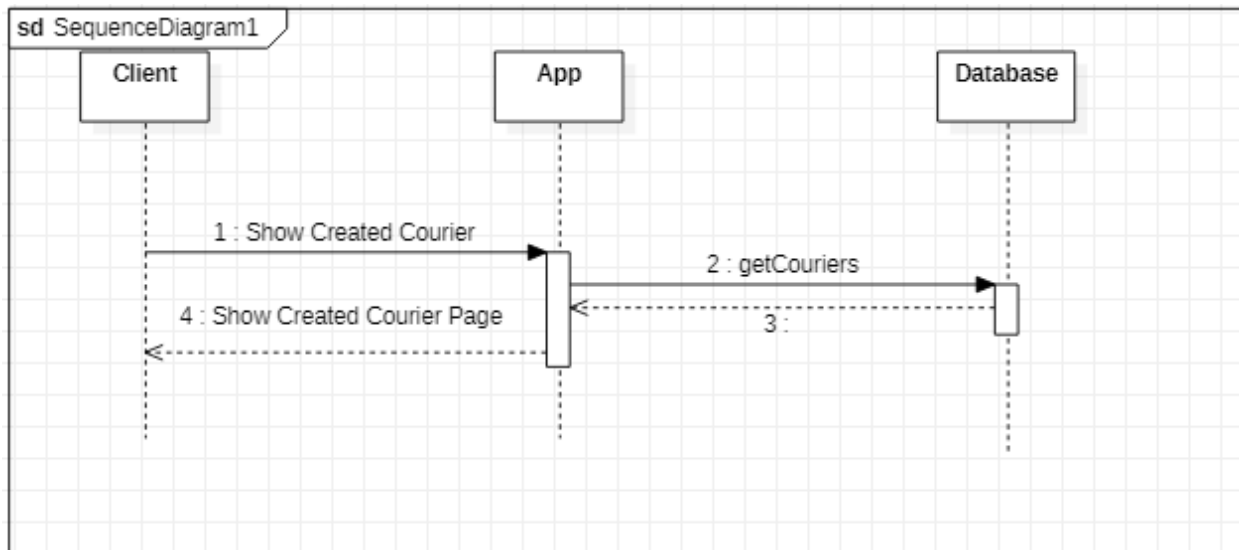All operations require authentication

Courier Delivery System -Client Side-

auto fill sender information

«include» → get profile information

«include»

Create a courier delivery request

«include» → Get updated courier pricing per weight

«include» → Get updated available cities list

Following the addition of courier to the database

«extend» → Get document containing the information of courier

View All Courier list and their status

View Payment History

Manage Profile information
Modify profile information

«extend» → profile picture

«extend» → name & phone number & Address

User

Client

All operations require authentication

Courier Delivery System —Employee Side—

profile picture

«extend»

Manage Profile information

Modify profile information

«extend»

name & phone number & Address

«extend»

Scan Courier

Support a Courier

«extend»

«extend»

Cancel a Courier

Manually Search Courier

«extend»

«extend»

View Supported Courier

«extend»

See more info about courier

View All Courier Related to Employee

«extend»

Change Courier Status

«extend»

Search A Courier In Data Base

«include»

Employee Class is A

See Client information

«extend»

«extend»

Update information

Delete Client

Employees Class A only

See client Payment

Validate Payment

«extend»

«include»

See Delivery Line For an Employee

Employee class is A

User

Employee

Sequence Diagram

sequence diagram -Log in-

sequence diagram -Create Courier-

sequence diagram -View couriers-

sequence diagram -show profile -
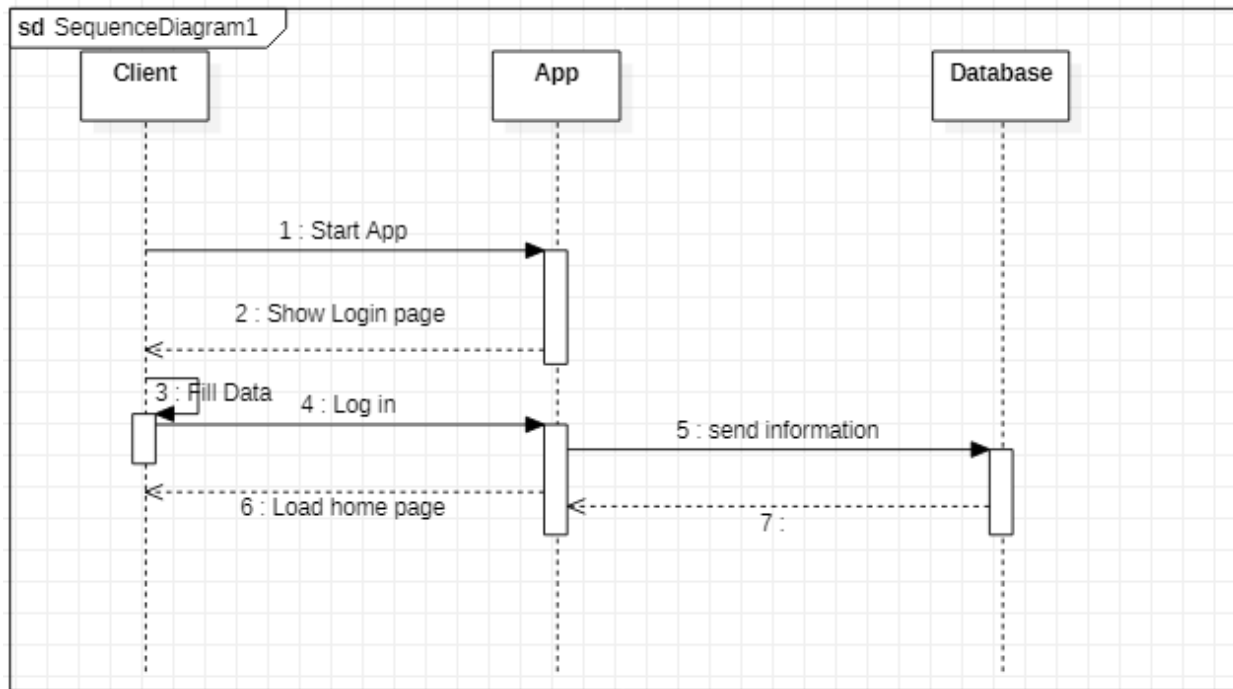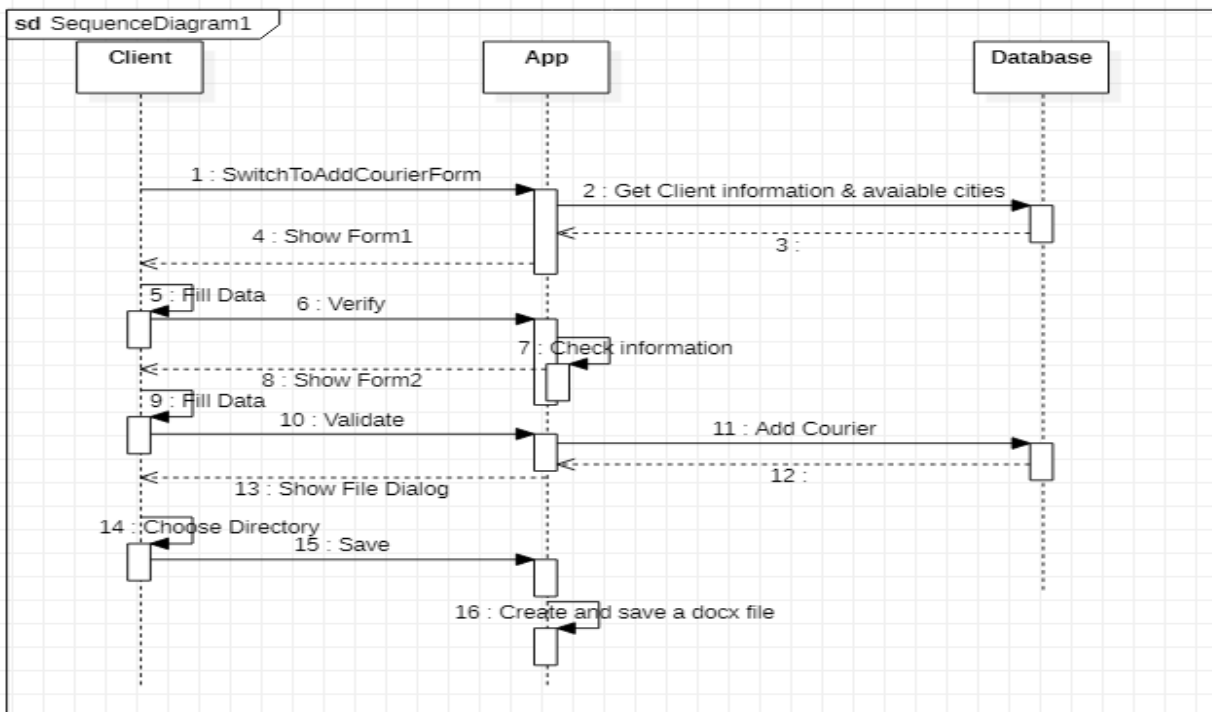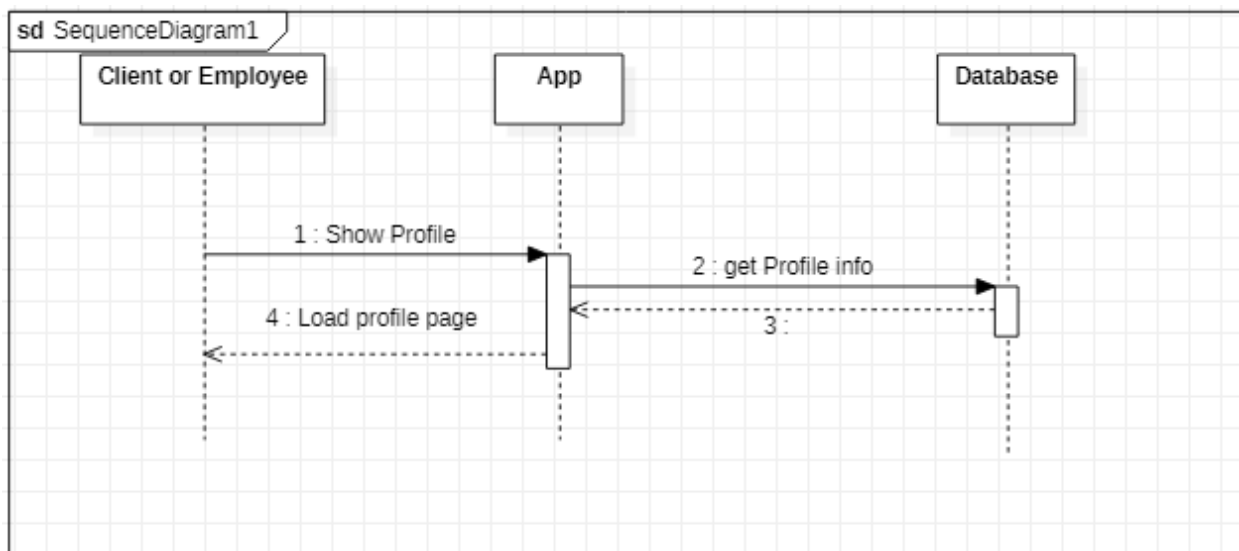
sequence diagram —

GANTT DIAGRAM

A successful project requires careful planning. In fact, the timetable assists in the proper division of labor and separation of activities to be done, as well as better time management. Calculate and control the amount of time required for each activity. The division of time was an important part of our approach. I've come across various ways of creating a good layout. For us, the Gantt chart was the best. It assists Given the work's detailed, precise, and easy-to-understand analysis, The desk The tasks to be accomplished are listed below, along with a time estimate that is essential to finish them.
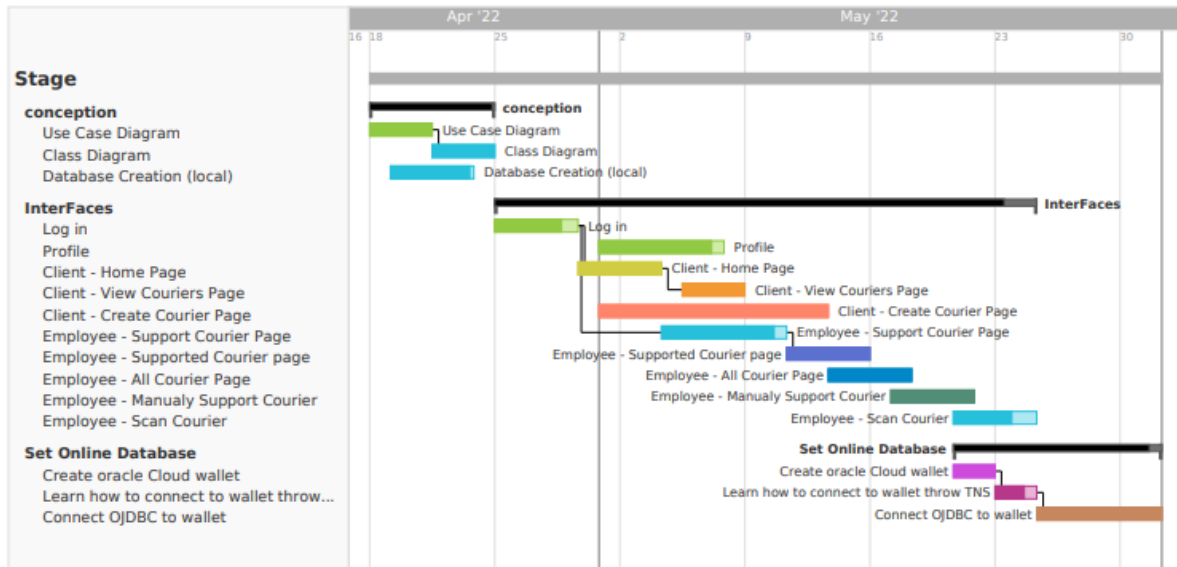
CONCLUSION:

Chapter III

Intro

This final chapter is dedicated to the project's implementation phase, which is a subsequent step in the project's development. We will begin the implementation phase of the project after the above-mentioned steps have been completed.

Programming Tools

JavaJAVA

Java is a general-purpose, object-oriented programming language based on classes that is supposed to have fewer implementation requirements. It is a computer platform for the development of applications. As a result, Java is quick, secure, and dependable. It is widely used in laptops, data centers, game consoles, scientific supercomputers, cell phones, and other devices to construct Java applications. The goal of this project is to develop a desktop application.

JavaFX

JavaFX is an Oracle software development platform for creating desktop and rich internet applications (RIAs) that may be viewed on a number of devices. Sun Microsystems created the platform, which includes JavaFX Script and JavaFX Mobile. This can help us create a high-design component and also comes with lots of features. For example, it comes with built-in UI controls and CSS, a hardware-accelerated graphics pipeline, and a self-contained application deployment model.

Python

Python is a widely used, interpreted, object-oriented, and high-level programming language with dynamic semantics, used for general-purpose programming. It was created by Guido van Rossum and first released on February 20, 1991. One of the amazing features of Python is the fact that it is actually one person's work. Usually, new programming languages are developed and published by large companies employing lots of professionals, and due to copyright rules, it is very hard to name any of the people involved in the project. Python is an exception. The purpose of its existence for this project is that Java does not support creating a Google Docx that will contain courier information.

PL-SQL

PL/SQL stands for "Procedural Language Extensions to the Structured Query Language". PL/SQL adds many procedural constructs to SQL to overcome some limitations of the relational database management system (RDBMS). PL/SQL is an embedded language that only executes in an Oracle Database.

DEVELOPMENT TOOLS

VISUAL STUDIO CODE

Visual Studio Code is an extensible code editor developed by Microsoft for Windows, Linux, and macOS. Features include support for debugging, syntax highlighting, smart code completion, snippets, code refactoring, and Git integration. This code editor was chosen for its compatibility with the JavaFX API.

GIT

Git is a distributed version control system (a system that records changes to a file or set of files over time so that you can recall specific versions later.) for tracking source code changes during software development. It is designed to coordinate the work between programmers, but it can be used to track changes in any set of files. Its goals include speed, data integrity, and support for distributed and non-linear workflows.

GITHUB

is an Internet hosting company that specializes in software development and Git version control. It combines Git's distributed version control and source code management features with its own, allowing teams of developers to work on the same documents (typically source code) at the same time without having to redo each other's work.

Scene Builder

JavaFX Scene Builder is a visual layout tool that allows users to easily develop user interfaces for JavaFX applications without having to code. Users may drag and drop UI components into a work area, change their settings, apply style sheets, and the FXML code for the layout they're working on is created automatically in the background. The result is an FXML file that may be used to link the user interface to the application logic in a Java project.

SQL Developer

Oracle SQL Developer is a free graphical user interface that allows database users and administrators to do database tasks with fewer keystrokes and clicks. The Oracle SQL Developer is a time-saving productivity tool that aims to help end users get the most out of their Oracle Database technology stack.

Oracle Cloud Wallet

Oracle Cloud Wallet makes managing database credentials across many domains straightforward and quick. Instead of changing individual datasource definitions, you can update database credentials simply by upgrading the Wallet. This is done by including a database connection string in the datasource definition, which is resolved by a wallet entry.

Project InterFaces

Both clients and employees can log in from the same page; after the user enters their email and password, we check the information against the database. It's worth noting that all passwords are encrypted using the BCrypt tool, which is a password hashing tool from the spring framework; we also check the account

type; if the user is a client, we redirect him to the client home page; otherwise, we direct him to the employee home page.
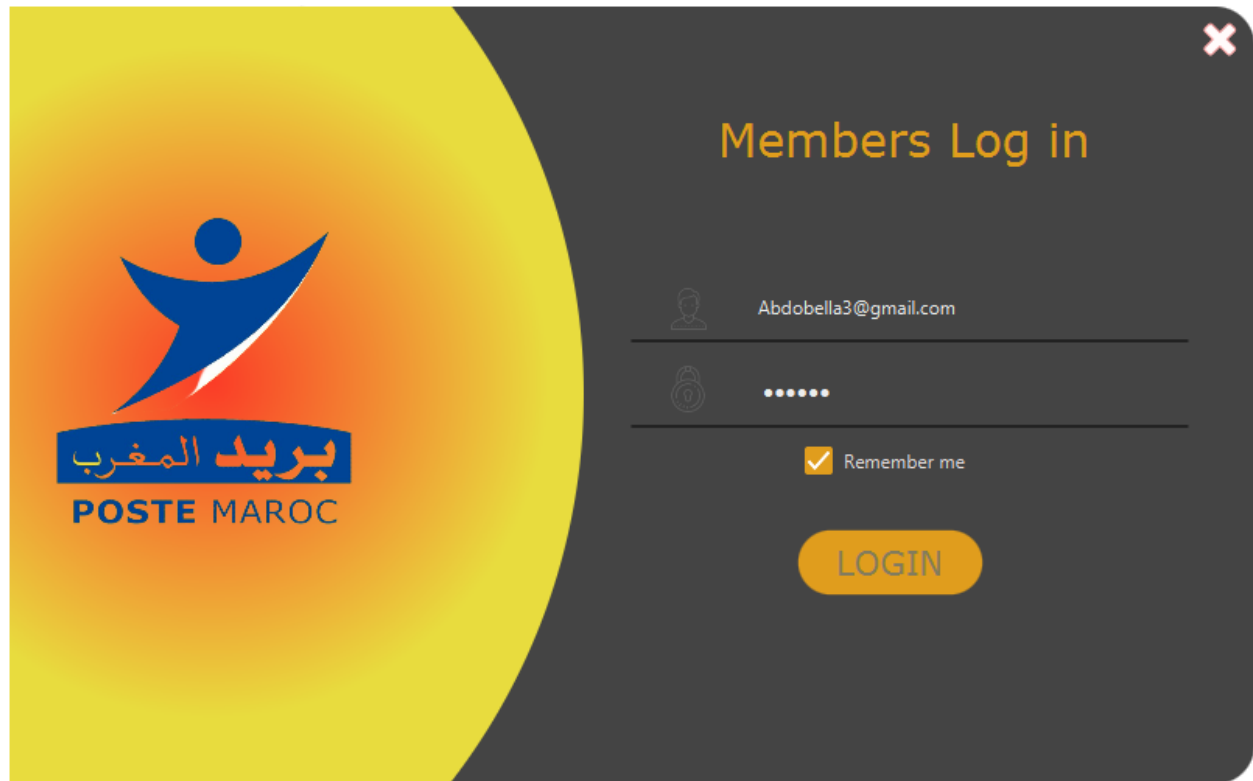
We'll begin with the client pages and then move on to the employee pages.

But first I will explain the window header because it is repetitive.

There are four options in the window header. The log out icon clears the session and redirects the user to the login page, as well as the minimize icon, close window icon, and profile icon, which displays the profile page that we will look up in the following figures.

Now, there are two main options on the home page: add courier and see created couriers. Both take you to the appropriate page. Now we will move on to create a courier page. It is divided into slides. The first concerns client and recipient information, while the second concerns courier information.
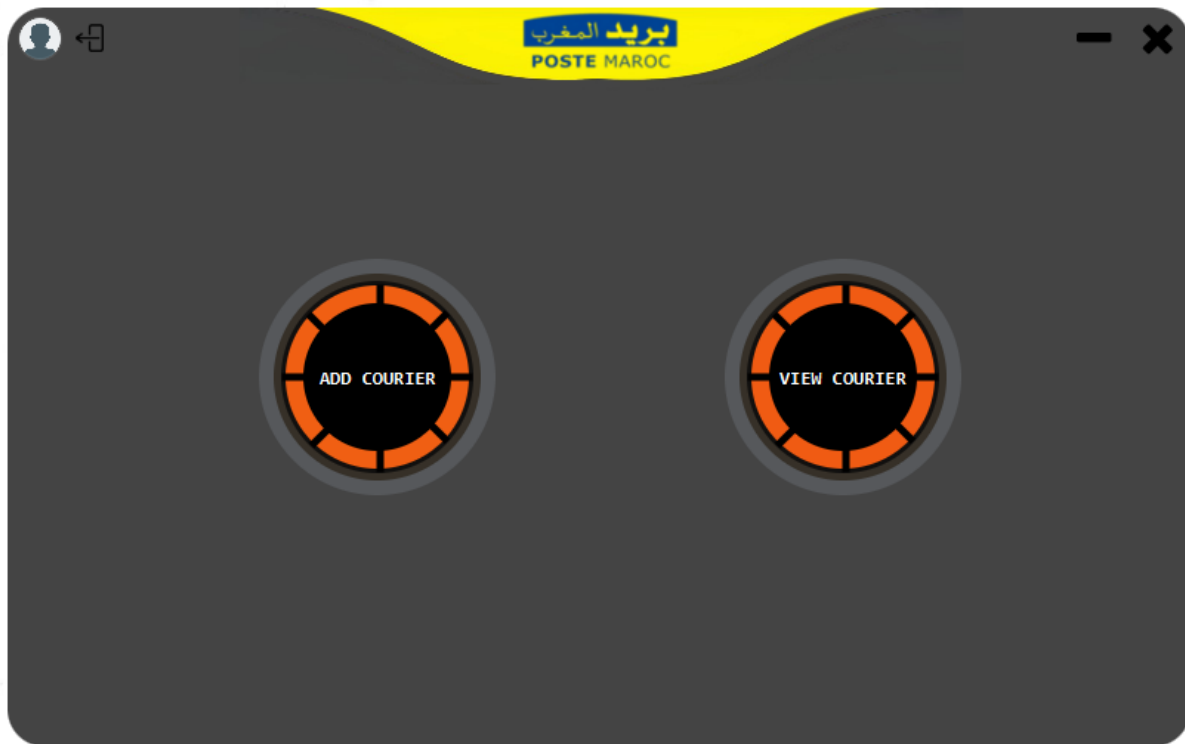
This slide contains two parts: the first part for the client's information, and as shown in the figure, the fields are a little darker because they are disabled and auto-filled with client information, which gives the client a faster access time.

There is also an optional field for a backup phone number, which is added to the courier information in case the client's original phone number does not work. Next is the receiver's information. Besides the normal information, the client is required to specify the city and then the local address. This process occurs because this service is not available in all cities in Morocco, so there is a combobox list to select the city, and the list is fetched from the database.

On the next slide, the client is required to provide courier information. When a client enters a specific weight for a courier and presses enter, the fee is calculated using the database's pricing list.

The collection date and time is the date on which the client wants his courier picked up. However, there is a requirement that if the client wants his courier picked up the same day, the collection time must be at least 3 hours ahead of the current time.

After the client inputs all of the information and clicks verify, the courier information is double-checked and added to the database with a waiting status, and a window appears to tell the user and provide him the opportunity to save a copy. This copy is a word document that contains the courier's vital information.

Courier Information

| 9 | = | 20.0 |

Courier added successfully
Your Courier id is : RR000000007MA

OK   Save A Copy

Validate
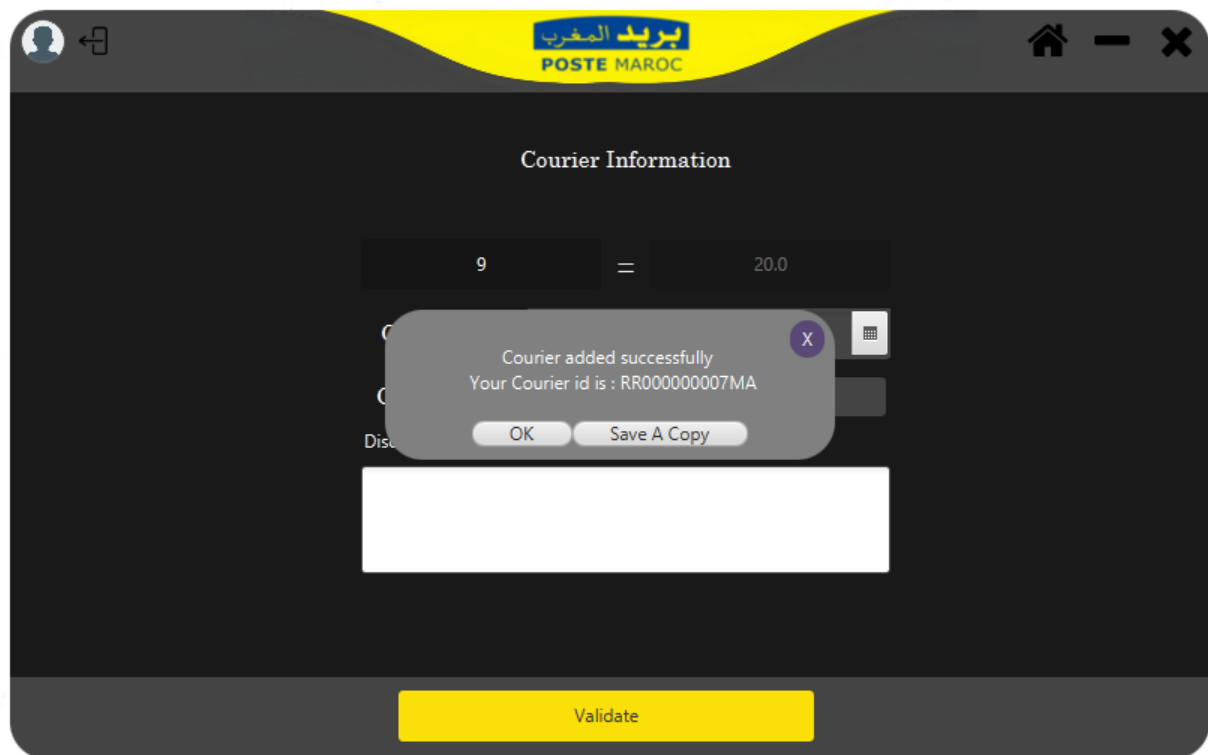
This is the word document. It was generated using Python (library: docx). This document contains the logo of Post Maroc, sender and receiver information, courier identification, and a place to sign.

This document is printed and attached to the real courier.

Sender

MR.bella abdelouahab
traoudant we are from
+212762549778

Courier ID
RR000000026MA

Receiver

MR.asd asd
Ain Chegga : asd
12

This page is the second option on the client's home page. It allows the client to keep track of the created couriers.

ID	ADDRESS	COLLECT DATE	PRICE	STATUS
RR000000003MA	Agadir: qwe	2022-05-21 11:05:00	11.5	Delivered
RR000000001MA	test2: rwerw	2022-05-20 11:06:00	11.5	Waiting
RR000000004MA	Agadir: hg	2022-05-23 10:04:00	11.5	Supported
RR000000005MA	FÃ¨s: ASDSD	2022-05-24 13:03:00	11.5	Waiting
RR000000006MA	Casablanca: 123123	2022-05-24 10:05:00	11.5	Waiting
RR000000007MA	Agadir: jkl	2022-05-24 10:18:00	20.0	Supported
RR000000002MA	Agadir: qweqw	2022-05-20 12:06:00	11.5	Supported
RR000000008MA	Ait laaz : qwe	2022-05-18 11:05:00	11.5	Waiting

This is the Client profile page it shows on top of the existing window. It contains all essential information, and the client can modify some information like name, address, phone number and job title, for the rest of information the user needs to contact us to change them.

If the user is an employee, we redirect him to this page, which has many functionalities. Firstly, we will talk about the header. The header contains, for the most part, the same actions as the client's header. The only difference is that the profile is a bit different.

Next up is the scan button. Once clicked, we start a function that waits for the data from the scanner. Now you may wonder how it works. Basically, we start a function that is called once every 500 ms. This function checks whether the copied text on the key board is different from the last call back of the function. If so, it checks if the new text is a valid courier id. If so, we look up the courier in the database, recognizing that the courier must be related to the employee (he is the one who will deliver it).

We use this function because the scanner is connected to the keyboard. Once the codebar is scanned, it copies the data to the keyboard.
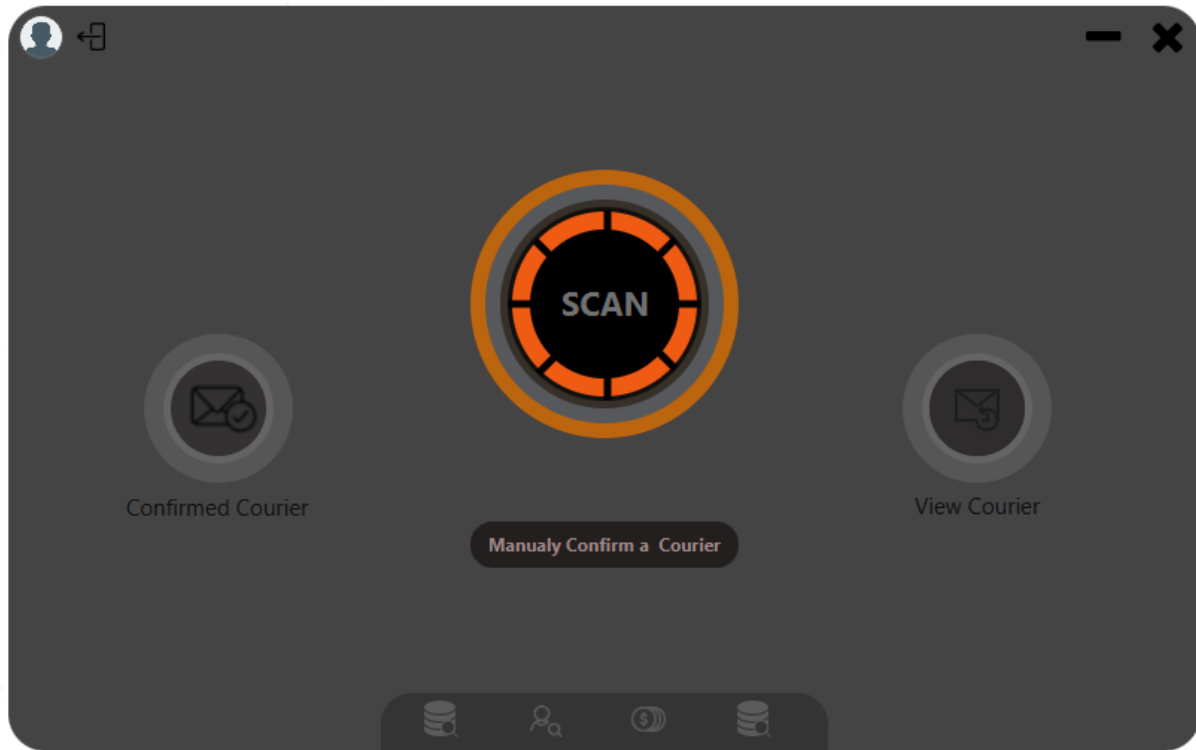
This page shows up when the user employee clicks on the manually confirmed courier button. It gets all the related couriers to the employee, which has a status of "waiting".
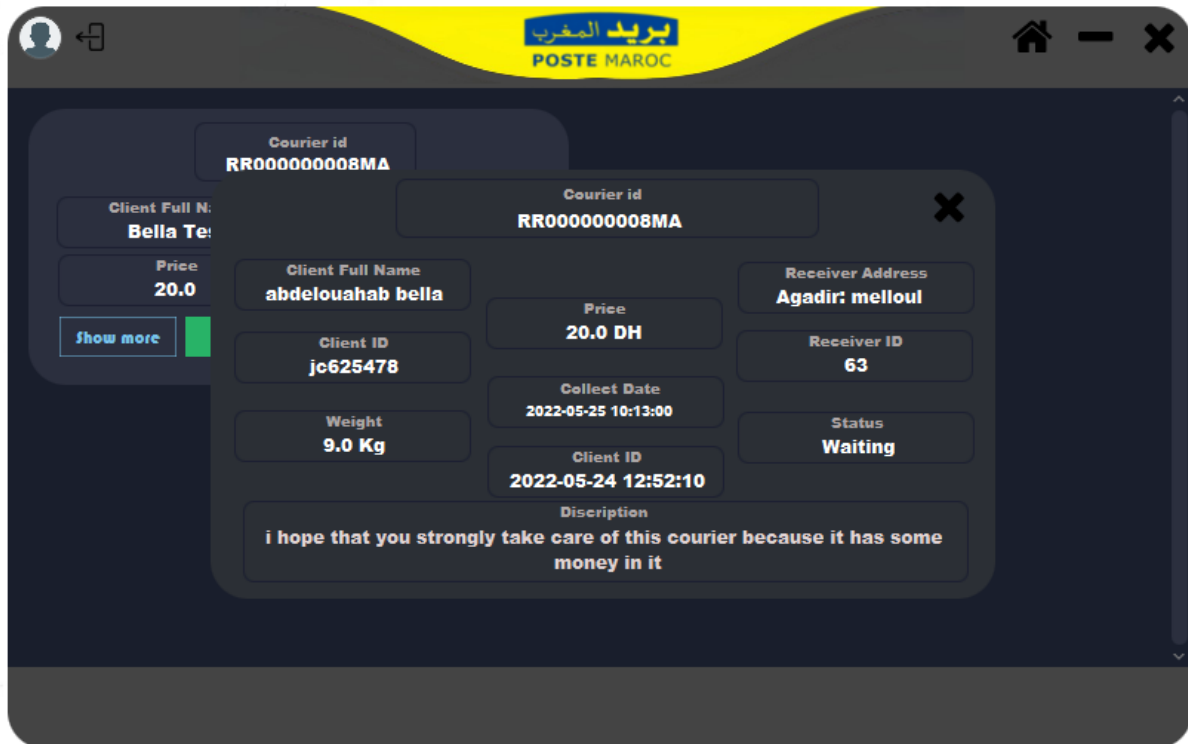
Each courier has three options. The first is to cancel the courier, which changes its status to canceled; the second is to see more information about the courier; and the last is to support the courier, which changes its status to supported.
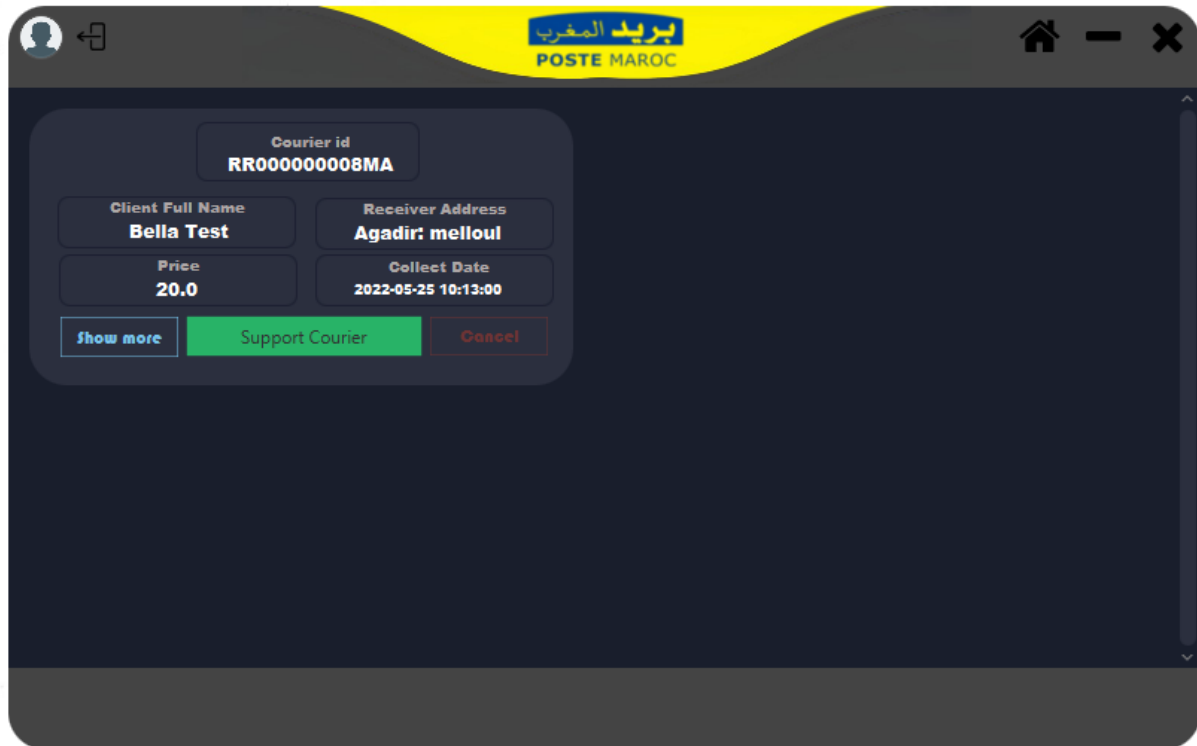
Once the user clicks "Show more", this sub-window pops up and shows information related to the courier.

On this page, an employee can view all the couriers that he has confirmed (change status to 'Supported').

On this page we see only two options. The first is to cancel the courier, which changes its status to canceled; the second is to see more information about the courier.

Once the user clicks "Show more", this sub-window pops up and shows information related to the courier.

On this window the employee can see all the courier related to him beside their status