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ENTiTLED

Vehicle rental platform for transporting goods

Presented publicly in front of the jury composed by :

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DEDICATIONS

"I dedicate this modest work to my dear parents as a testament to their sacrifices and care throughout my life, as well as their encouragement and support throughout my studies.
I also thank my sisters and brother who have always been there for me whenever I needed them.
To my dear aunts and all my family.
To the person who has always encouraged and supported me, to my future husband Mohamed.
To my best friend Mimouna .
To my partner Ismahan who knew how to be patient in periods Difficult.
To the entire promotion 2022/2023 "
Bouammar aya

DEDICATIONS

"Praise be to God, that in the midst of difficulties Today, I have successfully crossed a thousand-mile journey, thanks to the grace and generosity of God. I extend my gratitude to my father, Noureddine, who played a significant role in my pursuit of higher education. I also express my appreciation to my mother, Kalthoum, who dedicated her life to my happiness and success.
I am grateful to the hands that offered assistance whenever I stumbled. To my sisters, brothers, uncles, friends, and colleagues, thanks.
to my Bestie Hadeel, thank you for your constant support all the time." **Hamiche Ismahan**

ACKNOWLEDGMENTS

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General Introduction

In today's world, people are increasingly looking for convenience and flexibility. This is especially true when it comes to shopping and delivery. With the rise of on-demand services, people can now have anything they need delivered to their door with just their phone.

We focus on the design and development of an innovative mobile application for freight delivery. The application aims to streamline the delivery process, optimize route planning, enhance package tracking, and provide a seamless user experience. Additionally, a desktop management system will be implemented to enable businesses to effectively manage their delivery operations, including order management, inventory tracking, and resource allocation.
In addition to freight delivery, this company also offers other services such as relocation. The mobile application and desktop management system will be customized to support these additional services, Customers will not only benefit from a reliable and efficient freight delivery service, but also professional assistance for their relocation requirements. The objective of our project is to create a user-friendly and intuitive mobile application, along with a powerful desktop management system, that will enable the company to deliver exceptional freight delivery and relocation services. Through this technological solution, the company will be able to optimize its operations, improve customer satisfaction, and differentiate itself from competitors. the development of a mobile application and desktop management system for freight delivery and relocation offers new opportunities to enhance logistics operations and deliver superior services. This solution will enable the company to adapt to changing market demands, increase operational efficiency, and strengthen its competitive position. Here are some of the benefits of developing a mobile app for merchandise delivery:
Increased convenience for customers: Customers can order merchandise from anywhere, at any time.
Increased efficiency for businesses: Businesses can save time and money by automat-

ing their delivery process.

Increased customer satisfaction: Customers are more likely to be satisfied with a business that offers a convenient and efficient delivery service.

Here are some of the benefits of developing a desktop app to manage a merchandise delivery company:

Increased efficiency: Businesses can manage their inventory, orders, and customers more efficiently with a desktop app.

Increased accuracy: Businesses can reduce the risk of errors by automating their processes.

Increased security: Businesses can protect their data and customer information with a desktop app.

To provide you with an overview of the implementation process of our application, we followed the following steps: First, since our application is in the field of transport:

in the first chapter we will present the three concepts of « Logistic » and « transport » « information system».

Then, the second chapter allows to have a general idea on the companies and the projects of the end of the study in the same field of our project.

The third chapter will focus on the analysis and design of our application, using the UML modeling language.

Finally, the last chapter will cover the actual implementation of our application. We will describe the tools used and present some interfaces. Our work will be concluded with a general conclusion and an exploration of potential future prospects.

Chapter I

Overview

1.1 Introduction

Transportation is a key challenge for cities to ensure sustainable, inclusive and economically efficient development. This chapter aims the definitions of the following concepts: logistics, transport and small history of each concept, and also aims the information system.
the objective of this chapter is to highlight the significance of the concepts of logistics, transport and its modes.

1.2 Logistic

1.2.1 Definition:

Logistics is system management of getting resources (materials, people, equipment), storing and moving them from the point origin to the point consumption in the right time, place, quantity and right quality with right conditions, originally, logistics is important of moving military personnel, equipment, goods. [1]
There are many types of logistics. The most well-known type is sales logistics that moves products from the producer to the consumer. In addition, there are a number of other types of logistics, such as procurement logistics which is the flow of raw materials and parts, production logistics which is the flow of materials inside a factory or business, recovery logistics which is the return flow of returns from consumers and waste, and recycling logistics which is the flow of recyclable materials. This section describes the types and fields of logistics in depth . [14].

1.2.2 Components of Logistics System

A logistics system consists of several key components that work together to ensure efficient and effective management of the flow of goods and information. These components, as shown in Figure 2, include:

- **Storage, Warehousing, and Materials Handling:** This component involves the physical storage of goods, as well as the management of warehouses and distribution centers. It also includes materials handling activities, such as loading, unloading, and movement of goods within the facilities
- **Packaging and Unitization:** This component focuses on the proper packaging and unitization of products to ensure their protection, facilitate handling, and optimize space utilization during storage and transportation.
- **Inventory:**This component focuses on optimizing the levels of inventory to ensure efficient operations. It includes activities such as demand forecasting, replenishment planning, order management, and stock monitoring to minimize stockouts and excess inventory.
- **Transport:**The transport component encompasses the movement of goods from one location to another, utilizing various modes of transportation such as road, rail, air, or sea. It involves planning, routing, and execution of transportation activities to ensure timely and efficient delivery
- **Information and Control**: This component involves the management of information and control systems necessary for monitoring and coordinating logistics activities. It includes technologies and systems for real-time tracking, data analysis, and decision-making, such as Warehouse Management Systems (WMS), Transportation Management Systems (TMS), and Enterprise Resource Planning (ERP) systems.

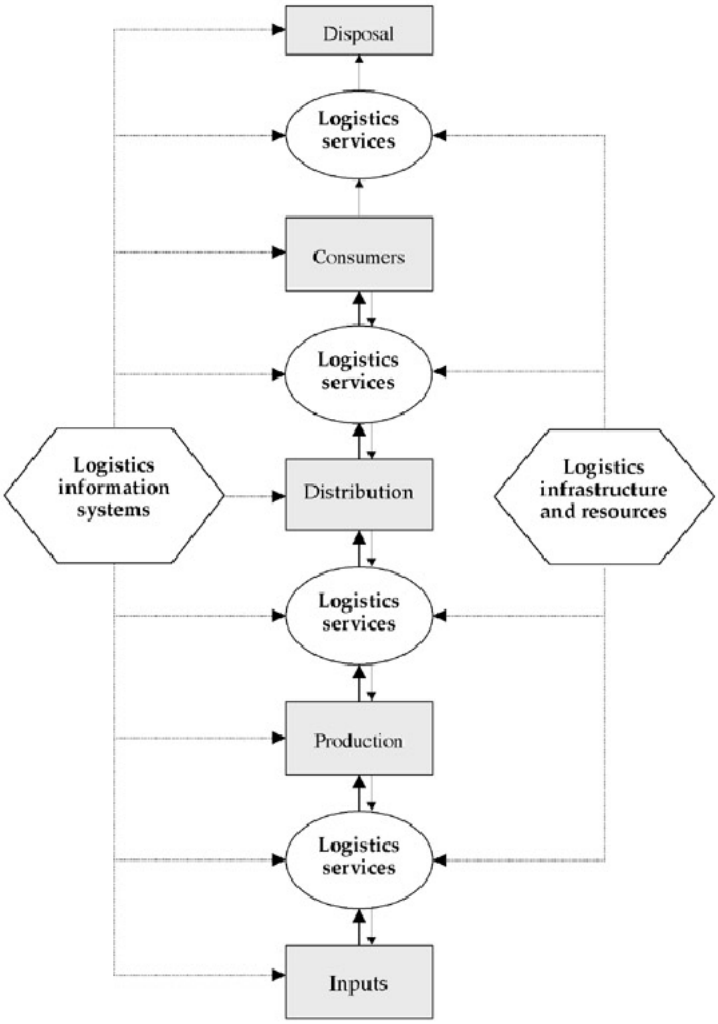


Figure 1.1: Logistics components [1]

1.2.3 History of logistics

Logistics was initially a military activity concerned with getting soldiers and munitions to the battlefront in time for flight, but it is now seen as an integral part of the modern production process. The main background of its development is that the recession of America in the 1950s caused the industrial to place importance on goods circulations. [1]The term, logistics, was initially developed in the context of military activities in the late 18Th and early 19Th centuries and it launched from the military logistics of World War II. The probable origin of the term is the Greek logistikos, meaning 'skilled in calculating'. Military definitions typically incorporate the supply, movement and quartering of troops in a set. And now, a number of researches were taken and made logistics applications from military activities to business activities. [1]Business logistics was not an academic

subject until the 1960s. A key element of logistics, the trade-off between transport and inventory costs, was formally recognized in economics at least as early as the mid-1880s. Based on the American experience, the development of logistics could be divided into four periods [1] which are represented as Figure

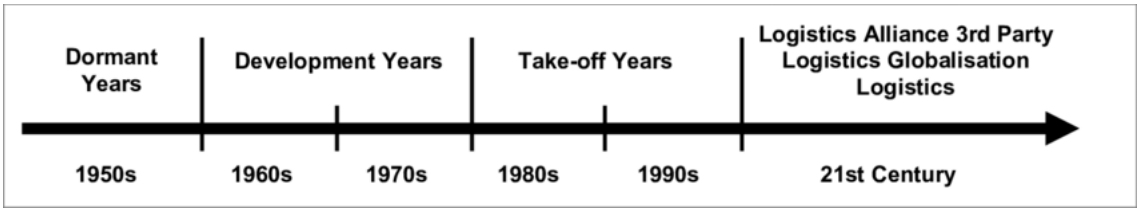


Figure 1.2: logistics history [1]

Before the 1950s, logistics was under the dormant condition. Production was the main part of the managers concerned, and industry logistics was once regarded as "necessary evil" in this period. During the 1950s to and 1960s, applying new ideas of administration on business was a tendency. who thought Logistics was The Economy's Dark Continent, regarded the procedure of physical distribution after producing products as the most possible development area in American businesses but also the most neglected area. Lewis's study in 1956 on the role of air transportation in physical distribution was the application of "total cost concept" and it pointed out the notions of trade-off between inventory and transportation. From the 1970s on wards, more and more applications and researches of logistics appeared. Due to petroleum price rise in 1973, the effects of logistics activities on enterprises grew. Slow growth of market, pressure of high stagflation, release of transportation control, and competitions of the third world on products and materials all increased the significance of logistics system on planning and business at that time.
The further tendency of logistics in the early 21st century is logistics alliance, Third Party Logistics (TPL) and globalised logistics. Logistics circulation is an essential of business activities and sustaining competitiveness, however, to conduct and manage a large company is cost consuming and not economic. Therefore, alliance of international industries could save working costs and cooperation with TPL could specialize in logistics area. [1]

1.3 Transport

1.3.1 Definition of transport

Transportation is the movement of people and goods from one place to another, using a variety of modes, including automobiles, trucks, buses, trains, ships, and airplanes. [15]

1.3.2 The importance of transport

Transportation is vital for economic development,trade, accessibility, urbanization, emergency services, environmental sustainability, and cultural exchange.It drives economic growth, connects businesses to markets, and facilitates the exchange of goods and services. Transportation provides individuals with access to essential services and promotes social inclusion.It supports urbanization by managing population movement and improving infrastructure.During emergencies, transportation enables quick response and supply distribution.
Sustainable transportation options reduce environmental impact,Additionally, transportation facilitates tourism and cultural exchange.
Overall, transportation is a critical component of modern society, driving progress and societal well-being.

1.3.3 History of Transport

1782: the Montgolfier brothers creation of the first airplane at Annonay.
1800-1900: steam engines and transportation, successes and failures Land transportation and the steam engine: Automobile applications suffered as a result of the development of the steam locomotive.
1852: Henri Giffard created the first airship. For more than 50 years, balloons have offered a variety of services. However, their interest was still constrained by the necessity of being captive, or cabled to the ground.
1860-1900: The two primary energy vectors of transportation in the 20Th century were the internal combustion engine and the electric motor.
1900-2000: increased use of motorized transportation and competition for technological excellence The modes of transportation that make up our current transportation system were already in place at the beginning of the 20Th century: the automobile, which was developed from the internal combustion engine to serve daily personal mobility; railroads with electric locomotives for national transport; and maritime transport for intercontinental exchanges. The airplane will soon be added to these currently available forms of transportation for international passenger travel.
Since the 1960s: construction of high-speed trains In 1980, Köbe, Japan will see the first commercial implementation of an automated metro system similar to the VAL.

1.3.4 Modes of transport

1. **Road transport:** Road transport refers to the movement of people and goods on land using various vehicles, including cars, buses, trucks, and motorcycles, over a network of public and private roads and highways. [16]

Figure 1.3: Road Transport [2]

2. **Maritime transport:** The term "maritime transport" describes the movement of products, people, or services over the sea utilizing ships, boats, or other vessels. It entails the transportation of cargo through oceans, seas, or navigable waterways, linking ports and promoting global trade. In order to carry bulk products, containerized cargo, and passengers cost-effectively and efficiently, maritime transport is essential to global trade.

Figure 1.4: Maritime Transport [3]

3. **Rail transportation**: Train travel is another name for rail travel. It is a mode of transportation that uses vehicles that travel along rails or railroad lines. It is one of the most significant, frequently utilized, and highly affordable methods of transportation for both people and products across long and short distances.

Figure 1.5: Rail Transport [4]

4. **Air transport:** The most recent kind of transportation to emerge in the 20Th century is also the one that is expanding the quickest; its capacity to facilitate quick exchanges of people and products and its dependability are crucial for integration and economic growth.

Figure 1.6: Air Transport [5]

1.4 Interrelationship between Transportation and Logistics

Without well developed transportation systems, logistics could not bring its advantages into full play. Besides, a good transport system in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality. The improvement

of transportation systems needs the effort from both public and private sectors. A well-operated logistics system could increase both the competitiveness of the government and enterprises. [1]

1.5 Information system

1.5.1 Definition

Information systems are combinations of hardware, software, and telecommunications networks that people build and use to collect, create, and distribute useful data, typically in organizational settings. [17]

1.5.2 Components of Information system

The information system contains five components of equipment, software, database, network and human resources that integrate to perform input, process, output, feedback and control.

- **Hardware:** It is physical component of a computer that can be seen and touched, It consists of :
  1. Input device (keyboard ,etc)
  2. output device(printer, etc)
  3. Secondary storage device (CD,DVD,etc)
  4. Internal components (CPU,RAM,etc)
- **Software computer** : It is set of data and programs which is a sequence of instruction, it used for control computer and execute tasks. There are 3 types :
  1. system software (exp : iOS, Windows).
  2. applications software (applications that do specifics tasks) .
  3. utility software (exp: security and optimisation programs) .
- **Database** : A database is a collection of data that is organized in a way that enables efficient storage, retrieval, and analysis of that data. [18]
- **Network** : It is a system that links two or more computing devices for the purpose of information sharing and transmission. it consists two types very common :WAN(wide area network) and LAN(local area network).

- **People** :The individuals who interact with the information system, including users, managers, analysts, and IT professionals, who contribute to its operation and utilization.

1.5.3 What Are The Types Of Information Systems?

- **Transaction Processing Systems (TPS)**: TPS handle routine transactions like sales and inventory changes, ensuring accurate and efficient data processing for day-to-day operations.
- **Management Information Systems (MIS)**:MIS provide reports and information to support decision-making and strategic planning for middle and senior managers. They present summarized data in a structured format.
- **Decision Support Systems (DSS)**:DSS assist managers in making decisions by offering interactive tools and models for data analysis and scenario simulation. They support decision-making at different managerial levels.
- **Executive Support Systems (ESS):** ESS cater specifically to top-level executives, providing strategic information from internal and external sources. They aid in monitoring organizational performance and making high-level strategic decisions.
- **Knowledge Management Systems (KMS):** KMS capture, organize, and distribute an organization's knowledge assets to facilitate knowledge sharing, collaboration, and decision-making. They focus on leveraging intellectual capital.
- **Enterprise Resource Planning (ERP) Systems:** ERP systems integrate various business functions and processes into a unified system, enabling efficient data sharing and coordination across departments.
- **Customer Relationship Management (CRM) Systems**: CRM systems manage an organization's interactions and relationships with customers, aiming to enhance customer satisfaction, retention, and overall business performance.
- **Business Intelligence (BI) Systems:**BI systems collect, analyze, and present data to support decision-making, helping organizations derive insights from large amounts of data and make data-driven decisions.

1.5.4 How To Apply Information Systems in Business

Applying information systems in business involves several steps and considerations. Here are some key guidelines for implementing information systems in a business setting:

- **Assess Business Needs:** Start by identifying the specific needs and challenges of your business. Determine the areas where information systems can bring value, such as improving operational efficiency, decision-making processes, customer relationship management, or data analysis.
- **Define Objectives:** Set clear objectives for how information systems can support your business goals. Establish measurable targets, such as reducing processing time, enhancing data accuracy, or improving customer satisfaction.
- **Select Appropriate Systems:** Research and select the information systems that align with your business requirements. Consider factors such as scalability, compatibility with existing infrastructure, ease of use, and the ability to integrate with other systems.
- **Involve Stakeholders:** Engage stakeholders throughout the implementation process. Seek input from employees, managers, and IT professionals who will be using or affected by the information systems. Encourage open communication and address any concerns or resistance to change.
- **Plan Implementation:** Develop a detailed implementation plan that outlines the steps, timeline, and resources needed. Consider factors such as system configuration, data migration, training, and change management strategies.
- **Test and Pilot:** Prior to full deployment, conduct thorough testing of the information systems to ensure they function as intended. Consider piloting the system in a smaller, controlled environment to identify any issues and gather feedback for improvement.
- **Train Users:** Provide comprehensive training programs to ensure employees are familiar with the information systems and understand how to use them effectively. Offer ongoing support and resources to address questions or challenges that may arise.
- **Monitor and Evaluate:** Continuously monitor the performance and impact of the information systems on your business. Collect feedback, analyze data, and assess whether the systems are meeting the defined objectives. Make necessary adjustments or improvements as needed.

- **Ensure Data Security:** Implement robust security measures to protect sensitive data and ensure compliance with relevant regulations. Establish user access controls, data encryption, and backup processes to safeguard information and maintain data integrity.
- **Foster a Culture of Continuous Improvement:** Encourage a culture of learning and innovation around information systems. Encourage employees to provide feedback, share best practices, and explore ways to leverage the systems for further business improvements.

1.6 Conclusion

The purpose of this chapter is to understand the domain of our application, we have studied modes of transport and information systems . So our application in the field of road transport exactly in the transport of goods

Chapter II

Stat of art

2.1 Introduction

Transportation is a reality of our life and without effective and affordable transportation it becomes impossible for any kind of movement from one place to another.
Transportation is an important means of carrying out transactions, and the demand for Transport is very strict for trade. This chapter provides a brief summary of Some companies and graduation projects in the same field of our project.

2.2 Summary of Companies

2.2.1 In Algeria

- **Yassir** is a model of Algerian start-up, operational since 2017, it is specialized in transport and vehicle rental with or without driver (VTC), has been able to three years to develop its business in 13 wilaya and expects to reach 25 in the coming months. The company also has a network of partners of 13 000 drivers including 350 women and about 2 million users. Recently Yassir has put online new services online, namely : Yassir Food and Yassir Business. this figure represented the logo of yassir's.

Figure 2.1: Yassir's logo [6]

Heetch: It is a French start-up that facilitates transport between individuals and its two executives teddy pellerin and mathei Jacob in April 2013 Heetch claims nearly 12,000 registered drivers (against 30,000 before the conviction) per 8,000 workers per week and nearly 100,000 weekly journeys. This pictures is a logo of heetch.

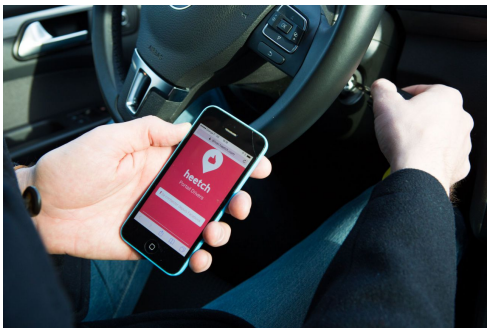


Figure 2.2: Heetch's logo [7]

- **Yalidine**:Born from the union between two people from the courier sector, the company Yalidine El Djazair Service present on the market since 2013.The company operates in the field of courier and express logistics on the domestic network and ensures the collection and delivery on 55 wilayas. logo of this company is represented in figure :

Figure 2.3: Yalidine's logo [8]

- **DHD Delivery** DHD Delivery is a Algerian company operating in the express delivery sector. With the rise of online commerce, delivery is becoming an increasingly important part of our consumption patterns, and is an integral part of the act of online purchase that inevitably results in the filling of the delivery address and the choice of delivery method (delivery, pick up, exchange).In this context DHD express

delivery was founded in March 2019, specialized in home delivery of parcels and emails, We intervened in 54 wilayas with maximum flexibility.

Figure 2.4: DHD Delivery s logo [9]

- **Universal Demenagement**: its is a Algerian company for Furniture lift rental and Transport of goods,furniture storage,Maritime transfer. [10]

Figure 2.5: Universal Demenagement logo [10]

- We can find the small company in Algeria of the domain transport in the website Kompass.

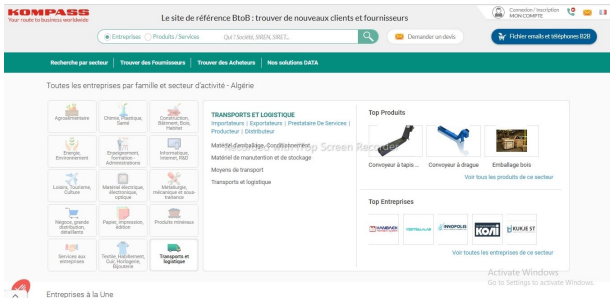


Figure 2.6: Kompass web site [11]

- **Bejaia logistic**: is the first and only company of goods transport in Algeria to be certified SMI,Bejaïa Logistic implements an integrated management system, in accordance with the requirements of the Standards.

2.2.2 Outside Algeria

- **DHL**:is a German logistic company providing international shipping and courier services, it was established in 1969, it has transport systems including planes, trains and boats.logo of this company presented in figure:

Figure 2.7: DHL Logo

- **FedEx** : FedEx is an American multinational conglomerate holding company focused on transportation, e-commerce and business services based in Memphis, Tennessee,it was used from 1973 until 2000.
  today is best known for its air delivery service ,which was one of the first major shipping companies to offer overnight delivery as a flagship service.

Figure 2.8: FedEx Logo [12]

- **Uber** : Uber Technologies,based in San Francisco, provides mobility as a service/ride-hailing, food delivery, package delivery couriers via Uber Eats and Postmates , and freight transport , it was founded in 2009.

Figure 2.9: Uber Logo [13]

2.3 Summary of projects graduated

1. **Design and production of a multi-platform mobile application for road transport of people and goods in real time By S.Bouterfa and Z.Hadid, univ tiziouezou 2016** : The rapid rise and spread of information and communication technologies has a direct and dramatic impact on all aspects of life, hence the concept of a smart city. One of the main components that makes it possible to live in a so-called smart city is the adaptation of smart transport in the city. Intelligent transport systems are an essential part of the transport system and policy. They cover all fields and activities related to transport (passengers, air, sea, rail, inland waterways, road, public transport, new mobility) and contribute fundamentally to its efficiency. The main objective of the work is to provide a multi-platform mobile application (i.e., one that will work on all mobile operating systems on the market) The European Commission's Directorate-General for the Environment, Public Health and Consumer Protection. [19]

2. **Development of application for transporting things by R.Brahimi and M.Abli,Univ M'sila 2020**: The objective of this work is to design and build a system that facilitates the transport of objects from one location to another. We proposed a solution that consists of developing an application for the transportation of people, goods and other objects. [20]

3. **Creation of a mobile application for intelligent transport management By kh.kousou and A.Bouchouicha,Univ telmcen 2019** : Increasing people's movements in their daily lives: traveling to jobs, recreation centers, or any other trip requires them to use different modes of transportation. Road transport is the

most used in urban areas. However, the latter is experiencing profound upheavals: congestion, accident, pollution, Public transport (bus, tram, ...) can deal with all these problems but this is achievable only with better management of the latter. In this thesis, we are interested in urban buses. Our goal is to create a bus network manager whose job it is to find the right conditions so that buses can offer the best services. [21]

2.4 Conclusion

In this chapter we talked about some popular companies and projects that graduated to the same field, this allowed us to identify the various projects and different companies that help us to developed our project.

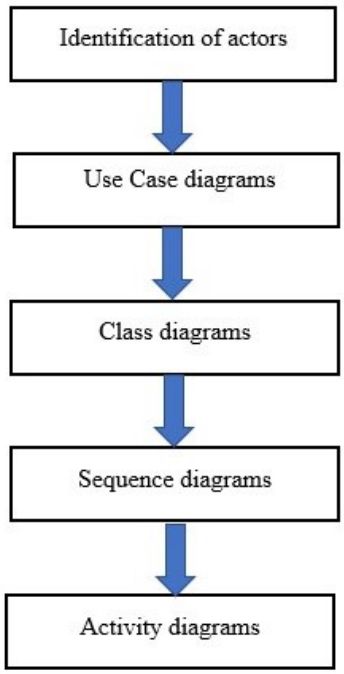
Chapter III

Design

3.1 Introduction

In this chapter, we delve into the crucial phase of design of our application. We focus on translating the identified requirements into a functional and structured design, emphasizing design choices, diagrams, and models used.
It is necessary to follow an approach rigorous methodology. that guide the development of our application, ensuring consistency and optimal efficiency.

Figure 3.1: approach methodology



3.2 Mobile Application

3.2.1 Definition

Mobile application is a set of programs that runs on a mobile device and perform certain tasks for the user new and fast developing Segment of the global Information and Communication Technology [22]

3.2.2 The Great App Divide: Cross-Platform vs. Native Apps

- **Native Apps** A native mobile app is an application which only looks for particular operating system by using their IDE and SDK. Native apps have the ability to use device-specific hardware and software and can provide quality with huge performance rates. [23]

- **Cross-Platform Apps** A cross platform application is a mobile app which is compatible with multiple operating systems and can therefore run on any smart phones or tablets. [23] cross-platform mobile applications can be divided into four basic groups:

  - Web Apps : A web app is an application that uses an Internet browser to run and has limited access to the underlying hardware of the mobile device . [24]
  - Hybrid Apps : Hybrid apps are primarily built using HTML5 and JavaScript, and a detailed knowledge of the target platform is not required. [25]
  - Interpreted Apps : These apps emulate native apps by allowing users to interact with the user interface components that are specific to a particular platform. These applications can be developed using Ruby, XML, and JavaScript etc. [24]
  - Generated Apps : Generated apps are compiled just like a native app and a platform specific version of the application is created for each target platform. A popular example of software development environment for creating generated apps is Applause. [25]

3.2.3 Both benefits and drawbacks

- **Benefits**

  - **Ease of access:** Thanks to the cellphones they carry about, users can access applications whenever they want, wherever.

- **Camera and location features**: Mobile applications have the ability to access location and camera functions, allowing them to be leveraged to deliver specialized and effective services.
- **Greater interaction:** Push notifications, SMS messages, and phone calls are just a few of the ways that mobile apps may communicate with consumers more.
- **Easy to install and update:** The App Store offers simple download options for mobile apps, which occasionally receive automated updates.

- **Drawbacks**
  - **Screen size:**The tiny screen size might make it challenging to utilize an app for lengthy periods of time or for tough activities. Battery life: Using applications might result in a rapid battery loss.
  - **Efficiency:** Particularly when working with huge data processors, mobile apps might perform less efficiently than desktop programs.
  - **System limitations:**Because to operating system limitations, not all mobile devices may support all functionalities of mobile apps.

3.2.4 Objective of our Mobile App

- **Convenience :**A mobile application makes it easy for customers and drivers to use the transportation service from their mobile devices at any time and from any location. To arrange a pickup or delivery, they are not need to make a phone call or be tethered to a desktop computer.
- **Real-time tracking :**A mobile application makes it possible to track shipments in real-time, which is a useful feature for customers. They can obtain updates on the anticipated arrival time and follow the whereabouts of their products.
- **Improved communication :**A smartphone application gives customers and drivers a direct line of communication, allowing them to converse in real time. This can lessen the chance of misunderstandings and delays brought on by poor communication.
- **Effective payment system :**A mobile application can provide a reliable payment system that enables users to send money swiftly and securely. Customers no longer need to carry cash or use other payment methods because of this.

- **Data analytic :**A mobile application can offer the transportation service provider useful data analytic, allowing them to enhance their offerings and spot areas for development. To improve their operations, companies can, for instance, monitor the quantity of orders, delivery times, and the most popular delivery areas.

3.3 Desktop application

3.3.1 Definition

Desktop applications are software programs that are installed on a user's computer and can be accessed directly from the desktop. They are a valuable tool for businesses of all sizes, They are an important tool for companies of all sizes because they may boost production, efficiency, and communication.

3.3.2 Desktop application Types

There are many different types of desktop applications, each with its own purpose.Desktop apps come in a variety of popular forms, including:

1. **Productivity applications**: These applications are designed to help users with tasks such as word processing, spreadsheets, and presentations. Examples of productivity applications include Microsoft Office, Google Docs, and LibreOffice.

2. **Graphics and multimedia applications :** These are applications that allow users to create and edit images, videos, and audio files. Examples of graphics and multimedia applications include Adobe Photo-shop, Adobe Premiere, and Audacity.

3. **Web browsers:**These applications are used to access the internet. Examples of web browsers include Google Chrome, Mozilla Firefox, and Microsoft Edge.

4. **Gaming applications:** this one that allow users to play games on their desktop computers. Examples of gaming applications like Mine-craft.

5. **Business application:** These programs are made to assist companies with activities including project management, bookkeeping, and customer relationship management (CRM). Applications for businesses include Microsoft Project, Salesforce, and Quick-Books.

3.3.3 Both benefits and drawbacks

- **Benefits** :
  Among the objectives of desktop applications are:

  1. **Performance:** Because desktop apps do not require an internet connection, they may be quicker and more responsive than web applications.
  2. **Security:**desktop apps can be made to operate locally on the user's machine. In order to defend against threats like cross-site scripting and SQL injection.
  3. **Customization:**Desktop programs can be created to complement a business's branding and offer a constant user experience across all of its goods and services.
  4. **Offline access:** Desktop programs can be used offline, which is beneficial for businesses that conduct business in regions with spotty or intermittent internet connectivity.

- **Drawbacks**
  To develop desktop applications you should know that they also have some drawbacks include:

  1. **Platform-specific:**Desktop apps are frequently made to run on a particular operating system, which can restrict their use and add to the development effort needed to support other platforms.
  2. **Installation and maintenance:** Installing and maintaining desktop apps may be time-consuming and expensive for both the user and the developer.
  3. **Limited accessibility:** Desktop app are typically installed on a user's computer, which can limit their accessibility for users who need to access the application from multiple devices or locations.
  4. **Limited collaboration:** Collaboration is limited in desktop apps because users often need to exchange files or work on the same computer to cooperate effectively.

So,desktop applications offer a number of advantages , such as better performance, security, and customization. However, Your own requirements and preferences will decide the best solution for you.

3.3.4 The Objective of our Desktop:

The main objective of an enterprise desktop is to provide a secure, consistent, and efficient computer platform to save and aggregate company data.

3.4 Design

The Design is the last step before the technical realization of The applications, it is therefore to realize the model that will be implemented. Just like the analysis step, UML uses different diagrams for the design.

- **Identification of actors:**
  Actor : An actor is any person, organization, or external system that interacts with the system being described. [26]

- **In our desktop application** : we have one actor who interact with the system:
  - **User-Admin** :This is the person who uses the application to save data or search or print ...etc

- **In our Mobile App** ,we have three actors:
  - Admin : The admin role is responsible for activating the delivery personnel to receive orders from clients and managing the data analytic.
  - User or Client : Users or clients are individuals who place orders through the platform. They can conveniently select services, make online payments, and track the progress of their shipments in real-time.
  - deliverer:Deliverers are the designated personnel who accept orders from users and ensure their prompt delivery. They will receive notifications for new orders, manage the delivery process, and provide a high level of service to ensure customer satisfaction.

3.4.1 use case

A use case is a description of a set of sequences of actions that a system performs that yield an observable result of value to a particular actor. [27] Use case related to our Mobile application:

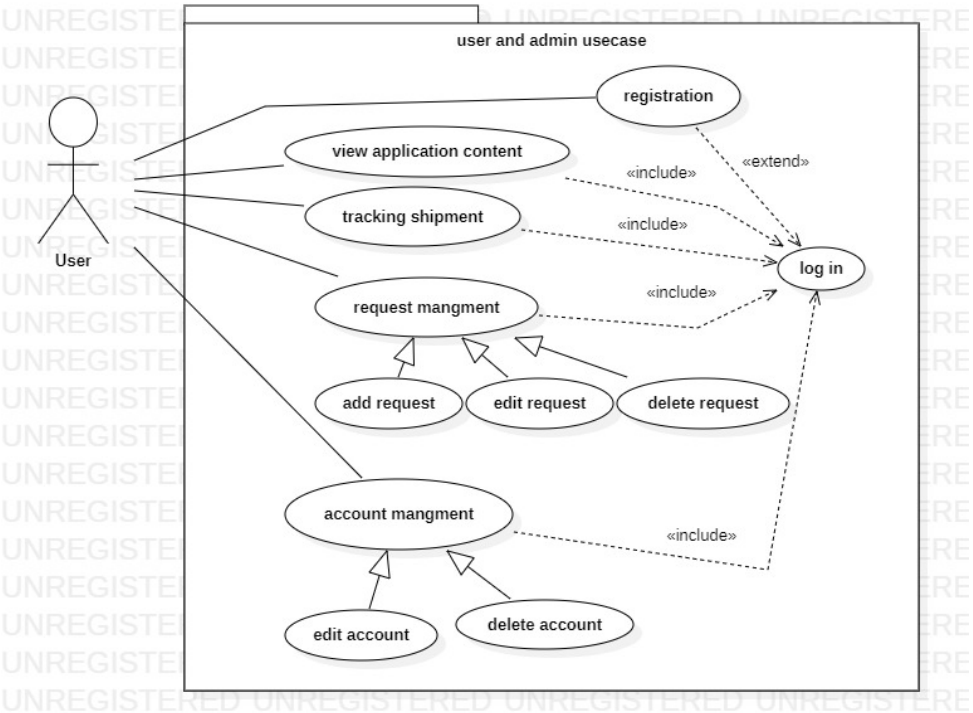


Figure 3.2: use case of User

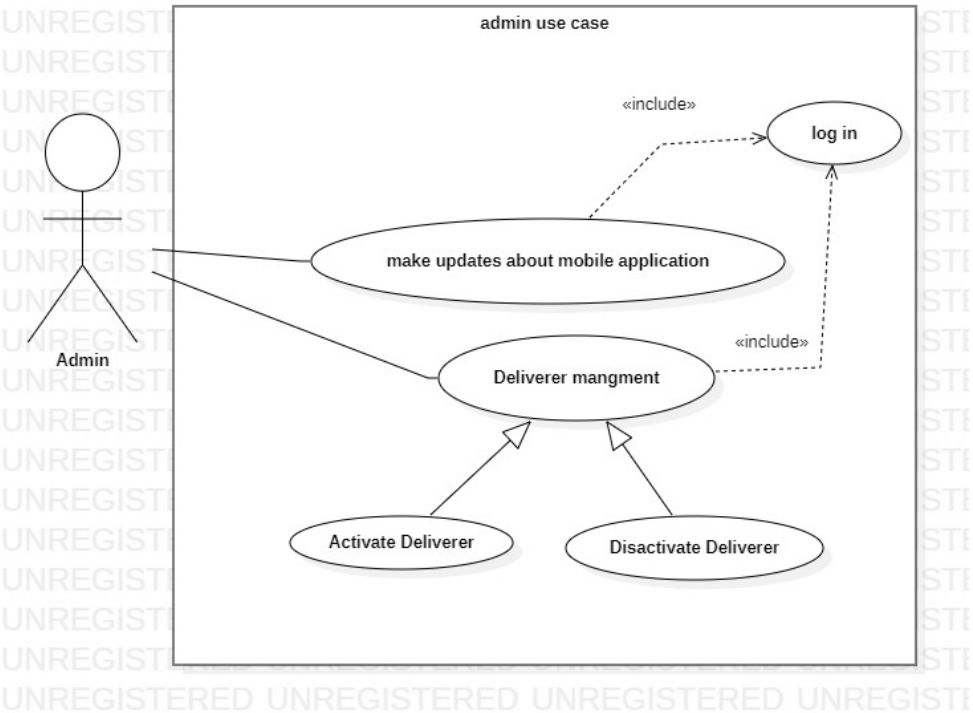


Figure 3.3: use case of admin

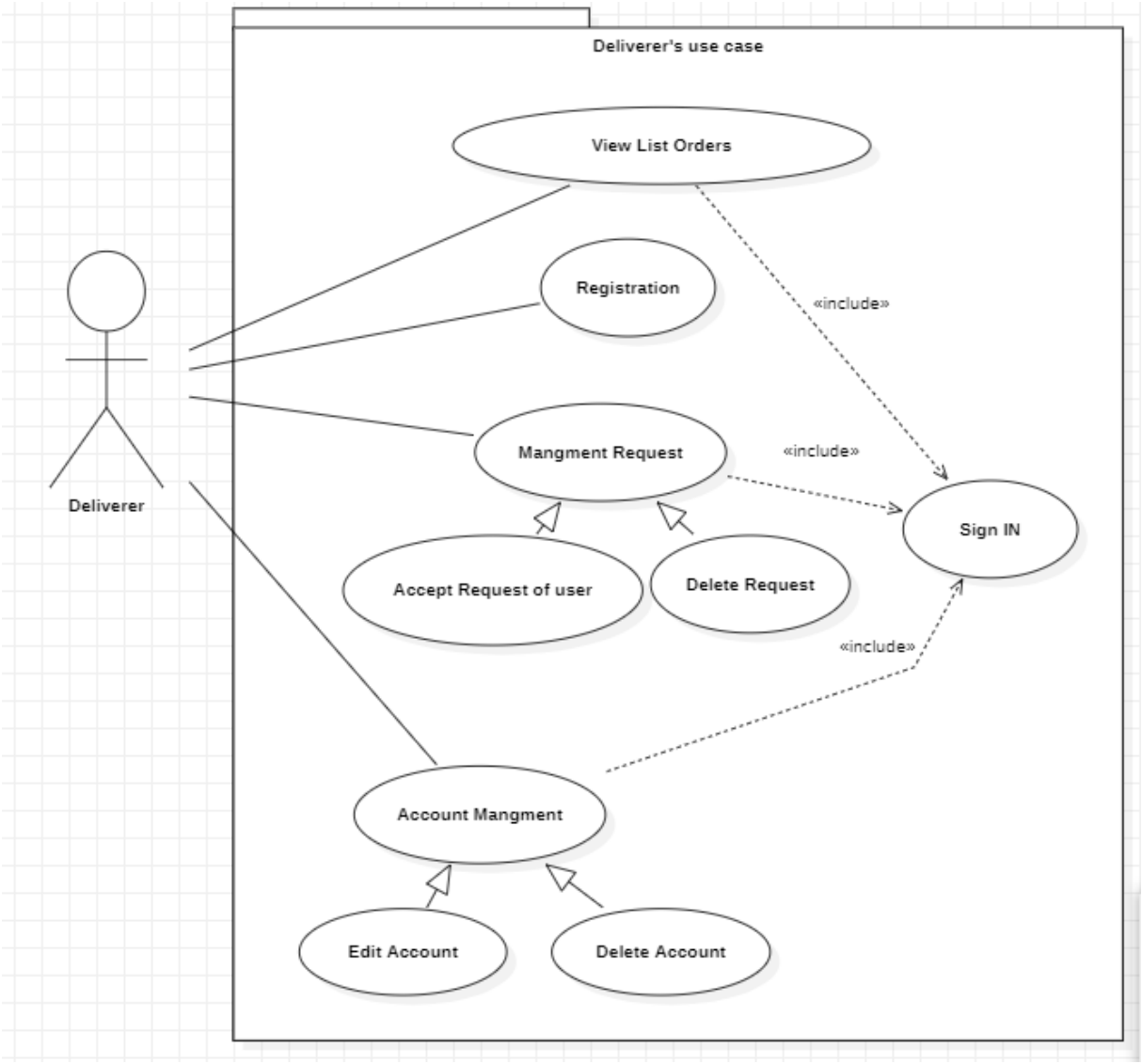


Figure 3.4: use case of deliverer

Use case related to our Desktop application:

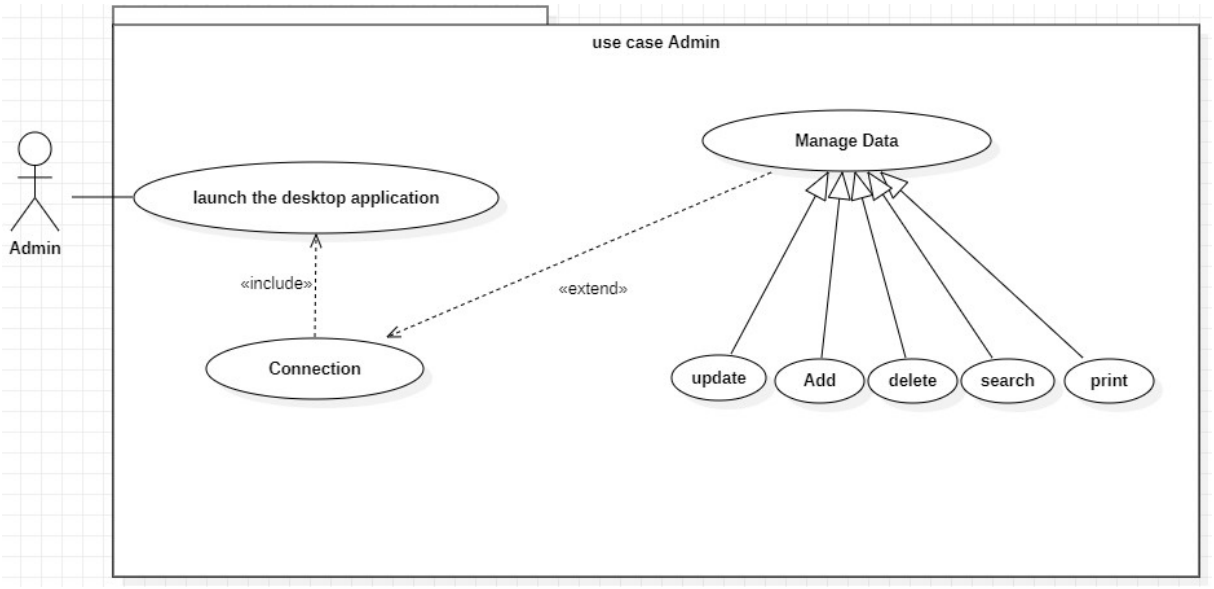


Figure 3.5: Use Case Diagram

3.4.2 Class diagram:

A class diagram is a static diagram that shows the structure of a system by modeling its classes, their attributes, operations, and the relationships among objects. [28] Here are the Class diagram for our Mobile App seen above :

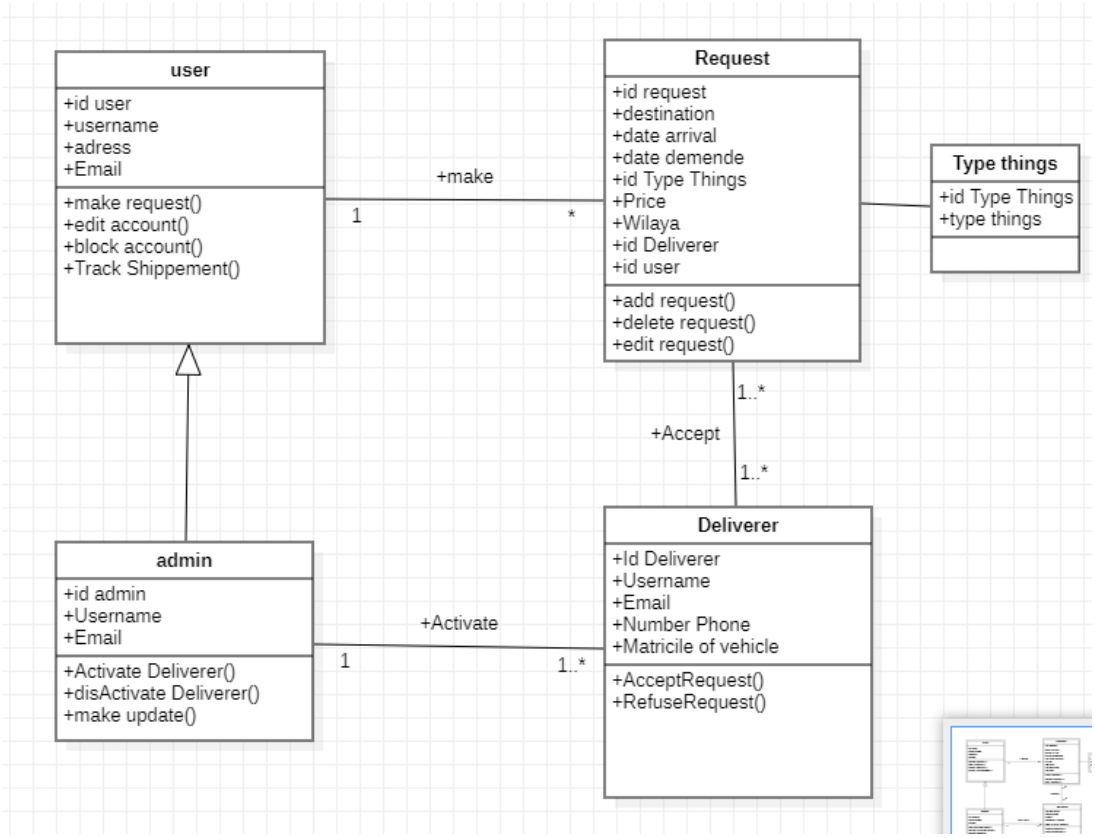


Figure 3.6: Class Diagram of Mobile APP

Here are the Class diagram for our Desktop App seen above :

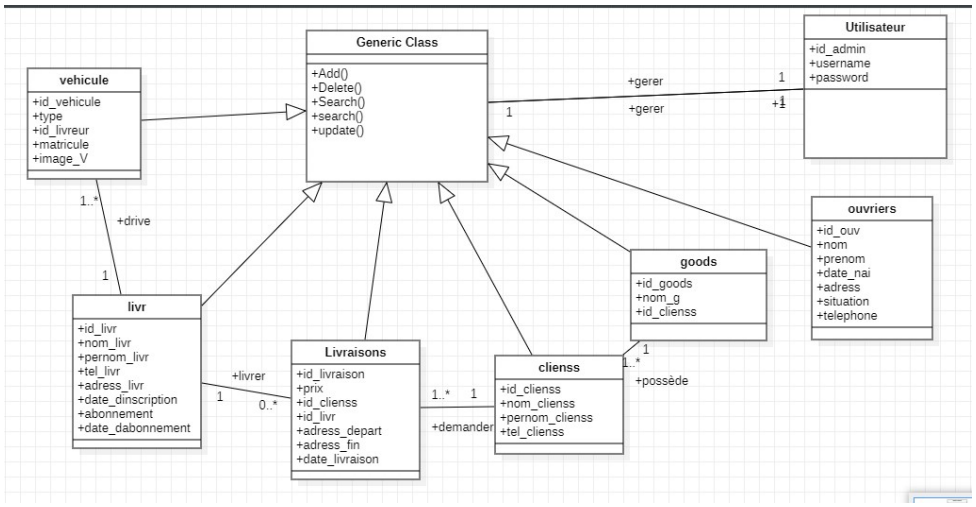


Figure 3.7: Class Diagram

3.4.3 Sequence Diagram

: A sequence diagram is a good way to visualize and validate various run time scenarios for a single use case. [29]
Here are the Sequence diagram for our Mobile App seen above :
we represent the interactions for the actions of delete, edit, and insert in a concise manner by showing just one of them. This approach avoids repetition

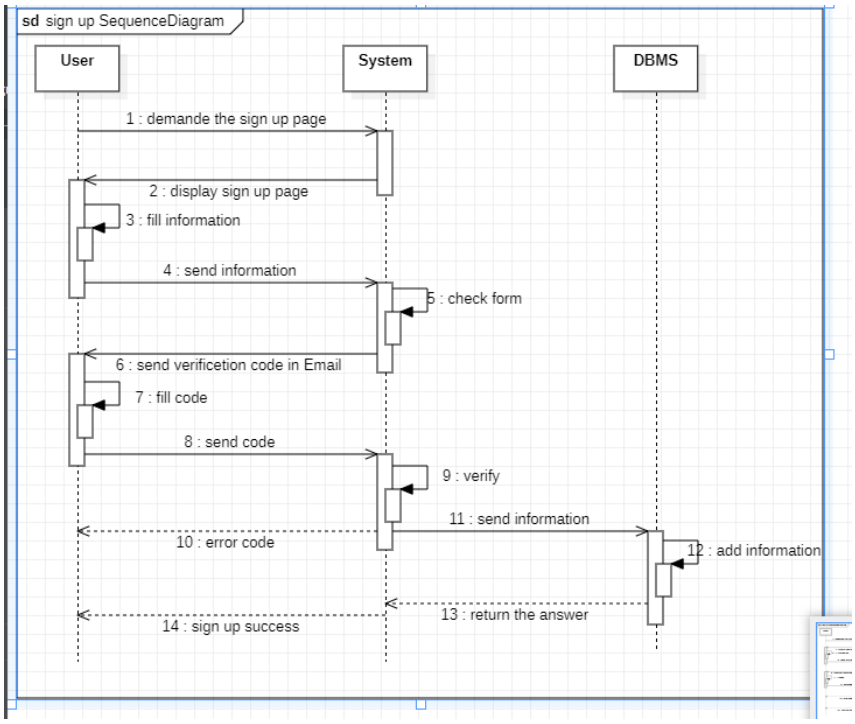


Figure 3.8: Sequence Diagram : Sign up

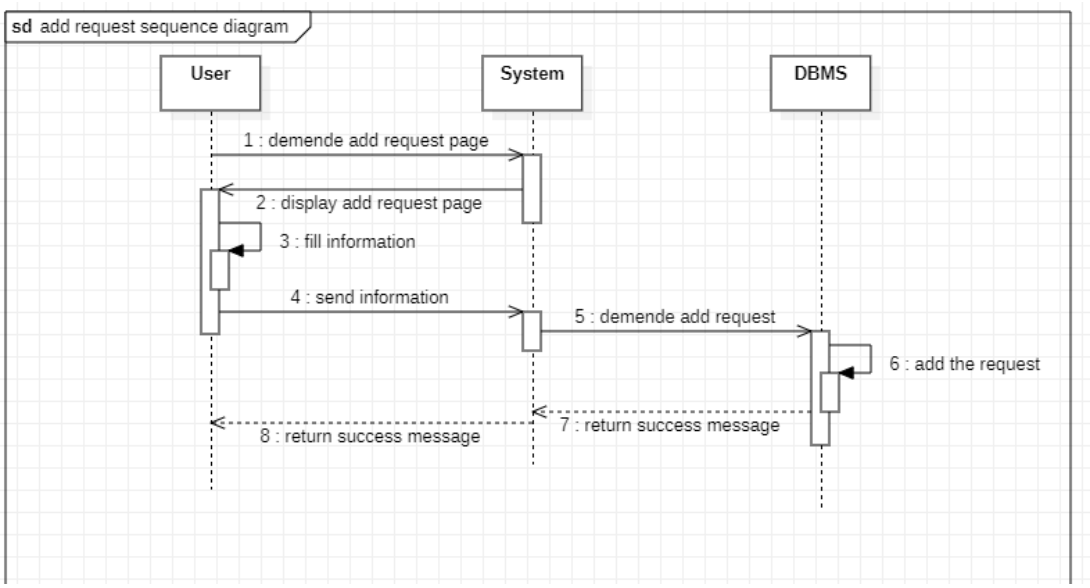


Figure 3.9: Sequence Diagram : Add Order

Here are the Sequence diagram for our Desktop App seen above :

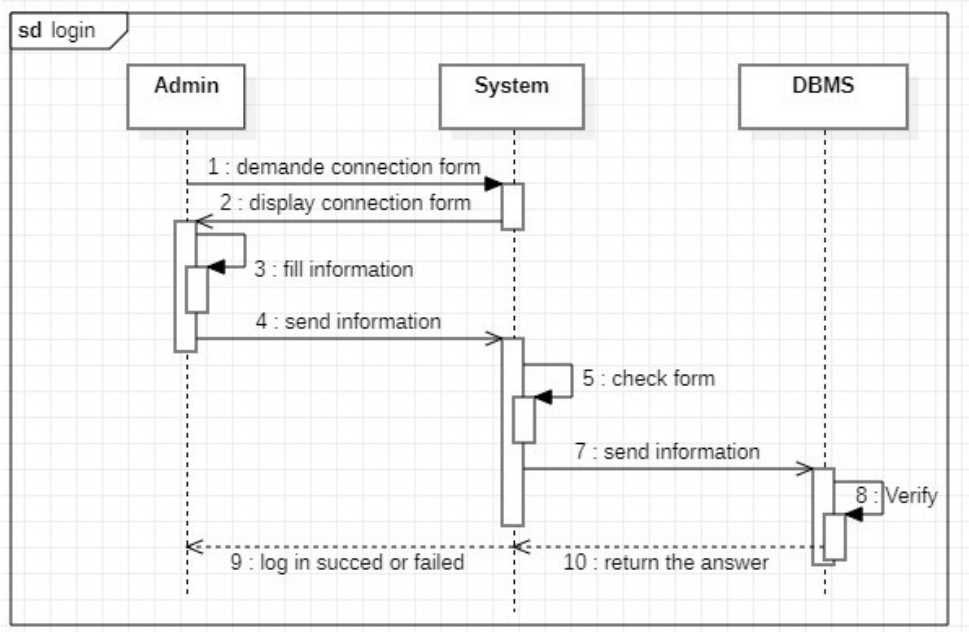


Figure 3.10: Sequence Diagram : Connection

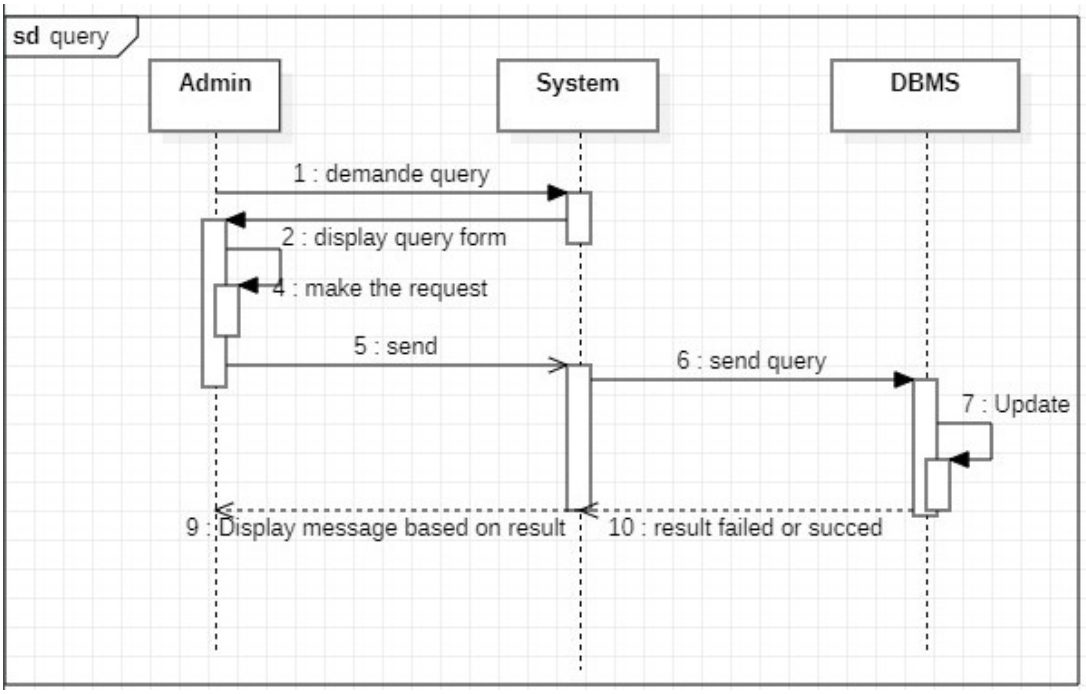


Figure 3.11: Sequence Diagram : Request in Desktop

3.4.4 Activity Diagram:

An activity diagram is a graphical representation of a process flow that includes activities, decisions, and synchronization points. [30] Here are the Activity diagram for our Mobile App seen above :

If i have multiple cases in an activity diagram, but i only want to show a specific subset of them, i use a decision node or a merge node to indicate the branching or merging of different paths :

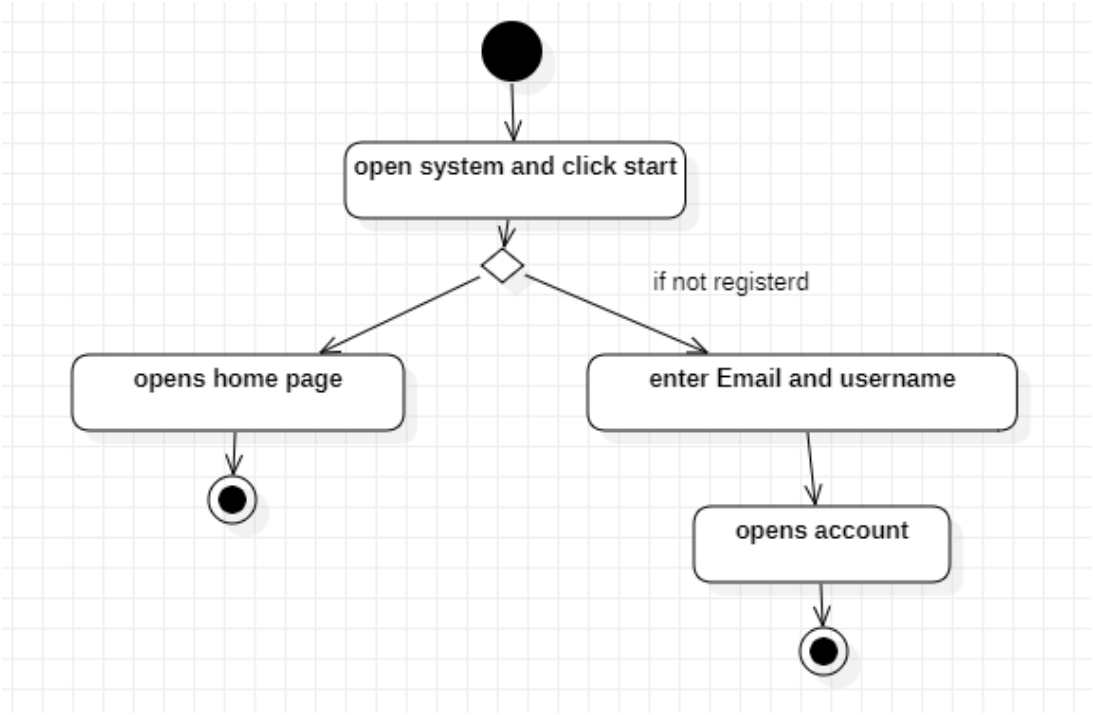


Figure 3.12: Activity Diagram

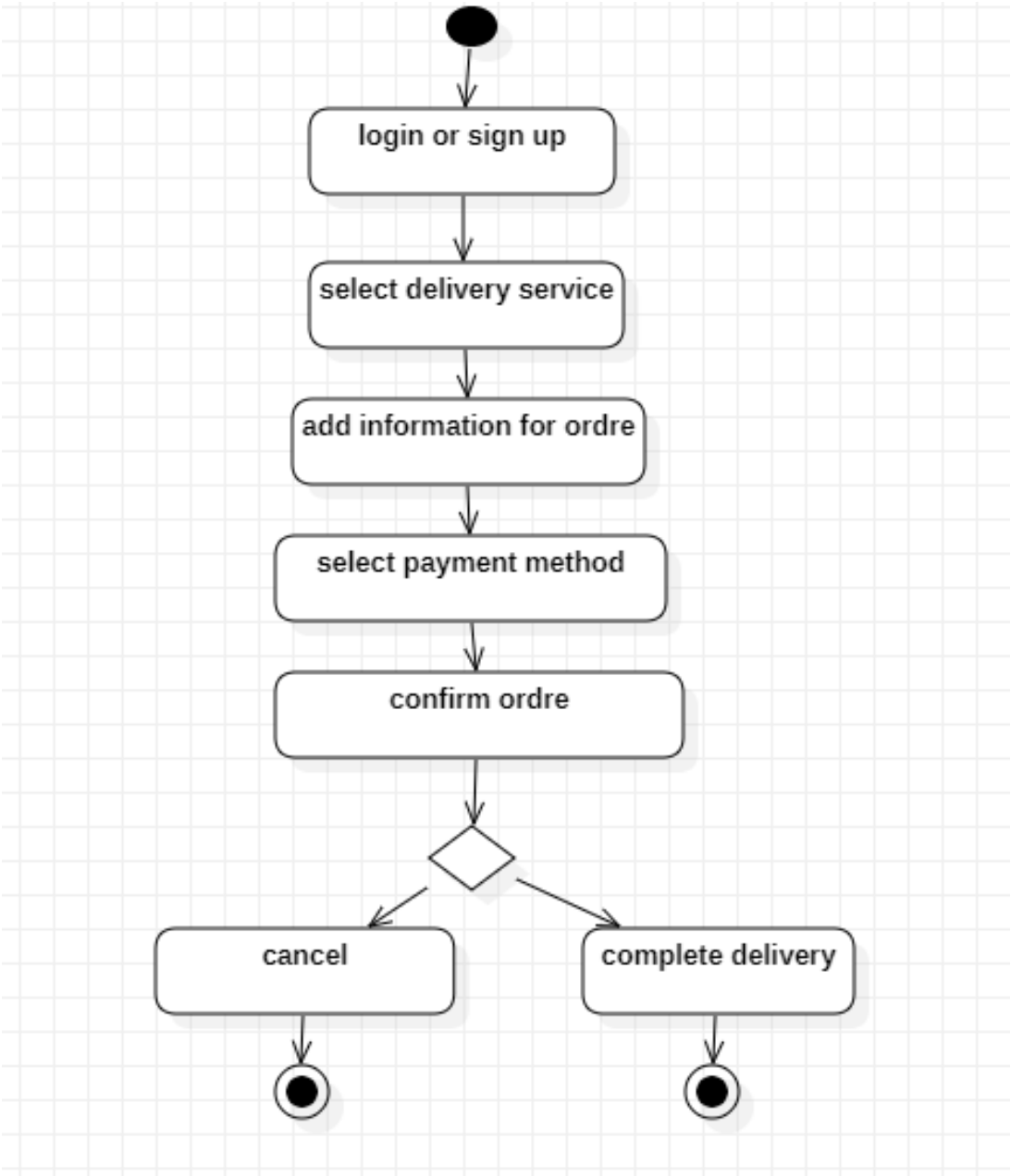


Figure 3.13: Activity Diagram

Here are the Activity diagram for our Desktop App seen above :

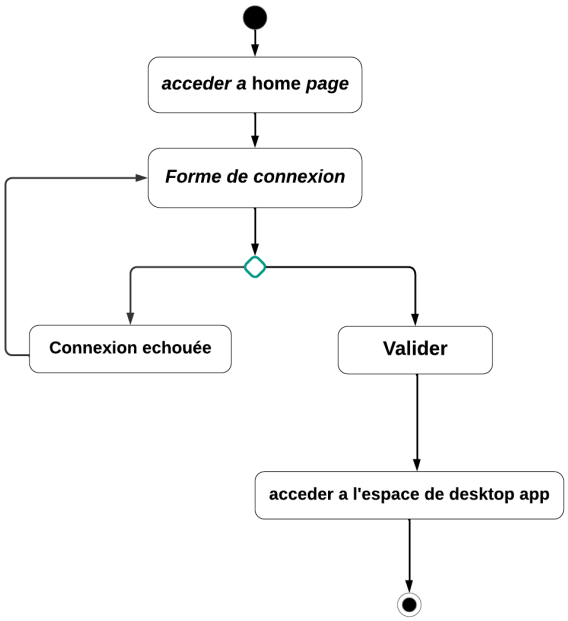


Figure 3.14: Activity Diagram

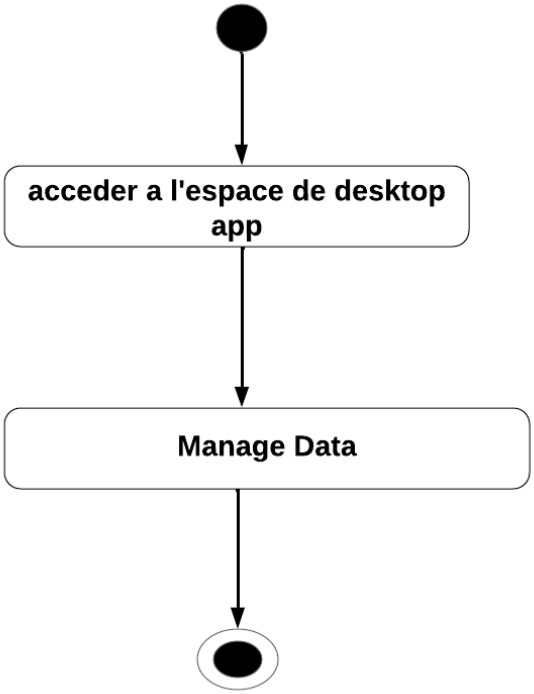


Figure 3.15: Activity Diagram

3.5 Conclusion

in this chapter ,the design and analysis chapter has played a significant role in establishing a strong foundation for the development of our application. We focused on analyzing the requirements and translating them into a clear and organized design that meets the needs of users and project objective.
In the next chapter, we will define the different tools used and leverage the analysis and design conducted in this chapter to assist us in realizing the applications.

Chapter IV

Implementations

4.1 Introduction

The previous chapter presents the different stages of analysis and design, we will present in this last chapter the development environment.
we delve into the exciting phase of implementation, where we transform our carefully designed concepts into a fully functioning application. The focus shifts from planning and design to the actual development and coding of the software.

4.2 Environment

1. **Physical environment:**
   To develop this applications, we utilized the following hardware:

   - **for Desktop application :**laptop computer Dell I5 , 3rd generation, 4,00 GB RAM.
   - **for mobile application :** laptop computer Dell I5 , 5Th generation, 8,00 GB RAM.

2. **Software environment:**
   For the implementation of our application, we have opted for the following software tools:

   - **In Desktop application :**

     (1) Visual Studio Community to develop desktop application.

     (2) Microsoft SQL Server Management Studio, MYSQL query language to query the database.

- **In Mobile application :**

  (1) Android Studio Using Java to develop Mobile application.

  (2) Firebase,to query the database.

4.3 Development and Programming Languages: Choosing the Right Tools for the Job

4.3.1 Android Studio :

Definition : Android Studio is the official Integrated Development Environment (IDE) for Android app development. Based on the powerful code editor and developer tools from IntelliJ IDEA , Android Studio offers even more features that enhance your productivity when building Android apps. [31]

- IntelliJ: IntelliJ IDEA is an Integrated Development Environment (IDE) for JVM languages designed to maximize developer productivity. It does the routine and repetitive tasks for you by providing clever code completion, static code analysis, and refactoring, and lets you focus on the bright side of software development, making it not only productive but also an enjoyable experience. [32] Use IntelliJ IDEA to develop applications in the following languages that can be compiled into the JVM byte-code, namely: Java,Kotlin,Scala,Groovy. [32]

4.3.2 Firebase:

Definition : Firebase is considered as web application platform, It helps developers builds high-quality apps. It stores the data in JavaScript Object Notation (JSON) format which does not use query for inserting, updating, deleting or adding data to it. It is the back-end of a system that is used as a database for storing data. [33]

4.3.3 Visual Studio Community:

Definition: Visual Studio is an Integrated Development Environment(IDE) developed by Microsoft to develop GUI(Graphical User Interface), console, Web applications, web apps, mobile apps, cloud, and web services, etc. With the help of this IDE, you can create managed code as well as native code.It is not a language-specific IDE as you can use this to write code in C, C++, VB(Visual Basic), Python, JavaScript, and many more languages. [34] There are 3 editions of Microsoft Visual Studio as follows:

1. Visual Studio Community: It is a free, full-featured edition of Visual Studio that includes a complete collection of tools for developing a variety of apps. It is appropriate for solo developers, open-source projects, academic research, and small teams.

2. Visual Studio Professional: This Visual Studio version is intended for professional developers and small teams working on commercial software development projects. It includes powerful debugging, profiling, and testing tools, as well as collaboration and productivity capabilities.

3. Visual Studio Enterprise: is Visual Studio's most complete edition, aimed at large development teams and enterprise-level applications. It includes all of the features of the Professional edition as well as extra performance optimization tools. It also includes capabilities for team collaboration and interaction with business systems.

installation:

- Step 1: Visit the official Microsoft Visual studio website and download .all the versions of the same are available on Website.

- Step 2 : Run the Visual Studio Installer, Once the installer is downloaded, run it to start the installation process. You may be prompted to choose the components you want to install. Ensure that the ".NET desktop development" workload is selected, as it includes support for C, and then click on Install.

- Step 3 : Now let the Visual Studio Installer download the packages and perform the installation.

- Step 4 : After the installation is complete, launch Visual Studio from the Start menu or desktop shortcut.

- Step 5: To create a new Windows Forms project, go to "File" > "New" > "Project" in Visual Studio. Under the C language category, select the "Windows Forms App (.NET Framework)" template.

4.3.3.1 The tools used by visual studio:

- C-sharp (C): C, pronounced "C-sharp," is an object-oriented programming language from Microsoft that enables developers to build applications that run on the .NET platform. C has its roots in the C family of programming languages and shares many of the same characteristics as those found in C and C++, as well as in Java and JavaScript. [35]

- ADO.Net : ADO.NET is a set of classes that expose data access services for .NET Framework programmers. ADO.NET provides a rich set of components for creating distributed, data-sharing applications. It is an integral part of the .NET Framework, providing access to relational, XML, and application data. [36]
- Guna Framework :The Guna Framework is a C/.NET user interface (UI) framework designed to ease and improve the building of contemporary, aesthetically appealing desktop applications. It includes a set of UI controllers, styles, and themes that may be simply incorporated into C projects.
- NuGet Package Manager: NuGet is an integrated package management system that allows developers to effortlessly add, delete, and update external libraries and dependencies in their projects.

4.3.4 Microsoft SQL Server Management Studio :

Definition : SQL Server Management Studio (SSMS) is an integrated environment for managing any SQL infrastructure. Use SSMS to access, configure, manage, administer, and develop all components of SQL Server, Azure SQL Database, Azure SQL Managed Instance, SQL Server on Azure VM, and Azure Synapse Analytic. SSMS provides a single comprehensive utility that combines a broad group of graphical tools with many rich script editors to provide access to SQL Server for developers and database administrators of all skill levels. [37] **Installation:** Visit the official Microsoft Download Center website to download the latest version of SQL Server Management Studio,Run the Installer,Accept License Terms,Select Features,Choose Installation Location,Specify Instance,Select Installation Rules (optional),finally "install".

4.3.5 MySQL language

- Definition:MySQL is an open-source relational database management system (RDBMS) that manages and manipulates databases using the SQL (Structured Query Language) language. SQL is a standardized language for communicating with databases, and MySQL uses it to conduct a variety of database tasks.
  It is a database manipulation language created by IBM in the 1970s. SQL, or Standard Query Language, is a programming language that enables for basic database queries. It has a precise syntax that must be followed in order to communicate with the database effectively.
  The ultimate purpose of utilizing SQL is to incorporate these SQL queries in a program written in another language, in addition to directly sending SQL questions to

the database management system (DBMS). As a result, a programming language and a program can be integrated with the DBMS.
Different concepts revolve around this definition citing: Database, DBMS and RDBMS.

1. Data Base: A computer database is a collection of data that has been kept on a computer system and set up in a structured and organized way to make it easy to access and modify its contents. But it's critical to remember that simply having a database is insufficient; you also need to have:
   - A system for managing this database.
   - A language for transmitting instructions to the database.
2. DBMS : software program that permits the development, arrangement, and maintenance of databases is referred to as a database management system (DBMS). In order to store, retrieve, update, and alter data in a structured and controlled way, it offers a number of tools and functions.
3. RDBMS : A software program known as a Relational Database Management System (RDBMS) controls how data is stored, organized, and retrieved from relational databases. It is founded on the relational model, which shows data as tables with rows and columns and relationships defined by keys.

4.4 Implementation steps

4.4.1 Desktop Application :

we create our desktop application by these general steps:

1. **Design the database:** identifying the entities, attributes, and relationships in the database.
2. **Create the diagram:**we use UML diagramming .
3. **Create the database:**we use a database management system (DBMS) such as MySQL.
4. **Implement the database and diagram in the desktop application:**this involves connecting the database to the application , we use Ado.Net entity and creating code to interact with the database and diagram.

5. **design the user interface for the application.**: this involves designing user control and forms .

6. **Write the code:**write the code for the application using C. This may include creating classes, functions(add,delete...) and structures data to implement the application's functionality.

4.4.2 Android App

1. **Set up Firebase:**

   Create a Firebase project and configure the necessary Firebase services like Firebase Authentication, Firebase Real time Database. These services will provide back-end functionality and data storage for your Android app.

2. **Design the User Interface:** Design the User Interface:

   Use Android Studio's layout editor to design the user interface (UI) of your app And create XML layout files to define the structure and appearance of different screens and components.

3. **Implement Functionality:**

   We Write Java code in Android Studio to implement the functionality of our app. This includes handling user interactions, processing data, making network requests, and integrating with Firebase services. We utilize the Firebase SDKs and APIs to interact with Firebase services. For example, we use Firebase Authentication SDK for user login and registration, Firebase Real-time Database for data storage and retrieval.

4. **Create the Test and Debug:**

   Perform rigorous testing to ensure that our app functions correctly and meets the desired requirements. We use the Android Studio's testing framework and tools to run unit tests, instrumented tests, and perform debugging to identify and fix any issues.

5. **Iterate and Refine:**

   Continuously iterate on our implementation, making improvements based on user feedback and testing results. Refine the UI/UX, optimize performance, and address any bugs or issues that arise during testing.

4.5 Presentation of some interfaces

4.5.1 Mobile application :

Application divided into three phases one is USER and another is ADMIN and Deliverer:

- SIGN IN SCREEN This screen will be a sign in screen, login with Email ID and Password.

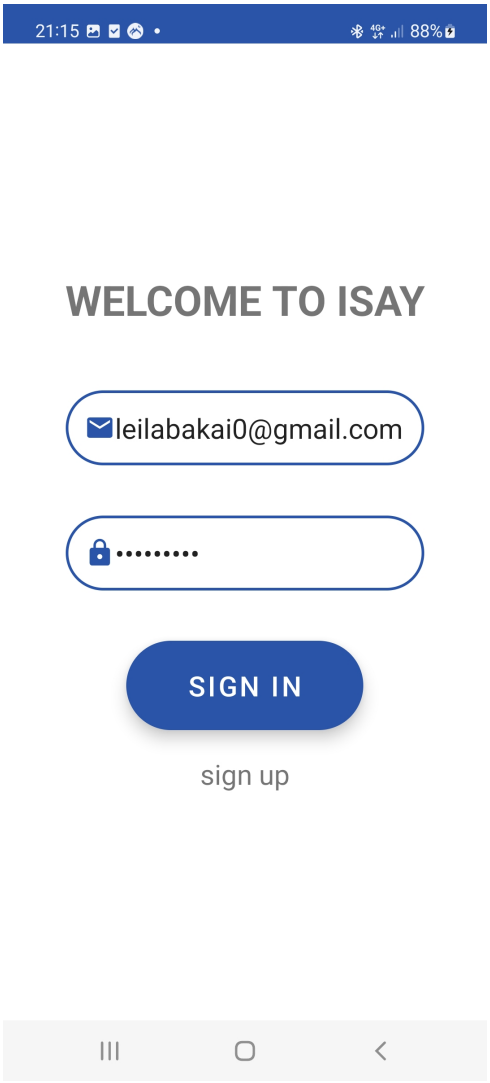


Figure 4.1: sign in

- SIGN UP SCREEN this screen will be a registration screen.if The user has to register himself for the further process, registration screen includes full name, email Id, and Password.

  if the deliverer registry himself the screen includes full name ,email ,password, id vehicle ,number phone ,type of vehicle, wilaya .

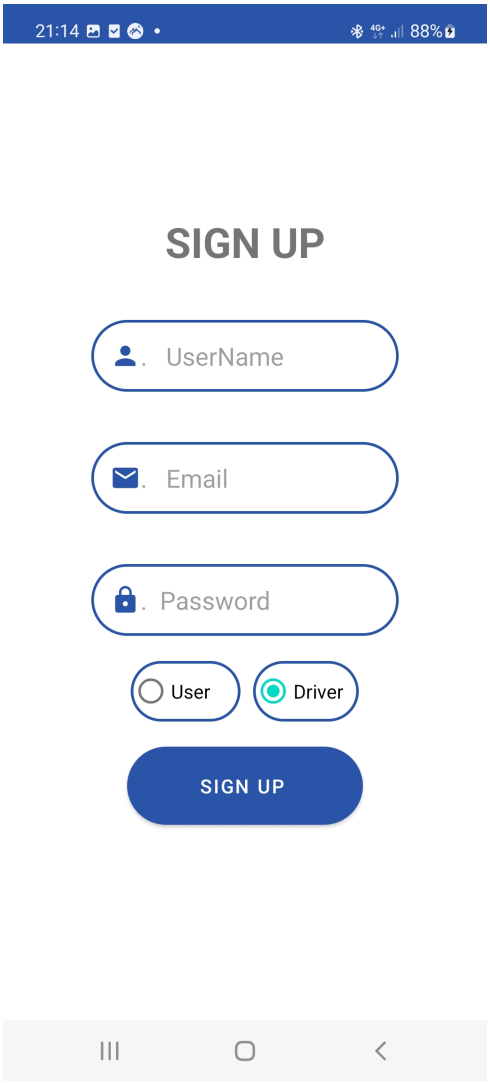


Figure 4.2: sign up

- HOME PAGE

  User Side This screen displays the current location of the user, and when the deliverer accepts the user's order, it will show the location of the deliverer.

  Deliverer Side in this screen the deliverer see the current location of himself.

Figure 4.3: Home page

- ORDER SCREEN
- **User side**

This screen provides a list of orders where users can add, edit, delete, and search for orders. This screen allows for user placing an order which includes the following details: username, wilaya, destination, date, phone number, and type of thing, mode of payment .

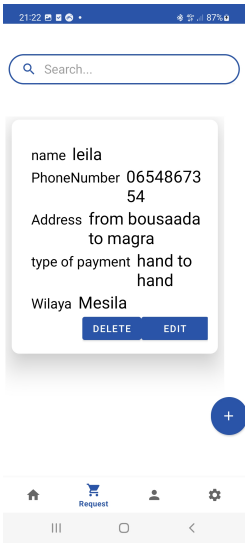


Figure 4.4: Orders screen

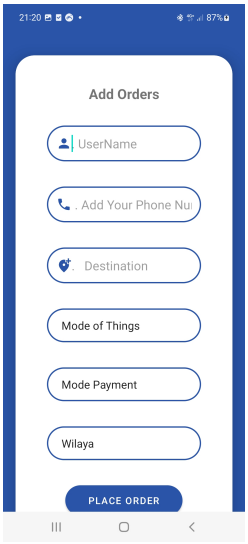


Figure 4.5: Add Order

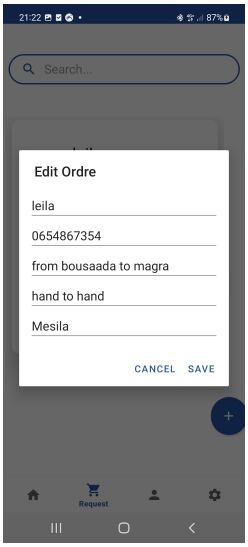


Figure 4.6: Edit Order

Deliverer side

this Screen has all orders from all users in the same wilaya of deliverer in addition to that the deliverer can accept or refuse the order .

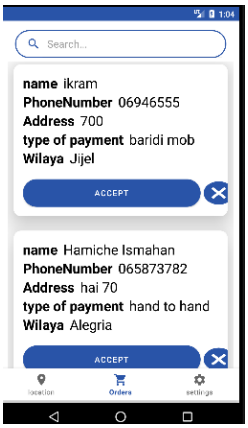


Figure 4.7: Profile Page

- PROFILE SCREEN This is a single screen that serves both users and deliverers during the sign up process. It contains relevant information for both parties.

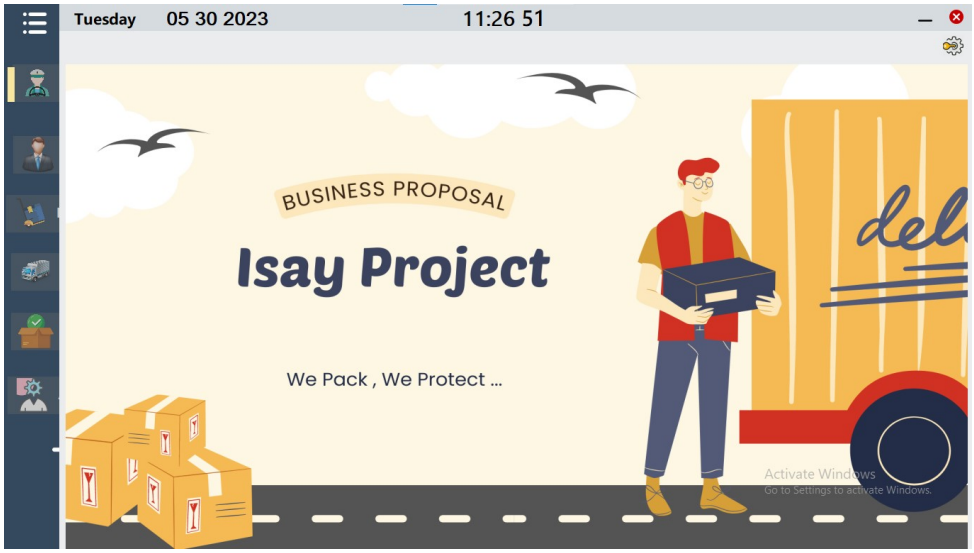
Figure 4.8: Profile Page

4.5.2 Desktop application :

- **home page :** This is the first page that appears when launching Desktop, the user must be clicked to file the connection form.

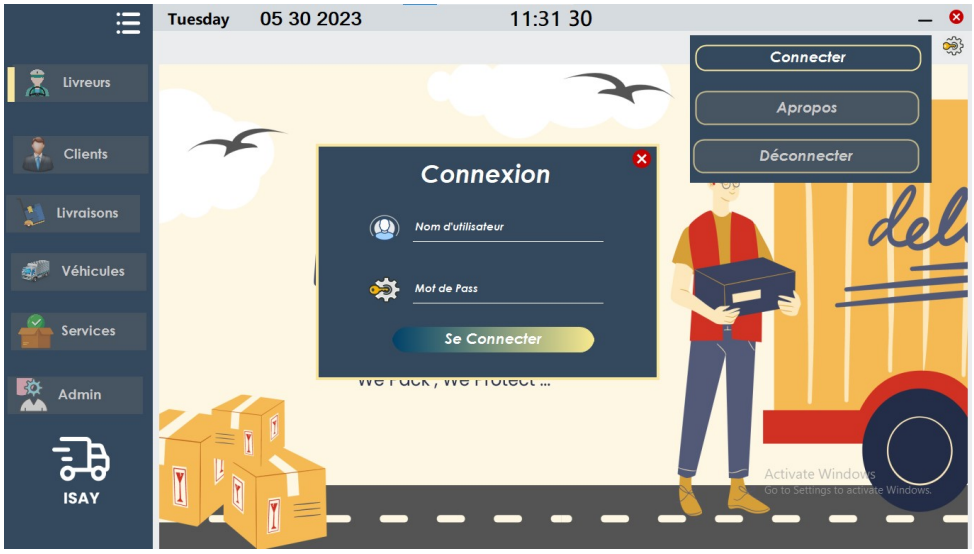
Figure 4.9: Home page 1

Figure 4.10: Home page 2



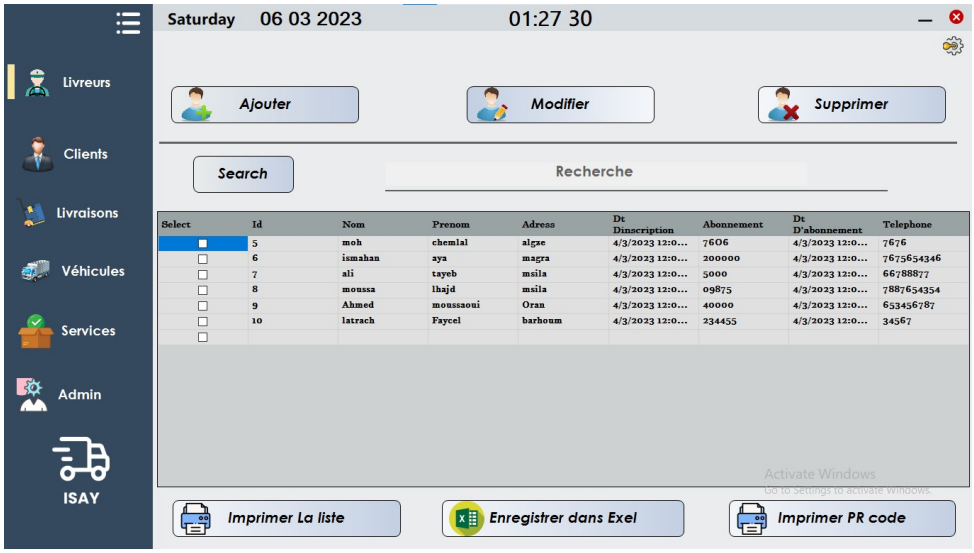
- **Connection Form:** On this form the user must enter his user name and its password to access the desktop space.

Figure 4.11: Connection Form



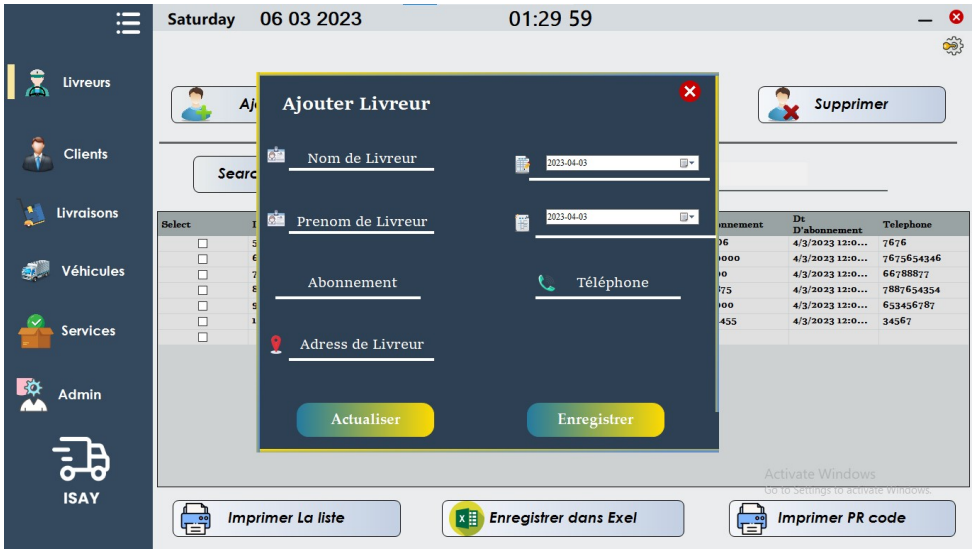
- **Delivery Man list:** the user can read the list or insert a new Delivery man, delete,update,save list on excel file ,print the report.

Figure 4.12: Delivery person list



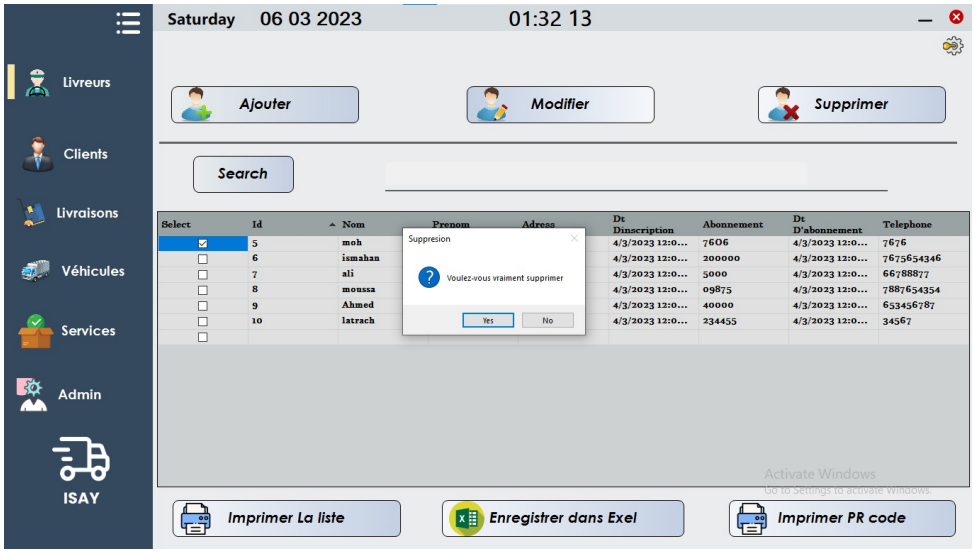
insert : the user click button "Ajouter" and must be enter the informations for inserting a new delivery.

Figure 4.13: Add form



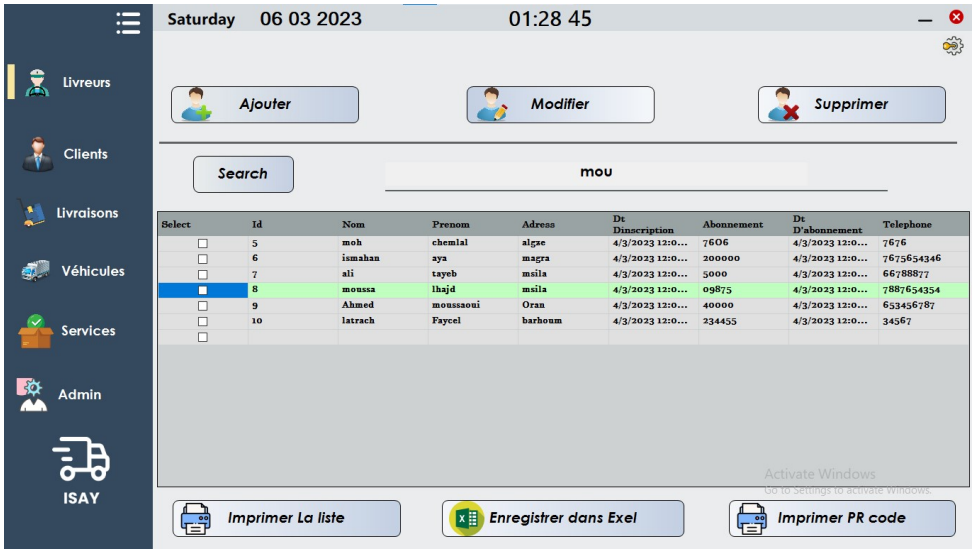
Delete : for deleting ,must be selected the delivery's man.

Figure 4.14: Delete Operation



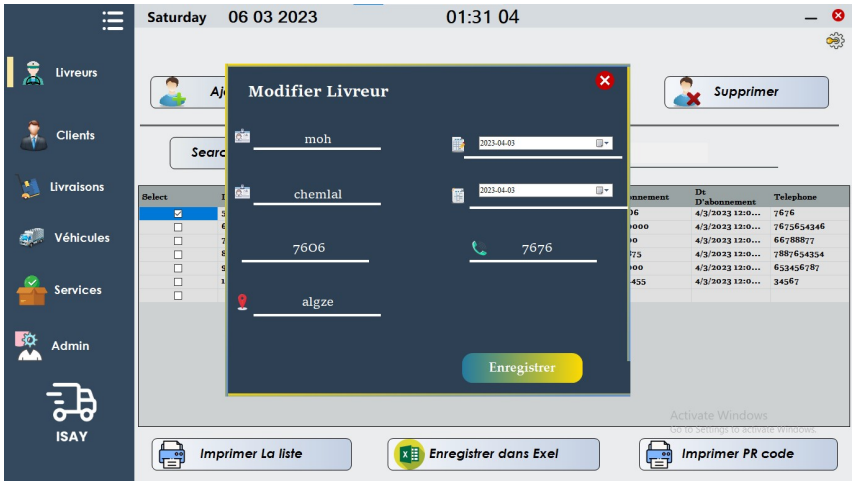
Search :user insert in text Box the name and click the button "search" .

Figure 4.15: Search Operation



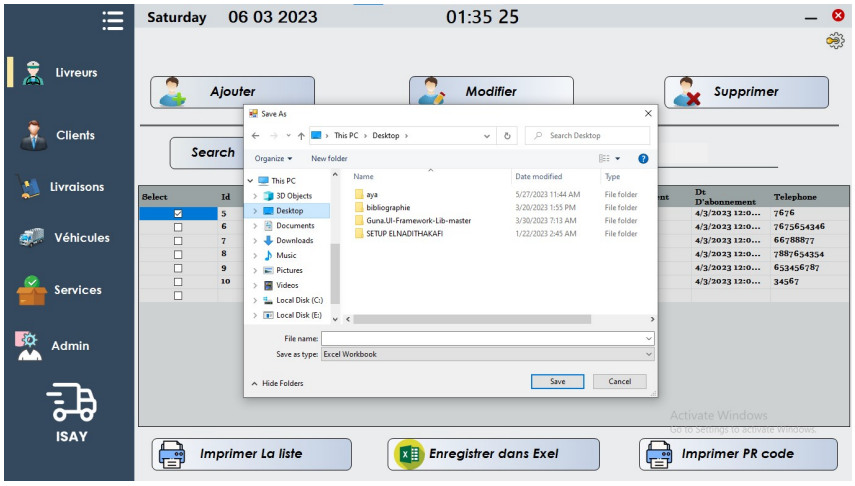
Update:must be selected just one for update the delivery man, and enter the new information.

Figure 4.16: Update Operation



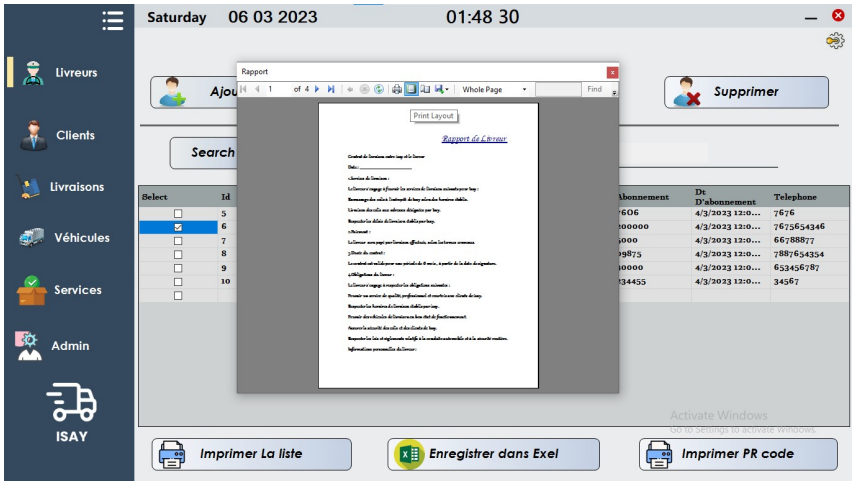
save list on excel file : click the button"Enregistrer dans excel", and choose when the user want save the file .

Figure 4.17: save list on excel file



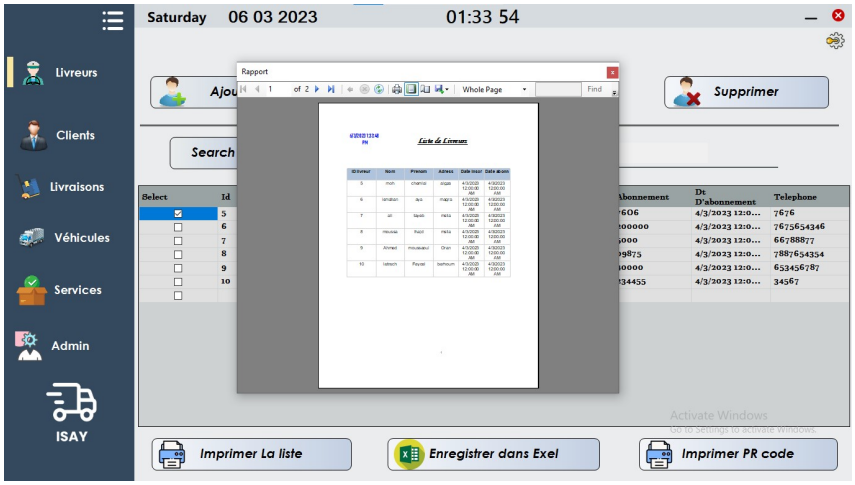
Print delivery report : click the button"imprimer pr code ".

Figure 4.18: save list on excel file



Print delivery list : click the button"imprimer la liste".

Figure 4.19: save list on excel file



4.6 Conclusion

In this chapter we have first presented the environment of Development and implementation of our application. We then presented some interfaces accompanied by a brief description.

General Conclusion

The development of a mobile application and a desktop dedicated to moving services offers innovative solutions to meet the specific needs of this sector.
We started our work by presenting the concepts of logistics and transportation and information systems.
Then, in the second chapter, we provided some examples of companies in the same field and final year projects. Finally, in chapters III and IV, we designed, analyzed, and implemented our applications.
The work done has given us the opportunity to expand our knowledge of programming and test our understanding of software design. We've encountered a lot of issues, and in the majority of them, we were able to come up with an alternate solution that at least partially addressed them.
As it stands, our mobile application can connect a user who needs a moving or transport service with the delivery person who can provide it, as well as our desktop program, which can manually save and manage clients and deliverers.
In the future, we want to create a platform that will connect to applications and handle management automatically, and developed our desktop application.

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ملخص

هناك صعوبات في الاتصال بين الموصلين والعملاء لنقل البضائع .فالهدف الرئيسي لهذا المشروع هو إنشاء نظام يبسط نقل الأشياء من موقع لاخر . يتضمن الحل المقترح تطوير تطبيق للهاتف المحمول و تطبيق سطح مكتب، يعمل تطبيق الهاتف المحمول كجسر بين السائقين والعملاء، مما يسمح لهم بتوصيل وتنسيق خدمات النقل بسهولةمن خلال تقديم طلبات النقل، وتحديد سلعهم ومتطلبات التسليم، بينما يمكن للسائقين عرض هذه الطلبات وقبولها بناءً على توافرها وقربها. و يتضمن أيضًا ميزات مثل التتبع في الوقت الفعلي، وتمكين العملاء من مراقبة تقدم سلعهم وضمان الشفافية طوال عملية النقل. اما التطبيق المكتبي يوفر نظاما إداريا للمؤسسة يسمح للمسؤولين بالتعامل مع الطلبات بكفاءة، بالإضافة إلى ذلك، يسهل إدارة العملاء، مما يمكّن المسؤولين من الاحتفاظ بقاعدة البيانات، لإنشاء تطبيق الهاتف المحمول اخترنا ندرِد ستُدِ بلغة اما لتطبيق سطح المكتب طِسُل ستُدِ بلغة سهر-.

الكلمات المفتاحية:، تطبيق سطح المكتب، تطبيق الهاتف المحمول، نقل البضائع Visual studio، Android studio، C-Sharp، Java

Abstract

There are difficulties in connecting connectors and customers to transport goods. The main goal of this project is to create a system that simplifies moving things between one location and another. The proposed solution includes the development of mobile application and desktop application, The mobile app acts as a bridge between drivers and customers, allowing them to easily connect and coordinate transportation services by submitting transportation orders, identifying their goods and delivery requirements, while drivers can view and accept these orders based on their availability and proximity. It also includes features such as real-time tracking, enabling customers to monitor the progress of their goods and ensuring transparency throughout the transportation process. Desktop application provides an enterprise management system that allows administrators to handle requests efficiently. In addition, it facilitates customer management, enabling administrators to maintain the database. To create the mobile app we chose android studio in java either for the Visual studio desktop app in c-sharp.

Keywords: C-Sharp, Visual studio, Desktop app, Mobile app,Java,Transport goods

Résumé

Il est difficile de relier les connecteurs et les clients au transport de marchandises. L'objectif principal de ce projet est de créer un système qui simplifie le déplacement des choses d'un endroit à un autre. La solution proposée comprend le développement d'applications mobiles et de bureau,L'application mobile sert de pont entre les conducteurs et les clients, leur permettant de connecter et de coordonner facilement les services de transport en soumettant des commandes de transport, en identifiant leurs marchandises et les exigences de livraison, tandis que les conducteurs peuvent voir et accepter ces commandes en fonction de leur disponibilité et de leur proximité. Il comprend également des fonctionnalités telles que le suivi en temps réel, permettant aux clients de surveiller la progression de leurs marchandises et d'assurer la transparence tout au long du processus de transport. L'application de bureau fournit un système de gestion d'entreprise qui permet aux administrateurs de traiter les demandes efficacement. En outre, il facilite la gestion des clients, permettant aux administrateurs de maintenir la base de données. Pour créer l'application mobile, nous avons choisi android studio en java soit pour l'application de bureau Visual studio en c.

Mots Clés : C-Sharp, Visual studio, Application de bureau, Application mobile, Java, Transport de marchandises.