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GLOSSARY

* 2TUP: Two Track Unified Process
* AICS : AFRICAN Institute of computer sciences
* APK: Android Package Kit.
* MVC: Model View Controller.
* UML: Unified Modelling Language
* DBMS : Database Management System
* GUI: Graphical User Interface
* IDE: Integrated Development environment
* IPA: iOS App Store Package.
* JSON: JavaScript Object Notation

ABSTRACT

In the digital age, eCommerce has become a critical component of business strategy, enabling companies to reach a global audience and provide customers with convenient access to products and services. This report details the conception and realization of an eCommerce website designed to offer a seamless online shopping experience. The project began with a comprehensive market analysis to identify target audiences, competitors, and key features that would differentiate our platform from others.

The development process involved the selection of a robust technology stack, including a content management system (CMS), secure payment gateways, and responsive design techniques to ensure accessibility across various devices. The website's architecture was carefully planned to support scalability, security, and ease of navigation, with particular attention paid to user interface (UI) and user experience (UX) design.

Throughout the development, emphasis was placed on security measures to protect user data and ensure safe transactions. Rigorous testing was conducted to guarantee the website's functionality, performance, and reliability before deployment. The result is a fully functional eCommerce platform that meets modern standards of online retail, providing both customers and administrators with an efficient and user-friendly environment.

This report outlines the methodologies used, challenges encountered, and solutions implemented during the project, offering insights into the successful development of an eCommerce website capable of competing in today's dynamic online marketplace.

**KEYWORDS**

* ecommerce
* Online Shopping
* User Experience (UX)
* User Interface (UI)
* Web Development
* Payment Gateway
* Market Analysis
* Security

RESUME

À l'ère numérique, le commerce électronique est devenu un élément essentiel de la stratégie commerciale, permettant aux entreprises d'atteindre un public mondial et d'offrir aux clients un accès pratique aux produits et services. Ce rapport détaille la conception et la réalisation d'un site web de commerce électronique conçu pour offrir une expérience d'achat en ligne fluide. Le projet a débuté par une analyse de marché approfondie visant à identifier les publics cibles, les concurrents, et les fonctionnalités clés qui différencieraient notre plateforme des autres.

Le processus de développement a impliqué la sélection d'une pile technologique robuste, incluant un système de gestion de contenu (CMS), des passerelles de paiement sécurisées, et des techniques de conception responsive pour garantir l'accessibilité sur divers appareils. L'architecture du site a été soigneusement planifiée pour soutenir l'évolutivité, la sécurité, et la facilité de navigation, avec une attention particulière portée à la conception de l'interface utilisateur (UI) et de l'expérience utilisateur (UX).

Tout au long du développement, l'accent a été mis sur les mesures de sécurité pour protéger les données des utilisateurs et assurer des transactions sûres. Des tests rigoureux ont été effectués pour garantir la fonctionnalité, la performance, et la fiabilité du site avant son déploiement. Le résultat est une plateforme de commerce électronique entièrement fonctionnelle répondant aux normes modernes du commerce en ligne, offrant aux clients et aux administrateurs un environnement efficace et convivial.

Ce rapport décrit les méthodologies utilisées, les défis rencontrés, et les solutions mises en œuvre au cours du projet, offrant des perspectives sur le développement réussi d'un site web de commerce électronique capable de concurrencer dans le marché en ligne dynamique d'aujourd'hui.

### Mots-clés

* **Commerce électronique**
* **Achat en ligne**
* **Expérience utilisateur (UX)**
* **Interface utilisateur (UI)**
* **Développement web**
* **Passerelle de paiement**

GENERAL INTRODUCTION

Technology is advancing at an incredible rate, spanning almost every sector from business to agriculture and other sectors. Due to the huge technological advancement, we now live in a fast-paced society where everything is gradually being digitalized making life easier. As a developing country, most businesses in Cameroon strive to make advantage of the digital economy to grow their businesses thereby boosting the economy as well. To achieve such a goal enterprise, need qualified personnel having skills in computer sciences and related fields. Second year students in AICS Cameroon, are required to carry out a three (3) months’ academic internship at an enterprise to put into practice the knowledge gotten from school in the professional milieu. For this reason, we applied for an internship at MickMaq, which specializes in providing IT solutions. While there, we were attributed the theme “CONCEPTION AND REALIZATION OF AN ECCOMERCE PLATEFORME”. We divided this report into eight (8) parts which are as follows:

1. **Insertion Document:** In this book, we shall present the company in which we spent our internship period and the integration of interns.
2. **Existing System:** Here, we shall present the already present system in place, that is the one used for consultation and follow-up purposes.
3. **Specification Book:** In this book, we specify the needs of the user taking into considerations the time and cost of the project.
4. **Analysis Document:** Here, we shall present the analysis method chosen together with the presentation of all the diagrams used for the analysis of this project.
5. **Conception phase:** This presents the generic and detailed conception of the project to bring out real world constituents.
6. **The Realisation phase:** This phase will permit us to visualize the implementation process of the solution.
7. **Test of functionalities:** In this phase, we shall present to you the different functionalities or modules of our application and how they work.
8. **The User Guide:** This elaborates on all conditions necessary to use the application and how to use it.

**PART I**

**INSERTION PHASE**

# Preamble

This section of the report will cover details of how we were welcomed in the host company, presentation, organization and brief introduction to our project.

# Content

INTRODUCTION

I.

II.

WELCOME AND INSERTION

GENERAL

COMPANY

PRESENTATION

OF

THE

1. ORGANIZATION OF THE COMPANY
2. GEOGRAPHICAL LOCATION
3. BRIEF PRESENTATION OF THE PROJECT THEME

CONCLUSION

INTRODUCTION

The insertion phase in a company is a period during which we discover our working environment, the staff of the company and other interns. Here, we will begin by discussing our first two weeks in the company, how we were welcomed and how we began adapting to our internship environment, we will proceed by exploring the history of the company, discovering its missions, learning what its major activities are, and witnessing some of its key realisations. We will also get to understand how the company is structured administratively and functionally so that it operates effectively and accomplishes its goals. Furthermore, we will look at the hardware equipment used by the company, and the software resources used in its daily operations. We will then introduce our chosen theme for the internship period, briefly elaborate on it.

# WELCOME AND INSERTION

We arrived at MickMaq on Monday 01 July 2024, at 09:00 a.m. we were received by the director of the IT department, Mr. HASSAN, who introduced me to our workspace, gave us an official welcome to the enterprise, its activities and its different rules and regulations. Also, we discussed on the enterprise’s preferred languages and frameworks, our professional supervisor encouraged us through his past working experiences in different enterprises.

The first week we did verification of concept with basic HTML and CSS to ensure that everybody was at the same level before kicking off. There was a talk on project ideas, we were advised to propose project ideas and we were assigned the tasks to carry out research on these ideas. The objective was that the enterprise did not want to impose some themes on us.

The second week we proceeded with verification of JavaScript concepts with some exercises, to test our reasoning and understanding faculties. We also discussed about the specification book with our professional supervisor and its different components, with him explaining what was required from us in each component. We discussed further on our different project ideas to give it shape.

# GENERAL PRESENTATION OF MICKMAQ

### Background:

Mickmaq is a Cameroon based non-governmental tech company institute founded by Ndelogakeh Daniel in 2022 which proposes IT solutions and empowers the use of new technologies in Cameroon.

### Missions

The mission of Mickmaq mainly relates to the empowerment and the perpetuation of Technology use. These include:

* + Design and Mickmaq mobile-oriented software for companies and individuals.
  + Assist newborn companies for quick growth using computer sciences.
  + Provide training and certifications to improve qualified human resources in many fields of study.
  + Take an active part in the sustainable development of the world through innovative solutions and virtual reality.

### Vision :

At Mickmaq, we believe that the true potential of every organization and individual can be unlocked through the harmonious fusion of analysis, development, realization, and data analytics. Our vision propels us forward, guiding us to make a lasting impact on the digital landscape and shape a future where innovation knows no bounds."

### Activities

The activities of Mickmaq range from computer sciences, engineering, and training. We can outline the following:

* Conception realization, and hosting of websites.
* Software development and maintenance.
* Training in Software related fields.
* Conception and realization of multimedia.
* IT consulting and innovation
* IT support

# ORGANIZATION OF MICKMAQ

### A. Administrative organization

Mickmaq is administratively organized as follows:

* 1. The General management

This is the highest level of the company, which takes care of the following:

* + - Proper functioning of each department.
    - Define project strategies.
    - Provide leadership and guidance to the company’s employees.
    - Makes critical decision that could affect the company’s operations or reputation
    - Severe as a point of contact for key stakeholders such as investors etc.
  1. Human resource department

This department is in charge of the following:

* + - Recruitment and Hiring.
    - Acts as a liaison between employees and management;
    - Manages employee compensation and benefits programs;
    - Develops and implements company policies and procedures, ensuring compliance with employment laws and regulations.
    - Manages administrative tasks related to employee records, data management, and HR systems.
  1. Communication Department

This department is in charge of the following:

* + - Handles public relations activities, which involve managing the company’s reputation and image.
    - Responsible for crafting and delivering messages to external stakeholders such as customers etc.
    - It fosters effective communication within the company.
    - They create and manage content across different platforms and channels.
  1. Department of Financial Affairs

This department is in charge of the following:

* + - Responsible for developing and managing the company’s financial plans and budgets.
    - Prepare and present accurate and timely financial reports to management, stakeholders, and regulatory authorities.
    - Responsible for managing costs and expenses within the organization.
    - Ensures compliance with tax laws and regulations. Etc.
  1. Technical department

This department is in charge of the following:

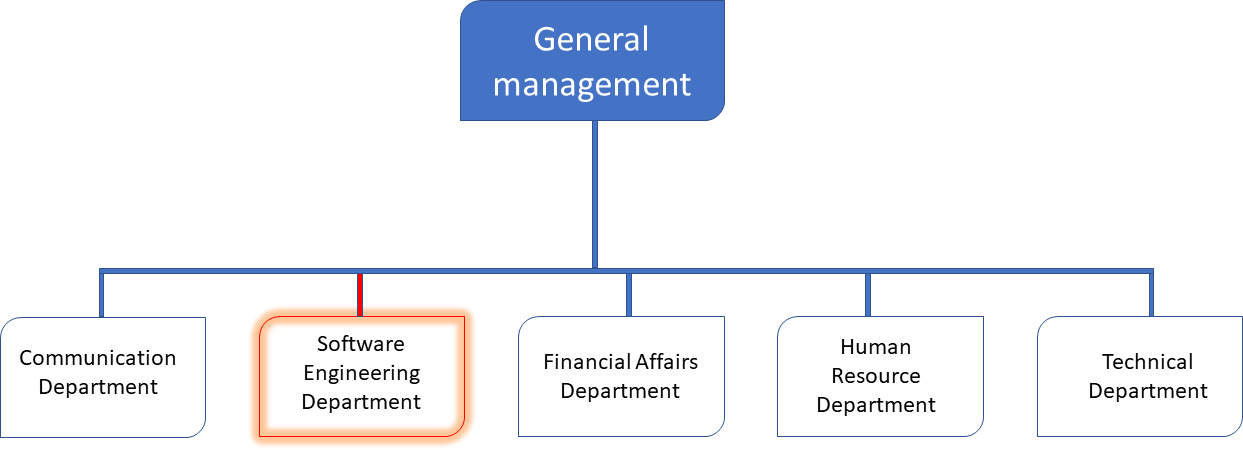
* + - Managing the company’s technological infrastructure, including networks and hardware.
    - Play a role in managing and maintaining the company’s data.
    - Implementing and maintaining cybersecurity measures to protect the company’s digital assets from potential threats.
    - Interacts with technology vendors and manages relationships with external service providers. Etc.
  1. Software Engineering Department

This department is in charge of the following:

* + - Primarily responsible for developing software applications and systems.
    - Responsible for maintaining and supporting software applications throughout their lifecycle.
    - Evaluation and realization of projects etc.

# B.FUNCTIONAL ORGANISATION OF MICKMAQ

The functional branch of Mickmaq is organized as follows,



*Figure 1: Functional Organization of Mickmaq*

# GEOGRAPHICAL LOCATION



*Figure 2:* *GEOGRAPHICAL LOCATION OF MickMaq*

# BRIEF PRESENTATION OF THE PROJECT THEME

Following our arrival at MickMaq, we were encouraged to suggest innovative project ideas for our internship. Following the mission of MICKMAQ that demonstrate the company’s willingness to take active part in the sustainable development of the world through innovative solutions, we saw the room for creativity in our project idea and proposed the theme “**CONCEPTION AND REALIZATION OF AN ECOMMERCE PLATEFORM**”. This system that we named Calex optic is made up of an admin dashboard, ,Patient’s dashboard.

Calex optic’s patient’s dashboard provide the patients with a list of available hospitals from which he/she can get a list of trained medical personnels in various fields where they can book for an appointment for consultation or in cases of emergency locate the closest hospital or free health professional, a chat section for discussions with these medical professionals on light or less serious cases, a geolocalisation section where they can locate the different pharmacies that are opened at that particular time, that have the required drugs they are looking for and most importantly that are not far from their current position. Consultations are also made through video calls.

# CONCLUSION

Our insertion phase at MICKMAQ lasted for two (2) weeks. We discovered the amazing environment where we found ourselves in. This environment gives room for hard work, perseverance and collaboration, what most students are looking for. We learned about the missions of the company, its activities. We met and got acquainted with the staff and other interns at MICKMAQ. Finally, we chose our theme “**DEVELOPMENT OF A PATIENTS’ CONSULTATION AND FOLLOW-UP PLATFORM FOR CAMEROON GOVERNMENT HOSPITALS**”.

PART II

EXISTING SYSTEM

Preamble

The existing system is a document that provides a view of the system currently in place, that is how it carries out its different activities, also it provides a deep understanding of this system associated to the various limitations, the problems that result from these and the solution we propose.

Content

INTRODUCTION

1. PRESENTATION OF THE THEME
2. STUDY OF THE EXISTING SYSTEM
3. CRITICISMS OF THE EXISTING SYSTEM
4. PROBLEMATICS
5. PROPOSED SOLUTIONS

INTRODUCTION

Every system undergoes changes over time, and positive changes often require an improved system.This can be achieved by either enhancing the existing system or developing a new one .In either case, it is necessary to analyse the existing system .In this phase we will thoroughly study and comprehend the functionality of the current system .Once we have a complete understanding of the system , We will identify any existing problems.These identified problems will then be followed by the proposed solutions .The main objective of our proposed system is to enhance the management of essential activities across various sectors of an E-commerce system .Specifically ,the application will focus on facilitating online purchasing of goods.STUDY OF THE EXISTING SYSTEM.

1. Delimitation of the field of study

E-commerce stands for electronic mean which has to do with the buying and selling of products or goods online .We are going to implement an ecommerce plateform permiting :

* The Administrator(Owner) to add available products in his store and manage them(I.e,he can view products in his store remove it and make a statistic of the sale done)in his database.
* The client or individual can view the different products corresponding to their category and can buy a product.

1. Presentation of the existing system

The study of the existing system can be briefly explained in the few steps below for easy and quick understanding.

* Client are given a small receipt to enter their information manually
* Bought and sold Product list are made to view the sale statistics manually.
* Client Registration are still done on paper and at times it is not.
* Seller walk around it table to attract client to buy goods

1. LIMITATIONS OF THE EXISTING SYSTEM

For us to put in place our proposed system, it is important to point out the possible limitations of the existing system .After all possible studies carried out the on the existing system ,We identified the following limitations of the existing system ;

* Manual registration on the forms can lead to loss of information.
* It may lead to data reducdancy, time wastage and data destruction by environmental hazards or by the Public community Authority council.
* The fact that the product are been expose to heat and rain can damage them.
* The seller can easily fall sick
* Safety concerns:Street vendors may be at risk of theft ,violence , or harassment while selling their product.

1. PROPOSED SOLUTIONS

The aim of proposed solution is to develop a system of improved facilities .The proposed system can overcome all the limitations of the existing system .the system provides proper security and reduces the manual work.

* Security of data
* Minimize manual entry of the client
* Ensure data accuracy.
* Minimize time needed for various processing
* User friendly environment for the users
* View statistics of sales been done

1. CRITICS ,CONSEQUENCES AND THE PROPOSED SOLUTION OF THE EXISTING SYSTEM.

At the end of our collection of information concerning the medical consultation process in hospitals, we find that this system has weaknesses that should not be overlooked despite their warm welcome. However, it should be noted that some observations have been made within the clinic and it would be wise for us to suggest solutions to the various problems noted.

|  |  |  |
| --- | --- | --- |
| **CRITICS** | **CONSEQUENCE** | **PROPOSE SOLUTION** |
| Manuanl treatement of products | * Much of paper work may lead to loss of information | * Creation of an online form for product’s registration link to the module to create ,add and delete products |
| Lack of data security | Authorized access to information | Restricted access to specific information by implementing each route according to the role of a user |
| Product are exposed to environmental disater | As the product are exposed to  The environment and weather disasters it quality decrease and get bad rapidly | Store product in a store and sell them on the ecommerce website |
| Expose to disease | The seller is been expose to high number of risks and this may make him to decrease productivity | Build an eccomerce which will be host online permitting the owner of the shop to sell his/her products |

**PART III**

**SPECIFICATION BOOK**

# Preamble

The Specification book is a document which is been established by the customer needing a particular product and the producer (engineer) who is to create the product, which is to be respected to its fullness during the realization of the product. From this, we obtain the major importance of the specification book.

Content

PLAN

INTRODUCTION

1. CONTEXT
2. PROBLEM DEFINITION
3. OBJECTIVES OF THE PROJECT
4. EXPRESSION OF NEEDS
5. PROJECT PLANNING
6. DELIVERABLES

CONCLUSION

INTRODUCTION

IN order to efficiently Mickmaq our project “CONCEPTION AND REALIZATION OF AN ECOMMERCR PLATEFORM” it is important to create a specification book . The specification book of our report helps us provide details about our theme to improve our understanding of it and increase the likelihood of it succeeding. To delimitate the scope of our project, we will specify the context of our theme. From the context, we will list the problems we have decided to address throughout the project. After presenting our solution, we will talk about the objective we have set for the project. Also, we will explore the needs to which our system will respond both at the functional and non-functional level. We will then look at the estimated financial requirements for our project and establish a plan we will follow to complete our project on time. From here, we will discuss what is expected of us by the end of the project under the project deliverables

1. CONTEXT

E-commerce , also known as electronic commerce , refers to the buying and selling of goods or services over the internet .In recent years ,the rapid growth of the internet has facilitated the widespread adoption of e-commerce ,enabling business of all sizes to effectively reach customers worldwide .the shift has been accompanied by many advantages .one prominent benefits of ecommerce is the ability to operate 24/7 ,eliminating the need for physical storefronts .As a result customers has the ability to shop at any time, providing them with enhance convenience . Moreover E-commerce enables businesses to access a global audience ,creating new avenues for market expansion and potential growth .

1. PROBLEM DEFINITION

Many customers still face difficulties in purchasing high-quality products online, primarily due to the rise of profit-driven businesses that prioritize financial gains over customer satisfaction. These businesses often flood the market with substandard goods, making it challenging for consumers to identify products that meet their expectations. This situation also puts small businesses, which are dedicated to offering superior quality products, at a disadvantage, as they struggle to compete with larger, resource-rich corporations. The need for a reliable e-commerce platform that prioritizes both product quality and customer satisfaction is evident, and addressing this issue is essential for fostering a more trustworthy and fulfilling online shopping experience.

1. OBJECTIVES OF THE PROJECT
2. General objective

The general objective of an ecommerce website is to create an online plateform that enables users to purchase products or services easily and conveniently.

1. Specific objectives

* **Design a User-Friendly Interface**: Create an intuitive and aesthetically pleasing user interface that enhances the shopping experience, making it easy for customers to browse, search, and purchase products.
* **Implement Secure Payment Systems**: Integrate secure and diverse payment gateways to ensure safe and convenient transactions for users, fostering trust in the platform.
* **Enhance Customer Support Services**: Establish comprehensive customer support, including live chat, FAQs, and user-friendly return and refund policies, to ensure customer satisfaction and resolve issues efficiently.
* **Enable Personalized Shopping Experiences**: Implement personalized recommendations and targeted marketing strategies based on customer preferences and behavior to improve user engagement and satisfaction.
* **Ensure Scalability and Performance**: Design the website architecture to handle high traffic volumes and a growing product catalog, ensuring fast load times and smooth performance.
* **Integrate Advanced Analytics**: Utilize analytics tools to monitor user behavior, sales trends, and website performance, enabling data-driven decisions to continually enhance the platform.
* **Promote Sustainability and Ethical Practices**: Incorporate features that encourage sustainable shopping practices, such as highlighting eco-friendly products and offering incentives for sustainable choices.

By achieving these objectives , An ecommerce website project can create an effective platform that enables the purchase goods or services ,an ultimately drive growth and profitability for the organization behind the project .

1. EXPRESSION OF NEEDS
2. FUNCTIONAL NEEDS

Base on the different actors that exist in our system we have as fuctional need:

1. Administrator
   * View the ecommerce website store i.e add ,delete,and view different products or categories of products available.
   * Manage his/her profile i.e ,can modify any relevant information concening him/her
   * Authebticate his/her self
   * View statistic of sales done
2. Client
   * Authenticate his/her-self.
   * Buy product
   * Add product to cart
   * View his/her profile
3. Visitor
   * View products and category of product
   * Add products to Wishlist Shopping cart
4. Non-Functional needs

The non functional needs essentially specify how the system behave and that it is a constraint upon the systems behavior .They could be the thought of as quality attributes of the system.

1. PERFORMANCE REQUIREMENTS

The system must perform what every user expects with no delay.Every action response of the system such as opening windows forms ,displaying error messages and saving the forms or session should be fluent .A machine with core i3 and a RAM of 4gb will be necessary for the good functioning of the system .

1. SOFTWARE REQUIREMENTS SPECIFICATIONS

Security:This programs uses object oriented mechanism to protect the data passed using methods.We can also add to it the presence of a very good login procedure (authentication system)together with the responsibility of students within the system.It also provides the following :

* + Check data integrity for critical variables
  + Restrict communication between some areas of the software
  + Assign certain functions to the different modules .

1. SOFTWARE QUALITY ATTRIBUTES

### 1. **Reliability**

* **Definition**: The ability of the software to perform its required functions under stated conditions for a specified period of time.
* **Resources**:
  + - * + **Automated Testing Tools**: Tools like Selenium, JUnit, and Postman help ensure the software behaves as expected.
        + **Error Monitoring Services**: Tools like Sentry or New Relic monitor errors and uptime in real-time.

### 2. **Usability**

* **Definition**: The ease with which users can learn, use, and interact with the software.
* **Resources**:
  + - * + **User Experience (UX) Design**: Following UX principles and using tools like Adobe XD, Figma, or Sketch can enhance usability.
        + **Usability Testing**: Conducting tests with actual users to gather feedback on ease of use.

### 3. **Performance**

* **Definition**: The ability of the software to perform its tasks quickly and efficiently under varying conditions.
* **Resources**:
  + - * + **Performance Testing Tools**: Tools like Apache JMeter, LoadRunner, and Google Lighthouse test the speed, responsiveness, and stability of the application.
        + **Optimization Techniques**: Caching strategies, code optimization, and database indexing.

### 4. **Security**

* **Definition**: The protection of software against unauthorized access, data breaches, and other vulnerabilities.
* **Resources**:
  + - * + **Security Best Practices**: OWASP Top 10 guidelines for web application security.
        + **Security Testing Tools**: Tools like OWASP ZAP, Burp Suite, and Nessus for penetration testing and vulnerability scanning.

### 5. **Maintainability**

* **Definition**: The ease with which software can be modified to correct faults, improve performance, or adapt to a changed environment.
* **Resources**:
  + - * + **Code Quality Tools**: Tools like SonarQube, ESLint, and Prettier for maintaining code quality and consistency.
        + **Version Control**: Using Git for tracking changes and facilitating collaboration among developers.

### 6. **Scalability**

* **Definition**: The ability of the software to handle increased loads and adapt to growth.
* **Resources**:
  + - * + **Cloud Services**: Platforms like AWS, Google Cloud, and Azure provide scalable infrastructure.
        + **Load Balancers**: Tools like NGINX or HAProxy distribute traffic efficiently across servers.

### 7. **Interoperability**

* **Definition**: The ability of the software to work with other systems and applications.
* **Resources**:
  + - * **API Standards**: RESTful APIs, GraphQL, and SOAP ensure that the system can communicate effectively with others.
      * **Integration Tools**: Tools like Zapier and MuleSoft facilitate seamless integration between different software systems.

### 8. **Portability**

* **Definition**: The ease with which software can be transferred from one environment to another.
* **Resources**:
  + - * **Containerization**: Using Docker or Kubernetes to package applications in a way that they can run in any environment.
      * **Cross-Platform Development**: Frameworks like React Native or Flutter for building applications that work across different platforms.

### 9. **Compliance**

* **Definition**: Adherence to laws, regulations, and guidelines relevant to the software's operation.
* **Resources**:
  + - * **GDPR Compliance**: Ensuring that data collection and processing meet European Union regulations.
      * **PCI DSS**: Standards for securing credit card transactions and sensitive data in e-commerce applications.

### 10. **Documentation**

### **Resources**:

* + - * **Documentation Tools**: Tools like Doxygen, Swagger, and ReadTheDocs for creating and managing documentation.
      * **API Documentation**: Properly documenting APIs so other developers can integrate them easily.

1. ESTIMATION OF COST

It is of need to do the estimated cost of the project. The cost of the project is the sum of the costs: the human resources of the project, the hardware and the software resources of the project. The most important factor in the estimation of a project being the human resources been used.

1. Human Resources

*Table 5: Human Resources (source : Mercurial 2022)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ROLE** | **NUMBER OF DAYS** | **QUANTITY** | **COST PER DAY** | **TOTAL PRICE (FCFA)** |
| **Project Manager** | **90** | **01** | **30 000** | **2 700 000** |
| **Analyst** | **21** | **01** | **25 000** | **525 000** |
| **UI/UX**  **Designer** | **07** | **01** | **20 000** | **140 000** |
| **Programmer** | **30** | **01** | **15 000** | **450 000** |
| **Tester** | **14** | **02** | **10 000** | **140 000** |
| **Margin error** | **/** | **/** | **/** | **1,475,000** |
| **TOTAL 3** |  |  |  | **4 840 000** |

1. Hardware resources

*Table 4: Hardware resources (source: http*[*s://www*](http://www.scribd.com/document/561202966/mercuriale-2022))*.sc*[*rib*](http://www.scribd.com/document/561202966/mercuriale-2022))*d*[*.com/document/561202966/mercuriale-2022)*](http://www.scribd.com/document/561202966/mercuriale-2022))

|  |  |  |  |
| --- | --- | --- | --- |
| **RESOURCES** | **HARDWARE** | **Quantity** | **UNIT COST**  **(FCFA)** |
| **Computer** | *LAPTOP HP ELITEBOOK 8540P CORE I5, DISQUE DUR 500 GO, RAM 4 GO,*  *ECRAN LARGE 15" HD* | **1** | **402 500** |
| **Printer** | Printers | **1** | **546 250** |
| **Network** | Local network installation | **1** | **300 000** |
| **Removable Disk** | Removable Disk | **1** | **11 555** |
| **Smart phone** | Smart phone | **2** | **150 000** |
| **TOTAL 2** |  | **6** | **1 410 305** |

1. Software resources

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **RESOURCES** | **DESIGNATION** | **USAGE** | **QUANTITY** | **UNIT COST**  **(FCFA)** |
| **Formatting** | Microsoft Office  365 | Writing of the  report | 1 | **47 998** |
| **Cloud**  **Storage** | Google Cloud | Saving our report | 1 | **Freemium** |
| **Web**  **browser** | Google Chrome | View web pages | 1 | **Freeware** |
| **Code Editor** | Visual Studio Code | For writing the code of the  application | 1 | **Freeware** |
| **Project**  **planning** | Gantt Project | For building a  Gantt chart | 1 | **Freemium** |
| **Illustrating tool** | Ichogram | For building a geographical location of the  enterprise | 1 | **Freemium** |
| **UML**  **Analysis** | Sybase  PowerAMC | For drawing  UML diagrams | 1 | **Freemium** |
| **Testing Mobile App** | Expo Go | For testing the mobile  application | 1 | **Freemium** |
| **TOTAL 1** |  |  | **8** | **47 998** |

1. Globalised estimation

*Table 6: Global Estimation*

|  |  |  |  |
| --- | --- | --- | --- |
| **TOTAL 1(FCFA)** | **TOTAL 2(FCFA)** | **TOTAL 3(FCFA)** | **OVERALL TOTAL (FCFA)** |
| **47 998** | **1 410 305** | **4 840 000** | **6 298 303** |
| **SIX MILLION TWO HUNDRED AND NINETY-EIGHT THOUSAND THREE HUNDRED AND THREE** | | | |

1. CONSTRAINTS
2. **Technical constraint**

For the development of our system, we have sufficiently robust tools to guarantee a minimum of security, extensibility and excellent scalability. Moreover, the programming phase will have to follow all the technical standards for a better performance in a reduced execution time, this is why the choice of the development technologies is crucial.

1. **Time Constraint**

The project will be realized in 13 weeks (3 months) starting from the beginning date, July 1, 2024.

1. **Cost constraint**

The realization of our project will require expenditures in human resources, material and software a total cost of 6 298 303 FCFA.

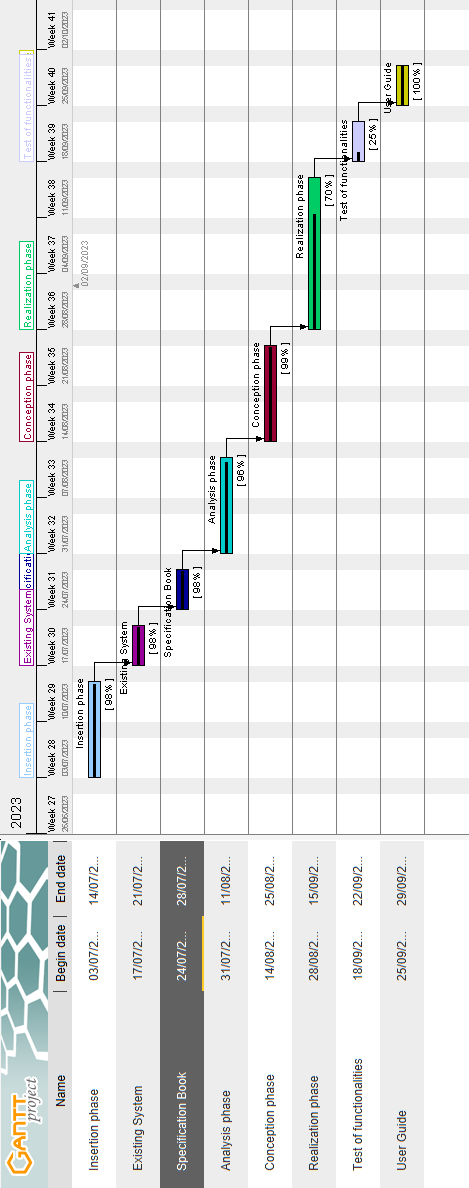
1. PROJECT PLANNING

### Chronogram of activities

*Table 6 chronogram of activities*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PHASE** | **OBJECTIVE** | **OUTPUT** | **DURATION** | **PERIOD** |
| **INSERTION** | Collection of information on the enterprise | Insertion book | 2 weeks | 03rd July to 14th July |
| **EXISTING SYSTEM** | Study of the existing system | Existing System | 5 days | 17th July to 21st July |
| **SPECIFICATION BOOK** | Specification of the user needs | Specification Book | 5 days | 24th July to 28th July |
| **ANALYSIS** | Capture of needs Use case and textual description Modelling | Analysis Book | 2 weeks | 31st July to 11th August |
| **CONCEPTION** | Preliminary conception and Detailed conception | Conception book | 2 weeks | 14th August to 25th August |
| **REALIZATION** | Implementation Unitary test Integration Test Development, Deployment, Component diagrams | Realization book | 3 weeks | 28th August to 15th September |
| **TEST OF FUNCTIONALITIES** | Testing of the software and debugging | Test of functionalities | 5 days | 18th  September to 22nd September |
| **INSTALLATION AND USER GUIDE** | Documenting software | User Guide | 5 days | 25th  September to 29th September |

1. Grant project planning



1. LIST OF PARTICIPANTS AND DELIVERABLES
2. List of participants

|  |  |  |
| --- | --- | --- |
| **NAME** | **FUNCTION** | **ROLE** |
| **Mr. Hassan** | Follows up interns at the  company level | Professional supervisor |
| **Mrs.ONGUENE VANESSA** | Follows up student at the  academic level | Academic Supervisor |
| **NDONGO NGA MAXIME JOEL** | AICS Student Intern | Student at AICS |

1. DELIVRABLES
   1. In project management, any component materializing the result of a realization service is called a deliverable. In the case of our project, the deliverables are: A report composed of the following document
      1. The application.
      2. The user guide.
      3. The powerpoint.

CONCLUSION

Reaching the end of this part. The list of objectives to be achieved has been enumerated and made clear. The specification book permitted us to present the different actors associated with the project as well as the requirement and the provisional planning needed for the achievement of our project. We will move directly to the next part which is the analysis phase. In the analysis phase, we will model our system with a modelling language and a unified process, do a comparative study of uml and merise.

PART IV

ANALYSIS PHASE

# Preamble

The main objective of the analysis phase is to capture the user’s need, the delimitation of the field of study and to have a clear understanding of the system in study. To achieve this, we will use UML (Unified Modelling Language) with the 2TUP (2 Track Unified Process) as method applied to UML to analyze the system. We will start by doing a comparison between UML and MERISE, of various unified processes and lastly, we will present the modelling of the solution we propose (Our software).

# Content

INTRODUCTION

I.

METHODOLOGY

1. COMPARATIVE STUDY OF UML AND MERISE.
2. COMPARATIVE STUDY OF

UNIFIED PROCESSES.

1. CHOICE OF THE ANALYSIS METHOD
2. MODELLING OF THE PROPOSED SOLUTION

CONCLUSION

# INTRODUCTION

System development can be thought of as having two major components: System analysis and system design which both help in understanding the details of the existing system or the system to be designed. The analysis and design of information systems has most of the time vocation to allow the creation of databases, which must represent as closely as possible the reality of the field studied thus requiring the use of a design method. This is why our choice will be directed on the UML method as it offers much to developers seeking a user-centered approach and / or a wide scope in design. This part of the report consists of the comparative study of UML and MERISE, unified processes and finally the various diagrams that meet the functional need requirements.

# METHODOLOGY

# COMPARATIVE STUDY OF UML AND MERISE

### MERISE

MERISE stands for “Méthode d’Etude et de Réalisation Informatique pour des Systèmes d’Entreprise”. Although it is prescriptive to some extent, MERISE permits the participation of end users and senior management as well as data processing professionals in its decision cycle. MERISE is a method for designing, developing and carrying out IT projects. The goal of this method is to achieve the design of an information system. The MERISE method is based on the separation of data and processing to be carried out in several conceptual and physical models. The essentials of the approach lie in its three cycles: the decision cycle, the life cycle and the abstraction cycle, which cover data and process elements equally. The separation of data and processing ensures longevity in model. Indeed, the arrangement of data does not have to be often overhauled, while treatments are more frequently.

# UML

UML (Unified Modelling Language) is a standard notation for the modelling of real world objects as a first step in developing an object-oriented design methodology. Its notation is derived from and unifies the notations of three object-oriented design and analysis methodologies: Grady Booch's methodology for describing a set of objects and their relationships, James Rumbaugh's Object-Modelling Technique (OMT), Ivar Jacobson's approach which includes a use case methodology. Other ideas also contributed to UML, which was the result of a work effort by Booch, Rumbaugh, Jacobson, and others to combine their ideas, working under the sponsorship of Rational Software. UML captures information about the static and dynamic view of a system. UML 2.5 comprises of 14 diagrams which represent the different views of a system. The 14 diagrams can be subdivided into two, Static or structural and Dynamic diagrams. These diagrams include;

1. Structural Diagrams:

Structural diagrams represent the static components of a system; they emphasize on what should be in the system we are modeling. They include:

* Class diagram;
* Object diagram;
* Package diagram;
* Composite structural;
* Deployment diagram;
* Component diagram;
* Profile diagram.

1. Behavioral Diagrams:

The behavioral diagrams capture the dynamic state of a system; they emphasize on what should happen in the system we are modeling. They are:

* + Use case diagram;
  + Activity diagram;
  + State machine diagram;
  + Sequence diagram;
  + Communication diagram;
  + Interaction overview diagram;
  + Timing diagram
  1. UML 2.5 diagrams overview :

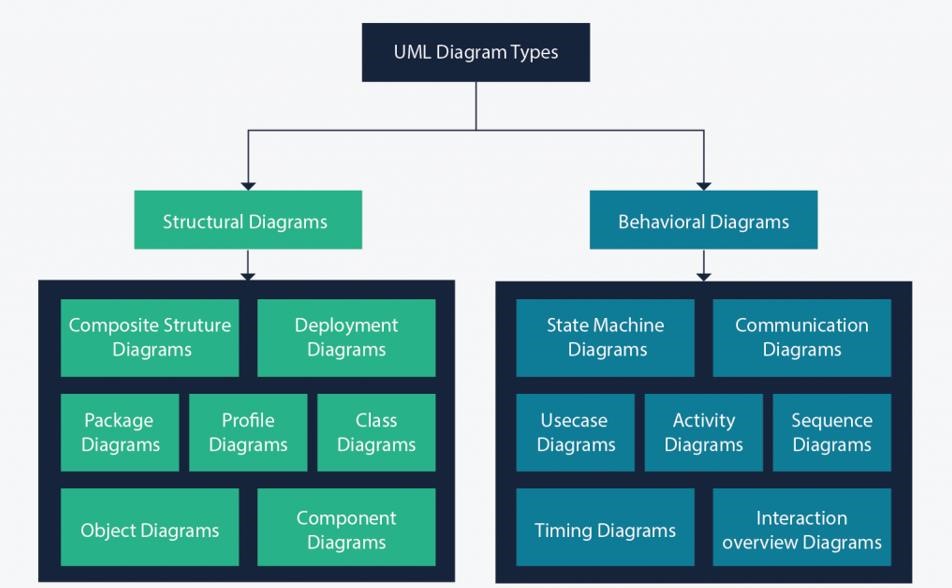


Figure 4: UML 2.5 diagrams overview

Source: <https://creately.com/blog/diagrams/uml-diagram-types-examples/>

It is important to note that UML is a modeling language and not a method or procedure. Hence, to give it an approach, we need to associate UML to a Unified process (UP) in order to give our conception a methodology to follow. A unified process is a generic method for developing software. This implies it is necessary to adapt the UP to the context of the project, team domain and or the organization. We will use the Two Tracks Unified Process (2TUP) throughout our project to implement our solution.

Difference between UML and MERISE

|  |  |
| --- | --- |
| MERISE | UML |
| It stands for Méthode d'Étude et de Réalisation Informatique pour les Systèmes d'Entreprises | Unified Modeling Language |
| MERISE is a systemic method of analysis and design of information systems. That is, it uses a systems approach. | UML is however not a method but rather an object modeling language to which it is necessary to associate an approach to make it a method. This is the case with the 2TUP method; RUP and XP. |
| MERISE proposes to consider the real system from two points of view: - A static view (data) - A dynamic view (treatments). That is, with the MERISE method, we have a separate study of the data and the treatments. | UML offers a different approach from that of MERISE in that it combines data and processing. Because with UML, centralizing the data of a type and the associated processing makes it possible to limit the maintenance points in the code and facilitates access to information in the event of software development. In addition, UML describes the dynamics of the information system as a set of operations attached to the objects of the system. |
| Rational | Object |

Table 12: Difference MERISE and UML

1. COMPARATIVE STUDY OF UNIFIED PROCESS
2. The Process of Development of a Software

A process can be defined as a partially sequence of steps that permits us to obtain software systems or evolution of an existing one. The main objective of software development is the production of quality software that response to the needs of the users during a particular time and at a particular cost.

#### A Unified Process :

A unified Process is a process of development of software constructed on UML; it is iterative, incremental, centered on architecture, driven by use cases and requirements.

**Iteration** is distinct sequence of activities with a basic plan and evaluation criterion that produces an internal or external output. Either the content of an iteration is improved or the evolution of the system is evaluated by users.

**An increment** is the difference between two released products at the end of two iterations. Each iteration that the group is capable of integrating the technical environment in order to develop a final product and give users the possibility of having tangible results.

**Centered on architecture** the different models derived during the establishment of system must be reliable and coherent.

**Driven by use case and requirements** enables the clear definition of a users’ needs and priorities respectively thereby minimizing the risk of project failure.

#### The Two Track Unified Process (2TUP)

2TUP is a unified process which is belt on UML and has as objective to bring solution to constraints of functional and technical changes imposed on information systems by strengthening controls on development capacities. It proposes a Y-sharped development life cycle that separates the functional aspect from the technical aspects, and the merging of these two forms the implementation aspect. 2TUP distinguishes therefore two branches: the functional and technical branches, the combination of the result of these two branches forms the third: the realization branch – where we realize our system. The diagram bellow illustrates the branches of 2TUP.

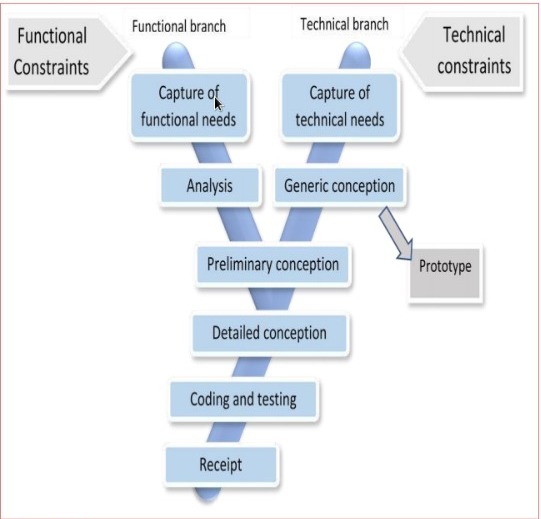


Figure5:RealizationBranch Source:https://image.slidesharecdn.com/2tup-presentation-121226144316-phpapp01/85/mthodologie-2-track-unified-process-7-320.jpg?cb=1666089460

##### The left branch (functional branch)

It captures the functional needs of a system. This ensures the production of software that meets the needs/requirements of the user. The analysis here consists of studying precisely the functional specification in order to obtain an idea of what the system is going to realize and its result does not depend on any technology.

##### The right branch (Technical branch)

The technical branch enumerates the technical needs and proposes a generic design validated by a prototype. The technical needs include constraints and choices related to the conception of the system, the tools and equipment as well as the integration constraint with the existing system condition. The different diagrams are shown in the table below.

##### The middle branch (Realization or implementation branch)

In this branch, we study the preliminary conception, detailed conception, and documentation of the system. The realization branch supports the following:

**Preliminary conception:** This is the most sensitive step of 2TUP as it is the confluence of the functional and technical branch. It is completed when the deployment model, the operating model, the logical model, inter-phases and the software configuration model are defined.

**Detailed conception:** This is the detailed design of each feature of the system.

**Coding and testing:** This are the phase where we program the designed features and test the coded features.

**The recipe:** Also known as the deliverable is the validation phase of the functions of the developed system.

1. JUSTIFICATION OF METHOD OF ANALYSIS

The reason why we chose UML modelling language and the software development process 2TUP instead of many others that exist, include:

UML is the current standard for programming in an object-oriented language. For this reason, it is widely understood and well known making it easy for a new programmer to join the project and be productive from the very first day.

UML diagrams allow teams to visualize how a project is or will be working, and they can be used in any field, not just software engineering. The diagrams will allow teams to visualize together how a system or a process will work or did work. It can provide new ideas for how teams have to collaborate to achieve the goal of the work-flow process.2TUP is centered around the creation and maintenance of a model, rather than the production of mountain documents.

2TUP is user oriented as it permits the development of software that responds to the needs of the users through the study of the user needs.

2TUP is iterative and incremental, hence it enables the project team to produce refined amelioration if necessary and easily integrate it in the already existing system. 2TUP by permitting the project team identify and test the key functionalities of the system limits the risk related to building the system.

## MODELING OF THE SYSTEM

Capture Of Functional Needs:

The first step of the left (functional) branch of Two Track Unified Process (2TUP) is the capture of the functional needs. At this step, we capture the intended behavior of the system that maybe express as services, tasks or functions the system is required to perform.

## Use Case Diagram:

##### Definition:

A use case diagram shows the functionalities of a system, their inter-dependencies and how they relate with actors of the system. A use case is a specification of behavior.

The main objectives of the use case diagram are:

* Provide a high-level view of the system;
* Identify the functions of the system.

Use case diagrams are completed with a textual description of each use case that is intended to define the use case in greater details.

##### Formalism:

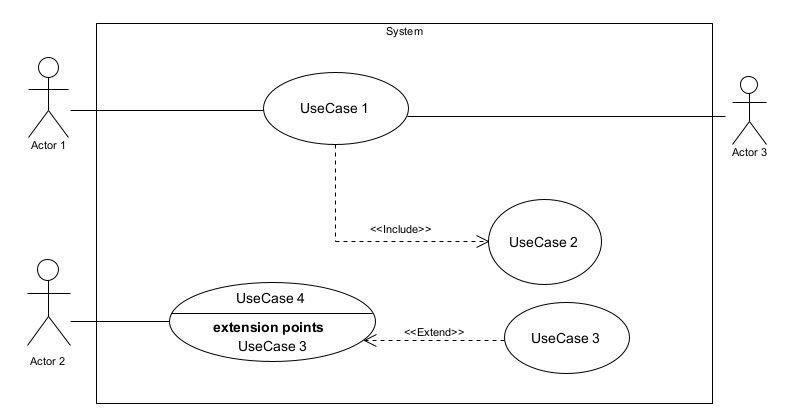


Figure 6: Use Case Diagram Formalism

1. Elements of a usecase diagram

|  |  |  |
| --- | --- | --- |
| Elements Notation Description | | |
| Actors |  | Represents an entity that directly interacts with the system. The actor is what performs the different possible actions of the system. |
| Use case |  | A use case represents a |
|  | Use Case  1 | functionality of the system. It is an action that can be performed by an actor. |
| Association |  | it indicates that an actor takes part in a use Case. |
| Include |  | An inclusion denotes that an included action must be performed before the including action can be performed. |
| Extend |  | An extension denotes that an extending action may be performed while an extended action is being performed. |
| Generalization |  | This shows that an actor or a use case is a kind of another abstract or concrete actors can be defined and later specialized using generalization relationship. |
| Elements | Notation | Description |
| System |  | It is a container of use cases which interact with external actors |

Table 13:Use case diagram component

##### The Actors Of Our System

1. Primary Actors

|  |  |
| --- | --- |
| **Actor** | **Role** |
| **User** | He is in charge of recording attendance of students, on daily basis. |
| **System Administrator** | He can identify a random student at the campus, during exams or on special occasions. |

Table 14:Actors of our system.

1. Secondary Actors

|  |  |
| --- | --- |
| Actors | Role |
| Payment API | Provide payment method |
| Google map API | Provide the map |

Table 15:Secondary Actors

admin textual description

|  |  |
| --- | --- |
| TITLE | Manage the shop products and consultations |
| objective | Manage the shop product and entries |
| Actors | Administrator |
| Precondition(s) | Admin is Authenticated |
| Triggers |  |
| Nominal Scenario | 1. System display home page 2. User log in / sign in 3. System checks user credentials 4. System displays a successful message 5. System display admin dashboard page 6. Admin clicks on dashboard button 7. System display admin dashboard 8. Admin clicks on product button 9. System displays product page with all the products 10. Admin clicks on consultation 11. System displays consultation page 12. Admin clicks on product 13. Admin clicks on create product 14. System displays create product page 15. Admin fill form and submit 16. System display success message and redirect to all products page |
| Alternative Scenarios | 1. At each step where the form is been display the will be a validation process and a message will be displayed according to the status of the validation i.e if the form is properly filled it will display a success message and if it is not it will display and error message |
| Post condition of success | The system generate a list of payment method and when the payment is been done a success page will appear ,and the payment is done |
| Post condition for failure | The payment has failed |
| Non-functional requirements | There must be a good network connectivity |

|  |  |
| --- | --- |
| TITLE | To buy products |
| objective | To buy on the platform |
| Actors | User |
| Precondition(s) | 1. User is Authenticated |
| Triggers |  |
| Nominal Scenario | 1. System display home page 2. User log in / sign in 3. User view all the services perform by the platform 4. User clicks on the cart icon 5. System add product to the user shopping card list 6. User select the quantity of the product to buy 7. User click on the checkout button 8. System display payment page 9. User selects the payment method fill the form and submit 10. System display success payment message |
| Alternative Scenarios | 1. At each step where the form is been display the will be a validation process And a message will be displayed according to the status of the validation i.e if the form is properly filled it will display a success message and if it is not it will display and error message |
| Post condition of success | The payment has been made |
| Post condition for failure | The payment has failed |
| Non-functional requirements | There must be a good network connectivity |

Table :Visitor textual diagram

User textual description to buy products

|  |  |  |
| --- | --- | --- |
| Identification | Name | Project Realization |
|  | Objective | To browse through all the services that the shop offer |
|  | Actors | Visitor |
|  | Secondary actors |  |
| **Realization** | Presumption | The users enters the url on his browser |
|  | Nominal scenario | 1. System display home page 2. User browse through all the platform pages 3. User click on the cart icon 4. System display visitor cart list 5. Visitor clicks on the cart icon 6. System add the visitor product to his cart list 7. User clicks the checkout button 8. System redirect user to the login page |
|  | Alternative Scenario | If the visitor does not create an account he will not be able to purchase any product and will be redirected to the login page whenever he try to purchase any product |
| **Non-functional requirement** |  | Internet connectivity is required |

|  |  |  |
| --- | --- | --- |
| Identification | Name | Project Realization |
|  | Objective | To manage user account |
|  | Actors | user |
|  | Secondary actors |  |
| **Realization** | Presumption | The users is authenticated |
|  | Nominal scenario | 1. System display home page 2. User log in /sign in 3. User click on his profile icon 4. System display user dashboard 5. User click on update profile 6. System display update profile page 7. User fill the update profile form and submit 8. System update user info and display success message 9. User clicks on log out icon 10. System log out the user and redirect to the dashboard |
|  | Alternative Scenario | At each step where the form is been display the will be a validation process And a message will be displayed according to the status of the validation i.e if the form is properly filled it will display a success message and if it is not it will display and error message |
| **Non-functional requirement** |  | Internet connectivity is required |

User textual description to manage his profile and track his order

## Communication Diagram

* 1. Definitions:

It is a diagram which is used to show the relationship between the actors of a system, both the sequence and the communication diagrams represent the same information but differently. Instead of showing the flow of message. It depicts the architecture of the object residing in the system as it is based on object-oriented programming.

* 1. Formalism

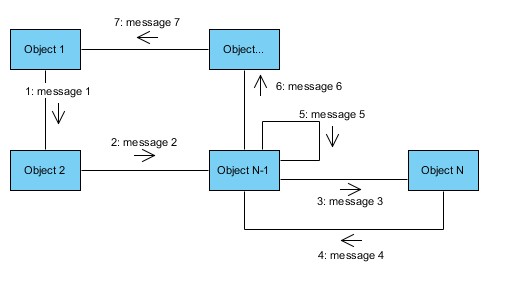


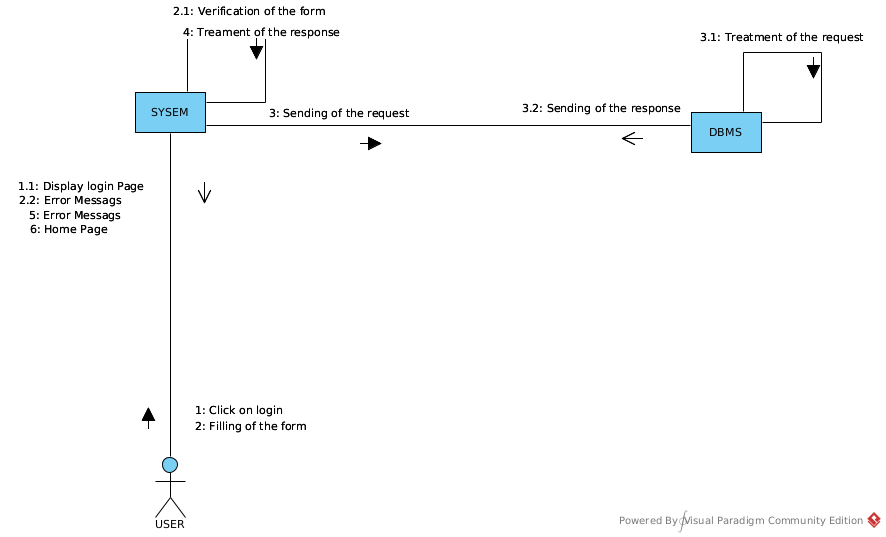
Figure 10:Communication Diagram Formalism

|  |  |  |
| --- | --- | --- |
| **Element** | **Representation** | **Description** |
| **Object** |  | An actor represents an individual participant in the interaction conversation. |
| **link** |  | It initiates an association it connects two objects together for them to communicate. |
| **Actor** |  | A role play by an entity that interacts with the subjects. |
| **message** |  | Defines a particular communication between lifelines in an interaction. |

Table 18:Communication Diagram Components

DSEI Communication Diagram for Authentication

Figure 11 : Communication Diagram of authentication



## Sequence Diagram:

1. Definition:

A sequence diagram is an interaction diagram which represents the flow of message between elements in a system, it is termed as an event diagram. It portrays the communication between any two lifelines as a time-ordered sequence of events.

1. Formalism:

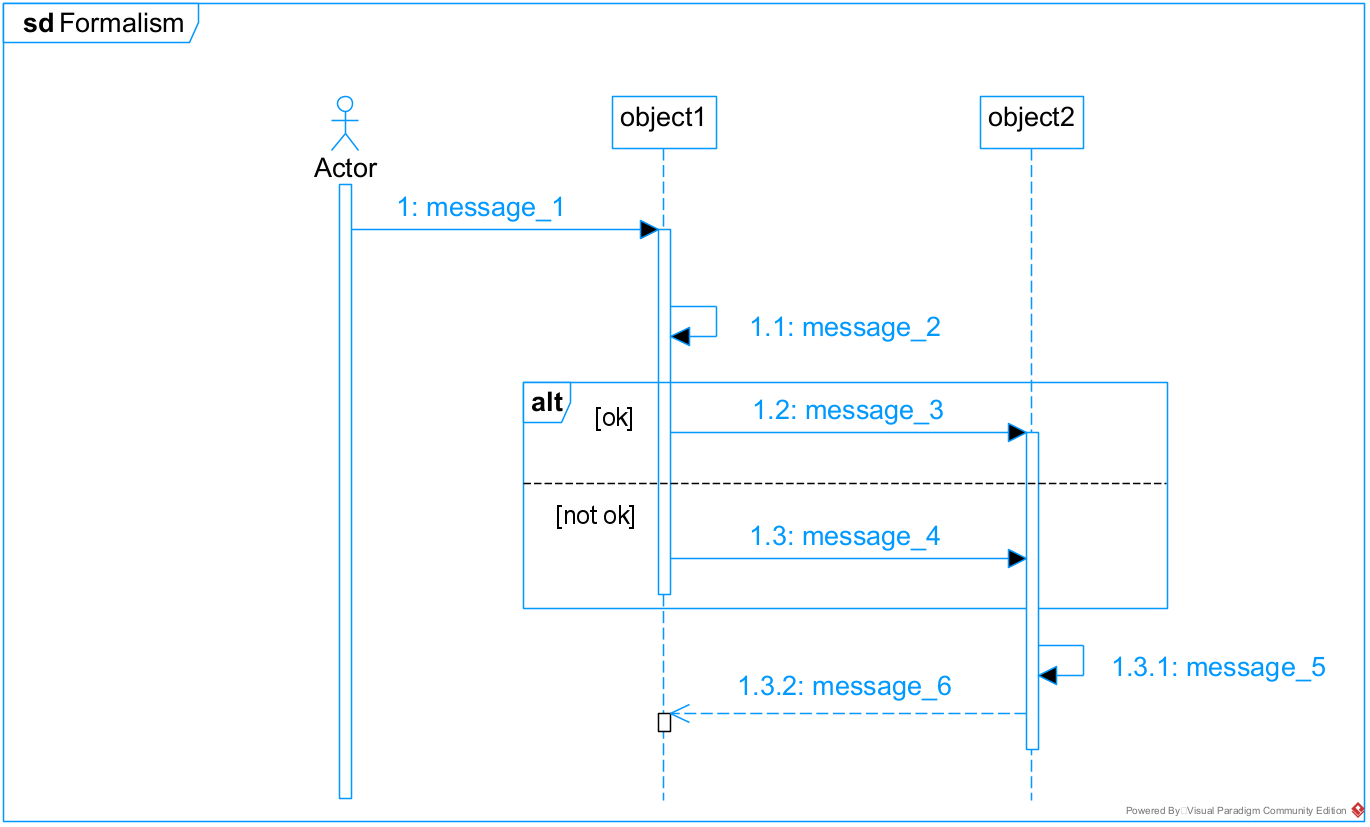


Figure 14: Sequence Diagram formalism

|  |  |  |
| --- | --- | --- |
| **Element** | **Representation** | **Description** |
| **Lifeline** |  | An individual participant in a sequence diagram, it is position at the top of the diagram. |
| **Combined fragment** |  | It represents a choice of behavior in which at most one operand will be chosen. |
| **Messages** |  | These are arrows which shows the direction of message flow. We have the synchronous, the asynchronous and the selfmessages. |
| **Activation** |  | It describes the time period in which an operation is performed by an element. |

Table 19:Sequence Diagram Components

DSEI Authentication Sequence Diagram

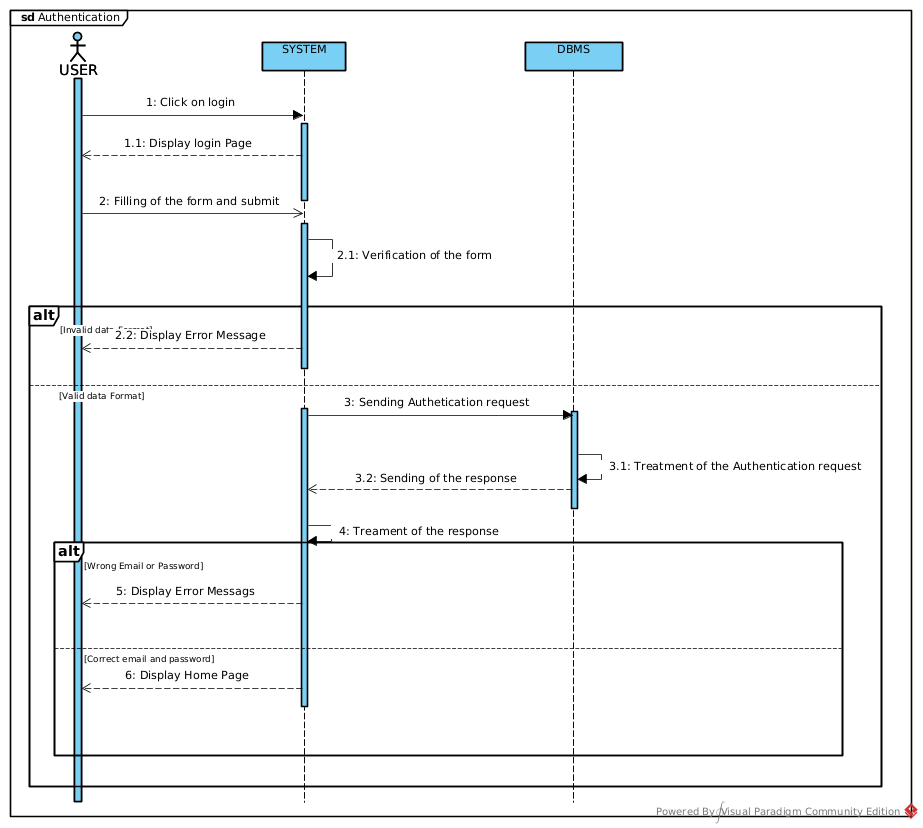


Figure 15: Sequence Diagram of authentication

DSEI Add Incubator Sequence Diagram

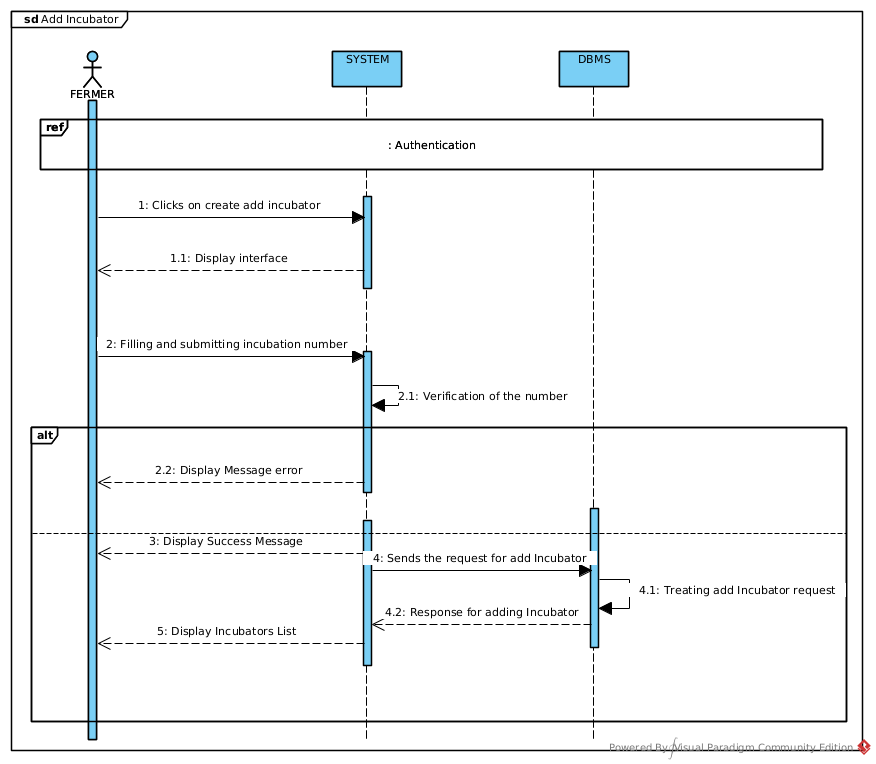


Figure 16 : Sequence Diagram of add an incubator

## Activity Diagram

##### Definition:

An activity diagram is a graphical representation of work-flows that show the steps needed in the realization of a process; showing the details from a start point to an end point through all decisions and actions that can possible be performed. Activity diagrams are intended to model both the computational and organizational process. They flow can be sequential, branched or concurrent. Below is an activity diagram formalism.

##### Formalism

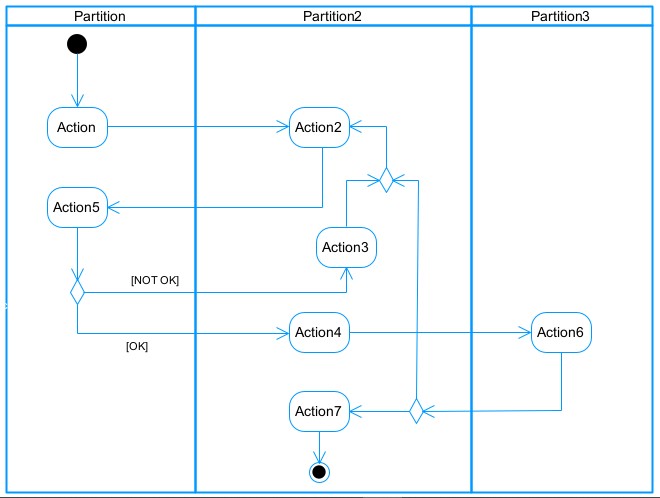


Figure 17 : Activity Diagram formalism

1. Activity Diagram Elements:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Elements Diagrammatic Representation** | | | | **Description** | |
| **Activity** | |  | | Use to represent a set of actions. | |
| **Action** | |  | | Represent a task to be performed. | |
| **Activity edge** | |  | | A directed connection between two activity nodes through which tokens may flow. | |
| **Initial node** | |  | | Shows the beginning of an activity or set of actions. | |
| **Final node** | |  | | Stops all controls and object flows in an activity. | |
| **Object node** | |  | | Represents an object connected to a series of object flows. | |
| **Decision node** | |  | | Represents a test condition that slits an incoming activity edge into opposite outgoing activity edges. | |
| **Merge node** | |  | | Reunite different decision paths created using a decision node. | |
| **Fork node** | |  | | Slits behaviour into parallel or concurrent flows of activities  (or actions) | |
| **Join node** | |  | | Unites a set of parallel or concurrent flows of activities or actions. | |
| **Swimlane and partition** | |  | | A way of grouping activities performed by the same actor in an activity diagram or to group actions in the same thread. | |

Table 20:components of an Activity Diagram

1. DSEI Activity Diagram to Create Account

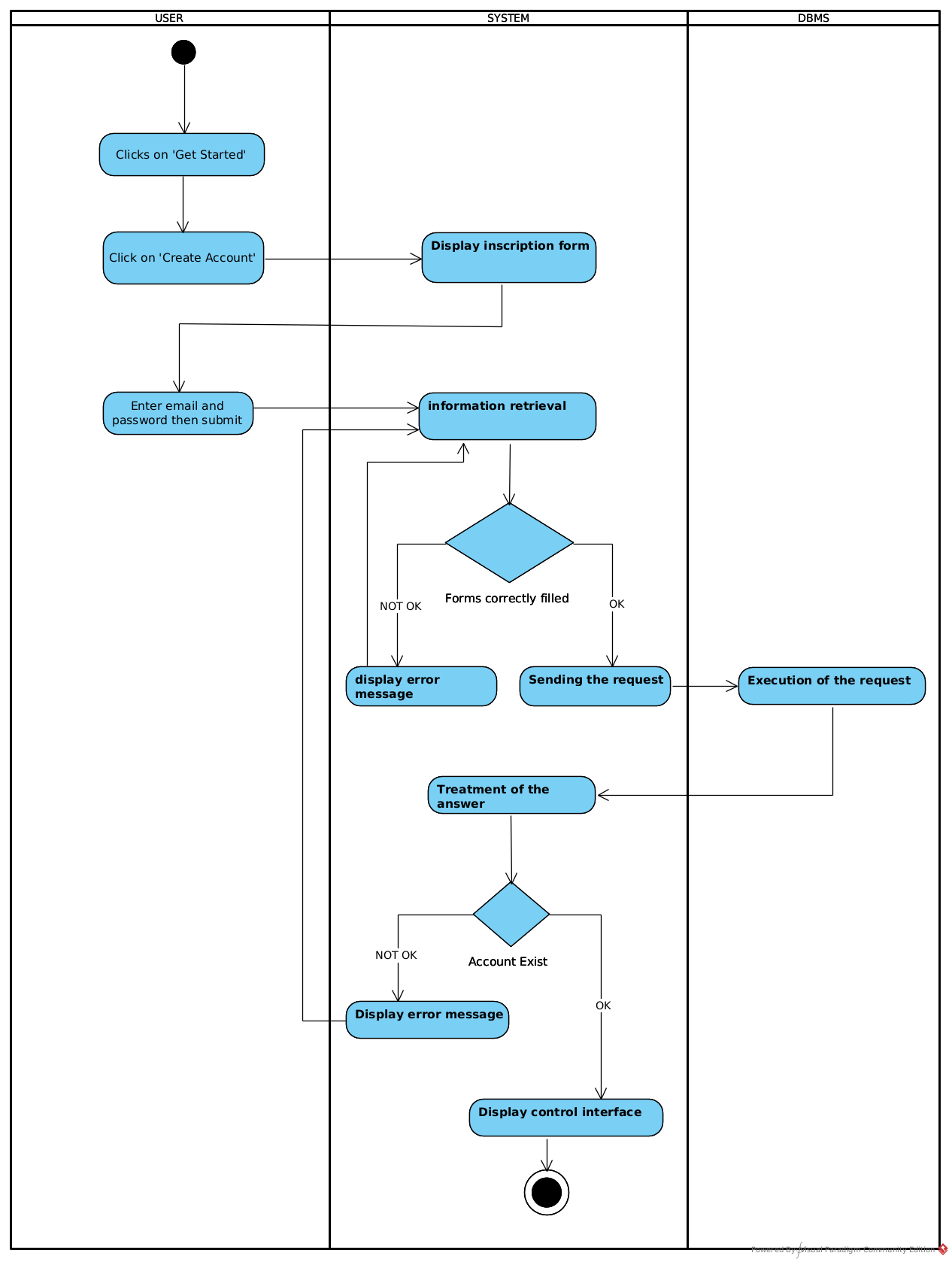


Figure 18: Activity Diagram of create Account

1. DSEI Activity Diagram to login

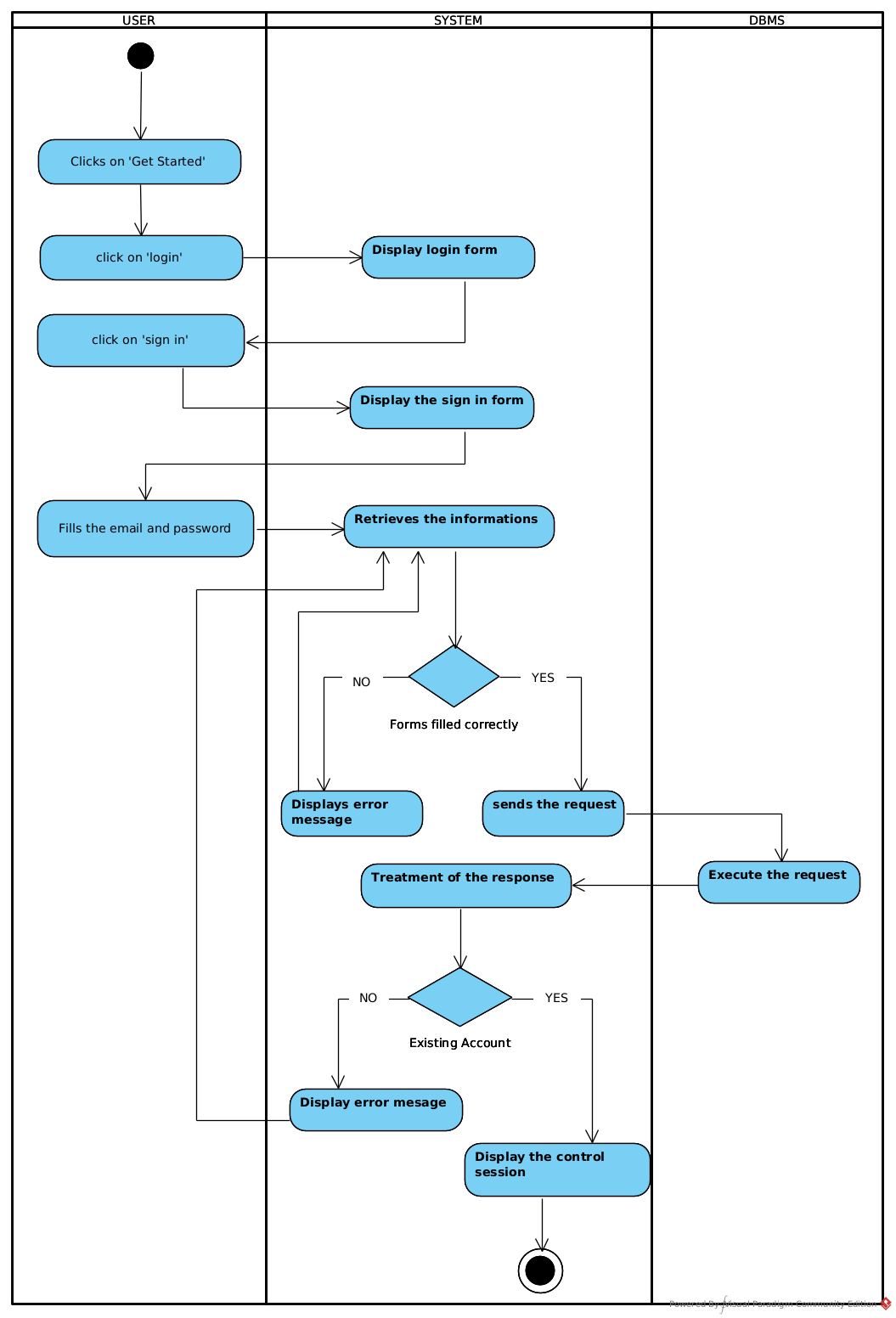


Figure 19 : Activity Diagram of login

1. DSEI Activity Diagram Stop Incubation

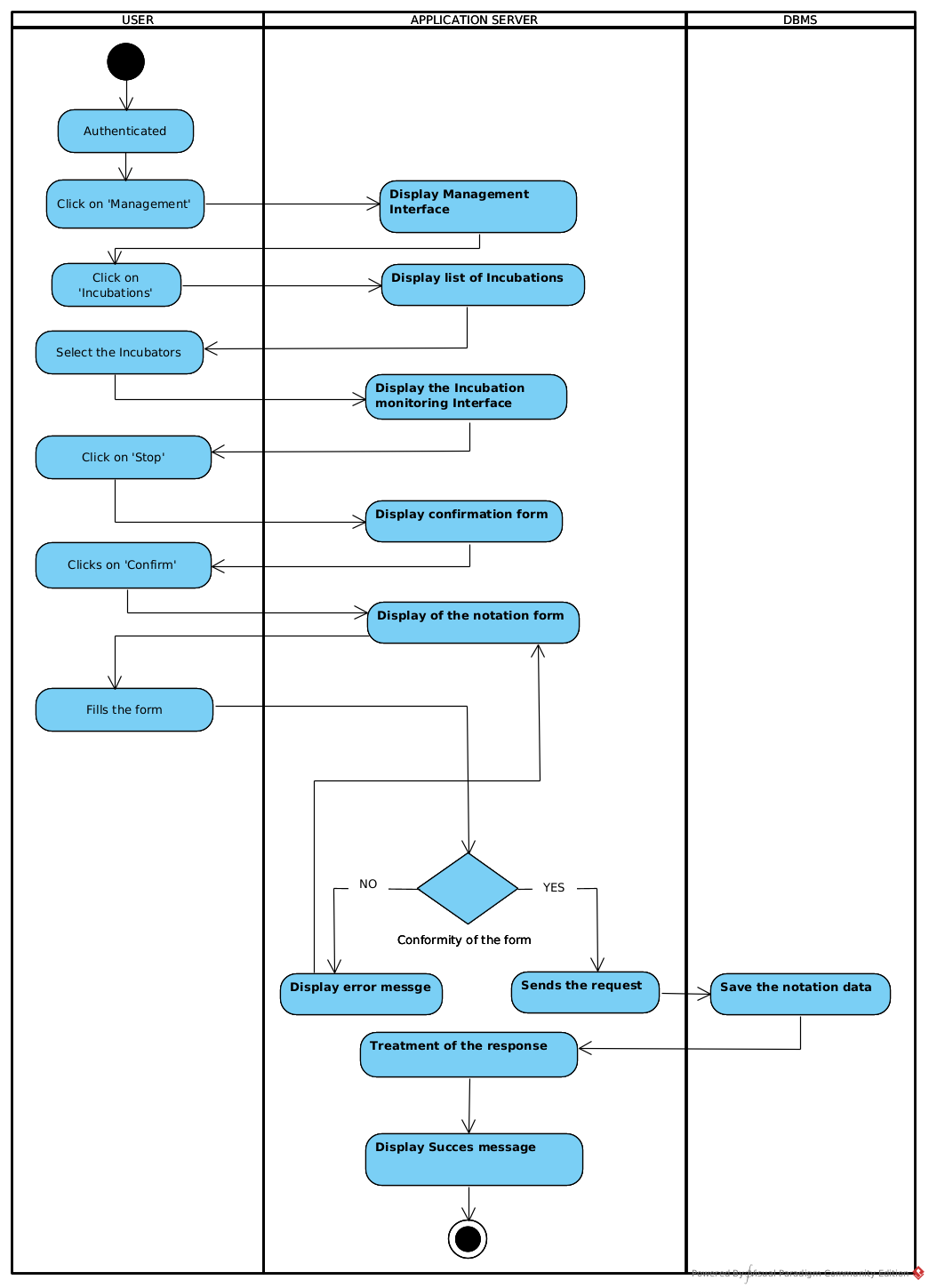


Figure 20 : Activity Diagram of Stop incubation

1. DSEI Activity Diagram for Adding An Incubator

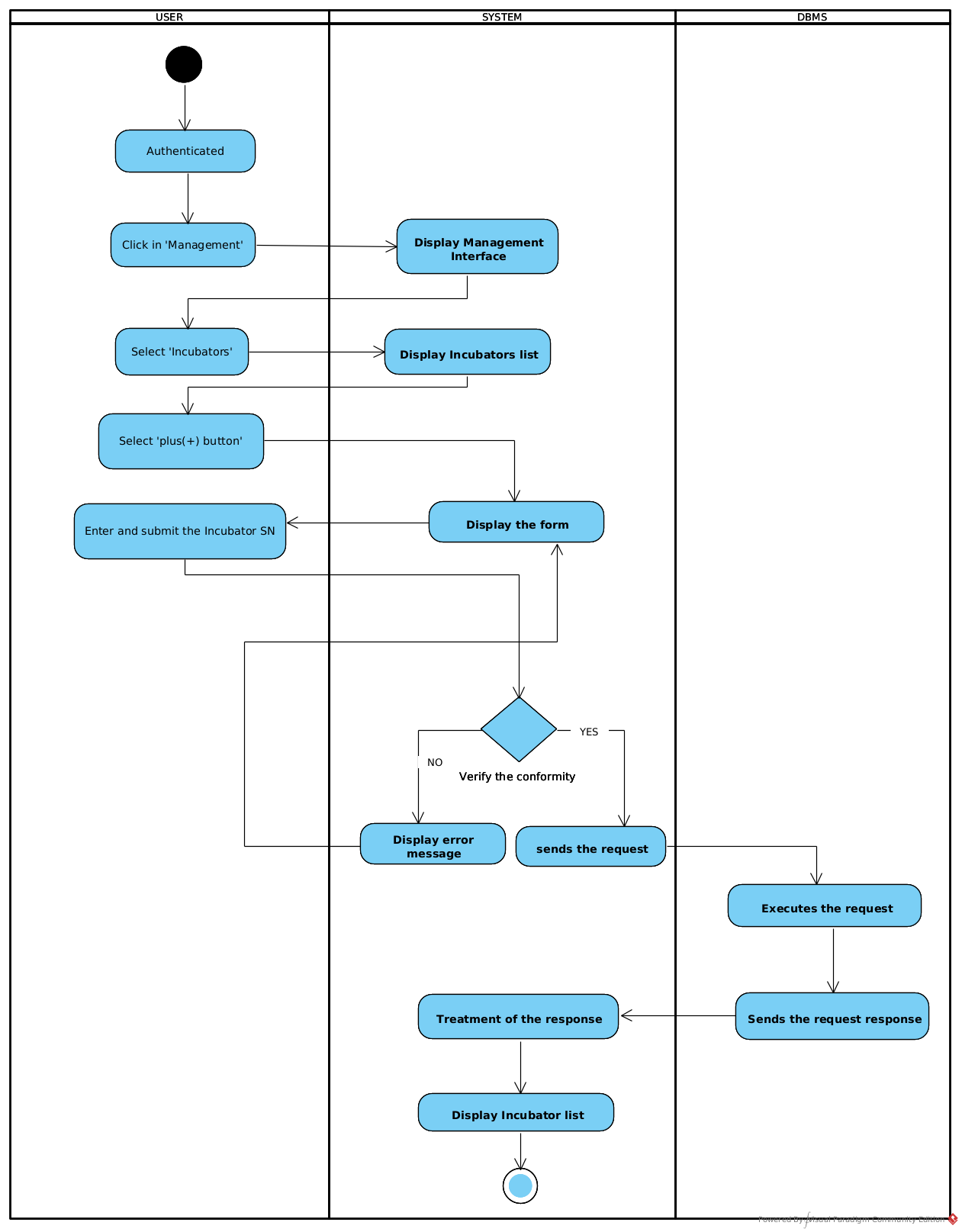


Figure 21 : Activity Diagram of add an incubator

1. DSEI Activity Diagram to View the Incubation state

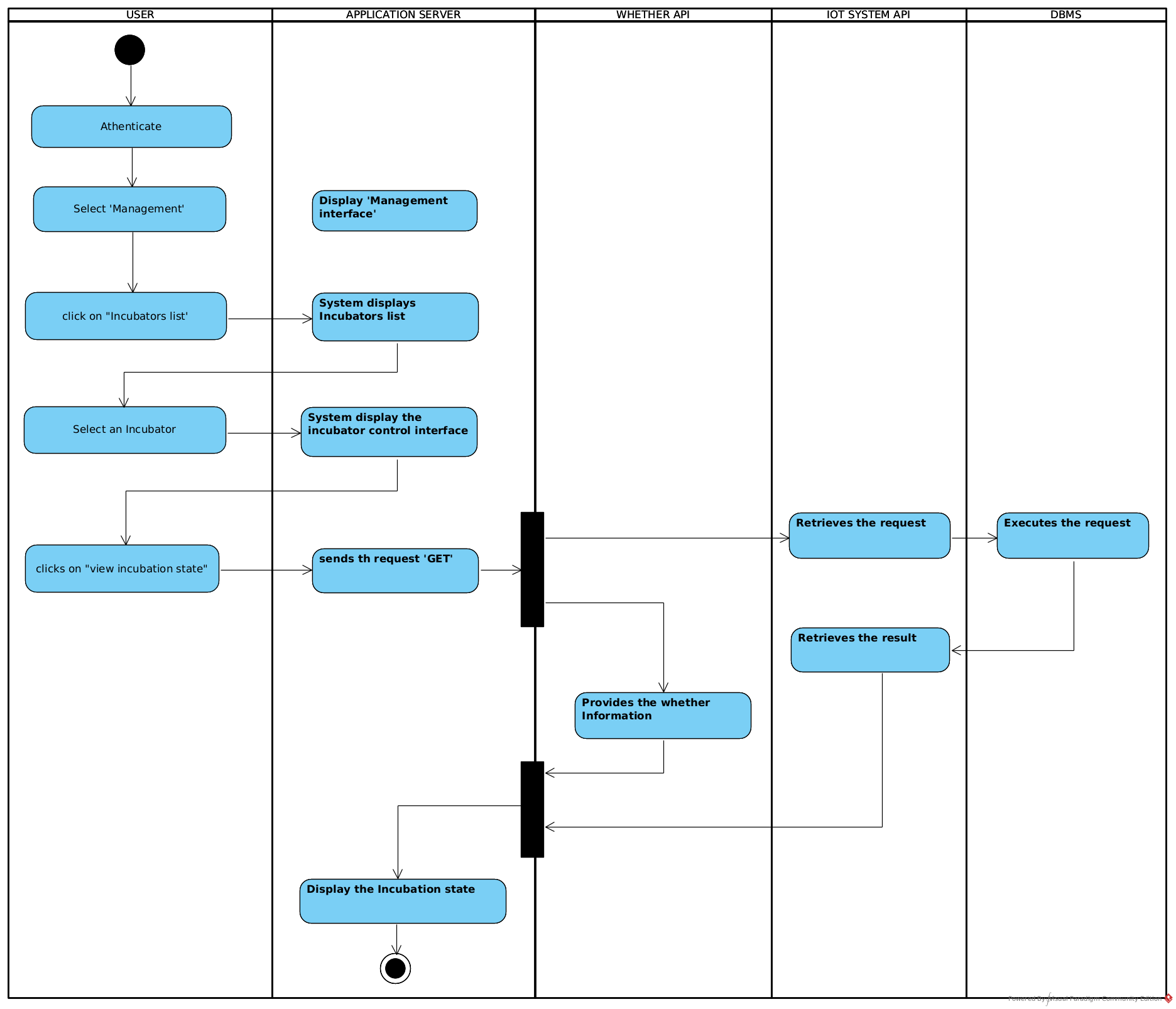


Figure 22: Activity Diagram of view incubation state

CONCLUSION

In the analysis phase, we chose a software development process and modelling language, after which we presented the existing system, its limitation and our proposed solutions. We went forth explaining the functional need of our system, we saw the use case diagram which shows the relationship between the actors and use case (the action the actor can perform on the system), we saw the activity diagram which shows the work-flow of our system, and lastly the State machine diagram which shows the behavior of a single object in response to an event. We will now move to the conception phase in which we will present the other two branches of the 2TUP which are the Technical and the realization branch of our system.

PHASE V

CONCEPTION PHASE

PHASE VI

REALIZATION PHASE

PREAMBLE

In this phase we will to straight forward in the implementation of our solution, we will base ourselves on the analysis and conception phases and also present the component and deployment diagrams.

CONTENT

INTRODUCTION

1. DEPLOYEMENT DIAGRAM
2. COMPONENT DIAGRAM

CONCLUSION

INTRODUCTION

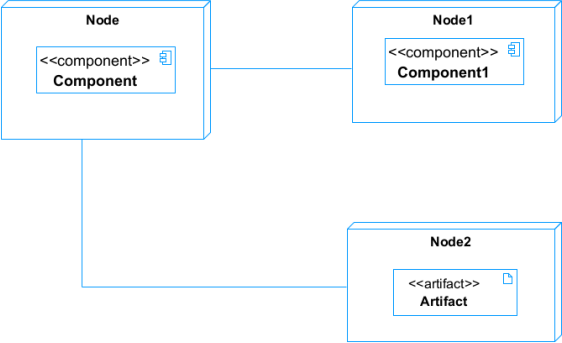
Here in the realization phase, we will see some diagrams related to the physical aspect pf the system like libraries, documents, as well as the physical topology of the components of the system when the software is been deployed.

#### DEPLOYMENT DIAGRAM

* 1. Definition

Deployment diagram is a structural diagram used to visualize the topology of the physical components of a system, where the software is deployed. They consist of nodes and their relationship. It is related to the component diagram because the components are deployed using the deployment diagram. A deployment diagram consists of nodes. Nodes are nothing but physical hardware used to deploy the application.

* 1. Formalism



*Figure 38: Formalism of deployment diagram*

*Table 20: Elements of deployment diagram*

|  |  |  |
| --- | --- | --- |
| **Element** | **Representation** | **Description** |
| **Node** |  | It is a hardware used to deploy the application |
| **Artifact** |  | An artifact is a major product, which is produced or used during the  development of a software. E.g  diagrams, data  models, setup scripts |
| **Component** |  | It represents a modular part of a system that  encapsulates its content and whose manifestation is replaceable within it  environment. |
| **Association** | association | An association helps to connect two nodes together which permits them to communicate  together |

* 1. System deployment diagram



https/http

https/http

TCP/IP

https/http

users pc

https/http

API

Web/Appication Server Backend Server

<<component>> PAYMENT API

<<component>> SMS API

Database Server

<<component>> Mongo DB

<<component>> DBMS

Client Server2

Client Server

<<component>> Google Map API

<<component>> Web browser

<<component>> Node Js

<<component>> IPA(IOS)

<<component>> APK(ANDROID)



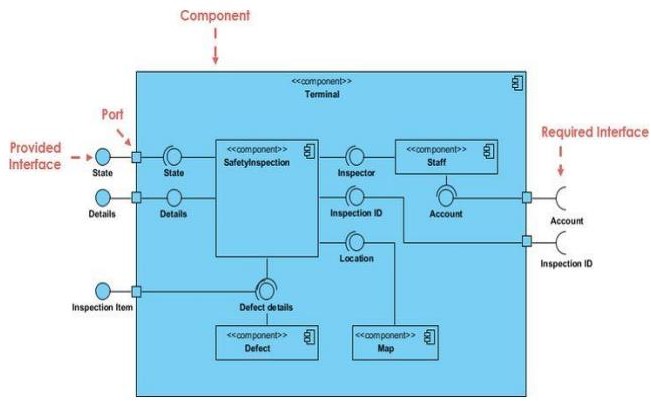
*Figure 39 iKare deployment diagram*

1. *COMPONENT DIAGRAM*
   1. Definition

Component diagrams are used to model the physical aspect of a system. Now the question is what are this physical aspect? They are elements such as Executables, libraries, files, document etc. which resides in a node. The component diagram does not describe the functionality of the system, but it describes the components used to make those functionalities.

* 1. Formalism

c.



*Figure 40: Formalism of component diagram (Source: http*[*s://www*](http://www.pinterest.com/pin/551128073157994549/))*.pin*[*terest.com/pin/551128073157994549/)*](http://www.pinterest.com/pin/551128073157994549/))

*Table 21: Elements of component diagram*

|  |  |  |
| --- | --- | --- |
| **Name** | **Representation** | **Description** |
| **A Component** |  | A component is an abstract logical unit block of a system.it is represented as a rectangle with smaller rectangle in the upper right corner which saves as it  icon for recognition. |
| **Dependency** |  | Dependency is a directed relationship which is used to show that some components are dependent on others for their correct  functioning. |
| **Required Interface** |  | It is a straight line from the component box with an attached half circle representing interfaces where a component requires information in order to perform its own  functions. |
| **Provided Interface** |  | It is a straight line from the component box with an attached circle representing interfaces where a component produces information used  by required interfaces |
| **Port** |  | A port (represented by a small square at the end of a |

|  |  |  |
| --- | --- | --- |
|  |  | required or provided interface) is used when the components delegate the interfaces to an internal  class. |

1. System mobile component diagram



|  |  |  |
| --- | --- | --- |
| <<component>> model | | |
|  |  |  |
| <<component>> controller | | |

*Figure 41 iKare mobile component diagram*



<<component>> web server

<<component>> Google and Twilio APIs

Port\_1

Interface\_4

~~Port~~\_3

Port\_2

Interface\_3

<<component>> Database

Port\_1

Mongo DB

Twilio SMS API

Google Geolocation API



<<component>> User

<<component>> mobile app

Port\_1

Port\_1

Interface\_2

Interface\_1

Port\_1

<<component>> assets

<<component>> images

<<component>> utils

<<component>> Dashboard.js

<<component>> Login.js

<<component>> Register.js

~~Port\_1~~



1. System web component diagram

Port\_1



<<component>>

User

Interface\_2

Port\_1

Port\_1

Interface\_1

Port\_1

<<component>> assets

<<component>> utils

<<component>> images

<<component>> web

<<component>> Dashboard.js

<<component>> Login.js

<<component>> Register.js



<<component>> Google and Twilio APIs

Twilio SMS API

Google Geolocation API

<<component>> web server



Interface\_3

Port\_3

Port\_2

Port\_1

|  |  |
| --- | --- |
| <<component>> model | |
|  |  |
| <<component>> controller | |

Port\_1 Interface\_4



<<component>> Database

Mongo DB

*Figure 42 iKare mobile component diagram*



# CONCLUSION

In our realization phase, we implemented our application. In other to accomplish this phase, we made used of our analysis and conception phase. We also drew the deployment and component diagrams which depict the structure of our system in terms of modules, files, assets, how the different elements interact with each other. We will move to the test of functionalities phase, where we will examine the different modules present in our app and how beneficial they are to its different users

**PART VII**

**TEST OF FUNCTIONALITIES**

# Preamble

In this phase, we will present the various functionalities of our application.

# Content



INTRODUCTION

1. APPLICATION FUNCTIONALITIES
2. TESTS SHOWCASES CONCLUSION

INTRODUCTION

The test of functionalities phase helps us to know more about the solution we are building be it web or mobile. It provides the different functionalities or modules found in our application and how they are beneficial to the users. Hence, we are going to explore the different functionalities present in optic center

1. APPLICATION FUNCTIONALITIES

* Authentication

This functionality enables the users to have access to their workspace or dashboard. In case he/she does not have an account he/she will register

* Order Products
* Book consultation
* Logout

1. TESTS SHOWCASES

The following test are carried out using post man on our API’s endpoint

1. Admin Module test
2. Clients Module test

CONCLUSION

In the test of functionalities phase we explained the different functionalities of our application and the benefits to the various users (client, admin,visitor). This phase is essential in the understanding of the application. We will move to the last phase which is the installation and user guide where we will elaborate on how to install and use  **optic solution**

**PART VIII**

**INSTALLATION GUIDE AND**

**USER GUIDE**

# Preamble

The purpose of the user guide is to provide users of our platform with step-by-step instructions on how to install and use the system.

# Content

INTRODUCTION

I.

II.

INSTALLATION OF THE APPLICATION

SHOW CASE

CONCLUSION

INTRODUCTION

This is the final phase of our report. In this phase we will walk through the requirements for our system, the necessary installation process, accessing our system and its features, all this in a step-by-step manner to facilitate the setting up of the platform for the first-time users. The steps of different processes will be accompanied by images. After we will showcase our application by viewing the different screens.