

A logo with a map and a globe

Description automatically generated

**REPUBLIQUE DU CAMEROUN**

Paix-Travail-Patrie

**REPUBLIC OF CAMEROON**

Peace-Work-Fatherland

**N-TEC LABS**

PO BOX : Grand Chefferie Simbock, Immeuble DC

Tel: (+237)651834545

Website: www.nteclabs.com

Email: contact@nteclabs.com

**AFRICAN INSTITUTE OF COMPUTER SCIENCES FOR PAUL BIYA TECHNOLOGICAL CENTER OF EXCELLENCE CAMEROON**

PO Box: 13719 Yaoundé

Tel: (+237)242729957 / (+237)242729958

Website: [www.iaicameroun.com](http://www.iaicameroun.com)

Email: contact@iaicameroon.com

Email: contact@iaicameroun.com

INTERNSHIP REPORT

**RESTAURANT MANAGEMENT SYSTEM**

Internship Carried out from the 01st July to 30th September 2023

In view of obtaining a **Higher Technician Diploma (HTD)** in computer sciences option

**Software Engineering**

Submitted by:

**NDIP LUCY-DIANE BANYI**

**Level 2 Student at AICS Cameroon**

Supervisors:

**Academic Supervisor**

**Mr. NGUH PRINCE**

**Lecturer at AICS-Cameroon**

**Professional Supervisor**

**Miss NFORMI VICTORY**

**Developer at N-tech labs**

ACKNOWLEDGEMENTS

**ACADEMIC YEAR 2023-2024**

This work would not have been accomplished without the help, encouragements, and advice, teachings and precious time of the following people:

* We give thanks to God who made me able to this project.
* The Resident Representative of African Institute of Computer Sciences Yaounde Cameroon, **Mr. ARMAND CLAUDE ABANDA.**
* **Mr. NGUH PRINCE** our academic supervisor and lecturer at AICS-Cameroon for his availability, advice and moral support throughout the internship period which helped in the realization of this project.
* The CEO of N-Tech Labs Mr. **NGWANYI JOEL** for having welcomed us and validate our application.
* **Miss FONGWA BLESSING** for having welcomed us, encouragements, availability, support, supervision, counseling and motivation throughout the internship period.
* **Miss** **NFORMI VICTORY** our professional supervisor, for her warm welcome, encouragements, availability, support, supervision, counseling and motivation throughout the internship period.
* To all the teachers of the African Institute of Computer Sciences Yaounde Cameroon for their help and support throughout our training.
* **MR MBAH ROYCE CHUM ALEM** for his constant verification, support, counselling.
* To my parents and family for their guidance and support and for have done the required sacrifice to have made me integrate in this prestigious and talented institution
* To all friends and classmates at AICS for their knowledge, ideas, collaboration and most importantly the unforgettable moments spent together.
* To a special friend **BONG SHALOM** for her help, support, advice for the constant encouragement in the realization of our report.

**DEDICATION**

**THANKS TO MY PARENTS AND FAMILY**

FOR THEIR LOVE, ADVICE AND UNCONDITIONAL SUPPORT

**LIST OF ABBREVIATIONS**

* **2TUP:** Two Track Unified Process
* **AICS:** AFRICAN Institute of Computer Sciences
* **API :** Application Programming Interface
* **CSS:** Cascading Style Sheet
* **DBMS:** Database Management System
* **ER:** Entity Relationship
* **ERD:** Entity Relationsip Diagram
* **HTML:** Hyper Text Markup Language
* **HTTP:** Hypertext Transfer Protoccol
* **PDM:** Physical Data Model
* **RMS;** Restaurant Mnagement System
* **SQL:** Structured Query Language
* **Mr:** Mister
* **Mrs:** Miss

**LIST OF FIGURES**

[Figure 1: geographical location of N-TEC LABS 10](#_Toc147113555)

[Figure 2 organization chart of N-TEC LABS 12](#_Toc147113556)

[Figure 3: Gannt project planning 34](https://d.docs.live.net/4be1740105e2a1f3/Documents/presentation%20of%20hadron%20(Repaired).docx#_Toc147113557)

[Figure 4: Gantt project 34](#_Toc147113558)

[Figure 5 System Design Phases 43](#_Toc147113559)

[Figure 6 Two-Track Unified Process 49](https://d.docs.live.net/4be1740105e2a1f3/Documents/presentation%20of%20hadron%20(Repaired).docx#_Toc147113560)

[Figure 7: Formalism of Use Case Diagram 52](#_Toc147113561)

[Figure 8: General Use Case Diagram of our system 57](#_Toc147113562)

[Figure 9: Use case diagram of Ordering 58](#_Toc147113563)

[Figure 10: Use case diagram of Upload card. 59](#_Toc147113564)

[Figure 11 use case diagram of Authenticate. 60](#_Toc147113565)

[Figure 12: Activity Diagram of Signup 70](#_Toc147113566)

[Figure 13:Activity diagram of report lost card 71](#_Toc147113567)

[Figure 14: Activity diagram of match Card 72](#_Toc147113568)

[Figure 15: Communication diagram of Lost card 75](#_Toc147113569)

[Figure 16: Communication diagram of found card. 76](#_Toc147113570)

[Figure 17: Communication Diagram of Register 77](#_Toc147113571)

[Figure 18: formalism of Sequence diagram 78](#_Toc147113572)

[Figure 19: reporting lost card Sequence Diagram 82](#_Toc147113573)

[Figure 21 SignUp Sequence Diagram 83](#_Toc147113574)

[Figure 31: MVT pattern in Django 89](#_Toc147113575)

[Figure 23: package diagram of the system 92](#_Toc147113576)

[Figure 24 formalism of state machine diagram 93](#_Toc147113577)

[Figure 25: state machine diagram <<User's Card>> 95](#_Toc147113578)

[Figure 26: State machine diagram <<Finder's Entry>> 96](#_Toc147113579)

[Figure 27: Class Diagram for our system 99](#_Toc147113580)

[Figure 28: Visual components of Deployment Diagram 104](#_Toc147113581)

[Figure 29:deployment diagram of the solution 106](#_Toc147113582)

[Figure 30 Component Diagram of the Software solution 109](#_Toc147113583)

**LIST OF TABLES**

[Table 1: Hardware resources of HADRON SA 13](#_Toc147113584)

[Table 2 Software resources of HADRON SA 13](#_Toc147113585)

[Table 3: Criticism of the system 21](#_Toc147113586)

[Table 4 Project's Plan 32](#_Toc147113587)

[Table 5 Software resources of the project 35](#_Toc147113588)

[Table 6 hardware resources of the project 36](#_Toc147113589)

[Table 7 Human Resources of the project 36](#_Toc147113590)

[Table 8: Comparison between UML and MERISE 47](#_Toc147113591)

[Table 9: formalism of textual description of a use case 61](#_Toc147113592)

[Table 10: textual description of use case Report Lost Card 62](#_Toc147113593)

[Table 11 textual description of use case Found Card with Image 63](#_Toc147113594)

[Table 12: Formalism of an activity diagram 67](#_Toc147113595)

[Table 13: Components of an activity Diagram 68](#_Toc147113596)

[Table 14: formalism of Communication Diagram 74](#_Toc147113597)

[Table 15: Component of a class Diagram 97](#_Toc147113598)

[Table 17: description of element in deployment diagram 105](#_Toc147113599)

[Table 16: component of a Component Diagrams 107](#_Toc147113600)

[Table 18: Software tools used in the project 110](#_Toc147113601)

[Table 19: languages used in the project. 111](#_Toc147113602)

**ABSTRACT**

Restaurants play an important role in society by contributing to culture, economy, and social life, in order to facilitate management of services restaurants should have computer systems.

Most restaurants do not have computer systems which aid them to manage services properly, hence they struggle with manual order taking and processing leading to errors and delays, services are slow leading to longer wait for customers, cash handling errors where money can be stolen by employees, difficulty in tracking sales trends, customer preferences.

In this report we are proposing the design and development of a **RESTAURANT MANAGEMENT APPLICATION**. To do this, studies were conducted as well as a series of interviews with users (customers, servers, kitchen staff, managers). We used 2TUP methodology practices for the development of our application, the requirements specifications allowed us to formalize the data interaction with UML (Unified Modelling Language). In terms of structuring and storing data, we used the MySQL Relational Database Management System (RDBMS). The implementation in PHP allowed us to set up a flexible, secure, and easy to use and perfectly manage services in restaurants. By developing this application restaurants can significantly improve their operational efficiency, enhance customer satisfaction, and gain valuable insights to drive growth and profitability.

#

**RESUME**

Les restaurants jouent un rôle important dans la société en contribuant à la culture, à l'économie et à la vie sociale. Pour faciliter la gestion des services, les restaurants devraient disposer de systèmes informatiques.

La plupart des restaurants ne disposent pas de systèmes informatiques qui les aident à gérer correctement les services, ce qui les amène à lutter avec la prise de commandes et le traitement manuels, entraînant des erreurs et des retards. Les services sont lents, ce qui entraîne une attente plus longue pour les clients, des erreurs de manipulation d'argent où l'argent peut être volé par les employés, et des difficultés à suivre les tendances des ventes et les préférences des clients.

Dans ce rapport, nous proposons la conception et le développement d'une APPLICATION DE GESTION DE RESTAURANT. Pour ce faire, des études ont été menées ainsi qu'une série d'entretiens avec les utilisateurs (clients, serveurs, personnel de cuisine, gestionnaires). Nous avons utilisé les pratiques de la méthodologie 2TUP pour le développement de notre application, les spécifications des exigences nous ont permis de formaliser l'interaction des données avec UML (Langage de Modélisation Unifié). En termes de structuration et de stockage des données, nous avons utilisé le Système de Gestion de Base de Données Relationnelle (SGBDR) MySQL. L'implémentation en PHP nous a permis de mettre en place un système flexible, sécurisé et facile à utiliser pour gérer parfaitement les services dans les restaurants. En développant cette application, les restaurants peuvent améliorer considérablement leur efficacité opérationnelle, augmenter la satisfaction des clients et obtenir des informations précieuses pour stimuler leur croissance et leur rentabilité.

**GENERAL INTRODUCTION**

Restaurants are multipurposed establishments that offer much more than just food, they are places of social connection, cultural exchange, entertainment, and economic activity, serving a wide range of purposes for individuals and communities. Cameroonians go to restaurants to have an experience and they expect to be served well. Thus, it is important to manage restaurant service to enhance this experience.

The purpose of this report with the theme **“COMPUTERIZED MANAGEMENT OF RESTAURANT SERVICES”** will help enhance customers experience and to do this we went through all the following phases. We divided this report into 6 main parts which are shown below:-

1. **The insertion phase:** Here, we present the company in which we did our internship, and the integration of the interns into the company.
2. **Existing system**: Here, we present the present system and evaluate its advantages and most importantly its downfalls.
3. **The specification book**: Here, we identify the need of the future system users and point out different constraints of the project.
4. **Analysis phase:** Here, we choose our analysis method and provides all the diagram needed to visually represent our system both the infrastructure and the data structure.
5. **The Conception phase**: this presents the generic and detailed conception of the project and the architecture used to bring into reality our analysis.
6. **Realization phase:** In this phase, we will visualize the implementation process of the solution

# **PART ONE :**

# **INSERTION PHASE**

Preamble

The insertion phase is a part of t he internship report where we will present the detailed structure and characteristics of our enterprise where our internship was carried out.

Content

INTRODUCTION

1. WELCOME AND INTEGRATION
2. GENERAL PRESENTATION OF THE COMPANY
3. ORGANISATION OF THE COMPANY
4. HARDWARE AND SOFTWARE RESOURCES OF THE COMPANY
5. BRIEF PRESENTATION OF THE PROJECT THEME

CONCLUSION

**INTRODUCTION**

The insertion phase is a period (generally of 02 weeks) reserved for the different interns to discover and to familiarize themselves with the working environment. Here, we got to know about the staff, the different hardware and software resources used, the different departments which constitute the enterprise, how the company functions both internally and externally and we were introduced to our work space. During this period, we were also attributed an internship master often called professional supervisor and a theme. We also had a time to discuss amongst us interns on topics like what we love doing most, what we dislike, our beliefs and experiences.

1. **WELCOME AND INTEGRATRION**
2. **Welcome**

We arrived at N-TEC LABS on Monday July 2024 at 8:00am. we were welcomed, by **Mme Fongwa Blessing** the enterprise’s main Secretary, who introduced us to our work space and her collaborators. She then introduced us to the boss **Mr. Ngwanyi Joel** and our supervisor **Mme Nformi Victory.** Later on, we were logged onto the Intern portal and we were given a task to test our competence

1. **Integration**

A working day at N-TEC LABS start from 08:00am to 06:00pm. Our tasks in the company generally follow a predefined routine. Every day we were assigned tasks to carry out. There was also an opportunity to present our difficulties and challenges to everyone and receive directives.

1. **GENERAL PRESENTATION OF THE COMPANY**
2. **Geographical location**



*Figure1: Location of N-tec Labs*

1. Company’s Identification Form

|  |  |
| --- | --- |
| IDENTIFICATION FORM | |
| Company name | N-TEC LABS |
| Type of Enterprise | Institution, Digital Agency |
| President of the Company | Mr. NWANYI Joel |
| Office Telephone | (+237)651834545 |
| Website | nteclabs.com |
| Language | English and French |
| Logo | A logo with a map and a globe  Description automatically generated |

*Table 1: Company Identification form*

1. **History**

N-Tec Labs is a Cameroon based non-governmental tech start-up institute founded by **Mr. Ngwanyi Joel in** 2022 which proposes IT solutions and empowers the use of new technologies and also trains various people in Various IT domains in Cameroon.

1. **Mission**

The mission of N-Tec Labs mainly relates to the empowerment and the perpetuation of technology use. These missions include:

* Design and realization of mobile-oriented software for companies and individuals;
* Offering training in computer technologies and information technology
* Taking an active part in the sustainable development of the world through innovative solutions and virtual reality.

1. **Vision**

At N-Tec Labs, 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.

1. **Activities**

The activities of N-Tec Labs range from computer sciences, engineering, and training. We can outline the following:

* Computer Training: Hardware, Web Mastery, Secretaryship
* Software development and maintenance;
* Training in Software related fields;
* CCTV Installations
* Wired / Wireless Networking
* IT support

1. **ORGANISATION OF THE ENTERPRISE**
2. Administrative Organisation of N-Tec Labs

N-Tec Labs is administratively organized as follows;

1. The General Management

This is the decision-making department of the company. They perform some of the following functions

* Ensure the office runs properly
* Evaluate the realization of projects by the company

1. The Teaching Department

This department is in charge of the school activities of the enterprise.

1. The Development Department

This is the heart of the company because they carry out the company’s projects. They perform some of the following functions:

* Reenforce the application standards of the company
* Write training content
* Maintenance
* Innovations

1. Functional organization of N-Tec Labs

The functional branch of N-Tec Labs is organised as follows;

PRESIDENT OF N-TEC LABS

SECRETARY

DEVELOPMENT TEAM

SUPERVISOR

INTERNS

STUDENTS

*Figure 2 : Organisation Chart of N-Tec Labs*

1. **HARDWARE AND SOFTWARE RESOURCES OF THE COMPANY**
2. **Hardware Resources**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Designation | Quantity | Characteristics |
| 1 | Mac Desktop | 4 | APPLE |
| 2 | Hp Desktop | 1 | HP |
| 3 | Star link | 1 | / |
| 4 | Printer | 2 | HP |
| 5 | Training equipment and office furniture | 22 | / |

***Table 2****: Hardware resources of N-tec labs*

### Software Resources

As an enterprise specialised in IT, N-Tec also comprises of software resources such as;

|  |  |
| --- | --- |
| Designation | Software |
| Operating system | Windows 11, Mac OS |
| Design tools | Photoshop |
| Integrated development environment (IDE) | Vs Codium |
| Text editor | Sublime text, Notepad++ |
| Database management system (DBMS) | MongoDB, PostgreSQL, MySQL |
| Web browser | Google Chrome, Microsoft Edge, Safari |
| Document editor | Microsoft Office Word |
| Presentation | Microsoft Office PowerPoint |

***Table 3****: Software resources of N-Tec Labs*

1. **BRIEF PRESENTATION OF THE PROJECT**

During our insertion phase at N-Tec Labs, we were asked to look for themes which solve a specific problem and something innovative. Our professional supervisor took some time to look into what we proposed as themes and he also proposed some theme ideas. Finally, we were assigned the theme **“RESTAURANT MANAGEMENT SYSTEM”**.

**CONCLUSION**

To end, our insertion phase into N-tec labs was a serene, warm and convenient experience with the company’s personnels. One of the things we learned during this phase was collaboration and discipline which is essential for a successful career.

**PART II:**

**SPECIFICATION BOOK**

Preamble

The primary objective of the specification book is to outline the comprehensive specifications for our project, detailing functional and non-functional requirements, UI design, system limitation, and database structures serving as the development guide.

Content

INTRODUCTION

1. CONTEXT AND JUSTIFICATION
2. OBJECTIVES
3. General Objectives
4. Specific Objectives
5. EXPRESSION OF NEEDS
6. ACTORS OF THE PROJECT
7. PLANNING OF THE PROJECT
8. CONSTRAINTS
9. DELIVERABLES

CONCLUSION

**CONTENT**

[ACKNOWLEDGEMENTS 2](#_Toc176268886)

[DEDICATION 3](#_Toc176268887)

[CONTENT 4](#_Toc176268888)

LIST OF ABBREVIATIONS,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,5

[LIST OF TABLES i](#_Toc176268889)

[LIST OF FIGURES ii](#_Toc176268890)

[GLOSSARY iii](#_Toc176268891)

[ABSTRACT iv](#_Toc176268892)

[RESUME 1](#_Toc176268893)

[GENERAL INTRODUCTION 2](#_Toc176268894)

[PART I 3](#_Toc176268895)

[INSERTION PHASE 3](#_Toc176268896)

[INTRODUCTION 5](#_Toc176268897)

[Conclusion 16](#_Toc176268898)

[PART II 17](#_Toc176268899)

[EXISTING SYSTEM 17](#_Toc176268900)

[INTRODUCTION 20](#_Toc176268901)

[CONCLUSION 26](#_Toc176268902)

[SPECIFICATION BOOK 27](#_Toc176268903)

[INTRODUCTION 29](#_Toc176268904)

[CONCLUSION 42](#_Toc176268905)

[ANALYSIS PHASE 43](#_Toc176268906)

[INTRODUCTION 45](#_Toc176268907)

[CONCLUSION 89](#_Toc176268908)

[CONCEPTION PHASE 90](#_Toc176268909)

[INTRODUCTION 92](#_Toc176268910)

[CONCLUSION 105](#_Toc176268911)

[REALIZATION PHASE 106](#_Toc176268912)

[INTRODUCTION 108](#_Toc176268913)

[CONCLUSION 117](#_Toc176268914)

[Functionality Test 118](#_Toc176268915)

[INTRODUCTION 120](#_Toc176268916)

[USER GUIDE 121](#_Toc176268917)

[USER GUIDE 122](#_Toc176268918)

[INTRODUCTION 123](#_Toc176268919)

[GENERAL CONCLUSION 135](#_Toc176268920)

[Annexe 136](#_Toc176268921)

[BIBLIOGRAPHY 137](#_Toc176268922)

[WEBOGRAPHY 138](#_Toc176268923)

[TABLE OF CONTENT 139](#_Toc176268924)