



**IPRC KIGALI**  
Integrated Polytechnic Regional College

# **INTERNSHIP REPORT**

**Done by: Amelie INEZA / 21RP02674**

**Internship Period: July 2024 - August 2024**

**Done at: COM AGENCY**

**Supervisor: Paul NIYONKURU / 0784811494**

**Department: ICT**

**Institution: IPRC KIGALI**

## **DECLARATION**

I, Amelie INEZA, a student of ICT at IPRC KIGALI, hereby declare that this Industrial Attachment Final Report is my original work and has not been submitted for any other academic purpose, The contents of this report accurately reflect my experiences and contributions during my IAP, and they are a true representation of my activities and learning during this period. . All sources of information and material used in this report have been duly acknowledged.

Date:

Signature:

INEZA Amelie

## **APPROVAL**

This Industrial Attachment Final Report has been examined and approved as meeting the requirements for IAP(Industrial Attachment Program).

Signature:

Supervisor's Name: Paul NIYONKURU

## **ACKNOWLEDGMENT**

Firstly, I would like to thank God and to all those who have contributed to the successful completion of this IAP, This IAP has been a significant learning journey, and I am thankful for the support and guidance I have received along the way.

I extend my sincere thanks to my IAP supervisor, “Paul NIYONKURU”, for his valuable insights, constant encouragement, and expert supervision. His guidance has been instrumental in shaping this IAP and enhancing its quality

I am also grateful to the faculty members of the ICT at IPRC Kigali for their continuous encouragement and the knowledge they have imparted throughout my academic journey.

I extend my appreciation to my friends and peers for their moral support, constructive discussions, and collaborative efforts that enriched the IAP outcomes.

Furthermore, I would like to thank my family for their unwavering encouragement and understanding throughout the project's duration.

Lastly, I express my gratitude to all those whose work and research I have referred to during this IAP.

## DEDICATION

This report is dedicated to those who have been a constant source of inspiration and support throughout my Industrial Attachment Program.

- To my family, who have always believed in me and provided unwavering encouragement on this journey, I dedicate this report to you. Your love and support have been my rock.
- To my friends, who stood by me through the ups and downs of this experience, I dedicate this report to you. Your camaraderie added joy to the challenges I faced.
- To my fellow interns and colleagues, who shared their knowledge and experiences, I dedicate this report to you. Your guidance and collaboration were invaluable in shaping my learning.
- To my supervisor and mentors, who patiently nurtured my skills and guided me through the intricacies of the industry, I dedicate this report to you. Your mentorship was instrumental in my growth.
- To the organization that provided me with this opportunity, I dedicate this report to you. Your trust and support in hosting my Industrial Attachment Program were instrumental in my development.
- This report is a testament to the collective efforts and support of those who made my Industrial Attachment Program a memorable and enriching experience. Thank you all for being a part of my journey.

With deepest gratitude,

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## **ABBREVIATION**

CRUD: Create, Read, Update, Delete

CSS: Cascading Style Sheets

HTML: HyperText Markup Language

IAP: Industrial Attachment Program

ICT: Information and Communication Technology

IT: Information Technology

IPRC: Integrated Polytechnic Regional College



## **DEFINITION OF TERMS**

- **Industrial Attachment:** A structured work experience program that allows students to gain practical knowledge and skills in their field of study.
- **IT: Information Technology:** The use of computer systems, networks, and technology to store, process, transmit, and retrieve information.

## **EXECUTIVE SUMMARY**

**The Industrial Attachment Program (IAP)** is a pivotal phase in a student's academic journey, providing a practical bridge between the classroom and the professional world. This executive summary offers an overview of the IAP, highlighting key components and its significance.

### **Program Overview**

The Industrial Attachment Program is a structured work-integrated learning experience designed to equip students with real-world insights and skills essential for their future careers. It involves a supervised placement within an organization, typically lasting several months, during which students work on tasks and projects relevant to their field of study.

### **Objectives**

- To apply theoretical knowledge in practical settings, gaining hands-on experience.
- To develop essential skills, including problem-solving, communication, and teamwork.
- To explore and evaluate career options and build professional networks.
- To enhance academic and career readiness, fostering personal and professional growth.

### **Impact and Benefits**

The IAP offers numerous benefits to students, host organizations, and academic institutions. Students gain valuable insights, enhanced employability, and a competitive

edge in the job market. Host organizations benefit from fresh perspectives and contributions. Academic institutions strengthen industry connections and maintain program relevance.

### **Challenges and Opportunities**

Challenges include the need for effective matching of students and host organizations, ensuring learning objectives align with practical experiences, and addressing logistical and administrative complexities. However, these challenges present opportunities for program enhancement, such as refining curriculum integration, expanding industry partnerships, and increasing support mechanisms

# **CHAPTER 1: GENERAL INTRODUCTION**

## **1.1 Introduction**

During the academic year 2023 - 2024, I engaged in various activities to develop competencies in API development, USSD application development, graphic design, and front-end web development. This report outlines the activities undertaken, the skills acquired, and the knowledge gained throughout this period.

### **1.1.1 Purpose of the IAP**

The primary objective of the Industrial Attachment Program is to offer students a structured and immersive learning experience outside the academic realm. By participating in the program, students can apply their theoretical knowledge to practical situations, gain exposure to the professional world, and develop essential skills necessary for their future careers. This program aims to foster a deeper understanding of the industry, enhance problem-solving abilities, and facilitate personal and professional growth.

### **1.1.2 Significance of the IAP**

The significance of the IAP cannot be overstated. It serves as a bridge that connects classroom learning with the realities of the workforce. Through this program, students have the opportunity to:

1. **Apply Theoretical Knowledge:** The IAP allows students to put into practice the theories and concepts they've learned in their courses, reinforcing their understanding.
2. **Explore Career Paths:** It provides students with the chance to explore different career options, helping them make informed decisions about their future professional paths.

3.      **Develop Skills:** Students can develop essential soft and technical skills, including teamwork, communication, problem-solving, and industry-specific expertise.
  
4.      **Build a Professional Network:** Interactions with professionals and colleagues during the IAP can help students establish a valuable network within their industry.
  
5.      **Enhance Employability:** Practical experience gained during the program enhances students' employability and positions them as more attractive candidates in the job market.

### **1.1.3 Organization and Structure of This Report**

This report is a comprehensive account of my experiences, activities, and learning during my Industrial Attachment Program. It is structured to provide a detailed insight into the nature of the program, the tasks I undertook, the challenges I encountered, and the lessons I have learned. The report is divided into several chapters, each focusing on different aspects of my IAP journey:

Chapter 2: Performed Activities in Industrial Attachment Program

Chapter 3: Industrial Attachment Life Experience

Chapter 4: General Conclusion and Recommendations

In the following chapters, I will delve into the specifics of my journey, reflecting on the professional growth and experiences I gained during my time in **COM AGENCY**. The report will conclude with a summary of key findings and recommendations for the improvement of the IAP.

## **CHAPTER 2: PERFORMED ACTIVITIES IN INDUSTRIAL ATTACHMENT PROGRAM**

### **2.1 INTRODUCTION**

This chapter is dedicated to an exploration of the key activities I undertook during my attachment period, highlighting the diverse range of tasks and responsibilities I encountered. It aims to provide a comprehensive view of the practical experiences that constitute the backbone of the IAP.

### **2.2 GENERAL ACTIVITIES UNDERTAKEN**

#### **2. 2.1 Development of APIs-Research on RESTful APIs**

Activity: Researched and documented the basics of RESTful APIs, including methods like GET, POST, PUT, and DELETE.

Details:

RESTful APIs: Representational State Transfer (REST) is an architectural style for designing networked applications. It relies on stateless, client-server communication, typically over HTTP.

HTTP Methods:

GET: Retrieve data from the server.

POST: Send data to the server to create a new resource.

PUT: Update an existing resource on the server.

DELETE: Remove a resource from the server.

Understanding Gained:

The principles of RESTful architecture.

How HTTP methods correspond to CRUD (Create, Read, Update, Delete) operations. The importance of statelessness and resource identification through URLs.

### **2.2.2 Setting Up Development Environment**

Activity: Installed necessary tools (Node.js) and set up an API development environment.

Details:

Node.js Installation: Downloaded and installed Node.js, which allows running JavaScript on the server side.

Environment Setup:

Configured Node Package Manager (npm) for managing dependencies.

Installed Express.js, a web application framework for Node.js.

Understanding Gained:

How to set up a server-side JavaScript environment.

Basics of package management and dependency installation.

### **2.2.3 Developing CRUD Operations**

Activity: Developed basic CRUD (Create, Read, Update, Delete) operations for the API.

Details:

Create (POST): Implemented endpoints to add new data to the server.

Read (GET): Set up routes to retrieve data from the server.

Update (PUT): Enabled updating existing data entries.

Delete (DELETE): Allowed for the removal of data from the server.

// Example of POST request to add new data

```
app.post('/add', (req, res) => {
```

```
  let data = req.body;
```

```
let sql = 'INSERT INTO users SET ?';

let query = db.query(sql, data, (err, result) => {

  if(err) throw err;

  res.send('User added...');

});

});
```

Understanding Gained:

How to handle HTTP requests and responses.

Structuring API endpoints and routing.

Data validation and error handling.

#### **2.2.4 Connecting API to MySQL Database**

Activity: Connected the API to a MySQL database to store and retrieve data.

Details:

MySQL Setup: Installed MySQL and created a database with necessary tables.

Database Integration:

Used MySQL drivers for Node.js to connect the API to the database.

Wrote queries for data manipulation within the API code.

Understanding Gained:

Basics of relational databases and SQL queries.

How to perform database operations from an API.

Importance of secure database connections and query sanitation to prevent SQL injection.

#### **2.2.5 Development of USSD Applications- Understanding USSD Technology**



Activity: Researched and documented how USSD works, including its architecture, protocols, and use cases.

Details:

USSD Definition: Unstructured Supplementary Service Data (USSD) is a protocol used by GSM cellular telephones to communicate with the service provider's computers.

Architecture: USSD operates over GSM signaling channels and supports session-based communication.

Use Cases: Commonly used for mobile banking, network configuration, and information services.

Understanding Gained:

How USSD differs from SMS and mobile internet services.

The advantages of USSD in areas with limited internet connectivity.

The session-based nature of USSD interactions.

### **2.2.6 Setting Up USSD Development Environment**

Activity: Installed necessary tools and software (Android Studio) and configured the development environment.

Details:

Android Studio Installation: Set up the integrated development environment (IDE) for Android app development.

SDK Configuration: Installed necessary Software Development Kits for USSD application development.

Emulator Setup: Configured virtual devices to test USSD applications.

Understanding Gained:

Basics of Android app development.

How to simulate mobile environments for testing purposes.

The tools required for developing and testing USSD applications.

### **2.2.7 Connecting USSD App to Backend Server**

Activity: Connected the USSD app to a backend server via an API to retrieve or store data based on user inputs.

Details:

Backend Integration: Developed API endpoints to handle USSD requests.

Session Management: Implemented logic to manage user sessions and state.

Data Handling: Enabled data retrieval and storage in response to USSD codes.

Understanding Gained:

How to handle real-time communication between the USSD app and server.

Managing user sessions without a persistent connection.

Ensuring fast response times due to the synchronous nature of USSD.

### **2.2.8 Testing the USSD Application**

Activity: Tested the USSD app on different mobile devices and network conditions to ensure performance.

Details:

Device Testing: Used various mobile devices to test compatibility.

Network Simulation: Simulated different network conditions to test reliability.

Bug Fixing: Identified and resolved issues related to connectivity and user experience.

Understanding Gained:

Importance of testing across multiple platforms.

How network conditions affect USSD application performance.

Techniques for optimizing application responsiveness and reliability.

### **2.2.9 Graphic Design-Installing Design Tools**

Activity: Installed design tools (Adobe Photoshop).

Details:

Software Installation: Downloaded and installed Adobe Photoshop for graphic design tasks.

Tool Familiarization: Explored basic features like layers, brushes, and editing tools.

Understanding Gained:

Basics of using professional graphic design software.

Navigating the Photoshop interface and utilizing key features.

### **2.2.10 Designing a Logo**

Activity: Designed a logo for a fictional or real company, considering brand identity, target audience, and market positioning.

Details:

Brand Identity: Defined the company's mission, values, and visual style.

Target Audience: Analyzed the demographics and preferences of the intended audience.

Market Positioning: Identified how the company differentiates itself from competitors.

Design Process:

Sketched initial concepts on paper.

Selected color schemes and typography.

Created the digital logo using Photoshop tools.

Understanding Gained:

The creative process behind logo design.

How visual elements convey brand messages.

The importance of aligning design with marketing strategies.

### **2.2.11 Front-End Development-Creating a Basic Static Web Page**

Activity: Created a basic static web page using HTML and CSS, including text, images, and links.

Details:

HTML Structure:

Used <header>, <nav>, <main>, <footer> tags for semantic structure.

Included headings, paragraphs, lists, and images.

CSS Styling:

Applied styles for layout .

Customized typography and color schemes.

Implemented responsive design principles for mobile compatibility.

Links and Navigation:

Added internal links for navigation within the page.

Included external links to relevant resources.

Understanding Gained:

How to build the structure of a web page using HTML.

Styling and layout techniques with CSS.

Basics of responsive design to improve user experience across devices.

## **CHAPTER 3: INDUSTRIAL ATTACHMENT LIFE-EXPERIENCE**

### **3.1 Introduction**

My Industrial Attachment Program (IAP) journey was more than just a period of professional development; it was a transformative experience that exposed me to the real-world dynamics of the Information and Communication Technology (ICT) industry. This chapter delves into the rich tapestry of my life during the IAP, encompassing my day-to-day experiences, interactions, challenges, and the lessons I learned along the way.

### **3.2 Environment and Company Culture**

One of the first and most striking aspects of my IAP life was the work environment and company culture at **COM AGENCY**. It was an organization characterized by innovation, collaboration, and a strong commitment to excellence. The open and inclusive atmosphere fostered a sense of belonging and encouraged a culture of learning and growth. I had the privilege of working in a company that valued employee well-being, encouraged creativity, and promoted continuous improvement.

### **3.3 Interactions and Collaborations**

My IAP life was enriched by the interactions and collaborations with colleagues, mentors, and supervisors. Each day brought opportunities to learn from experienced professionals and peers who shared their knowledge and insights. I engaged in open dialogues, brainstorming sessions, and collaborative problem-solving, which not only deepened my understanding of ICT but also enhanced my teamwork and communication skills. These interactions played a pivotal role in broadening my perspective and providing valuable mentorship.

### **3.4 Personal and Professional Growth**

My IAP life was marked by a continuous journey of personal and professional growth. I discovered the importance of adaptability, resourcefulness, and resilience in the face of challenges. It was through confronting and overcoming obstacles that I witnessed the most significant growth in my skills and capabilities. The diverse range of tasks I undertook forced me to think critically, manage my time efficiently, and stay committed to delivering high-quality results.

### **3.5 Highlights and Achievements**

Several moments and projects stood out as highlights of my IAP life. From contributing to the successful launch of a software application to presenting ideas during departmental meetings, each achievement added to my sense of accomplishment

### **3.6 Networking and Building Professional Relationships**

My IAP life involved more than just professional growth; it was an opportunity to build a network of valuable professional relationships. Colleagues, supervisors, and mentors became sources of guidance and support. The relationships I cultivated opened doors to new opportunities and served as a reminder of the importance of networking in the industry.

### **3.7 Lessons Learned**

The lessons I gathered from my IAP life were not confined to technical knowledge alone. I learned about the significance of effective communication, the art of adaptability, and the necessity of perseverance. My IAP life reaffirmed that the ICT industry is not solely about machines and code but is equally driven by human interaction, innovation, and the relentless pursuit of excellence.

## **Chapter 4: General Conclusion and Recommendations**

### **4.1 Summary**

The Industrial Attachment Program (IAP) has been a pivotal chapter in my academic and professional journey, providing me with a unique opportunity to gain hands-on experience in the Information and Communication Technology (ICT) industry. Throughout this report, I have shared insights into my IAP experience, including the activities I performed, the valuable lessons I learned, and the meaningful interactions I had. In summary, the IAP has been an enriching and transformative experience marked by:

**Practical Learning:** The program allowed me to bridge the gap between theory and practice, applying my academic knowledge to real-world ICT challenges.

**Skill Development:** I acquired a diverse set of technical and soft skills, from software development and troubleshooting to communication and project management.

**Professional Growth:** The IAP pushed me out of my comfort zone, fostering adaptability, resilience, and a deeper understanding of the industry.

**Networking:** Building professional relationships and learning from experienced colleagues has been instrumental in my development.

The IAP not only deepened my passion for the ICT field but also affirmed the value of experiential learning in preparing for a successful career.

### **4.2RECOMMENDATION**

Based on my IAP experience, I offer the following recommendations to enhance the effectiveness of future Industrial Attachment Programs:

- **Structured Orientation:** Provide a comprehensive orientation to familiarize interns with the organization's structure, culture, and expectations. This will help them adapt more swiftly to their roles.
- **Mentorship Program:** Formalize a mentorship program to pair interns with experienced professionals who can guide them through the intricacies of the ICT industry and provide regular feedback.
- **Diverse Assignments:** Offer a variety of assignments to expose interns to different facets of ICT, encouraging well-rounded skill development and a broader understanding of the field.
- **Continuous Learning Opportunities:** Encourage and support interns to engage in continuous learning through online courses, workshops, or certifications, and provide opportunities for them to apply their newfound knowledge.
- **Performance Evaluation and Feedback:** Establish a structured system for performance evaluation and regular feedback sessions to help interns track their progress and set clear goals for improvement.
- **Cross-Department Collaboration:** Encourage collaboration between interns and different departments within the organization to foster a holistic view of ICT operations and provide diverse learning experiences.
- **Recognition and Awards:** Consider implementing an awards system to recognize outstanding contributions by interns, motivating them to excel in their roles.



- Enhanced Networking Opportunities: Facilitate intern involvement in industry conferences, seminars, and networking events to expand their professional networks and industry knowledge.

#### **4.3 Findings**

- Lack of IT Technologist
- Lack of Regular training
- Poor internet service for the user

#### **4.4CONCLUSION**

As I conclude this report, I am deeply appreciative of the IAP experience and the contributions it has made to my personal and professional growth. My time at **COM AGENCY** has reaffirmed my commitment to pursuing a career in ICT, armed with practical skills, a deeper understanding of the industry, and a network of valuable connections.

I extend my gratitude to all those who supported me throughout my IAP journey. I look forward to embracing the insights gained during this period as I continue to strive for excellence in the ever-evolving field of ICT.