Alphonse BIZIRAREMYE

REG | kigali, nyarugenge

**Industrial attachment report**

220011657

**DECLARATION**

I hereby declare this industrial attachment is prepared and submitted by me as partial fulfillment of the requirements for the industrial attachment program at Rwanda Energy Group (REG) where make internship activities.

I further declare that the information presented in this report is based on my personal experience and observations during the internship period, along with relevant information obtained from credible resources. Any reference, quotation, or materials user from other sources have been duly acknowledged and cited.

I acknowledge that the internship work and its outcomes presented in this report are the result of my own efforts, under the guidance and my supervisor. The internship was carried out from 30th January 2023 at headquarter of Rwanda Energy Group(REG), located nyarugenge.

I affirm that I have adhered to the ethical standards and guidelines set by the institution and the organization throughout the internship duration. I take full responsibility for the authenticity, accuracy, and originality of the content presented in this report.

I understand that any act of plagiarism or misrepresentation in this report is considered as serious offence may result in disciplinary action, including the rejection of this report and any related academic consequences.

Also I acknowledge and appreciate the support, guidance and cooperation extended by all individuals who contribute to the successful completion of this internship and preparation of this report. Their assistance has been invaluable in enriching my learning experience.

I affirm that all the information provided in this declaration is true and correct to the best of my acknowledge and belief.

I grant permission to the institution and the organization to use this report for academic and research purpose, while maintaining the confidentiality of any proprietary or sensitive information contained herein.

**DEDICATION**

I dedicate this industrial attachment report to my family, friends, and loved ones who have supported and encouraged me throughout my academic journey. Their unwavering belief in my abilities has been a constant source of motivation and strength.

I am grateful for the understanding and patience they have shown during the demanding and challenging moments of this internship. Their love, encouragement and moral support nave been instrumental in helping me overcome obstacles and achieve success.

I would also like to extend my heartfelt gratitude to the faculty and staff of Rwanda Energy Group(REG) for providing me with the opportunity to pursue this internship. Their guidance, knowledge and expertise have played a significant role on shaping my understanding of software development and fostering my professional growth.

Additionally, I want to express my appreciation to my internship supervisor MANISHIMWE EMMANUEL, for their valuable guidance, support, and mentorship throughout the internship period. Their expertise, feedback, and encouragement have been instrumental in enhancing my technical skills and expanding my knowledge in the field of software development.

Finally, I would like to dedicate this report to all individuals within the organization where I completed my internship. Their willingness to share their knowledge and expertise, and their collaborative spirit have contributed immensely to my learning experience. I am grateful for the opportunities they provided me to work on real world project and gain practical insights into the software development industry.

This report is a testament to the collective efforts and support of all who have played a significant role in my internship journey. I am truly grateful for their contributions, and this dedication is a token of my appreciation and gratitude.

**ACKNOWLEDGMENT**

In this report I can express my sincere gratitude for the opportunity to undertake an internship in the field of software development at Rwanda Energy Group. I am thrilled to accept the offer extended to me and eagerly look forward to contributing my skills and knowledge to the company project.

I am fully aware of the significance of this internship in shaping my professional career, and I am committed to making the most of this valuable experience. I am confident that working with the talented team at Rwanda energy group will provide me with the necessary exposure to enhance my technical skills and gain practical industry experience.

I would like to express my appreciation to Rwanda energy group team for giving me this opportunity. I am eager to learn from the experienced professionals at your organization and contribute to the development of innovative software solutions. I am excited about the chance to collaborate on challenging projects and apply the theoretical knowledge I have acquired during studies.

I understand that the internship will commence on 30th January 2023 and conclude on 7th April 2023. I assure you that I will dedicate myself to the tasks assigned to me and actively participate in all relevant training and development programs offered by Rwanda energy group.

Once again, I would like to express my sincere appreciation for granting me this internship opportunity. I am excited about the learning and growth that lies ahead during my tenure at REG. please feel free reach out to me via email or phone if you require any further information or have any specific instructions to me.

[Biziyaremyealphonse@gmail.com](mailto:Biziyaremyealphonse@gmail.com)

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**ABSTRACT**

This internship focused on software development, providing an opportunity to gain practical experience in a professional setting. The objective was to enhance technical skills and knowledge while working on real world software project. Throughout the internship, the primary responsibilities included collaborating with team of experienced developers, participating in the software development life cycle, and contributing to the design, coding, testing, and debugging of various software applications.

The internship provided a valuable learning experience in multiple aspects of software development, including understanding the project requirement, implementing software solution, and employing best coding practices. It involved utilizing industry standard programming language, frameworks, and tools to develop software application that addressed specific needs and requirements. The experience helped to improve proficiency in areas such as programming logic, algorithm design, and troubleshooting software issues.

Furthermore, the internship fostered an understanding of the importance of effective teamwork, communication, and time management in a professional software development environment. Regular meeting and code reviews with the development team facilitated knowledge sharing, constructive feedback, and continuous improvement. The opportunities to collaborate on team projects also enhanced shills in version control, collaborative coding, and agile development methodologies.

Overall, the internship in software development provided a comprehensive introduction to the practical aspects of building software applications. It equipped the intern with valuable technical skills, industry knowledge, and an understanding of the software development life cycle. The experience gained during this internship will serve as a foundation for future endeavors in the field of software development and contribute to the intern’s professional growth and career aspirations.

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# CHAP1. INTODUCTION

## Background and necessity of the training

During my internship, I had the opportunity to work with an Internship application management system(IAMS) at Rwanda energy group. REG is a learning software development firm specializing in creating innovative solution for various industries. The internship program at REG aims to provide valuable hands on experience to aspiring software developers like myself.

Rwanda energy group has been in operation as a trusted provider of software solutions. The company focuses on developing cutting edge applications and system that cater to the specific needs of their clients.

Within REG, I was assigned to the software development team. Which is responsible for designing, developing and maintaining various software applications. The team consists of experienced software engineers and developers who works collaboratively to deliver high quality solutions to clients. The team follows agile software development methodologies, ensuring efficient project management and timely to delivery of software products.

During my internship I worked on the development and enhancement of Internship Application Management System(IAMS). The IAMS is an internal tool used by REG to streamline and automate the entire internship application process, it allows potential inters to submit their application, provide a centralized platform for HR personnel to manage and review applications, and facilitates communication between the HR team and application.\

Prior to the internship, I had a solid foundation in programming language such as java and web development technologies like HTML.CSS and java script. I also had experience with database and SQL. This knowledge provided a strong base for me to contribute to the development of the IAMS. Throughout the internship, I aimed to further enhance my skills in front-end development, backend programming and database management.

## Training objectives

My primary learning objectives for the internship were to gain practical experience in developing web based application, improve my understanding of software development best practices, and enhance my skills in teamwork and collaboration, I was particularly interested in learning about the software development lifecycle, version control system, and agile methodologies.

Other hand this internship provides to me experience in a specific field or industry. I have the opportunity to apply the knowledge and skills they have acquired though academic studies in real world situation.

Opportunity to assess whether a particular career path or industry is the right fit for them .by gaining exposure to the work environment and tasks associated with a specific fob, this help me to evaluate it aligns with my interest, skills .and long term career goals.

## Training pre-requisites

Training help me to have a basic understanding of the organization internship program, its objectives and the overall application process. This can include knowledge about the types of internship available, eligibility criteria and the desired outcomes of the program.

Clear understanding of the various component of an internship application. This can include knowing what information and documents are typically required, such as resumes, letter, transcripts or reference.

The general of how internship applications are typically reviewed and evaluated. this can include knowledge of criteria used of assessing applications such as relevant skills, qualifications, academic achievements or previous experience.

## 1.4 Site selection

Look for internship opportunities that align with career goals and fields of interest. By consider the industry, sector or specific job function that are interested in pursuing. To choose an internship site that offers relevant experiences and exposure to the skills and knowledge I want to develop.

The company culture and values determine if they align with my own beliefs and work style. By considering factor such as work environment, employee satisfaction, diversity and inclusion initiatives and corporate social responsibility. A positive company culture can enhance my internship experience.

Evaluate the learning and development opportunities provided by the internship site. Consider if the organization offers structured training programs, and workshops or other professional development activities. The presence of such opportunities indicates a commitment to the growth and skills development of inters.

## Training benefit and motivation

Training offer the opportunity to apply academic knowledge in real world scenarios. They provide hand on experience in a specific field or industry allow inters to develop practical skills and learn how to navigate professional environment.

Training enable individual to develop a wide range of skills relevant to chosen fields. Whether its technical skills, such as programming or data analysis or soft skills like communication and teamwork internship provide and avenue for honing and expanding one’s skills set.

Training allow interns to build professional networks and establish connections with industry professionals. These connections can be instrumental in sevuring future job opportunities obtaining references and gaining mentorship or guidance from experienced professionals.

# CHAP2. LITERATURE REVIEW

## 2.1 Class theories related to site training

## 2.2 Description of the training activities

# CHAP3. MATERIALS AND METHODS

## 3.1 Site description

### 3.1.1 Site localization

I am thrilled to share my software development internship journey with you. Throughout my internship at Rwanda energy group, I had the privilege of working in a multicultural and diverse environment. As a result, I understand the importance of catering to different language and cultures, which is why I have localized my website.

You can select your preferred language from the drop down menu at the top of right corner of the page and the entire website will be translated accordingly. This way, I want to ensure that everyone regardless of their language or cultural background can fully comprehend and engage with the content.

During my internship, I had the opportunity to collaborate with talented professionals and work on a variety of software development projects I gained hands on experience in the different phases of the software development life cycle, employing agile methodologies to adapt to changing requirements and foster effective teamwork.

I am excited to share my experience showcase the projects I contributed to and highlight the technologies and programming languages I worked with by providing localization option, I aim to create an inclusive and accessible platform for visitors from all over the world.

### 3.1.2 Brief description of the company

During my internship, I had the privilege of working at Rwanda energy group.a leading software development company in the industry. This organization is known for its innovative solutions and cutting edge technologies that drive digital transformation across various sectors. As an intern I had the opportunity to collaborate with a talented team of software engineers and developers, working on challenging project that pushed the boundaries of what is possible. The company’s commitment to excellence, emphasis on continuous learning and supportive work environment made it an ideal place for me to gain practical experience and enhance my skills in software development.

I had the incredible opportunity ti inter at company. A dynamic startup specializing in software development. At company, th culture of innovation and entrepreneurial spirit were palpable, creating an exciting and fast pace work environment. I was fortunate to be part of a small but highly skilled team where I contributed to the development of innovative software solutions. The company focus on agility, creativity, and customer centricity allowed me to hone my problem solving skills collaborate closely with cross functional teams, and make a meaningful impact on product we delivered.

In the field if software development th tools and equipment used during an internship typically revolve around software and hardware resources rather than physical tools. Here a brief description of some common site tools and equipment used during a software development.

Development software. Inters have access to a range of development software tools including integrated development environment like visual studio code, eclipse or intellij IDEA. These IDEs provide a robust set of features for coding, debugging, version control, and project management. making them essential for efficient software development.

## 3.2 Brief description of the site tools and equipment

## 3.3 Exposure of the used methodology

### 3.3.1 Site visit

### 3.3.2 Required training information and data collection

### 3.3.3 Questionnaire and interview

Certainly! Here are some samples questions for questionnaire and interview for software development internship

Questionnaire:

1. What motivated to apply for a software development internship?
2. What specific programming language or technologies are you familiar with?
3. Have you worked on any software development project in the past? If yes, please provide a brief description of your role and contributions?
4. What are your career goals in software development and how do you think this internship will help you achieve them?
5. How comfortable are you with working in a team and collaborating with other developers?
6. Are you familiar with an software development methodologies such as agile, scrum, or waterfall? If yes, please describe your experience them.
7. How do you approach problem solving and debugging in software development?

Interview:

1. Tell us about your experience with software development and any relevant project you have worked on
2. Which programming language are you most comfortable with? Can you provide examples of project you have completed using those languages?
3. How do you handle challenges or obstacles that arise during the software development process?
4. Have you worked in a team setting before? if so, describe your experience collaboration with others and contributing to a team project.
5. Can you explain the difference between front-end and back-end development? Which area are you more interested in.
6. have you worked with any software development frameworks or libraries? If yes, please provide examples and discuss your experience with them.

### 3.3.4 Site illustration

Development environment: an illustration showcasing developers working at their desks, surrounded by computers, multiple monitors and various programming tools. This can depict the typical workspace of a software development team.

Collaboration space: show an illustration of a designated collaboration area with team members brainstorming, discussing code, and working together on digital collaboration tools. This emphasizes the importance of teamwork and collaboration in software development.

Agile methodology: create an illustrations representing an agile environment featuring in scrum board with sticky notes representing user stories, tasks, and progress. This visually represent the iterative and collaborative nature of agile software development.

Testing lab: depict an illustration of a testing lab, showing testers using different device and too to perform software testing, including manual testing and automated testing. This highlight the importance of quality assurance in software development.

Code review: show an illustration of a code session, with developers sharing their code on screen or using code review tools. This emphasizes the importance of code quality and collaborative code review in improving software development practice.

Learning and training: illustrate a scene where interns engaged in training sessions or workshops, with a mentor or trainer guiding them through various software development concept and technologies. This represent the learning and growth opportunities provided during the internship.

Project collaboration: create illustration showcasing developers working together on a software development project, collaborating on code, discussing solution, and sharing knowledge, this demonstrate the collaborative nature of software development projects.

### 3.3.5 Site works

Assigned me in specific development tasks such as coding features or fixing bugs, under the guidance of experienced developers. These task may involve programming in various language, writing clean and efficient code and following coding standards and best practices.

Involved in software development testing activities, including manual tasting, test case creation, and test script execution. They may assist in identifying and reporting bugs, analyzing test result and contributing to the overall quality assurance process.

Contribute to the documentation process by creating or updating technical documentation, user manuals or API documentation. This include documenting code, APIs project requirement and software design.

Participate in collaborative projects within a development team. This could involve working on specific modules or features of a large software project, collaborating with team members and using version control system to manage code changed and contributions.

Often encouraged to explore new technologies, programming languages or framework. They may be assigned research tasks to evaluate new tool, libraries or methodologies and provide recommendation on their potential use in software development project.

Participate in code reviews sessions both as reviewers and receivers of feedback. The can learn from experienced developers code reviews and gain insight into code quality, best practices and effectives programming technique.

Provide technical support to end users or assist in troubleshooting issues related to software application. This involves understanding user requirement reproducing reporting issues, and providing solution or escalation the to the appropriate team members.

### 3.3.6 Books and e-documentation

Agile software development: principles, pattern and practices by Robert C. Martin- this book provides an in depth understanding of agile principles and patterns along with practical advice for applying agile method in software development

Scrum: The art of doing twice the work in half the time by Jeff Sutherland- this book introduces the scrum framework and shares insights on how to implement scrum effectively improve productivity and deliver high quality software.

Agile estimating and planning by Mike Cohn- this book offers guidance on writing and refining user stories an essential technique for capturing requirements in agile development projects.

Succeeding with agile: software development using scrum by Mike Cohn this comprehensive guide covers scrum practices including sprint planning, daily stand ups, backlog grooming and retrospectives to help teams succeed in agile software development.

Agile alliance (<https://www.agilealliance.org/resources/)-> the agile alliance websites offers a wide range of resources including articles, whitepapers, and case studies covering various agile methodologies, practices and tools.

Scrm.org [(https://www.scrum.org/resources)](https://www.scrum.org/resources) –scrum.org provide a collection or resources including guides assessments and case studies for individuals and teams looking to learn and apply scrum.

Agile manifesto [(https://agilemanifesto.org/)](https://agilemanifesto.org/)-- the agile manifesto is a foundational document that outlines the values and principle of agile software development, it is serves as a guiding reference for understanding the agile mindset.

Agile coach’s toolbox (<https://agilecoachingtoolbox.com/> ) – this is online resources offers a curated collection of tools, techniques, and templates for agile coaches and practitioners, providing practical guidance for implementing agile methodologies.