



Tribhuvan University
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Ekantakuna, Lalitpur, Nepal

An Internship Report
On
“DevOps Engineer “
At
F1Soft International Pvt. Ltd.

Submitted by
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An Internship Report Submitted in partial fulfillment of the requirement
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SUPERVISOR'S RECOMMENDATION

I hereby recommend that this report has been prepared under my supervision by Saurab Tharu entitled is accepted as fulfilling in partial requirements for the degree of Bachelor of Science in Computer Science and Information Technology.

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ACKNOWLEDGEMENT

ABSTRACT

TABLE OF CONTENTS

ABSTRACT	i
TABLE OF CONTENTS	ii
LIST OF FIGURES	iii
LIST OF TABLES	iv
LIST OF ABBREVIATIONS	v
Chapter 1: Introduction	1
1.1. Introduction	1
1.2. Problem Statement	2
1.3. Objectives	2
1.4. Scope and Limitation	2
1.5. Report Organization	3
Chapter 2: Background Study and Literature Review	5
2.1. Introduction to Organization	5
2.2. Organizational Hierarchy	5
2.3. Working Domains of Organization	5
2.4. Description of Intern Department/Unit	5
2.5. Literature Review / Related Study (if any)	5
Chapter 3: Internship Activities	6
3.1. Roles and Responsibilities	6
3.2. Weekly log (Log should contain the list of technical activities performed)	6
3.3. Description of the Project(s) Involved During Internship	6
3.4. Tasks / Activities Performed (Technical details of the activities done during the internship)	6
Chapter 4: Conclusion and Learning Outcomes	7
4.1. Conclusion	7
4.2. Learning Outcome	7
References	
Appendices	

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

Chapter 1: Introduction

1.1. Introduction

Over the course of my internship at F1Soft International, I had the chance to fully embrace their DevOps culture and see how it has been used effectively in bridging the gap between software development and IT operations. F1Soft International is one of the most well-known names in innovative financial solutions, offering a wide array of innovative and advanced solutions to commercial banks, development banks, financial institutions, and several other large enterprises. The company is committed to using advanced technology with the view of enhancing financial inclusion and making digital experience seamless. My primary responsibility, as a member of their DevOps team, has been to learn how to streamline and enhance the development and operational processes, so that the resulting systems could be robust, efficient, and reliable.

My main duty included understanding implementation of DevOps practices to automate and simplify different parts of the software delivery process. This entailed creation as well as optimization of Continuous Integration/Continuous Deployment (CI/CD) pipelines which automate integration of code changes frequently and reliably should be deployed; they are important in reducing time-to-market while increasing overall development team's productivity.

Additionally, I also got a chance to look into how corporations utilize automation for handling repetitive tasks in their environments. Automation not only saves time but also lowers human error thus increasing reliability; it should therefore yield consistent results always too. During this period, I got practical experience on automating routine operations, configuring infrastructures easily without any challenges faced and managing applications seamlessly deployed across different systems or platforms.

This paper serves as a documentation of my internship experience showing what projects I worked on, where difficulties arose and how they were solved. It also indicates the skills gained and knowledge acquired which contributed immensely to shaping me into becoming an expert DevOps professional.

I got real world experience with DevOps apart from the theoretical knowledge that I had. I also understood better how collaborative and iterative DevOps is. F1Soft has been able to produce quality software faster because they focus on continuous improvement, automation as well as ensuring effective communication among development and operations teams. These skills and ideas will help me handle any other challenges that come my way in this area hence becoming an even better engineer.

1.2. Problem Statement

F1Soft International, like many tech-driven organizations, faced challenges related to the manual processes in software deployment, the scalability of their infrastructure, and the efficiency of their operational workflows. The primary issues included:

- **Manual Deployment Processes:**

The existing deployment processes were largely manual, leading to inconsistencies, longer deployment times, and higher risk of errors.

- **Infrastructure Scalability:**

With a growing user base, the need for scalable infrastructure became critical. The current setup struggled to efficiently handle the increased load, affecting performance and user experience.

- **Operational Efficiency:**

The lack of automated workflows resulted in slower response times to incidents and less efficient use of resources.

Addressing these problems was crucial for maintaining F1Soft's competitive edge, ensuring customer satisfaction, and supporting the company's growth objectives.

1.3. Objectives

The primary objectives of my internship at F1Soft International were:

- Gain Professional Experience:** Work in a real-world corporate environment to understand team dynamics, project management, and effective communication within a professional setting.
- Develop Problem-Solving Skills:** Tackle real-world challenges and develop solutions, enhancing critical thinking and problem-solving abilities.
- Automate Deployment Processes:**
Implement CI/CD pipelines to automate the build, test, and deployment processes, reducing deployment time and errors.
- Improve Operational Efficiency:**
Develop and integrate automated monitoring and alerting systems to enhance incident response times and operational efficiency.

1.4. Scope and Limitation

1.4.1. Scope

The scope of my internship included the following key areas:

- CI/CD Pipeline Implementation:** Setting up automated pipelines for continuous integration and deployment on bare-metal servers.
- Bare-Metal Infrastructure Management:** Designing and deploying scalable solutions using physical servers.

- iii. **Monitoring and Alerting:** Implementing tools like Prometheus and Grafana for monitoring and setting up alerting mechanisms.
- iv. **Security Enhancements:** Adding security checks within the CI/CD pipeline and ensuring infrastructure compliance with security standards.

1.4.2. Limitations

Despite the comprehensive scope, there were some limitations during my internship:

- i. **Time Constraints:**

The duration of the internship was limited, which restricted the depth of exploration and implementation of certain advanced DevOps practices and tools.
- ii. **Resource Availability:**

Access to certain hardware and software resources was limited, which occasionally hindered the implementation and testing of specific solutions on a larger scale.
- iii. **Learning Curve:**

The complexity of some tools and technologies, especially those I was unfamiliar with, required significant time to learn, reducing the time available for hands-on application.
- iv. **Assigned Task Scope:**

The tasks assigned were predetermined, leaving limited room to explore additional areas of personal or emerging interest within the DevOps field.

1.5. Report Organization

This report is structured into four main chapters, each detailing different aspects of my internship experience at F1Soft International. Here is a brief overview of each chapter:

- i. **Chapter 1: Introduction**

This chapter introduces the work completed during my internship. It outlines the problem statement, the objectives of the internship, the scope and limitations of the project, and provides an overview of the report's organization.
- ii. **Chapter 2: Organization Details and Literature Review**

In this chapter, I provide a comprehensive introduction to F1Soft International. This includes an overview of the organization, its hierarchy, the various domains in which it operates, and a detailed description of the department or unit where I interned. Additionally, this chapter includes a literature review or related study, highlighting relevant theories and frameworks that underpin the work I performed during the internship.
- iii. **Chapter 3: Internship Activities**

This chapter delves into the specifics of my internship activities. It outlines my roles and responsibilities, provides a weekly log of the technical activities I performed, describes the projects I was involved in, and details the technical tasks and activities I completed. This section

offers an in-depth look at the hands-on experience I gained and the contributions I made to the organization.

iv. **Chapter 4: Conclusion and Learning Outcomes**

A brief overview of the experience gained during the internship is also stated in this last part, as well as the main conclusions. It mentions my skills and knowledge, challenges I faced and how I dealt with them. Additionally, the section talks about what the future holds in terms of career development after such an opportunity.

Chapter 2: Background Study and Literature Review

2.1. Introduction to Organization

2.2. Organizational Hierarchy

2.3. Working Domains of Organization

2.4. Description of Intern Department/Unit

2.5. Literature Review / Related Study (if any)

Chapter 3: Internship Activities

3.1. Roles and Responsibilities

3.2. Weekly log (Log should contain the list of technical activities performed)

3.3. Description of the Project(s) Involved During Internship

3.4. Tasks / Activities Performed (Technical details of the activities done during the internship)

Chapter 4: Conclusion and Learning Outcomes

4.1. Conclusion

4.2. Learning Outcome

References

Appendices