



**Tribhuvan University**  
**Institute of Science and Technology**

**Asian College of Higher Studies**  
**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**  
**of Bachelor of Science in Computer Science & Information Technology**  
**(BSc.CSIT) 8th Semester of Tribhuvan University, Nepal**

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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

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## **LIST OF ABBREVIATIONS**

# Chapter 1: Introduction

## 1.1. Introduction

During my internship at F1Soft International, a leading financial technology company, I got the opportunity to dive deep into the world of DevOps. F1Soft is well-known for its cutting-edge financial solutions, and as part of their DevOps team, I was responsible for streamlining and enhancing their development and operational processes. This report shares the journey of the projects I tackled, the skills I picked up, and how I contributed to making F1Soft's infrastructure more efficient and reliable.

In my role as a DevOps Engineer, I focused on closing the gap between software development and IT operations. This meant setting up continuous integration and continuous deployment (CI/CD) pipelines, managing bare-metal infrastructure, and making sure applications were delivered smoothly. My goal was not only to improve the existing systems but also to ensure they were scalable, secure, and highly available.

## 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:

- i. **Automate Deployment Processes:**

Implement CI/CD pipelines to automate the build, test, and deployment processes, reducing deployment time and errors.

ii. **Enhance Infrastructure Scalability:**

Design scalable infrastructure solutions on bare-metal servers to handle more users and improve system performance.

iii. **Improve Operational Efficiency:**

Develop and integrate automated monitoring and alerting systems to enhance incident response times and operational efficiency.

iv. **Ensure Security and Compliance:**

Integrate security best practices into the CI/CD pipelines and bare-metal infrastructure to protect against vulnerabilities and meet industry standards.

## **1.4. Scope and Limitation**

### **1.4.1. Scope**

The scope of my internship project included the following key areas:

- i. **CI/CD Pipeline Implementation:** Setting up automated pipelines for continuous integration and deployment on bare-metal servers.
- ii. **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 making significant progress, there were some limitations:

- i. **Time Constraints:** The internship duration limited the scope, and not all features could be fully implemented or tested.
- ii. **Resource Availability:** Access to some proprietary tools and resources was restricted, which influenced the choice of technologies.
- iii. **Learning Curve:** Being new to some advanced tools and practices, I had a steep learning curve that impacted the pace of development.

## **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:

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:

## **Chapter 1: Introduction**

This chapter introduces the project and 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.

## **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.

## **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.

## **Chapter 4: Conclusion and Learning Outcomes**

The final chapter summarizes the entire internship experience, reflecting on the overall conclusion and the key learning outcomes. It highlights the skills and knowledge I acquired, the challenges I faced, and how I overcame them. This chapter also discusses how the internship has prepared me for future professional endeavors.

## **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**