ST. XAVIER’S COLLEGE

**(Affiliated to Tribhuvan University)**

**Maitighar, Kathmandu**



**INTERNSHIP REPORT**

**ON**

**“Implementing PoP3 and IMAP Protocol**

**For Desktop Email Client”**

**AT**

**GURU INFOSYS PVT. LTD**

**Under the supervision of**

**Mr. Vishnu Kumar Rana**

**HoD, Department of Computer Science**

**Submitted by**

**Binaya Kharel (TU Exam Roll No. 2102/069)**

**Submitted to**

**ST. XAVIER’S COLLEGE**

**Department of Computer Science**

**Affiliated to Tribhuvan University**

**Maitighar, Kathmandu, Nepal**

**December 28, 2016**

**Implementing PoP3 and IMAP Protocol for Desktop Email Client**

**[CSC - 452]**

An Internship report submitted in partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Information Technology.

Submitted by

Binaya Kharel (TU Exam Roll No. 2102/069)

Submitted to

ST. XAVIER’S COLLEGE

Department of Computer Science

Affiliated to Tribhuvan University

Maitighar, Kathmandu, Nepal

December 28, 2016

****

# CERTIFICATE OF APPROVAL

The undersigned certify that they have read and recommended to the Department of Computer Science for acceptance, an internship report entitled “Implementing PoP3 and IMAP protocol for desktop email client” submitted by **Binaya Kharel (TU Roll No. - 2102)** in the partial fulfillment for the degree of Bachelors of Science in Computer Science and Information Technology.

…………………………

Mr. Vishnu Kumar Rana

Supervisor

Department of Computer Science

…………………………

External Examiner

Tribhuvan University

…………………………

Mr. Vishnu Kumar Rana

Head of Department

Department of Computer Science

St. Xavier’s College

# ACKNOWLEDGEMENT

# ABSTRACT

With its instant global reach, email has revolutionized the way we communicate with each other. As the development in technology, email is not only limited to desktop for organizations but for everyone on the planet. Easily accessible from all the devices and ability to synchronize on all devices has made email much easier and efficient. The major downside while accessing the email is the need for an internet connection every time user wants to check email.

**“Implementing PoP3 and IMAP Protocol for Desktop Email Client”** is a project that aims to deliver a desktop email client that can simply the way user access their email. The project is expected to be extremely feasible and useful in context of Nepal. The problem of slow internet connection and load shedding are major hindrance on accessing the email anytime user need. So, the desktop email client that can save all the email on the local drive of a user can be extremely useful.

The project features on improving the existing system for email exchange and how the user access them. PoP3 and IMAP are the emerging protocols that are used by various desktop email client. Desktop email clients are versatile and more secure as they are stored on user’s local system. The user can then define their own way of accessing and backup option for their email. Flexibility of the protocol such as PoP3 which allows user to keep or delete the message from the mail server is also a huge benefit for the user. Consolidating multiple mail accounts from various provider and servers into one inbox is an important feature of PoP3 and IMAP protocol. This proposed desktop mail client will definitely aid the general users and organization in their day to day business as well as other activity.

**Keywords:** Web Email Clients, Desktop Email Clients, PoP3, IMAP

Table of Contents

[CERTIFICATE OF APPROVAL 3](#_Toc469831324)

[ACKNOWLEDGEMENT 4](#_Toc469831325)

[ABSTRACT 5](#_Toc469831326)

[LIST OF FIGURE 7](#_Toc469831327)

[LIST OF TABLE 8](#_Toc469831328)

[ABBREVIATIONS 9](#_Toc469831329)

[CHAPTER 1: INTRODUCTION 10](#_Toc469831330)

[1.1 Introduction to Internship 10](#_Toc469831331)

[1.2 Background 11](#_Toc469831332)

[1.3 Objective 11](#_Toc469831333)

[1.3.1 Internship Objective 11](#_Toc469831334)

[1.3.2 Objective of Project 11](#_Toc469831335)

[1.4 Brief Introduction of Industry 11](#_Toc469831336)

[1.5 Brief Introduction of Organization 13](#_Toc469831337)

[1.5.1 About Organization 13](#_Toc469831338)

[1.5.2 Organization Rationale 13](#_Toc469831339)

[1.5.3 Organizational Hierarchy 13](#_Toc469831340)

[1.5.4 Contact Details 13](#_Toc469831341)

[CHAPTER 2: ANALYSIS OF ACTIVITY DONE 14](#_Toc469831342)

[2.1 Internship Placement Details 14](#_Toc469831343)

[2.1.1 Organization Selection 14](#_Toc469831344)

[2.1.2 Placement 14](#_Toc469831345)

[2.1.3 Duration 14](#_Toc469831346)

[2.1.4 Roles and Responsibilities 15](#_Toc469831347)

[2.2 Literature Review 15](#_Toc469831348)

[2.3 Specific Problem Analysis 15](#_Toc469831349)

[2.4 Management Strategy 15](#_Toc469831350)

[2.4.1 Time Management Strategy 15](#_Toc469831351)

[2.4.2 Cost Management Strategy 15](#_Toc469831352)

[2.4.3 Data Collection Strategy 15](#_Toc469831353)

[2.5 Project Schedule 16](#_Toc469831354)

# LIST OF FIGURE

# LIST OF TABLE

# ABBREVIATIONS

# CHAPTER 1: INTRODUCTION

## Introduction to Internship

An internship, to be succinct, is a program that allows students and recent graduates to gain practical work experience with a company or organization. Internship provides practical experience for beginners in an occupation or profession [1]. Internship programs vary widely depending on what kind of position the student holds, what type of company is hosting the internship, when and where it’s held, and what kind of compensation the student receives. The modern concept of internships essentially springs from the medieval apprenticeship, in which skilled laborers (often craftsmen) would teach a young person their trade and, in exchange, that person would agree to work for the teacher for a certain length of time [1][2]. Internships offer students a period of practical experience in the industry relating to their field of study. This experience is valuable to students as a means of allowing them to experience how their studies are applied in the "real world", and as work experience that can be highly attractive to potential employers on a candidate's CV [3].

Internships can be done in a range of sectors, including sales, marketing, engineering, graphic design, management, I.T. and many, many more. Throughout an internship you will develop a variety of soft skills, including communication skills, personal effectiveness, presentation skills, creative problem solving and influencing skills [4].

The course Bachelor of Computer Science and Information Technology under the affiliation of Tribhuvan University includes Internship program in the final year. This program has been chiefly designed to prepare the students for the current market competition. The internship is done as a partial fulfillment of requirements of the Bachelor’s degree in Computer Science and Information Technology under Tribhuvan University. The internship is assigned six credit hours (minimum of ten weeks or 180 hours long) as a part of the course requirement.

## Background

## Objective

### Internship Objective

The main objective of internship project is to get practical experience of the theoretical academic knowledge. The objectives of internship are listed below:

* To strengthen professional skills and interpersonal relationship in professional settings
* Relating theoretical knowledge with practical aspect
* To learn and understand the organizational workflow
* To prepare students for vital career related skills such as organizational and interpersonal communication skills

### Objective of Project

The task assigned to author in internship program was to design, develop and test a Desktop Email client. From this internship project following objectives are derived:

* To design a desktop email client based on PoP3 and IMAP protocol.
* To ease the process of email management such as creation and searching of email
* To save mail on local server so they can be viewed without connecting to the internet.

## Brief Introduction of Industry

The software industry has transformed the way organizations, businesses, and even people coordinate and work. Its impact on the global economy and across various industries can be gauged by the increase in innovations, technical progress, enhanced productivity, and the workforce [5]. The software industry evolved from its beginnings in the late 1960s to become an economic giant providing United States employment alone for more than four million people. The worldwide PC software market was $88 billion in 2008, representing 30% of the total packaged-software market, which was $297 billion [6]. The software industry can be separated into four main categories: programming services, system services, open source and SaaS. The following describes the categories of business software used in the industry.

**Programming Services:** This sector has historically been the largest sector and includes names such as Microsoft Corporation (NASDAQ: MSFT), Automatic Data Processing, Inc. (NASDAQ: ADP), Oracle Corporation (NYSE: ORCL) and SDC Technologies, Inc. These companies often pioneered solutions to needs by businesses to analyze data, store and organize data, or provide programs to run machinery.

**System Services:** Although programming was the largest software sector early in computer history, system services grew rapidly through the 1960s and 1970s, and then exploded in the 1980s with the rise of personal computers (PCs) and the need for an encompassing operating system such as Microsoft’s original disk operating system (DOS) that was launched in 1981 [6] [7].

**Open Source:** Programming or software engineering has become a huge in-demand profession with the growth of the Internet, cloud systems and businesses willing to venture more willingly into open-source environments such as the Linux operating system. Open source refers to a code base that was created and is free to acquire. However, most businesses require changes to be made to the code bases to suit their needs. Another open-source code base is the Android operating system.

**Software as a service:** With the rise of cloud computing and the movement of most businesses large and small to the cloud, SaaS has become more popular than system software for businesses' specific needs. This software is kept on the creators' servers and clients access the software through the Internet, also referred to as the cloud [7] [8].

## Brief Introduction of Organization

## About Organization

Guru Infosys is a registered company established by well experienced IT professionals and certified engineers in Nepal. Guru have invested a significant time in research on client need and innovation on production features and specialties. Guru Infosys is now in market with number of software products such as Guru-Sahakari (Co-operative Management System), Guru Accounts (Accounting software based on double entry system), Auto Guru and many more.

## Organization Rationale

As one of the pioneer of software development in Nepal, Guru has passion for excellence and to win with flawless execution. Customer satisfaction is placed above all at Guru Infosys. Guru responds to any of their customers all while seeking to exceed their expectations.

Teamwork is observed at its best at Guru Infosys. The company treats one another with respect and communicates openly. It fosters collaboration and maintains individual accountability. Guru encourages “anyone can do” attitude and appreciates value of multiple perspectives and diverse expertise.

## Organizational Hierarchy

## Contact Details

|  |  |
| --- | --- |
| Organization | Guru Infosys |
| Organization Type | Pvt. Ltd. |
| Location | Bafal-13, Kalanki, Kathmandu |
| Phone no | +1 4286977, 4278095 |
| Website | Guruinfosys.com |
| Email Address | info@guruinfosys.com |

Table 1: Contact Detail of Guru Infosys:

# CHAPTER 2: ANALYSIS OF ACTIVITY DONE

## Internship Placement Details

### Organization Selection

The first phase of the internship was the selection of organization for internship. Among the various criteria provided in internship prerequisite, application development was chosen. Various software companies were shortlisted and approached. Since internship provides the practical experience for the theoretical knowledge gained, selection of proper organization for the internship program was important. Selection of organization which is working in domain which is coherence with the final year project of the student is very important. Guru Infosys has been a pioneer in design and development of web based as well as desktop application.

### Placement

Application for internship was sent to various institutes, and after 2 weeks, the author was called by Guru Infosys for the interview. After selection, the author was placed under the supervision of Er. Milendra Tuladhar. The author was selected as an intern for software development in the organization.

### Duration

|  |  |
| --- | --- |
| Start Date |  |
| End Date |  |
| Total Duration |  |
| Position | Intern |
| Supervisor | Er. Milendra Tuladhar |
| Office Hour | 10 AM – 6 PM |

Table 2: Internship Duration

### Roles and Responsibilities

The internship at Guru Infosys involved various activities and task as per the requirement of both the organization and the project. The goal of the internship program was to develop a desktop email client using java programming. Extensive preliminary studies about mail clients, working of PoP3 and IMAP protocol.

Study of the existing system was carried out extensively during the research phase. Various papers on IMAP and PoP3 protocols are thoroughly studied. Requirement specification analysis was done after discussion with internship supervisor. Project planning, design and implementation was carried out as per the project requirement under the guidance of supervisor.

## Literature Review

## Specific Problem Analysis

Specific problem analysis is the in-depth analysis of the domain to better understand the problem and work towards its solution. It defines the degree of the problem and helps to recognize whether the problem is genuinely related to the subject matter. With the root cause of the problem analyzed, various counter measures such as developing an alternative can be taken.

### Understanding the Existing System

Various existing systems, both web based and desktop mail clients were studied. Various mail protocols were also studied for the better understanding of mail protocols. Various desktop mail clients such as Mailbird, Outlook by Microsoft, Mozilla Thunderbird were studied. The existing mail clients support various protocols and have multiple functions which user can chose from. These function make the software far more useful but complex as well. The email client proposed by the author is far simpler than the existing system and is easier to use.

### Development of Project Goals

After thorough study and having better understanding of the existing system, and analyzing the problem to be solved, the goals for the project were formulated. Following were the goals developed by the author:

* The interface design for the new system can be made simpler than existing system
* Support for both PoP and IMAP protocols are added
* Support for any mail services such as Gmail, Outlook etc

## Management Strategy

### Time Management Strategy

“Time Management” is the process of organizing and planning how to divide the time between specific activities [9]. Effective time management strategy can protect project from heading toward failure. Collecting the task in a to-do list is an effective way of remembering the thing to be done during the development of project. Estimating task and setting deadline for each of the task will avoid last minute problems. Similarly, setting priorities for the work to be done can also save a lot of time. Difficult task get the highest priorities and must be solved before moving to any other task.

### Cost Management Strategy

Cost management is the process of planning and controlling the budget of a business. Cost management is a form of management accounting that allows a business to predict impending expenditures to help reduce the chance of going over budget [10]. Development, Operational and Maintenance cost are the factors that are considered highly during the development of the project. The system is developed in java which is a free open source programming platform. Since the API used are also free and the system runs on local computer there is no additional server charges. Similarly, maintenance

### Data Collection Strategy

#### Interview

Interview is conducted with CTO of Guru Infosys on how the proposed system can be developed and what are the technologies that can be used. Various question were raised about the efficiency of Desktop based system over Web based client.

#### Questionnaire

#### Secondary Sources

## Project Schedule