Tribhuvan University

An internship report on IBS Support System of Nepal Telecom

In partial fulfillment of the requirements for the degree of Bachelor of Information Management (BIM)

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Submitted To:

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LETTER OF APPROVAL

This is to certify that the internship report Submitted By: Aishwarya Rana Entitled IBS Support System. I/We certify that I/We have read this document and in my opinion, it is satisfactory in scope and quality area as an internship report in partial fulfillment for the undergraduate course (BIM Program) held at the Prime College, Tribhuvan University.

_____

Date of approval

_____	_____	_____
Naresh Prasad Shrestha	Satya Bahadur Shrestha	Dilli Prasad Sharma
(Principal)	(Program Director)	(ProjectSupervisor)

ACKNOWLEDGEMENT

The internship project is a great opportunity for a student to experience organizational environment and work culture of the organization. This internship project on Nepal Telecom has helped us in our transition phase from students to professional. Thus, the vote of thanks goes to all people who are directly or indirectly involved in this project.

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My thanks and appreciation all respected staff of Nepal Telecom, my parents, colleague and people who have willing supported me for the completion of the internship with their abilities.

Sincerely

Aishwarya Rana

DECLARATION

I hereby declare that the internship report entitled "IBS Support System" submitted to Prime College, Faculty of Management, Tribhuvan University is my original work done in the form of partial fulfillment of the required of Bachelor is Information Management (BIM) under the supervision of Mr. Dilli Prasad Sharma. The author is not responsible or liable, legally against the results and consequent decision or finding based on the primarily date and questionnaire distribution.

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BIM 8th Semester

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ABSTRACT

The internship project entitled “Internet Billing System (IBS) Support System” has been prepared as per the requirement for the completion of Bachelor of Information Management (BIM) degree. This report is the full documentation of IBS Support System designed for Nepal Telecom during my internship period. The IBS application is developed on Edit plus 3, phpmyadmin and MySQL.

IBS Support System is a system that records the customer’s information which has ADSL internet access. Here in this system Pe are able add info about the customer and we can inquiry the recent internet status. This application highlights the facts and makes them meaningful to the users. By ability to generate status about internet, retrieve the session, change the ADSL user’s passwords also add the system users with privileges are the functions of this project.

IBS Support System application is developed according to the requirement of NT. It utilizes the company’s databases as its main source of information. It is primarily focused to be used by data entry clerks and managers within the organization and is not for use by people outside the organization.

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LIST OF ABBREVIATION

CDMA- Code Division Multiple Access

NT- Nepal Telecom

PSTN- Public Switched Telephone Network

IBS- Internet Billing System

ADSL- Asymmetric Digital Subscriber line

NTA- Nepal Telecommunication Authority

NDCL- Nepal Doorsanchar Company Limited

MIS - Management Information system

ISDN- Integrated Services Digital Network

CHAPTER 1: INTRODUCTION

1.1. Introduction

The World is treading towards the trend of "Information and Communication Technology". It has encompassed each and every sector of life. The business is not the alone that has been touched but many sectors as Science, Engineering, Aeronautics and Fashion and so on. The big corporate house has been effectively utilizing the fruits of IT, which has been growing as an effective concern for the educationalists in many universities to develop the sufficient manpower to serve the changing era. BIM, due to its suitable blend of management along with the computer and supporting course, which is today's highly appreciated course. Realizing the importance of IT, Tribhuvan University launched this program in 2000 to generate capable IT professional that are going to require for the nation in the changing global village era. Even Nepal could not stay back from the influence of an IT. With the completion of BIM program, the students will be exposed to a wide variety and choices of employment opportunities and further degrees. BIM program provides the students with manifold future prospects for advance studies and rewarding employment. A BIM graduate commands a vital role in the information management of any organization they enroll into. Being a Software Engineer with managerial insights, s/he is expected to provide crucial support to all functional areas as well as strategic management. In addition, BIM graduates can find jobs in almost every work arena. The diversity of opportunities that exist for them include Software Engineers, Programmer/Analysts, System Designers, Network Managers, Database Managers, and Trainers/Instructor among others.

1.2. Background

This project report is the outcome of internship undertaken at Nepal Telecom at Sundhara branch during 8th Semester of BIM (Bachelor of Information Management) program. In the process, the students are exposed to a professional work environment, various challenges and experience how it is to work in an organization company otherwise not possible only through classroom learning. As the work gets increasingly together and competitive with more fresh graduates entering every year, the internship experience proves to be vital for students. It teaches the student of the program confidence and helps them make crucial business and professional relationships that can be beneficial for them

in the future. Further, students will be able to also realize their strengths and also make improvements by knowing weaknesses.

It is a complete documentation of the software development process for IBS Support System is a customized application to assist the organization in getting relevant information about customer's who have ADSL internet access. This system can be helpful to the organization to know about the status of the customer's ADSL service. Also this system is back end system which is used by the organization and user can view status, retrieve session, reset user's password, reset port bind, add portal users and change portal's password.

This report consists of information on activities conducted during a period of at least 8 weeks of internship as per requirement of Tribhuvan University. It contains information about the industry, organization where internship was conducted and the application developed for an organization**.**

1.3. Objective

The specific objectives of the program are:

- To strengthen our professional skills and interpersonal relationships in professional settings.
- It allows us to have a close working relationship with a seasoned professional and to increase your confidence by experiencing the industry first-hand with involvement in planning, implementing, and evaluating of assigned tasks.
- To Prepare IT professionals proficient in the use of computers and computing techniques.
- To prepare students to proceed onto post graduate level study in Information Management in and out of the country.
- To develop skills in the application of theory to practical work situation.
- To provide professional education to students with the blend of information technology and managerial skills.
- To analyze the real world problem and find the solution using knowledge obtained.
- To gain opportunity to understand informal organizational interrelationship.
- To obtain higher level of academic performance.

The important side of the BIM is that it consists of the Internship program that enables the students to apply the knowledge that they have learned in the classroom. This practice is really important because it gives break to the student in the organization and helps them to gain the real life experience. BIM course is a blend of IT and Management. However, theories written in a book may have different impacts in a day to day experience. In Management, there are uncountable theories made and told by lots and lots of pioneers. Similarly, IT is a course that improvises with time. In this area, practice counts rather than going through codes printed in the books. Hence, BIM is important both from Management perspectives as well as IT perspectives. The bookish knowledge is not enough for any student in this competitive world. Since, student need to work after study, they must have insight regarding how the things actually get done in a working area which has been made possible through the introduction of programs as internship.

1.4. Methodology of the study

1.4.1. Internship Placement Details

The intern was placed in developing part of the organization working under a developing supervisor.

1.4.2. Organization Selection

To gain a real knowledge in his/her academic, a student requires theoretical knowledge as well as practical experience of what he/she had learnt in the classroom. Introducing internship program in BIM has helped the students a lot with practical exposure in the real world. It is very important to choose the right industry to imply the knowledge gained because it is a chance to know one's actual potential and to learn from the industry too. Selecting organization for internship was a tough task. The organization, where we work as internship for the industrial attachment project, gives the real working environment experience and exposure. It is also the opportunity for us to show our skills, knowledge and ability to the real world. As we work for the intern only, the organization should be well cultured and all the staff should be also cooperative to express their needs and the suggestion.

Organization selection is the fundamental step for the internship program. The better the organization better are the chances of learning more and familiarizing with the working environment of the organization. The intern approached the deputy manager Er.Gopal K.C. of Nepal Telecom and requested to work as an intern in their organization.

1.4.3. Placement/ Duration

The requirement duration of internship for BIM affiliated to Tribhuvan University, demands the time of 8 weeks. So, with a view to fulfill this requirement, the intern was engaged for the period of 8 weeks at Nepal Telecom. During the internship period, the intern was asked to develop an application which could demonstrate the information of the intern was placed in IT/Technical Department starting from 16th June, 2015 to 14th August, 2015 working hour from 10am-4pm under supervision of Er. Gopal K.C.

- The activities that the intern has performed during the internship are:
- Design the procedure of the system.
- Collected the necessary requirement of the system from the organization members.
- Consulted with the supervisor and the person who will be using the system.
- Interface and System Design.
- Coding and Debugging.
- Implementation of the system
- IT class and training- 1 month at Sundhara in the field of convergent billing system.
- Counter- 1month at Sundhara counter in the field of PSTN Billing System, ADSL Billing System, CDMA Billing System.
- Total Duration- 2 months

1.4.4. Work Procedure

Since, affixed time was allotted for the completion of the project; time management was very important to carry out the required task. The software process model that was used in this project is the waterfall models as the requirement analysis were done at the beginning of the project. The work schedule and the various procedures undergone during the two months of internship are depicted through the Gantt chart as shown below. The work

procedure is guided by the software development cycle. The activities performed as per the life cycle starting from the initial investigation to the documentation of the final project. In order to perform the allocated task on time, 8 weeks was divided as:

Table 1: Task Schedule

Task Name	Start Date	Duration(days)	End Date
Requirement Gathering and Analysis	15/06/20	10	15/06/30
System Analysis	15/07/01	14	15/07/14
System Design	15/07/14	11	15/07/25
Coding	15/07/25	10	15/08/04
Testing	15/08/04	6	15/08/10
Implementation	15/08/10	9	15/08/19

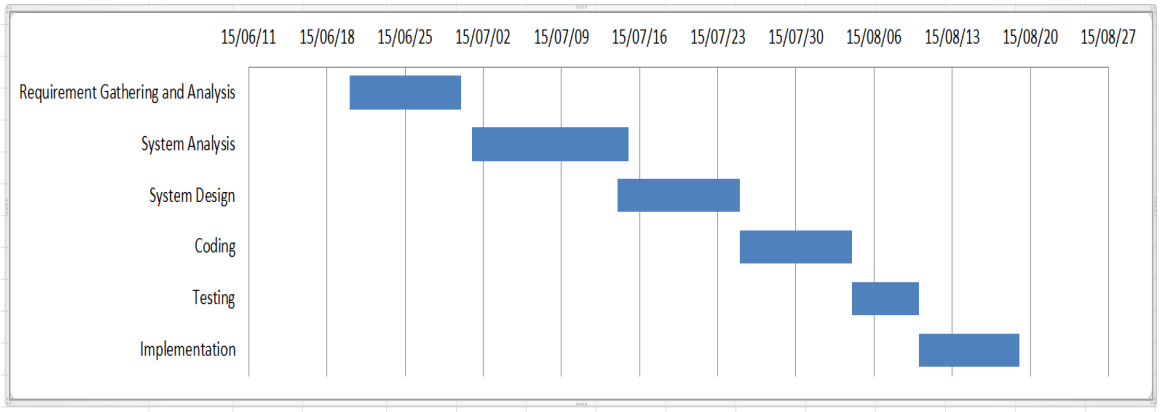

Figure 1: Gantt chart

1.4.5. Tools used

For the development of the software during this internship period, the following tools were used.

- MySQL
- Microsoft Office Visio 2007
- Microsoft word 2007
- Web browser
- Wamp server
- Wamp

Wamp stands for "Windows, Apache, MySQL, and PHP" that allows users to create web applications with Apache, PHP and the MySQL database. Wamp Server refers to a software stack for the Microsoft Windows operating system, created by Romain Bourdon and consisting of the Apache web server, OpenSSL for SSL support, MySQL database and PHP programming language.

Microsoft SQL Server Compact 4.0

It is a compact database ideal for embedding in desktop and web applications. SQL Server Compact 4.0 gives developers a common programming model with other SQL Server editions for developing both native and managed applications.

Apache

Apache is web server software notable for playing a key role in the initial growth of the World Wide Web. In 2009 it became the first web server software to surpass the 100 million website milestone. Since apache has evolved it has dominate other web servers in terms of functionality and performance. Typically Apache is run on a Unix-like operating system.

Mysql

MySQL is an open source relational database management system. It is based on the structure query language (SQL), which is used for adding, removing, and modifying information in the database. Standard SQL commands, such as ADD, DROP, INSERT, and UPDATE.

Firefox

Mozilla Firefox is a free and open source web browser developed for Microsoft Windows, Mac OS X, and Linux coordinated by Mozilla Corporation and Mozilla Foundation. Firefox uses the Gecko layout engine to render web pages, which implements current and anticipated web.

1.5. Activities Performed in an Organization

The intern was involve with Nepal Telecom to familiarize oneself with the real working environment, here; the intern had to work with the group of people who were developing different software projects under the guidance of Mr. Pradeep Kahtiwada. The intern had to prepare a small component of IBS Support System which would later be aggregated with a complete system developed by other team members. Since the internship program obliges the intern to complete a project within a fixed time; besides involving with the organization activities the intern was given the project IBS Support System which can automate the process of printing and keeping records of ADSL users.

1.6. Limitations of Project

The two months internship period was a small duration to learn many things about the real world working mechanism. Within this period of time it helped me to work and think as an IT professional but still there are many things that could have been improved. Learning the language, researching and completing an entire project within this limited time was very difficult. Some of the constraints and limitation which was faced during the internship period are as follows:

- The time period we less to learn about the real world working mechanism.
- Due to time restriction only single module is completed successfully.
- The change in user requirement made the project more difficult to complete.
- User requirements was hard to understand and harder to implement.
- All the user of the system must have the knowledge of using computer.
- The administrative user must have knowledge to run and execute the servers and ability to debug the certain bugs.

- We were given chance to work in only one company and one project so the intern has being limited.
- The project was handled by a single person so the area covered and way of doing is being limited. If the project were done.

Chapter 2: Introduction of the Industry

2.1. Brief Introduction on Telecommunication Industry

Technically, telecommunications encompasses any communication over a distance, be it via telephone, television, radio, wireless network, computer network, telemetry, or other means-but traditionally, the term referred to telephone service. These days, though, all these technologies and others are converging-indeed, nowadays you can access the Internet, play videos, or track your children's movements via global positioning system (GPS) technology on your cell phone-so the lines between telecommunications and other industries like computer hardware and consumer electronics are getting blurrier all the time.In other words, If you want to work in an industry that requires you to learn fast and adapt quickly, this is it.

Telecommunications is a mammoth industry, comprising companies that make hardware, produce software, and provide services. Hardware includes a vast range of products that enable communication across the entire planet, from video broadcasting satellites to telephone handsets to fibre-optic transmission cables. Services include running the switches that control the phone system, providing Internet access, and configuring private networks by which international corporations conduct business. Software makes it all work, from sending and receiving e-mail to relaying satellite data to controlling telephone switching equipment to reducing background noise on your cell phone call.

2.2. History on Telecommunication Industry in Nepal

In Nepal, operating any form of telecommunication service dates back to B.S. 1970. However, telecom service was formally provided mainly after the establishment of MOHAN AKASHWANI in B.S. 2005. Later as per the plan formulated in the First National Five year plan (2012-2017 BS); Telecommunication Department was established in B.S. 2016. To modernize the telecommunications services and to expand the services, during third five-year plan (2023-2028), Telecommunication Department was converted into Telecommunications Development Board in B.S. 2026.

After the enactment of Communications Corporation Act 2028, it was formally established as fully owned Government Corporation called Nepal Telecommunications Corporation in

B.S. 2032 for the purpose of providing telecommunications services to Nepalese People. After serving the nation for 29 years with great pride and a sense of accomplishment, Nepal Telecommunication Corporation was transformed into a Nepal Doorsanchar Company Limited (NDCL) from Baisakh 1, 2061. NDCL is a company registered under the companies Act 2053 with 85% government share. However, the company is known to the general public by the brand name Nepal Telecom (NT) as a registered trademark.

Nepal Telecommunications Authority (NTA) is the regulatory body of telecommunications in the country. According to the latest figures, 8 companies have been licensed to operate voice based telephony services out of which 5 are heavily invested by foreign companies.[1] The investment market of telecom is a subject of interest for many foreign companies and NTA itself as it has to prepare the regulations on hand.[2]

According to the latest Management Information system (MIS) report of Nepal Telecommunications Authority (NTA), 97.65 percent of 26.49 million people in the country have access to telephone service.The report includes data of up to mid-December, 2014. Telephone penetration increased by 12.88 percentage points in the one-year period. It stood at 84.77 percent in mid-December, 2013.

Chapter 3: Introduction of Organization

3.1. About the Organization

Nepal Doorsanchar Company Ltd. popularly known as Nepal Telecom is state owned telecommunication service provider in Nepal with 85% of the government share. The company was monopoly until 2003, when the first private sector operator UTL started providing basic telephony services. The central office of Nepal Telecom is located at Bhadrakali Plaza, Kathmandu. It has branches, exchanges and other offices in 184 locations within the country.

It is the sole provider of fixed line, ISDN and leased-line services in Nepal. Following the entry of Ncell (previously called Mero Mobile) into Nepal's telecommunications industry in 2005, it is no longer the only provider of GSM mobile service. With around 7,000 employees, it is one of the largest corporations of Nepal. It has a total of 262 telephone exchanges in various part of the country serving 603,291 PSTN lines, more than 5 million GSM cellular phones and more than a million CDMA phone line as of July 2011. According to recent data, there are about 10 million users of Nepal Telecom including all those of fixed landline, GSM mobile, CDMA and internet service.

Nepal Telecom has always put its endeavours in providing its valued customers a quality service since its inception. To achieve this goal, technologies best meeting the interest of its customers has always been selected. The nationwide reach of the organization, from urban areas to the economically non- viable most remote locations, is the result of all these efforts that makes this Definitely Nepal Telecom's widespread reach will assist in the socio-economic development of the urban as well as rural areas, as telecommunications is one of the most important infrastructures required for development. Accordingly in the era of globalization, it is felt that milestones and achievements of the past are not adequate enough to catch up with the global trend in the development of telecommunication sector and the growth of telecommunication services in the country will be guided by Technology, Declining equipment prices, market growth due to increase in standard of life and finally by healthy competition.

3.2. Vision and Goals

Mission:

"Nepal Telecom as a progressive, customer spirited and consumer responsive Entity is committed to provide nation-wide reliable telecommunication service to serve as an impetus to the social, political and economic development of the Country"

Vision:

"Vision of Nepal Telecom is to remain a dominant player in telecommunication sector in the Country while also extending reliable and cost effective services to all"

Goal:

"Goal of Nepal Telecom is to provide cost effective telecommunication services to every nook and corner of country"

3.3. Objectives of Organization:

Following are the objectives of the Nepal Telecom:

- To provide fast communication services.
- To regulate the responsive environment for the customer.
- To provide cheap phone calls and internet services.
- To provide resource required for the communication.
- To develop different system for effective and efficient output.
- To enhance the quality of services.

3.4 Organization Structure

3.4.1 Hierarchy of Management

Organizational structural and economic success has direct correlation which gives competitive advantage and greater profitability for a company. A company is a group of

individuals coordinated into different levels of autonomy and segments of specialization purpose of achieving the goals and objectives of the company.

An organizational structure in a company is a mechanism with which a management directs, coordinates and controls the activities of each employee. An organization tries to establish effective behavioral relationship among selected employees and in selected work place in order that a group may work together effectively.

Through organizational structure, an organization ensures that it has the right number of people, at right place, at the right time doing things for which they are most useful for the company. Human resource activities are equally important at every level of the organizations. Personnel directly or indirectly or indirectly have to be involved in its success.

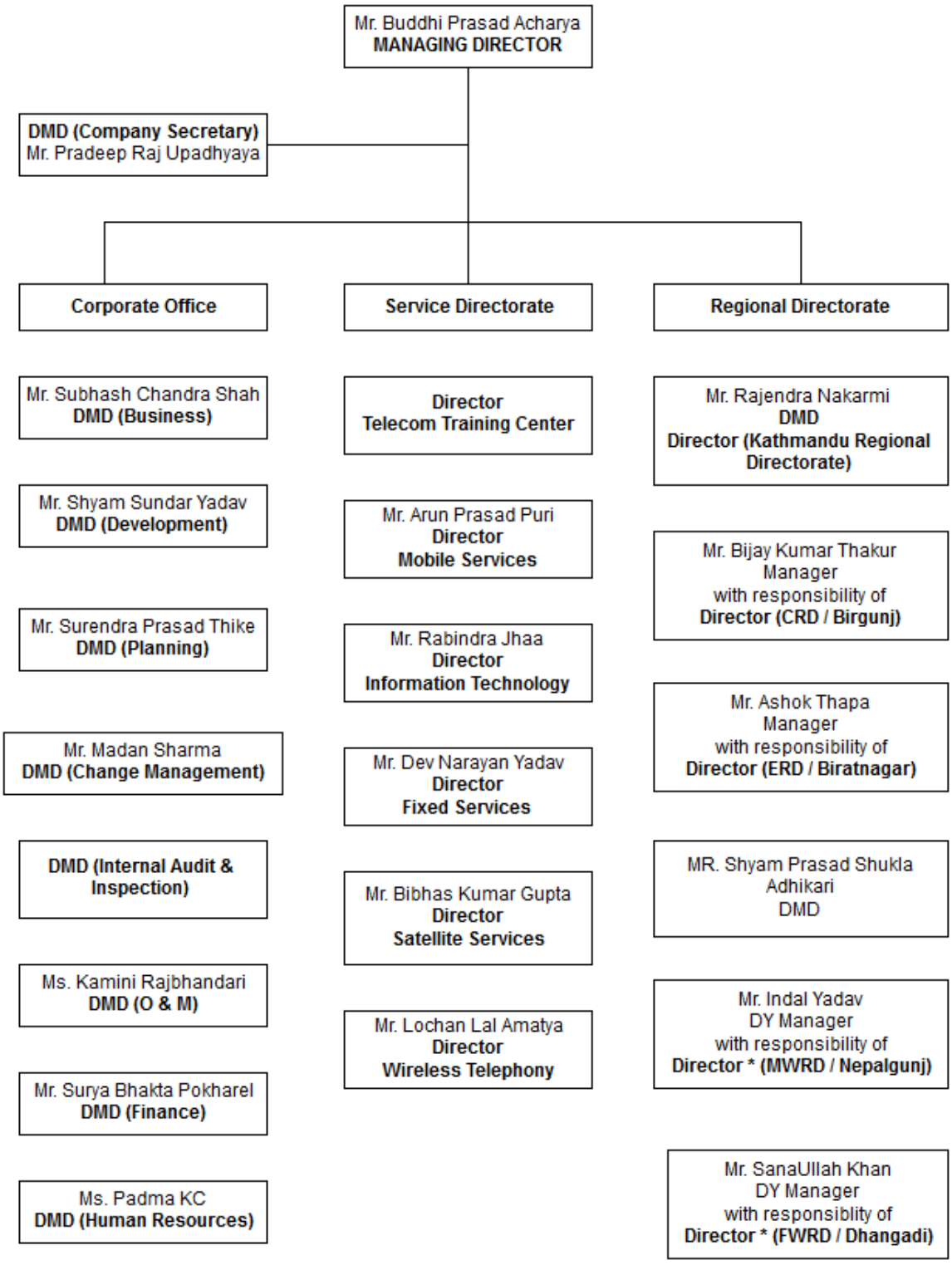

Figure 2: NT Organization hierarchy

Source: http://www.ntc.net.np/companyInfo/orgnStru.php

3.4.2 Hierarchy of Decision Making Process

The organization follows top-down approach in decision making process. The CEO is the decision maker for the organization. Sales and marketing, technology and corporate services departments work under the CEO.

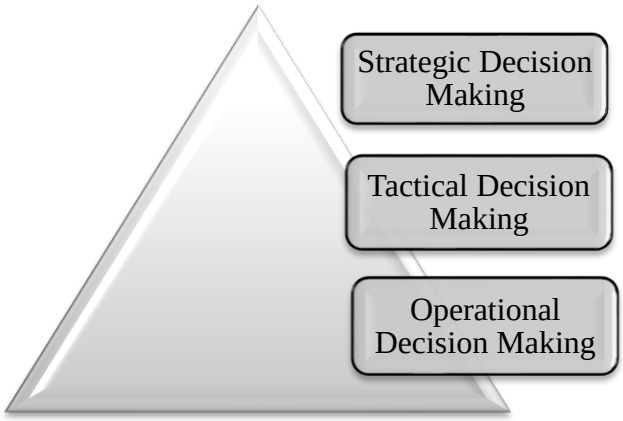

Figure 3: Decision making process

Strategic Decision Making:

Strategic decision such as formulating policies, objectives, setting goals and strategies are typically taken by an executive committee of CEO. They provide directions and monitor the performance of the organization on political, economic and competitive business environment.

Tactical Decision Making:

Increasingly, business professionals in self-directed teams as well as business unit managers develop short and medium range plans, schedules, and budget and specify the policies, procedures and business objective for their subunits of the company. They also allocate resources and monitor the performance of their organizational subunits, including departments, divisions, process team, project teams and other workgroups.

Operation Decision Making:

The members of the self-directed teams or operating managers develop short range plans. They direct the use of resources and performance of task according to procedures and

within budget and schedules they establish for the teams and other workgroups of the organization.

CHAPTER 4: ANALYSIS OF ACTIVITIES DONE AND PROBLEM SOLVED

4.1. Analysis of the Existing Information System

In the organization, all records are stored systematically. The internee collects the required information from the client to understand the existing system and how it works. If the records are stored properly, then it can be retrieved easily in a few mouse clicks. Likewise different applications and systems are available in the organization. Through this application design helps organization to enhance the activities in organization and avoid following drawbacks.

- Duplication of the effort.
- The system can be very slow, inefficient and even misleading.
- Complexity and inconvenience.
- Delay in reporting.
- There is absence of customized computer system that can upgrade the quality of the overall activities of the organization.

4.2. Description of the system under study

IBS Support System is a customized Web-based application designed to assist the organization in storing information of the ADSL user, retrieving information of the customers and their status.

The main features of IBS Support System is that it provides record management of ADSL users privileged user access management control with login (by entering username and password)

4.3. Function of the current system

- To ensure maximum throughput and accuracy in managing the ADSL user's structure in organization.

- For displaying the records of each ADSL customer when queried and give their recent status.
- To reduce delays and ensure task to be performed in time.
- To facilitate organization in managing records of users.
- For making information more secure and responsive.
- For improving the control of a process with less manual intervention.
- To facilitate ADSL user by extending their internet access days by 2 days when it has been expired.

4.4 Initial Investigation

During internship, the first two weeks were spent for the initial investigation since it is the most preliminary and crucial phase for the development of the system. Initial investigation helps to understand the working procedure and the problem in the existing system. The requirements were carefully analyzed. This led to develop a concept for designing the system which could overcome the difficulties of the existing system. Since, previously no such system existed; the new system had to be developed from the scrap.

4.4.1 Preparing the Summary of the Interview

To understand the working procedure and to gather the requirements, the intern chose the interview method which is one of the most effective and commonly used tools. Intern interviewed the coordinator, supervisor and some of the working staffs of NT. The questions were based on the following:

- Getting familiarized with the organization environment
- Duties and responsibilities of the origination
- Knowing the requirements of system to develop
- Problems and limitations in current method of working
- Work procedure and flow of the information
- Importance of new system

4.4.2 Information flow of the System

Following are the information flow in the IBS Support System:

Figure 4 shows the information flow of the system from System user to ADSL user where ADSL user inquiry for the status and system user view status and provide the current status.

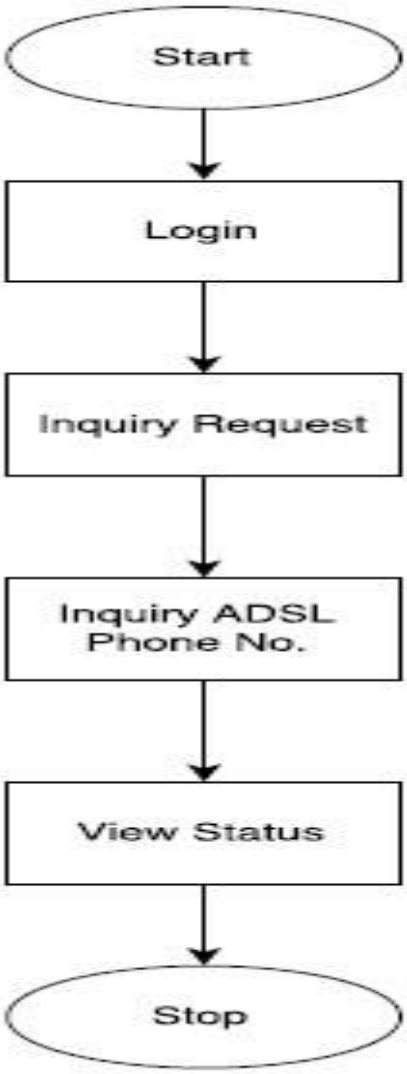

Figure 4: Flow of information to view status

Figure 5 shows the information flow of the system where ADSL user Ask for the extension for the expiry of the ADSL date and System user check the expiry date then if expired on today date then add 2 days of extension.

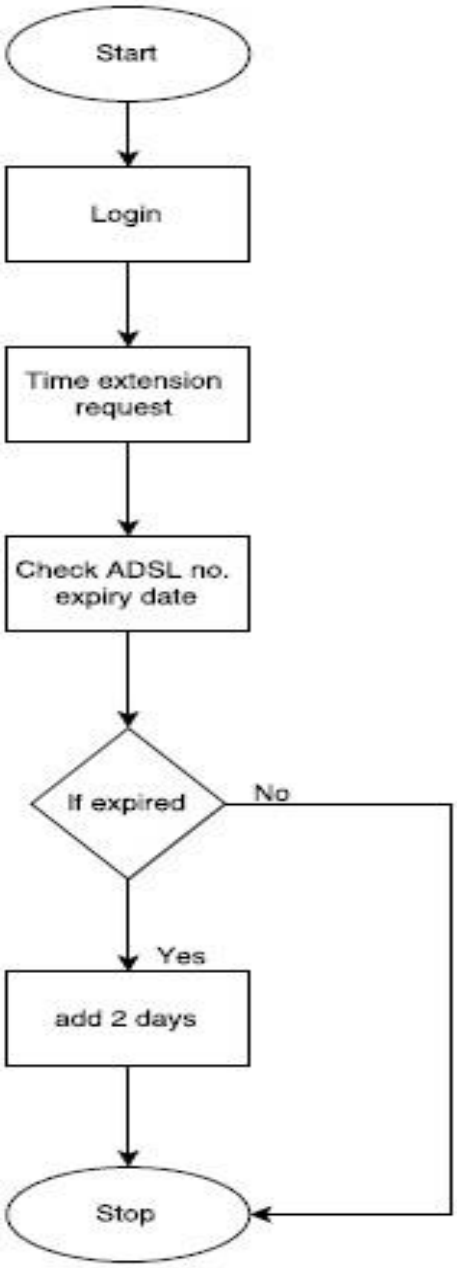

Figure 5: Flow of information for time extension

Figure 6 show the information flow of the system where ADSL user request to change the ADSL password the System User enter the respective ADSL phone number then change the password.

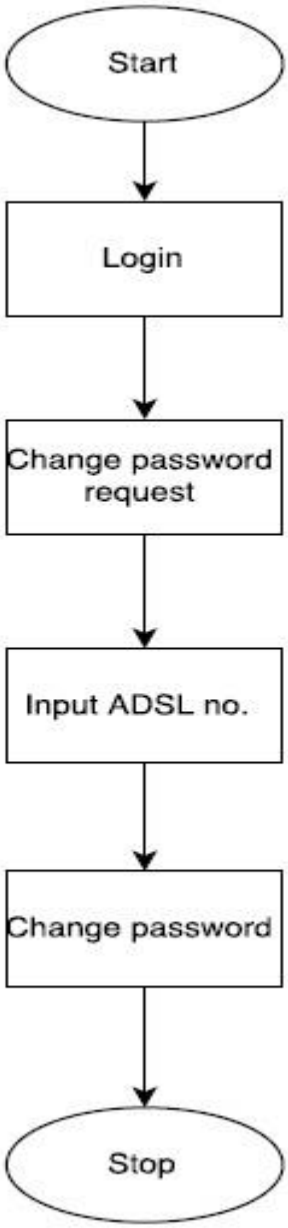

Figure 6: Flow of information to change password

4.4.3 Volume of Data

It is difficult to analyze the precise volume of data of the system. The system has to maintain the records of the user and system user etc. The volume of the data increases as the number of these records increase in the organization. This system will help to keep tract of the

growing volume of data and at the same time eases in accessing the information when required.

The design of the new system will be very simple and user friendly which can overcome the performance of the existing system.

4.4.4 Delivery/Report

The system provides many reports such as:

- Status of ADSL user
- System user can add more users.
- System user can add 2 days' time for ADSL expired numbers.
- System Users can change the password for ADSL users.

4.4.5 User's Skill level

The users operating system do not require any specialized knowledge and training. The system has been developed in a simple way. Training, however, enhances the person's knowledge and skill, but this system can be operated by the user with basic computer skill. A simple guidance and demonstration can clear the concept and working of the system.

4.5 Problem of Existing System

Problem with existing system is that there is systematic procedure to store and retrieve data. Likewise in NT even there are complex systems available people are having problem to use the system. Since NT has employee who don't have clear idea on using system. So to train them simple system is necessary. Therefore building such system will help user to use system effectively and efficiently.

4.6 User's Needs Assessment of Information

After the problem is analyzed and user's requirements are defined, the objective is to overcome the existing problem and provide a system that is easy to use and which is secure. The system is created on the basis of the ease for the user which is to create a user friendly

interface for which a basic knowledge of computer and the working mechanism of the system are required.

4.7 Defining Data Requirement

The new system has the ability to store information about the ADSL users like their phone number their internet status, also session can be retrieved too. System users are able to extend time duration for 2 days if the ADSL user internet access has expired in today date. Also system users are able to change the password for ADSL users. System also contains of Portal users and gives them a privilege to access the system.

4.8 Technical Requirement Analysis

Table 2 : Tools and Platform

Tools	Details
Programming Language	Php 5.5.12
Database	Phpmyadmin
Graphical Design	Photoshop CS6
OOAD Designing	Draw.io
Report Writing and Documentation	Microsoft Word 2010
Platform	Phpmyadmin

Table 3 : Hardware Requirements

Hardware	Specification
Processor	133 MHz or above

RAM	2GB or above
VGA	8MB True Color
Hard disk	10 GB free Space
Adapter	Network adapter or other networking component

Table 4 : Software Requirements

Software	Specification
WampServer 2.5	Wamp Server
EditPlus 3	Php
Database	MySQL Server
Operating System	Windows 7 or above

4.9 Overall System Design

The system is designed after all the basic requirements are gathered and analyzed. The feasibility study for the requirements and the system provides the sufficient environment for designing the system. The backbone of the system lies in the design of the system for its success.

4.9.1 Input/process/output

Input:

System user's username and password, ADSL ID, ADSL phone number.

Process:

Login page comes only authentic user can log in After the users are logged in to our system by entering valid username and password different option is displayed from where system user can check the status of ADSL user. Also System user can extend 2 days if ADSL user's

internet access duration expires. Also System user can retrieve the session and also change the password for ADSL users

Output:

- Status: Active/ Passive
- Expiry date
- If password changed which user changed the password at which time?

4.10 Flow of Information in the New System

The flow of information in the new system is briefly defined below:

4.10.1 Data Flow Diagram of the System

A Data Flow Diagram (DFD) is a graphical representation of the "flow" of data through an information system, modelling its process aspects. A DFD shows what kind of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored. With only four symbols, we can use the Data Flow Diagrams to represent both physical and logical information of the system.

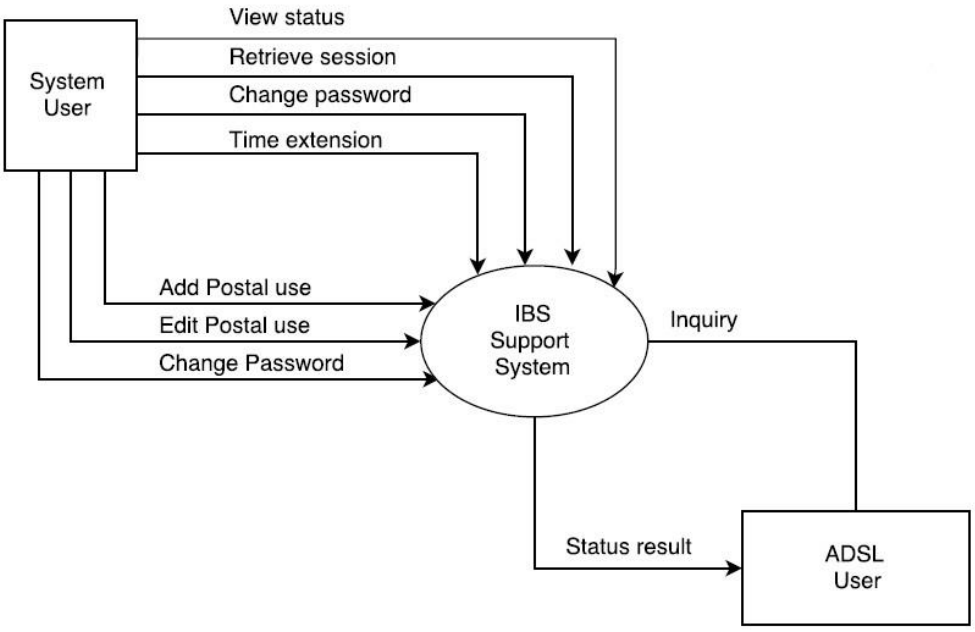

Figure 7: Data Flow Diagram 0 Level

4.10.2 Use Case Diagram

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well. The purposes of use case diagrams can be as follows:

- Used to gather requirements of a system.
- Used to get an outside view of a system.
- Identify external and internal factors influencing the system.
- Show the interacting among the requirements are actors.

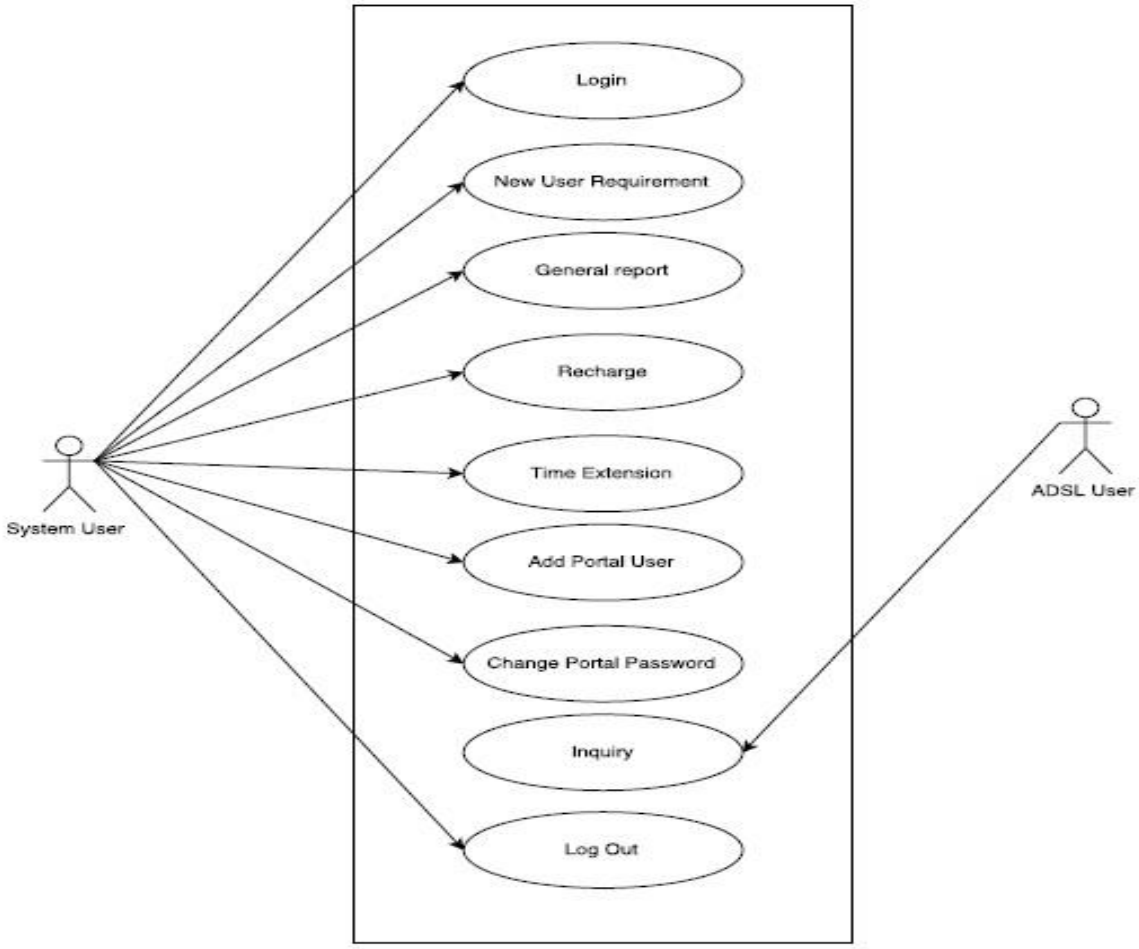

Figure 8: Use Case Diagram

4.10.3 Sequence Diagram

A Sequence diagram is an interaction diagram that shows how processes operate with one another and in what order. A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. A sequence diagram shows, as parallel vertical lines, different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.

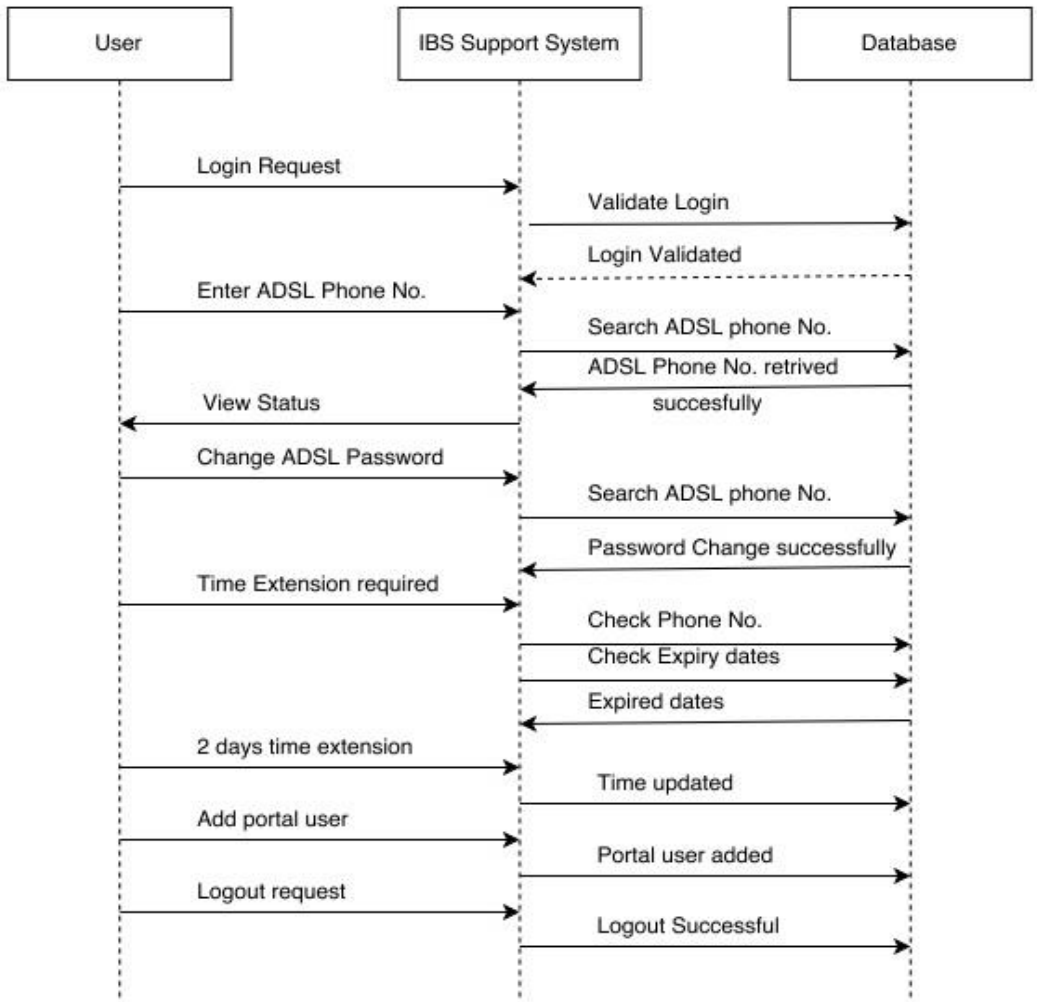

Figure 9: Sequence Diagram

4.11 Database design

4.11.1 E-R Diagram

An entity relationship model, also called an entity-relationship (ER) diagram, is a graphical representation of entities and their relationships to each other, typically used in computing in regard to the organization of data within databases or information systems. An entity is a piece of data-an object or concept about which data is stored. The main components of ER models are entities, their attributes and the relationships that can exist among them.

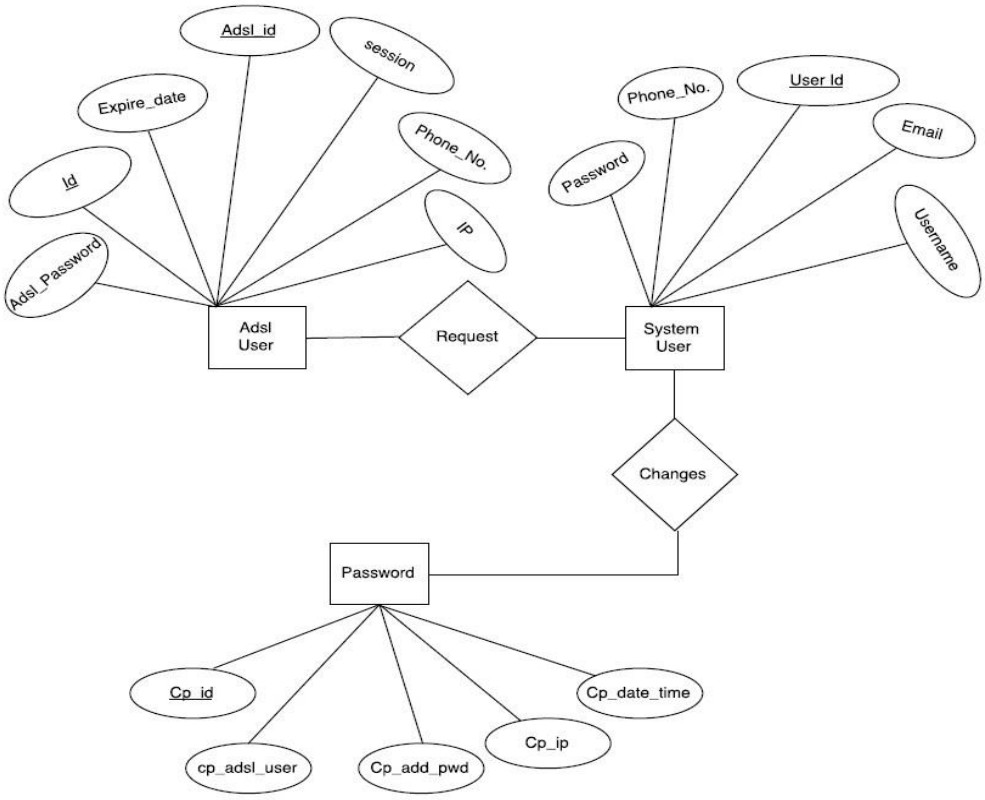

Figure 10: E-R Diagram for changing password

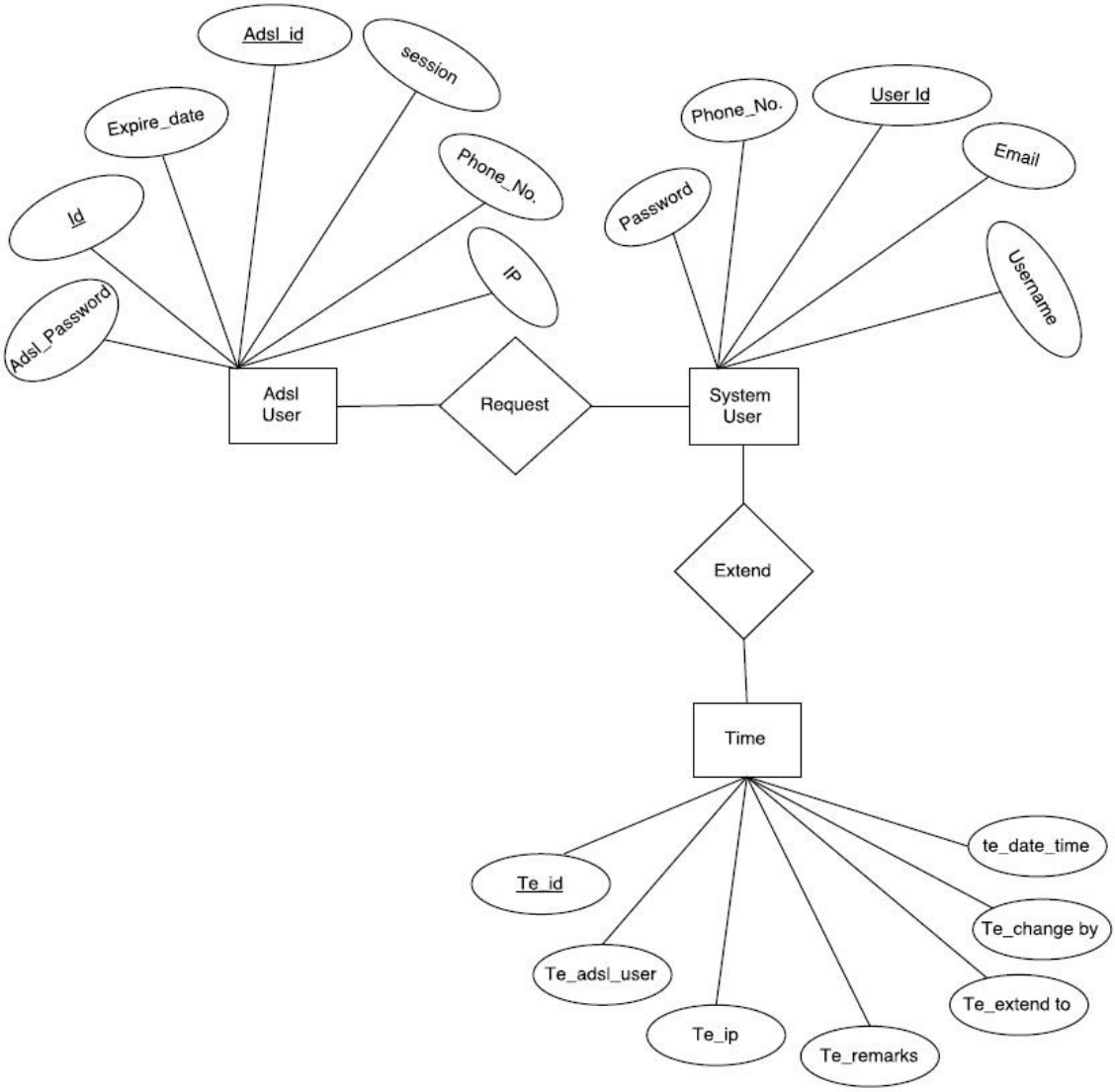

Figure 11: E-R diagram for time extension

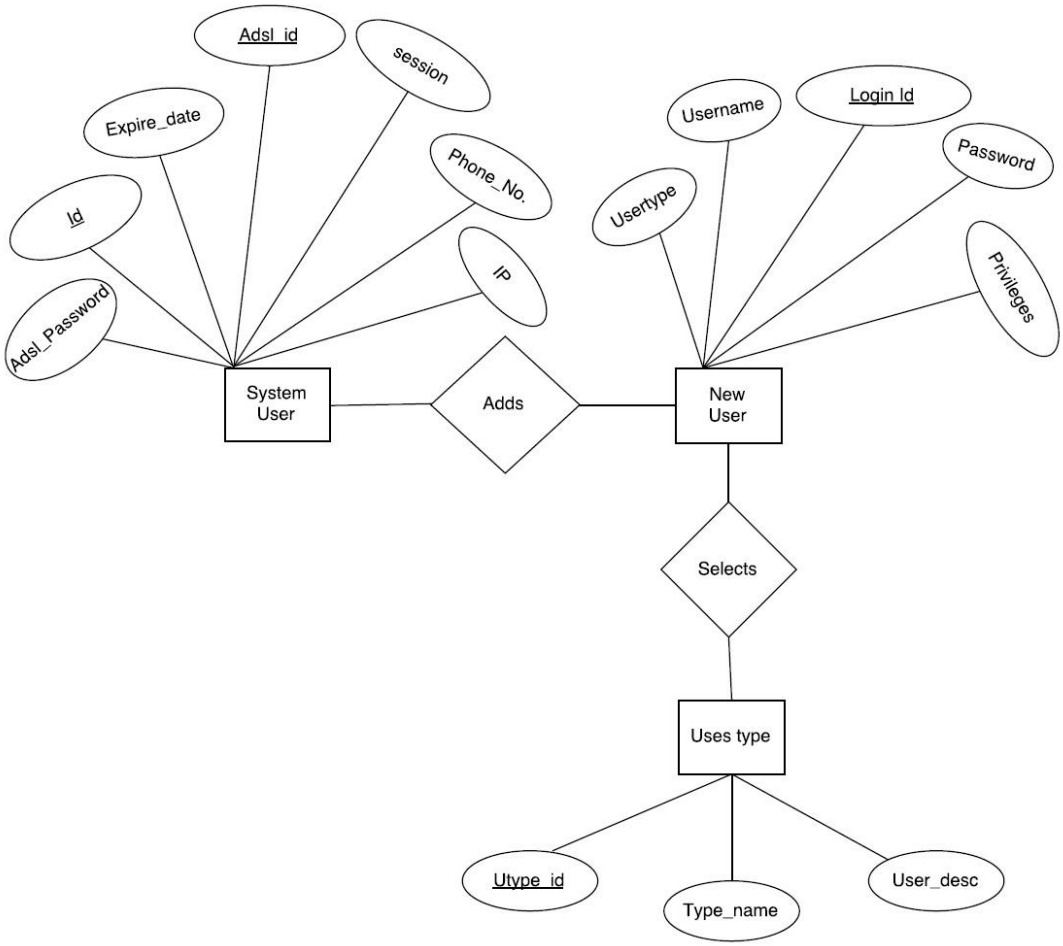

Figure 12: E-R diagram for adding new user

4.11.2 Table Diagram

Server: localhost ▸ Database: prime ▸ Table: tbl_adsl

Browse | Structure | SQL | Search | Insert | Export | Import | Operations | Empty | Drop

	Field	Type	Collation	Attributes	Null	Default	Extra	Action
	id	int(11)			No	None	auto_increment	
	adsl_id	varchar(50)	latin1_swedish_ci		No	None		
	phoneno	varchar(11)	latin1_swedish_ci		No	None		
	adslpass	varchar(50)	latin1_swedish_ci		No	None		
	expiredate	varchar(50)	latin1_swedish_ci		No	None		
	status	varchar(50)	latin1_swedish_ci		No	None		
	plan	varchar(50)	latin1_swedish_ci		No	None		
	ip	varchar(50)	latin1_swedish_ci		No	None		
	session	varchar(50)	latin1_swedish_ci		No	None		
	callid	varchar(50)	latin1_swedish_ci		No	None		
	nasid	varchar(50)	latin1_swedish_ci		No	None		

Figure 13: ADSL User Table

Server: localhost ▸ Database: prime ▸ Table: user_type

Browse | Structure | SQL | Search | Insert | Export | Import | Operations | Empty | Drop

	Field	Type	Collation	Attributes	Null	Default	Extra	Action
	utype_id	int(2)			No	None	auto_increment	
	type_name	varchar(20)	latin1_swedish_ci		No	None		
	user_desc	varchar(100)	latin1_swedish_ci		No	None		

Figure 14: User Type Table

Server: localhost ▸ Database: prime ▸ Table: ist_chgpwd

Browse | Structure | SQL | Search | Insert | Export | Import | Operations | Empty | Drop

	Field	Type	Collation	Attributes	Null	Default	Extra	Action
	cp_id	int(11)			No	None	auto_increment	
	cp_adsl_user	varchar(30)	latin1_swedish_ci		No	None		
	cp_adsl_pwd	varchar(50)	latin1_swedish_ci		No	None		
	cp_chg_by	int(11)			No	None		
	cp_datetime	timestamp			No	CURRENT_TIMESTAMP		
	cp_ip	varchar(50)	latin1_swedish_ci		No	None		

Figure 15: Change Password Table

Browse | Structure | SQL | Search | Insert | Export | Import | Operations | Empty | Drop

	Field	Type	Collation	Attributes	Null	Default	Extra	Action
	te_id	int(11)			No	None	auto_increment	
	te_adsl_user	varchar(30)	latin1_swedish_ci		No	None		
	te_extendto	date			No	None		
	te_remarks	varchar(250)	latin1_swedish_ci		No	None		
	te_chg_by	int(11)			No	None		
	te_datetime	timestamp		on update CURRENT_TIMESTAMP	No	CURRENT_TIMESTAMP	on update CURRENT_TIMESTAMP	
	te_ip	varchar(50)	latin1_swedish_ci		No	None		

Figure 16: Time Extension Table

Browse Structure SQL Search Insert Export Import Operations Empty Drop

	Field	Type	Collation	Attributes	Null	Default	Extra	Action
	usr_ids	int(4)			No	None	auto_increment	
	usr_name	varchar(25)	latin1_swedish_ci		No	None		
	usr_pwd	varchar(100)	latin1_swedish_ci		No	None		
	usr_email	varchar(60)	latin1_swedish_ci		Yes	NULL		
	usr_fullname	varchar(50)	latin1_swedish_ci		Yes	NULL		
	usr_pict	varchar(50)	latin1_swedish_ci		No	None		
	usr_type	int(3)			Yes	NULL		
	usr_status	int(1)			No	0		
	usr_region	varchar(5)	latin1_swedish_ci		No	None		
	usr_region_loca	int(5)			No	0		
	usr_telno	varchar(20)	latin1_swedish_ci		No	None		

Figure 17: User table

4.12 Snap shots

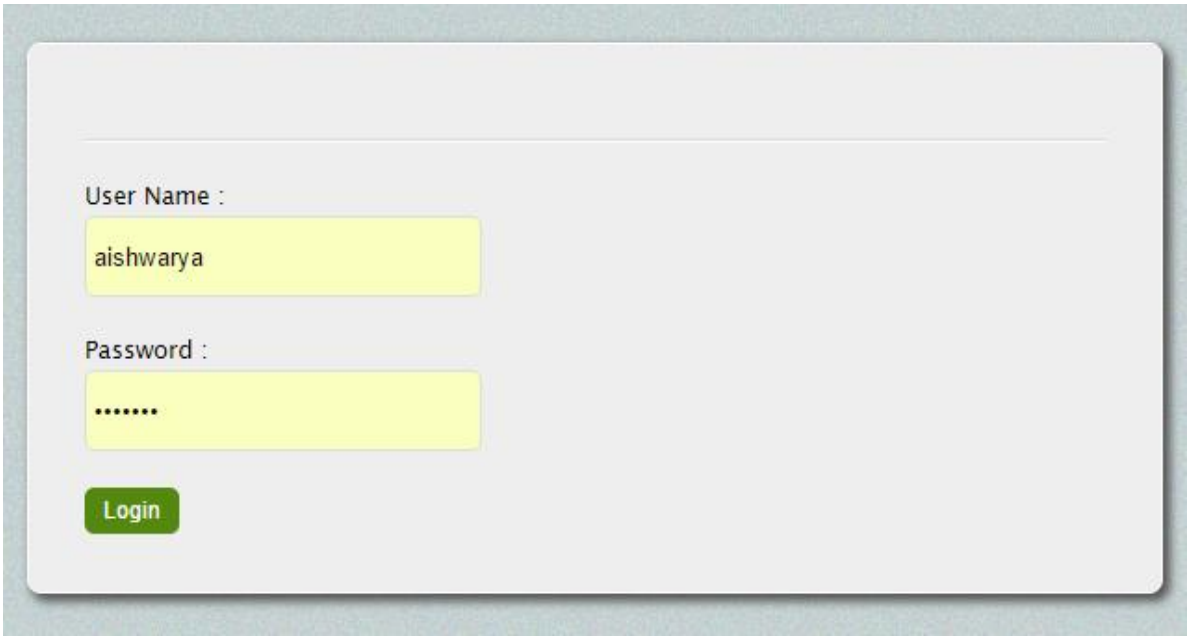

Figure 18: Login page

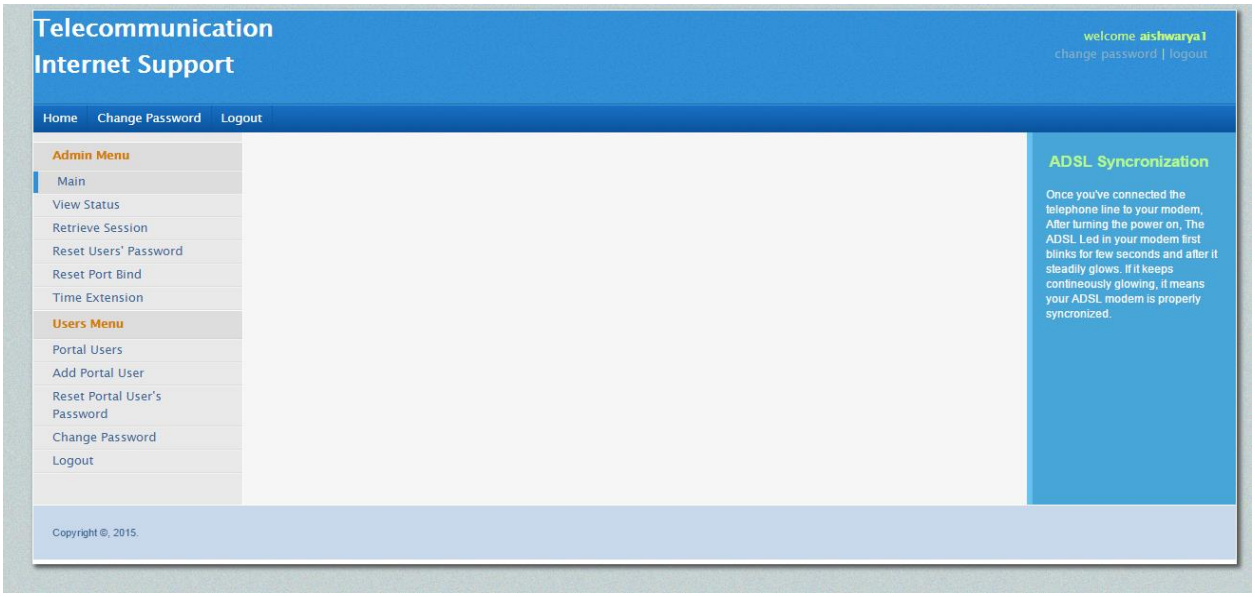

Figure 19: Main view

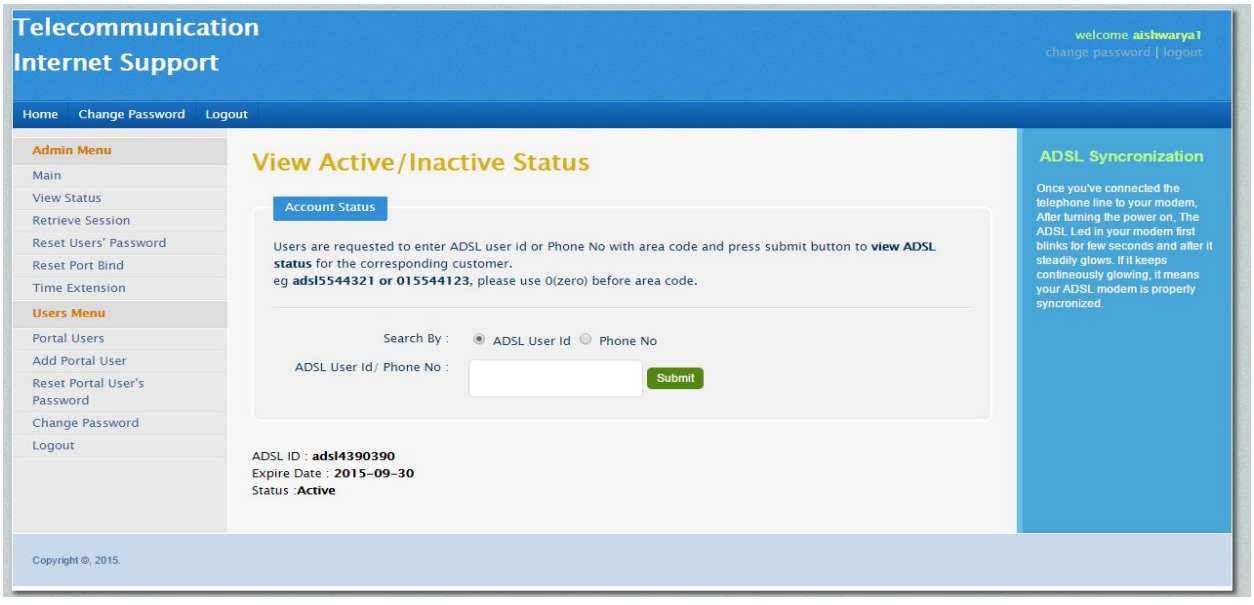

Figure 20: Status View

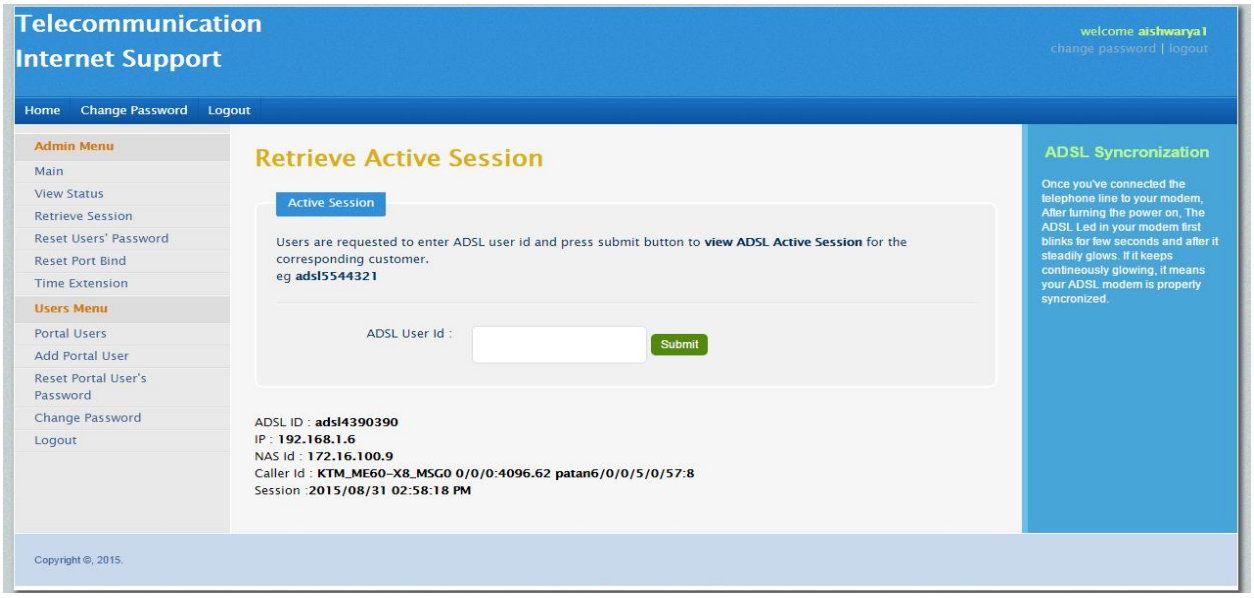

Figure 21: Session view

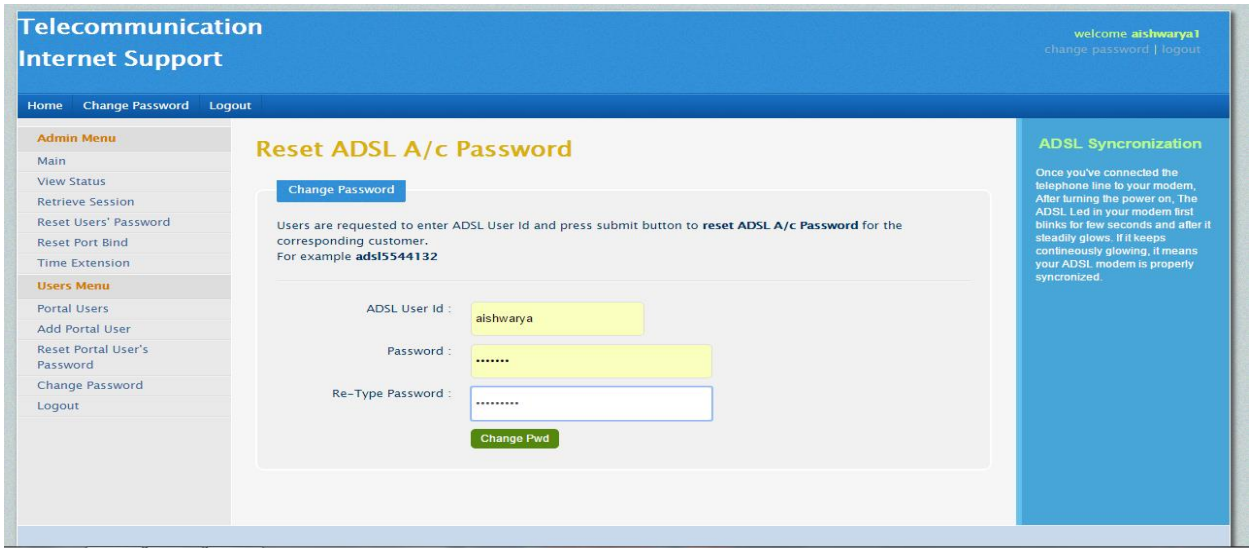

Figure 22: Change ADSL password page

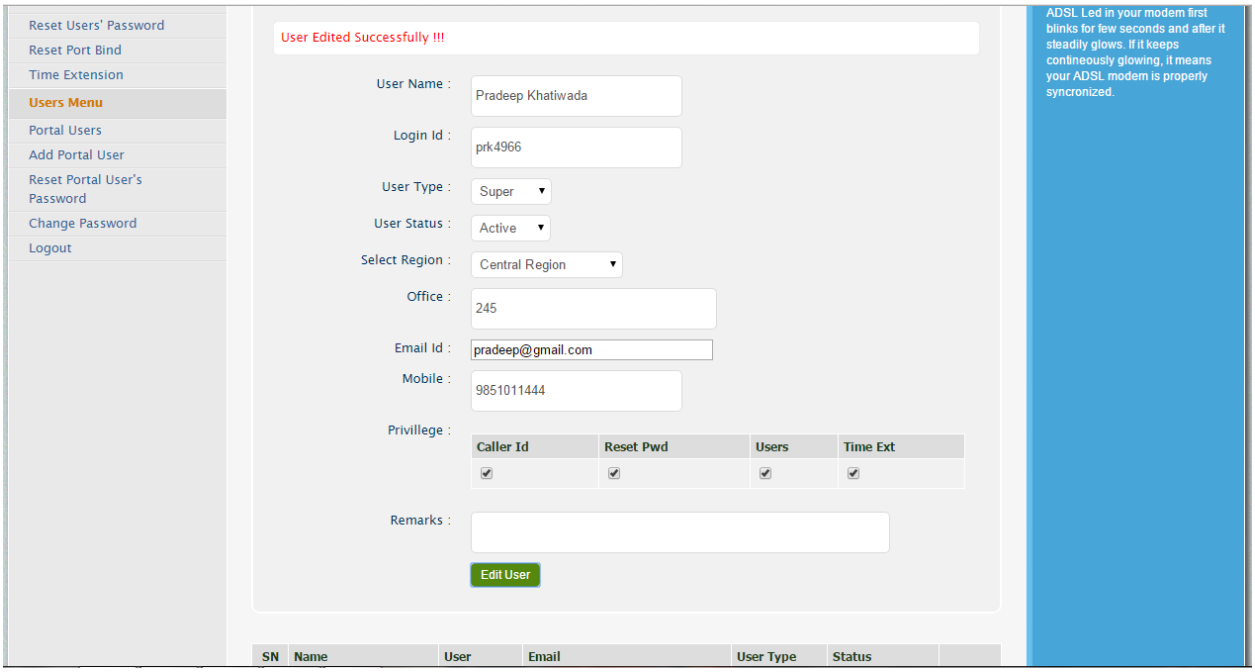

Figure 23: User menu page

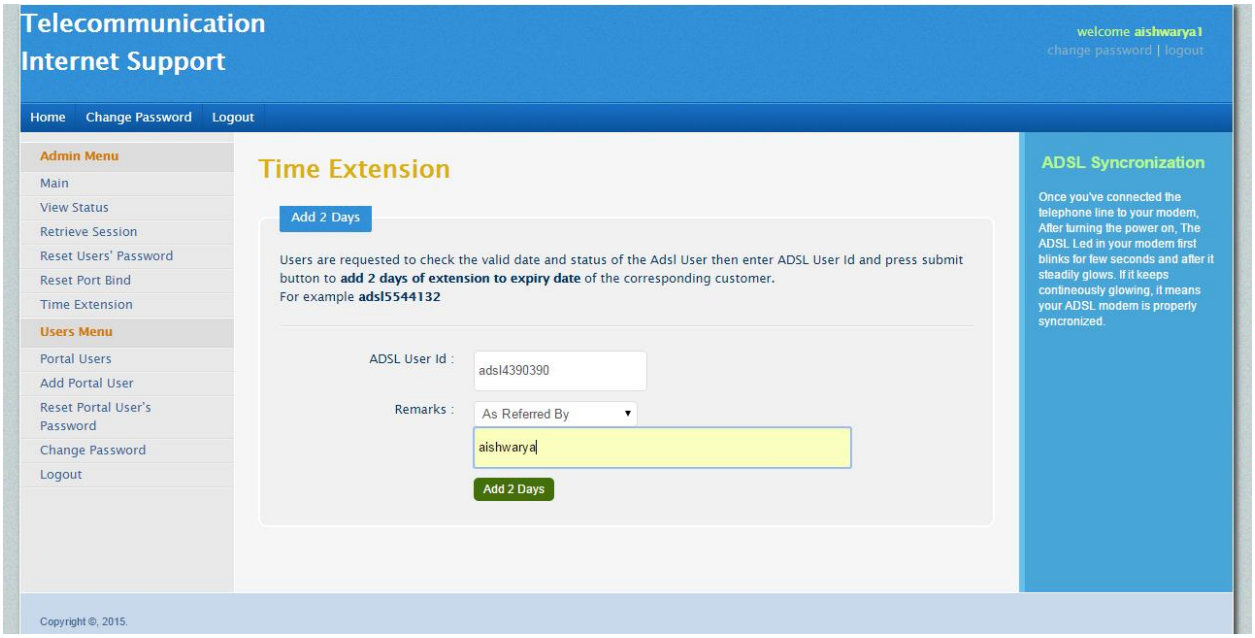

Figure 24: Time Extension page

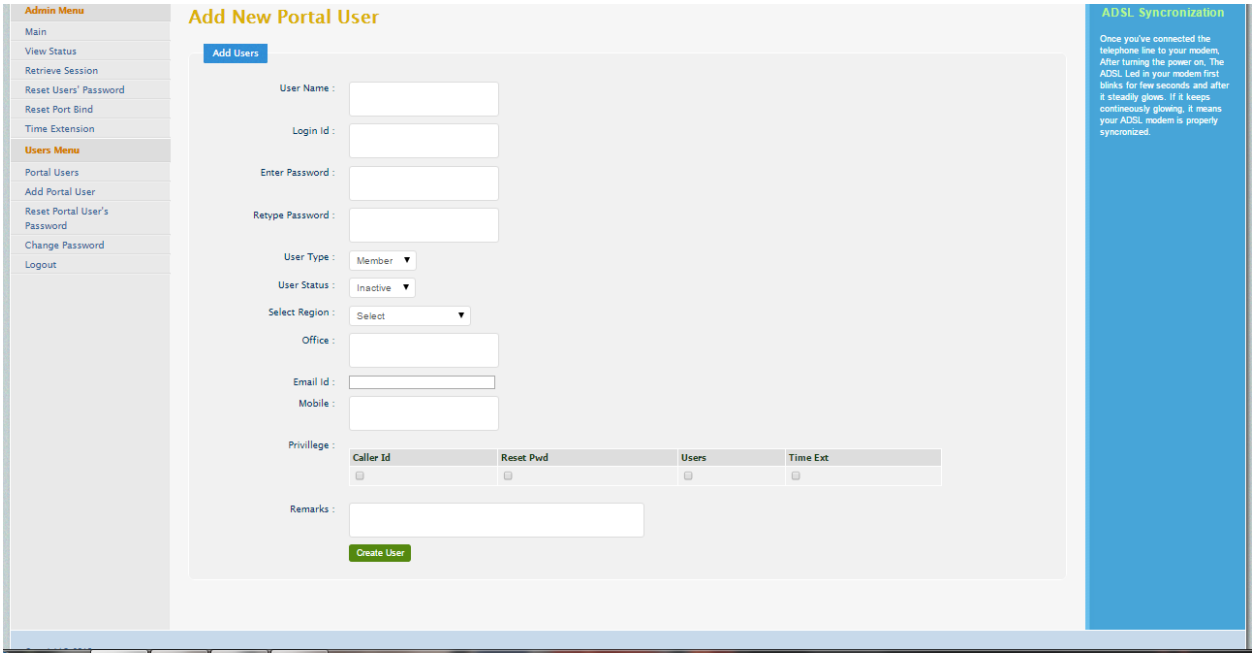

Figure 25: Portal User page

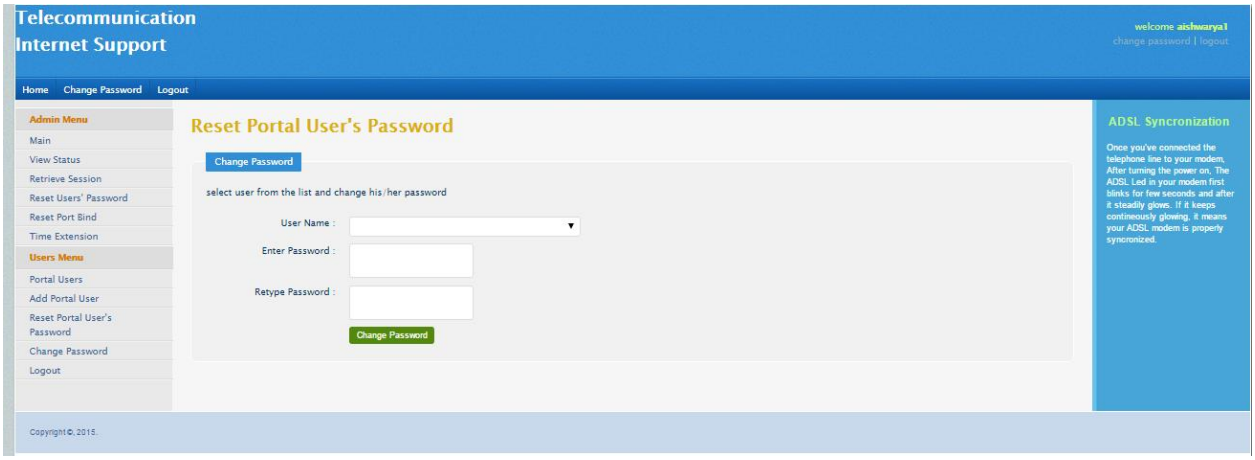

Figure 26: Reset Portal User Password page

4.13 System Development

After full analysis of the existing system and analyzing the proposed system, the next task is to develop the system. It means that to code the proposed system. While developing a system, it is essential to follow the SDLC. SDLC describes the entire phase during the lifecycle of the system which will ultimately guide in developing a new system. The SDLC involves the following steps:

1. System Investigation.

2. System Analysis

3. System Design

4. System Implementation

5. System Maintenance

4.13.1 System Investigation

One of the most tedious tasks is to recognize the real problem of the pre-installed system. The analysis has to spend hours and days for understanding the fault in the system. This fault could have however overcome if the Preliminary Investigation before installing the system was properly done. This is the first stage of the development of the system. In this stage the analyst makes a survey by gathering all the available information needed for the system elements and allocation of the requirements to the software.

4.13.1.1 Technical Feasibility

This study was useful to test whether the proposed system is technically feasible or not. Technical feasibility was primarily concerned to determine whether the proposed system will be compatible with the existing technology or not and if it needs the additional equipment or devices.

4.14.1.2 Operational feasibility

Operational feasibility is the ability of the management, employee and users, to operate, use and support a proposed system. Operational feasibility is performed to give the solution of the following:

1. Will the system be useful to the users?

2. How do the end-users feel about the system?

4.14.1.3 Economical Feasibility

Economic feasibility is the most frequently used method for evaluating the effectiveness of the proposed system. The study was concerned with whether the benefits will exceed the costs of developing and operating a proposed system. Most commonly used economic feasibility is cost/benefit analysis

1. Cost estimation:

    a) Initial Investment (Computer, training, software)

    b) Running Cost (Maintenance, Updates)

2. Benefit Analysis

    a) HR reduction

    b) Customer increments

    c) Upgrade in speed of work.

4.13.2 System Analysis

The analyst understands the nature of the information and the functions of the software which is required for the system. The analyst makes a brief survey of the requirements and tries to analyze the performance of the system which is to be developed. He also makes sure that he gets enough information and resources for building the appropriate system.

4.13.3 System Design

The analyst actually makes number of designs of the system on paper or on the computer and sees to it that the rough image made of the system comprises of all the requirements or not. Once this is done, the analyst selects and finalizes a best suited design for the development of the system.

The analyst translates the code or the programs in such a way that they become in machine readable form. The coding step is very time consuming and involves number of rooms for errors.

Once the analyst is through with the coding stage he tests the systems and sees to it that it is working as per the expectations or not. He corrects the flaws in the system if any.

4.13.4 System Implementation

This is one of the most vital phases as in this phase; the system developed is needed to be implemented in real world to check if it works properly as per user's requirements or not. System implementation is essential in ensuring the success of the system as deployment of the system may fail if not implemented properly.

4.13.5 System Maintenance

The last stage of the SDLC is that the analyst needs to maintain the system and see to it that it working within the standards set. He needs to maintain the system by removing the defects of flaws occurred.

4.14. Security/Backup/Control

Security is very much essential aspect of any system. It is a must to protect the valuable information from unauthorized access and misuse them. Much software has been developed that can easily trust the information from the database. Hence, to protect from such a calamity, it is essential that a secure way is provided to the users.

Thus, for the security mechanism, our system has a login page where users are required to provide their valid username and password that are provided to them after filling up a

simple sign up form by providing their crucial information such as: name, address, phone number, etc. However, from this login page, they will not have the full access which means to say that they can only search and buy the items and cannot modify the content.

Backup of the system files are kept in the different hard drive. Backup become important when the system become useless or corrupted. It is also important when it comes to adding or removing certain requirements of the system. User requirements keep on changing in the field of software development, that's why it is very necessary to keep a backup file of the system in any case of changing the requirements.

4.15 Test Strategy

A test strategy is an outline that describes the testing approach of the software development cycle. It is created to inform project managers, testers, and developers about some key issues of the testing process. This includes the testing objectives, methods of testing new functions, total time and resources required for the project, and testing environment.

4.15.1 Test Plan

For testing of the system, unit, module, integration and system testing was done to check if all the functionalities are working properly.

4.15.2 Functional Testing

Functional testing is a type of black box testing that bases its test cases on the specifications of the software component under test. Functions are tested by feeding them input and examining the output, and internal program structure is rarely considered (not like in white-box testing). Functional testing differs from system testing that functional testing verifies a program by checking it against, design documents or specifications, while system testing validates a program by checking it against the published user or system requirements.

4.15.3 Module Testing

Module testing is done for the purpose of knowing whether the modules do the task for which they were built. With the collection and integration of variety of functions, modules were developed which again had to be tested in order to recognize the underlying mistakes

when being integrated. These modules together made the system to work smoothly. So, every module was tested independently to identify if there were any bugs to be removed.

4.15.4 System Testing

Testing the behavior of the whole software/system as defined in Software Requirements Specification (SRS) is known as system testing, its main focus is to verify that the customer requirements are fulfilled.

System testing is done after integration testing is complete. System testing should test functional and non-functional requirements of the software. Following types of testing should be considered during system testing cycle. The test types followed in system testing differ from organization to organization however this list covers some of the main testing types which need to be covered in system testing.

4.15.5 User's Testing, Test results and discussion

After the whole system was tested and became error free, the system was provided to the actual user. The user tests the functionality of the system using real data. This type of testing will be much closer to the real operating environment.

After the coding, the system was presented to the supervisor. The supervisor gives the sets of data to test. After testing, the overall system and the test results were discussed thoroughly. Since the duration of the internship was short, the developed system was simple and small, the test result focused on the possible future errors and ways to eliminate it.

4.16 Plan for System Implementation

System implementation generally focuses on the coding and installing on the system. The system implementation is composed of activities, which are coding, testing and installation. The purpose of these steps is to convert the physical system specification into a working and reliable software.

Coding is the process whereby the physical design specification created by the analysis team is turned into working computer code by the programming team. Once the coding had begun the testing procedure can begin and proceed in parallel. Installation is also an activity

involved in the implementation phase and is the process during which the current system is replaced by the new system. There are three strategies of installation.

Direct Installation:

In direct installation, the old system is turned off and the new system is installed. This type of installation is very risky.

Parallel Installation:

In parallel installation, the old and new systems run in parallel. It is the most risky type of installation. In this method, two systems run in parallel, until the end users are satisfied with the new system's performance, then the old system is turned off.

Phased Installation

In phased installation, the old system is changed into the new one incrementally, starting one or few functional components and then gradually extending the installation to cover the whole system. Since our system is newly developed and there is no existing system to be replaced, we choose direct installation strategy to implement the system.

4.17 Requirements of the User's Training

The user of the system doesn't require any specialized knowledge of the system. The system has developed in a simple way so that the any user with basic computer knowledge can use the system very easily and convenient way. However, training enhances the person's knowledge and skill. A simple guidance and demonstration can clear the concept of system gives user clear vision of how system works.

4.18 System Maintenance

The key of successful system is hold by the regular maintenance of the system. It is not enough to develop and implement the system only, it is also essential to maintain system in regular basis. Maintenance of the system refines as well as improves the performance of the system. Maintenance of the system required for the following reasons:

- To eliminate the errors that occurred in the system during the real working period.
- To reduce the code redundancies and improve the underlying algorithms and functions.

- To cope with the changing requirement of the users as well as of the environment.
- To make compatible with the other system as per the need.

CHAPTER 5: CONCLUSION AND LESSON LEARNT

5.1 Conclusion

The development of software includes so many people like system developer, users of system and the management. It is important to identify the system requirements by properly collecting required data to interact with supplier and customer of the system. Proper design builds upon this foundation to give a blue print, which is actually implemented by the developers.

Intern has gained a lot of practical knowledge from this project which shall make a stand in a good state in the future. Though the system needs some improvements and the future enhancement is also a challenging task, the overall outcome of the project is as expected in its design consideration.

Enormous knowledge has been gained throughout the project work. The importance of the background research, requirement analysis and specifications, well designing concept, and superior methodology were learnt. Also implementation techniques, testing, error handling, optimization issues and the predictability of problems such as when to perform a certain task, have been exercised. Thus we hope that the system developed will certainly be useful and will be supported by many users for its enhancement and improvement in the future.

5.2 Lesson Learnt

Intern is very grateful to the Prime College and all the staff of Nepal Telecom for their kind cooperation and support. During 2 months internship period, intern got to learn and understand about various things which are sure to help a lot in days to come. Intern got exposure in the real world business environment and got a chance to experience the work procedures. It was a real challenge in the beginning for the intern to develop a module of a system but later on it really boosted the knowledge that was learnt during the college time and aroused the interest to learn more and handle real world tasks with efficiency.

The major lessons learnt till the end of the internship period are:

- There is a vast difference between the theoretical knowledge and the real world. So, the knowledge learnt in the classroom should be implemented in the real life.
- How to work under the rules and regulation of the organization.
- Know the importance of the time.
- Learned how to actually learn to develop a system.
- Learned to prepare everything before starting anything.
- Organization runs on the coordination and cooperation.
- Gaining the ability to develop the interpersonal communication skills.
- Learned how to think critically in the real world
- Clients are great teacher.

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