Tribhuvan University

Institute of Science and Technology

An

INTERNSHIP REPORT

on

NEA - Theft Customer Department

At

Sathi Soft Pvt. Ltd.

Submitted To:

Department of Computer Science and Information Technology

Ambikeshwari Campus

Ghorahi, Dang

In partial fulfillment of the requirements of the Bachelor Degree in Computer Science and Information Technology

Under the supervision of

Mr. Raj Singh Jora

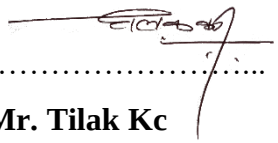
Submitted by:

Ran Bahadur kc (8787/072)

March 2020

Mentor's Recommendation

I hereby recommend that this internship is done under my mentorship by **Mr. Ran Bahadur kc** entitled **"NEA-Theft Customer Department"** in the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Information Technology of Tribhuvan University and be processed for the evaluation.



……...

Mr. Tilak Kc

Mentor

Sathi Soft Pvt. Ltd.

Ghorahi, Dang

Supervisor's Recommendation

I hereby recommend that this project report prepared under my supervision by **Mr. Ran Bahadur kc** entitled **"NEA- Theft Customer Department"** in the partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Information Technology of Tribhuvan University and be processed for the evaluation.

……...

Mr. Raj Singh Jora

Supervisor

Ambikeshwari Campus

Ghorahi, Dang

Certificate of Approval

This is to certify that this internship report prepared by **Mr. Ran Bahadur kc** entitled **"NEA-Theft Customer Department"** in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Information Technology of Tribhuvan University and be processed for evaluation.

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Mr. Raj Singh Jora
BSc. CSIT Coordinator
Ambikeshwari Campus
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Mr. Chandra Prakash Khanal
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Acknowledgement

The successful completion of this internship report would not have been possible without the support and assistance of many individuals and organizations. I feel immensely blessed to have gotten this during the course of my internship program. I would like to take this opportunity to offer my earnest admiration to each and every one of them.

First and foremost, I am highly indebted to **Mr. Tulsi Ram Dangi**, CEO, Sathi Soft Pvt. Ltd, who took confidence in me and provided me with the opportunity to work as an Intern. I had a wonderful and an unforgettable experience being part of such a lovely and lively team.

I also express my gratitude to **Mr. Tilak Kc,** Full Stack Developer, Sathi Soft Pvt. Ltd for his priceless support during this intersnship period.

I am profoundly grateful to my supervisor **Mr. Raj Singh Jora**, for his guidance, continuous encouragement and ever willingness to spare time from his otherwise busy schedule for the intern's progress reviews. Without his constant guidance and suggestions, this report would have been nowhere near completion. My gratitude for his trust and generosity goes beyond words.

I would also like to express our deepest appreciation to **MR. Chandra Prakash Khanal**, Chief of Ambikeshwari Campus, for his constant motivation, support and for providing us with a suitable studying environment.

Finally, my thanks and appreciations go to each and every one of my colleagues who irrespective of the situation, always encouraged and supported me to prepare this report.

Ran Bahadur kc

(8787/072)

Abstract

This internship report contains the details of the activities carried out during the internship conducted at Sathi Soft Pvt. Ltd. Ghorahi, Dang, Nepal. It was a real time work experience at Sathi Soft Pvt. Ltd. I was able to gather a lot of knowledge and experience from our mentor and other professionals. It also taught me how to work in a team and be one of the efficient team members. Sathi Soft Pvt. Ltd. is one of the fastest growing Information Technology (IT) firms operating in the country. Sathi Soft Pvt. Ltd. primarily uses PHP Laravel Framework coupled with other cutting-edge technology to cater Information Technology (IT). Sathi Soft Pvt. Ltd. has established as a premium hub for consulting and Web Development among startups and mid-sized business around the world.

NEA- Theft Customer Department is a web-based enterprise system. The main objective of this system is to automate information gathering and theft report generation process of Theft Customer Department of electricity distribution center authorized under Nepal Electricity Authority (NEA). Theft Customer Department is concerned with proving new theft report of electricity of theft. System user can keep the record of Theft Customers in system. Afterwards, system handles later hands process, rules, and regulations governed under NEA of Theft Customer department. Finally, this system aims to generate theft report monthly basis or annual basis.

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List of Abbreviations

BSc.CSIT	Bachelors of Science in Computer Science and Information Technology
CSS	Cascading Style Sheets
DFD	Data Flow diagram
ER	Entity Relationship
HTML	Hypertext Markup Language
IT	Information Technology
MVC	Model View Controller
MySQL	My Structured Query language
NEA	Nepal Electricity Authority
PHP	Hypertext Preprocessor
SEO	Search Engine Optimization
SQL	Structured Query Language
UML	Unified Modeling Language

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Chapter 1: Introduction

1.1 Introduction

Internships help build competent resume giving students visible work experience. The internship is an opportunity offered by an employer to potential employees, called interns, to work at a firm for a fixed, limited period of time. Interns are usually undergraduates or students (Maio, 2020). There is no standardized duration for how long an Internship program lasts but typically an Internship is the period of three to twelve months. During this period, interns have the opportunity to explore their field of interest, find out what future they are diving into and whether or not their skill sets match their path of career. I worked as an internee in Sathi Soft Pvt. Ltd. Ghorahi, Dang from 6th September 2019 to 21th December 2019 developing the NEA-Theft Customer Department in PHP Laravel, under the mentorship of Mr. Tilak Kc.

NEA- Theft Customer Department is the web based, enterprise system providing the functionalities to be handled through this department. Theft Customer Department is concerned with proving electricity theft of new theft customer. This system handles the progression of application submitted to be provided with new theft customer. System increases the interactivity of the system with the vast amount of data stored for being processed. This system calculates the theft report in different condition of electrical appliances, house type, their floor and room, and electricity loss evaluation. Afterwards, system handles later hands process, rules, and regulations governed under NEA of Theft Customer department.

The admin of this system are the officers who are designated under this department. The data of this system are updated by the admin and they are sole responsible for an update, edit, and delete of the information. The admin can add Theft Customer and the admin with the same authority. But, the authority to delete the admin is restricted to the super admin only.

1.2 Background

The project for NEA- Theft Customer Department is the web-based, enterprise system providing the functionalities to be handled through this department. The primary goal of this system is to generate a report of the theft customer in a standardized format. This project is running up in the localhost and updated in the time for being up to date with the

progress. The back-end of this system is built in PHP Laravel and the front-end is designed with using HTML, CSS, Bootstrap for styling purposes. Moreover, JavaScript is used in different places to make the system more responsive and attractive with the elegant design, and jQuery is use to create dynamic form and ajax is use to handle the server request and response for data.

1.3 Problem Statement

In the modern Internet age, Information technology has become an essential feature in business that has helped industries cut costs, improve communication, safeguard information, fulfill administrative and production requirements, and it crosses all industries. and produce more useful knowledge.

As the existing system is based on paper or file system, it has suffered from many problems such as difficulty in accessing data, lack of storage space, editing problem, data inconsistency, prone to damage, difficulty in data sharing and recovery, error in report generation, etc. The solution to these problems is only to automate the system. NEA - Theft Customer Department is a government-based enterprise web application. The main objective of this system is to automate the information gathering process, generate an error-free report and make fast retrieval of information of Theft Customer Department and calculated the all theft customer report during the form fill up.

1.4 Scope of Project

Although this project is developed for the specific purposes of an enterprise, it has a great scope to the Nepal Electricity Authority especially in NEA –Theft Customer Department as every operation in any organization needs professional growth with time. It not only helps in the professional growth of NEA- Theft Customer Department.

1.5 Limitations of Project

A software solution is never 100% perfect. Like other software systems, this system also may not be perfect. Since this system is web-based, the Internet is required all the time otherwise the system does not work. Economic details of the project have not been mentioned due to confidentiality issues. Another limitation is every part of the functioning of the department has not been described as there are restrictions due to the policies of the organization.

1.6 Objectives:

The main objectives of this project “NEA-Theft Customer Department” are as follows:

- To develop an automated system for Theft Customer Department of Electricity Distribution Center.
- To provide reliable record maintenance in a systematic, auto calculate the electrical loss evaluation and electrical appliances device to consume electricity per day, per month or per year and scientific basis.
- To generate report of the theft consumer in highly standardized format.

1.7 Internship Placement Details

The internship is the part of the BSc. CSIT final year curriculum where the student has to enroll in the organization and learn the basic culture and working methodology in the real field apart from the academic educational knowledge. The students go through applying and interviewing the various organizations in this process.

1.7.1 Organization Selection

Selecting an appropriate organization for internship is a hard task, as the different organization has different policies to follow. Sathi Soft Pvt. Ltd. is a company based on Nepal and provides various services on web design/development, software development, mobile app development, social media marketing and SEO. Over the years Sathi Soft Pvt. Ltd. has left an incredible impression in the IT solutions with the impressive client and an extensive national or international presence. After searching through various means and sources I finally enrolled in Sathi Soft Pvt. Ltd.

1.7.2 Placement in Organization

During the intern period in the Sathi Soft Pvt. Ltd., I worked as the position of intern Laravel Developer in the project NEA- Theft Customer Department.

1.7.3 Duration of Internship

Particulars	Time
Start Date of Internship	6th September, 2019
End Date of Internship	21th December, 2019
Total Duration	3 Months
Office Hour	10:00 AM – 5:00 PM
Working Hour	7 Hours per Day
Working Days	6 Days
Holiday	Saturday

Table 1. 1: Duration of Internship

1.7.4 Responsibilities Assigned

Completing a whole system requires certain responsibilities to be carried out. Some responsibilities assigned for completion of this project.

- Requirements gathering to model the system adequately.
- Creating requirement specification document.
- Creating front end design using Bootstrap, HTML, jQuery, Ajax, and CSS.
- Designing the database schema using MYSQL.
- Client-side scripting using JavaScript, Ajax and jQuery.
- Server-side programming using PHP Laravel.

1.8 Motivation

Sathi Soft Pvt. Ltd. is an IT company established by energetic and dynamic team of people working together to develop and deliver the web-based system and desktop-based system to the maximum standards. Its friendly and welcoming team members benefits their clients with complete control of their website and system and support their client. I have selected Sathi Soft Pvt. Ltd. so that I can know a lot about Nepal based IT companies which has been serving Nepali clients and abroad clients.

As for the fulfillment of the course and me being an IT student, we have to choose an institution where information technology is implemented well. This is one of the reasons choose this company. This is good enough reason to choose this organization. The company is a small company with few staff and every staff is in touch with each other. Due to this, I can have better opportunities to learn each and every aspect of the project. The company manages each project with complete integrity, professionalism, and dedication. Their commitment to the client's project will make their client happy and satisfied. With the belief that I can learn many things and experiences many works in real time environment, I choose Sathi Soft Pvt. Ltd. as my internship.

1.9 Overview of Organization

1.9.1 Introduction

Sathi Soft Pvt. Ltd. is IT company. It has been involved in software development, web design and development, web hosting and mobile application development for more than 1 years. They create cost-effective solutions based on technical expertise to deliver the ultimate customer satisfaction while also helping each business to achieve their unique needs. Sathi Soft Pvt. Ltd. provides quality services by implementing agile software

development process, solid and realistic planning after analysis of work to meet deadlines.

Figure 1. 1: Logo of the Company

1.9.2 Vision

To become a global partner in software and web application outsourcing for medium to large scale companies.

1.9.3 Mission

To leverage strong skills and extensive experience in developing and managing secure, scalable and highly innovative solutions in software and web technology.

1.9.4 Objectives of Organization

- To provide the best innovation, enhancing their customer's competitiveness.
- To provide best solutions coupled with best practices for customer satisfaction in very cheap price without compromising in quality.

1.9.5 Contact Information

Sathi Soft Pvt. Ltd. is located in Ghorahi, Dang. Its contact information is:

Sathi Soft Pvt. Ltd

Email: info@sathisoft.com

Contact: +9779847898029

Web: www.sathisoft.com

1.10 Report Organization

This report is organized into 5 chapters. In the 1st chapter contains basic introduction of the Internship, the web application which covers problem statement, objectives, responsibilities assigned and motivation to choose Sathi Soft Pvt. Ltd. The 2nd chapter deals with different papers related to the thesis of the internship project which includes the functional and non-functional requirement, Feasibility analysis, Data modeling and Process modeling of the project which is done to analyze the data and working mechanism of the system. The 3rd chapter looks architectural design of the system, database schema diagram, class diagram and sequence diagram of the system. The methods and tools that are used to implement this project and all testing for this system are clearly explained in the 4th chapter. Finally, the 5th chapter contains a conclusion and lesson learnt.

Chapter 2: System Analysis

2.1 Literature Review

It is prevalent that most government organizations in Nepal are sustaining on the vast amount of data being processed in the form of hard copy paper. However, trends towards the implementation of technological infrastructure becoming a grown-up. Besides this, some of the strategies are becoming mandatory and pushing from central government to local. Such attempts recognize as a very good thing in the context of our developing country. But in some context, it was created some problems regarding the procedures to be handled in local offices. To overcome such technical problems some organizations realizes to build their own system to handle their daily organizational activities and with this realization, the concept of this system was born.

Information technology (IT) - as a tool of socio-economic development- is a significant issue for developing countries (DCs). Through declining hardware costs and increasing benefits, IT has been spreading into developing countries. There is a rapid expansion in the use of IT in many sectors of the economy, particularly in public organizations. However, this usually occurs with external 'assistance'. As latecomers to the IT scene, developing countries face enormous difficulties - perhaps the most important being that they are becoming users of IT without building up the necessary infrastructure, planning and manpower to support it. Castells (1996) and others have also recognized IT as the most important factor separating the developing and developed countries. Countries are being encouraged to attract economic growth by entering the 'information age', and being able to supply or compete at the multinational level. Therefore, there is no wonder that many developing countries are trying to bridge the development gap by means of technology acquisition. However, the rapid diffusion of IT in developing countries has not been accompanied by substantial developmental benefits. This does not mean that this technology has to be discarded as a tool of development. There is no question as to whether IT is appropriate or not; it is a technology which cannot be ignored.

2.2 Requirement Analysis

2.2.1 Functional Requirement

The functional requirement of this project is explained through the Use Case Diagram, which captures the service, task or function of the system (Kumar, 2014).

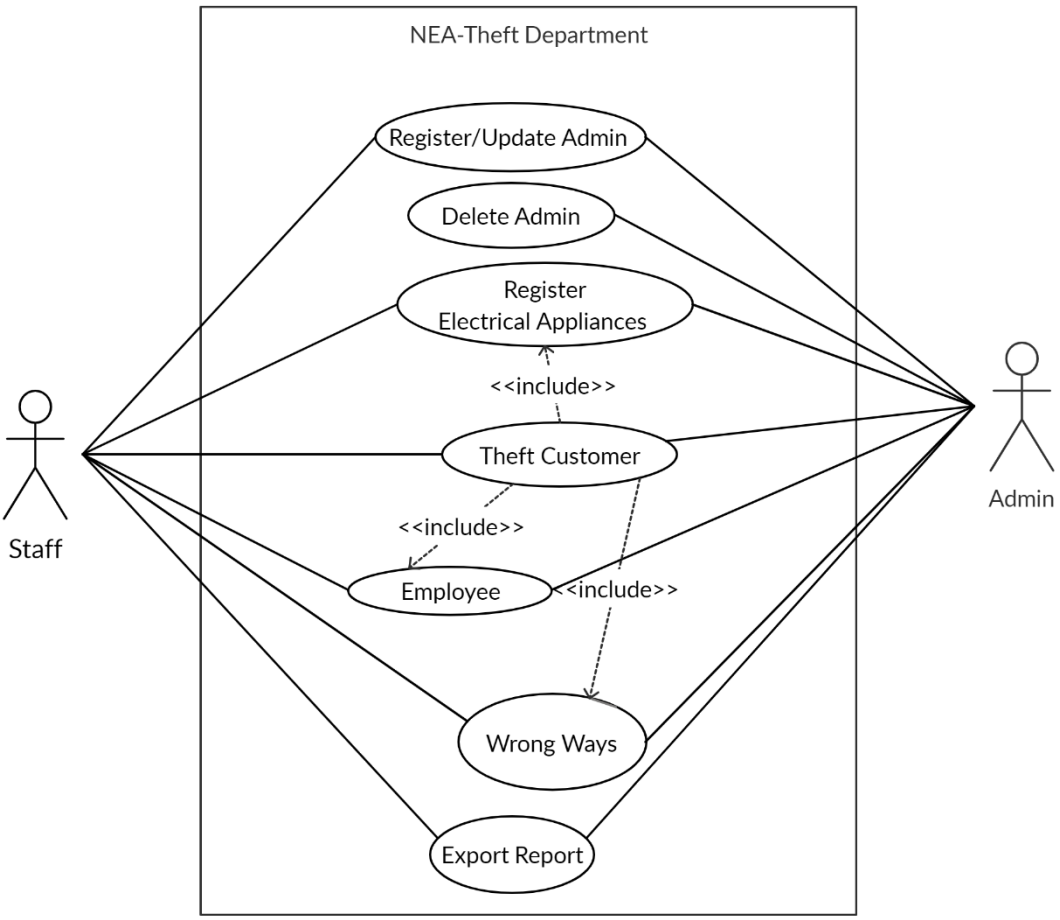

Figure 2. 1: Use case Diagram

The figure 2 shown above represents the use case diagrams for the system which contains two actors Admin and Staff.

Admin:

Admin is the actor who can login into the system to perform or operate the system using valid credentials. After registration and authorization admin can perform the different operation on the system. The admin can perform operation like managing electrical appliances, wrong ways, employees, backups, theft customers and staff. Also, the administrator can generate theft customers report in a systematic and scientific way.

Staffs:

Staff is an actor that can login to the system using correct credentials. All the staffs have the same authority as that of admin in the system except to delete admin from the system. Almost all of the operations are carried by the staffs in this system.

2.2.2 Non-functional Requirement

Non-functional requirements are not concerned with the functions of the system. Instead,

they look at the criteria to which the system is expected to conform to. Non-functional requirements can include things like response time and reliability. Some of the Non-functional requirement for NEA- Theft Customer Department are:

- Web application should be compatible with the last three major versions of Firefox, Chrome, Safari and Internet Explorer.
- Should be user friendly and content should be readable by all types of users.
- Should take minimal time, effort, resources or cost to create the web application.
- All the components of application should be fully loaded within reliable time without downgrading performance.
- Should provide the correct information about all the modules.
- Should consider the Response times such web page loading, screen open and refresh times of each pages

Availability

The system is available 100% for the user and is used 24 hours a day and 365 days a year. The system shall be operational 24 hours a day and 7 days a week.

Efficiency:

If the system fails, the system will be recovered back up within an hour or less.

Reliability:

The system should accurately provide real time information taking into consideration various concurrency issues. The system shall provide 100% access reliability.

Usability:

This system is designed with one motto which is used to provide a user-friendly environment and ease of use.

Performance:

Choosing the right technology increases the performance of the system. The choice made for the implementation of this system is made using Bootstrap, CSS, HTML, JavaScript jQuery and Ajax in the front end, PHP Laravel as back end and it will be used for the database connectivity. MYSOL is used to develop the database part.

Portability:

Since the system is a web-based application built on PHP laravel and MySQL. So, it is platform-independent and independent of the operating system

Security:

This system follows the MVC pattern of system development architecture And use middleware authentication of laravel to maintain the security. Apart from this, the system is secured with authorized username and password.

2.3 Feasibility Study

Feasibility study is all about showing if this project is feasible or not based on different feasibility types.

2.3.1 Technical Feasibility:

In this project, PHP Laravel Framework and XAMP server is being used which are famous, open source and cross-platform packages. This technology is already proved as a technical feasible to develop a system. Laravel is accessible, yet powerful, providing powerful tools needed for large, robust applications. Hence this project is Technologically feasible

2.3.2 Economic Feasibility

Cost/Benefit analysis is carried out to analyze the economic feasibility of the system. If the selected system proves the higher cost benefits then the system is considered to be economically feasible. The Project NEA- Theft Customer Department cost is developed with less investment and since it has higher cost benefits, NEA- Theft Customer Department is economically feasible.

2.3.3 Schedule Feasibility:

This project was completed within the expected schedule with good number of products added on the lists. Hence, Schedule Feasibility of this project was determined.

Weeks / Tasks	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Study and Analysis	■	■										
Documentation		■	■									
Data Collection			■	■								
Implementation and Testing				■	■	■	■	■	■	■		
Review											■	
Presentation												■

Table 2. 1: Gantt chart for scheduling

2.3.4 Operational Feasibility

To be operationally feasible, the framework must satisfy a need required by the organization. NEA- Theft Customer Department is also easy to use and it is user-friendly. The user interface is easy to operate, so it is operationally feasible. A user with basic knowledge and skills can easily operate this web application.

2.4 Process Model

Process modelling of the application is done through DFD and Flowchart.

2.4.1 Data Flow Diagram

A data flow diagram (DFD) maps out the flow of information for any process or system. In this project, DFD is extended up to level 1.

a. Level-0 Context Data Flow Diagram

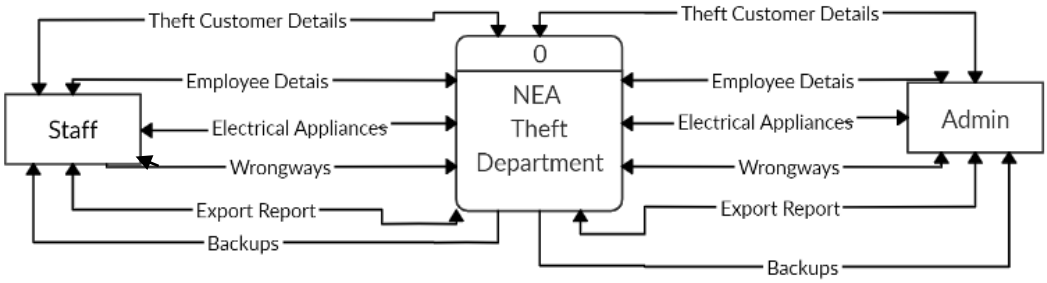

Figure 2. 2: Context Data Flow Diagram (Level 0)

In the context data flow diagram, the admin manages the consumer, receiver person, and electricity meter stock by passing corresponding information details. Staff also can perform all these activities within the system. Admin is created in the system only to monitor the staff and their activities.

b. Level-1 Data Flow Diagram

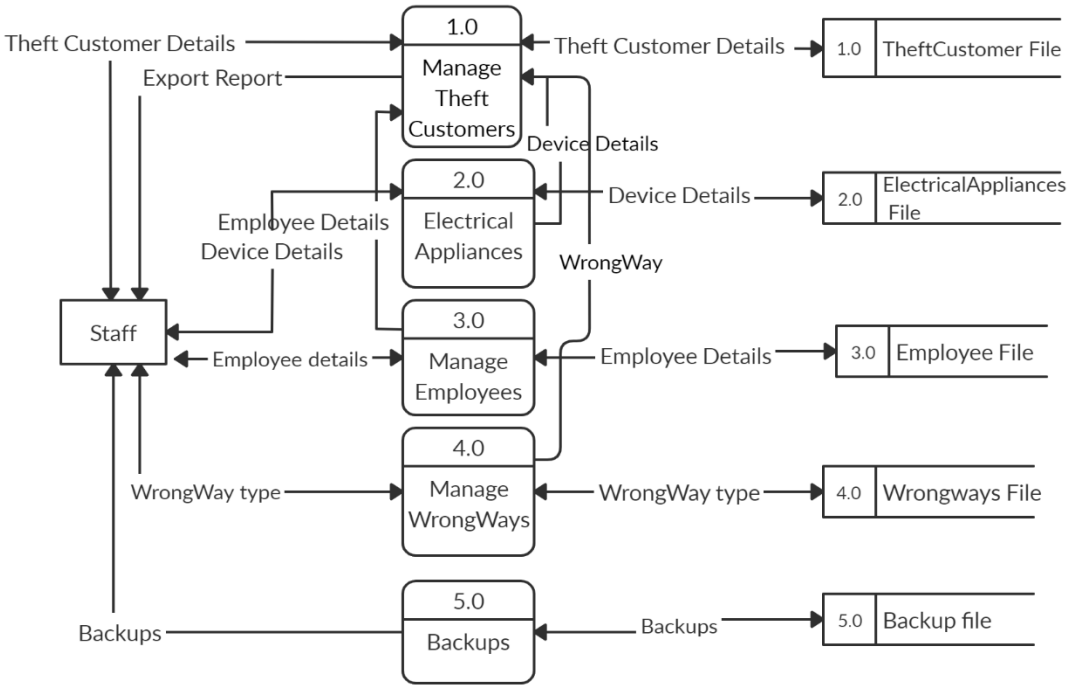

Figure 2. 3: Level-1 Data Flow Diagram of Staff

In level-1 DFD, Staff is responsible for managing theft customers, electrical appliances, employee, wrong ways and backups by storing and retrieving valid information details to/from the individual database files. Before theft customer records store use the wrong way, electrical appliances, and employee record should be added and the Export Reports from the theft customer theft report.

2.4.2 Flowchart

The Flowchart representing the sequence of steps and decisions needed to perform a process in NEA-Theft Customer Department is given below:

This flowchart has used simple geometric symbols and arrows to define relationships. A rounded rectangle represents the beginning and end of the program, a parallelogram represents input or output, triangle represents merge operation, display symbol represents view operation, a diamond represents a decision, a rectangle represents operations, and a small circle represents an on-page connector. In this way, flowchart depicts flow of process from one module to another and it shows how the pattern and activities occur in the system.

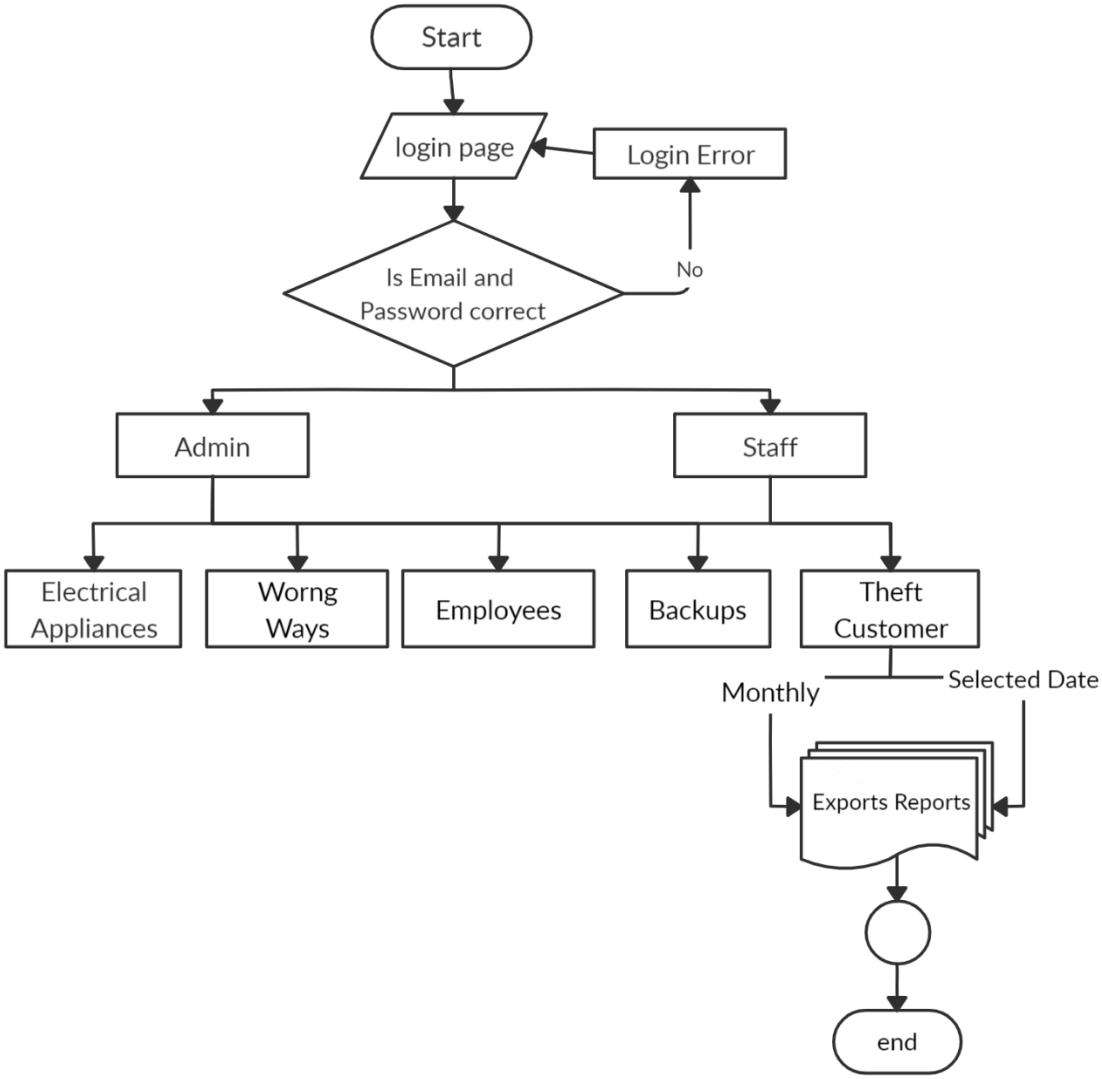

Figure 2. 4: Flowchart showing the workflow of NEA-Theft Customer Department

2.5 Data Model

Conceptual data modelling of the application is done through the ER- Model. The ER model is usually expressed as ER diagram, which is the graphical representation of the ER model.

2.5.1 ER Diagram

ER diagram in the system consists of a set of symbols such as rectangles, diamonds, ovals, and connecting lines to depict the interconnectedness of entities, relationships, and their attributes.

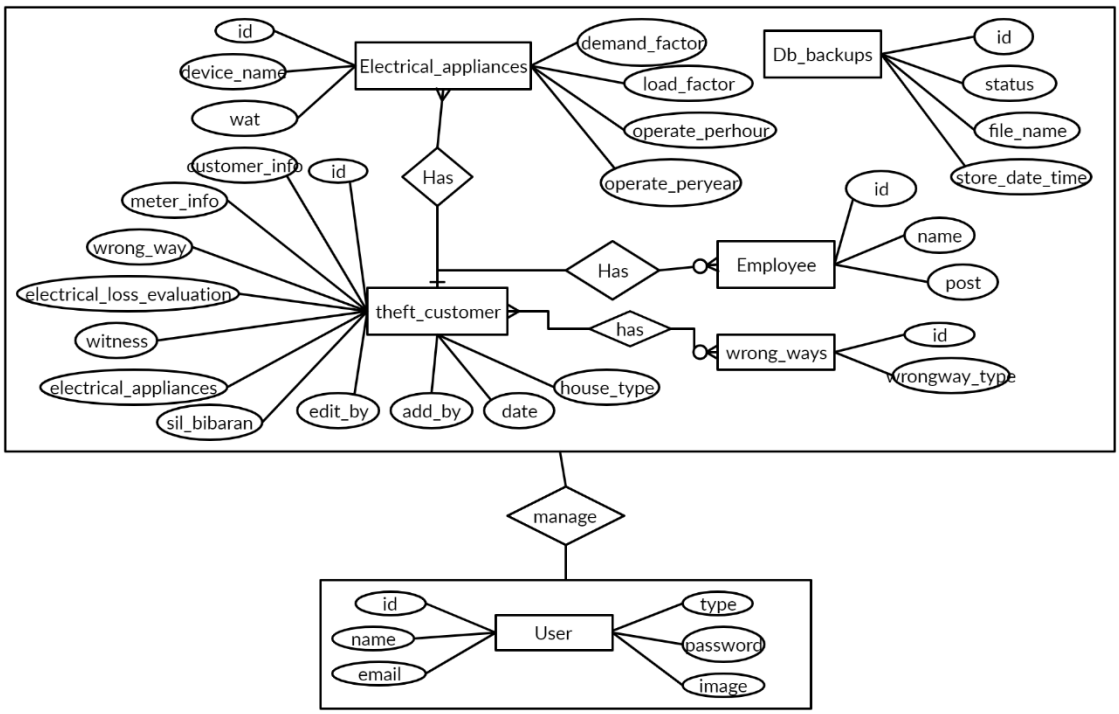

Figure 2. 5: ER Diagram of Database

For this system, theft_customer, Employee, wrong_ways, Electrical_appliance and Db_backups are the entities having different types of relationship which are managed by user entity. Super admin provides a role to other admin based on users type attribute. Many theft_customer having attributes like customer_info, meter_info, electrical_appliances, sil_bibaran, house_type, date, add_by, edit_by, electrical_loss_evaluation, witness, wrong_ways where customer_info is one object which is serialize object to keep record to database similarly meter_info electrical_appliance, wrong_ways, house_type, witness and electrical_loss_evaluation and id has a one-to-Many relationship with a electrical_appliances, Employee, and many-to-many relationship with wrong_ways having a unique primary key id.

Chapter 3: System Design

3.1 Architectural Design

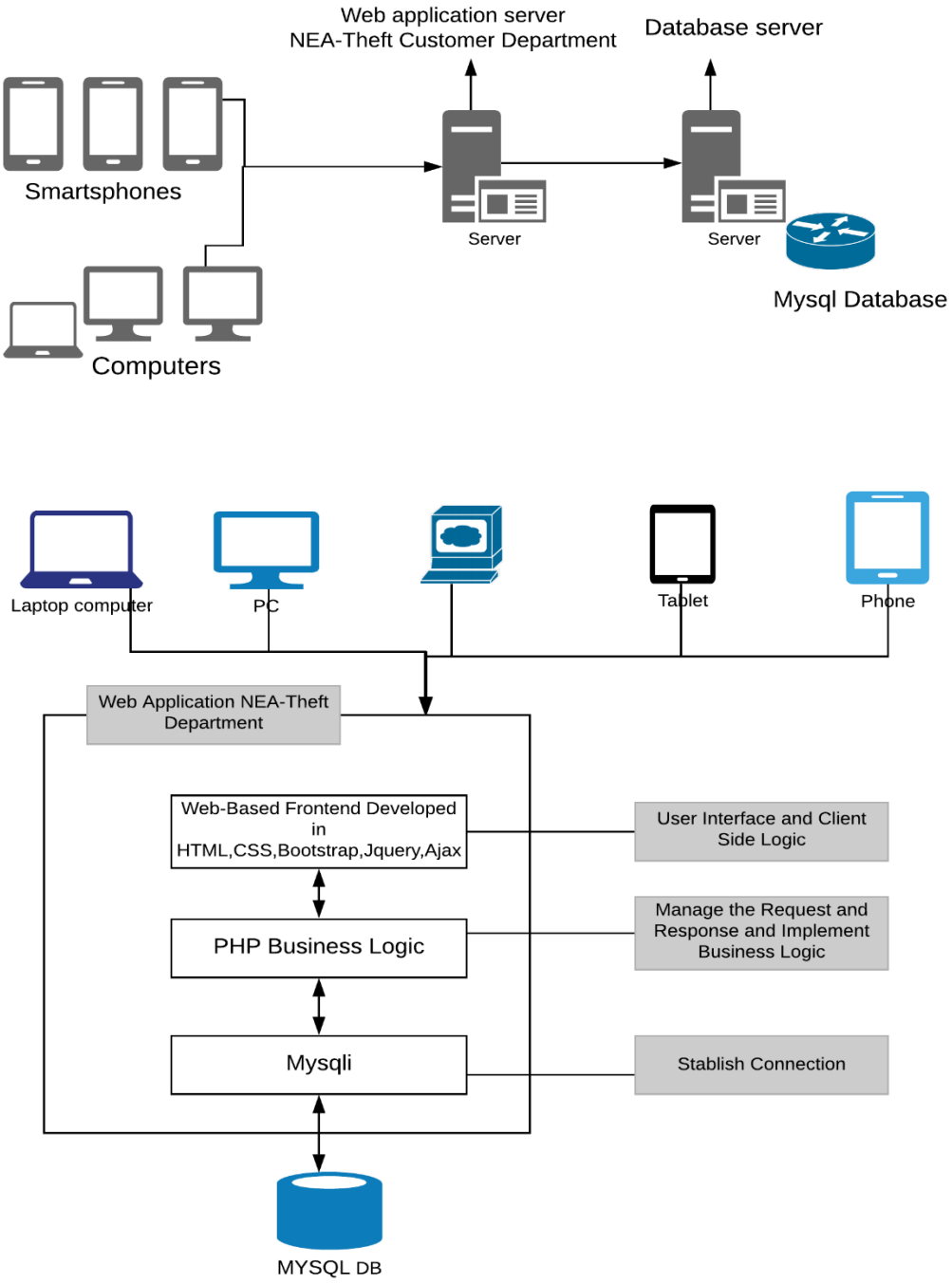

Figure 3. 1: Architectural Design

An early stage of the system design process is done through architectural design. During this design process, the sub-systems making of a system and the framework for sub-system control is identified. As an output, a description of the system architecture can be found. In

this system, an overall system architecture is broken down into three different layers, namely presentation layer, business logic layer and database connection layer forming a complete web application (Dennis, January 18, 2012). The presentation layer of this system is formed with HTML, CSS, Bootstrap, and JavaScript, the business logic with PHP programming language and database in MySQL. The connection between web application and database is achieved by using MySQLi or PDO. At the frontend, the user can get access to the system using a browser through PC, laptops, browser or smartphones. However, complete business logic resides on the web application server, which communicates with the database server to add functionality over data resides on the database.

3.2 Database Schema Design

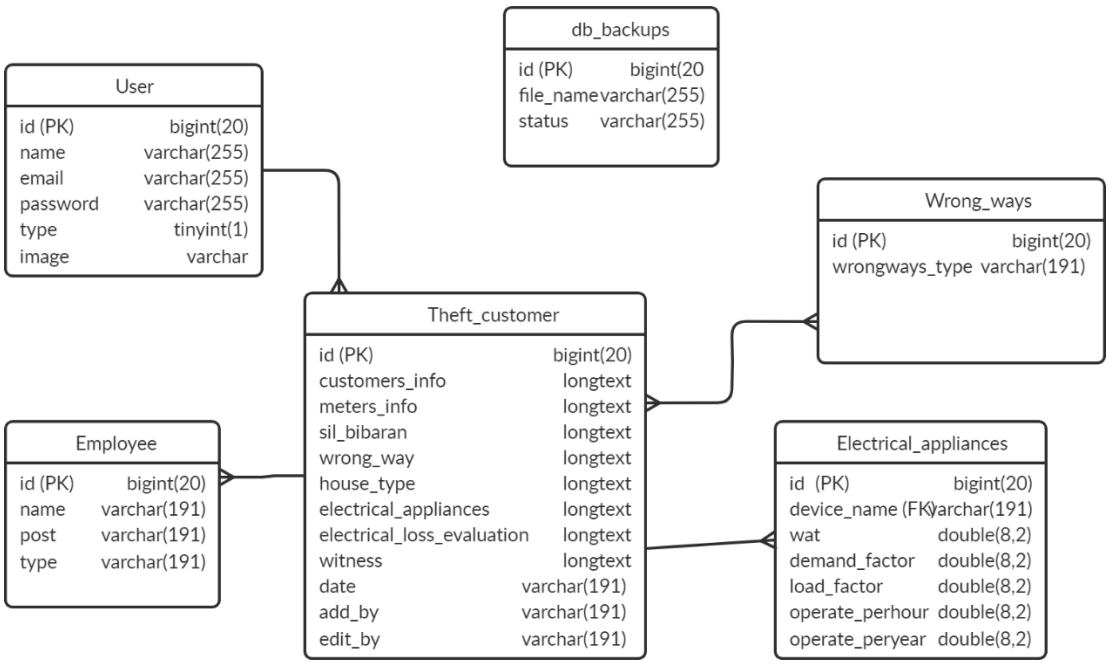

Figure 3. 2: Database Schema Design

In this project, the system consists of database nea_theft which consist of six tables which are user, employee, theft_customer, electrical_appliances, wrong_ways, and db_backups. Theft_customer consist of primary key id, which is linked to foreign key of electrical_appliances, wrong_ways and employee (Arihant Khicha, 2014).

3.3 Class Diagram

In this project, a class diagram in UML is used to depict the structure diagram which describes the structure by showing the relationship between classes, User, Employee, Theft_customer, Electrical_appliances, Wrong_ways and Db_backups and their attributes

and operation. Here the Theft_customer class has a Many to Many relationship with wrong_ways and One to Many relationship with Electrical_appliances and Employee.

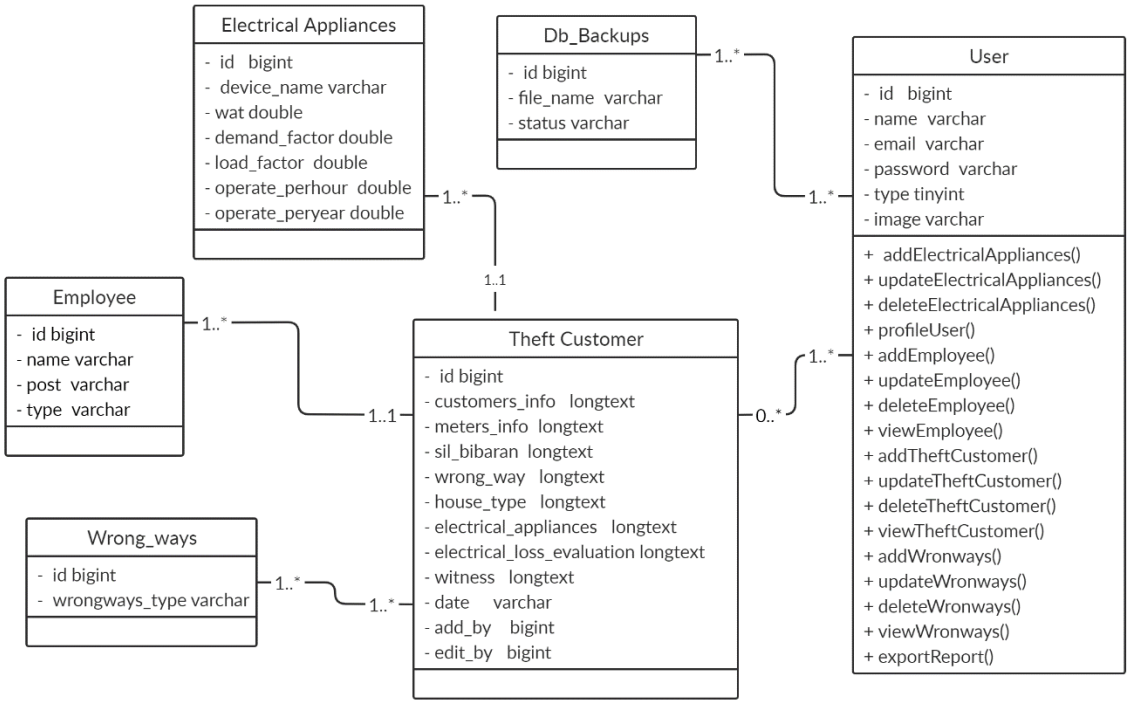

Figure 3. 3: Class Diagram

Here, the User class operations are addElectricalAppiances(), updateElectricalAppiances(), deleteElectricalAppiances(), profileUser(), addEmplyee(), updateEmployee(), deleteEmployee(), viewEmployee(), addTheftCustomer(), updateTheftCustomer(), deleteTheftCustomer(), viewTheftCustomer(), addWorngways(), updateWorngways(), viewWrongways() and exportReport(), deleteWrongways(),

3.4 Sequence Diagram

A Sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is a construct of a message sequence chart. 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. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. Sequence diagrams are sometimes called event diagrams or event scenarios. A sequence diagram shows, as parallel vertical lines (lifelines), 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.

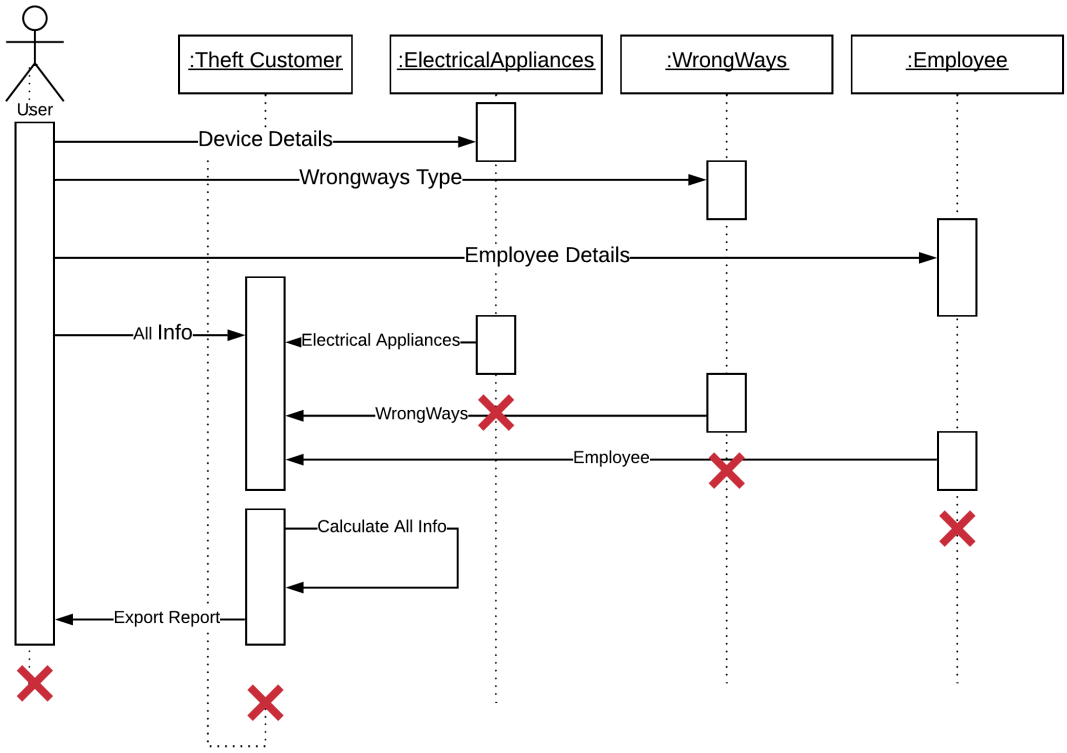

Figure 3. 4: Sequence diagram for NEA- Theft Customer Department

In this diagram, device details, wrongways type, and employee details is sent to the corresponding object namely ElectricalAppliances, WrongWays, and Employee respectively. After then, all customer info and other info pass to the theft customer and calculate the all operation on theft operation and finally generate the report in well format.

Chapter 4: Implementation and testing

4.1 Implementation

First, the user is logged in into the system. Then, Electrical Appliances stock is added by the user. Next, the Wrong Ways and employee stock is added by the user. After all, details are maintained into the system, the theft customer details are added during the addition operation all theft customer detail are auto calculate and create object to store the theft customer details. After all process export the report in well format for final result in the theft customer department of NEA.

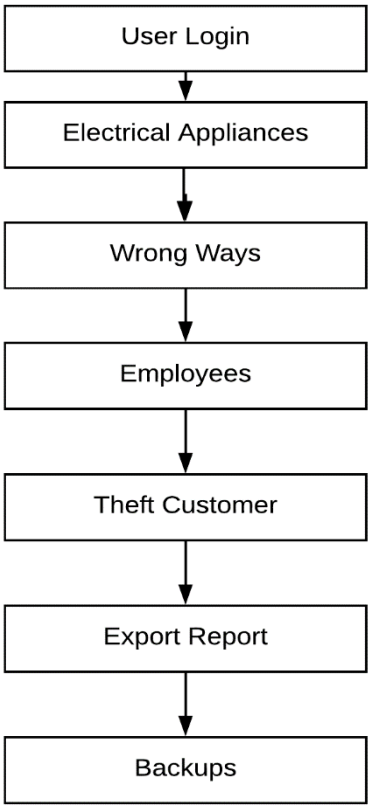

Figure 4. 1: Implementation model of Theft Customer System

4.2 Tools Used

4.2.1 HTML, CSS, Bootstrap, JavaScript, jQuery, Ajax for front-end design

We have used HTML for the structure of the system. CSS is used for the layout of this system. Bootstrap is used for creating a dashboard and also different login system, which helps to make the system more user-friendly and compatible with the various mobile devices. JavaScript is used for form validation, and it also simplifies user application

interactivity. jQuery is used for create dynamic html form and ajax is used to call the server for data request

4.2.2 PHP Laravel for back-end API design

Laravel is a free, open-source PHP web framework and intended for the development of web applications following the model–view–controller (MVC) architectural pattern and based on Symfony. Some of the features of Laravel are a modular packaging system with a dedicated dependency manager, different ways for accessing relational databases, utilities that aid in application deployment and maintenance, and its orientation toward syntactic sugar.

Laravel aims to make the development process a pleasing one for the developer without sacrificing application functionality. Happy developers make the best code. To this end, we've attempted to combine the very best of what we have seen in other web frameworks, including frameworks implemented in other languages, such as Ruby on Rails, MVC, and Sinatra.

4.2.3 MySQL for database.

Structure Query Language (SQL) is used for the database connectivity and entering data in the database. A database is created that contains different tables which are linked to each other.

4.4 Testing

Testing is done in every project after the completion of generating the project efficiently. Testing is an essential aspect of the project that is usually performed during every step so that errors can be quickly sorted out. If errors are present in some steps, then it is tested at a particular step during testing (Glenford J. Myers, 2015).

4.4.1 Browser Compatible and Responsiveness

Browser compatible is one of the testing that should be done on the webpage as all the users who is browsing the site doesn't use same browser and also the same size of devices. Thus, browser compatibility is one of the major issues in webpage development.

"**NEA - Theft Customer**" is compatible with mostly used browsers like Google Chrome, Mozilla Firefox, Safari, Brave, and Opera. Moreover, the site can be view from different sizes of laptop and desktop and also from the mobile devices.

4.4.2 Unit Testing

Unit testing is used to test the different module that is used in a project like user login module, receiver module, meter module, and consumer module.

Test Case ID	Test Scenario	Test Steps	Input Test data	Expected Result	Actual Result	Pass/ Fail
TC-1	Check Login activity with valid data	-Open admin login form -Fill all field of form with valid data -Click Login button	-email: admin@gmail.com -password: admin	Admin should get admin dashboard and perform all admin activity	As Expected	pass
TC-2	Check Login activity with invalid data	-Open admin login form -Fill all field of form with invalid data -Click login button	-email: abcd@gmail.com -password: password123	Admin should not get admin dashboard and redirect in login page	As Excepted	Pass

Table 4. 1: Test Case for Admin Login

Test Case ID	Test Scenario	Test Steps	Input test data	Expected Result	Actual Result	Pass/Fail
TC-1	Addition activity with valid data	-Open Electrical Appliances form -Fill form with valid data -Click submit	-device_name: light -wat: 20 -deman_factor: 0.5 -load_factor: 0.5 -perate_perhour: 8 -perate_peryear: 365	Electrical Appliances added successfully	As expected	pass
TC-2	Edition Activity With valid data	-Click Electrical Appliances edit button -Modify Valid Data	-device_name: light -wat: 20 -deman_factor: 0.5 -load_factor: 0.5	Faculty updated successfully	As expected	pass

			- perate_perhour: 8 -perate_peryear: 360			

Table 4. 2: Test Case for Electrical Appliances

Test Case ID	**Test Scenario**	**Test Steps**	**Input test data**	**Expected Result**	**Actual Result**	**Pass/Fail**
TC-1	Addition activity with valid data	-Open Employee form -Fill form with valid data -Click submit	- wrongways_type: kasur	Wrong Ways added successfully	As expected	pass
TC-2	Edition Activity With valid data	-Click Employee edit button -Modify valid data	- wrongways_type: kasur1	Wrong Ways updated successfully	As expected	pass

Table 4. 3: Test case for Wrong Ways Module

Test Case ID	**Test Scenario**	**Test Steps**	**Input test data**	**Expected Result**	**Actual Result**	**Pass/Fail**
TC-1	Addition activity with valid data	-Open theft_customer form -Fill form with valid data -Click submit	-customer_info: customer_details -meter_info: meter_details - electrical_appliances: electrical_appliances -wrong_ways: Kasur - house_type: house details -sil_bibaran: bibaran_details - elctrical_loss_evaluation: elctrical_loss_evaluation details -witness: witness details -date: 2076/11/4	Theft customer added successfully	As expected	pass

			- add_by: admin - edit_by: admin			

Table 4. 4: Test case Theft Customer Module

Test Case ID	Test Scenario	Test Steps	Input test data	Expected Result	Actual Result	Pass/Fail
TC-1		-Click Backup button		Backup successfully	As Expected	Pass
TC-2	Restore With valid backup file	-Click Restore button	-sql_file	Restore Successfully	As Expected	Pass

Table 4. 5: Test Case for Backups Module

4.4.3 Integration Testing

The system was tested again to know whether it is functioning properly or not after integration. The different modules of this project have undergone integration testing while being merged. The components that passed the unit testing were integrated and new set of test cases were generated and tested on integrated component.

4.4.4 System Testing

System testing enables the developer access how end user interface with the system. NEA-Theft Customer Department was tested with large number of theft customer, electrical appliances, employees and wrong ways details under various scenario. All these records were taken from Tulsipur Distribution Center relevant to this project. System testing confirmed that the proposed system is able to eliminate the shortcomings of the current system preserving data integrity due to the accuracy, consistency and timeliness of export report.

Chapter 5: Conclusion and Future Enhancement

5.1 Conclusion

The internship in Sathi Soft Pvt. Ltd. has provided a great opportunity to enhance knowledge and skills. It helped author to gain the experience of working in real and practical field and most importantly working in team. Moreover, it presented an opportunity to work in the project related to author interest and specialization. The main objective of the internship is learning the things that is necessary to get yourself into the real field of work. This internship has enhanced author knowledge and skills. It has given author the opportunity to understand this industry and how the work is actually done. To conclude, author found that the internship was very beneficial as a part of development of career and the experience gained through this would be helpful and beneficial for the future opportunities.

NEA-Theft Customer Department is designed to automate information gathering and report generation process of Theft Customer Department of electricity distribution center authorized under Nepal Electricity Authority (NEA). Theft Customer Department is concerned with theft customer for theft report of electricity. It is actually called fine of theft electricity of Nepal. This system handles the theft customer theft report.

5.2 Lesson Learnt

Internship represents a cross-over point between universities and career that facilitates learning opportunities outside the classroom in order to implement the theory of the classroom into the real world. After the completion of this system, my internship was completed then learned and gained more knowledge of web development and design. Some of the lessons that I have learnt from the internship are:

- Working cooperatively on the office and team environment
- Practical knowledge of real world system is more understandable and rememberable than theoretical knowledge
- Enhance the confidence regarding the abilities
- Importance of data collection and requirement analysis primarily and secondarily
- Importance of time and deadline for specific project
- Development of effective websites according the client's requirements

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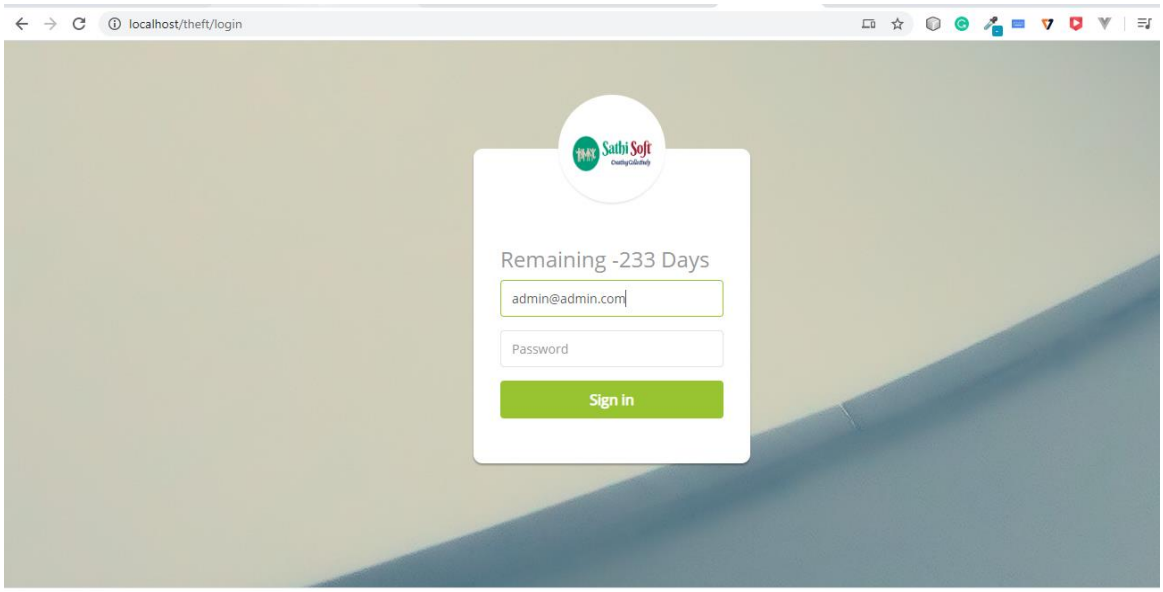
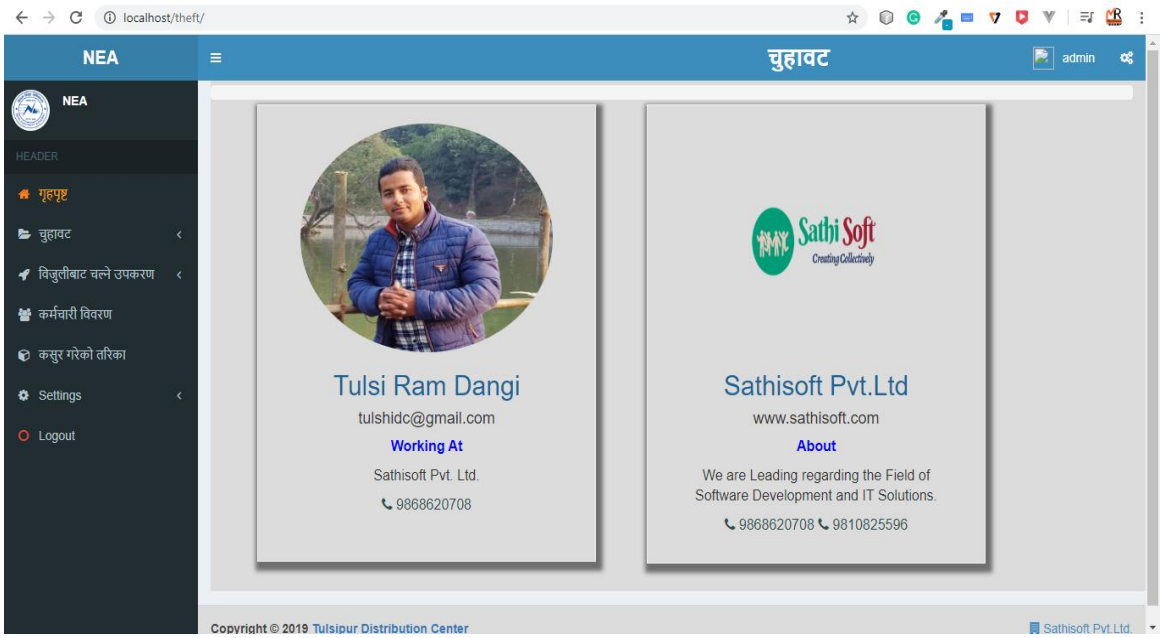
Appendix A Screen Shots

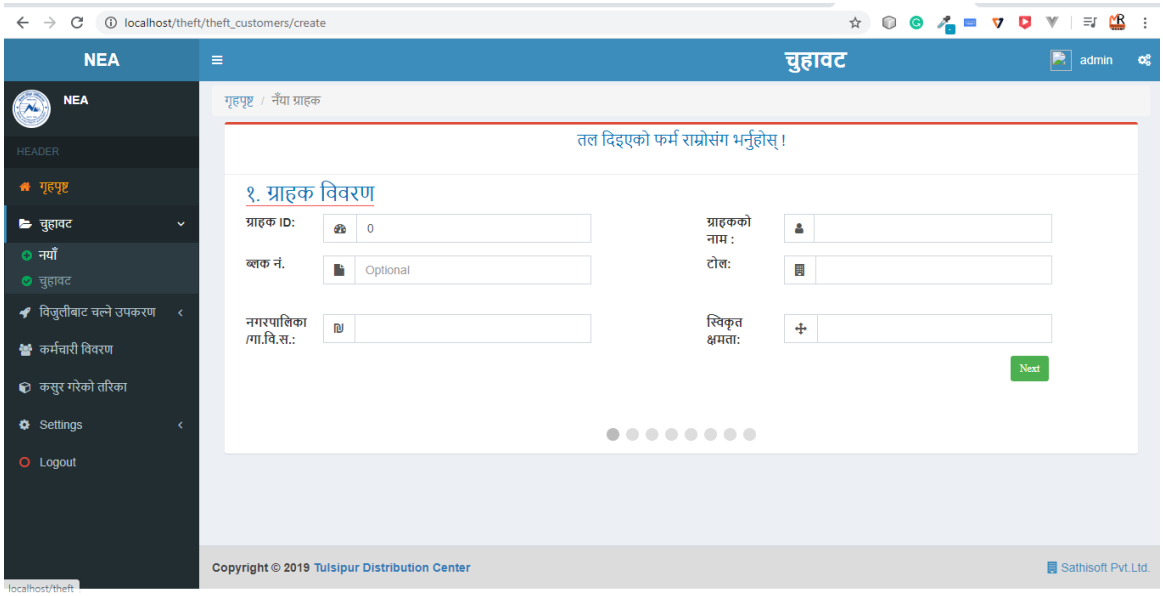
A.1 Login Page

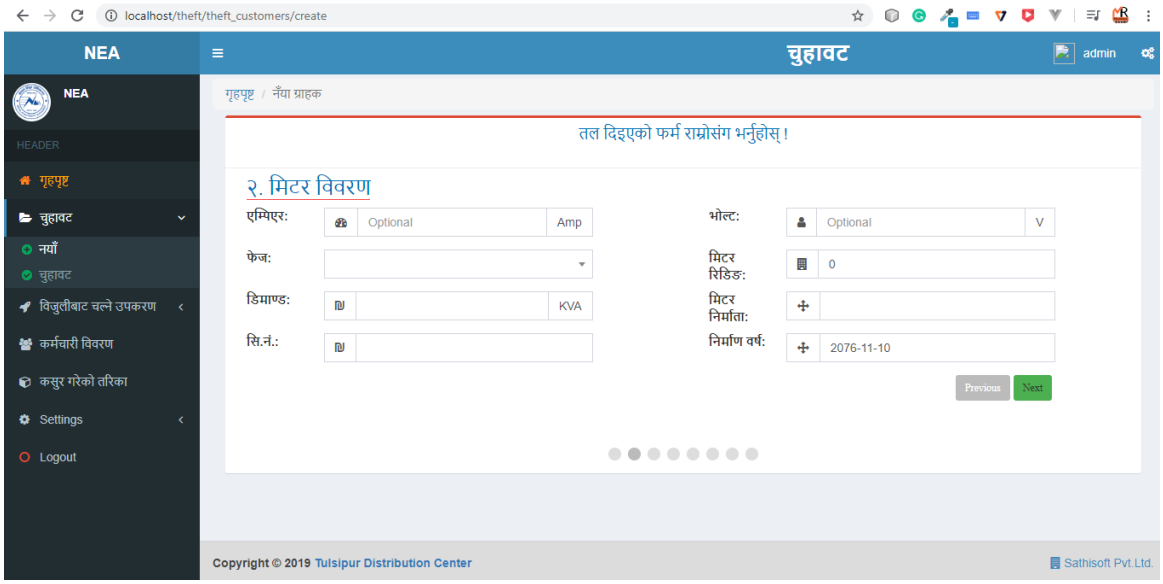


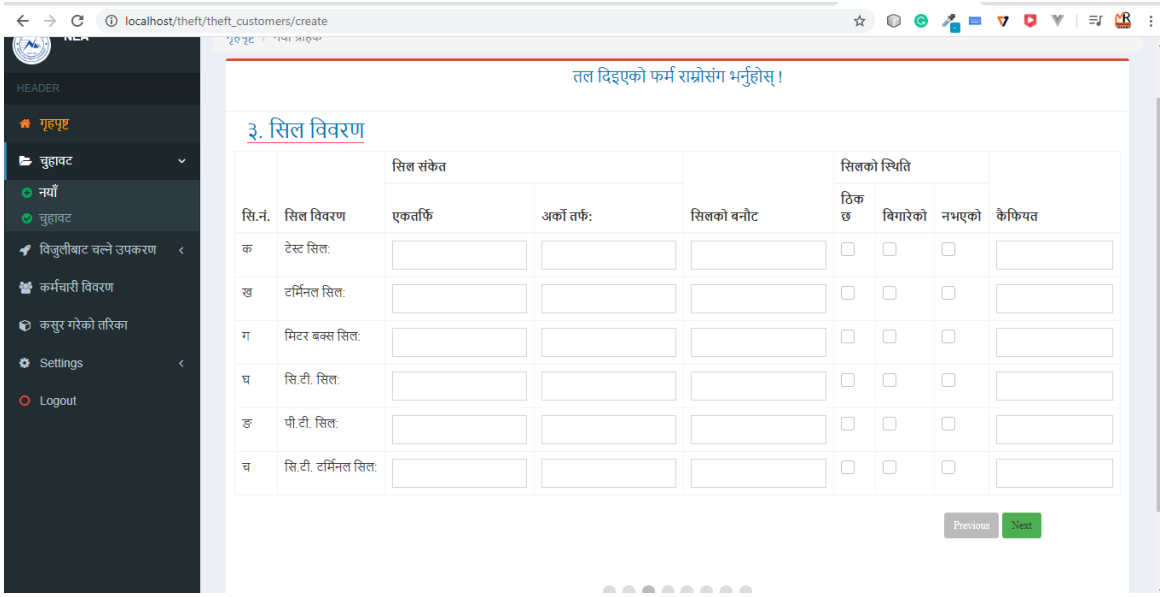
A.2 Dashboard

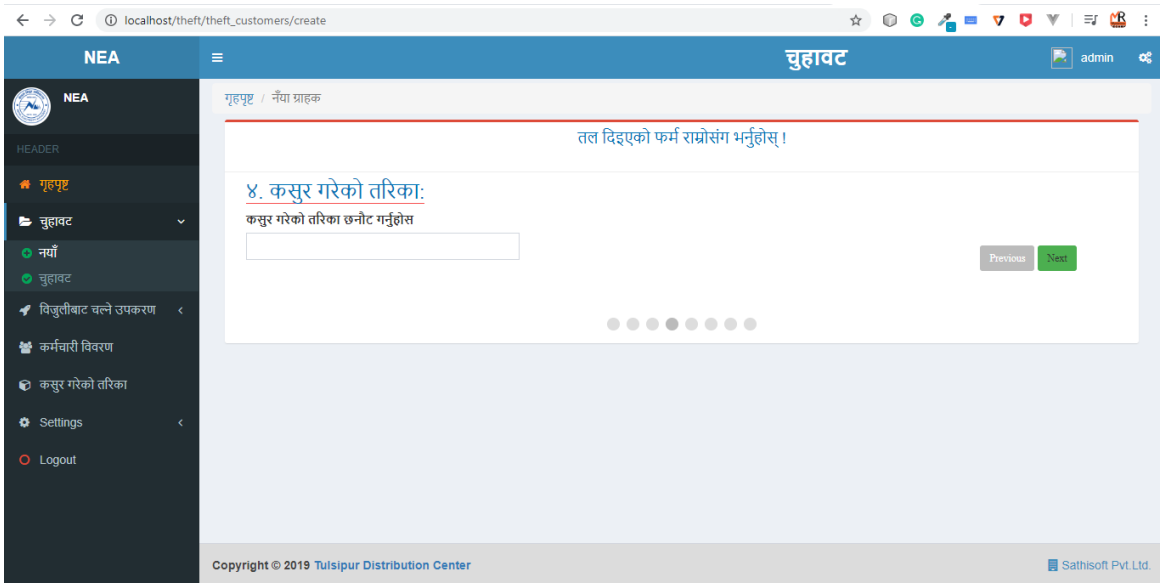


A.3 Theft Customer Form





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NEA
चुहावट
admin
NEA
HEADER
गृहपृष्ठ
चुहावट
नयाँ
चुहावट
बिजुलीबाट चल्ने उपकरण
कर्मचारी विवरण
कसुर गरेको तरिका
Settings
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तल दिइएको फर्म राम्रोसंग भर्नुहोस् !
४. कसुर गरेको तरिका:
कसुर गरेको तरिका छनौट गर्नुहोस
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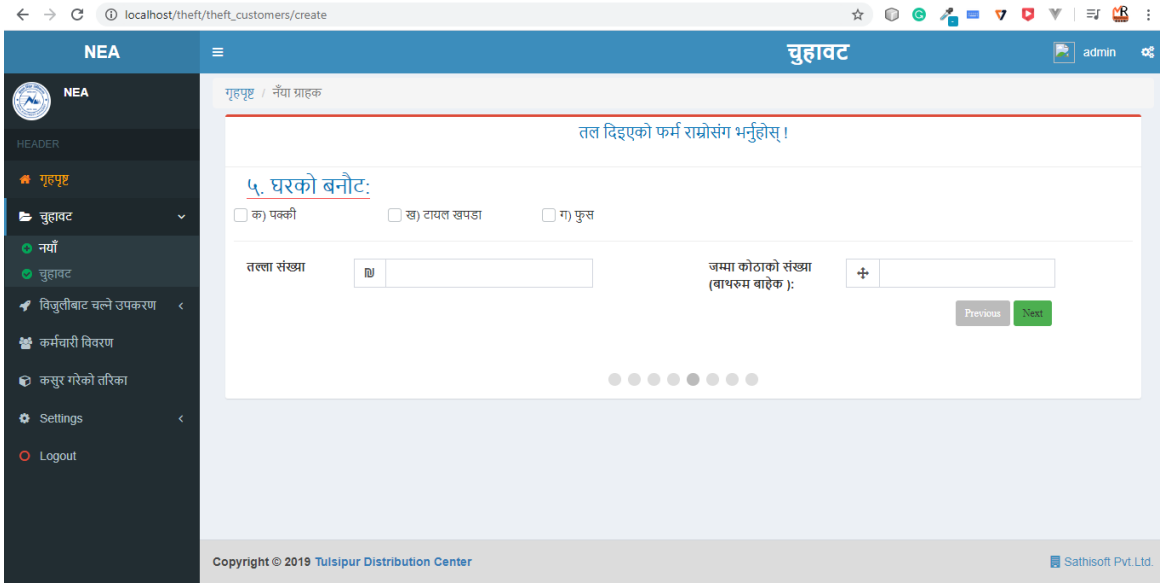
Copyright © 2019 Tulsipur Distribution Center
Sathisoft Pvt.Ltd.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कर्मचारी विवरण
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५. घरको बनौट:
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ख) टायल खपडा
ग) फुस
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जम्मा कोठाको संख्या (बाथरुम बाहेक):
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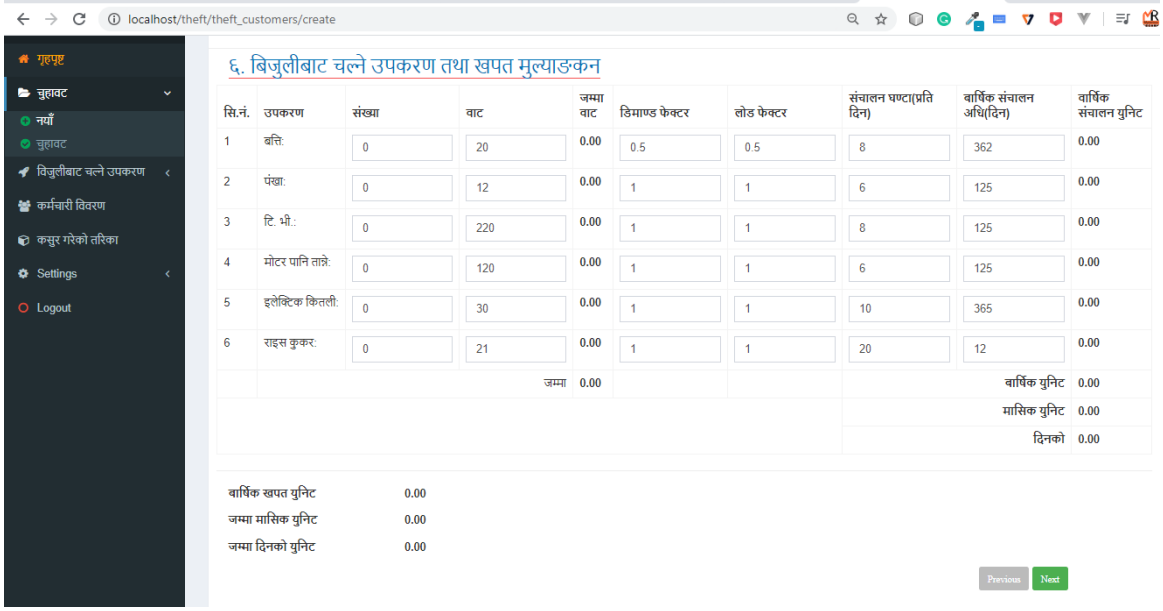
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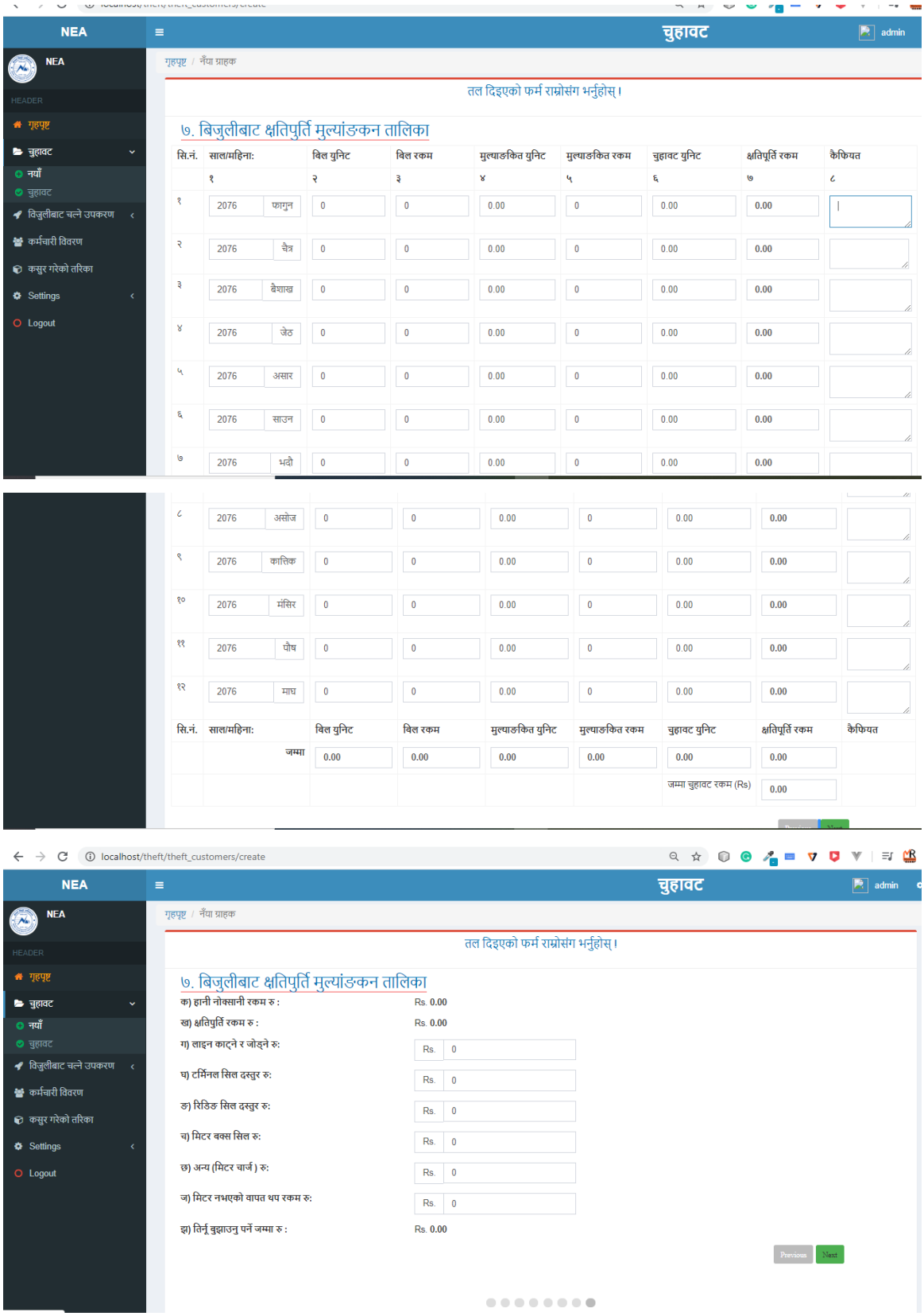
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बिजुलीबाट चल्ने उपकरण
कर्मचारी विवरण
कसुर गरेको तरिका
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Logout
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७. बिजुलीबाट क्षतिपुर्ति मुल्यांङकन तालिका
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बिल रकम
मुल्याङकित युनिट
मुल्याङकित रकम
चुहावट युनिट
क्षतिपूर्ति रकम
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चुहावट
admin
NEA
HEADER
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चुहावट
बिजुलीबाट चल्ने उपकरण
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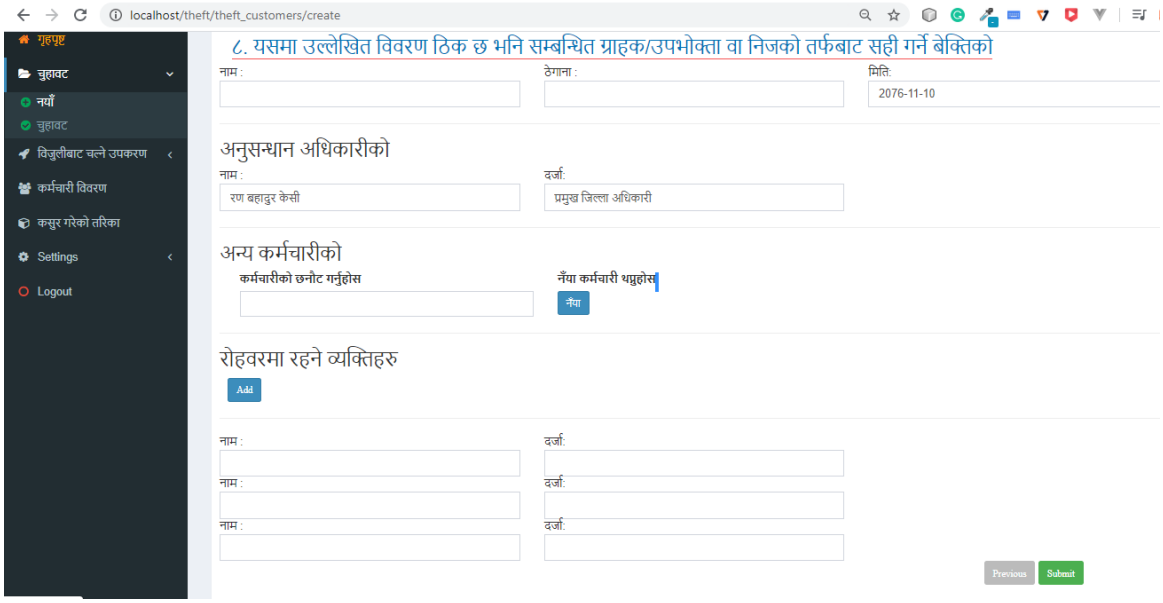

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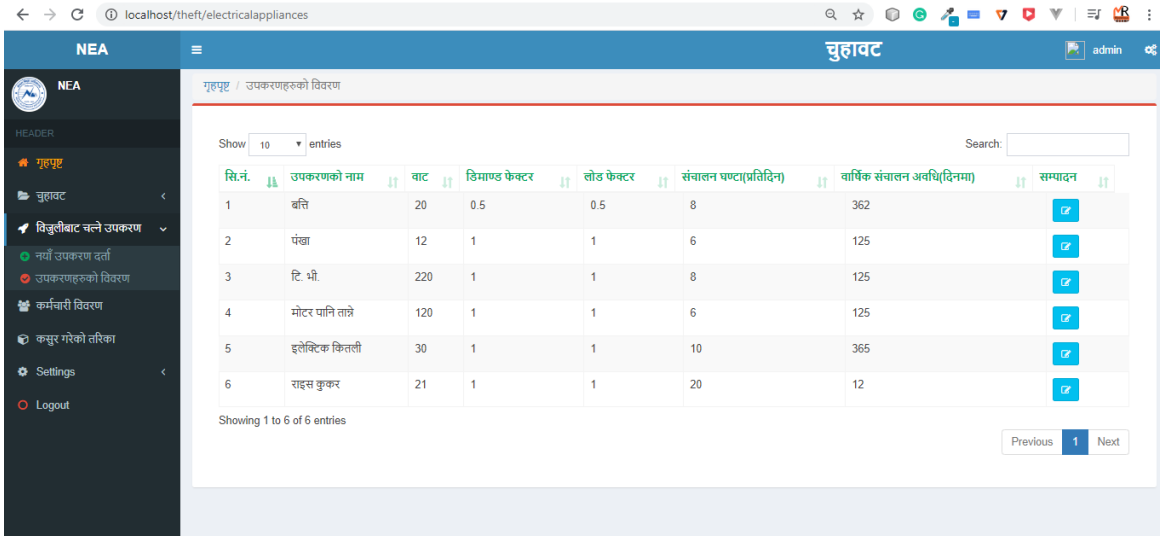

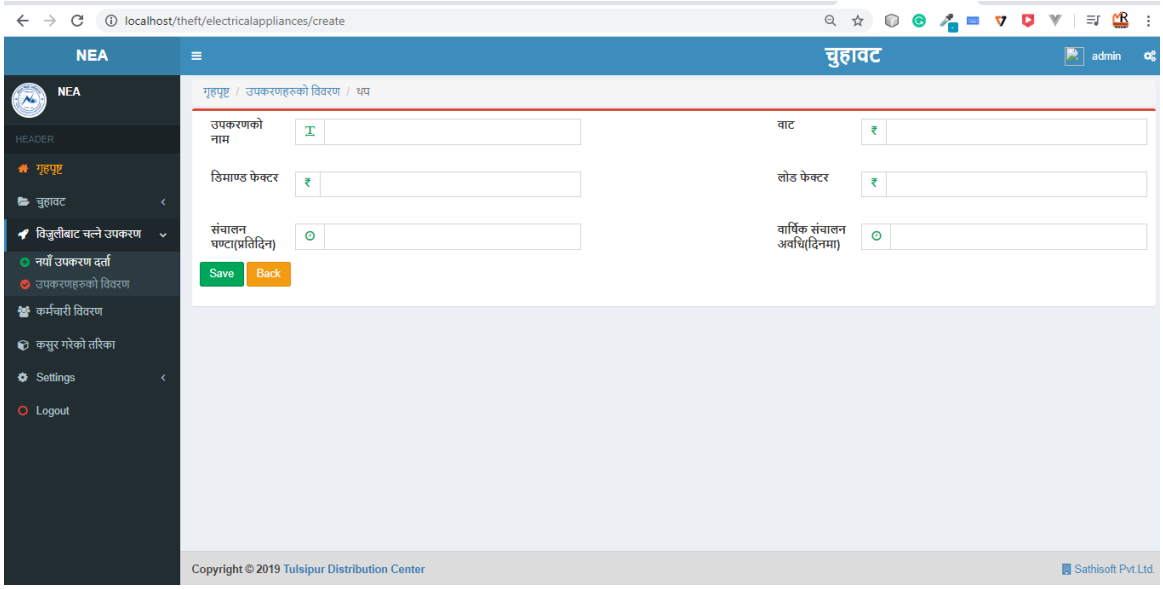

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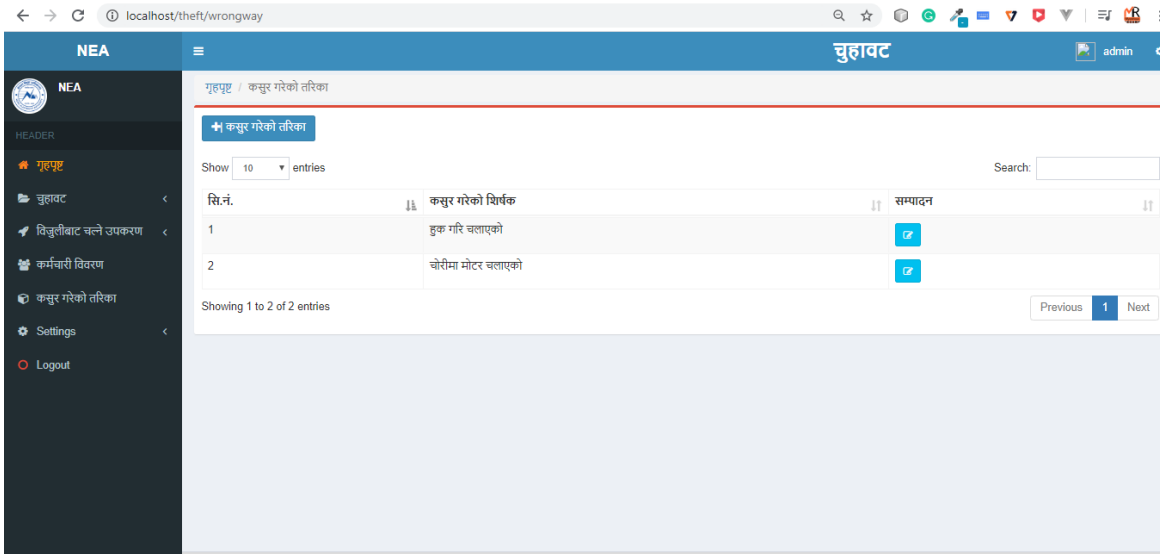
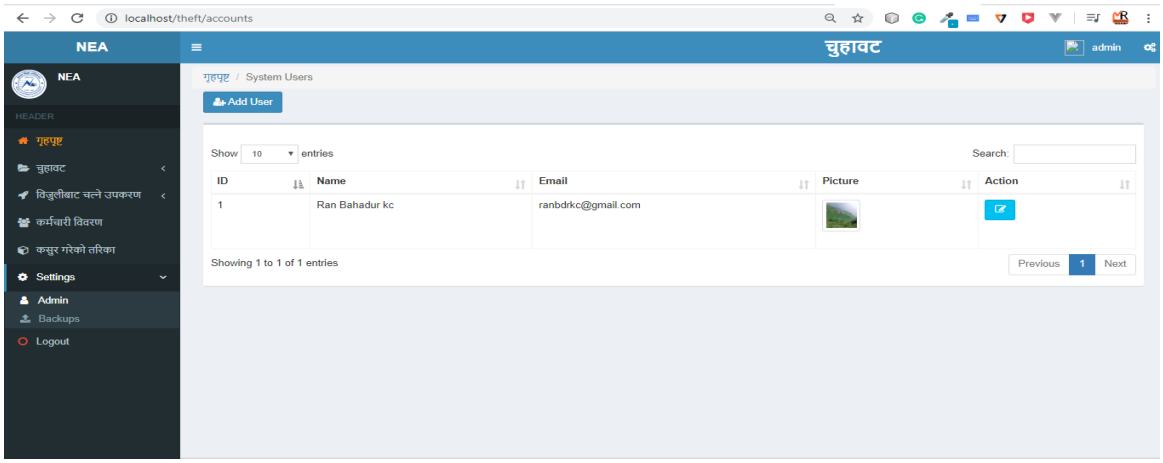


A.6 Employee Page

A.7 Staff Page



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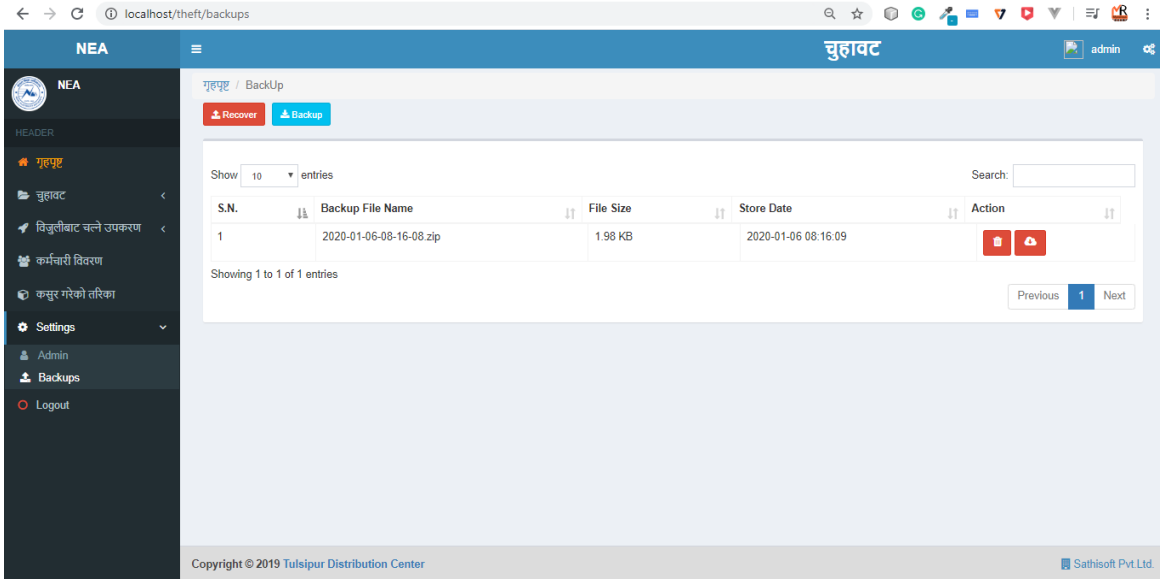

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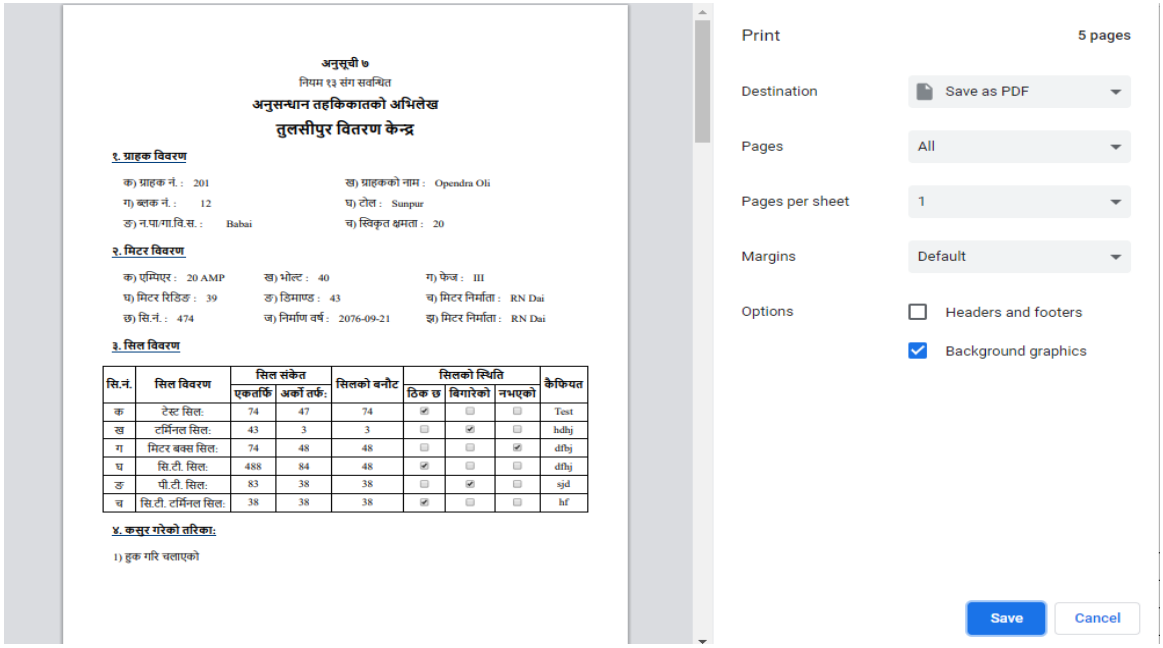

अनुसूची ७

नियम १३ संग सम्बन्धित

अनुसन्धान तहकिकातको अभिलेख

तुलसीपुर वितरण केन्द्र

१. ग्राहक विवरण

क) ग्राहक नं. : 201 ख) ग्राहकको नाम : Opendra Oli

ग) ब्लक नं. : 12 घ) टोल : Sunpur

ङ) न.पा/गा.वि.स. : Babai च) स्विकृत क्षमता : 20

२. मिटर विवरण

क) एम्पिएर : 20 AMP ख) भोल्ट : 40 ग) फेज : III

घ) मिटर रिडिङ : 39 ङ) डिमाण्ड : 43 च) मिटर निर्माता : RN Dai

छ) सि.नं. : 474 ज) निर्माण वर्ष : 2076-09-21 झ) मिटर निर्माता : RN Dai

३. सिल विवरण

सि.नं.	सिल विवरण	सिल संकेत		सिलको बनौट	सिलको स्थिति			कैफियत
		एकतर्फि	अर्को तर्फ:		ठिक छ	बिगारेको	नभएको	
क	टेस्ट सिल:	74	47	74	☑	☐	☐	Test
ख	टर्मिनल सिल:	43	3	3	☐	☑	☐	hdhj
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ङ	पी.टी. सिल:	83	38	38	☐	☑	☐	sjd
च	सि.टी. टर्मिनल सिल:	38	38	38	☑	☐	☐	hf

४. कसुर गरेको तरिका:

1) हुक गरि चलाएको