



**Tribhuvan University**  
**Faculty of Humanities and Social Science**  
**Online Banking System**  
**A Project Report**

**Submitted to:**  
**Department of Computer Application**  
**Pascal National College**

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# **Chapter 1 : Introduction**

## **1.1 Introduction**

As we know that, An “Online Banking System” is a digital platform that allows the users/customers to access and manage their financial accounts over the internet. It provides a convenient way for users to perform various banking transactions without physically visiting a bank branch.

Online Banking System is a digital platform that enables individuals to conduct various financial transactions and manage their accounts over the internet. This system provides users with the convenience of accessing banking services from the comfort of their homes or on-the-go through mobile devices. Users can view account balances, access transaction histories, transfer funds between accounts, and pay bills electronically.

Security features such as multi-factor authentication and encryption are implemented to ensure the confidentiality and integrity of user data. Mobile banking applications further enhance accessibility, allowing users to perform banking tasks using smartphones and tablets.

Overall, an online banking system streamlines financial processes, offering a range of services including account management, bill payments and fund transfers while adhering to regulatory standards and providing robust customer support.

## **1.2 Problem Statement**

In the context of Nepal, the internet and online banking systems face a myriad of challenges that contribute to their limited accessibility and effectiveness. One major hurdle is the limited internet penetration, particularly in rural and remote areas, where users encounter difficulties accessing online banking services due to poor connectivity.

Additionally, low levels of digital literacy present another obstacle, making the online banking process intimidating for some users. Security concerns further impede the system's functionality, with risks ranging from phishing attacks to identity theft and data breaches. Inadequate encryption and weak authentication methods exacerbate these risks, making online transactions more vulnerable than traditional methods.

A crucial factor contributing to the challenges is the lack of trust in online banking systems, stemming from worries about data privacy, security breaches, and the potential for financial fraud. To overcome this, transparent communication, robust security measures, and consistent regulatory compliance are essential to reassure users. Lastly, customer support challenges, including language barriers, limited accessibility in remote areas, and varying digital literacy levels, add another layer of complexity to the overall effectiveness of online banking in Nepal. Addressing these issues requires a holistic approach that encompasses infrastructure development, educational initiatives, and regulatory improvements.

### **1.3 Objectives**

- To develop a system that helps to create and manage accounts.
- To develop a system that consists of functionalities like payment, balance inquiry and view statement.
- To develop a system that helps to transfer funds between accounts.

### **1.4 Scope**

- This system will incorporate mobile accessibility features, ensuring users can seamlessly access and manage their banking services.
- This system will consist of a user-friendly interface, especially for the people with limited digital literacy.
- This system will design and implement some of the core functionalities such as user registration, account creation and basic account management.

### **1.5 Limitations**

- The system is only from the client side only.

## **Chapter 2 : Background Study and Literature Review**

### **2.1 Background Study**

Online banking systems have revolutionized the way customers interact with their financial institutions, offering unparalleled convenience, accessibility, and efficiency. Traditionally, banking transactions required customers to visit physical branches during business hours, often leading to long wait times and limited flexibility. However, with the advent of online banking, customers now have the freedom to manage their finances anytime, anywhere, through secure digital platforms.

Online banking offers a range of benefits. One of the primary advantages is the ability to perform a wide range of financial transactions without the need to visit a physical branch. Whether it's checking account balances, transferring funds between accounts, paying bills, or applying for loans, online banking provides customers with a convenient and efficient way to manage their money.

## **2.2 Literature Review**

Online banking has become an integral part of modern banking services, transforming the way customers interact with financial institutions. This literature review aims to provide an overview of key themes and findings in the existing body of research related to online banking systems. The review will focus on technological advancements, security measures, user experience, and recent developments in the field [1].

For this project, we conducted an analysis of a few relevant websites, i.e Nepal Bank . These websites offer a similar feature set and functionalities . As part of our research, we actively engaged with these websites as a user to identify their area of weakness and their strength. By assuming the user perspective, we found out the valuable understanding of the expectations and requirements of a high quality online bank management system.

According to the source, Nepal Bank, it has every function like this project but the system hasn't facilitated a good user interface which makes users not want to visit again.

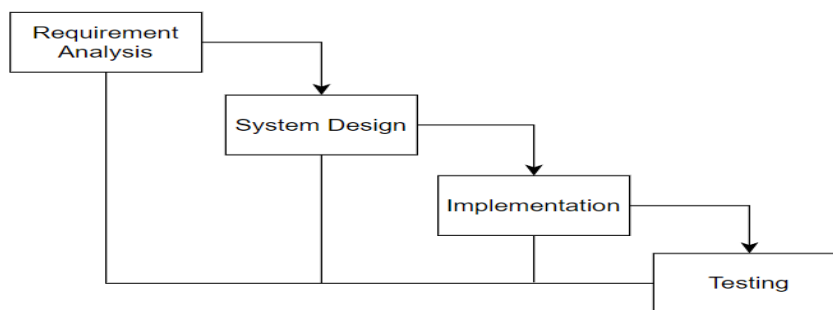
A study about e-banking over 1999–2006 shows that the application of e-banking can improve banks' performance in terms of the growth in assets, reduction in operating expenses and portfolio enhancement [2]. Even in the 1990s, Sraeel (1996) emphasizes that creating virtual banking will not only create a new service delivery channel, but also lead to value creation to both banks and customers. AmatoMcCoy further argues that customers will be attracted to e-banking when the advanced e-banking services like e-transfer and e-bill options are available.

Today, the banking system in the country has become so technologically advanced that Almost all banking services are delivered through electronic platforms. Electronic banking in North Macedonia has a relatively recent history of its development [3].

## Chapter 3: System analysis and Design

### 3.1 System analysis

This project will be done by using the Waterfall Model with additional development. It includes a series of starting with requirement analysis, design, implementation and testing. During requirement analysis, all the functional and nonfunctional requirements are analyzed and the system is developed according to the requirement then designing of the system is carried out. After the design process, implementation as well as coding and development part is started. Then after integrating the system the testing part is done.



**Fig 1: Waterfall System**

#### 3.1.1 Requirement Analysis

##### I. Functional Requirement

- Users should be able to register online while providing necessary information.
- Users should be able to create, view and manage their bank accounts.
- Users should be able to sign in with passwords.
- The system should support functions like fund transfer, online payment checking balance, updating personal information.
- Admin should be able to manage and authenticate customer information and accounts.

## **II. Non-functional Requirement**

- The system should be available 24 hrs of the time.
- The system should be compatible with the latest version of popular browsers, including Opera, Chrome and Edge.
- The system should be able to handle multi-user connections during peak hours.
- Users should be able access their account after successful authentication.

### **3.1.2 Feasibility Analysis**

#### **I. Technical**

The technical feasibility of implementing an online banking system in Nepal is crucial taking into account factors such as availability, reliability and speed especially in remote or rural areas.

#### **II. Operational**

By addressing the operational feasibility considerations like regulatory compliance, training and capacity building and risk management, one can gain a comprehensive understanding of the challenges and opportunities associated with implementing an online banking system.

#### **III. Economic**

Conducting an economic feasibility study for implementing an online banking system in Nepal involves evaluating the financial viability and potential economic benefits of the proposed initiative. We should also study about the comprehensive understanding of the financial implications, return on investment and broader economic contributions of introducing an online banking system

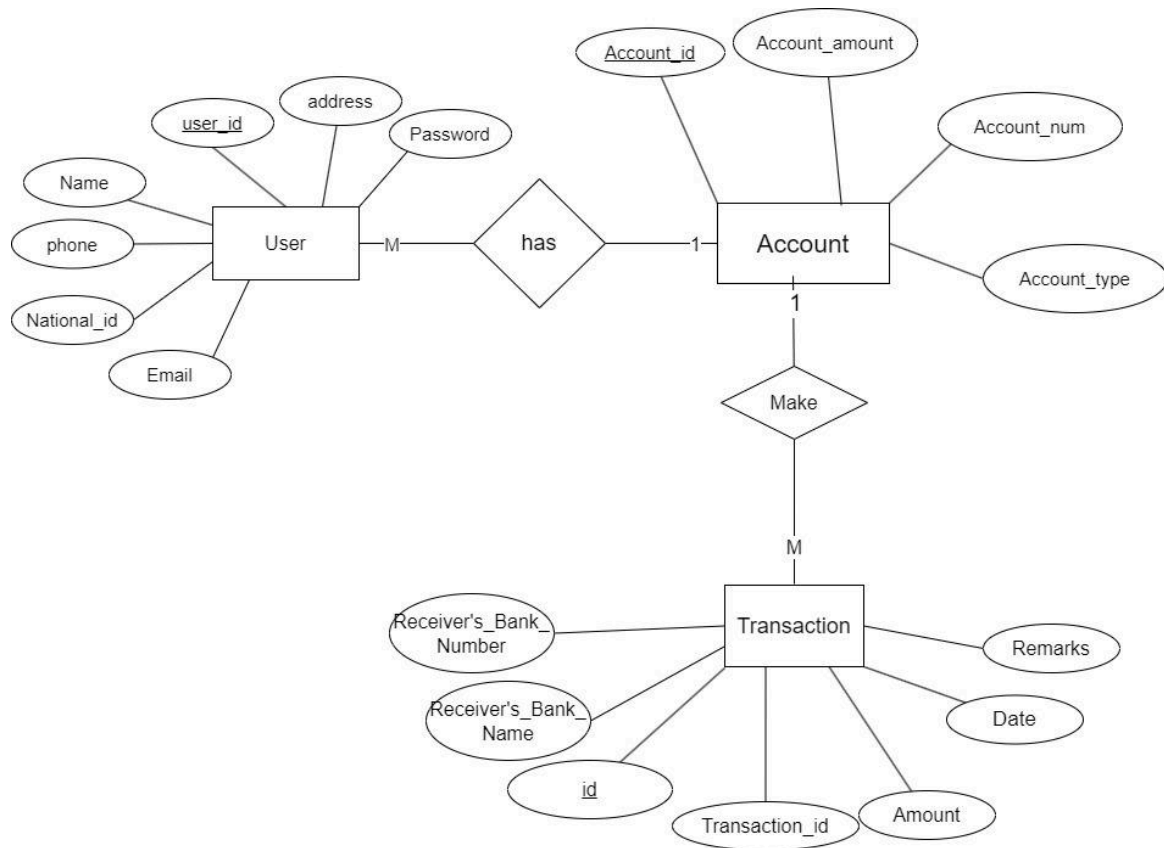
#### **IV. Schedule**

Schedule feasibility analysis consists of creating a detailed project schedule from development to implementation. It defines key milestones and deadlines. It ensures the project resources like developers, tester are available.



### 3.1.3 Data Modeling (ER diagram)

The Entity relationship diagram of different entities and their relationship are presented below.



**Fig 2: ER-Diagram of Online Banking System**

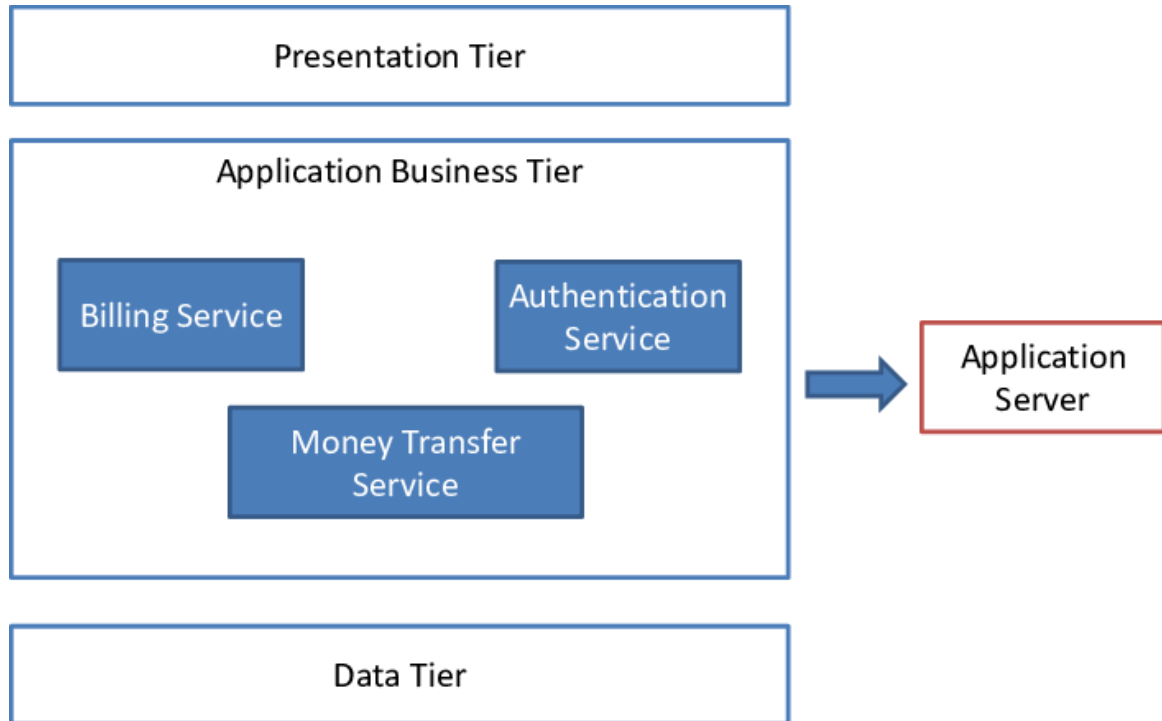
There are three entities for the eDHAN online banking system : User, Account and Transaction. User has attributes like user\_id, name, address, phone, National\_id, Email, password whereas user\_id remains the primary key. Account entities hold attributes like account\_id, account\_amount, account\_num, account\_type. Transaction entity holds attributes like Receiver's Bank Number , Receiver's Bank Name, id, Transaction\_id, Amount, Date, Remarks.

### 3.2 System Design

To realize the different functional requirement of the system in graphical form, different design diagram of the systems has been prepared which are as follows:

### 3.2.1 Architectural Design

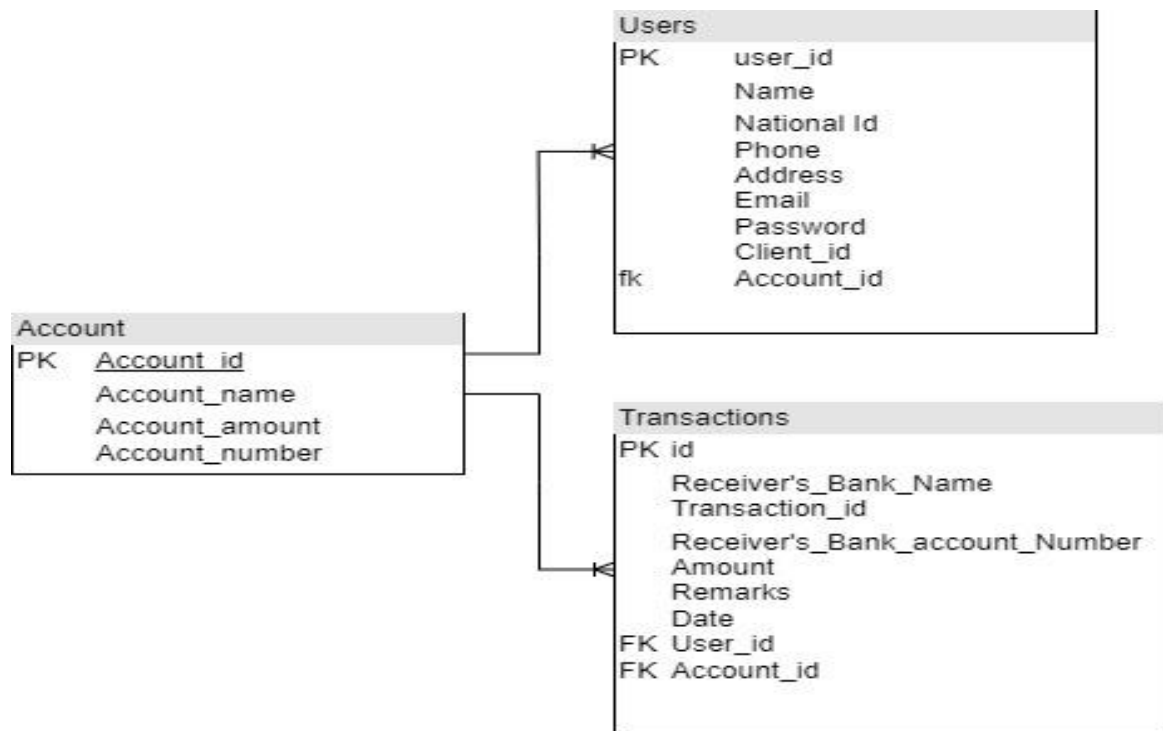
For this system, three tier architecture is used which includes presentation, server and database tier. In architectural design, basic structure is given.



**Fig 3: Architectural Design of Online Banking System**

### 3.2.2 Database Schema Design

The database schema design for the online banking system is represented below:

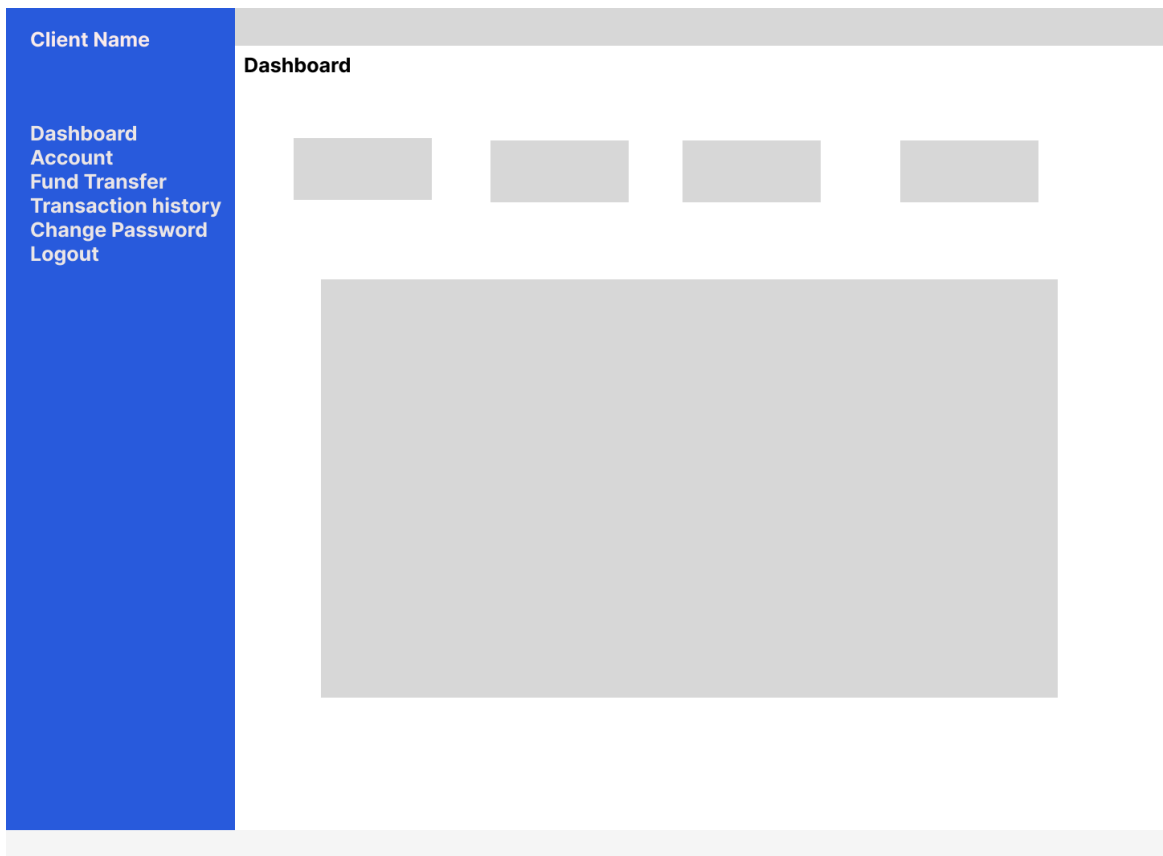


**Fig 4: Schema Design of Online Banking System**

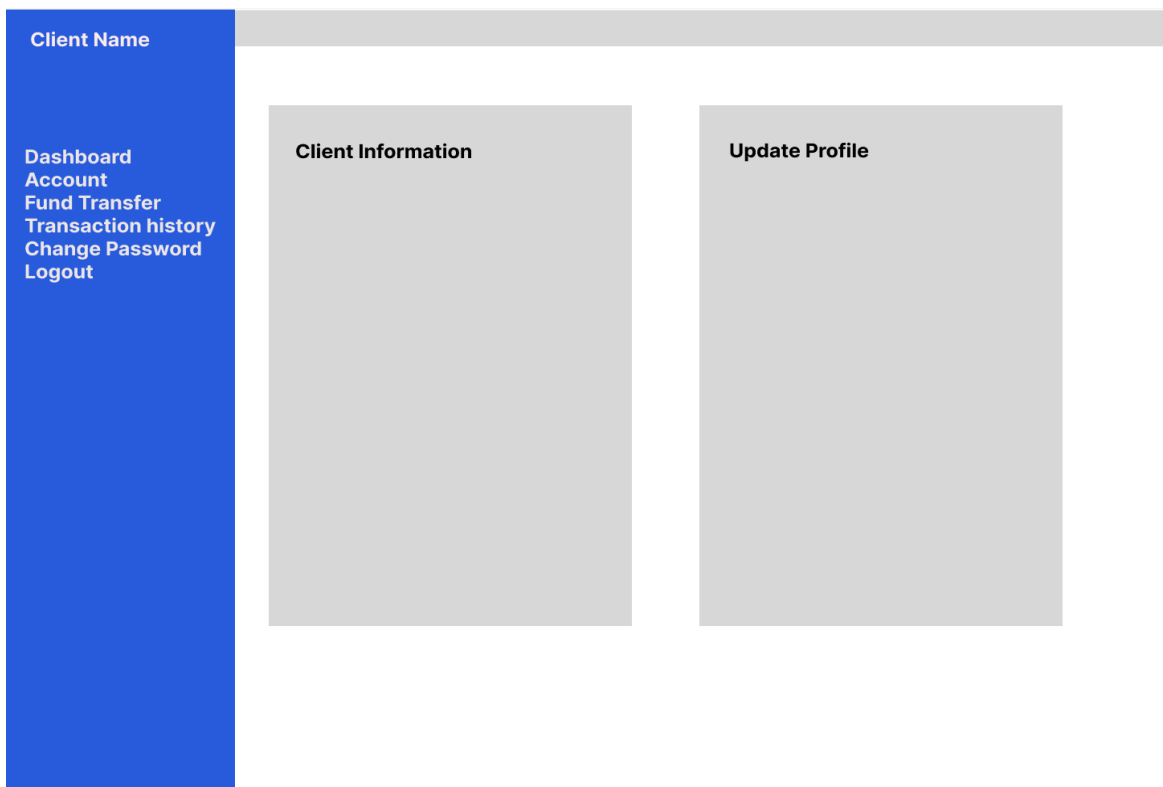
In the above schema, we can figure out there are three tables in the database: User, Account and Transaction. The User table has attributes like user\_id which is the primary key for the user table with data type int and other attributes like name, phone, National\_id, Email, address, password. Similarly in the next table Account it contains primary key account\_id as int data type and other attributes like account\_number, account\_amount, account\_type. Transaction table contains primary key id as int data type and other entities like Receiver's Bank Number, Receiver's Bank Name, id, Transaction\_id, Amount, Date, Remarks.

### 3.2.3 Interface Design

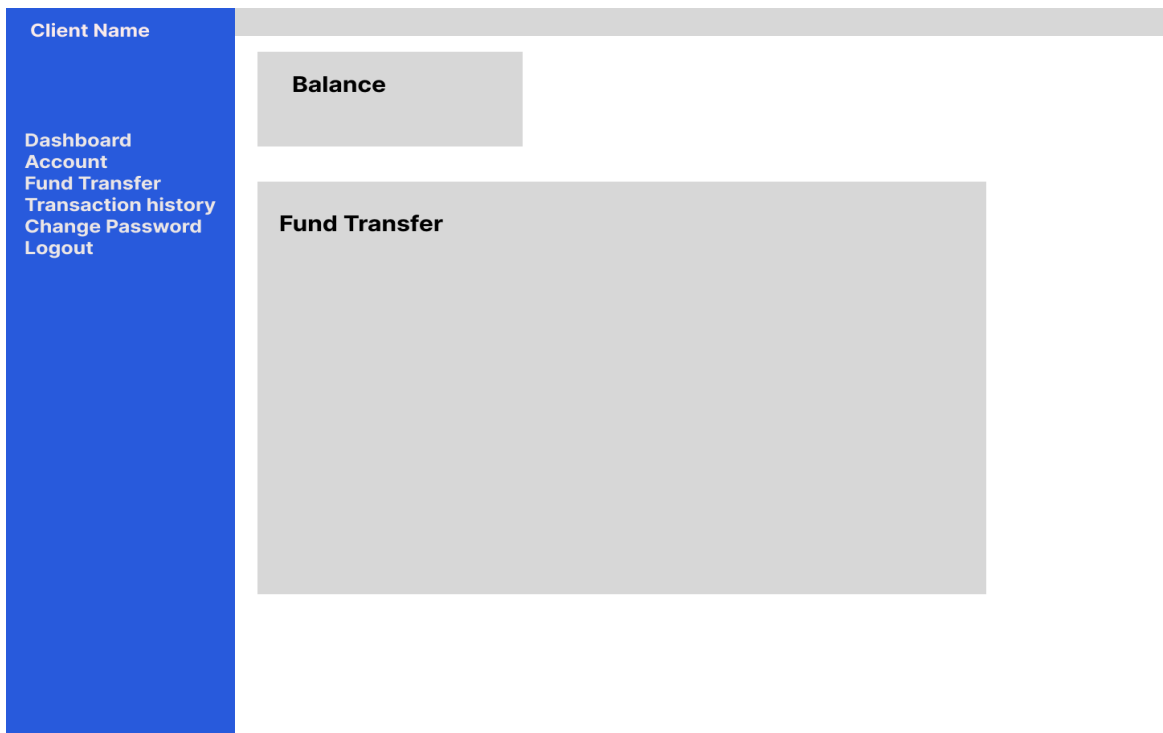
Interface design refers to the process of creating visual elements, interactions, and layouts through which users interact with a product or system. A simple wireframe of Online Banking system are represented below:



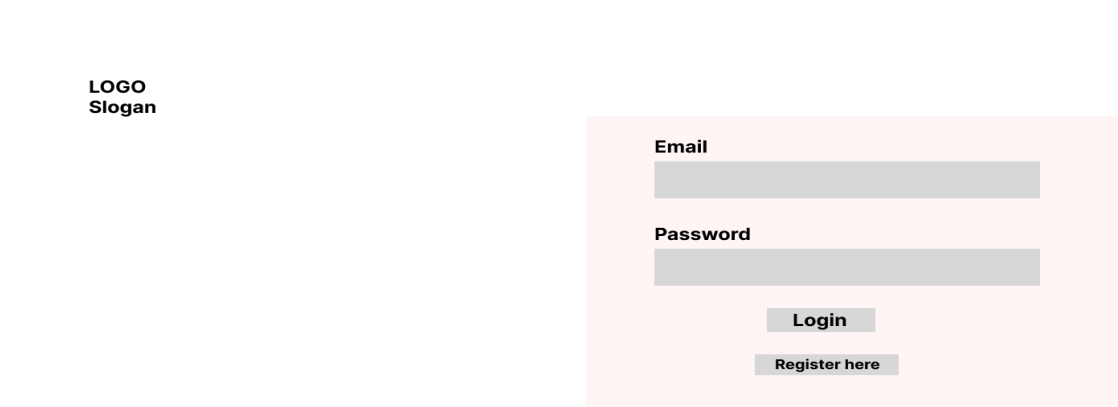
**Fig 5: Wireframe for Dashboard**



**Fig 6: Wireframe for Client side**



**Fig 7: Wireframe for Fund Transfer**



**Fig 8: Wireframe for login page**

## **Chapter 4 : Implementation and Testing**

### **4.1 Implementation**

#### **4.4.1 Tools Used**

Following are the tools and framework used for accomplishment this project:

##### **Front End Tools:**

- **HTML**

We used HTML to structure the layout of web pages, define the elements (such as buttons, forms, text fields, and images), and present information to users. We also used elements such as <form>, <input>, <select>, and <button> to create forms and capture user data.

- **CSS**

CSS is used for designing different tags of html. It is also used to design different components by the help of class and id. By using css, we can control the text color, font style, the spacing between paragraphs, sizing of columns, layout designs, and many more. CSS, or Cascading Style Sheets, is a crucial technology in web development that helps in enhancing the design and presentation of a system, especially web-based systems.

- **JavaScript**

JavaScript is used for client-side validation and to make dynamic, interactive and responsive web pages. It is used to add dynamic behavior to the webpage and add special effects to the webpage.

##### **Back End Tools:**

- **PHP**

PHP is used for the backend purpose and for making dynamic web pages. It is used for server-side scripting purposes to add connectivity to the database and also used to encrypt the data, validate the user data, confirm users to go to certain pages, login pages. It also includes add, update and delete the data from the database.

## **Server**

- **APACHE SERVER**

APACHE server is used to run php files and create fast and dynamic web pages.

## **Database**

- **MYSQL**

MySQL is used for storing all the information required to the database in Work Progress Tracker. It is used for performing CRUD operations such as create, delete and update data from the database as requested by the user.

## **Documentation Tools**

- **MS Office**

We have used MS Office for writing and editing the documentation of work progress tracker.

- **Draw.io**

This is used to generate diagrams for system analysis and design of Diagrams in order to save time since all components are available with drag and drop functions.

## **4.4.2 Implementation of Modules**

There are three major modules within the Online Banking System: User Registration, Account Management and Transactions.

### **1. User Registration**

The user authentication module handles user registration, login and logout process. User's registered with their email, password and other verifications. Login functionality for the registered users with md5 secure hashing. Logout process exits the user from the system.

## **2. Account Management**

The account management module allows users to view their account, manage existing accounts and change passwords. User can view account balance, transaction history, and personal information. They can change their passwords.

## **3. Transactions Module**

The Transactions module allows users to transfer the fund from one account to another. If two accounts are from the same bank transaction can be allowed whereas if not then it's not allowed to transfer funds.



## **Chapter 5 : Conclusion and Future Recommendations**

### **5.1 Conclusions**

After the successful completion of the project, this system will help the customers to create and manage their accounts. Also this system will help the customer like payment, balance inquiry and view statements. Customers can easily fund transfer with the help of this system. With the help of this project, we learned different skills like team working, technical skills, project management, problem solving as well as management of the time.