



Database Management Project CSE303

Final Report Group 35

Name	ID
Kawshik Rahman Kabbo	2022650
Istiak Rahman	2010151
Ashrafur Rahman Asem	2021771
Md.Al-Mahamudur Rahman Rafi	2022164
Muzahidul Islam	2010465
Fatema Akter Bonna	2022134

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CHAPTER 1: INTRODUCTION

A. BACKGROUND OF THE ORGANIZATION - LANKABANGLA:

LankaBangla Finance Limited embarked on its transformative journey in 1997, marking its inception as a pioneering joint-venture financial institution in Bangladesh. With a steadfast commitment to excellence and an innovative spirit, the organization established itself as a formidable player in the country's financial landscape. This journey began with the acquisition of a license from the Bangladesh Bank under the Financial Institution Act of 1993, reflecting its compliance with regulatory standards from the outset.

Multinational Collaboration: LankaBangla's foundation was solidified through strategic multinational collaboration, underpinning its dedication to global best practices and insights. This collaboration has infused the organization with diverse perspectives and expertise, enabling it to deliver comprehensive financial solutions to its clientele.

Integrated Financial Services: Over the years, LankaBangla has evolved into the forefront of integrated financial services in Bangladesh. Its service offerings span a wide spectrum, encompassing corporate financial services, retail financial services, CMSME (Cottage, Micro, Small, and Medium Enterprise) financial services, stock broking, corporate advisory, and wealth management services. This comprehensive suite of services reflects LankaBangla's commitment to catering to the diverse and evolving financial needs of both individuals and businesses.

Customer-Centric Focus: LankaBangla's enduring success is underpinned by its unwavering dedication to its customers. By prioritizing the needs and aspirations of its clients, the organization has fostered lasting relationships and built a reputation for personalized and responsive service.

B. BACKGROUND OF THE PROJECT - (LBS 1.0):

The project focusing on Lankabangla Securities and the creation of various security forms is likely an important initiative within LankaBangla Finance Limited, a licensed non-banking financial company in Bangladesh. Lankabangla Securities is likely a subsidiary or a specialized division of LankaBangla Finance Limited that deals with brokerage and investment services, specifically in the field of securities trading and investment.

The objective of the project appears to be centered around developing or updating various security forms used by Lankabangla Securities. These forms are crucial for facilitating different

processes related to securities trading and account management. Some of the key forms mentioned in the project include the Customer Account Information Form, Terms and Conditions for Opening a Brokerage Account, Application for Credit Facility, BO Account Opening Form, BO Account Nomination Form, Power of Attorney (POA) Form, Central Depository Bangladesh Limited (CDBL) Depository Account Form, Electronic Fund Transfer (EFT) Enrollment Form, and others.

Each form likely serves a specific purpose, such as gathering customer information, outlining the terms and conditions of brokerage account opening, enabling credit facility applications, establishing power of attorney arrangements, and registering accounts with Central Depository Bangladesh Limited (CDBL), among other functionalities.

The overall goal of the project is to ensure that the security forms are designed efficiently, comply with regulatory requirements, and provide a seamless and user-friendly experience for customers and clients. Additionally, the project might also focus on enhancing security measures to safeguard sensitive information and data.

The successful completion of this project will contribute to enhancing Lankabangla Securities' operational efficiency, compliance adherence, and customer satisfaction. By providing well-structured and comprehensive security forms, the company can streamline processes, mitigate risks, and foster trust among its stakeholders in the financial market of Bangladesh.

C. OBJECTIVE OF THE PROJECT

The project centered around Lankabangla Securities aims to achieve several critical objectives. Firstly, it seeks to enhance regulatory compliance by ensuring that all security forms meet the guidelines and requirements set by Bangladeshi authorities. Secondly, the project focuses on improving operational efficiency by streamlining the account opening, brokerage, and investment processes through well-designed and standardized security forms. It also prioritizes customer experience, aiming to provide user-friendly and easily understandable forms to enhance overall satisfaction.

Data security and privacy are key concerns, with robust measures put in place to protect sensitive customer information. Additionally, the project aims to facilitate credit facility applications, and simplify account nominations, and Power of Attorney arrangements. It also

includes seamless registration with the Central Depository Bangladesh Limited for efficient shareholding management. Enabling electronic fund transfers and complying with bylaws and value-added services are other objectives. Ultimately, the project endeavors to optimize documentation requirements for a smoother account management experience. By achieving

these objectives, Lankabangla Securities aims to strengthen its position as a trusted and reliable financial services provider in Bangladesh.

D. SCOPE OF THE PROJECT

The primary scope of the project is to design, develop, and standardize a comprehensive set of security forms for Lankabangla Securities. These forms will cover essential aspects such as Customer Account Information, Account Opening, Credit Facility Applications, Power of Attorney, BO Account Nomination, and more. Special attention will be given to ensuring that the forms are compliant with the relevant legal and regulatory requirements in Bangladesh. The project aims to enhance the overall user experience by making the security forms user-friendly and easily understandable. By streamlining the account opening, brokerage, and investment processes, the forms will contribute to improved operational efficiency. Additionally, robust data security measures will be implemented to protect sensitive customer information, fostering trust and confidence among clients. The seamless integration of the newly designed security forms with existing systems will be a crucial aspect of ensuring smooth implementation and efficient data management.

Thorough testing and validation will be conducted to ensure accuracy and functionality before deployment. Proper documentation and guidelines will be prepared to facilitate proper utilization of the forms by both employees and customers.

Gathering feedback from users will provide valuable insights for continuous improvement, enhancing the overall effectiveness of the security forms. If applicable, the project may include the integration of value-added services with specific forms to enhance customer benefits and options. By successfully addressing these aspects, the project will strengthen Lankabangla Securities' position as a trusted and reliable financial services provider in Bangladesh, contributing to operational excellence and customer satisfaction.

CHAPTER 2: REQUIREMENT ANALYSIS

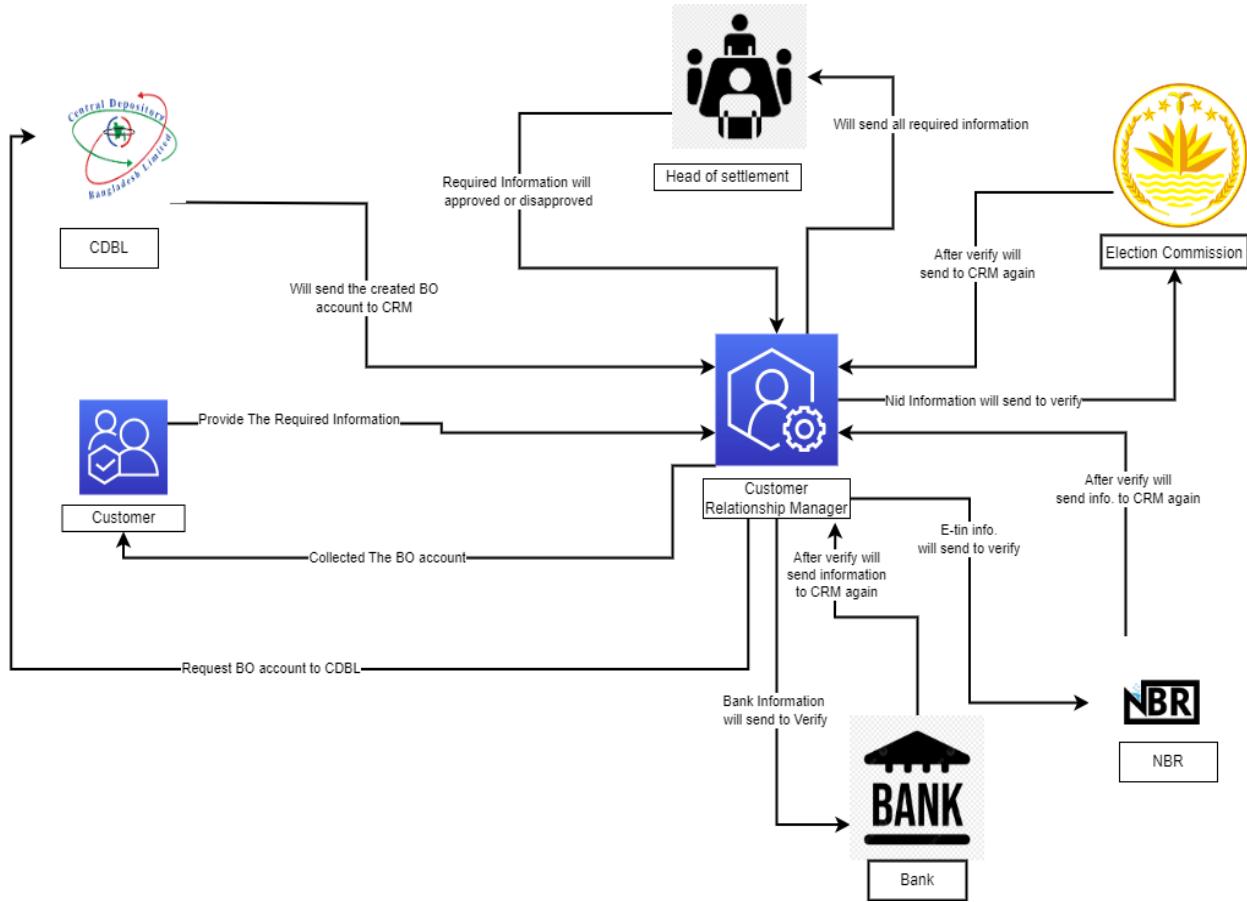
A. RICH PICTURE (AS IS)

In the LankaBangla Securities project, the stakeholders follow a coordinated process to ensure smooth operations. It begins with customers providing necessary information to Customer Relationship Managers (CRMs). These CRMs then transmit the gathered data to the Head of Settlement for review. Once reviewed and approved by the Head of Settlement, the information loops back to the CRM for further actions.

CRMs also facilitate the acquisition of BO (Beneficiary Owner) accounts from the Central Deposit Bangladesh Limited (CDBL). Upon creation, CDBL shares the BO account details with the CRM, completing this stage. If all the provided customer information is validated, the CRM hands over the BO account to the customer.

Throughout this journey, CRMs play a vital role, including providing detailed reports for analysis to the customers. Moreover, they collaborate with banks to verify customer bank information, ensuring accuracy. Additionally, CRMs liaise with the National Board of Revenue (NBR) for validation of the provided customer information.

Lastly, to guarantee comprehensive verification, CRMs seek endorsement from the Election Commission for customer National ID (NID) information. This intricate web of interactions and verifications ensures a streamlined process and enhanced customer experience within LankaBangla Securities.



B. SIX ELEMENT ANALYSIS (AS IS)

The Six Element Analysis to the existing customer support system, stakeholders gain a comprehensive understanding of its strengths and weaknesses. They can identify areas for improvement, such as streamlining communication channels, enhancing knowledge management, or fine-tuning response time targets. This analysis fosters a holistic perspective, enabling stakeholders to make informed decisions to optimize the support process and deliver exceptional customer experiences. Additionally, it encourages systems thinking, emphasizing the interconnectedness of the system's elements and the significance of considering the broader context in which the support system operates.

We can observe from the Rich Picture that there are seven main processes:

- 1. Customer Account Opening**
- 2. Trade Execution**
- 3. Transaction Settlement**
- 4. Data Backup and Security**
- 5. Customer Support**
- 6. Compliance and Regulatory Reporting**
- 7. Continuous Improvement**
- 8. Account Maintenance and Updates**

We may use six-element analysis to examine the influence of six factors in a process. The six elements are as follows:

- 1. Human**
- 2. Non-computing Hardware**
- 3. Computing Hardware**
- 4. Software**
- 5. Database**
- 6. Network and Communication**

Process	System Roles					
	Human	Non-Computing Hardware	Computing Hardware	Software	Database	Communication & Network
Customer Account Opening	Customer Relationship Manager: 1) Interacting with customers to collect necessary information for account opening	Document Scanners 1) Document scanners are used to convert physical documents, such as customer identification cards, address	Computers (Desktop/Laptop) 1) Computers are used to run various software applications and databases required for customer account	Customer Information Management Software 1) This software is used to manage and store customer information, including		Internal Communication Network 1) The internal communication network enables communication and data

		proofs, and application forms, into digital formats	opening and management	personal details, contact information, and identification documents		exchange among various departments and personnel involved in the account opening process within "Lankabangla Securities
	2) verifying customer identification and documentation	Signature Pads 1) Signature pads are used to capture and digitize customer signatures for documentation and verification purposes	Printers 1) Printers are used to generate account opening documents, agreements, receipts, and other important paperwork required for the account opening process	Document Verification and Scanning Software 1) This software is used to verify and scan customer identification documents and other required paperwork during the account opening process		Customer Communication Network 1) The customer communication network enables communication between the organization and customers during the account opening process

	3) Explaining the account opening process and requirements to customers.	Biometric Devices 1) Biometric devices are used for customer identity verification, adding an extra layer of security during the account opening process	Barcode Scanners 1) Barcode scanners are used to capture and input data from barcodes on customer identification documents and application forms	Compliance and Regulatory Software 1) This software is used to ensure compliance with relevant regulatory requirements during the account opening process.		Data connectivity 1) Data connectivity ensures seamless data transfer between different systems and databases involved in the account opening process
	Document Verification Officer:		Card Readers (e.g., Smart Card Readers)	Account Opening Workflow Software		
	1) Verifying the authenticity and accuracy of customer-provided identification documents and account opening forms		1) Card readers are used to read data from smart cards or chip-enabled cards that customers may use for identity verification or account access	1) This software is used to manage the overall account opening process, ensuring a smooth and efficient workflow from application submission to account activation		
	2) ensuring compliance with regulatory requirements.					

	Account Opening Officer:					
	1) Reviewing the completed account opening application					
	2) cross-referencing customer data with existing records					
	3) performing due diligence to prevent fraudulent activities.					
	Data Entry Specialist:					
	1) Entering customer account information into the database					
	2) setting up account details and preferences					
	3) generating unique account numbers					
	Account Opening Specialist:					
	1) Confirming the successful account					

	opening with the customer					
	2) providing account details					
	3) Explaining the next steps in the investment process					
	Customer Support Representative:					
	1) Assisting customers with any account opening issues					
	2) answering queries through phone or email, and ensuring a smooth and efficient account opening experience					
Trade Execution	Trading Specialist:	Telephone 1) Telephones are used for verbal communication between traders, customers, and relevant parties involved in the trade execution process	Trading Computers 1) Trading computers are specialized hardware devices used by traders to access trading platforms, execute trades, and monitor market data	Trading Platform Software 1) The trading platform software provides a user interface for traders to access the stock exchange, execute trade orders,		Internal Communication Network 1) The internal communication network enables communication and data exchange among various

				and monitor market data		departments and personnel involved in the trade execution process within "LankaBangla Securities
	1) Receiving trade orders from customers	Physical Trade Confirmation Slips	Server Systems 1) Server systems are powerful computers that store and manage data, processes, and applications required for trade execution	Order Management System (OMS) 1) The Order Management System is software that facilitates the end-to-end order processing and management		Customer Communication Network 1) The customer communication network enables communication between the organization and customers during the trade execution process
	2) validating order details	1) Physical trade confirmation slips are paper-based documents used to provide official confirmation of executed trades	Data Storage Devices 1) Data storage devices are hardware components used to store and retrieve trade-related information and historical data	Reporting and Analytics Software 1) Reporting and analytics software provides insights into trade execution performance		Data connectivity 1) Data connectivity ensures seamless data transfer between different systems and databases

				and market analysis		involved in trade execution
	3) ensuring that orders comply with regulatory requirements.	Fax Machines 1) Fax machines are used for transmitting essential trade-related documents securely				
	Trader:					
	1) Confirming the execution of trade orders to customers					
	2) providing trade details					
	3) Generating trade confirmations					
	Risk Management Specialist:					
	1) Monitoring open positions and evaluating potential risks associated with market movements					
	2) ensuring adherence to risk management guidelines					
	Settlement Officer:					

	1) Coordinating with settlement teams to ensure timely and accurate settlement of executed trades.					
	Customer Interaction and Support:					
	1) Addressing customer queries related to trade execution					
	2) providing support for order placement and modification					
Transaction Settlement	Settlement Officer:	Settlement Instruction Slips 1) Settlement instruction slips are physical documents used to provide settlement instructions for each trade	Central Processing Unit (CPU) 1) The CPU is the core computing component responsible for executing instructions and performing calculations	Order Management System (OMS) 1) The Order Management System is software that facilitates the processing and execution of trade orders		Electronic Data Interchange (EDI) 1) EDI facilitates the electronic exchange of settlement data and instructions between different entities involved in the transaction
	1) Verifying trade transactions,	Physical Securities Certificates	Storage Devices	Customer Relationship		Network Infrastructure

	reconciling trade data with the stock exchange	1) Physical securities certificates represent ownership of securities and are used for settlement in certain cases	1) Storage devices store and retain data required for settlement processing and long-term record-keeping	Management (CRM) System 1) The CRM system manages customer information, communication, and interactions during the settlement process		1) The network infrastructure supports the seamless flow of data and information across the organization's internal systems.
	2) ensuring accuracy in settlement details		Printers 1) Printers produce physical copies of settlement documents, reports, and payment-related materials			Real-time Messaging Systems 1) Real-time messaging systems enable instant communication and collaboration among settlement officers and relevant parties
	Transfer Specialist:					
	1) Coordinating the transfer of funds and securities between involved parties					
	2) ensuring smooth and					

	timely settlements					
	Compliance Officer:					
	1) Preparing regulatory reports related to transaction settlements and ensuring compliance with regulatory guidelines					
	Communication Specialist:					
	1) Confirming successful settlements with involved parties					
	2) coordinating communication regarding settlement details					
Data Backup and Security	Data Backup Officer:	External Hard Drives 1) External hard drives serve as a portable storage medium for backing up critical data and information	Server Infrastructure 1) Servers form the core computing hardware that hosts and manages critical data and applications	Access Control Software 1) access control software manages user access to backup data, ensuring that only authorized personnel can access and modify backup files		Virtual Private Network (VPN) 1) VPN provides secure and encrypted communication channels for remote access to the network

	1) Managing data backup procedures, scheduling regular backups	Barcode Scanners 1) Barcode scanners are used to manage and track backup media, ensuring efficient retrieval and organization	Backup Devices (e.g., Tape Drives) 1) Backup devices such as tape drives are used for storing data backups in physical media	Data Recovery Software 1) Data recovery software is used to restore backup data in the event of data loss or system failure		Network Monitoring and Management 1) Network monitoring and management tools oversee network performance, identifying issues and ensuring smooth operations
	2) ensuring data integrity		Storage Area Network (SAN)			
	3) safeguarding sensitive customer information		1) SAN is a high-speed, dedicated network that connects servers to storage devices, facilitating efficient data storage and retrieval			
	IT Security Specialist:					
	1) Implementing data security measures					
	2) managing access controls to					

	databases and systems					
	3) protecting customer data from unauthorized access					
	Compliance Officer:					
	1) Ensuring compliance with data privacy regulations					
	2) Implementing privacy policies					
	3)safeguarding customer data from unauthorized disclosure					
	Security Auditor:					
	1) Performing security audits to assess compliance with security policies and regulations					
	2) ensuring adherence to data security standards					
Customer Support	Customer Support Representative:	Telephones and Headsets	Computers and Laptops	Customer Relationship Management (CRM) Software		Local Area Network (LAN)

	1) Addressing customer inquiries related to account information	1) Telephones and headsets enable customer support representatives to communicate with customers over voice calls	1) Computers and laptops serve as the primary workstations for customer support representatives, enabling them to access essential software and databases.	1) CRM software is used to manage customer information, interactions, and support requests		1) The LAN connects all the computers and devices within the support team's office, enabling seamless communication.
	2) general queries	Printers and Fax Machines	Printers			Internet Connectivity
	Account Specialist:	1) Printers and fax machines facilitate the generation of physical documents for customer support purposes	1) Printers are used to generate physical copies of customer-related documents and support materials			1) Internet connectivity is essential for customer support representatives to communicate with customers and access online resources
	1) Assisting customers with account-related tasks such as password resets		Scanners 1) Scanners are used to convert physical documents into digital formats for easy storage and sharing			
	2) account updates					

	3) account closures.					
	Complaints Officer:					
	1) Managing customer complaints					
	2) investigating issues					
	Communication Specialist:					
	1) Managing various communication channels (e.g., phone, email, live chat) to interact with customers promptly and effectively					
Compliance and Regulatory Reporting	Regulatory Compliance Manager:	Filing Cabinets	Computers and Laptops	Compliance Management Software		Internet Connectivity and Cloud Services
	1) Ensuring the organization's compliance with relevant financial regulations	1) Filing cabinets are used to store physical documents and records related to compliance and regulatory requirements	1) Computers and laptops are essential workstations for compliance officers to access software applications and databases	1) Compliance management software is a specialized application that helps track and manage compliance-related activities and deadlines.		1) Network connectivity and cloud services provide scalable infrastructure for compliance reporting systems and data storage
	2) monitoring changes in		Printers			

	regulatory requirements		1) Printers are used to produce physical copies of compliance reports and documents for record-keeping and submission			
	3) Implementing necessary measures to adhere to compliance standards					
	Compliance Officer:					
	1) Collecting and verifying data required for regulatory reporting					
	2) ensuring the accuracy and completeness of data sets					
	Internal Auditor:					
	1) Conducting internal audits to assess compliance with internal policies and procedures					
	2) identifying areas for improvement, and recommending					

	corrective actions					
	Reporting Analyst:					
	1) Reviewing regulatory reports for accuracy, ensuring that reports comply with regulatory guidelines before submission					
	Record-keeping Specialist:					
	1) Maintaining comprehensive records of regulatory reports					
	2) compliance documents					
	3) audit findings					
Continuous Improvement	Process Analyst:	Physical Security and Access Control	Workstations and Devices Setup	Process Management Software		Information Dissemination
	1) Evaluating existing processes	1) Non-computing hardware elements, such as security systems and access control mechanisms, play a role in safeguarding physical	1) Workstations and computing devices serve as the primary tools for employees involved in continuous improvement tasks	1) Process management software is used to streamline and optimize continuous improvement processes, such as workflow automation and task tracking		1) The network and communication system disseminate important information, updates, and guidelines related to continuous improvement

		assets and information				nt to all relevant stakeholders
	2) identifying inefficiencies		Server Management and Upgrades			
	3) analyzing areas that require improvement		1) Servers are critical computing hardware that store and process data, applications, and services related to continuous improvement			
	Data Analyst:					
	1) Collecting relevant data and performance metrics					
	2) such as customer feedback					
	3) process cycle times					
	Change Management Officer:					
	1) Developing change management plans to ensure smooth process implementation					

	2) coordinating with relevant teams, and conducting training sessions					
	Quality Assurance Specialist:					
	1) Monitoring the implementation of process improvements					
	2) conducting quality checks					
	3) ensuring compliance with new processes					
	Performance Tracker:					
	1) Tracking the performance of improved processes					
	2) analyzing results					
	3) preparing performance reports for management review					
Account Maintenance and Updates	Customer Relationship Manager:	Paper and Stationery	Computers	Customer Account Management Software		Communication with Customers
	1) Handling customer	1) Paper and stationery	1) Computers,	1) This software is		1) The network

	requests for account information updates	are essential for processing account maintenance and update requests manually	specifically workstations, serve as the primary tool for employees involved in account maintenance and updates	designed to manage and update customer account information securely and efficiently		facilitates communication with customers, enabling them to access their accounts online, receive updates on transactions, and communicate with customer support
	2) such as contact details	Physical Security Measures	Biometric Devices			
	3) mailing addresses	1) Physical security measures are employed to protect physical documents from unauthorized access or damage	1) Biometric devices can be used for secure authentication and access control to account maintenance systems			
	4) personal information					
	Account Maintenance Specialist:					
	1) Reviewing account status					
	2) verifying customer-provided information					

	3) ensuring that updates comply with regulatory requirements					
	Data Analyst:					
	1) Providing customers with transaction history					
	2) generating account statements					
	3) addressing customer inquiries related to account activities					
	Account Closure Specialist:					
	1) Handling customer requests for account closure					
	2) deactivating accounts					
	3) ensuring appropriate procedures are followed					
	Account Maintenance Specialist:					
	1) Ensuring proper documentation for account updates and					

	maintenance activities, maintaining comprehensive records					
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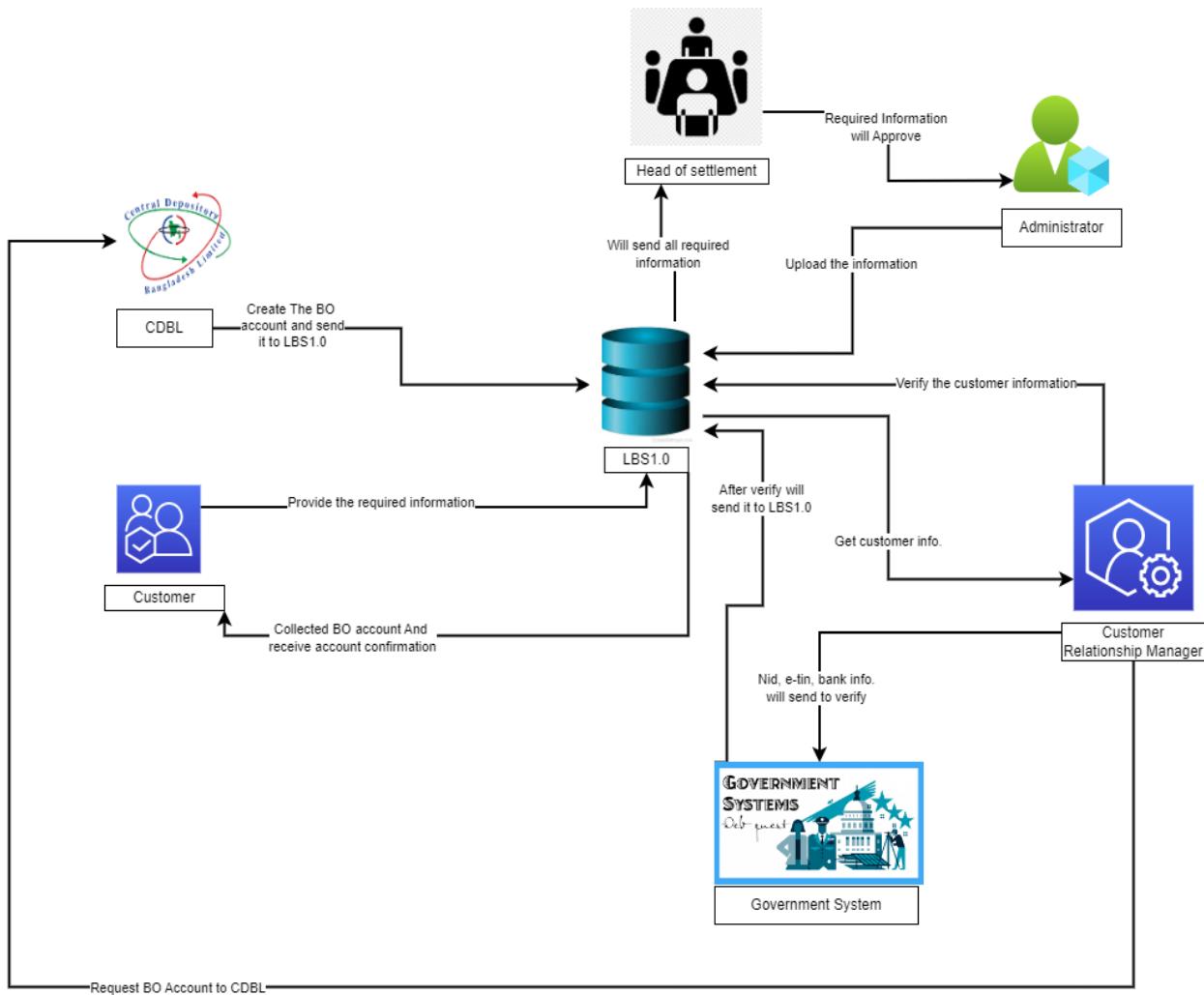
C. PROBLEM ANALYSIS

Process Name	Stakeholders	Concerns(P roblems)	Analysis(Reason of The Problem)	Proposed solution
Securities Settlement Efficiency Assessment	CDBL (Central Depository Bangladesh Limited)	1.Delays in Settlement Processing 2.Lack of Automation	1.This can lead to dissatisfaction among customers and result in financial losses for both customers and Lankabangla Securities. 2.Insufficient automation in the settlement process can hinder the speed and accuracy of settlements.	Delays in settlement processing and lack of automation in our project "Lankabangla Securities," we can implement two distinct processes: "Settlement Process Optimization" and "Automation Implementation." Proposed Solutions for "Settlement Process Optimization" - Delays in Settlement Processing: 1. Streamline Settlement Workflows 2. Communication and Coordination: 3. Real-Time Transaction Monitoring 4. Proactive Issue Resolution 5. Compliance and Regulatory Adherence 6. Automated Alerts and Notifications Proposed Solutions for "Automation Implementation" - Lack of Automation: 1. Automated Settlement Processing. 2. Straight-Through Processing (STP) 3. Automated Data Validation 4. Electronic Confirmations and Notifications 5. Smart Contract Integration (If Applicable) 6. Robotic Process Automation (RPA).

Customer Service Feedback and Analysis	Customer	1.Response Time and Resolution 2.Lack of Personalization	1.The response time for queries or the time taken to resolve issues. 2.Customers may feel that the services provided lack personalization, leading to a generic and unsatisfying experience	The time and resolution as well as the lack of personalization in our project "Lankabangla Securities," we can implement two distinct processes: "Customer Support Enhancement" and "Personalization Strategy Implementation." Proposed Solutions for "Customer Support Enhancement" - Response Time and Resolution: 1.Service Level Agreements (SLAs) 2.Tiered Support System 3. Customer Support Training 4.Ticketing and Tracking System 5.Proactive Communication 6. Root Cause Analysis "Personalization Strategy Implementation" - Lack of Personalization: 1.Customer Data Collection 2.Segmentation 3.Personalized Content and Recommendations 4.Personalized Alerts and Notifications 5.Customized Reports preferences. 6.Relationship Manager Engagement
Settlement Process Optimization	Head of Settlement	1.Settlement Delays and Backlogs 2.Technological Limitations	1..Delays in the settlement process, which can result in a backlog of pending transactions. This could lead to customer dissatisfaction and potential financial losses. 2.Outdated or inadequate technological infrastructure might hinder the settlement process's speed and efficiency	Settlement delays and backlogs, as well as technological limitations in our project "Lankabangla Securities," we can implement two distinct processes: "Settlement Process Optimization" and "Technology Upgrade and Enhancement". Proposed Solutions for "Settlement Process Optimization" - Settlement Delays and Backlogs: 1.Workflow Analysis and Streamlining 2. Automation of Settlement Processes 3.Real-Time Transaction Monitoring 4 Enhanced Communication and Collaboration. 5.Proactive Issue Resolution. Proposed Solutions for "Technology Upgrade and Enhancement" - Technological Limitations: 1.Technology Assessment. 2. Scalability Planning. 3. Hardware and Software Upgrades.

				4. Cloud Adoption. 5. Robust Disaster Recovery Solutions. 6. Technology Training and Skill Development.
Database Performance and Reliability Assessment	Database Administration	1. Slow Query Response Time 2. Backup and Recovery Problems	1. One of the primary concerns could be the slow response time of database queries, which may impact the overall system performance and user experience. 2. Inadequate backup and recovery procedures can lead to data loss in case of system failures or disasters.	Slow query response time in our project "Lankabangla Securities," we can implement a process called "Database Performance Optimization." and "Backup and Recovery Optimization." This process involves analyzing the reasons for slow query response time and implementing solutions to enhance the database system's performance and efficiency.
Customer Engagement and Retention Analysis	Customer Relationship Management	1. Low Customer Retention Rate	1. One of the primary concerns could be a low customer retention rate, indicating that customers might be leaving or not continuing their relationship with Lankabangla Securities.	For low customer retention rates in our project "Lankabangla Securities," we can implement a process called "Customer Retention Improvement Strategy." This process involves analyzing the reasons for low customer retention rates and developing solutions to enhance customer loyalty and encourage long-term relationships. Solutions for Customer Retention Improvement: 1. Enhanced Customer Engagement 2. Tailored Customer Education. 3. Improve Customer Support. 4. Loyalty Programs and Incentives. 5. Personalized Investment Recommendations. 6. Regular Performance Reviews. 7. Addressing Complaints and Feedback.

E. RICH PICTURE (TO BE)



SIX ELEMENT ANALYSIS (TO BE)

We can observe from the Rich Picture that there are seven main processes:

- 1. Customer Account Opening**
- 2. Trade Execution**
- 3. Transaction Settlement**
- 4. Data Backup and Security**
- 5. Customer Support**
- 6. Compliance and Regulatory Reporting**
- 7. Continuous Improvement**
- 8. Account Maintenance and Updates**

We may use six-element analysis to examine the influence of six factors in a process. The six elements are as follows:

- 1. Human**
- 2. Non-computing Hardware**
- 3. Computing Hardware**
- 4. Software**
- 5. Database**
- 6. Network and Communication**

Process	System Roles					
	Human	Non-Computing Hardware	Computing Hardware	Software	Database	Communication & Network
Customer Account Opening	Customer Relationship Manager: 1) Interacting with customers to collect necessary information for	Document Scanners 1) Document scanners are used to convert physical documents,	Computers (Desktop/Laptop) 1) Computers are used to run various software applications	Customer Information Management Software 1) This software is used to	LBS1.0 1) To maintain all of the information up to date, the LBS1.0 have	Internet 1) use to gain access to LBS1.0

	account opening	such as customer identification cards, address proofs, and application forms, into digital formats	and databases required for customer account opening and management	manage and store customer information, including personal details, contact information, and identification documents	access to all of the data.	
	2) verifying customer identification and documentation	Signature Pads 1) Signature pads are used to capture and digitize customer signatures for documentation and verification purposes	Printers 1) Printers are used to generate account opening documents, agreements, receipts, and other important paperwork required for the account opening process	Document Verification and Scanning Software 1) This software is used to verify and scan customer identification documents and other required paperwork during the account opening process		
	3) Explaining the account opening process and requirements to customers.	Biometric Devices 1) Biometric devices are used for customer identity verification, adding an extra layer of security during the account	Barcode Scanners 1) Barcode scanners are used to capture and input data from barcodes on customer identification documents and	Compliance and Regulatory Software 1) This software is used to ensure compliance with relevant regulatory requirements during the account		

		opening process	application forms	opening process.		
	Document Verification Officer:		Card Readers (e.g., Smart Card Readers)	Account Opening Workflow Software		
	1) Verifying the authenticity and accuracy of customer-provided identification documents and account opening forms		1) Card readers are used to read data from smart cards or chip-enabled cards that customers may use for identity verification or account access	1) This software is used to manage the overall account opening process, ensuring a smooth and efficient workflow from application submission to account activation		
	2) ensuring compliance with regulatory requirements.					
	Account Opening Officer:					
	1) Reviewing the completed account opening application					
	2) cross-referencing customer data with existing records					
	3) performing due diligence					

	to prevent fraudulent activities.					
	Data Entry Specialist:					
	1) Entering customer account information into the database					
	2) setting up account details and preferences					
	3) generating unique account numbers					
	Account Opening Specialist:					
	1) Confirming the successful account opening with the customer					
	2) providing account details					
	3) Explaining the next steps in the investment process					
	Customer Support Representative:					
	1) Assisting customers with					

	any account opening issues					
	2) answering queries through phone or email, and ensuring a smooth and efficient account opening experience					
Trade Execution	Trading Specialist:	Telephone 1) Telephones are used for verbal communication between traders, customers, and relevant parties involved in the trade execution process	Trading Computers 1) Trading computers are specialized hardware devices used by traders to access trading platforms, execute trades, and monitor market data	Trading Platform Software 1) The trading platform software provides a user interface for traders to access the stock exchange, execute trade orders, and monitor market data	Database Administration 1) To maintain all of the information up to date, the LBS1.0 have access to all of the data.	Internet 1) use to gain access to LBS1.0
	1) Receiving trade orders from customers	Physical Trade Confirmation Slips 1) Server systems are powerful computers that store and manage data, processes, and applications required for trade execution	Server Systems 1) Server systems are powerful computers that store and manage data, processes, and applications required for trade execution	Order Management System (OMS) 1) The Order Management System is software that facilitates the end-to-end order processing and		

				management		
	2) validating order details	1) Physical trade confirmation slips are paper-based documents used to provide official confirmation of executed trades	Data Storage Devices 1) Data storage devices are hardware components used to store and retrieve trade-related information and historical data	Reporting and Analytics Software 1) Reporting and analytics software provides insights into trade execution performance and market analysis		
	3) ensuring that orders comply with regulatory requirements.	Fax Machines 1) Fax machines are used for transmitting essential trade-related documents securely				

	Trader:					
	1) Confirming the execution of trade orders to customers					
	2) providing trade details					
	3) Generating trade confirmations					
	Risk Management Specialist:					

	1) Monitoring open positions and evaluating potential risks associated with market movements					
	2) ensuring adherence to risk management guidelines					

	Settlement Officer:					
	1) Coordinating with settlement teams to ensure timely and accurate settlement of executed trades.					
	Customer Interaction and Support:					
	1) Addressing customer queries related to trade execution					
	2) providing support for order placement and modification					
Transaction Settlement	Settlement Officer:	Settlement Instruction Slips	Central Processing Unit (CPU)	Order Management System (OMS)	LBS1.0 1) To maintain all	Internet 1) use to gain

		1) Settlement instruction slips are physical documents used to provide settlement instructions for each trade	1) The CPU is the core computing component responsible for executing instructions and performing calculations	1) The Order Management System is software that facilitates the processing and execution of trade orders	of the information up to date, the LBS1.0 have access to all of the data.	access to LBS1.0
	1) Verifying trade transactions, reconciling trade data with the stock exchange	Physical Securities Certificates 1) Physical securities certificates represent ownership of securities and are used for settlement in certain cases	Storage Devices 1) Storage devices store and retain data required for settlement processing and long-term record-keeping	Customer Relationship Management (CRM) System 1) The CRM system manages customer information, communication, and interactions during the settlement process		
	2) ensuring accuracy in settlement details		Printers 1) Printers produce physical copies of settlement documents, reports, and payment-related materials			
	Transfer Specialist:					
	1) Coordinating the transfer of funds and					

	securities between involved parties					
	2) ensuring smooth and timely settlements					
	Compliance Officer:					
	1) Preparing regulatory reports related to transaction settlements and ensuring compliance with regulatory guidelines					
	Communication Specialist:					
	1) Confirming successful settlements with involved parties					
	2) coordinating communication regarding settlement details					
Data Backup and Security	Data Backup Officer:	External Hard Drives 1) External hard drives serve as a portable storage medium for backing up critical data and information	Server Infrastructure 1) Servers form the core computing hardware that hosts and manages critical data and applications	Access Control Software 1) access control software manages user access to backup data, ensuring that only	LBS1.0 1) To maintain all of the information up to date, the LBS1.0 have access to all of the data.	Internet 1) use to gain access to LBS1.0

				authorized personnel can access and modify backup files		
	1) Managing data backup procedures, scheduling regular backups	Barcode Scanners 1) Barcode scanners are used to manage and track backup media, ensuring efficient retrieval and organization	Backup Devices (e.g., Tape Drives) 1) Backup devices such as tape drives are used for storing data backups in physical media	Data Recovery Software 1) Data recovery software is used to restore backup data in the event of data loss or system failure		
	2) ensuring data integrity		Storage Area Network (SAN)			
	3) safeguarding sensitive customer information		1) SAN is a high-speed, dedicated network that connects servers to storage devices, facilitating efficient data storage and retrieval			
	IT Security Specialist:					
	1) Implementing data security measures					
	2) managing access controls to					

	databases and systems					
	3) protecting customer data from unauthorized access					
	Compliance Officer:					
	1) Ensuring compliance with data privacy regulations					
	2) Implementing privacy policies					
	3)safeguarding customer data from unauthorized disclosure					
	Security Auditor:					
	1) Performing security audits to assess compliance with security policies and regulations					
	2) ensuring adherence to data security standards					
Customer Support	Customer Support Representative:	Telephones and Headsets	Computers and Laptops	Customer Relationship Management (CRM) Software	LBS1.0	Internet

	1) Addressing customer inquiries related to account information	1) Telephones and headsets enable customer support representatives to communicate with customers over voice calls	1) Computers and laptops serve as the primary workstations for customer support representatives, enabling them to access essential software and databases.	1) CRM software is used to manage customer information, interactions, and support requests	1) To maintain all of the information up to date, the LBS1.0 have access to all of the data.	1) use to gain access to database administration
	2) general queries	Printers and Fax Machines	Printers			
	Account Specialist:	1) Printers and fax machines facilitate the generation of physical documents for customer support purposes	1) Printers are used to generate physical copies of customer-related documents and support materials			
	1) Assisting customers with account-related tasks such as password resets		Scanners 1) Scanners are used to convert physical documents into digital formats for easy storage and sharing			
	2) account updates					
	3) account closures.					
	Complaints Officer:					

	1) Managing customer complaints					
	2) investigating issues					
	Communication Specialist:					
	1) Managing various communication channels (e.g., phone, email, live chat) to interact with customers promptly and effectively					
Compliance and Regulatory Reporting	Regulatory Compliance Manager:	Filing Cabinets	Computers and Laptops	Compliance Management Software	LBS1.0	Internet
	1) Ensuring the organization's compliance with relevant financial regulations	1) Filing cabinets are used to store physical documents and records related to compliance and regulatory requirements	1) Computers and laptops are essential workstations for compliance officers to access software applications and databases	1) Compliance management software is a specialized application that helps track and manage compliance-related activities and deadlines.	1) To maintain all of the information up to date, the administrators have access to all of the data.	1) use to gain access to LBS1.0
	2) monitoring changes in regulatory requirements		Printers 1) Printers are used to produce physical copies of compliance			

			reports and documents for record-keeping and submission			
	3) Implementing necessary measures to adhere to compliance standards					
	Compliance Officer:					
	1) Collecting and verifying data required for regulatory reporting					
	2) ensuring the accuracy and completeness of data sets					
	Internal Auditor:					
	1) Conducting internal audits to assess compliance with internal policies and procedures					
	2) identifying areas for improvement, and recommending corrective actions					
	Reporting Analyst:					

	1) Reviewing regulatory reports for accuracy, ensuring that reports comply with regulatory guidelines before submission					
	Record-keeping Specialist:					
	1) Maintaining comprehensive records of regulatory reports					
	2) compliance documents					
	3) audit findings					
Continuous Improvement	Process Analyst:	Physical Security and Access Control	Workstations and Devices Setup	Process Management Software	LBS1.0	Internet
	1) Evaluating existing processes	1) Non-computing hardware elements, such as security systems and access control mechanisms, play a role in safeguarding physical assets and information	1) Workstations and computing devices serve as the primary tools for employees involved in continuous improvement tasks	1) Process management software is used to streamline and optimize continuous improvement processes, such as workflow automation and task tracking	1) To maintain all of the information up to date, the LBS1.0 have access to all of the data.all of the data.	1) use to gain access to LBS1.0
	2) identifying inefficiencies		Server Management			

			t and Upgrades			
	3) analyzing areas that require improvement		1) Servers are critical computing hardware that store and process data, applications, and services related to continuous improvement			
	Data Analyst:					
	1) Collecting relevant data and performance metrics					
	2) such as customer feedback					
	3) process cycle times					
	Change Management Officer:					
	1) Developing change management plans to ensure smooth process implementation					
	2) coordinating with relevant teams, and conducting training sessions					

	Quality Assurance Specialist:					
	1) Monitoring the implementation of process improvements					
	2) conducting quality checks					
	3) ensuring compliance with new processes					
	Performance Tracker:					
	1) Tracking the performance of improved processes					
	2) analyzing results					
	3) preparing performance reports for management review					
Account Maintenance and Updates	Customer Relationship Manager:	Paper and Stationery	Computers	Customer Account Management Software	LBS1.0	Internet 1) use to gain access to LBS1.0
	1) Handling customer requests for account information updates	1) Paper and stationery are essential for processing account maintenance and update requests	1) Computers, specifically workstations, serve as the primary tool for employees involved in	1) This software is designed to manage and update customer account information securely and	1) To maintain all of the information up to date, the LBS1.0 have access to	

		manually	account maintenance and updates	efficiently	all of the data.	
	2) such as contact details	Physical Security Measures	Biometric Devices			
	3) mailing addresses	1) Physical security measures are employed to protect physical documents from unauthorized access or damage	1) Biometric devices can be used for secure authentication and access control to account maintenance systems			
	4) personal information					
	Account Maintenance Specialist:					
	1) Reviewing account status					
	2) verifying customer-provided information					
	3) ensuring that updates comply with regulatory requirements					
	Data Analyst:					
	1) Providing customers with transaction history					

	2) generating account statements					
	3) addressing customer inquiries related to account activities					
	Account Closure Specialist:					
	1) Handling customer requests for account closure					
	2) deactivating accounts					
	3) ensuring appropriate procedures are followed					
	Account Maintenance Specialist:					
	1) Ensuring proper documentation for account updates and maintenance activities, maintaining comprehensive records					

CHAPTER 3: LOGICAL SYSTEM DESIGN

A. BUSINESS ROLE - LBS 1.0:

LankaBangla is the country's leading integrated financial services provider that include Corporate Financial Services, Personal Financial Services, CMSME Financial Services, Liability Management, Stockbroking, Corporate Advisory and Wealth Management Services. They have asked you to design a part of their database based on the following information:

1. Every customer is required to be associated with an Introducer, who provides essential information such as Introducer_id, introducer_name, introducer_contact, email, and Occupation. For each customer, their comprehensive details are recorded, encompassing attributes like Customer_Code, Name, FatherName, MotherName, PresentAddress, PermanentAddress, Nid, Gender, Opening_Date, email, Phone_Number, Fax, SpouseName, Title, Occupation, DOB, PresentCity, PresentPost, PermanentCity, PermanentCountry, and Type. Notably, an Introducer can be linked to one or multiple customers, facilitating accurate records and associations within the system.
2. Every customer is mandated to possess a bank account, which encompasses vital attributes such as BankCode, bank_branch_code, and routing_no. Notably, a bank account can be associated with one or multiple customers. The bank account itself should be identified and recorded by its unique Bank Account Number (bank_acc_no).
3. Each customer is required to possess a card, which encompasses essential details such as Card_No., Card_Holder_Name, Card_Holder_Signature, Card_Expiry_Date, Card_Holder_PassportNo., and Smart_Chip. Notably, a single card is exclusively designated for use by a single customer.
4. Customers are categorized as either First Account Holders, Joint Account Holders, or Corporate Accounts. But not both. In the case of Joint Account Holders, essential attributes such as Joint_Name, Joint_father_name, Joint_Mother_Name, Joint_spouse_name, Joint_address, Joint_Mobile, Joint_email, Joint_city, Joint_postcode, Joint_country_code, Joint_nid, Joint_etin, Joint_occupation, Joint_dob, Joint_photo, Joint_sign, Joint_nationality, and Joint_gender, Joint_per_address are recorded. On the other hand, Corporate Accounts

encompass details such as Corporate_Name, Corporate_Registration_Number, Corporate_email, Corporate_etin_number, Corporate_Address, and Corporate_Contact_Number. It's important to note that a customer can fall into only one of these categories, ensuring clear and distinct account classifications.

5. For Corporate Accounts, the inclusion of at least one Authorized Person's permission is mandatory. An Authorized Person is characterized by attributes like Authorized_Personid, Authorized_name, Authorized_PresentAddress, Authorized_PermanentAddress, Authorized_dob, Authorized_Mobile, Authorized_email, and Authorized_Occupation. Notably, an Authorized Person can grant permission to one or multiple Corporate Accounts, ensuring a structured authorization process.

6. A customer has the option to select one or multiple nominees. Each nominee is identified by attributes such as Nom_nid, Nom_Name, Nom_Address, Nom_City, Nom_Country, Nom_State, Nom_Postcode, Mobile, Email, Nom_dob, Nom_country_code, Residency, PriorityType, Nom_Relationship, Nom_signature, Nom_Photo, Nom_Gender, Nom_etin, Nom_title, Nom_nationality, and Nom_percentage. Importantly, a nominee must be associated with at least one customer, reflecting the linkage between customers and their designated nominees.

7. Every customer is required to possess a BO Account, which encompasses attributes like Application_Id, BO_application_number, CDBL_participant_id, Passport_Number, Account_Status, and Security_settings. Importantly, a BO Account should be associated with at least one or multiple customers, reflecting the necessity for customer involvement in the BO Account process.

8. A BO Account has the potential to be associated with multiple nominees, signifying the possibility of several individuals being linked to a single BO Account. Conversely, each nominee is unequivocally tied to a singular BO Account, ensuring a one-to-one relationship between a nominee and their corresponding BO Account.

9. A Power of Attorney must need a single BO account. A Power of attorney has a POA_Id, POA_PostCode, POA_Phone, POA_PassportNo, POA_Passport_IssueDate, POA_Passport_IssuePlace, and POA_dob. A BO account must need only one Power of Attorney.

10. Every Customer is required to possess a minimum of one KYC profile. A KYC profile is characterized by attributes such as KYC_Profilee_Id, Account_Type, Account_Opening_OfficerName, and National_idNumber. Each KYC profile is intrinsically associated with one or more customers, ensuring a mandatory linkage between these entities.

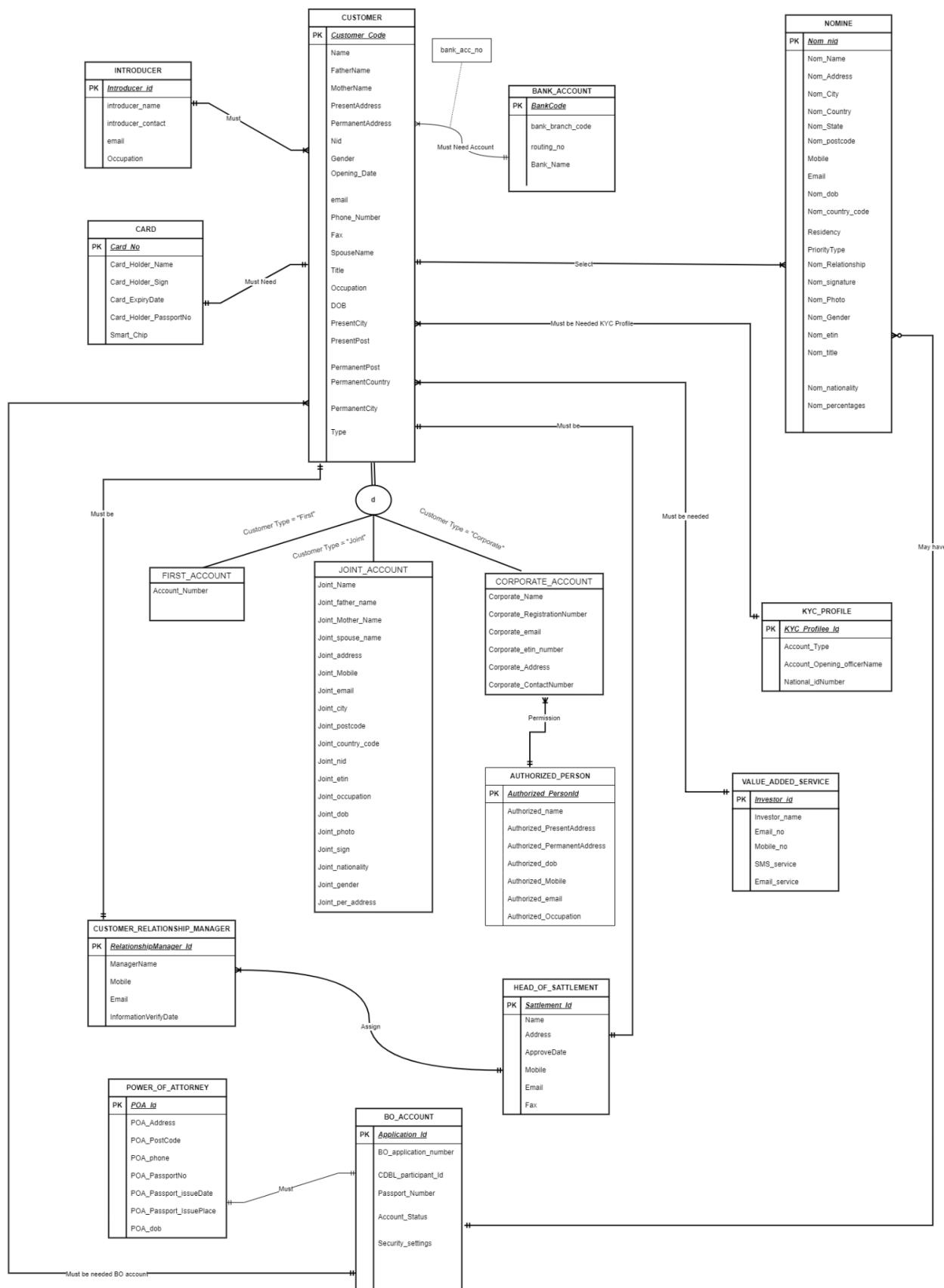
11. Each customer is obligated to have at least one value-added service. A value-added service encompasses attributes such as Investor_Id, Investor_name, Email_no, Mobile_no, SMS_service, and Email_service. This ensures a mandatory connection between a value-added service and either one customer or multiple customers

12. Every customer is required to be associated with one head of settlement. The head of the settlement entity comprises attributes like Settlement_Id, Name, Address, ApproveDate, Mobile, Email, and Fax. Additionally, a crucial condition is that a Head of Settlement must also fulfill the role of a Customer.

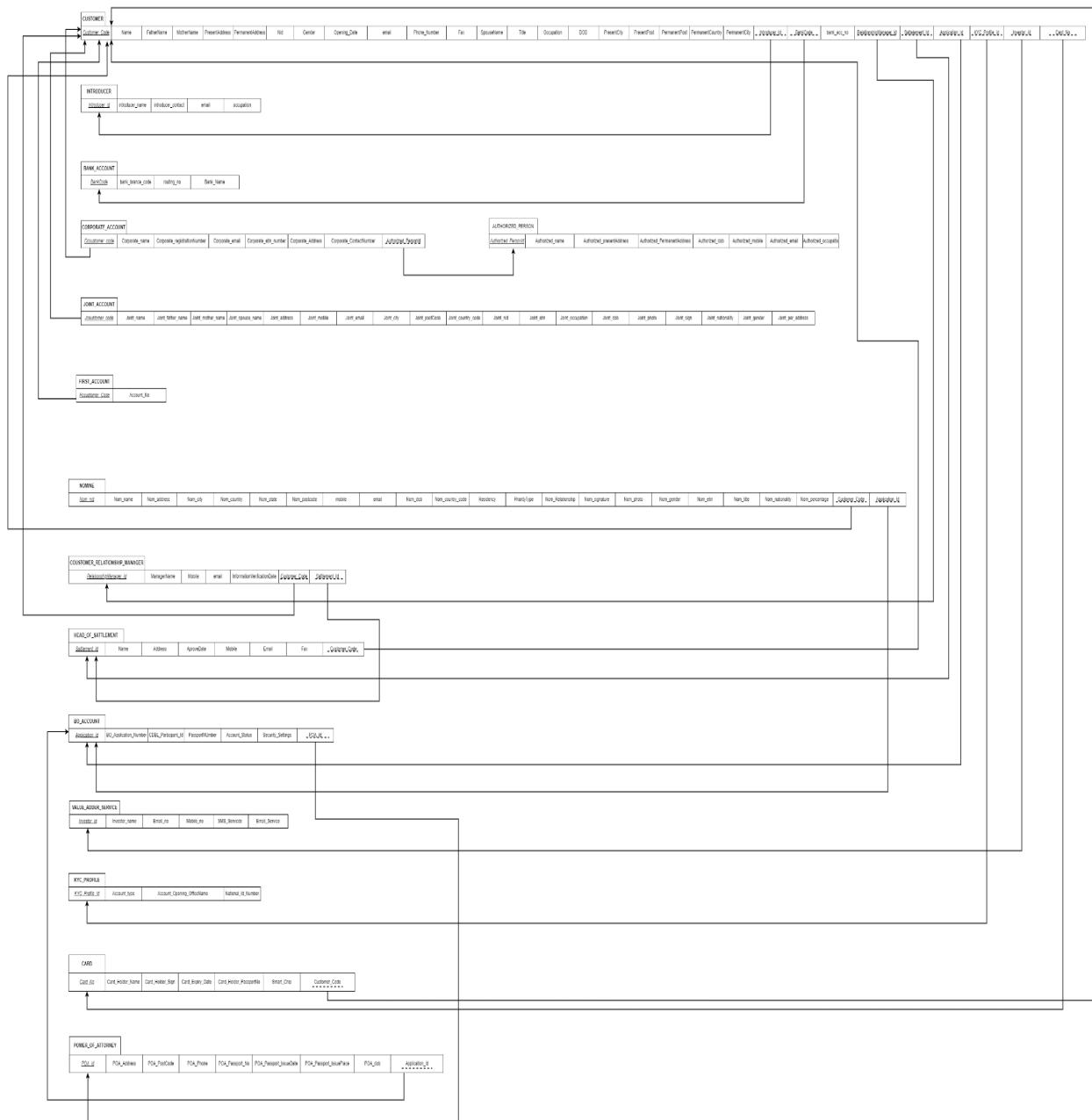
13. Each Customer Relationship Manager is intrinsically linked to a single Customer. The attributes of a Customer Relationship Manager encompass RelationshipManager_Id, ManagerName, Mobile, Email, and InformationVerifyDate. Importantly, every individual fulfilling the role of a Customer Relationship Manager must also be classified as a Customer.

14. Every Customer Relationship Manager is indispensably assigned to a Head of Settlement. In turn, each Head of Settlement is associated with one or more Customer Relationship Managers.

B. ENTITY RELATIONSHIP DIAGRAM:



C. ENTITY RELATIONSHIP DIAGRAM TO RELATIONAL SCHEMA



D. Normalization:

Customer_Code(a) → Name(b), FatherName(c), MotherName(d), PresentAddress(e), PermanentAddress(f), Nid(g), Gender(i), Opening_Date(j), email(k), Phone_Number(l), Fax(m), SpouseName(n), Title(o), Occupation(p), DOB(q), PresentCity(r), PresentPost(s), PermanentPost(t), PermanentCountry(u), PermanentCity(v), Introducer_Id(w), BankCode(x), bank_acc_no(y), RelationshipManager_Id(z), Sattlement_Id(v1), Application_Id(w5), KYC_Profile_Id(y1), Investor_Id(z5)

Introducer_Id(w) → introducerName(w1), IntroducerContact(w2), email(w3), Occupation(w4)

BankCode(x) → bank_branch_code(x1), routing_no(x2), bank_Name(x100)

Fcustomer_code(a1) → Account_No(y5)

jcustomer_code(a2) → joint_name(b1), joint_father_name(c1), joint_mother_name(d1), joint_spouse_name(e1), joint_address(f1), joint_mobile(g1), joint_email(h1), joint_city(i1), joint_postCode(j1), joint_country_code(k1), joint_nid(l1), joint_etin(m1), joint_occupation(n1), joint_dob(o1), joint_photo(p1), joint_sign(q1), joint_nationality(r1), joint_gender(s1), joint_per_address(t1)

Ccustomer_code(a3) → Corporate_name(b2), Corporate_registrationNumber(c2), Corporate_email(d2), Corporate_etin_number(e2), Corporate_Address(f2), Corporate_ContactNumber(g2), Authorized_PersonId(a4)

Authorized_PersonId(a4) → Authorized_name(b3), Authorized_PresentAddress(c3), Authorized_dob(d3), Authorized_mobile(e3), Authorized_email(f3), Authorized_occupation(g3)

Nom_nid(u1) → Nom_name(u2), Nom_address(u3), Nom_city(u4), Nom_Country(u5), Nom_state(u6), Nom_postcode(u7), mobile(u8), email(u9), Nom_dob(u10), Nom_country_code(u11), Residency(u12), PriorityType(u13), Nom_Relationship(u14), Nom_signature(u15), Nom_photo(u16), Nom_gender(u17), Nom_etin(u18), Nom_title(u19), Nom_nationality(u20), Nom_percentage(u21), Customer_Code(a), Application_Id(w5)

RelationshipManager_Id(z) → ManagerName(z1), mobile(z2), email(z3), InformationVarificationDate(z4), CustomerCode(a), Sattlement_Id(v1)

Sattlement_Id(v1) → Name(v2), Address(v3), ApproveDate(v4), Mobile(v5), Email(v6), Fax(v7), Customer_Code(a)

Application_Id(w5) → BO_Application_Number(w6), CDBL_Participant_id(w7), PassportNumber(w8), Account_Status(w9), Security_Settings(w10)

KYC_Profile_id(y1) → AccountType(y2), Account_Opening_OfficerName(y3),
National_Id_Number(y4)

Card_No(z11) → Card_Holder_Name(z12), Card_Holder_Sign(z13), Card_Expiry_date(z14),
Card_Holder_PassportNo(z15), Samrt_Chip(z16), Customer_Code(a)

Investor_Id(z1) → Investor_name(z2), Email_no(z3), Mobile_no(z4), SMS_Service(z5),
Email_Service(z6)

POA_Id(h) → POA_Address(h2), POA_PostCode(h3), POA_Phone(h4),
POA_Passport_IssueDate(h5), POA_Passport_IssuePlace(h6), POA_dob(h7),
Application_Id(w5)

*****Showing all the dependencies using the alphabet shown above**

a → b, c, d, e, f, g, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, v1, w5, y1, z5

w → w1, w2, w3, w4

x → x1, x2, x100

a1 → y5

a2 → b1, c1, d1, e1, f1, g1, h1, i1, j1, k1, l1, m1, n1, o1, p1, q, r1, s1, t1

a3 → b2, c2, d2, e2, f2, g2, a4

a4 → b3, c3, d3, e3, f3, g3

u1 → u2, u3, u4, u5, u6, u7, u8, u9, u10, u11, u12, u13, u14, u15, u16, u17, u18, u19, u20,
u21, a, w5

z → z1, z2, z3, z4, a, v1

v1 → v2, v3, v4, v5, v6, v7, a

w5 → w6, w7, w8, w9, w10

y1 → y2, y3, y4

$z11 \rightarrow z12, z13, z14, z15, z16, a$

$z5 \rightarrow z6, z7, z8, z9, z10$

$h \rightarrow h2, h3, h4, h5, h6, h7, w5$

1NF: A relationship that has a primary key and no repeated groups

1NF

T	a	b	c	d	e	f	g	i	j	k	l	m	n	o	p	q	r
s	t	u	v	w	x	y	z	v1	w5	y1	g1	w1	w2	w3	w4	x1	
x2	x100	<u>a1</u>	y5	<u>a2</u>	b1	c1	d1	e1	f1	e2	h1	i1	j1	z9	k1	l1	
m1	n1	o1	p1	r1	s1	t1	<u>a3</u>	b2	c3	d2	u8	f2	g2	a4	b3	c3	
d3	e3	f3	g3	<u>u1</u>	u2	u3	u4	u5	u6	u7	z4	u9	u10	u11	u12	u13	
u14	u15	u16	u17	u18	u19	u20	u21	z1	z2	z3	v2	v3	v4	v5	v6	z10	
w6	w7	w8	w9	w10	y1	y2	y3	y4	z5	z6	z7	z8	<u>z11</u>	z12	z13	z14	
<u>h</u>	h2	h3	h4	h5	h6	h7	v7										

2NF**T1**

<u>u1</u>	u2	u3	u4	u5	u6	u7	u8	u9	u10	u11	u12	u13	u14	u14	u15	u16
u17	u18	u19	u20	u21	a	b	c	d	e	f	g	i	j	k	l	m
n	o	p	q	r	s	t	u	v	w	w1	w2	w3	w4	x	x1	x2
z	z1	z2	z3	z4	v1	v2	v3	v4	v5	v6	w5	w6	w7	w8	w9	w10
y1	y2	y3	y4	z5	z6	z7	z8	z9	z10	v7						

T2

<u>a1</u>	y5
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T3

<u>a2</u>	b1	c1	d1	e1	f1	g1	h1	i1	j1	k1	l1	m1	n1	p1	q	r1
s1	t1															

T4

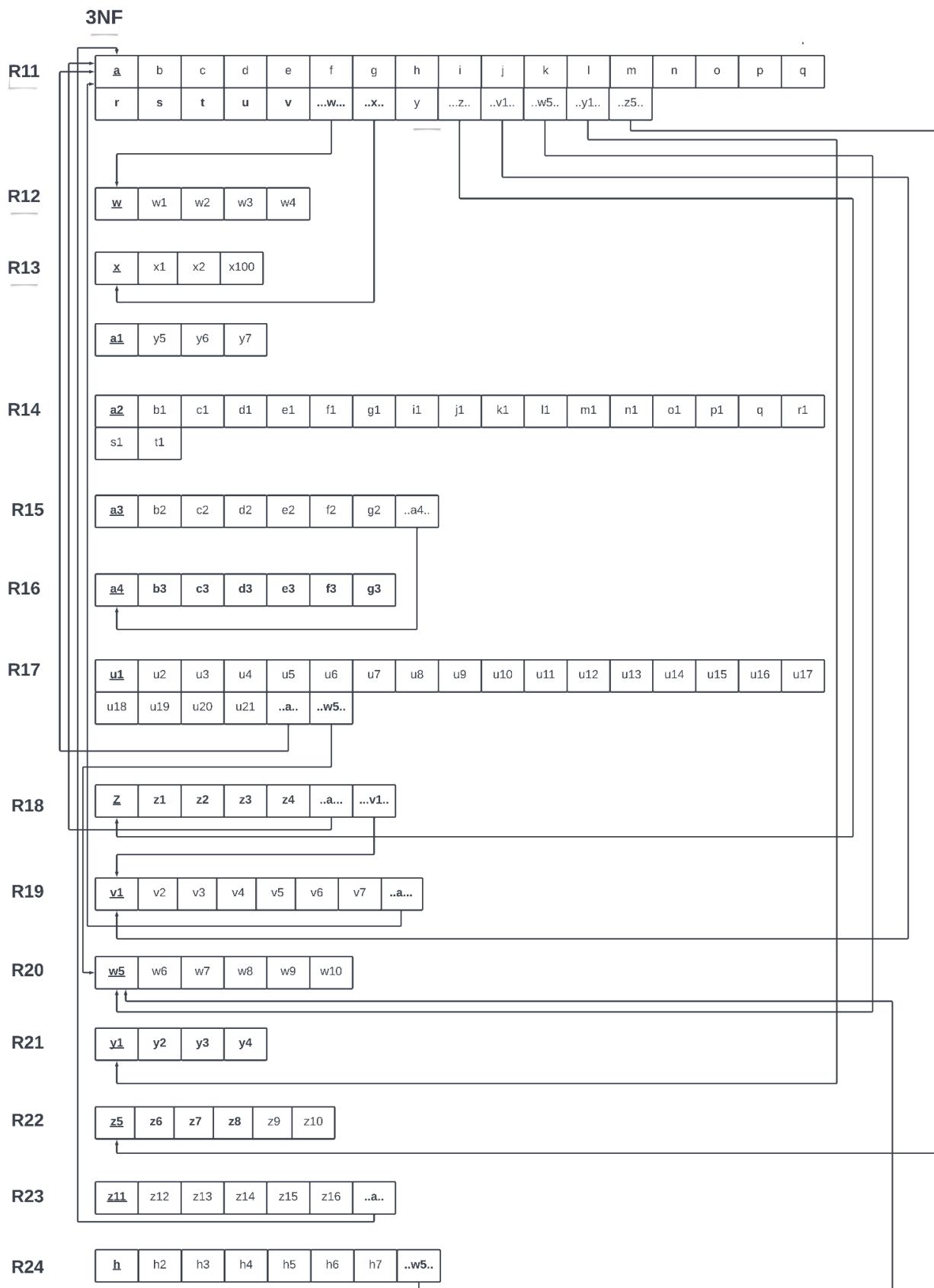
<u>a3</u>	b2	c3	d2	e2	f2	g2	a4	b3	c3	d3	e3	f3	g3			
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T5

<u>z11</u>	z12	z13	z14	z15	z16	a	b	c	d	e	f	g	i	j	k	l
m	n	o	p	q	r	s	t	u	v	w	w1	w2	w3	w4	x	x1
x2	x100	y	z	z1	z2	z3	z4	v1	v2	v3	v4	v5	v6	v7	w5	w6
w7	w8	w9	w10	y1	y2	y3	y4	z5	z6	z7	z8	z9	z10			

T6

<u>h</u>	h1	h2	h3	h4	h5	h6	w5	w6	w7	w8	w9	w10				
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E. DATA DICTIONARY

Customer_T

Name	Data Type	Size	Remarks
nCustomerCode	INTEGER	11	This is the primary key for the Customer Table. E.g. : 0123456
cName	VARCHAR	50	This is the name of the Customer. E.g : Rahim
cFatherName	VARCHAR	50	This is the name of the customer's father. E.g: Abdullah
cMotherName	VARCHAR	50	This is the name of the customer's mother.E.g: Nasrin
cPresentAddress	VARCHAR	40	This is the Present address of the customer.E.g; badda,dhaka1212
cPermanentAddress	VARCHAR	40	This is the Permanent Address Of the customer.E.g:cantonment,Dhaka
nNid	INTEGER	13	This is the national ID of the customer.E.g.:1234567891012
dOpeningDate	DATE	DD MM YYYY	This is the opening date of the customer.E.g.:26/03/2020
cGender	VARCHAR	8	Gender of the customer. E.g: Male
cEmail	VARCHAR	25	This is the email address of the customer. E.g.:asdf@gmail.com
nPhoneNumber	INTEGER	11	This is the phone number title of the customer. .E.g.:12345678910
cFax	VARCHAR	40	This is the FAX of the customer. E.g: +880
cSpouseName	VARCHAR	50	This is the name of the Spouse. E.g: Hanifa

cTitle	VARCHAR	50	This is the title of the customer. E.g: Customer Information
cOccupation	VARCHAR	10	This is the name of the occupation. E.g: Product Supplier
dDOB	DATE	DD MM YYYY	This is the date of birth of the customer.E.g: 23/05/1993
cPresentCity	VARCHAR	8	This is the name of the present city. E.g: Dhaka
nPresentPost	VARCHAR	4	This is the name of the present post. E,g: Salesman
nPermanentPost	VARCHAR	4	This is the name of the permanent post. E.g: Employer
cPermanentCountry	VARCHAR	15	This is the name of the permanent country. E.g: Bangladesh
cPermanentCity	VARCHAR	15	This is the name of the permanent city. E.g: Barishal
nIntroducerId	INTEGER	15	This is the foreign key from table Introducer. E.g: 208467
nBankCode	INTEGER	20	This is the foreign key from table Bank_Account.E.g: 126784
nbank_accno	INTEGER	20	This is the number of the bank account.E.g.:1234 1568 1529 1258 12
nRelationshipManager Id	INTEGER	15	This is the foreign key from table Customer_Relationship_Manager.E.g.:55 8899
nSattlementId	INTEGER	15	This is the foreign key from table Head_OF_Sattlement.E.g.:154236
nApplicationId	INTEGER	10	This is the foreign key from table BO_Account.E.g.:654321
nKYCProfileid	INTEGER	20	This is the foreign key from table KYC_Profile.E.g.:115566
nInvestorId	INTEGER	20	This is the foreign key from table Value_Adder_Service.E.g.:12345

Introducer_T

Name	Data Type	Size	Remarks
nIntroducerId	INTEGER	15	This is the primary key for the Introducer table.E.g: 208467
cIntroducername	VARCHAR	50	This is the name of the introducer.E.g:
nIntroducercontact	INTEGER	11	This is the Introducer contact of the introducer.E.g.:12345678910
cEmail	VARCHAR	25	This is the email address of the introducer. E.g.:asdf@gmail.com
cOccupation	VARCHAR	15	This is the Occupation of the introducer.

Bank_Account_T

Name	Data Type	Size	Remarks
nBankCode	INTEGER	20	This is the primary key for the Bank Account table.E.g: 126784
nBankBranchcode	INTEGER	15	This is the Bank Branch code of the bank Account customer.Eg: LBS12345
nRoutingno	INTEGER	13	This is the Routing number of the bank Account customer.E.g: LBSC123456

First_Account_T

Name	Data Type	Size	Remarks
nFcustomerCode	INTEGER	11	This is the primary key for the First Account table. E.g: 53693
cFirstname	VARCHAR	50	This is the first name of the First Account customer. E.g: Khalil
cFirstcontactNumber	INTEGER	11	This is the First contact Number of Account customers.E.g.12345678910
cFirstAddress	VARCHAR	15	This is the First Address of the First Account customer.E.g; A,B1212

Joint_Account_T

Name	Data Type	Size	Remarks
nJcustomercode	INTEGER	11	This is the primary key for the Joint Account table. E.g: 135946
cJointname	VARCHAR	50	This is the name of the joint Account customer. E.g: Mostak
cJointfathername	VARCHAR	50	This is the name of the joint Account customer's father. E.g: Abdul
cJointmothername	VARCHAR	50	This is the name of the joint Account customer's mother. E.g: Sabera Khatun
cJointaddress	VARCHAR	40	This is the address of the joint account customer.E.g; A,B1212
cJointemail	VARCHAR	25	This is the email address of the joint account customer.E.g.:asdf@gmail.com
cJointcity	VARCHAR	15	This is the Joint city of the joint account customer.E.g.: "Dhaka".
nJointpostCode	INTEGER	4	This is the postCode of the joint account customer.E.g: 1205
nJointcountrycode	INTEGER	4	This is the country code of the joint account customer.E.g: +880
nJointnid	INTEGER	13	This is the nid number of the joint account customer. E.g: 12345678901234567
nJointetin	INTEGER	15	This is the etin number of the joint account customer. E.g: 123456789012
cJointoccupation	VARCHAR	50	This is the occupation of the joint account customer.E,g: Business Man
dJointdob	DATE	DD MM YYYY	This is the date of birth of the joint account customer.E.g: 23/05/1993
bJointphoto	BLOB	100	This is the photo of the joint account customer.
cJointsign	VARCHAR	20	This is the sign of the joint account customer.E.g: Mostak
cJointnationality	VARCHAR	15	This is the nationality of the joint account customer.E.g: Bangladesh

cJointgender	VARCHAR	8	This is the gender of the joint account customer. E.g: Male
cJointpresentaddress	VARCHAR	15	This is the present address of the joint account customer. E.g: Barishal sadar

Corporate_Account_T

Name	Data Type	Size	Remarks
nCcustomercode	INTEGER		This is the primary key for the Corporate Account table. E.g: 46492724
nCorporateregistrationNumber	INTEGER		This is the Corporate registration Number of the Corporate Account customer.E.g: ABC123456789
cCorporateemail	VARCHAR	25	This is the email address of the Corporate Account customer.E.g.:asdf@gmail.com
nCorporateetinnumber	INTEGER	50	This is the Corporate etin number of the Corporate Account customer. E.g: BFST56
cCorporateAddress	VARCHAR	15	This is the Corporate Address of the Corporate Account customer.E.g; A,B1212
nCorporateContactNumber	INTEGER	11	This is the Corporate Contact Number of the Corporate Account customer.E.g.:12345678910
cAuthorizedPersonId	VARCHAR	11	This is the foreign key from the table Authorized_Person..E.g.:1123356

Authorized_Person_T

Name	Data Type	Size	Remarks
nAuthorizedPersonId	VARCHAR	13	This is the primary key for the Authorized Person table.E.g.:1123356
cAuthorizedname	VARCHAR	50	This is the name of the authorized person.E.g.:"Halim".
cAuthorizedPresentAddress	VARCHAR	15	This is the Present Addressof the authorized person.E.g; A,B1212

dAuthorizeddob	DATE	DD MM YYYY	This is the date of birth of the Authorized Person.E.g.:24/2/1971
nAuthorizedmobile	INTEGER		This is the mobile number of the authorized person.E.g.:12345678910
cAuthorizedemail	VARCHAR	25	This is the email address of the authorized person.E.g.:asdf@gmail.com
cAuthorizedoccupation	VARCHAR		This is the occupation of the authorized person.

Nominee_T

Name	Data Type	Size	Remarks
nNomnid	INTEGER	13	This is the primary key for the Nominee table.E.g.:5624892
cNomname	VARCHAR	50	This is the name of the nominee.E.g.:"kamal".
cNomaddress	VARCHAR	15	This is the address of the nominee.E.g; A,B1212
cNomcity	VARCHAR		This is the city of the nominee.E.g.:"cumilla"
cNomCountry	VARCHAR		This is the Country of the nominee.E.g.:"bangladesh"
cNomstate	VARCHAR		This is the state of the nominee.E.g.:"Bangla"
nNompostcode	INTEGER		This is the postcode of the nominee.E.g.:26594
nmobile	INTEGER	11	This is the mobile number of the nominee.E.g.:12345678910
cemail	VARCHAR	25	This is the email address of the nominee. E.g.:asdf@gmail.com
dNomdob	DATE		This is the date of birth of the nominee.E.g: 23/05/1993
n Nomcountrycode	INTEGER		This is the country code of the nominee.E.g.:088
cResidency	VARCHAR		This is the Residency Of the nominee. E.g: Resident

cPriorityType	VARCHAR		This is the PriorityType of the nominee. E,g: Platinum
cNomRelationship	VARCHAR		This is the Relationship Of the nominee. E.g: Married
cNo signature	VARCHAR		This is the signature of the nominee.E.g.: "arif"
nNomphoto	BLOB	100	This is the photo of the nominee.
cNo gender	VARCHAR	8	This is the gender of the nominee.E.g.: "male"
nNometin	INTEGER		This is the etin number of the nominee.E.g.: 265461
cNomnationality	VARCHAR		This is the nationality of the nominee.E.g.: "Bangladeshi"
cNo percentage	INTEGER		This is the percentage of the nominee.
nCustomerCode	INTEGER		This is the foreign key from the table Customer.E.g. : 0123456
nApplicationId	INTEGER		This is the foreign key from table BO_Account.E.g.: 654321

Head_OF_Settlement_T

Name	Data Type	Size	Remarks
nSettlementId	INTEGER	15	This is the primary key for the Head OF Sattlemen table.E.g.: 154236
cName	VARCHAR	50	This is the name of the head of settlement.E.g.: "Kamrul"
cAddress	VARCHAR	15	This is the address of the head of settlement .E.g; A,B1212
dApproveDate	DATE		This is the date of approval of the head of settlement. E.g.: 22/3/2020
nMobile	INTEGER	11	This is the mobile number of the head of settlement. E.g.: 12345678910
cEmail	VARCHAR	25	This is the email address of the head of settlement. E.g.: asdf@gmail.com

cFax	VARCHAR	25	This is the FAX of the head of settlement. E.g: +880
nCustomerCode	INTEGER	20	This is the foreign key from the table Customer.E.g. : 0123456

Customer_Relationship_Manager_T

Name	Data Type	Size	Remarks
nRelationshipManagerId	INTEGER	15	This is the primary key for the Customer Relationship Manager table..E.g.:558899.
cManagerName	VARCHAR	50	This is the name of the C.R.Manager.E.g.:"abdul karim"
nMobile	INTEGER	11	This is the mobile number of the Customer Relationship Manager.E.g.12345678910
cEmail	VARCHAR	25	This is the email address of the Customer Relationship Manager. E.g.:asdf@gmail.com
Information Verification Date	DATE		This is the date of birth of the Information Verification.E.g.:22/03/2020
nCustomerCode	INTEGER	15	This is the foreign key from the table Customer.E.g. : 0123456
nSettlementId	INTEGER	15	This is the foreign key from the table Head_OF_Settlement.E.g: 154236

BO_Account_T

Name	Data Type	Size	Remarks
nApplicationId	INTEGER	15	This is the primary key for the BO Account table.E.g.:654321
nBOApplicationNumber	INTEGER	10	This is the BO Application Number of the BO_Account.E.g.:115496
nCDB Participantid	INTEGER	15	This is the CDBLParticipantid of the BO_Account.E.g.:4486259

nPassportNumber	INTEGER	8	This is the passport number of the BO_Account.E.g.:25761983
cAccountStatus	TEXT	100	This is the Account Status of the BO_Account. E.g:
cSecuritySettings	VARCHAR	20	This is the Security Settings of the BO_Account.

KYC_Profile_T

Name	Data Type	Size	Remarks
KYC Profile id	INTEGER	20	This is the primary key for the KYC_Profile table.E.g.:115566
cAccountType	VARCHAR	15	This is the Account Type of the KYC Profile.E.g.:"Premium"
cAccountOpeningOfficerName	VARCHAR	50	This is the Account Opening Officer Name of the KYC Profile.E.g.:"Kuddus"
nNationalIdNumber	INTEGER	13	This is the National Id Number of the KYC ProfileE.g.:1864925731648

Value_Addder_Service_T

Name	Data Type	Size	Remarks
nInvestorId	INTEGER	20	This is the primary key for the Value_Addder_Service table.E.g.:12345
cInvestorname	VARCHAR	50	This is the name of the value adder.E.g.:"yusuf"
cEmail	VARCHAR	25	This is the email address of the value adder. E.g.:asdf@gmail.com
nMobileno	INTEGER	11	This is the mobile number of the value adder. E.g.:12345678910
cSMSService	VARCHAR	50	This is the SMS Service of the value adder.
cEmailService	VARCHAR	50	This is the Email Service of the value adder. E.g.:

Card_T

Name	Data Type	Size	Remarks
Card_No	INTEGER	20	This is the primary key for the Card table. E.g.:456239
nCard_Holder_Name	VARCHAR	50	This is the name of the Card_Holder.E.g.:"Jalil"
cCard_Holder_Sign	VARCHAR	25	This is Sign of the Card_Holder E.g.:Jalil
nCard_Expiry_Date	DATETIME		This is the Card_Expiry_Date of Card_Holder E.g.:23/7/2021
cCard_Holder_PassportNo	INTEGER	20	This is the PassportNo of the Card_Holder E.g: 74244728
nSmartChip	INTEGER	50	This is the SmartChip of the Card_Holder E.g.: 1234-5678-9012-3456
nCustomer_Code	INTEGER	50	This is the foreign key of the Customer table. E.g: : 0123456

Power_Of_Attorney_T

Name	Data Type	Size	Remarks
POA_Id	INTEGER	20	This is the primary key for the Power_Of_Attorney Table. E.g.:73483
nPOA_Address	VARCHAR	50	This is the Address of the Power Of attorney, E.g.:"Banani, Rd. no. 6."
cPOA_PostCode	VARCHAR	25	This is the post code of the power of attorney. E.g.: 1213
nPOA_Phone	VARCHAR	35	This is the phone number of the Power of attorney E.g.:019635223**
cPOA_Passport_No	INTEGER	20	This is the passport number of the Power Of attorney E.g: 93224727
nPOA_passport_IssueDate	DATETIME	50	This is issue date of the Power of attorney

			Passport E.g.: 8-5-2022
nPOA_Passport_IssuePlace	INTEGER	50	This is the issue place of the Power of attorney passport. E.g: : Mohakhali
cPOA_dob	DATETIME		This is the birthdate of the Power of attorney E.g: 01-05-1985
nApplication_Id	INTEGER		This is the Application ID of the BO account table. E.g: :654321

CHAPTER 4: PHYSICAL SYSTEM DESIGN

A. INPUT FORMS

LankaBangla Securities



UserName

Password

The screenshot shows a website layout for LankaBangla Securities. At the top, there's a navigation bar with the company logo and links to 'Terms And Condition', 'Customer Account Info.', 'BO Account Form', and 'Power of Attorney'. Below this is a purple header bar with the text 'LankaBangla Information'. The main content area is divided into three columns:

- LankaBangla Customer**: Describes the company's focus on providing excellent customer service and building strong relationships. It highlights points like Personalized Service, Expert Guidance, and Online Trading. A link to 'visit the link' is provided.
- iBroker**: A section for Stock Brokerage. It explains that LankaBangla acts as an intermediary between investors and the stock market, facilitating buying and selling of stocks on behalf of clients. It includes a link to 'visit the link'.
- Central Depository Bangladesh Limited**: Describes the company's role as a depository participant, allowing clients to hold and manage securities electronically. It includes a link to 'visit the link'.

Customer Accounts Form

First Name

Last Name

Full Name

Present Address

Permanent Address

Date of Birth

Chose Your Photo No file chosen

Gender Male FeMale Others

Customer Code

Generate The Password

The screenshot shows a web form titled "CUSTOMER ACCOUNT INFORMATION FORM". It is divided into two sections: "First Account Holder" and "Joint Account Holder".

First Account Holder:

- Name of the customer: [Text Input]
- Father's/Husband's Name: [Text Input]
- Mother's Name: [Text Input]
- Present Address: [Text Input]
- Permanent Address: [Text Input]
- Phone: [Text Input]
- Nationality: [Text Input]
- Email: [Text Input]
- Occupation: [Text Input]
- Date of Birth: [Text Input] mm/dd/yyyy
- Gender: [Select Box] Male

Joint Account Holder:

- Name of Joint Account Holder: [Text Input]
- Father's/Husband's Name: [Text Input]

```

register_form.php
1  <?php
2  @include 'config.php';
3
4  if(isset($_POST['submit'])){
5
6      $first_name = mysqli_real_escape_string($conn, $_POST['first_name']);
7      $last_name = mysqli_real_escape_string($conn, $_POST['last_name']);
8      $username = mysqli_real_escape_string($conn, $_POST['username']);
9      $email = mysqli_real_escape_string($conn, $_POST['email']);
10     $present_address = mysqli_real_escape_string($conn, $_POST['present_address']);
11     $permanent_address = mysqli_real_escape_string($conn, $_POST['permanent_address']);
12     $dob = $_POST['dob'];
13     $gender = $_POST['gender'];
14     $bo_account_number = mysqli_real_escape_string($conn, $_POST['bo_account_number']);
15     $password = md5($_POST['password']);
16     $confirm_password = md5($_POST['confirm_password']);
17     $user_type = $_POST['user_type'];
18
19     $select = " SELECT * FROM users WHERE email = '$email' ";
20
21     $result = mysqli_query($conn, $select);
22
23     if(mysqli_num_rows($result) > 0){
24
25         $error[] = 'User already exists!';
26
27     } else {
28
29         if($password != $confirm_password){
30             $error[] = 'Passwords do not match!';

```

BO Account Opening FORM

Please complete all details in **CAPITAL** letters. **Please fill all names correctly.** All communications shall be sent only to the First Named Account Holder's correspondence address.

CDBL Participant ID

BO ID

BO Category
 Regular

BO type
 Individual

Date Account Opened mm/dd/yyyy

1. First Applicant

Short Name of Account Holder <input type="text"/>	Title i.e [Mr <input]]<="" td="" type="button" value="▼"/>
Name of Contact Person <input type="text"/>	Father's / Husband's Name <input type="text"/>
Mobile No. <input type="text"/>	Occupation <input type="text"/>

```

50     $error[] = "Passwords do not match";
51 } else {
52     // Insert data into the database
53     $insert = "INSERT INTO users(first_name, last_name, username, email, present_address, permanent_address, dob, gender, bo_account_number, password, created_on) VALUES('$first_name', '$last_name', '$username', '$email', '$present_address', '$permanent_address', '$dob', '$gender', '$bo_account_number', '$password', '$created_on')";
54     mysqli_query($conn, $insert);
55     header('location:login_form.php');
56 }
57
58 };
59 ?>
60
61
62 <!DOCTYPE html>
63 <html lang="en">
64 <head>
65     <meta charset="UTF-8">
66     <meta http-equiv="X-UA-Compatible" content="IE=edge">
67     <meta name="viewport" content="width=device-width, initial-scale=1.0">
68     <title>Registration Form</title>
69
70     <!-- Custom CSS file Link -->
71     <link rel="stylesheet" href="css/register_form.css">
72
73 </head>
74 <body>
75
76 <div class="form-container">
77
78     <form action="" method="post">
79         <h3>Customer Register Form</h3>
80         <?php
81
82             if ($error) {
83                 foreach ($error as $err) {
84                     echo "<div style='color: red; border: 1px solid red; padding: 5px; margin-bottom: 10px;'>" . $err . "</div>";
85                 }
86             }
87
88             if ($msg) {
89                 echo "<div style='color: green; border: 1px solid green; padding: 5px; margin-bottom: 10px;'>" . $msg . "</div>";
90             }
91
92             echo "<div style='border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;'>";
```

```

66    ?>
67    <input type="text" name="first_name" required placeholder="First Name">
68    <input type="text" name="last_name" required placeholder="Last Name">
69    <input type="text" name="username" required placeholder="Username">
70    <input type="email" name="email" required placeholder="Email">
71    <input type="text" name="present_address" required placeholder="Present Address">
72    <input type="text" name="permanent_address" required placeholder="Permanent Address">
73    <input type="date" name="dob" required>
74    <select name="gender" required>
75        <option value="male">Male</option>
76        <option value="female">Female</option>
77        <option value="other">Other</option>
78    </select>
79    <input type="text" name="bo_account_number" required placeholder="BO Account Number">
80    <select name="user_type" required>
81        <option value="customer">Customer</option>
82        <option value="head_of_settlement">Head of Settlement</option>
83        <option value="customer_relationship_manager">Customer Relationship Manager</option>
84        <option value="admin">Admin</option>
85    </select>
86    <input type="password" name="password" required placeholder="Password">
87    <input type="password" name="confirm_password" required placeholder="Confirm Password">
88    <input type="submit" name="submit" value="Register Now" class="form-btn">
89    <p>Already have an account? <a href="login_form.php">Login now</a></p>
90  </form>
91
92 </div>
93
94 </body>
95 </html>

```

Customer Accounts Form

Name of CDBL Participant: LankaBangla Securities Ltd:

CDBL Participant Id:

Account Holder BO Id:

Name Of Account Holder

Enter text here...

Power Of Attorney Holder's Details:

Create Account

Power Of Attorney Holder's Contact Details

Address

```
66    ?>
67    <input type="text" name="first_name" required placeholder="First Name">
68    <input type="text" name="last_name" required placeholder="Last Name">
69    <input type="text" name="username" required placeholder="Username">
70    <input type="email" name="email" required placeholder="Email">
71    <input type="text" name="present_address" required placeholder="Present Address">
72    <input type="text" name="permanent_address" required placeholder="Permanent Address">
73    <input type="date" name="dob" required>
74    <select name="gender" required>
75        <option value="male">Male</option>
76        <option value="female">Female</option>
77        <option value="other">Other</option>
78    </select>
79    <input type="text" name="bo_account_number" required placeholder="BO Account Number">
80    <select name="user_type" required>
81        <option value="customer">Customer</option>
82        <option value="head_of_settlement">Head of Settlement</option>
83        <option value="customer_relationship_manager">Customer Relationship Manager</option>
84        <option value="admin">Admin</option>
85    </select>
86    <input type="password" name="password" required placeholder="Password">
87    <input type="password" name="confirm_password" required placeholder="Confirm Password">
88    <input type="submit" name="submit" value="Register Now" class="form-btn">
89    <p>Already have an account? <a href="login_form.php">Login now</a></p>
90    </form>
91
92 </div>
93
94 </body>
95 </html>
```

```
login_form.php
56     }
57 }
58 ?>
59
60 <!DOCTYPE html>
61 <html lang="en">
62 <head>
63     <meta charset="UTF-8">
64     <meta http-equiv="X-UA-Compatible" content="IE=edge">
65     <meta name="viewport" content="width=device-width, initial-scale=1.0">
66     <title>Login Form</title>
67
68     <!-- Custom CSS file Link -->
69     <link rel="stylesheet" href="css/login_form.css">
70
71 </head>
72 <body>
73
74 <div class="container">
75
76     <form action="" method="post">
77         <h3>Login Now</h3>
78         <?php
79             if(isset($error)){
80                 foreach($error as $error){
81                     echo '<span class="error-msg">' . $error . '</span>';
82                 }
83             }
84         ?>
85         <input type="email" name="email" required placeholder="Enter your email">
86         <input type="password" name="password" required placeholder="Enter your password">
```

```
87     </form>
88
89 </div>
90
91 </body>
92
93 </html>
94
```

Profile



Tonmoy Hafiz
Customer Relationship Manager

[Profile](#)

IDENTITY

Name : Tonmoy Hafiz

Email : tonmoyhafiz@gmail.com

Address : Gazipur, Dhaka

Hobbies : Playing Football, Reading Book

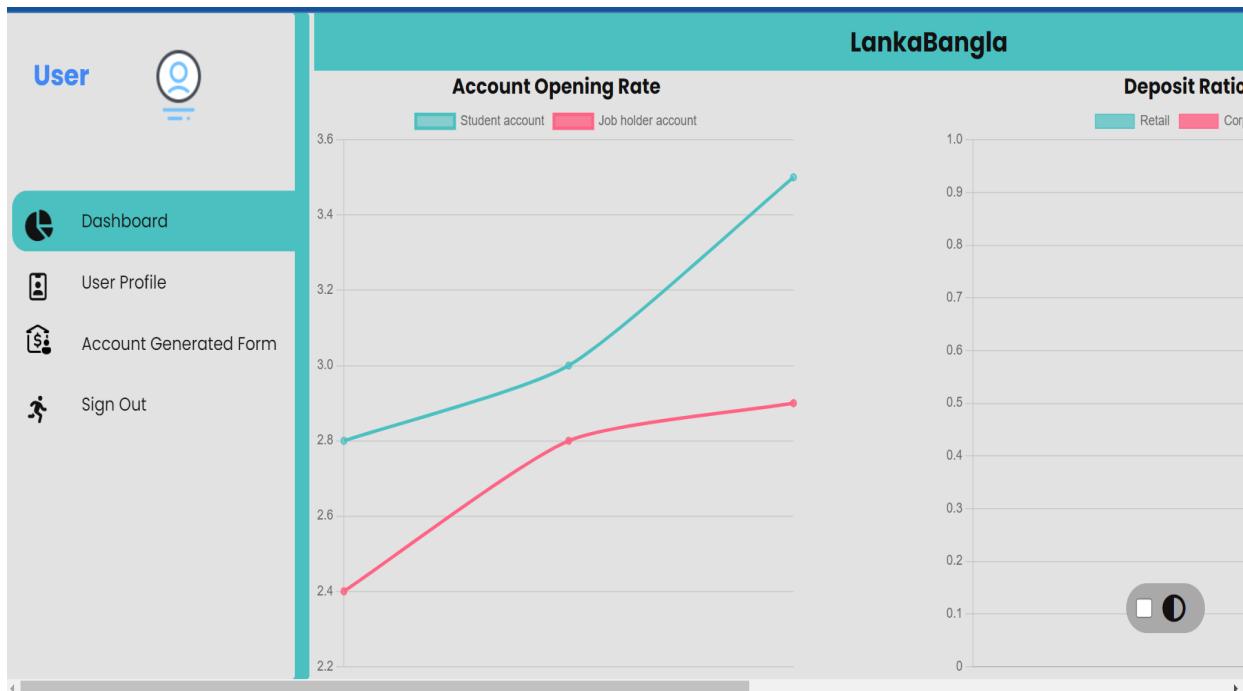
Job : Customer Relation Manager And Web Developer

Skill : PHP, Laravel, HTML, CSS, Bootstrap, JavaScript, React JS

SOCIAL MEDIA

ID	Requested by	Type	Status	Enter BO ID
202334	Fatema	Institutional	Completed	<input type="text"/>
202335	ABC	Institutional	Incomplete	<input type="text"/>
202336	ABC	Institutional	Incomplete	<input type="text"/>
202337	ABC	Institutional	Incompletely	<input type="text"/>
202338	ABC	Institutional	Incompleted	<input type="text"/>
202339	ABC	Institutional	Incomplete	<input type="text"/>
202340	ABC	Institutional	Incomplete	<input type="text"/>
202341	ABC	Institutional	Incomplete	<input type="text"/>
202342	ABC	Institutional	Incomplete	<input type="text"/>
202343	ABC	Institutional	Incomplete	<input type="text"/>
202344	ABC	Institutional	Incomplete	<input type="text"/>
202345	ABC	Institutional	Incomplete	<input type="text"/>

B. OUTPUT FORMS



BO Account Opening FORM

Please complete all details in **CAPITAL** letters. **Please fill all names correctly.** All communications shall be sent only to the First Named Account Holder's correspondence address.

CDLB Participant ID

BO ID

BO Category
 Regular

BO type
 Individual

Date Account Opened mm/dd/yyyy

1. First Applicant

Short Name of Account Holder <input type="text"/>	Title i.e [Mr] <input type="text"/>
Name of Contact Person <input type="text"/>	Father's / Husband's Name <input type="text"/>
Mobile No. <input type="text"/>	Occupation <input type="text"/>

```

register_form.php
1  <?php
2  @include 'config.php';
3
4  if(isset($_POST['submit'])){
5
6      $first_name = mysqli_real_escape_string($conn, $_POST['first_name']);
7      $last_name = mysqli_real_escape_string($conn, $_POST['last_name']);
8      $username = mysqli_real_escape_string($conn, $_POST['username']);
9      $email = mysqli_real_escape_string($conn, $_POST['email']);
10     $present_address = mysqli_real_escape_string($conn, $_POST['present_address']);
11     $permanent_address = mysqli_real_escape_string($conn, $_POST['permanent_address']);
12     $dob = $_POST['dob'];
13     $gender = $_POST['gender'];
14     $bo_account_number = mysqli_real_escape_string($conn, $_POST['bo_account_number']);
15     $password = md5($_POST['password']);
16     $confirm_password = md5($_POST['confirm_password']);
17     $user_type = $_POST['user_type'];
18
19     $select = " SELECT * FROM users WHERE email = '$email' ";
20
21     $result = mysqli_query($conn, $select);
22
23     if(mysqli_num_rows($result) > 0){
24
25         $error[] = 'User already exists!';
26
27     } else {
28
29         if($password != $confirm_password){
30             $error[] = 'Passwords do not match!';

```

```

        $error[] = 'Passwords do not match!';
31     } else {
32         // Insert data into the database
33         $insert = "INSERT INTO users(first_name, last_name, username, email, present_address, permanent_address, dob, gender, bo_account_number, password, user_type) VALUES('$first_name', '$last_name', '$username', '$email', '$present_address', '$permanent_address', '$dob', '$gender', '$bo_account_number', '$password', '$user_type')";
34         mysqli_query($conn, $insert);
35         header('location:login_form.php');
36     }
37 }
38
39 };
40 ?>
41
42 <!DOCTYPE html>
43 <html lang="en">
44 <head>
45     <meta charset="UTF-8">
46     <meta http-equiv="X-UA-Compatible" content="IE=edge">
47     <meta name="viewport" content="width=device-width, initial-scale=1.0">
48     <title>Registration Form</title>
49
50     <!-- Custom CSS file Link -->
51     <link rel="stylesheet" href="css/register_form.css">
52
53 </head>
54 <body>
55
56     <div class="form-container">
57
58         <form action="" method="post">
59             <h3>Customer Register Form</h3>
60             <?php

```

```
66    ?>
67    <input type="text" name="first_name" required placeholder="First Name">
68    <input type="text" name="last_name" required placeholder="Last Name">
69    <input type="text" name="username" required placeholder="Username">
70    <input type="email" name="email" required placeholder="Email">
71    <input type="text" name="present_address" required placeholder="Present Address">
72    <input type="text" name="permanent_address" required placeholder="Permanent Address">
73    <input type="date" name="dob" required>
74    <select name="gender" required>
75        <option value="male">Male</option>
76        <option value="female">Female</option>
77        <option value="other">Other</option>
78    </select>
79    <input type="text" name="bo_account_number" required placeholder="BO Account Number">
80    <select name="user_type" required>
81        <option value="customer">Customer</option>
82        <option value="head_of_settlement">Head of Settlement</option>
83        <option value="customer_relationship_manager">Customer Relationship Manager</option>
84        <option value="admin">Admin</option>
85    </select>
86    <input type="password" name="password" required placeholder="Password">
87    <input type="password" name="confirm_password" required placeholder="Confirm Password">
88    <input type="submit" name="submit" value="Register Now" class="form-btn">
89    <p>Already have an account? <a href="login_form.php">Login now</a></p>
90  </form>
91
92 </div>
93
94 </body>
95 </html>
```

CHAPTER 5: CONCLUSION

A. PROBLEM AND SOLUTION

Problem Statement:

Our project's effectiveness has been hindered by the constraints of a limited semester timeframe. While we aimed to develop a comprehensive program, the short duration has restricted our ability to fully explore its potential. Due to time limitations, our program may lack certain features and robustness that could have been achieved with more time and resources.

Proposed Solution:

To overcome the limitations imposed by the semester's duration, an extension of the project timeframe could be considered. This would allow for more thorough development, testing, and refinement of the program's features.

Providing access to more advanced tools, technologies, and data sources can significantly improve the accuracy of our program's outcomes and predictions. This may involve partnerships with data providers or research institutions.

Comprehensive documentation of the program's development, architecture, and codebase can enable future teams to build upon the project's foundation, even beyond the current semester.

B . ADDITIONAL FEATURES AND FUTURE DEVELOPMENT

As we look towards the future of our project, there are several additional features and enhancements that we can consider to further enhance its functionality, user experience, and impact

Provide users with real-time updates and alerts on relevant events or changes in their data. This could involve push notifications or dynamic updates on the dashboard.

Provide users with real-time updates and alerts on relevant events or changes in their data. This could involve push notifications or dynamic updates on the dashboard.

Commit to regular updates and improvements based on user feedback and technological advancements to keep the project relevant and cutting-edge. Stay updated

on data privacy regulations and ensure that the project remains compliant with evolving data protection laws.

Implement accessibility features to ensure that the project is usable by individuals with disabilities, meeting inclusivity and compliance standards.

Enable integration with other tools commonly used by businesses, such as project management software, CRM systems, and collaboration platforms.

C . CONCLUSION & RECOMMENDATION

In conclusion, the development and analysis phases of the LankaBangla Securities project have been both insightful and rewarding. As we reflect on the journey so far, we have gained a deeper understanding of the intricacies of the financial sector, as well as the critical role technology plays in optimizing decision-making and operational efficiency. Through our rich picture and six-element analysis, we have identified key elements and interactions that shape the success of our project.

It's important to acknowledge that the project's scope and potential are influenced by the limitations of time, resources, and the semester's duration. Despite these constraints, we have strived to create a robust program that addresses essential user needs and provides a foundation for future enhancements.

Prioritize user experience by conducting user testing and gathering feedback to refine the user interface and functionality. A user-friendly platform will attract and retain customers.

Integrate advanced data analytics and visualization tools to provide users with insightful market trends, real-time data, and predictive analysis for more informed decision-making.

Provide a library of educational resources, including articles, tutorials, and videos, to empower users with the knowledge they need to make informed investment choices.

Offer multi-channel customer support, including live chat, email, and phone support, to promptly address user inquiries and concerns.

Provide a library of educational resources, including articles, tutorials, and videos, to empower users with the knowledge they need to make informed investment choices.

Implement features that allow users to collaborate and share insights with other investors, fostering a sense of community and collective learning.

Commit to a schedule of regular updates and improvements to keep the platform current, bug-free, and aligned with user needs.