

CHAPTER 1

INTRODUCTION

During the past several decades personnel function has been transformed from a relatively obscure record keeping staff to central and top level management function. There are many factors that have influenced this transformation like technological advances, professionalism, and general recognition of human beings as most important resources.

A computer based management system is designed to handle all the primary information required to calculate monthly statements of customer account which include monthly statement of any month. Separate database is maintained to handle all the details required for the correct statement calculation and generation.

A Bank management system is designed to handle all the primary information required for maintaining a person's account in a bank. The system provides the access to the customer to create an account, deposit/withdraw the cash and other core banking features from his account. It also enables customer to view reports of all accounts present, calculate monthly statements of customer account which include monthly statement of any month.

The bank management system is an essential component of modern banking, as it helps to ensure the smooth functioning of financial institutions. It provides a comprehensive solution for managing various banking processes and operations, making it easier for banks to offer their services to customers. Here are some of the key features and benefits of a bank management system:

1. Account Management: The bank management system enables financial institutions to manage customer accounts efficiently. It allows banks to open and close accounts, perform account maintenance tasks, and manage account transactions.
2. Transaction Processing: The system enables banks to process various types of transactions, such as deposits, withdrawals, and transfers. It ensures that transactions are completed accurately and efficiently.

3. Loan Management: The bank management system enables financial institutions to manage loan applications, approvals, and disbursements. It also helps to monitor loan repayments and ensures that loans are managed effectively.
3. Customer Relationship Management: The system enables banks to manage their relationships with customers effectively. It provides a platform for customer support, complaint management, and feedback management.
4. Security and Compliance: The bank management system ensures that all transactions are secure and comply with the regulations and policies of the financial institution. It also provides tools for managing fraud and security risks.
5. Reporting and Analytics: The system provides banks with real-time data on their operations, allowing them to make informed decisions. It also provides tools for generating reports and analyzing data to identify trends and areas for improvement.

Separate database is maintained to handle all the details required for the correct statement calculation and generation. This project intends to introduce more user friendliness in the various activities such as record, updating, maintenance, and searching. The searching of record has been made quite simple as all the details of the customer can be obtained by simply keying in the identification or account number with the password of that customer. Similarly, record maintenance and updating can also be accomplished by using the account number and password with all the details being automatically generated. These details are also being promptly automatically updated in the master file thus keeping the record absolutely up-to- date.

1.1 BACKGROUND

A Bank management system is designed to handle all the primary information required for maintaining a person's account in a bank. The system provides the access to the customer to create an account, deposit/withdraw the cash and other core banking features from his account. It also enables customer to view reports of all accounts present, calculate monthly statements of customer account which include monthly statement of any month.

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The motivation for creating a bank management system can be attributed to several factors. Firstly, the increasing demand for banking services and the need to provide fast and efficient services to customers has led to the adoption of technology in banking operations. A bank management system provides a platform for financial institutions to manage their operations efficiently, automate various processes, and offer a wide range of services to customers. Secondly, the need for security and compliance has also motivated the development of bank management systems. Financial institutions are required to comply with regulations and policies to ensure the security of their operations and customers' data. A bank management system provides tools for managing fraud and security risks, monitoring transactions, and ensuring compliance with regulations.

Thirdly, the need for real-time data and analytics has also driven the development of bank management systems. Financial institutions require up-to-date data on their operations to make informed decisions, identify trends, and areas for improvement. A bank management system

provides real-time data, reporting, and analytics tools, enabling financial institutions to make data-driven decisions.

Finally, the need to improve customer experience and engagement has also motivated the development of bank management systems. Customers expect fast, efficient, and personalized services from their financial institutions. A bank management system provides a platform for managing customer accounts, processing transactions, and providing online and mobile banking services, enabling financial institutions to offer a wide range of services to customers. In conclusion, the motivation for creating a bank management system can be attributed to the increasing demand for banking services, the need for security and compliance, the need for real-time data and analytics, and the need to improve customer experience and engagement. A bank management system provides a comprehensive solution for managing various banking operations, enabling financial institutions to stay competitive and meet the evolving needs of their customers.

CHAPTER 2

LITERATURE SURVEY

1. "Design and Implementation of an Online Banking System" by Oluwaseun Akinwale and Adebayo Adesina, published in the International Journal of Computer Applications in 2015. This paper presents the design and implementation of an online banking system using PHP, MySQL, and HTML. The system includes features such as user registration, account management, funds transfer, bill payments, and loan applications.
2. "An Overview of Online Banking and its Security Issues" by Zahidur Rahman and Md. Farhanul Hossain, published in the International Journal of Computer Applications in 2013. This paper provides an overview of online banking and discusses the security issues associated with it. The authors present various security measures such as two-factor authentication, encryption, and firewalls that can be used to protect online banking systems.
- 3."Development of a Web-Based Banking System" by Abimbola O. Adubi and Olufunke O. Adubi, published in the International Journal of Computer Science and Information Technology in 2015. This paper describes the development of a web-based banking system using PHP, MySQL, and HTML. The system includes features such as user registration, account management, funds transfer, and bill payments.
4. "A Comparative Study of Traditional Banking System and Online Banking System" by Shamsul Arefin, published in the International Journal of Science and Research in 2015. This paper presents a comparative study of traditional banking systems and online banking systems. The author discusses the advantages and disadvantages of both systems and concludes that online banking is more convenient and efficient.
5. "A Secure Online Banking System Using Biometrics" by Tariq M. Yousef, published in the International Journal of Computer Applications in 2012. This paper presents the design and implementation of a secure online banking system using biometric authentication. The system includes features such as user registration, account management, funds transfer, bill payments, and loan applications.

6."Design and Implementation of an Online Banking System with SMS Notification" by Joseph Adeyemi Adebiyi and Segun O. Olatinwo, published in the Journal of Information Engineering and Applications in 2015. This paper presents the design and implementation of an online banking system with SMS notification using PHP, MySQL, and HTML. The system includes features such as user registration, account management, funds transfer, bill payments, and loan applications.

7."Implementation of a Secure Online Banking System" by K. D. Joshi and P. S.Deshpande, published in the International Journal of Computer Science and Network Security in 2013. This paper presents the implementation of a secure online banking system using Java, JSP, and MySQL. The system includes features such as user registration, account management, funds transfer, bill payments, and loan applications. The authors also discuss the security measures used in the system, such as SSL encryption and digital signatures.

Overall, these papers provide a comprehensive overview of online banking systems and the various technologies used in their development. They also discuss the security issues associated with online banking and present various measures that can be used to protect these systems.

CHAPTER 3

SOFTWARE REQUIREMENT SPECIFICATION

The development of a bank management system requires a meticulous understanding of the software requirements involved. Primarily, the system demands a robust database management system to efficiently handle extensive data related to banking operations. Popular choices such as MySQL, PostgreSQL, or MongoDB are preferred due to their reliability, scalability. These databases facilitate efficient storage and retrieval of crucial information including account details, transaction records, user profiles, and administrative data. Moreover, they support essential features such as data indexing, query optimization, and transaction management, ensuring smooth operation of the banking website even during peak traffic periods.

Continuous integration and deployment (CI/CD) pipelines, along with automated frameworks, play a pivotal role in ensuring code quality, reliability, and rapid iteration cycles. These practices enable the bank management system to evolve and adapt to changing requirements and user expectations over time. By embracing modern development methodologies and leveraging robust software tools, the bank management system can effectively address the complex challenges of the banking industry while providing a seamless and secure banking experience for users.

3.1 Software Requirements:

1. An internet connection.
2. Operating System: Windows 7 or later, macOS, or Linux
3. Terminal or Command Prompt to run the servers.
4. Database: MySQL
5. Text Editor: Visual Studio Code, Sublime Text, or any other text editor .
6. Browser: Chrome, Firefox, Safari, or Edge.

3.2 Hardware Requirements:

1. A computer system with a minimum of 2 GHz Processor.
2. Smartphones with Android 4.4 and higher or iOS 9.0 and higher.
3. Processor: Intel Core i3 or equivalent
4. RAM: 4GB or more
5. Hard disk: 500GB or more
6. Network card: Ethernet or Wi-Fi

CHAPTER 4

DESIGN

A schema diagram is a visual representation of the structure and relationships within a database schema. It provides a high-level overview of the tables, columns, primary keys, foreign keys, and relationships that define the database's structure. Schema diagrams are essential for database designers, developers, and stakeholders to understand the organization and logic of the database.

Components of a Schema Diagram:

1. Tables: Tables represent entities or concepts in the database, such as users, transactions, products, or orders. Each table consists of rows and columns, where columns represent attributes or properties of the entity.
2. Columns: Columns define the attributes or properties of the entities represented by tables. They specify the type of data that can be stored in each attribute, such as integers, strings, dates, or boolean values.
3. Primary Keys: Primary keys uniquely identify each record or row within a table. They ensure that each record in the table is uniquely identifiable and serve as the basis for establishing relationships between tables.
4. Foreign Keys: Foreign keys establish relationships between tables by referencing the primary key of another table. They enforce referential integrity and maintain consistency between related tables.
5. Relationships: Relationships define how tables are connected or related to each other. They can be one-to-one, one-to-many, or many-to-many relationships, depending on the cardinality of the relationship between entities.

For bank management system project, the schema diagram would include tables representing key entities such as customers, transactions, accounts, cards, and dashboards. Each table would contain

columns representing attributes relevant to the entity it represents, such as customer name, account number, transaction type, transaction amount, card number, and account balance.

The schema diagram would also depict the relationships between tables, such as the relationship between the customer table and the transaction table, established through the account number foreign key. Similarly, the relationship between the cards table and the customer table would be represented to show the association between customer accounts and issued cards.

In summary, the schema diagram for bank management system project would visually illustrate the structure of your database, including tables, columns, primary keys, foreign keys, and relationships between entities. It serves as a valuable tool for understanding the database's organization and facilitating effective database design and development.

4.1 SCHEMA DIAGRAM

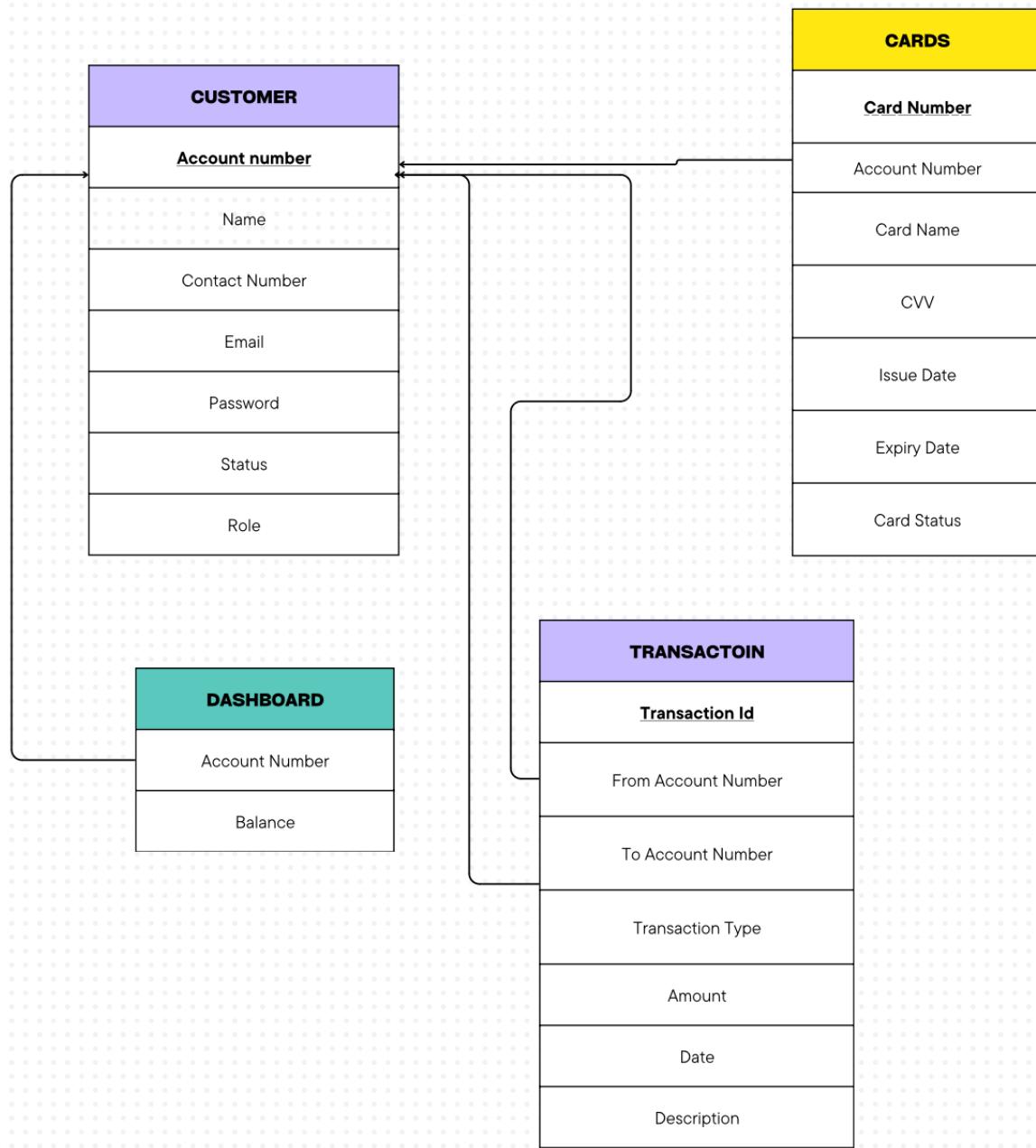


Figure 4.1 Schema Diagram Of Bank Management System

4.2 ENTITY-RELATIONSHIP DIAGRAM

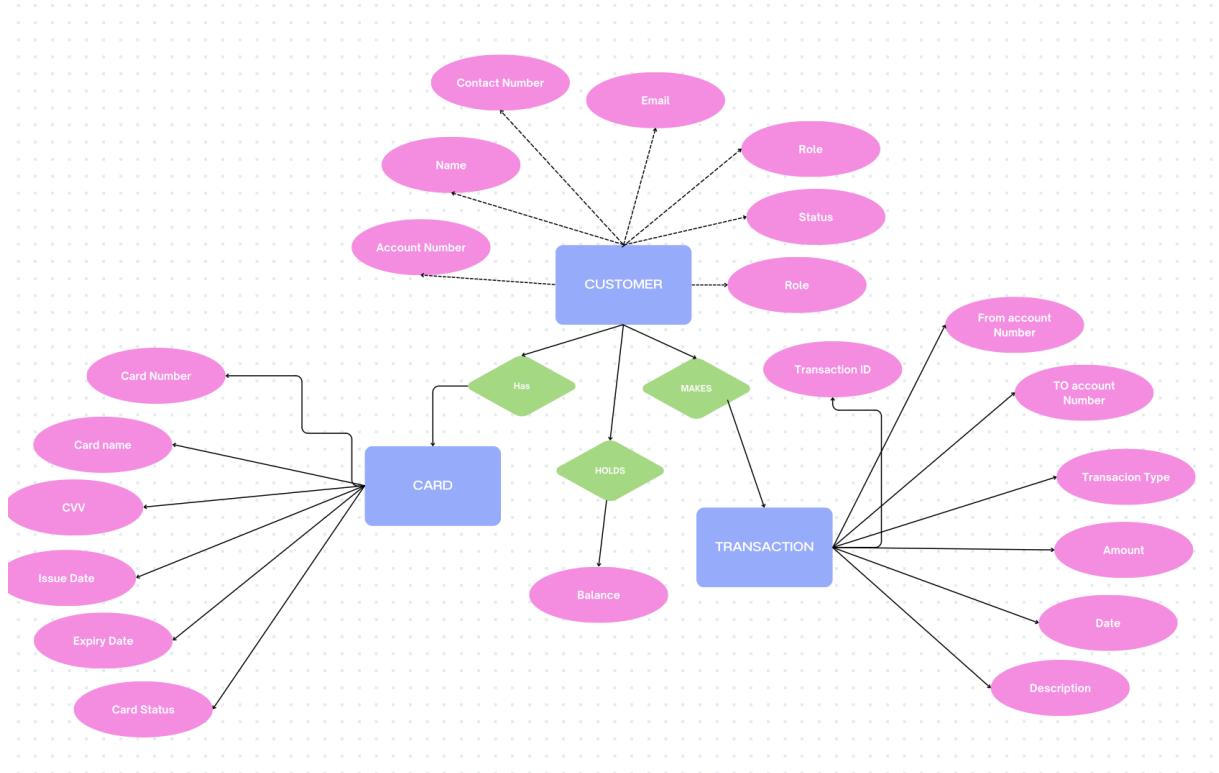


Figure 4.2 ER Diagram of Bank Management System

TABLE DESCRIPTIONS

Field	Type	Null	Key	Default	Extra
accountNumber	bigint	YES	MUL	NULL	
cardName	varchar(80)	NO		NULL	
cardNumber	varchar(16)	NO	PRI	NULL	
cvv	int	NO		NULL	
issuedDate	date	NO		NULL	
expiryDate	date	NO		NULL	
cardStatus	varchar(12)	NO		NULL	

Figure 4.3 Description of table :CARDS

Field	Type	Null	Key	Default	Extra
accountNumber	bigint	YES	MUL	NULL	
balance	float	NO		NULL	

Figure 4.4 Description of Table :DASHBOARD

Field	Type	Null	Key	Default	Extra
accountNumber	bigint	NO	PRI	NULL	
name	varchar(250)	YES		NULL	
contactNumber	varchar(20)	YES		NULL	
email	varchar(50)	YES		NULL	
password	varchar(50)	YES		NULL	
status	varchar(20)	YES		NULL	
role	varchar(20)	YES		NULL	

Figure 4.5 Description of Table :CUSTOMER

Field	Type	Null	Key	Default	Extra
transactionId	int	NO	PRI	NULL	auto_increment
accountNumber	bigint	YES	MUL	NULL	
transtype	varchar(250)	YES		NULL	
fromacc	varchar(250)	YES		NULL	
toacc	varchar(250)	YES		NULL	
amount	float	YES		NULL	
dateo	date	YES		NULL	
description	varchar(250)	YES		NULL	

Figure 4.6 Description of Table :TRANSACTION

CHAPTER 5

IMPLEMENTATION

1. Frontend Development: The frontend development will involve creating the user interface using HTML, CSS, and JavaScript. The user interface will allow users to input their information and interact with the system.
2. RestAPI Development: The RestAPI will be developed using Node, a javascript web application framework. The RestAPI will be responsible for receiving the user's input from the frontend and processing it.
3. Put Request: The frontend will make a Put request to the RestAPI endpoint with the user's input as the payload. The RestAPI will receive the request and process the payload.
4. RestAPI Processing: The RestAPI will process the user's input, which may include validation, data transformation, or calling other APIs or services.
5. Response: The RestAPI will generate a response to the frontend based on the user's input. The response may include data, status codes, or error messages.
6. Frontend Processing: The frontend will receive the RestAPI response and process it using JavaScript. The frontend may display the response to the user, update the user interface, or perform other actions based on the response.
7. Testing and Debugging: The system will be thoroughly tested and debugged to ensure that it meets the requirements and functions as expected. Testing may include unit testing, integration testing, and user acceptance testing.
8. Deployment: The system will be deployed to a production environment, which may include a web server or cloud-based platform. The deployment will involve configuring the system for scalability, security, and performance.
9. Monitoring and Maintenance: The system will be monitored and maintained to ensure that it continues to function properly and meets the needs of users. Maintenance may include bug fixes, upgrades, and performance optimization.
10. Documentation: The system will be documented to provide instructions for users and developers, including user manuals, API documentation, and code documentation. Documentation will help ensure that the system can be easily maintained and updated in the future.

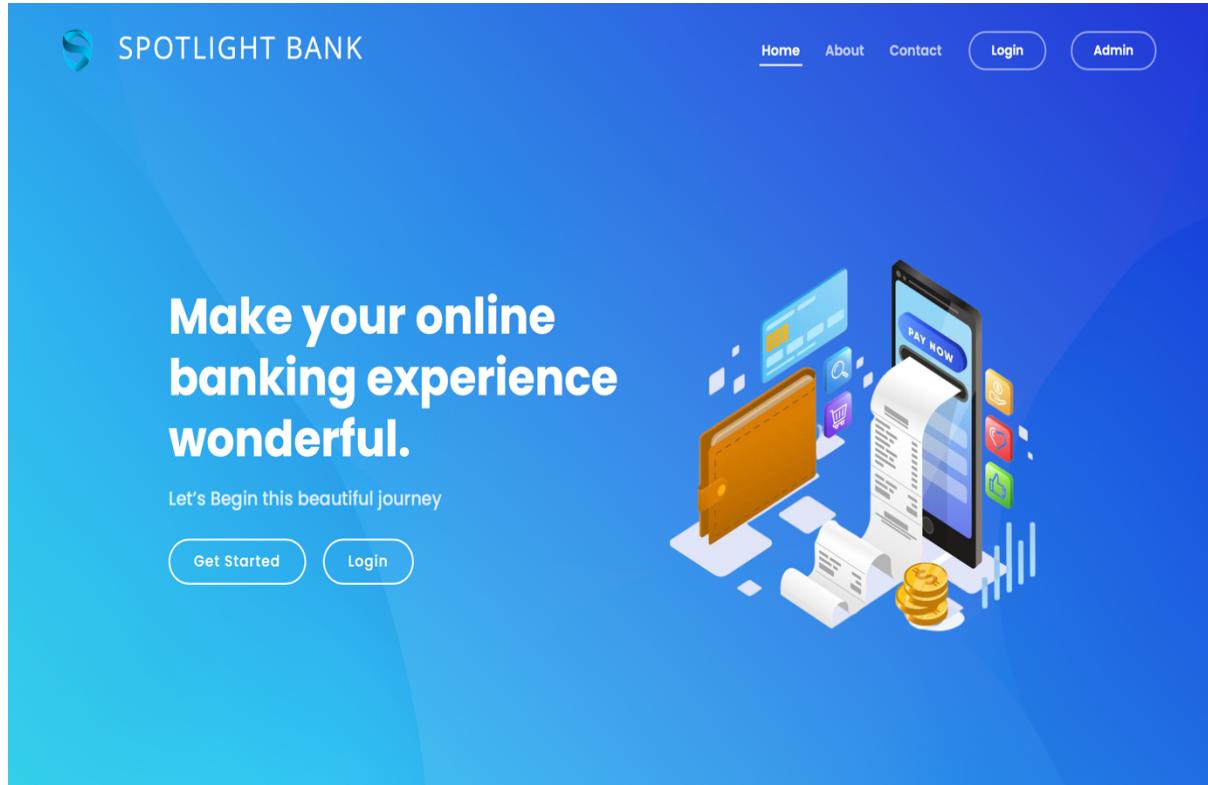


Figure 5.1 Main Window

A screenshot of the 'About Us' page of the Spotlight Bank Management System. The header is identical to the main window. The main content area has a dark blue background. At the top, there is a heading 'ABOUT US' with a horizontal line underneath. Below the heading, there is a paragraph of text: 'Welcome to Spotlight Bank! We are a trusted financial institution committed to providing reliable and secure banking services to our customers. Our team of experienced professionals is dedicated to delivering exceptional customer service and supporting you every step of the way. Whether you need assistance with opening an account, managing your finances, or navigating our online banking platform, we are here to help. We take the security and privacy of your information seriously. We employ the latest technology and security measures to protect your data and ensure that your online transactions are safe and secure. Thank you for choosing us as your banking partner. We look forward to serving you and helping you achieve your financial goals.' To the right of the text is a large, stylized illustration of two people interacting with a large mobile device screen. The screen displays the 'ABOUT US' section with three circular icons. Below the illustration are three categories: 'Money Savings' (with a wallet icon), 'Online Shoppings' (with a shopping cart icon), and 'Credit / Debit Cards' (with a credit card icon). An upward-pointing arrow is located in the bottom right corner.

Figure 5.2 About Us Window

SPOTLIGHT BANK MANAGEMENT SYSTEM

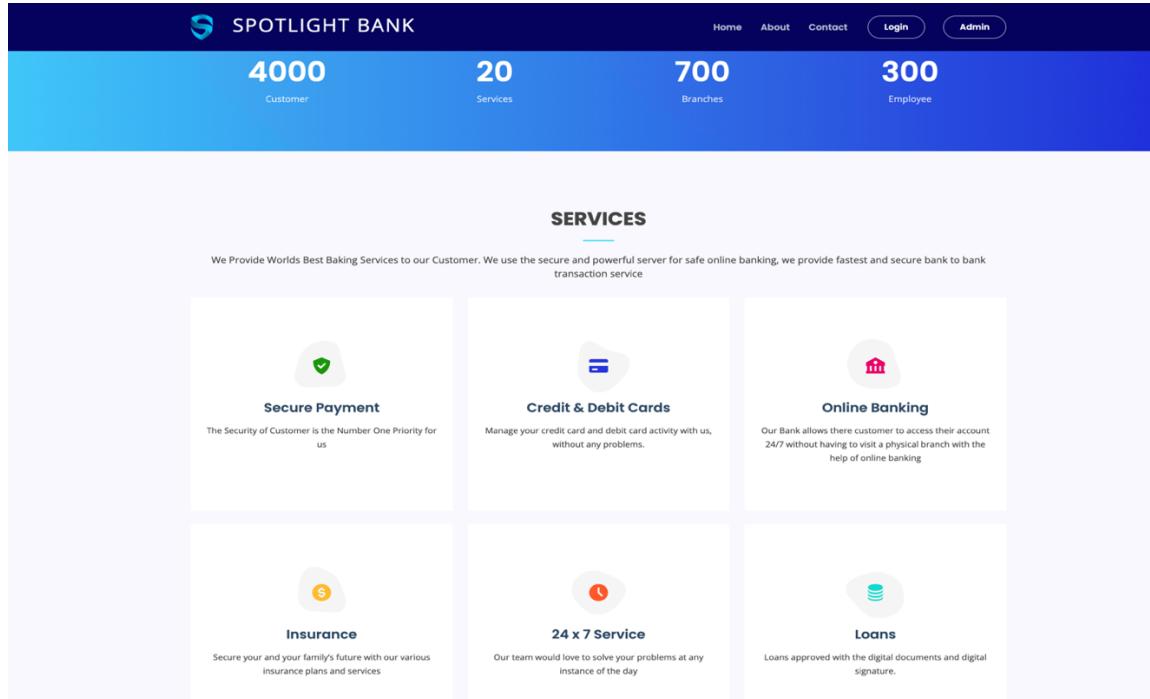


Figure 5.3 Services Window

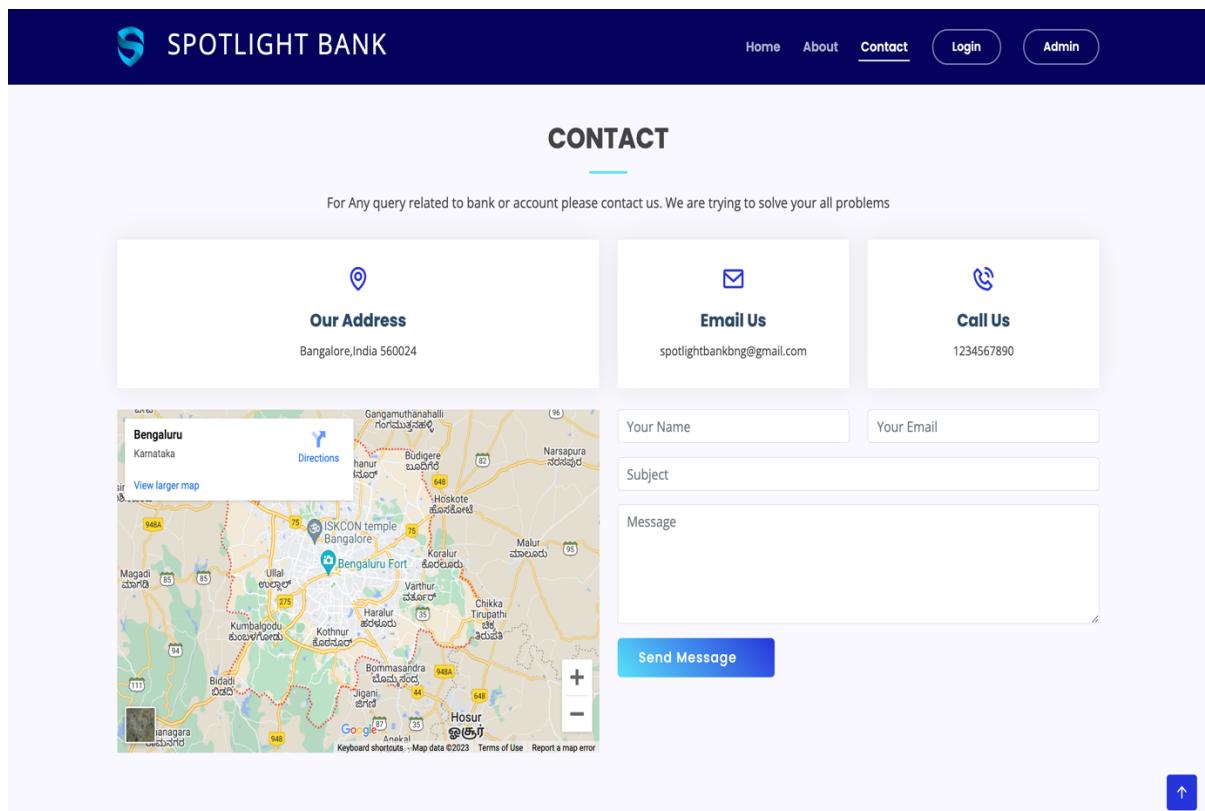


Figure 5.4 Contact Us Window

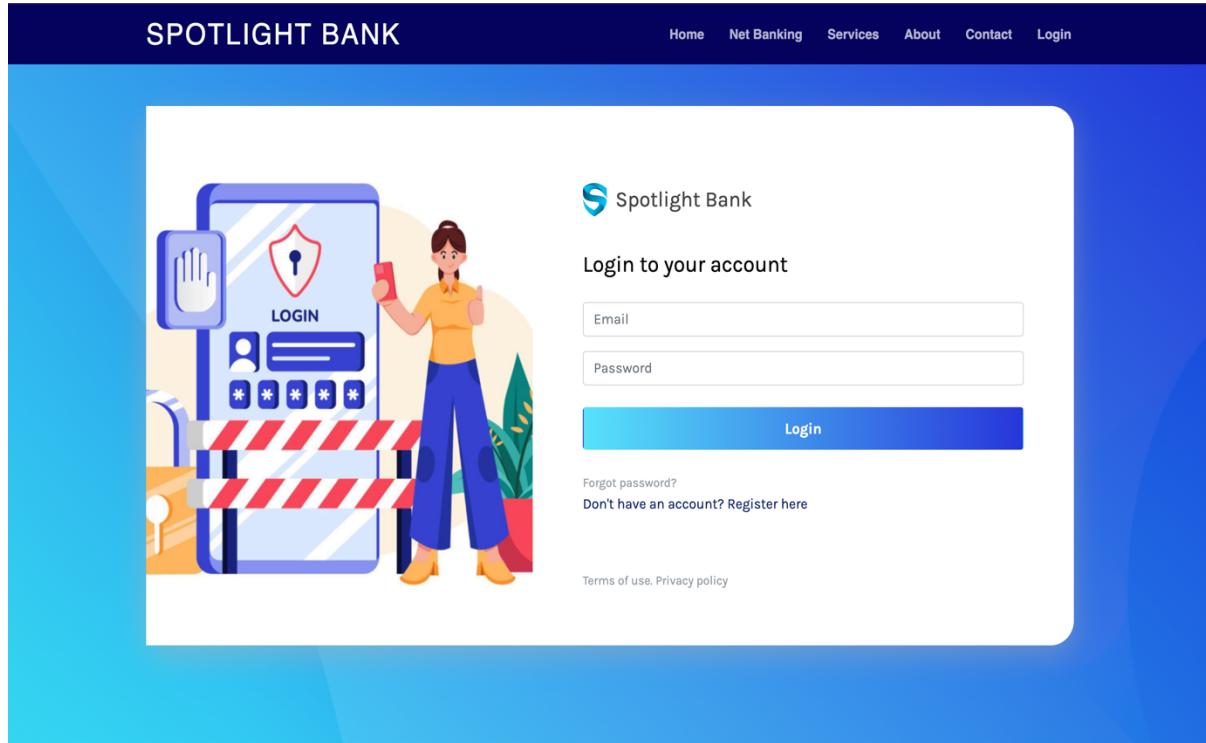


Figure 5.5 Login Page

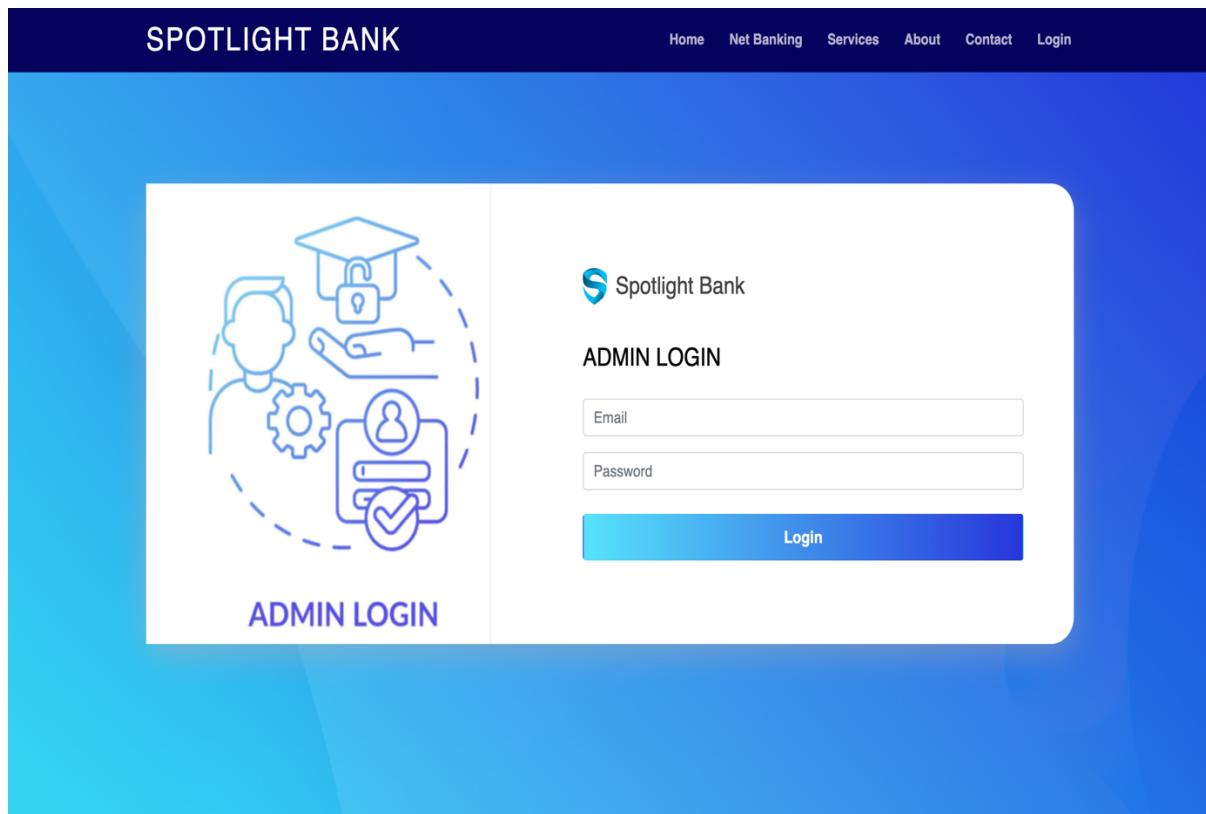


Figure 5.6 Admin Login Page

SPOTLIGHT BANK MANAGEMENT SYSTEM

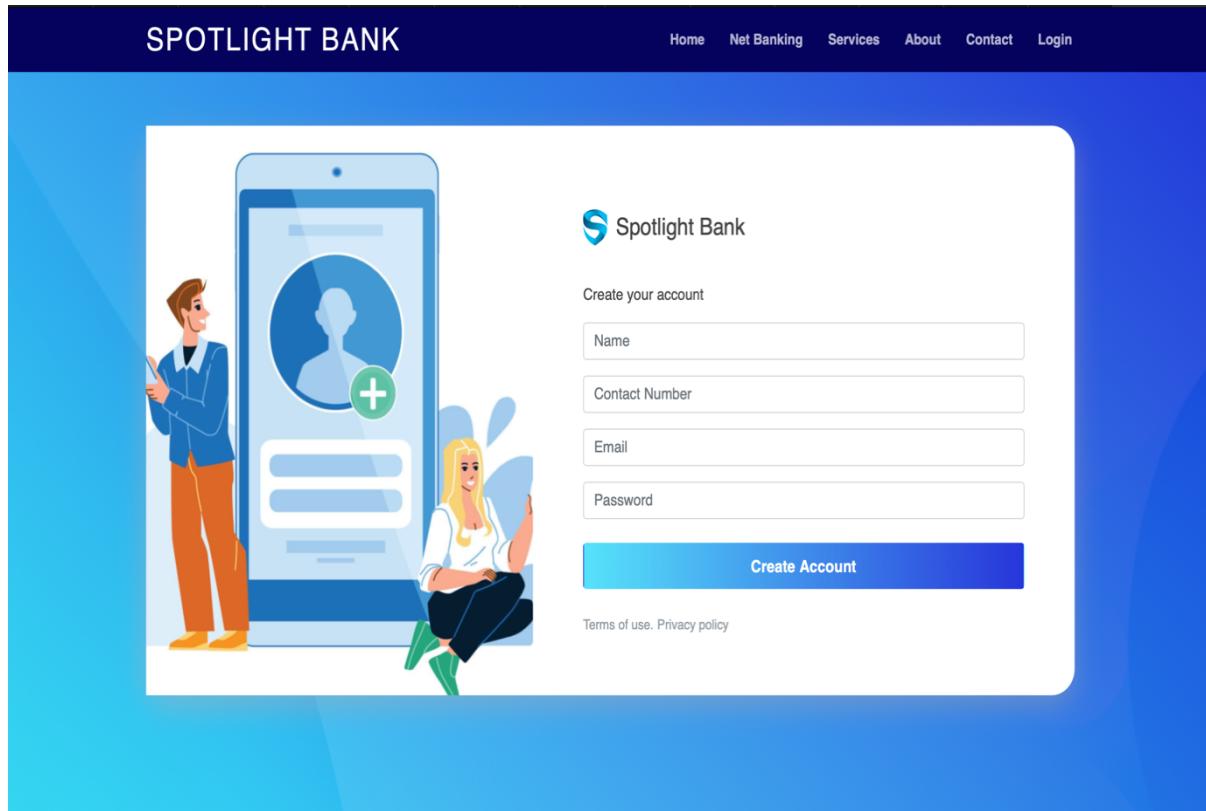


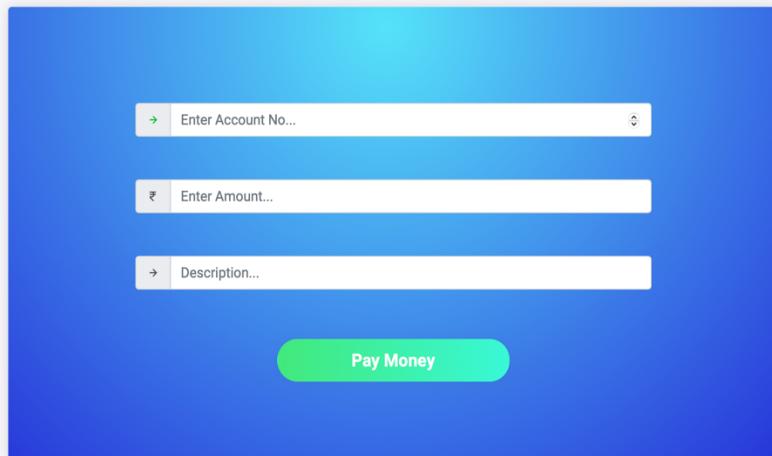
Figure 5.7 Register User Page

A screenshot of the customer dashboard for the Spotlight Bank Management System. The dashboard features a purple sidebar on the left with a 'Spotlight Bank' logo and links for Dashboard, Transfer, Transaction History, Cards, and Logout. The main content area has a light gray background. At the top, it shows the bank's name and a 'Logout' link. Below that is a 'Dashboard' section with three summary boxes: 'Balance' (15000), 'Credited this Month' (5000), and 'Debited this Month' (0). Underneath is a 'Transaction History' section with a table showing recent transactions. The table has columns for Transaction Id, From Account No, To Account No, Date, Amount, and Description. Three entries are listed: a transaction from Shreya BMC to Shreyas on 2023-03-08 for 5000 labeled 'scam money', a transaction from Shreyas to Admin on 2023-03-07 for 0 labeled 'initial', and a transaction from Admin to Shreyas on 2023-03-07 for 0 labeled 'initial'. At the bottom of the dashboard are links for 'Spotlight Bank ©', 'Privacy', and 'Terms'.

Figure 5.8 Customer Dashboard Page

☰ Spotlight Bank

Transfer Money



The Transfer Money form has a blue gradient background. It contains three input fields: 'Enter Account No...' with a green arrow icon, 'Enter Amount...' with an Indian Rupee symbol, and 'Description...'. A large green 'Pay Money' button is centered at the bottom.

Spotlight Bank ©

Privacy Terms

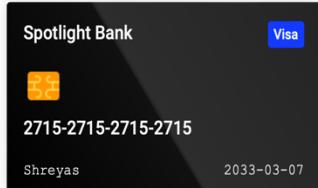
Figure 5.9 Customer Transaction Page

☰ Spotlight Bank

Spotlight Bank

Cards

Your Debit Card



Your Debit Card Details

Account Number	:	7048704870
Debit Card Number	:	2715-2715-2715-2715
Name	:	Shreyas
CVV Number	:	980
Issued Date	:	2023-03-07
Expiry Date	:	2033-03-07
Card Status	:	active

Spotlight Bank ©

Privacy Terms

Figure 5.10 Customer Card Info Page

accountNumber	name	contactNumber	email	password	status	role
1	Admin	123456789	admin@gmail.com	admin	true	admin
2	shreyas	123456789	shreyas@gmail.com	shreyas	true	user
1234567890	shreyas	1234567890	asfsdg1@gmail.com	test	true	user
1471147114	shubh	1234567890	shubh12345@gmail.com	shubh	true	user
5601225544	Shreya BMC	1234567890	shreyas.naidu2003@gmail.com	bmc	true	user
6908622524	shal	7076597	shali@gmail.com	Shal@6	true	user
7048704870	Shreyas	1234567890	rshreyas2003@gmail.com	shreyas	true	user
8766876687	shreyas	1234567890	asfsdkjgl@gmail.com	test	true	user

Figure 5.11 Customer Table Database

accountNumber	cardName	cardNumber	cvv	issuedDate	expiryDate	cardStatus
7048704870	Shreyas	2715271527152715	980	2023-03-08	2033-03-08	active
1471147114	shubh	5690569056905690	861	2023-03-08	2033-03-08	active
5601225544	Shreya BMC	6973952799598277	156	2023-03-09	2033-03-09	active
6908622524	shal	8134388865396275	168	2023-03-08	2033-03-08	active

Figure 5.12 Cards Table Database

transactionId	accountNumber	transtype	fromacc	toacc	amount	dateo	description
1	7048704870	credit	Admin	Shreyas	0	2023-03-08	initial
2	7048704870	debit	Shreyas	Admin	0	2023-03-08	initial
3	1471147114	credit	Admin	shubh	0	2023-03-08	initial
4	1471147114	debit	shubh	Admin	0	2023-03-08	initial
5	6908622524	credit	Admin	shal	0	2023-03-08	initial
6	6908622524	debit	shal	Admin	0	2023-03-08	initial
7	5601225544	credit	Admin	Shreya BMC	0	2023-03-09	initial
8	5601225544	debit	Shreya BMC	Admin	0	2023-03-09	initial
9	7048704870	credit	Shreya BMC	Shreyas	5000	2023-03-09	scam money
10	5601225544	debit	Shreya BMC	Shreyas	5000	2023-03-09	scam money

Figure 5.13 Transaction Table Database

accountNumber	balance
7048704870	15000
1471147114	10000
6908622524	10000
5601225544	5000

Figure 5.14 Dashboard Table Database

CHAPTER 6

CONCLUSION AND FUTURE ENHANCEMENT

6.1 CONCLUSION

This project is developed to nurture the needs of a user in a banking sector by embedding all the tasks of transactions taking place in a bank. It keeps the day by day tally record as a complete batting. It can keep the information of Account type, account opening form, Deposit, Withdrawal, and Searching the transaction, Transaction report. Individual account opening form. Group Account. The exciting part of this project is; it displays Transaction reports, Statistical Summary of Account type and Interest Information.

Online banking is an innovative tool that is fast becoming a necessity. It is a successful strategic weapon for banks to remain profitable in a volatile and competitive marketplace of today. If proper training should be given to customer by the bank employs to open an account will be beneficial secondly the website should be made friendlier from where the first time customers can directly make and access their accounts.

6.2 FUTURE ENHANCEMENT

1. Personal Financial Management Tools: Personal Financial Management (PFM) tools empower users to track their spending, set financial goals, and manage their budgets effectively. This feature provides insights into users' financial habits, categorizes expenses, and offers recommendations for improving financial health. Users can visualize their income, expenses, and savings trends through interactive charts and graphs. PFM tools also enable goal setting and progress tracking, helping users achieve financial milestones such as saving for emergencies, retirement, or a major purchase. Integration with budgeting apps and financial planning tools enhances user engagement and promotes financial literacy.

2. AI-Powered Chatbots :AI-driven chatbots offer personalized customer support, answering queries and providing assistance with basic banking tasks in real-time. These chatbots leverage

natural language processing (NLP) and machine learning algorithms to understand user requests and provide relevant responses. They can handle routine inquiries about account balances, transaction history, bill payments, and account management. Advanced chatbots can also assist with more complex tasks such as applying for loans, disputing transactions, or scheduling appointments with bank representatives. By offering round-the-clock support and reducing wait times, AI-powered chatbots enhance customer satisfaction and streamline service delivery.

3. Investment and Wealth Management Services: Integrating investment and wealth management services within the banking system allows users to explore opportunities for growing their wealth and achieving their financial goals. This feature enables users to invest in stocks, mutual funds, bonds, and other financial instruments directly from their bank accounts. It provides access to research tools, market analysis, and investment recommendations to help users make informed decisions. Wealth management services offer personalized advice on asset allocation, portfolio diversification, and risk management tailored to individual financial objectives and risk tolerance. By offering comprehensive investment solutions, banks strengthen customer relationships and capture additional revenue streams.

4. Voice Banking: Voice recognition technology enables users to perform banking tasks using voice commands through virtual assistants like Amazon Alexa or Google Assistant. Voice banking allows users to check account balances, transfer funds, pay bills, and inquire about recent transactions hands-free, using natural language. It enhances accessibility for users with disabilities and provides a convenient alternative to traditional banking channels. Voice banking solutions prioritize security by implementing voice biometrics and multi-factor authentication to verify user identities and prevent unauthorized access. By embracing voice technology, banks improve customer engagement and differentiate their services in the competitive market.

5. Continuous Improvement and User Feedback: Establishing channels for gathering user feedback and suggestions enables banks to continuously improve their banking system's features, usability, and performance. This includes implementing user-friendly feedback mechanisms within digital banking platforms, such as surveys, rating systems, and suggestion boxes. Banks can also leverage social media, email campaigns, and online forums to engage with customers and solicit their input on new features and enhancements. Analyzing user feedback helps banks identify pain

points, prioritize development efforts, and enhance customer satisfaction. By fostering a culture of continuous improvement and responsiveness to user needs, banks strengthen customer loyalty and drive innovation in their banking services.