

Banking Management System

Software Requirements Specification

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Revision History

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1. Purpose

The main purpose of this document is to present detailed discussion about Online Banking System. It will be providing explanation about its working, features, interfaces, required configuration and many more. This document is intended for both stakeholders as well as developers.

Scope of the proposed system is to provide a platform where

- Payments can take place
- Transaction history can be recorded
- Notifies instantly through SMS about success or failure of transaction.
- A bot is provided to solve queries.
- Multi-account functionality

1.1. Overview

Online Banking Management will eradicate the traditional way of working with entries and maintaining paper work. It basically provides end-to-end transaction with secured servers. Detailed transaction history can be tracked through this application. Provides security with each entry level and by invoking more unsuccessful attempts blocks the user accounts. A Chabot is provided to get faster solutions. In case of any middle way transaction failure no amount will be deducted, thus all functionalities are atomic in nature.

2. Overall Description

2.1. Product Perspective

The context or origin of online banking system is stated as Comparison b/w the Tradition system and the new system can also be cleared through the system models. In traditional system, customer should have to visit the Bank branch physically for the transactions or some other task. It wastes time. After implementing the online banking system customer will be able to connect to his account through the internet connection. Time usage will be minimized, task will be done fast instead of waiting someone other to complete his task.

2.2. Product Functionality/Features

The system will have users such as:

- Account holder
- Administrator
- Bank Employee

Major functionality of system will include:

- Online balance check and transaction information.
- Check the account statement online.
- Pay other utility bills (i.e. electricity bill, phone bill, etc).
- Transfer funds.
- Order for a checkbook.
- Buy general insurance.
- Recharge prepaid mobile/DTH.
- Online record entry.
- Online record search.
- Save or view up to 1 year past history of transaction.
- Bank-to-bank transfer

2.3. User Characteristics

While using this software, it is expected that the user must have proper knowledge of cyber security as it is a web-based application. Also, the user must be trained to a bit to use this software.

There will be three different users who will be using this system:

- Administrator
- Bank Employee
- Bank account holder

2.4. Constraints

Whenever this software is to be used, there are some constraints/conditions required to be followed. As this system is an online Web-based application so a client server will be the most suitable Organizational style for this system. The user must evidently have a computer system with following requirements:

- Latest version of web browser (Google chrome, Mozilla firefox, Brave).

- Stable internet connectivity (512 kbps)

2.5. Assumptions and Dependencies

Following are the assumptions and dependencies which are related to this online banking project.

- This project is a stand-alone project so it will not affect the system where it will be embedded.
- This project is a web-based project while the staff was addict of using traditional methods of data storage and retrieval so they will be trained a bit to jump to it.
- This system will not depend on any other module. It will be a web-based so everyone will independently contact it.
- It is will not affect the environment at all.
 - Banks will feel free to adopt it because it will not be so much expensive.
- As this project contains valuable and new features so it will probably remove the previous online banking systems embedded in some banks

3 Specific Requirements

3.1 Functional Requirements

3.1.1 Customer's Requirements

3.1.1.1 Login

3.1.1.1.1 To login into the system, the following details are required:

3.1.1.1.1.1 Phone no.– must be a registered with bank account.

3.1.1.1.1.2 OTP – received every time user logins

3.1.1.2 Manage Multiple Accounts

3.1.1.2.1 User can access to multiple bank accounts with same registered mobile no.

3.1.1.2.2 Switching will be made available instead of logging again and again

3.1.1.2.3 Facility of changing the phone no. can be done without interference of administrator.

3.1.1.3 Create Account

3.1.1.3.1 In case account doesn't exists user needs to register for it.

3.1.1.3.2 User needs to fill details in required time else the page will be timed out.

3.1.1.3.3 Details required: -

3.1.1.3.3.1 Valid Phone No.

3.1.1.3.3.2 OTP received

3.1.1.3.3.3 Bank Account No.

3.1.1.3.3.4 Bank Holder Name

3.1.1.3.3.5 4-digit Pin (Set by user)

3.1.1.4 Check Balance

- 3.1.1.4.1 User can check their balance on daily basis
- 3.1.1.4.2 Need to enter 4-digit security pin set at time of registration
- 3.1.1.4.3 Losing the pin no. user needs to go through some questions. If administrator approves then only you can change pin.

3.1.1.5 Change 4-digit pin

- 3.1.1.5.1 At times when user losses pin, he needs to go through predefined steps for resetting.
- 3.1.1.5.2 In case user fails to give correct information, administrator will deny to change the pin.
- 3.1.1.5.3 In worst case he/she needs to contact directly to bank authorities for re-opening the account.

3.1.1.6 Payment Gateway

- 3.1.1.6.1 Providing the service like NEFT/RTGS user will have a option for that
- 3.1.1.6.2 The payment will be done in an atomic way.
- 3.1.1.6.3 If the site gets into re-development phase, then the service will be made unavailable which will be informed before ample amount of time.

3.1.1.6.4 Details Required: -

- 3.1.1.6.4.1 Bank Account No:
- 3.1.1.6.4.2 Receiver Account No:
- 3.1.1.6.4.3 OTP
- 3.1.1.6.4.4 IFSC code
- 3.1.1.6.4.5 Account Type
- 3.1.1.6.4.6 Bank Holder Name
- 3.1.1.6.4.7 Branch Name

3.1.1.7 Secured OTP based transaction

- 3.1.1.7.1 For Security Purpose each time user performs transaction OTP will be sent on registered phone no. for confirmation.
- 3.1.1.7.2 In case server gets down and OTP is not available contact administrator.
- 3.1.1.7.3 Wait for some time In case you have requested multiple times for OTP.

3.1.1.8 Transaction History

- 3.1.1.8.1 We provide a digital e-passbook type document which is able to track all the transaction done till now both offline and online.
- 3.1.1.8.2 A service for order of new passbook can be requested with few steps.
- 3.1.1.8.3 Each transaction is attached with unique no which can be useful at times of any problem.

3.1.1.9 Failure of Transaction

- 3.1.1.9.1 At times it might happen that the transaction may fail in between.
- 3.1.1.9.2 To avoid various steps must be kept in mind: -**
 - 3.1.1.9.2.1 Secured Internet Connection
 - 3.1.1.9.2.2 Most Recent OTP
 - 3.1.1.9.2.3 Avoid Indulging with other things at times.
- 3.1.1.9.3 Contact employee/administrator anyone in case such situation arises.
- 3.1.1.10 24x7 Helpline available**
 - 3.1.1.10.1 Helpline no. will be provided in case of query.
 - 3.1.1.10.2 Also, WhatsApp chat bot will be in service for common queries.
 - 3.1.1.10.3 For Major issues it is recommended to meet in-person at the bank.
 - 3.1.1.10.4 Try to contact as soon as possible in case of failure.
 - 3.1.1.10.5 Avoid Fake People:**
 - 3.1.1.10.5.1.1 If someone ask for bank details do not provide without confirming.
 - 3.1.1.10.5.1.2 For any issues contact authorized person instead of local helpers.
 - 3.1.1.10.5.1.3 Do not fall in any trap like lottery or something like that
- 3.1.1.11 Notification**
 - 3.1.1.11.1 In case of any change in any loan policies or interest amount user will be informed well in advance.
 - 3.1.1.11.2 At times service will be unavailable
 - 3.1.1.11.3 On Completing successful transaction
 - 3.1.1.11.4 Bank Holidays
 - 3.1.1.11.5 ATM services.
- 3.1.1.12 Advancing of Loans**
 - 3.1.1.12.1 A separate section will be provided for Loan related details
 - 3.1.1.12.2 Daily update about new offers will be posted
 - 3.1.1.12.3 Also, reminder will be activated in case user has taken loan from that bank.
 - 3.1.1.12.4 Details related EMI options will be posted.
- 3.1.1.13 Hybrid Transaction**
 - 3.1.1.13.1 Facility for transaction from one bank to another will be made available for convenience
 - 3.1.1.13.2 It may fail to do so if that bank doesn't share same protocols for transaction
- 3.1.1.14 Credit/Debit Card**
 - 3.1.1.14.1 A separate facility for this section will be provided.
 - 3.1.1.14.2 In case of any transaction made through these cards a separate transaction history will be recorded for convenience.

- 3.1.1.14.3 In case if user reach credit limit he/she will be informed instantly through notification.

3.1.2 Administrator's Requirements

3.1.2.1 Admin login

- 3.1.1.1.1 Admin can create/add/update/delete account.
- 3.1.1.1.2 Admin can view his/her account information.

3.1.2.2 Tracking of Transaction

Any withdrawal/deposit/statements transaction by any sort of user can be visible to the administrator. Following can be done by administrator:

- 3.1.2.2.1 View any in-process transaction.(with valid timestamps)
- 3.1.2.2.2 Can access the transaction history (since 1 year ago) of any user.

3.1.2.3 User Management

- 3.1.2.3.1 View the account information(Name, Ph no., Balance) of the customers.
- 3.1.2.3.2 Email any particular customer.
- 3.1.2.3.3 Delete any customer account.
- 3.1.2.3.4 Activate/ Deactivate any customer.
- 3.1.2.3.5 Can view the list of all the active/inactive users.

3.1.2.4 Database Management

Admin can always view databases to carry out important operations.

- 3.1.2.4.1 View the current customers and employees from the database.
- 3.1.2.4.2 Perform any database operation (add/update/delete) on the current database to filter as per the needs.

3.1.2.5 Reports Management

Admin is able to view any statistical report made on the basis of different criteria.

- 3.1.2.5.1 View the graphical representation of the performance of employees.
- 3.1.2.5.2 View the activity chart of any customer based on their transaction history.

3.1.3.1 Employee's Requirement

3.1.3.2 Create Account

- 3.1.3.1.1 The employees can register themselves online. The following details are required for the registration process:
 - 3.1.3.1.1.1 Email address – Must be a valid email address
 - 3.1.3.1.1.2 Password – Must be at least 8 characters in length and the text field must be in password mode.
 - 3.1.3.1.1.3 Employee Post
 - 3.1.3.1.1.4 Address
 - 3.1.3.1.1.5 Country

- 3.1.3.1.1.6 State
- 3.1.3.1.1.7 City
- 3.1.3.1.1.8 Pin code
- 3.1.3.1.1.9 Contact number
- 3.1.3.1.2 Generates a unique ID for each of the employee
- 3.1.3.1.3 This part also works for the different categories of
for example. managar, clerk etc. to keep track of their performance.
Upon successful registration, this information will be saved in the database.

3.1.3.3 Accessible to all User Accounts

- 3.1.3.2.1 The employee can view the user's information like account balance, transaction history etc.
- 3.1.3.2.2 Employees can manage multiple user accounts and link them together when required.

3.1.3.4 Register/ Unregister User

- 3.1.3.3.1 The employees can Register the user to the bank on the user's request by providing them their bank account number and login details.
- 3.1.3.3.2 The employee can Unregister the customer from the bank on their request or when some suspicious activities are found on the account.
- 3.1.3.3.3 The employee can also block the user account for some time on the user's request and unblock it when found safe.

3.1.3.5 Search for Particular Transaction

- 3.1.3.4.1 The employee can search for a user's transaction when required and verify it.
- 3.1.3.4.2 The employee can use different filters to search based on transaction amount, date, account type etc.

3.1.3.6 Process Complaints

- 3.1.3.5.1 The employees can see the logged complaints from the customers.
- 3.1.3.5.2 They can contact the customers through phone, email and get in contact with them regarding the complaint.
 - 3.1.3.5.2.1 They can view the reviews of the customers after they have attended the complaints.
- 3.1.3.5.3 After the complaint gets resolved, they can close the complaint from the software.

3.1.3.7 Company Management

The employees with admin rights can manage the company information, or can display some important information onto the company site like special interest rates for loans or bank holidays etc.

3.2 External Interface Requirements

3.2.1 Software interfaces

- 3.2.1.1 Oracle database
- 3.2.1.2 Corezoid cloud process engine (for anti-fraud security and different other features).
- 3.2.1.3 Frameworks for popular languages like .NET, python, Ruby and Java.

3.2.2 **Communication interfaces**

3.2.2.1 Payments.cc -which is having the best interfaces for payment through internet.

3.2.2.1.1 Transparent and traceable log

3.2.2.1.2 Straight through processing (STP).

3.2.3 No media breaks during the process

3.3 **Design and Implementation Constraints**

3.3.1 The product is completely data oriented.

3.3.2 Here, users would input various details of the transaction, customers, employees, etc. for storing, updating, processing, or retrieval of data from the database as per the instructions given an acknowledging message to user.

3.3.3 This system works only on single user.

3.3.4 GUI is only in English.

3.3.5 Limited to HTTP/HTTPS protocols.

3.3.6 Login and password is used for identification of customer's account and there is no facility for non-users to login.

4 Non-Functional Requirements

4.1 **Performance Requirements**

4.1.1 **Reduce Overall Costs**

4.1.1.1 It will help to reduce a bank's costs in two fundamental ways: it minimize the cost of processing transactions and reduces the number of branches required to service an equivalent number of customer.

4.1.2 **Expand Product Offerings**

- 4.1.2.1 The new services allows bank to capture a larger percentage of their customers' asset base.
- 4.1.2.2 The internet banking system will provide facilities for bank to offer new services and products onto its homepage.

4.1.3 Increase Customer Satisfaction

- 4.1.3.1 Internet banking system must allows customers to access banking services 24 hours a day, 365 days a year with minimum downtime period for backup and maintenance.

4.2 Safety Requirements

4.2.1 Backup, recovery & business continuity

- 4.2.1.1 Banks should ensure adequate back up of data as may be required by their operations.
- 4.2.1.2 Banks should also have, well documented and tested business continuity plans that address all aspects of the bank's business.
- 4.2.1.3 Both data and software should be backed up periodically, the frequency of back up depending on the recovery needs of the application.
- 4.2.1.4 The back-up may be incremental or complete.

4.3 Security Requirements

4.3.1 Account ID and Password (PIN) Protection

- 4.3.1.1 User Account ID and Password (PIN) protection occurs at the first level within the Internet Banking System.
- 4.3.1.2 To further increase the level of security, the bank may impose a periodic change of passwords.
- 4.3.1.3 If the Password Change option is imposed, a warning message will be displayed when logging-onto Internet Banking.

4.3.2 Encryption

- 4.3.2.1 In addition to password protection, we ensure server authentication by using the latest techniques of data encryption.
- 4.3.2.2 Data encryption is a way of translating data into a form that is unintelligible without a deciphering mechanism.

4.3.3 Sign-off Button

- 4.3.3.1 When an end-user is finished with Internet Banking, they should click the Sign-off button before going anywhere else on the Web.
- 4.3.3.2 This ends the Internet Banking session.

4.3.4 Failed Log-on Attempts

- 4.3.4.1 As an added security feature, the Internet Banking System is denied access after a pre-determined number of failed log-on attempts.
- 4.3.4.2 If users have been locked out due to exceeding the pre-determined number of log-on attempts, the users must contact the Bank in order to be reinitialized.

