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Parabank

Introduction

Purpose

The purpose of this document is to define the Software Requirements Specification (SRS) for the ParaBank application. ParaBank is a demo online banking system that provides a platform for learning and practicing software testing concepts. The system simulates core functionalities of real-world banking, including account management, funds transfer, bill payment, loan requests, and profile updates.

This SRS will serve as a reference for:

- **Testers**, to design and execute manual and automated test cases.
- **Developers**, to understand functional and non-functional requirements.
- **Project managers/trainers**, to use ParaBank as a teaching and demonstration tool.

Scope

ParaBank is a web-based application that allows users to perform common banking activities in a safe, demo environment. The system supports three types of roles: **Guest, Customer, and Manager**.

- **Guest:** Can access public pages, recover login information, and register to become a Customer.
- **Customer:** Can log in and perform banking functions such as account overview, fund transfers, bill payments, requesting loans, updating profile, and viewing transactions.
- **Manager:** A conceptual role (admin) used for requirement modeling and testing scope. The Manager can register new customers, manage accounts, approve/reject loans, and perform system-level actions like deposit, withdraw, and account deletion.

The application is designed primarily for **software testing practice** and does not handle real transactions. Its goal is to help QA learners practice writing test cases, identifying requirements, performing exploratory testing, and validating application behavior.

Intended Audience

This SRS is intended for:

- **Software Testers / QA Engineers** – to practice test design and validation.
- **Developers** – to understand functional flow and requirements.
- **Trainers / Students** – to use ParaBank as a demo project for learning manual and automation testing.

Definitions

Abbreviation	Word
M	Manager
C	Customer
G	Guest

Specific Requirements

Parabank will have 3 roles

1-Manager
2-Customer
3-Guest

Guest: can only browse public pages, recover login info, and register (to become a customer).

Customer: can use all personal banking features after login.

Manager: theoretical/admin role — full control over all customers (for SRS or test design purposes).

Manager	Customer	Guest
Login & logout	Login & logout	Login (only)
Forget Login Info	Forget login info	Forget login info
Public Page	Public Page	Public page
Account overview (all)	Account Overview (own)	Register
Transaction history (all)	Transaction History (own)	
New account (any customer)	New account (own account)	
Transfer Funds (any account)	Transfer funds (own account)	
Bill payment (any account)	Bill Payment (own account)	
Loan Request (Review & accept)	Loan Request (Apply)	
Update info (Edit any customer)	Update info (Edit own info)	
Delete Customer		
Delete account		
Register		
Deposit		
Withdraw		

Module Name	Applicable	Description
Deposit	Manger	Manager: A manager can deposit money into any account. Usually done when cash is deposited at a bank branch.
Withdraw	Manager	Manager: A manager can withdraw money from any account. Usually done when cash is withdrawn at a bank branch.

Delete Customer	Manager	A customer can be deleted only if he/she has no active current or saving accounts Manager: A manager can delete a customer.
Delete Account	Manager	Manager: A manager can delete an account for a customer.
Update info	Manger Customer	Manager: A manager can add an edit account details for any existing account under his supervision Customer: A customer can add an edit account details for his own account
Open New account	Manger Customer	Manager : Can create new accounts for any customer. Customer : Can open a new account (Checking or Savings) linked to their profile.
Login & Logout	Manager Customer Guest	Manager : Can login with manager credential and logout. Customer : Can login with valid username & password, and logout to end session. Guest : Can access login page only.
Forgot Login Info	Manager Customer Guest	Manger: Can search & retrieve login info of any customer under his supervision Customer : Can recover own login info with register details Guest : Can recover forgotten username or password with register details
Public Pages	Manager Customer Guest	Includes : About us , Services , Products , Locations , Contuct us , Home Doesn't require login
Register new customer	Manager Guest	Manger: Can create new customers Guest : Can register as a new customer by filling registration form
Account Overview	Manager Customer	Manger: Can View balance of any customer under his supervision Customer : Can view balance of only their own bank accounts
Transaction History	Manager Customer	Manager : Can view transactions of any customer's account. Customer : Can view transaction history of their own accounts
Transfer Funds	Manager Customer	Manger : Can transfer between any customer's accounts.

		Customer : Can transfer funds between their own accounts or to valid destination accounts.
Bill Payment	Manager Customer	Manger : Can execute bill payments for any account. Customer : Can add payees and pay bills using funds from their own accounts
Loan Request	Manager Customer	Manger : Can review, approve, or reject loan application Customer : Can request loans through the Loan Request form.

Front-End Details (ParaBank)

Login Page

- Fields: Username, Password
- Links: Register, Forgot login info
- Buttons: Login

2. **Registration Page (New Customer)**
    - Fields: First Name, Last Name, Address, City, State, Zip Code, Phone, SSN, Username, Password, Confirm Password
    - Button: Register
3. **Forgot Login Info Page**
    - Fields: First Name, Last Name, Address, City, State, Zip Code, SSN
    - Button: Find My Login Info

4. **Customer Home Page (after login)**
    - Displays: “Welcome [Customer Name]”
    - Menu:
        - Open new account
        - Accounts Overview
        - Transfer Funds
        - Bill Pay
        - Find Transactions
        - Update Contact Info
        - Request Loan
        - Logout
5. **Accounts Overview Page**
    - Shows list of customer’s bank accounts (Account Number, Type, Balance).
    - Each account number is clickable → opens Transaction History.
6. **Transaction History Page**
    - Shows details of all transactions for a specific account (Date, Description, Amount, Balance).
7. **Open New Account Page**
    - Options: Account Type (Checking/Savings), From Account (initial funding).
    - Button: Open New Account.
8. **Transfer Funds Page**
    - Fields: Amount, From Account, To Account.

- Button: Transfer.

9. **Bill Pay Page**
    - Fields: Payee Name, Address, City, State, Zip Code, Phone, Account Number, Amount, From Account.
    - Button: Send Payment.
10. **Request Loan Page**
    - Fields: Loan Amount, Down Payment, From Account.
    - Button: Apply Now.
11. **Update Contact Info Page**
    - Fields: First Name, Last Name, Address, City, State, Zip Code, Phone.
    - Button: Update Profile.
12. **Public Pages**
    - Accessible without login: Home, About Us, Services, Products, Locations, Contact Us

13. Find Transactions Page

- By Date
- By Date Range (From Date – To Date)
- By Amount
- By Transaction ID

Buttons: Find Transactions

Technical Requirements (Parabank)

Login Form

ID	Validation Description
T1	Username field must not be blank.
T2	Password field must not be blank.
T3	Username field must not contain special characters except "_" or ".".
T4	Password field must allow alphanumeric and special characters.
T5	Invalid username or password must display error message "The username and password could not be verified."
T6	After 3 invalid login attempts, user session must reset to login screen.
T7	"Forgot login info" and "Register" links must redirect to their respective pages.

Registration Form (New Customer)

ID	Validation Description
T8	First Name – must not be blank.
T9	First Name – numbers and special characters are not allowed.

ID	Validation Description
T10	Last Name – must not be blank.
T11	Last Name – numbers and special characters are not allowed.
T12	Address – must not be blank.
T13	City – must not be blank.
T14	City – numbers and special characters are not allowed.
T15	State – must not be blank.
T16	State – must not contain digits or symbols.
T17	Zip Code – must not be blank.
T18	Zip Code – must contain exactly 5 digits.
T19	Phone Number – must not be blank.
T20	Phone Number – must contain only numbers (10–15 digits).
T21	SSN – must not be blank.
T22	SSN – must contain exactly 9 digits.
T23	Username – must not be blank.
T24	Username – special characters other than "_" are not allowed.
T25	Username – if already exists, system displays "This username is already taken."
T26	Password – must not be blank.
T27	Password – must be at least 8 characters long.

ID	Validation Description
T28	Password – must contain at least one uppercase, one lowercase, one number, and one special character.
T29	Confirm Password – must not be blank.
T30	Confirm Password – must match the Password field.
T31	Registration must display "Welcome [username]" message after success.

Forgot Login Info Form

ID	Validation Description
T32	All fields (First Name, Last Name, Address, City, State, Zip, SSN) must be filled.
T33	SSN must contain exactly 9 digits.
T34	City and State fields must not contain numbers or symbols.
T35	If provided details don't match any customer record, system displays "No customer information found."
T36	After valid input, system must display customer's Username on screen.

Open New Account Form

ID	Validation Description
T37	"Account Type" must be selected (Checking/Savings).
T38	"From Account" must be selected and exist in the database.

ID	Validation Description
T39	Customer must have at least one existing account to open a new one.
T40	Upon success, system must display “Account Opened Successfully” with new account number.
T41	If invalid account type or missing selection, system displays an error.

Transfer Funds Form

ID	Validation Description
T42	Amount field must not be blank.
T43	Amount field must be numeric and greater than 0.
T44	“From Account” must exist and belong to logged-in customer.
T45	“To Account” must exist and be valid.
T46	If “From Account” equals “To Account,” system must display “Cannot transfer to the same account.”
T47	If available balance < transfer amount, system must display “Insufficient Funds.”
T48	Successful transfer must show confirmation with transaction ID.

Bill Payment Form

ID	Validation Description
T49	Payee Name – must not be blank.

ID	Validation Description
T50	Address – must not be blank.
T51	City – must not contain numbers or special characters.
T52	State – must not contain numbers or special characters.
T53	Zip Code – must contain 5 digits.
T54	Phone Number – must contain only numbers.
T55	Account Number – must be numeric and exist in the database.
T56	Amount – must be numeric and greater than 0.
T57	“From Account” must belong to logged-in customer.
T58	If “From Account” balance < Amount, system displays “Insufficient funds.”
T59	On successful payment, system displays confirmation message with Payee details.

Request Loan Form

ID	Validation Description
T60	Loan Amount – must not be blank.
T61	Loan Amount – must be numeric and greater than 0.
T62	Down Payment – must be numeric and less than or equal to Loan Amount.
T63	“From Account” must be selected and belong to customer.
T64	If invalid account, system displays “Account not found.”

ID	Validation Description
T65	If input values are invalid, system displays “Invalid loan request.”
T66	On success, system displays loan approval or rejection status with decision reason.

Update Contact Info Form

ID	Validation Description
T67	First and Last Name – must not be blank.
T68	Address – must not be blank.
T69	City – must not contain numbers or symbols.
T70	State – must not contain numbers or symbols.
T71	Zip Code – must be 5 digits.
T72	Phone Number – must contain only numbers.
T73	System should display “Profile Updated Successfully” upon valid update.
T74	If any required field is blank, display “Field cannot be blank.”

Find Transactions Form

ID	Validation Description
T75	Search fields (Date, Range, Amount, Transaction ID) must be valid.
T76	Amount and Transaction ID must be numeric.

ID	Validation Description
T77	From Date must not be greater than To Date.
T78	If no records found, display “No matching transactions.”
T79	Results should display in chronological order.

Deposit Form (Manager Only)

ID	Validation Description
T80	Account Number – must be valid and exist in the system.
T81	Amount – must not be blank.
T82	Amount – must be numeric and greater than 0.
T83	Description – must not be blank.
T84	Successful deposit displays confirmation message and new balance.

Withdraw Form (Manager / Customer)

ID	Validation Description
T85	Account Number – must be valid and belong to user.
T86	Amount – must not be blank and must be numeric.
T87	If amount exceeds available balance, display “Insufficient funds.”
T88	Successful withdrawal must display updated balance.

Delete Account / Customer (Manager)

ID	Validation Description
T89	Customer ID – must be numeric and exist.
T90	Account Number – must be valid.
T91	Cannot delete customer with active accounts.
T92	Cannot delete account with non-zero balance.
T93	On success, system displays “Customer/Account deleted successfully.”

Public Pages

ID	Validation Description
T94	All links (Home, About Us, Services, Products, Locations, Contact Us) must open correctly.
T95	No login required to access public pages.
T96	“Contact Us” form (if present) must validate email and message fields.

Change Password

ID	Validation Description
T97	Old Password – must not be blank.
T98	New Password – must meet password policy.
T99	Confirm Password – must match New Password.
T100	If Old Password is invalid, display “Incorrect current password.”

ID	Validation Description
T101	On success, display “Password updated successfully.”

Functional Validations (ParaBank)

Login & Logout

Manager

- **F1** If Manager username is invalid, system displays an error.
- **F2** If Manager password is invalid, system displays an error.

Customer

- **F3** If Customer username is invalid, system displays an error.
- **F4** If Customer password is invalid, system displays an error.
- **F5** If Customer logs out, secure pages cannot be accessed via back button.

Guest

- **F6** If Guest enters invalid login credentials, system displays an error.

Register New Customer

Manager

- **F7** If Customer details are incomplete, system displays an error.
- **F8** If Username already exists, system displays an error.

Guest

- **F9** If mandatory fields are left blank, system displays an error.
- **F10** If Password and Confirm Password do not match, system displays an error.
- **F11** If Username already exists, system displays an error.

Account Overview

Manager

- **F12** Manager can view all customer accounts. If account number is invalid, system displays an error.

Customer

- **F13** Customer can view only their own accounts. If account number does not belong to the customer, system displays an error.

Transaction History / Find Transactions

Manager

- **F14** Manager can view transactions of any account. If account number is invalid, system displays an error.

Customer

- **F15** Customer can view only their own transactions. If account number does not belong to the customer, system displays an error.
- F16 If search criteria (date/amount/ID) does not match any transaction, system displays “No records found.”

Open New Account

Manager

- **F17** Manager can open an account for any customer. If customer ID is invalid, system displays an error.

Customer

- **F18** Customer can open new accounts for themselves. If invalid account type is selected, system displays an error.

Fund Transfer

Manager

- **F19** If source account number is invalid, system displays an error.
- **F20** If destination account number is invalid, system displays an error.
- F21 If source account has insufficient balance, system displays an error.

Customer

- F22 If source account number is invalid, system displays an error.
- F23 If destination account number is invalid, system displays an error.
- F24 If source account has insufficient balance, system displays an error.
- F25 If source account does not belong to the customer, system displays an error.

Bill Payment

Customer

- F26 If Payee details are incomplete, system displays an error.
- F27 If payment amount exceeds account balance, system displays an error.
- F28 If From Account does not belong to the customer, system displays an error.

Loan Request

Manager

- F29 If Customer ID is invalid, system displays an error.
- F30 If loan amount or down payment is invalid, system displays an error.

Customer

- F31 If loan amount or down payment is invalid, system displays an error.
- F32 If From Account does not belong to the customer, system displays an error.

Update Info

Manager

- F33 If Customer ID is invalid, system displays an error.

Customer

- F34 If Customer enters invalid details, system displays an error.

Delete Customer

Manager

- F35 If Customer ID is invalid, system displays an error.
- F36 If customer still has active accounts, system displays an error.

Delete Account

Manager

- F37 If Account Number is invalid, system displays an error.
- F38 If account balance is not zero, system displays an error.

Deposit

Manager

- F39 If destination account number is invalid, system displays an error.
- F40 If destination account does not belong to the bank, system displays an error.

Customer

- F41 If Customer tries to deposit into another customer's account, system displays an error.

Withdrawal

Manager

- F42 If source account number is invalid, system displays an error.
- F43 If source account has insufficient balance, system displays an error.

Customer

- F44 If source account number is invalid, system displays an error.
- F45 If source account does not belong to the customer, system displays an error.
- F46 If source account has insufficient balance, system displays an error.

Non-Functional Requirements

ID	Requirement	Description
N1	**Performance**	All pages must load within 3 seconds under normal network conditions.
N2	**Usability**	The user interface must be simple, readable, and intuitive for beginners.
N3	**Compatibility**	The application must function correctly on Chrome, Firefox, and Edge (latest versions).
N4	**Security**	Passwords must be encrypted; sessions must auto-expire after inactivity.
N5	**Availability**	System should remain available 99% of the time during testing hours.
N6	**Error Handling**	All errors must display clear messages without exposing sensitive details.
N7	**Data Integrity**	Transactions must maintain consistent balance updates across accounts.