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CPD

Software Requirements Specification – BANK

MANAGEMENT SYSTEM

**VERSION 1.0**

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# Introduction

## Purpose of this Document

The purpose of this Requirements Specification document is to clearly define and outline the functional and non-functional requirements for the development of the "Bank Management System " software application. This document serves as a foundation for both the development and the validation processes, ensuring that all stakeholders, including developers, testers, and end-users, have a shared understanding of the project's objectives. By detailing the specific requirements, expectations, and constraints of the system, this document aims to minimize any ambiguity and set a clear roadmap for the design, development, and implementation of the application. It will also act as a reference point throughout the project's lifecycle to ensure that the delivered product aligns with the defined goals.

## Scope of this Document

This document encompasses all the essential details needed to develop the "Bank Management System" software application. It covers the full range of functionalities, including user interface requirements, system architecture, and integration with other platforms or services. The scope also includes system performance and security requirements, data management strategies, and user accessibility features. Additionally, the document highlights the expected development timeline, resource allocation, and associated costs to deliver the product to completion. By thoroughly addressing both technical and business considerations, this document will ensure that the project stays within budget, meets deadlines, and satisfies the end-users' needs. The value this document provides to the customer includes a clear framework for understanding the project's goals, deliverables, and the expected outcomes.

## Overview

The "Bank Management System" software application is a user-friendly platform designed to help individuals store, manage, and organize their bank account efficiently. Users can login, create, check, transfer, deduct and close the account . The application will feature an intuitive user interface, ensuring ease of use for individuals with varying levels of technical expertise. The product is intended to be lightweight, fast, and responsive. The overall goal of the "Bank Management System" application is to provide a reliable, seamless solution for managing personal and professional bank account in an organized and efficient manner.

# GenERAL Description

The **"Bank Management System"** application is a comprehensive yet simple-to-use software solution designed to help users efficiently store, manage, and organize their account information. Whether for personal or professional use, the application provides a central location where individuals can maintain detailed records of amount in the account, including names, phone numbers and email addresses.

The primary functions of the application include login, create , check , transfer ,deduct and close the account. With a focus on user-friendliness, the application ensures that individuals of all technical skill levels can manage their accounts without encountering steep learning curves or complex procedures.

Key features of the **Bank Management System** include:

* **Account Management**: Users can easily create new account , search existing account information, transfer money to the account or deduct money from the account and close unnecessary account. Each account record can store multiple fields of information such as name, phone number and email address, address , amount .
* **Search and Filter**: A powerful search function enables users to quickly locate specific account by entering names, or other attributes.
* **User Interface (UI)**: The application will feature an intuitive, clean, and command prompt interface that simplifies navigation. The design will prioritize ease of use, ensuring that both tech-savvy and non-technical users can efficiently perform tasks with minimal effort.
* **Lightweight and Responsive**: Designed to be fast and responsive, the application will provide a smooth user experience, even when managing a multiple accounts. The software will be optimized for performance, ensuring that users can access and modify their data quickly and with minimal delay.

The overall goal of the **"Bank Management System"** application is to provide a reliable, efficient, and accessible solution for managing account information. By offering essential features like easy data entry and quick retrieval, the application will cater to the diverse needs of users who require an organized, up-to-date record of their personal or professional accounts. Whether it’s for managing business bank accounts, personal bank accounts, or a mix of both, the Bank Management System aims to be an indispensable tool for everyday financial management.

# FUNCTional Requirements

## Bank Management

### BANK EMPLOYEE LOGIN

* The employee must login by entering details such as:
  + User Name
  + Password
* The system should validate the entered data for required fields (username, password) and ensure data formats are correct (e.g., username format, password format).

### Creation of account

* The application must allow users to create new account by entering details such as:
  + Full Name
  + Phone Number
  + Email Address
  + Date of Birth
  + Permanent Address
  + Aadhaar Number
  + Password
* The system should validate the entered data for required fields (name, phone number, address & email) and ensure data formats are correct (e.g., email format, phone number format).
* The validated data should be saved into a file on windows file system.

### check amount in the account

* Ask user to enter the password which was entered while creating the account for security purpose.
* The system should read the file where the data is saved and retrieve the matching account.
* The search results should display all details of account in real-time with appropriate pattern.
* To check the amount in the account ask the user to select the option of check balance.
* The balance in the user account is displayed.

### transfer money to the account

* The application should allow user to login the account with password for security purpose.
* The application should allow user to transfer the amount from account using security measures (by using QR code or phone number or account number, etc).
* The system must ensure the correct mapping of login fields (username or phone number or email, password.) to the account data structure.

### deduct money from the account

* The application should allow user to login the account with password for security purpose.
* The application should allow user to deduct the amount from account using security measures (by using QR code or phone number or account number, etc )..
* The system must ensure the correct mapping of login fields (username or phone number or email, password.) to the account data structure.

### close account

* The application should allow users to remove user’s account from the bank with some conditions.
* The conditions should be user needs to give reason for closing of account and the account should contain zero balance.
* The extra security measures should be taken so that there will be no misuse of the account from others.

# Interface Requirements

## User Interface (UI) Requirements

### General UI Layout

* The application should have a clean, simple, and intuitive layout with easy navigation.
* The main screen should display asking the login data, allowing users to perform actions such as create new account, search existing account information, transfer money to the account, deduct money from the account, close account.
* The interface should be designed to minimize the number of steps required to perform common tasks.

## External Interface Requirements

### Import/Export Interfaces

* The application should provide an interface for importing and exporting account detials in common formats.
* For importing, users should be able to upload a file and download the software.
* For exporting, users should be able to download a bank software in common format.

## System Interfaces

### Database/Storing Interface

The application should use a backend file (e.g., txt or similar) to store account details information. The file interface should:

* Support CRUD (Create, Read, Update, Delete) operations for account and associated data.
* Ensure that the data is securely stored and encrypted to protect user privacy.
* Maintain file integrity, preventing data loss or corruption during app usage.

# Performance Requirements

## Response time

### account Search

* The application must return search results for any query (e.g., searching by username, phone number, or email and password) within 1 **second** under normal conditions.

### transfer and deduction of amount in account

* When transferring or deducting of amount, the system must reflect the change and display the updated information within **1 second** after the user submits the action.
* The application must immediately update the displayed amount details(such as history of transfer ,balance amount)and ensuring no delay in the interface when users perform these actions.

### Viewing account Details

* Viewing the details of a account (including all fields such as name, phone numbers, emails, amount, transfer history) must take no longer than **1 second** after the user searches the contact in the list.

## Throughput

### Data Import/Export

* The application should be capable of importing account data in less than 1 second.
* The export process should allow users to export their amount (up to 1,00,000 rupees) in less than 30 seconds.

## System Resource Utilization

### CPU and Memory Usage

* The application should operate efficiently, ensuring that CPU usage does not exceed 2**5%** during typical operations, including loading account data, creating the new accont, or transferring amount details.
* Memory consumption must be kept within **100 MB** for a account details and updating details of up to **1 year’s account details**.

## Availability and Reliability

### System Uptime

* The system should have a **99.9% uptime** over a rolling 30-day period, ensuring the application is consistently available to users without significant downtime.
* Maintenance windows or outages for updates and patches should be scheduled during off-peak hours and should not exceed **5 hour per month**.

### Error Handling and Recovery

* The system must be resilient and able to recover gracefully from common errors (e.g., database failures).
* If the system encounters an error, it should display a clear error message to the user.
* The application should ensure that no data is lost in case of a failure during synchronization or data entry.

## Load Testing

### Stress Testing

* The application should undergo load and stress testing to verify that it can handle sudden increases in user activity.

### System Failover and Redundancy

* The application must include system failover mechanisms, such as database clustering and load balancing, to ensure that performance is not impacted by system failures or high load.

# Design Constraints

## Platform and Device Compatibility

### Cross-Platform Support

* There is no cross-platform support, the application is designed and runs only on Windows PC with Windows 10 and greater.

### Device Specifications

* The application must work on any Intel and AMD processors.

## Visual Design Constraints

* The app's design should minimize the use of high-resolution images or heavy graphics to reduce loading times and conserve system resources.
* The color palette should be simple and neutral.

## Data storage and management

* The local data storage is to be performed using windows file system with a txt file.

## Performance Constraints

### Latency and load time

* The application must return search results for any query (e.g., searching by username, phone number, or email with password) within 1 **second** under normal conditions.
* For checking, transferring, deducting, the search results must still be displayed within 2 **seconds**.

### Transferring and Deduction of amount in account

* When transferring or deducting the amount, the system must reflect the change and display the updated information within **1 second** after the user submits the action.
* The application must immediately update the displayed account balance, ensuring no delay in the interface when users perform these actions.

### Viewing account Details

* Viewing the details of a account (including all fields such as name, phone numbers, emails, and balance ) must take no longer than **1 second** after the user searches the account.

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* The application should ensure that no data is lost in case of a failure during synchronization or data entry.

# Non-functional attributes

## Security

### Data Protection

* All user data, including account information and personal data, must be **encrypted**.

### Access Control

* The app should prevent unauthorized access to sensitive data.

### Compliance

* The application must comply with relevant privacy laws and regulations such as **GDPR** (General Data Protection Regulation), **CCPA** (California Consumer Privacy Act), and **HIPAA** (if applicable), ensuring user data is handled securely and users have control over their data.
* Users must be able to delete their data upon request, and they should be notified about data collection practices during initial use.

### Incident Response and Recovery

* The system must include logging and monitoring to detect potential security incidents (e.g., unauthorized access attempts or data breaches).
* In case of a security breach, the system should notify the affected users within **1 hours** and follow proper incident response protocols, including data recovery procedures.

## Reliability

### Availability

* The system must have a **99.9% uptime** for both the mobile and web applications. Scheduled maintenance should not exceed **5 hour per month**.
* The application must include automatic failover mechanisms to ensure continued operation in case of hardware or software failures.

### Fault Tolerance

* The system should be designed to recover gracefully from errors and failures, without losing user data. For example, in case of synchronization failure, the app should retry the operation automatically.
* **Backup systems** should be implemented to protect user data, and the system should allow users to restore their data from a backup if data loss occurs.

### Data Integrity

* The system should ensure that user data is always consistent and not corrupted, especially during synchronization or database updates.

## Usability

### User Experience (UX)

* The application should have an intuitive, easy-to-use interface, making it accessible to users with varying levels of technical expertise.
* Key actions, such as creating the account, checking for the balance, transfer of amount and viewing transfer details, should require **no more than 3 steps** to perform.

### Accessibility

* The application should support keyboard navigation for desktop users.

### Localization

* The application should support **multiple languages** (e.g., English, Spanish, French, and German) to cater to users in different regions.
* The user interface (UI) should automatically adapt to the language and regional preferences of the user, including date formats, currency symbols, and number formats.

## Maintainability

### Modularity and Extensibility

* The application should be built in a modular fashion, with each feature or component of the system isolated in separate modules for easier updates, bug fixes, and scalability.
* The architecture should support extensibility, allowing for easy addition of new features without requiring major changes to the core system.

### Code Quality

* The code base must adhere to **clean code principles**, ensuring it is well-documented, readable, and easy to understand.
* It should follow coding standards and best practices, including version control (e.g., **Git**) and regular code reviews to ensure high-quality, maintainable code.

### Automated Testing and Continuous Integration

* The system should include automated tests (unit, integration, and functional tests) to ensure that all components work correctly and that new changes do not break existing functionality.
* Continuous integration (CI) and continuous deployment (CD) pipelines should be used to automate the build, test, and deployment processes, ensuring that updates and bug fixes can be released quickly and safely.

## Scalability

### Horizontal Scalability

* The system should support horizontal scalability, meaning it can handle increasing numbers of users.
* The database must be capable of scaling to support **millions of users** while maintaining performance.