**RETRO ROBOTS INTERNET BANKING SYSTEM**

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**Software Requirements Specification**

1. **Introduction**

Since the internet has become a popular place to buy and sell goods, online banking services have made their way into most homes. Easier to pay bills, manage money, and transfer money to other accounts, internet banking is a convenient way to handle money.

* 1. Purpose :

The Traditional way of maintaining details of a user in a bank was to enter the details and record them. Every time the user need to perform some transactions he has to go to bank and perform the necessary tasks, which may not be so feasible all the time. It may be a hard-hitting task for the users and the bankers too. The project gives real life understanding of Internet banking and activities performed by various roles in the supply chain. Here, we provide automation for banking system through Internet. Internet banking system project captures activities performed by different roles in real life banking which provides enhanced techniques for maintaining the required information up-to-date, which results in efficiency. The project gives real life understanding of Internet banking and activities performed by various roles in the supply chain.

* 1. Scope :

This Project investigates the entry threshold for providing a new transaction service channel via the real options approach, where the entry threshold is established by using an Internet banking system designed for the use of normal users(individuals), Industrialists, Entrepreneurs, Educational Institutions(Financial sections), Organizations and Academicians under transaction rate uncertainty.

* Customer must have a valid User Id and password to login to the system
* If a wrong password is given thrice in succession, that account will be locked and the customer will not be able to use it. When an invalid password is entered a warning is given to the user that his account is going to get locked.
* After the valid user logs in he is shown the list of accounts he has with the bank.
* On selecting the desired account he is taken to a page which shows the present balance in that particular account number.
* User can request for the details of the last ‘n’ number of transactions that he has performed. A report can also be taken of this.
* User can make a funds transfer to another account in the same bank. User is provided with a transaction password which is different from the login password.
* User can transfer funds from his account to any other account with this bank. If the transaction is successful a notification should appear to the customer, in case it is unsuccessful, a proper message should be given to the customer as to why it failed.
* User can request for cheque book/change of address/stop payment of cheque’s
* User can view his monthly as well as annual statements. He can also take print out of the same.
* Generate reports at every section
* Administrator can take a back up of the database for every instance that is happening, periodically.
* All users are authenticated to avail the services
* FAQ section is also included for end users benefit.
  1. Definitions,Acronyms and Abbreviations :
* **Administrator:** He is the super user who can add new customers into banking system, and assigns corresponding username, password, account type and other details. When any customer withdraws his account from the bank, he can delete their account and stop the transactions immediately. He can generate different reports. He also takes the system backup.
* **Personal Members (Customers):** After login they can request for balance enquiry in his account, Funds Transfer to another account in the same bank, Request for cheque book/change of address/stop payment of cheques, Mini statements (Viewing Monthly and annual statements).
* **Industrialists, Entrepreneur, Organizations and academicians:** These are another type of customers. They will have additional privilages to add, edit , delete and pay salary to their employee. They can also perform all the actions what the normal customers are going to perform.
* **IBS:** Internet Banking System
* **HTML:** Hypertext Markup Language is a markup language used to design static web pages.
* **EJB:** Enterprise Java Beans.
* **J2EE:** Java 2 Enterprise Edition is a programming platform part of the Java Platform for developing and running distributed multitier architecture Java applications, based largely on modular software components running on an application server.
* **DB2:** DB2 Database is the database management system that delivers a flexible and cost effective database platform to build robust on demand business applications.
* **WAS:** Web sphere application server is an application server that runs business applications and supports the J2EE and web services standards.
* **HTTP:** Hypertext Transfer Protocol is a transaction oriented client/server protocol between web browser & a Web Server.
* **HTTPS:** Secure Hypertext Transfer Protocol is a HTTP over SSL (secure socket layer)
* **TCP/IP:** Transmission Control Protocol/Internet Protocol, the suite of communication protocols used to connect hosts on the Internet. TCP/IP uses several protocols, the two main ones being TCP and IP.
  1. References :
     + SRS (IEEE SRS Format and Format provided by TGMC)
     + Project specification requirement (provided by TGMC)
     + Problem Definition (provided by TGMC)
     + SBI Internet Banking
     + Google Search
  2. Technologies to be used
* HTML (Hyper text markup language)
* JavaScript
* JSP (Java Server Pages)
* Ajax
* DB2 Express
  1. Overview

SRS includes two sections overall description and specific requirements

* Overall description will describe major role of the system components and interconnections.
* Specific requirements will describe roles & functions of the actors.

1. **Overall Description**

The following sections describe the general factors that affect the product and its requirements.

Customer must have a valid User Id and password to login to the system. After the valid user logs in he is shown the list of accounts he has with the bank. On selecting the desired account he is taken to a page which shows the present balance in that particular account number, user can request details of the last ‘n’ number of transactions he has performed. User can make a funds transfer to another account in the same bank. User is provided with a transaction password which is different from the login password.

User can transfer funds from his account to any other account with this bank. If the transaction is successful a notification should appear to the customer, in case it is unsuccessful, a proper message should be given to the customer as to why it failed. User can request for cheque book/change of address/stop payment of cheque’s& can also make online DD which can be collected by him/her by in hand or by post..

User can view his monthly as well as annual statements. He can also take print out of the same and also generate reports from it. Appropriate help is to be provided when requested by the user.

* 1. Product Perspective

The client will have client interface in which he can interact with the banking system. It is a web based interface which will be the web page of the banking application. Starting a page is displayed asking the type of customer he is whether Personal User or Corporate User. Then the page is redirected to login page where the user can enter the login details. If the login particulars are valid then the user is taken to a home page where he has the entire transaction list that he can perform with the bank. All the above activities come under the client interface.

The administrator will have an administrative interface which is a GUI so that he can view the entire system. He will also have a login page where he can enter the login particulars so that he can perform all his actions. This administrative interface provides different environment such that he can maintain database & provide backups for the records in the database. He can register the users by providing them with username, password & by creating account in the database. He can view the cheque book request & perform action to issue the cheque books to the clients.

Personal

Corporate

User

User

Interface

WAS

Admin

Interface

Administrator

DB2

* 1. Software Interface

**User on Internet** : Web Browser, Operating System (any)

**Application Server** : WAS

**Data Base Server** : DB2

**Network** : Internet

**Development Tools** : RAD (J2EE,JavaScript,JSP,HTML), DB2,

* 1. Hardware Interface

|  |  |  |  |
| --- | --- | --- | --- |
| **Client Side** | | | |
|  | ***Processor*** | ***RAM*** | ***Hard-Disk Space*** |
| Web-browser (IE,Mozila,Firefox,Chrome) | PIII or Higher | 128 MB | 10GB |

|  |  |  |  |
| --- | --- | --- | --- |
| **Server Side** | | | |
|  | ***Processor*** | ***RAM*** | ***Hard-Disk Space*** |
| WAS | PIV or Higher | 512 MB | 20GB |
| DB2 V9.1 | PIV or Higher | 512 MB | 20GB |

Communication Interface

* Client on Internet will be using HTTP/HTTPS protocol.
* Client on Intranet will be using TCP/IP protocol.
* A Web Browser such as IE 6.0 or equivalent.
  1. Product Functions :

The IBS consists of following modules :

1. Login Process**:** This module allows valid customers to access thefunctionalities provided by the bank.
2. Balance Enquiry**:** This module maintains the balance details of a particular account.
3. Update Profile**:** This module allows the customer to update profile of their account.
4. Funds Transfer**:** This module allows the customers to transfer funds from one account to another within the same bank.
5. Change of Password: This module allows customers to change their password.
6. Mini Statements: This module allows customers to view their transaction details.
7. Request : This module allows user to send different request to admin like change of address, stopcheque payment,cheque Book.
8. Salary Pay: Corporate User can pay salary to his/her employee individually or to all. he also set salary of different employee. He also manages his employee list.
   1. User Characteristics :

Personal Users: The Personal users will have an account of fixed or savings and should have a minimum balance ofRs. 500.They can transfer funds to another account of the same bank & may view his monthly or annual statements.

Corporate Users: These users will have a minimum balance of Rs. 20,000. They can view the statements of his organization or industry.

Admin User: These User haveprivilege to manage both PERSONAL & COROPORATE accounts. They also respond to various request send by both users.

* 1. Constraints
* Login and password is used for identification of customer’s account and there is no facility for non users to login.
* This system works only on a single server.
* GUI is only in English
* Limited to HTTP/HTTPS protocols
  1. Architectural Design

Mini Stmt.

Administrator

USER

Data Manager

Login

Accounts

Transactions

Profile

Administrator

User\_UI

Data

Login\_UI

Accounts\_UI

Check Book\_UI

Update\_UI

Fund Transfer\_UI

Bal.-enq.\_UI

Mini Stmt.\_UI

Administrator\_UI

User

Data Manager

Login

Accounts

Check Book

Update

Fund Transfer

Bal.-enq.

**Application Layer**

**Business Layer**

**Data Layer**

**Data Layer**

**Business Layer**

**Application Layer**

Bal.-enq.

Fund Transfer

Update

Check Book

Accounts

Login

Data Manager

User

Administrator\_UI

Mini Stmt.\_UI

Bal.-enq.\_UI

Fund Transfer\_UI

Update\_UI

Check Book\_UI

Accounts\_UI

Login\_UI

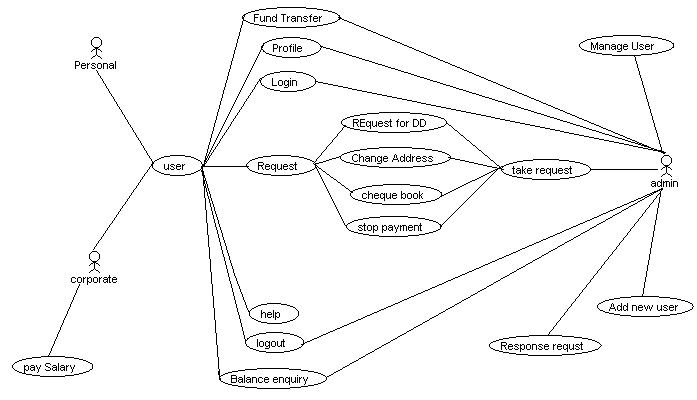
Data

User\_UI

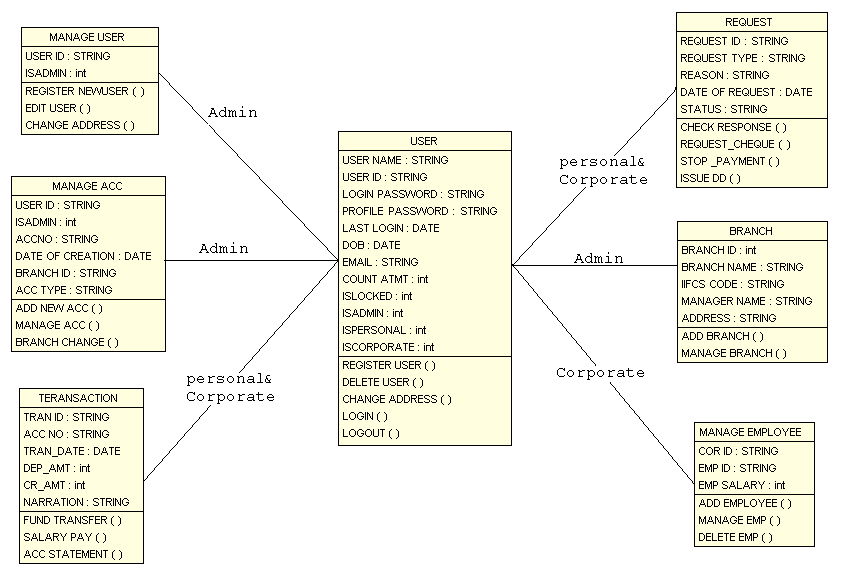
* 1. Use Case Model description

When we consider the online internet banking in this we provide the details of how to access the bank account without going to the bank through internet.

When we consider the priority of this project it is mainly of medium cost, efficient to user access data, provides the required data, safe and secure one. we can know the details of our account whether it may be a transaction or deposit or balance enquiry etc.



* 1. Class Diagram



* 1. Sequence Diagram

Login process:



Balance Enquiry:



Funds Transfer:



Request for Change Address:

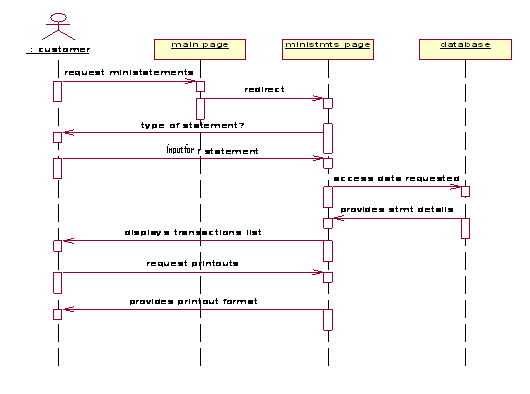
****

Cheque Book Request:

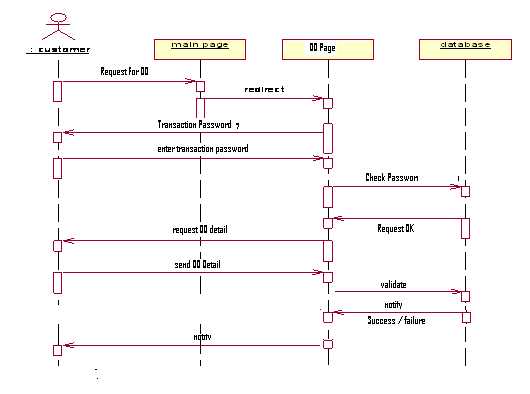


Stop payment of cheques:

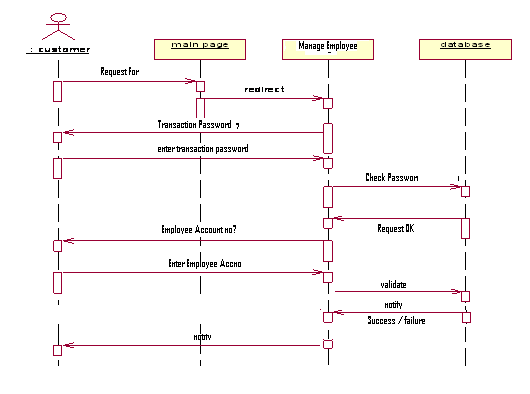


N-transaction Statements:

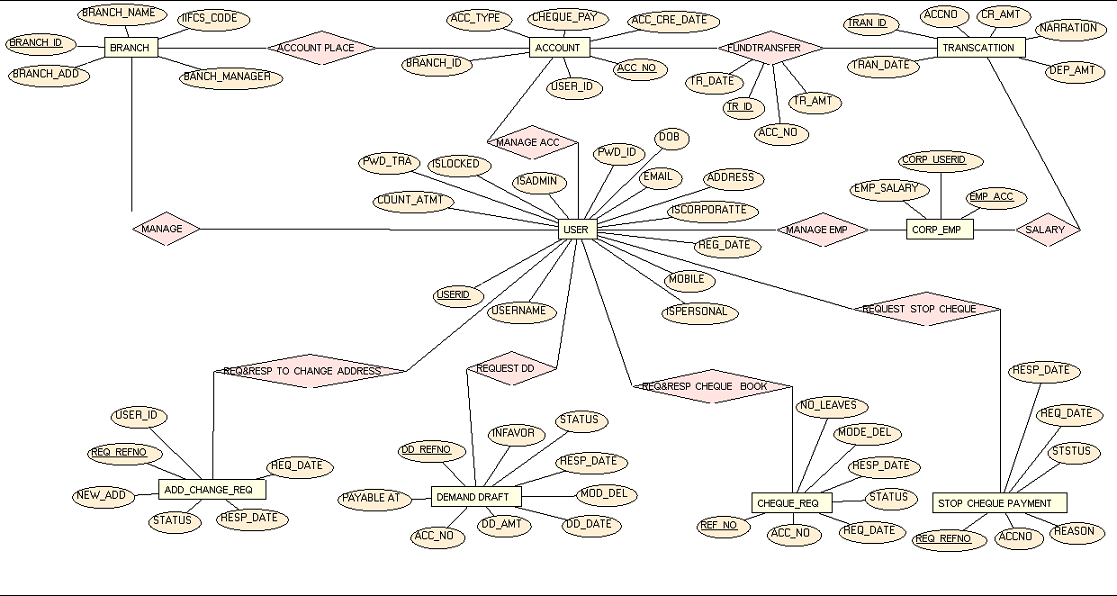
Issue DD:



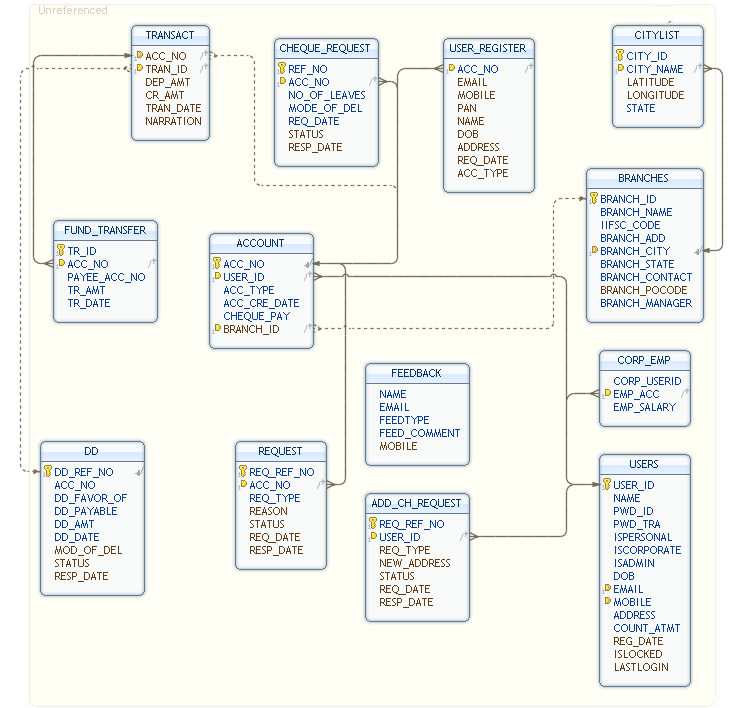
Pay Salary:



* 1. Database Design
     1. E-R Diagram



* + 1. Schema



* 1. Assumptions and Dependencies
     + The details of customers such as username, password, account type and their corresponding authority details should be manually entered by the administrator before using this system.
     + Every user should be comfortable of working with computer and net browsing.
     + He should be aware of the banking system.
     + He must have basic knowledge of English too.

1. **Specific Requirements**
   1. Use Case Reports
   2. **Administrator:**He is the super user responsible for managing clients of the system, taking system backup, generating reports, maintaining organization details.
      * + **Manage Clients:** The Administrator assigns new users when a new client joins the online bank. Also he can delete an account when any of the clients leave the bank organization.
        + **Maintain Corporate Details:** The Administrator maintains entire details of the Corporate that includes details of the Corporate Admin and its subusers details etc.
        + **Take System Backup:** The Administrator Backup the database in order to prevent loss of data on system crashes. He can backup entire database or a particular section..
        + **Generate Reports: :** Responsible for checking the logs of different system users for auditing and maintaining the integrity of the system

* **Name Of Use-Case:** Manage clients.

**Description:**

The Administrator assigns new users when a new client joins the online bank. Also he can delete an account when any of the clients leave the bank organization.

**Preconditions:**

* Administrator is already logged in.

Manage Clients

Delete Account

Create Account

* **Name Of Use-Case:** Maintain Corporate details

**Description:** The Administrator should maintain all the Corporate details.

**Preconditions:**

* + Administrator is already logged in.

Details

Corporate Details

* **Name Of Use-Case:** Generate Reports.

**Description:**  The Administrator is responsible for checking the logs of different clients for auditing and maintaining the integrity of the system.

**Preconditions:**

* + Administrator is already logged in.
  1. **Customer :**Ordinary customers have a user name & password with which they can login into their account. They can perform all the transactions such as funds transfer, balance enquiry, cheque book request, etc by sitting at their home on internet.
     + - **Login:** User can login to the system by providing appropriate username and password provided by the administrator.
       - **Selecting the Account:** After logging in the user is provided with a screen showing the details of accounts and he selects one of the account inorder to perform the transaction.
       - **Balance Enquiry:** He can view the balance left in his account, if once he has entered into his account.
       - **Funds Transfer:** Upon the request the user can transfer funds from his account to other accounts.
       - **Request for cheque book:** He can request for cheque book.
       - **Mini Statements:** He also can take a mini statement print out upon his requirement.
* **Name Of Use-Case:** Login.

**Description:** Customer must provide a valid User Id and password to login to the system

**Preconditions:**

Customer must have a valid User Id and password to login to the system.

<<Success>>

Login

Access Account

Warning Messages

Relogin

<<Failure>>

Warning Messages

* **Name Of Use-Case:** Accounts accessing.

**Description:**  Here the page will display all the accounts that the user has with the bank.

.**Preconditions:**

* + Client has already logged in.

Accounts

Personal Account

Corporate Account

**Accessing view:**

User after logging into his/her account a page is displayed with the basic requirements:

1. Balance Enquiry.
2. Request Cheque Book.
3. Funds Transfer (same bank).
4. Mini Statements.
5. Request Change of Address.
6. Request Stop Payment Cheque.
7. Request to Issue DD.

User can perform various actions on his/her account.

* **Name Of Use-Case: Balance enquiry.**

**Description:** Client can view the balance left in his account, if once he has entered into his account.

**Preconditions:**

* + The client has already been logged in.

Select Account

Request Balance

Display balance

ce

* **Name Of Use-Case:** Request cheque book.

**Description:**  The client can request for cheque book by giving the details required.

**Preconditions:**

* + The client has already been logged in.

Request Cheque Book

Enter Details

Submit

ce

Display balance

ce

* **Name Of Use-Case:** Funds Transfer.

**Description:**  The client can transfer the amount from his account in the bank to the other account in the same bank.

**Preconditions:**

* + The client has already been logged in.

Select Payee

Enter Payee detail

Submit

Enter Amount

Submit

Prompt Transaction Password

Valid

Not Valid

Re-Confirm Transaction

Fund Transfer Success

Fund Transfer UnSuccessful

Display Error Message

Display Success Message

Login Error

Redirect

* **Name Of Use-Case:** Stop payments of cheques.

**Description:**  Client can request to stop the payment of the cheque giving its Reason.

**Preconditions:**

* + The client has already been logged in.

Request Stop Check Payments

Enter Reason

Submit

ce

* **Name Of Use-Case:** Mini Statements.

**Description:** The client can request the mini statements i.e monthly, annual or ‘n’ number of transactions.

**Preconditions:**

* + The client has already been logged in.

Date Wise

N-Transaction

Generate Report

Monthly

Mini Statements

Submit

ce

* **Name Of Use-Case:** Request to Change Address.

**Description:** The client can send request to admin for change of Address in his profile, but he can change his/her both Login as well as Profile Password,

**Preconditions:**

* + The client has already been logged in.

Updating Profile &send Request

Change Address Detail

Submit

ce

Request Send To Admin

ce

Enter Detail

Submit

ce

Profile Updated

ce

* 1. **Corporate users :**

The corporate users will have the same functionalities as that of a customer. The extra functionality of corporate user is to have an internal administrator.

* **Name Of Use-Case:** Internal administrator duties.

**Description:** The internal administrator has to maintain company accounts & transfer salaries to the employees accounts.

**Preconditions:**

* + The internal administrator should have valid corporate\_id, username & password.
  + The internal administrator has already been logged in.

Internal Administraror

Manage Company Accounts

Transfer Money

* 1. Supplementary requirements:
     1. Performance Requirements

System can withstand even though many no. of customers request the desired service.Access is given to only valid users of bank who requires the services such as balance enquiry, update profile, funds transfer, mini statements, and request for stop payments and for cheque book

* + 1. Safety Requirements

By incorporating a robust and proven DB2 UDB into the system, reliable performance and integrity of data is ensured. There must be a power backup for server system. Since the product is of 24x7 availability there should be power backup for server which provides the information .Every day the data should be backup even when the operation of an user is not successful i.e., while performing the operation power failure occurs then data should be backup.

* + 1. Security Requirements

Sensitive data is protected from unwanted access by user’s appropriate technology and implementing strict user-access criteria. Facility of unique user number and Password in such a way that unauthorized user cannot log in. Operational rights for each user/terminal can be defined. Thus, a user can have access to specific terminals and specific options only.

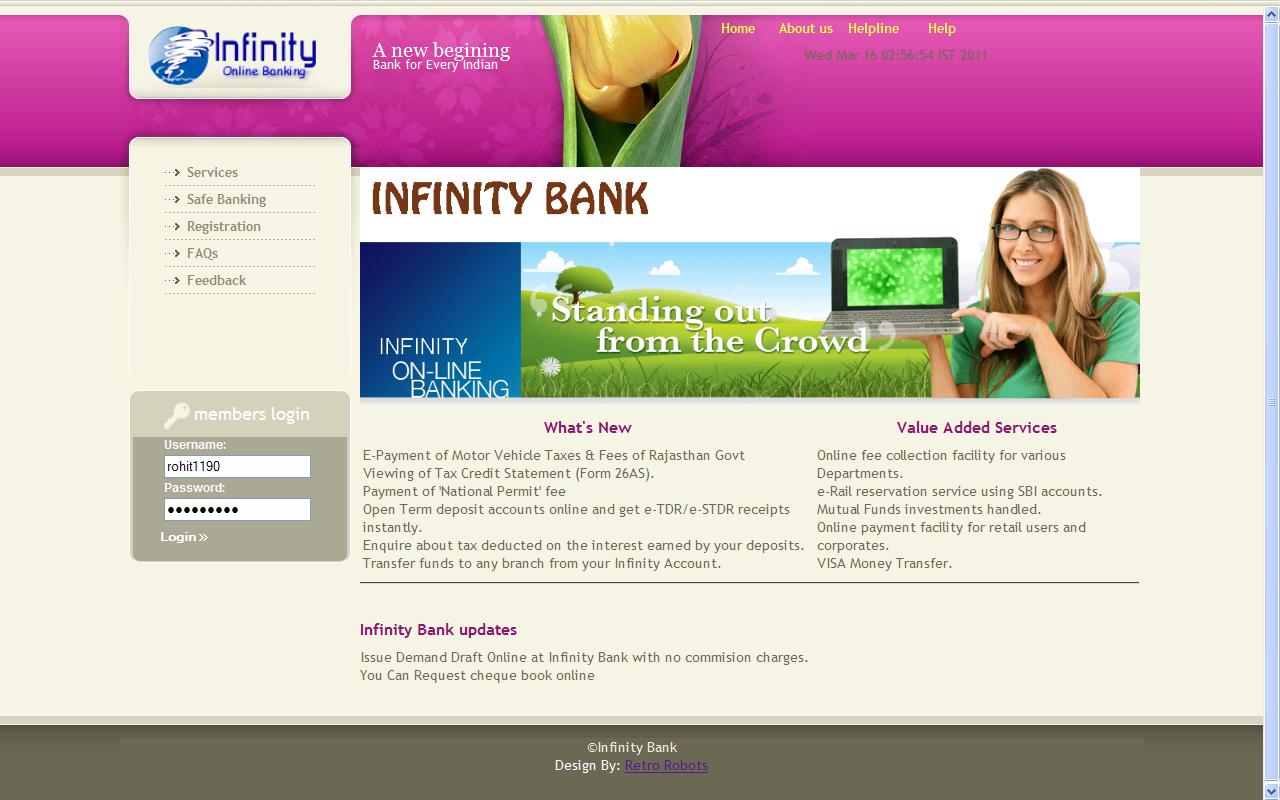
Online Banking uses the SSL (Secure Socket Layer) protocol for transferring data.SSL is encryption that creates a secure environment for the information being transferred between customer browser and Bank. Online Banking uses 128-bit digital certificate verified by IBM for encryption of the Secure Sockets Layer (SSL) session. SSL is the industry standard for encrypted communication and ensures that customer's interaction with the Bank over the Internet is secure.

Secure Socket Layer (SSL) protects data in three key ways:

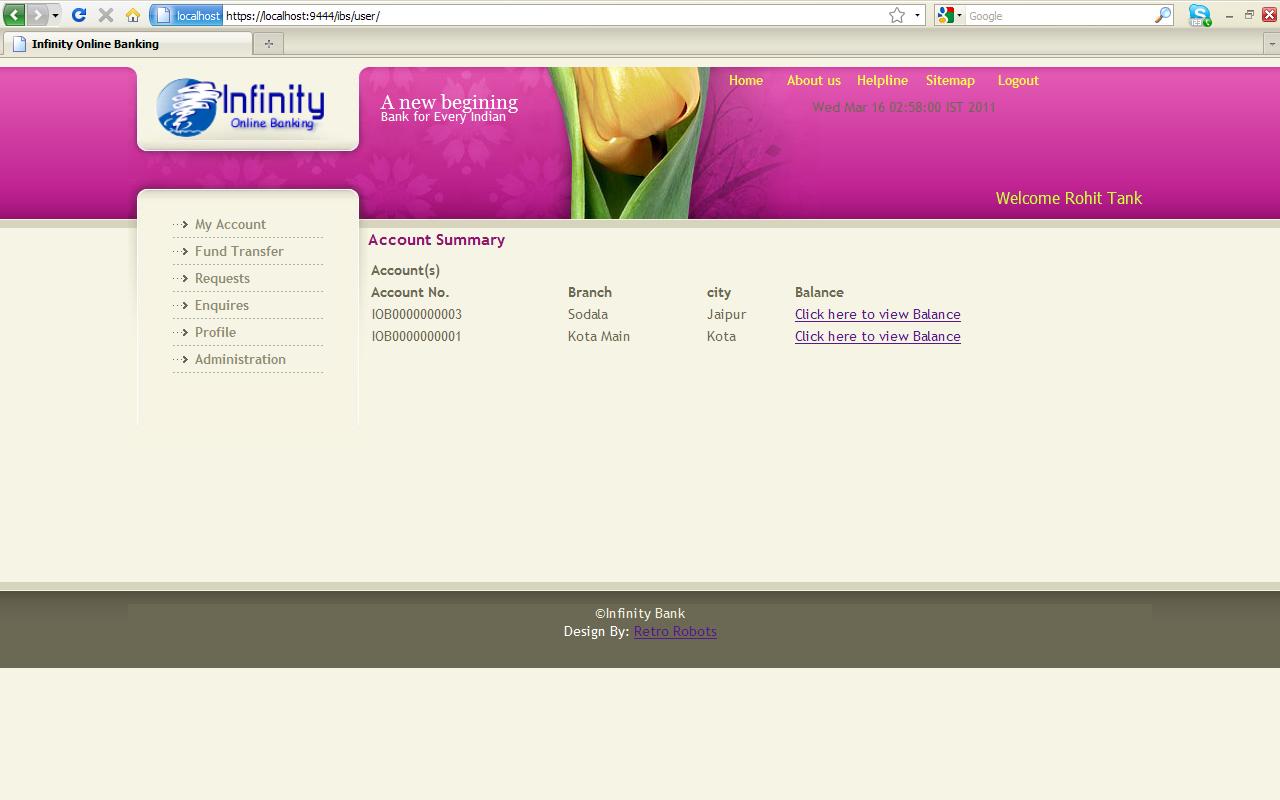
* Authentication ensures that you are communicating with the correct server. This prevents another computer from impersonating Bank.
* Encryption scrambles transferred data.
* Data integrity verifies that the information sent by customer to Bank wasn't altered during the transfer. The system detects if data was added or deleted after customer sent the message. If any tampering has occurred, the connection is dropped.

1. **Sample Screenshots**

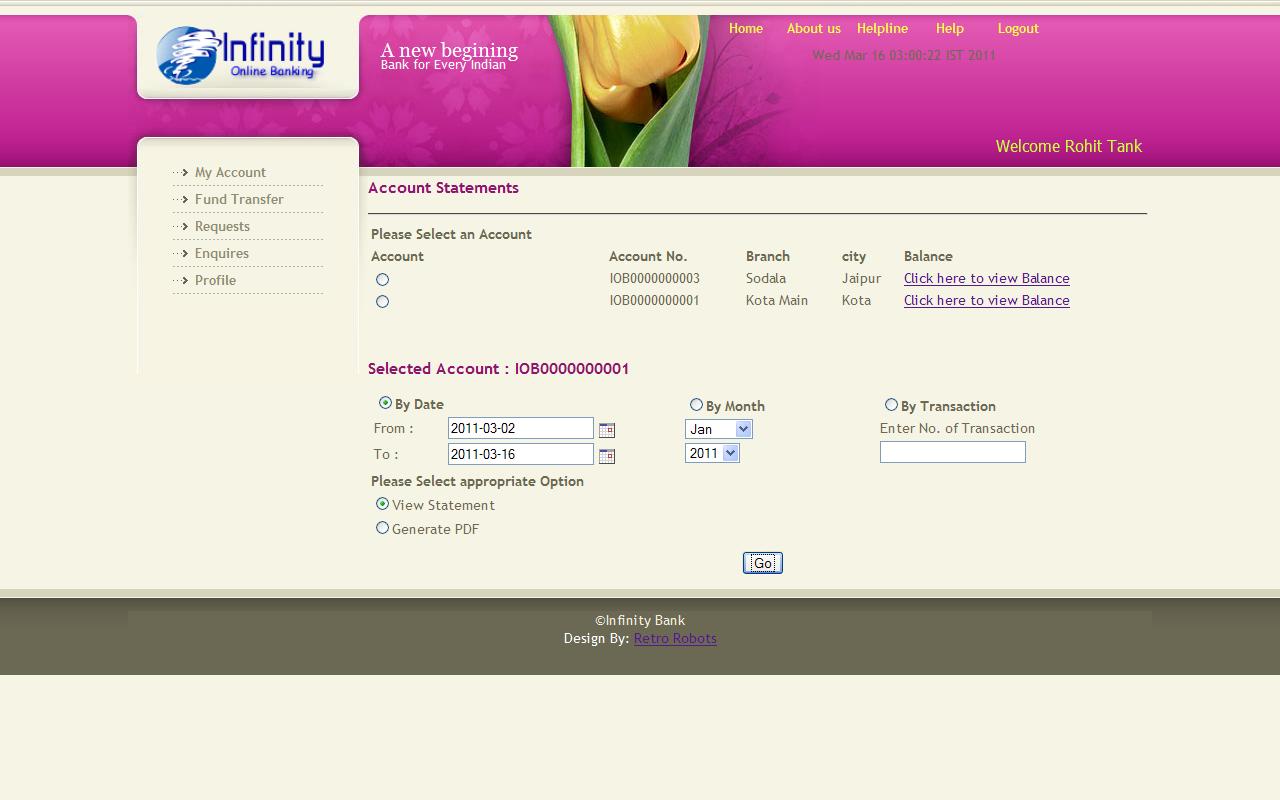
Homepage



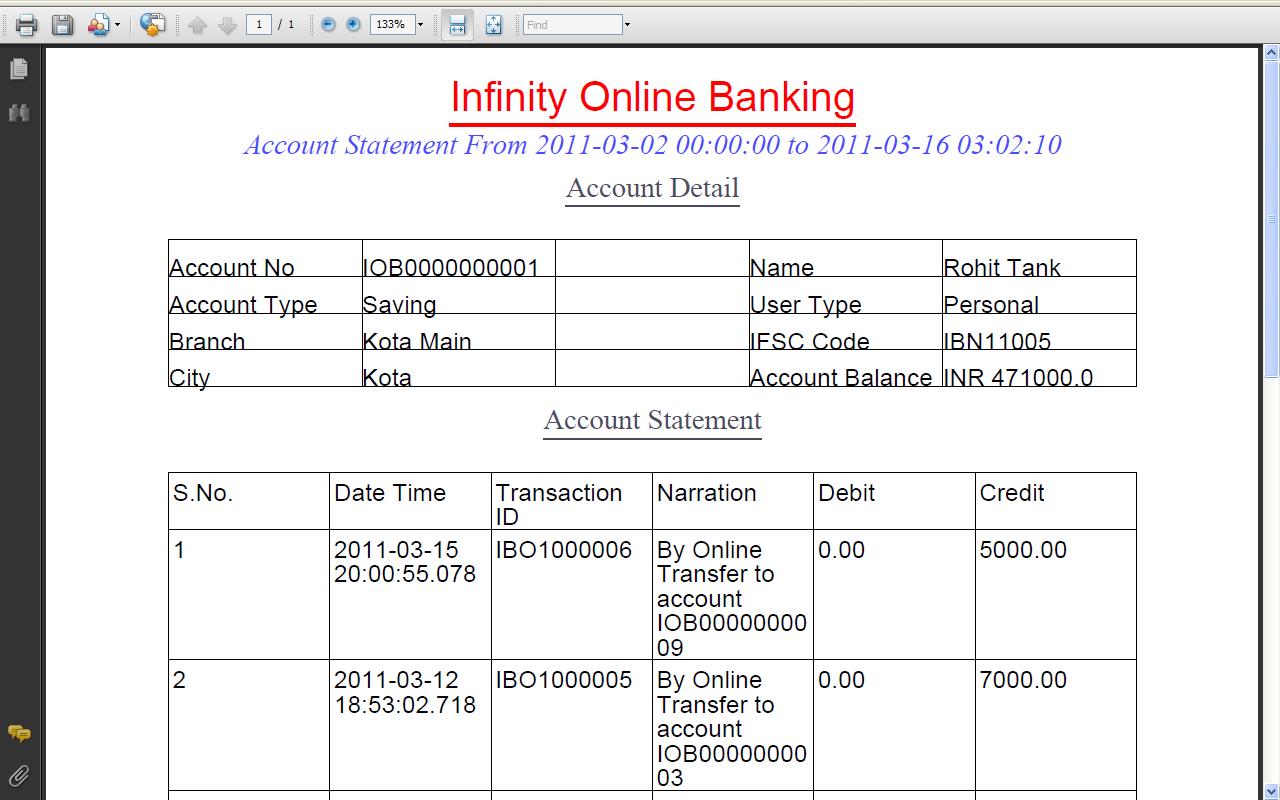
After Login Page



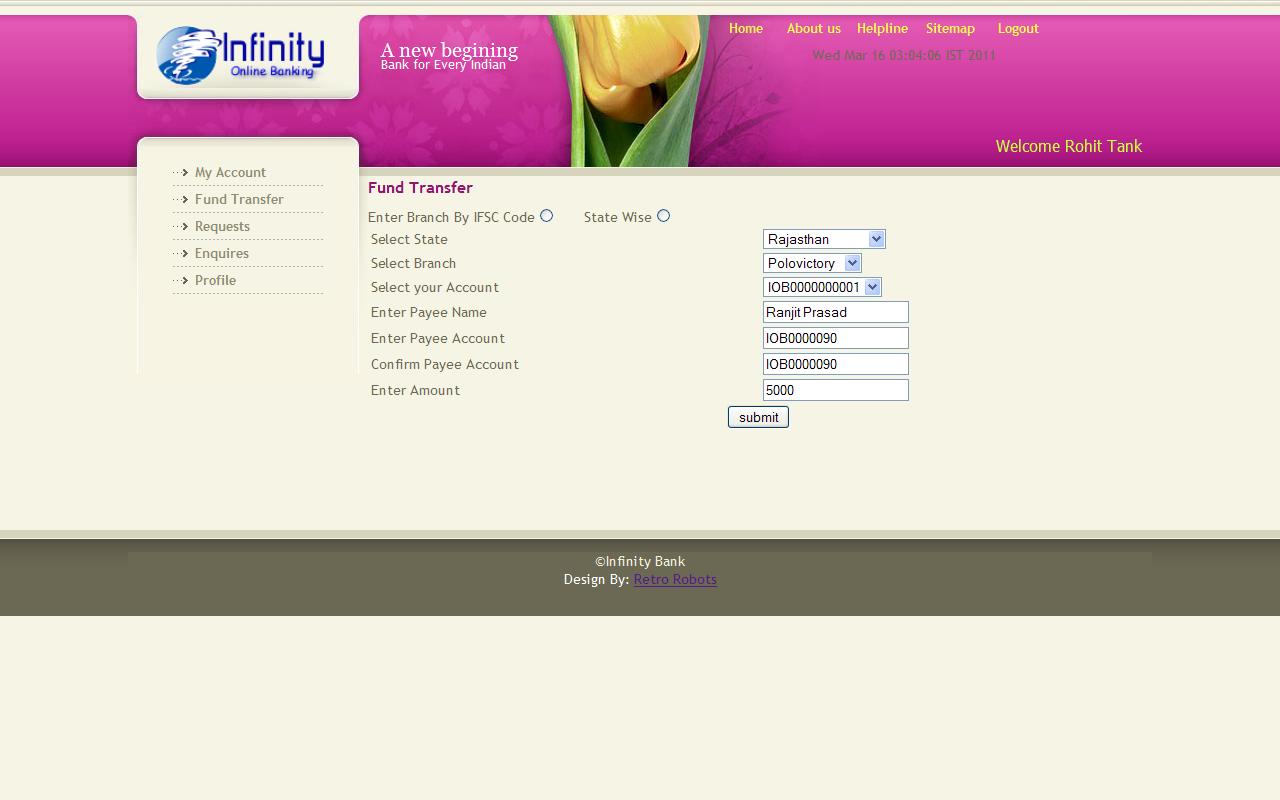
Account Statement



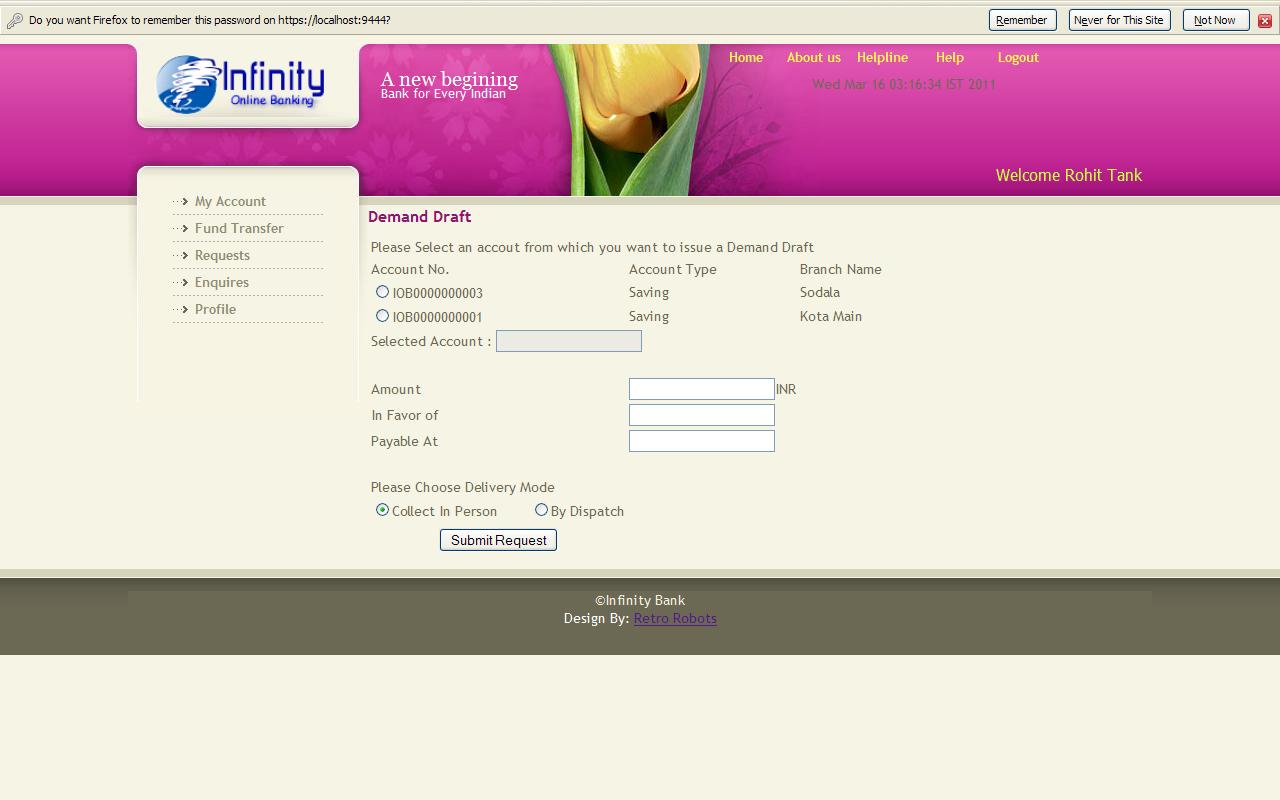
PDF Report



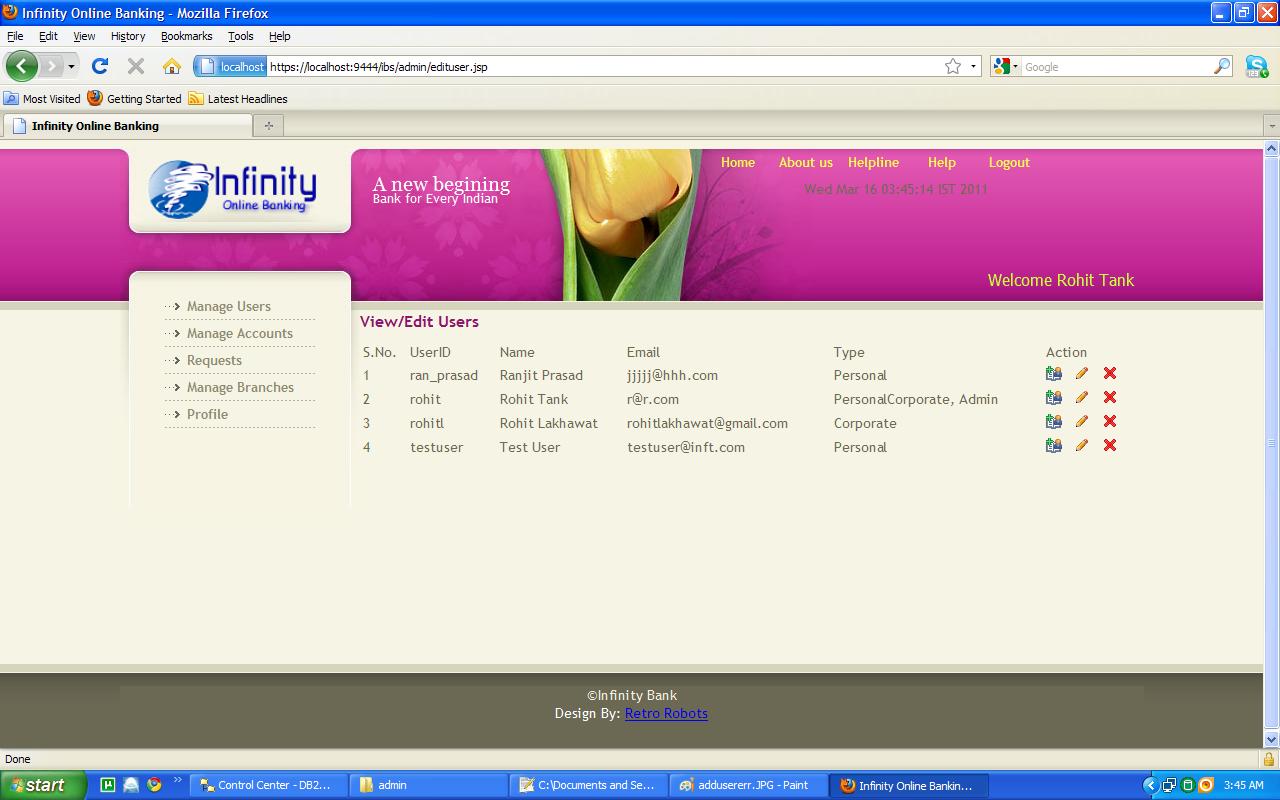
Fund Transfer



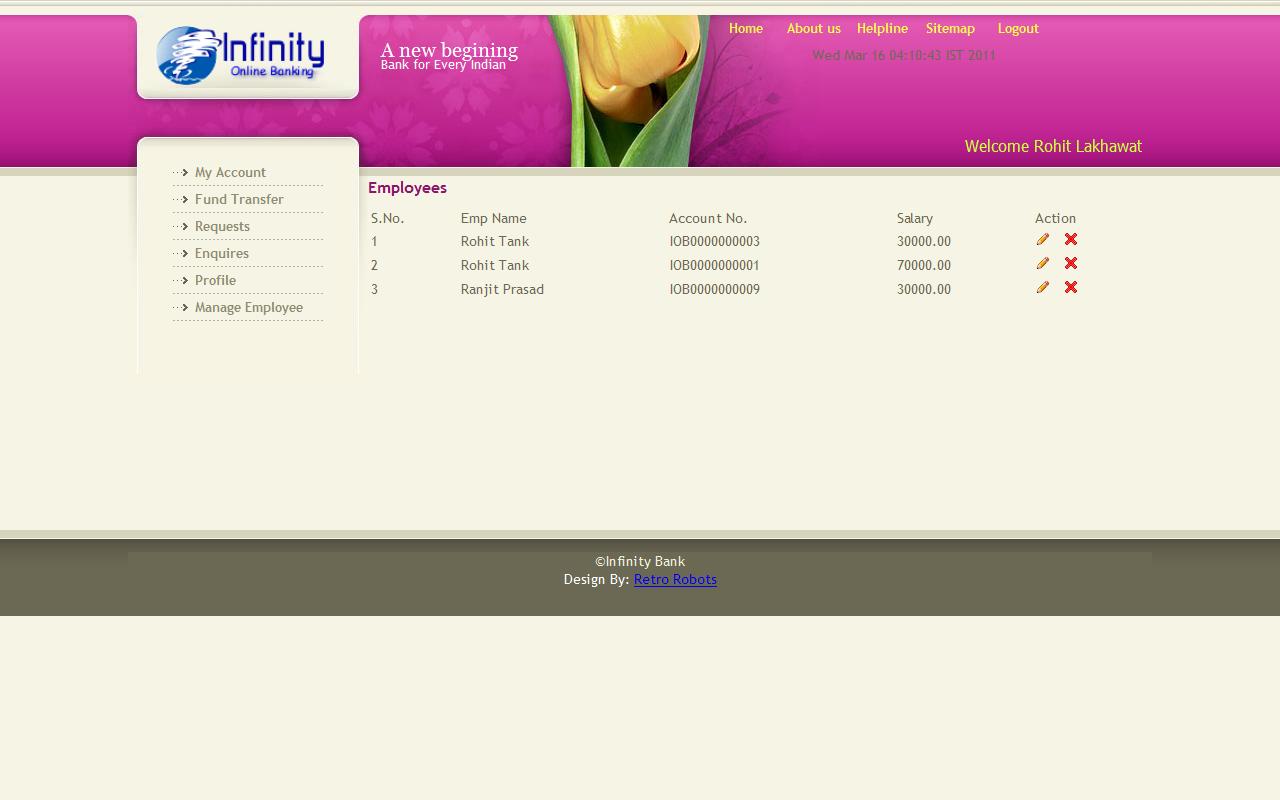
Demand Draft



Admin Manage User



Corporate Manage Employee



Corporate Pay Salary

