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| **Project Code:** | BS-01 |
| **Project Name:** | BANKING SYSTEM |

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| **Prepared by/Date** |  | **Reviewed by/Date** |  | **Approved by/Date** |

**Revision History**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Version (x.yy)** | **Date of Revision** | **Description of Change** | **Reason for Change** | **Affected Sections** | **Approved By** |
| 1.0 | 26.04.13 | Initial Draft |  |  |  |
| 2.0 | 25.07.14 | Revision | Mapping with UCF |  |  |
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**Affected Groups**

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**List of Reference Documents**

|  |  |
| --- | --- |
| **Name** | **Version No.** |
| 1.RS\_BS.pdf | 1.0 |
| 2. FS\_BS.pdf | 1.0 |
| 3. |  |
| 4. |  |

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# Introduction

## Background

XYZ Bank provides secure online banking services to its customers.

## Purpose

XYZ Bank plans to develop “Banking System” - a web application where a customer can avail the services of the bank online.

## Scope

The scope of the Banking System (BS) will be to provide the functionality as described in Functional Requirements below. The system will be developed on a Windows operating system using Oracle database.

# Global Data Structures and Shared Data Functions

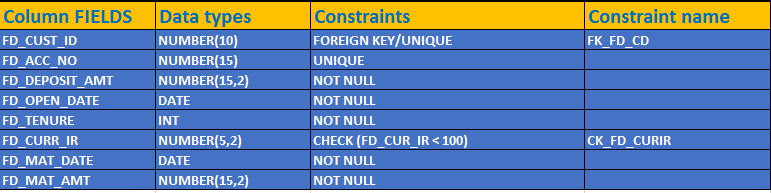
This section describes the structure of 8 tables to be used for the implementation of requirements as stated in the specification.

Table structures to be defined

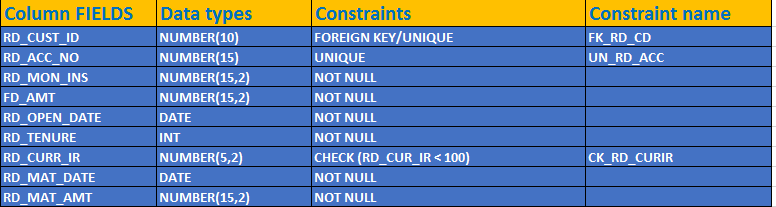
## Table Design

**Tables Used In Banking System**

|  |  |  |
| --- | --- | --- |
|  | | |
|  |  |  |
|  |  |  |
| 2.1.1 – BS\_CUSTDET\_TB |  |  |
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|  |  |  |
|  |  |  |
| 2.1.2 – BS\_USER\_CRED\_TB |  |  |
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| 2.1.3 – BS\_ACCOUNTS\_TB |  |  |
|  |  |  |
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| 2.1.4 - BS\_TRANS\_TB |  |  |
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|  |  |  |
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| 2.1.5- BS\_BRANCH\_DET\_TB |  |  |
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| 2.1.6 - BS\_PAY\_DET\_TB |  |  |
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| 2.1.7 – BS\_FIXED\_DEPO\_TB |  |  |
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|  |  |
| --- | --- |
| 2.1.8 – BS\_REC\_DEPO\_TB |  |



## 2.2 STORED PROCEDURES AND FUNCTIONS

### 2.2.1 BS\_LOGIN\_PROC

### 2.2.2 BS\_LOGOUT\_PROC

### 2.2.3 BS\_CHPSW\_PROC

### 2.2.4 BS\_CUST\_CREATE\_PROC

### 2.2.5 BS\_ADD\_PAY\_PROC

### 2.2.6 BS\_ACTIVATE\_PAY\_PROC

### 2.2.7 BS\_VIEW\_PAY\_PROC

### 2.2.8 BS\_DELETE\_PAY\_PROC

### 2.2.9 BS\_VIEW\_ACC\_PROC

### 2.2.10 BS\_FUND\_TRANSFER\_PROC

### 2.2.11 BS\_FIXED\_ACC\_PROC

### 2.2.12 BS\_REC\_ACC\_PROC

**2.2.13 BS\_CLOSE\_FD\_PROC**

### 2.2.14 BS\_CLOSE\_RD\_PROC

**2.2.15 BS\_ACC\_STATEMENT\_PROC**

**2.2.16 BS\_VIEWDEPOSIT\_PROC**

# High Level Design

## Use-Case Diagrams

### 3.1.1 Admin Use Case

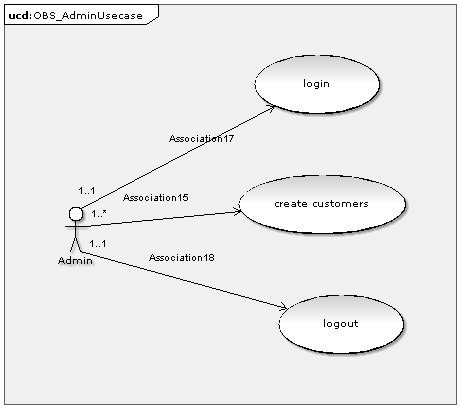
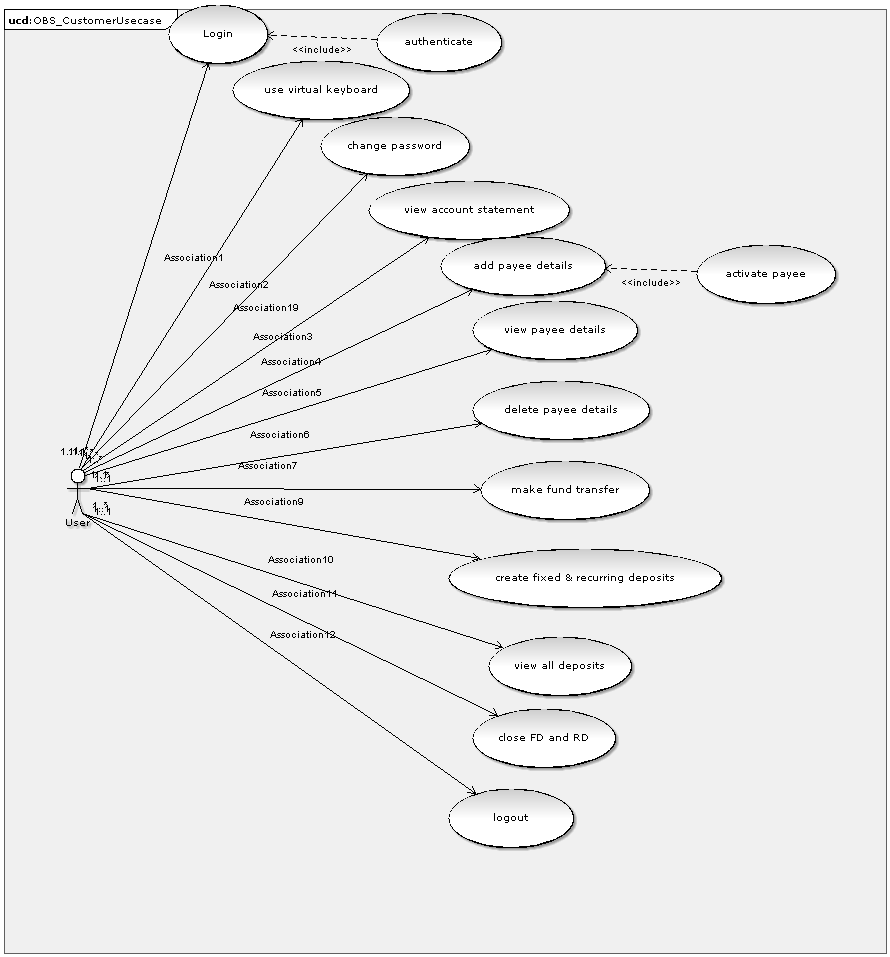


Fig. 3.1.1 Admin Use case

### 3.1.2 Customer Use Case



## Use Case

Generally, in a design document, Use case definitions should be written for all the *Requirements* of the system.

Note: Participants are expected to document use case definitions for all requirements. However, for few requirements documented below for reference.

**3.2.1 User Login**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-001** | ***AA-001 Login*** | |
| **Goal** | *The user should able to login* | |
| **Preconditions** | *The User must have a user id and password.* | |
| **Success End Condition** | *On Success user can be able to login to his Account.* | |
| **Failed End Condition** | *Not able to login.* | |
| **Primary, Secondary Actors** | *Admin, Customer* | |
| **Trigger** | *On Clicking the login Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Admin or Customer has to click on login Button.* |
| **2** | *Admin or Customer has to enter the username and password to login.* |
| **Step** | **Branching Action** |
| **2** | *On failure display an Error Message displaying unable to login.* |
| **Related Information/Use cases** | *-* | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *The User must have a user id and password.* | |

**3.2.2 User Logout**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-002** | ***EX-001nv User Logout*** | |
| **Goal** | *The user should be able to logout from session* | |
| **Preconditions** | *The User must Be Logged in* | |
| **Success End Condition** | *On Success customer can be able to logout from the current session.* | |
| **Failed End Condition** | *No one is logged in.* | |
| **Primary, Secondary Actors** | *Admin, Customer* | |
| **Trigger** | *On Clicking the logout Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Admin or Customer has to click on logout Button.* |
| **Step** | **Branching Action** |
| **1** | *On failure display an Error Message displaying no one logged in.* |
| **Related Information/Use cases** | *The user must have logged in.* | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Admin or Customer is having an Account and must already be logged in.* | |

**3.2.3 Change Password**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-003** | ***AA-002 Change password*** | |
| **Goal** | *The user should be able to change password.* | |
| **Preconditions** | *The User must Be Logged in* | |
| **Success End Condition** | *On Success User can be able to change his/her password.* | |
| **Failed End Condition** | *Not able to change password.* | |
| **Primary, Secondary Actors** | *Admin, Customer* | |
| **Trigger** | *On Clicking the change password Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Admin or Customer has to click on change password.* |
| **2** | *Admin or customer has to enter the new password* |
| **3** | *The password has been changed* |
| **Step** | **Branching Action** |
| **3** | *On failure display an Error Message displaying unable to change password.* |
| **Related Information/Use cases** | *3.2* | |
| **Priority** | *P2* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Admin or Customer is having an Account and must already be logged in.* | |

**3.2.4 Add Customer**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-004** | ***AD-001 Add Customer*** | |
| **Goal** | *The admin should able to create customer* | |
| **Preconditions** | *The must be logged in.* | |
| **Success End Condition** | *On Success Admin can be able to add the Customer details.* | |
| **Failed End Condition** | *Not able to add the customer* | |
| **Primary, Secondary Actors** | *Admin* | |
| **Trigger** | *On Clicking the Add Customer Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Admin has to click on Add Customer Button.* |
| **2** | *Admin has to enter the details of the Customer.* |
| **3** | *Able to Add the customer when details are given.* |
| **Step** | **Branching Action** |
| **3** | *On failure display an Error Message displaying unable to add the customer.* |
| **Related Information/Use cases** |  | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *The admin must have logged in.* | |

**3.2.5 Add Payee**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-005** | ***CU-004 Add Payee*** | |
| **Goal** | *The user can add payee.* | |
| **Preconditions** | *The User must have Logged in* | |
| **Success End Condition** | *On Success customer can be able to add the payee to his Account.* | |
| **Failed End Condition** | *Not able to add the Payee* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the Add Payee Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on Add Payee Button.* |
| **2** | *Customer has to enter the account number of the payee* |
| **3** | *Payee details are added* |
| **Step** | **Branching Action** |
| **1** | *On failure display an Error Message displaying unable to add the payee.* |
| **Related Information/Use cases** | *The payee should be one of the customer of the same bank.* | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account and payee must also have an account* | |

**3.2.6 Activate Payee**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-006** | ***CU-005 Activate Payee*** | |
| **Goal** | *The user should be able to activate payee* | |
| **Preconditions** | *The User must have Logged in* | |
| **Success End Condition** | *On Success customer can be able to activate the payee to his Account.* | |
| **Failed End Condition** | *Not able to activate the payee* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the Activate Payee Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on Activate Payee Button.* |
| **2** | *Customer has to enter the payee account number to activate.* |
| **3** | *On success the payee account will be activated.* |
| **Step** | **Branching Action** |
| **1** | *On failure display an Error Message displaying unable to activate the payee.* |
| **Related Information/Use cases** |  | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account and payee details to be activated.* | |

**3.2.7 View Payee Details**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-007** | ***CU-006 View Payee Details*** | |
| **Goal** | *To View Payee details* | |
| **Preconditions** | *The User must have Logged in to view payee details.* | |
| **Success End Condition** | *On Success customer can be able to view the payee in his Account.* | |
| **Failed End Condition** | *Not able to view the Payee* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the View Payee Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on View Payee Button.* |
| **2** | *Customer has to enter the Payee details to be viewed.* |
| **3** | *Able to Add the payee when details are submitted.* |
| **Step** | **Branching Action** |
| **3** | *On failure display an Error Message displaying unable to view the payee.* |
| **Related Information/Use cases** | *-* | |
| **Priority** | *P2* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account and payee must be valid to view.* | |

**3.2.8 Delete Payee**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-008** | ***CU-007 Delete Payee*** | |
| **Goal** | *The user must able to delete payee.* | |
| **Preconditions** | *The User must have Logged in to delete payee details.* | |
| **Success End Condition** | *On Success customer can be able to delete the payee in his Account.* | |
| **Failed End Condition** | *Not able to delete the Payee* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the delete Payee Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on delete Payee Button.* |
| **2** | *Customer enters the account number of the payee* |
| **3** | *Payee account deleted* |
| **Step** | **Branching Action** |
| **1** | *On failure display an Error Message displaying unable to delete the payee.* |
| **Related Information/Use cases** | *The payee account must be present in the payee list.* | |
| **Priority** | *P2* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account and payee must be valid to delete.* | |

**3.2.9 View Account Summary**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-009** | ***CU-002 View Account Summary*** | |
| **Goal** | *The user should be able to view account summary.* | |
| **Preconditions** | *The User must have account transactions to display summary* | |
| **Success End Condition** | *On Success the account summary is displayed.* | |
| **Failed End Condition** | *Not able to display account details.* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the Account Summary Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on Account Summary Button.* |
| **2** | *Customer has to enter the details of the account to get account summary.* |
| **Step** | **Branching Action** |
| **2** | *On failure no one is logged in.* |
| **Related Information/Use cases** |  | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account and should contain account transactions to display summary.* | |

**3.2.10 Generate Account Statement**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-010** | ***CU-003 Generate Account Statement*** | |
| **Goal** | *The user should be able to generate account statement* | |
| **Preconditions** | *The User must have Logged in* | |
| **Success End Condition** | *On Success customer can be able to generate account statement.* | |
| **Failed End Condition** | *Not able to generate account statement* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the account statement Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on Account Statement Button.* |
| **2** | *Customer has to enter the details of the account so that it generates the statement of the current account.* |
| **Step** | **Branching Action** |
| **2** | *On failure display an Error Message displaying unable to generate the account statement.* |
| **Related Information/Use cases** | *-* | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account and its transaction details.* | |

**3.2.11 Fund Transfer**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-011** | ***CU-008 Fund transfer*** | |
| **Goal** | *The user should able to transfer funds to another account.* | |
| **Preconditions** | *The User must have Logged in to transfer funds* | |
| **Success End Condition** | *On Success customer can be able to transfer the fund to an Account.* | |
| **Failed End Condition** | *Not able to transfer the fund.* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the fund transfer Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on fund transfer Button.* |
| **2** | *Customer has to enter the details of the funds to be transferred.* |
| **3** | *Able to transfer funds when details are submitted.* |
| **Step** | **Branching Action** |
| **3** | *On failure display an Error Message displaying unable to make a transaction to an account.* |
| **Related Information/Use cases** | *The user must have a payee account activated.* | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account to make a fund transaction to another account.* | |

**3.2.12 Creating Fixed/Recurring Deposit**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-012** | ***CU-009 Creating Fixed/Recurring deposit*** | |
| **Goal** | *The user should be able to create fixed/recurring deposit account.* | |
| **Preconditions** | *The User must have Logged in to create a deposit account* | |
| **Success End Condition** | *On Success customer creates Fixed /Recurring deposit to his Account.* | |
| **Failed End Condition** | *Not able to create deposit details* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the Fixed and Deposit button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on Fixed and Deposit button.* |
| **2** | *Customer has to enter the details for creating fixed and deposit account.* |
| **Step** | **Branching Action** |
| **2** | *On failure display an Error Message displaying unable to create account.* |
| **Related Information/Use cases** | *-* | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account to create Fixed and Recurring deposit account* | |

**3.2.13 Close Fixed/Recurring Deposit**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-013** | ***CU-010 Closing Fixed/Recurring deposit*** | |
| **Goal** | *The user should be able to close fixed/recurring deposit account.* | |
| **Preconditions** | *The User must have Logged in to close a deposit account* | |
| **Success End Condition** | *On Success customer closes Fixed and Recurring deposit to his Account.* | |
| **Failed End Condition** | *No deposit account exists* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the Close Fixed / Recurring Deposit button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click on close Fixed/recurring Deposit button.* |
| **2** | *Customer has to close fixed / recurring deposit account.* |
| **Step** | **Branching Action** |
| **1** | *On failure display an Error Message displaying unable to close deposit details.* |
| **Related Information/Use cases** | *The Customer must have a fixed / recurring account to close.* | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account to close Fixed and Recurring deposit account* | |

**3.2.14 View Deposit**

|  |  |  |
| --- | --- | --- |
| **USE CASE US-014** | ***CU-011 View Deposit*** | |
| **Goal** | *The user should be able to view deposit account details.* | |
| **Preconditions** | *The User must have Logged in to view deposit details* | |
| **Success End Condition** | *On Success customer can be able to View deposit details in his Account.* | |
| **Failed End Condition** | *Not able to view the deposit details.* | |
| **Primary, Secondary Actors** | *Customer* | |
| **Trigger** | *On Clicking the View Deposit Button* | |
| **DESCRIPTION** | **Step** | **Action** |
| **1** | *Customer has to click View Deposit Button.* |
| **2** | *The Details of Deposit is displayed.* |
| **Step** | **Branching Action** |
| **2** | *On failure display an Error Message displaying deposit.* |
| **Related Information/Use cases** | *Admin cannot use this option.* | |
| **Priority** | *P1* | |
| **Performance** | *50 secs (depends on user entry Time)* | |
| **Frequency** | *100* | |
| **Assumptions** | *Customer is having an Account and any deposit is activated.* | |

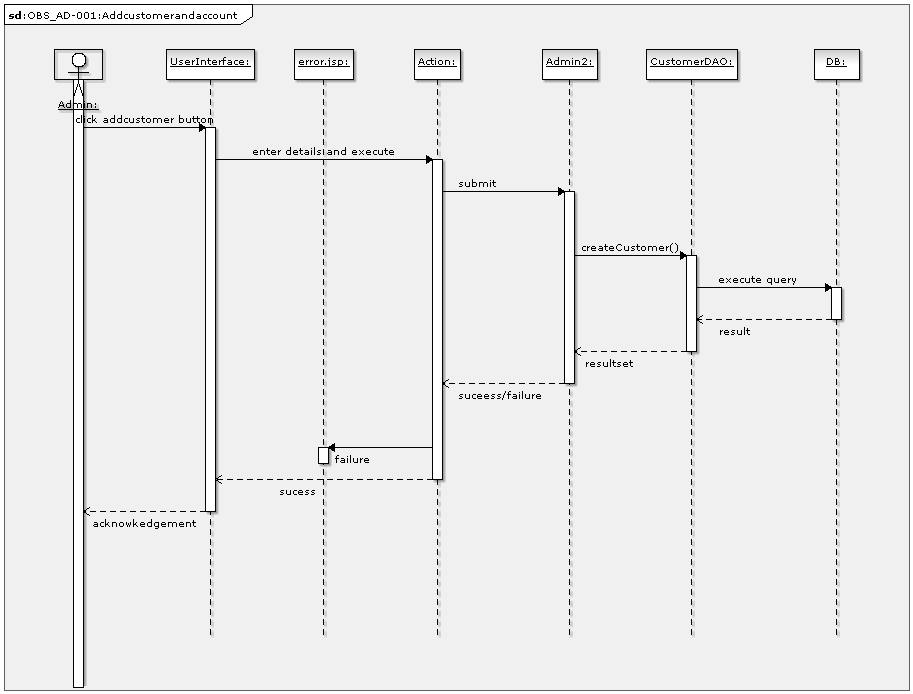
## Class Diagram

The class diagram is a very basic concept in object-oriented world. Class diagrams demonstrate a model, describing what attributes and behavior it has rather than describing the methods for accomplishing operations. Class diagrams are very useful in representing relationships between classes and interfaces.

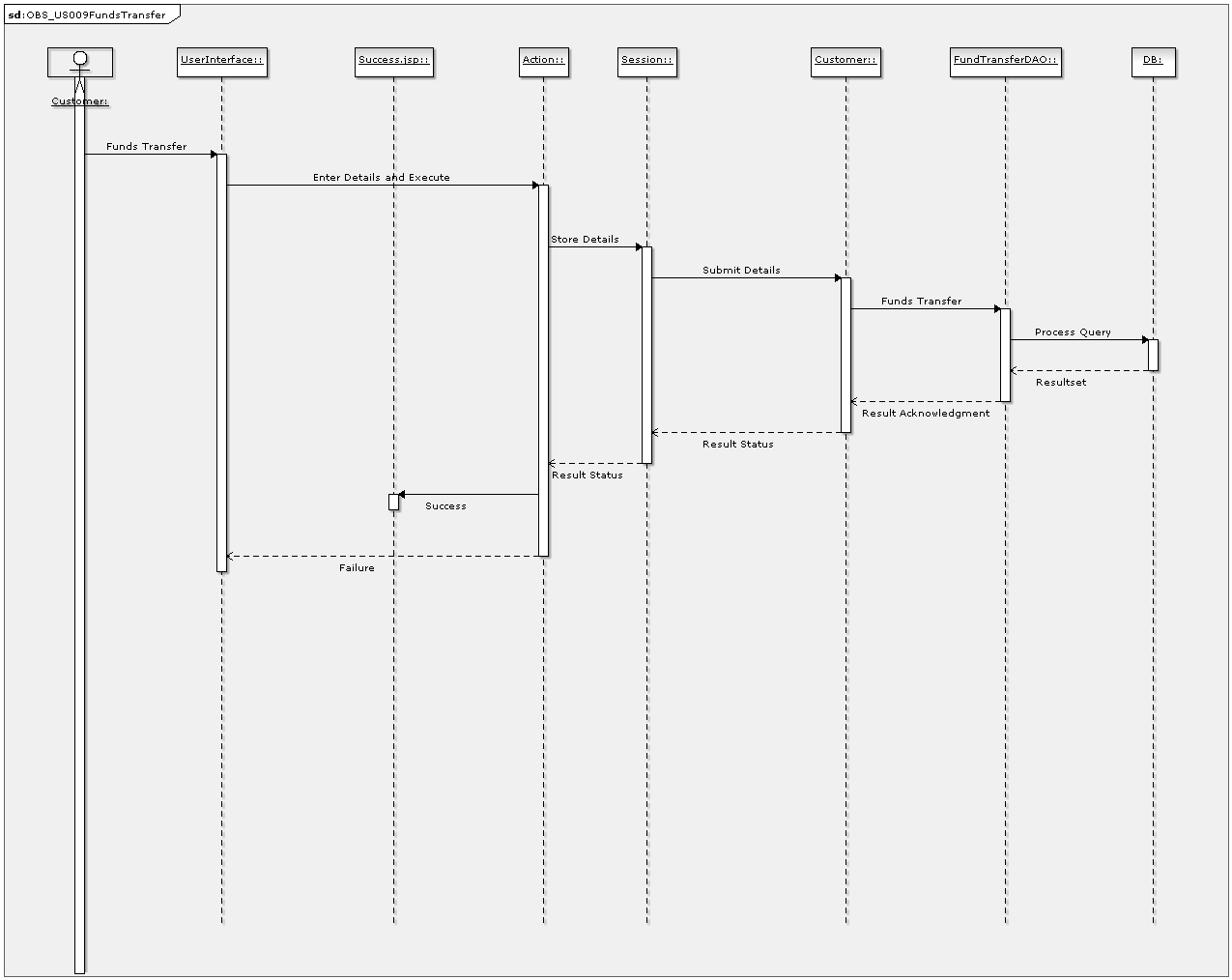
## Sequence Diagrams

A graphical representation of a module’s function invoking functions of other modules in order to achieve a task (specific user requirement) is called a sequence diagram. A sequence diagram for the authentication process is given below for reference. The below example is for a Web Application using servlet/jsp.

**3.4.1 Add Customer details:**



### 3.4.2 Fund Transfer sequence



# Critical Functions and Focus for Testing

* Login Handling
* Log out Handling
* Create Customer
* Activation of payee
* Fund Transfer
* Fixed Deposit and Recurring Deposit Accounts Handling
* To Transfer funds payee must already be activated.

# Limitations

* Customer is limited to have maximum of 2 accounts per branch.
* Fund transfer should be within the same branch / bank.
* Customer is allowed to have only one Fixed and Recurring deposit.
* Minimum Tenure period of deposit accounts is 6 months.