Overnight Call Money (Fund Borrow) System

For Banks and Non-Bank Financial Institutions

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A project

in

The Department

of

Computer Science and Engineering



Presented in Partial Fulfillment of the Requirements
For the Degree Master of Science in Computer Science and Technology
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Abstract

All type of Banks and Non Bank Financial Institution (NBFI) requires the Call Money System to meet their liquidity. It is used for interbank, non- bank transaction. When a bank or NBFI faces cash crunch it borrows money from another bank or NBFI. Those involving bank's transaction conducted over the telephone. In this project the user can input the entire borrowing details like the amount, rate of interest, name of the bank or NBFI, type of borrow etc. All these receiving data and payable data are enlisted in a detailed form called Deal Slip. After insertion of all these data, Approver check all the details to approve and can also revert them if needed. The user also can print the cheques and create voucher after approval.

The goal of this project '**Overnight Call Money (Fund Borrow) System for Banks and Non-Bank Financial Institutions**' is to combine the whole call money system process under one entity. The software system can be managed by any user and this also saves the business from taking the trouble of hiring extra manpower and increase efficiency. This project will help the users of both the banks and non bank financial institutions to get all previous records of individual deals and can compare it with the recent deals so that company can predict the loss or profit and can run the business smoothly.

Acknowledgement

At first I would like to express my deepest gratitude to Almighty Allah for giving me the knowledge & strength to do this project.

Then I would like to show my gratitude to my supervisor **Dr. Khondaker Abdullah Al Mamun,** Professor, CSE and Founder and President of CMED Health, for his continuous supervision & support to improve this project. This project '**Overnight Call Money (Fund Borrow) System for Banks and Non-Bank Financial Institutions**' is prepared for the partial fulfillment of MSCSE program. I am very much fortunate to receive this opportunity to do this project under his supervision at United International University (UIU). I would also like to express my special thanks to the examiner **Mr. Suman Ahmmed** and **Prof. Dr. Mohammad Nurul Huda,** Director- MSCSE, for willingly help me to finalizing the project within the limited time frame.

Finally I would like to express my gratitude to my parents, my spouse, my colleagues and my friends. Their continuous support & help made me successful to achieve this goal.

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Chapter 1

1. Introduction

Call money is an integral part of money market around the whole world. In the Money Market, the money that is borrow for one (1) day by any Bank or Non Bank Financial Institutions (NBFI) is traded as Call money. It is so difficult for the central Bank to provide sufficient liquidity to all the Banks and NBFIs.

Call Money is essential to fill the asset liability mismatch, to meet the sudden demand for funds arising out of large outflows and also to meet the reserve requirements of the Statutory Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR). Banks or NBFIs who faces temporary cash crunch and seeks to avail the fund for liquidity approaches the call market, are the borrowers and the ones who have excess liquidity in the money market, are the lenders. Call money is repayable on the immediate next working day. Those involving bank's transaction conducted over the telephone. Collateral security does not required for these transactions. All these receiving data and payable data are enlisted in a detailed form called Deal Slip. Call Money Rate is the highly volatile rate that differs from day to day and sometimes from hour to hour.

Idea of this project was to build a system where user of the banks and NBFIs can insert all the borrowing deal details and the system will calculate accrual interest, total balance amount of the individual deal, the closing balance of the individual deal, the opening and closing balance of all deals of an individual day. All these data forms a report called deal Slip.

1.1Existing Practice

1.1.1 Borrowing Interest Calculation

In the existing system of overnight call money system; there has maintained Calculation for each bank for each date. The interest amount that need to be pain, outstanding amount, ROI and total balance every calculation need to be appropriate in a manual manner.

	SONALI BANK LTD.					Total	
	ROI	INTEREST ACCRUED	PAID	OUTSTANDING	BALANCE	ROI	INTEREST
02-Feb-19	8.75%	36,458		36,458.33	2,470,000,000	8.73%	598,888.89
03-Feb-19	8.75%	36,458		36,458.33	2,430,000,000	8.73%	589,097.22
04-Feb-19	8.75%	36,458		36,458.33	2,330,000,000	8.73%	564,791.67
05-Feb-19	8.75%	36,458		36,458.33	2,340,000,000	8.73%	567,638.89
06-Feb-19	8.75%	36,458		36,458.33	2,410,000,000	8.73%	584,625.00
07-Feb-19	8.75%	36,458		36,458.33	2,410,000,000	8.73%	584,625.00
Oct-14	**9.19%**	**1,186,458.33**	-	**1,186,458.33**	**82,400,000,003**	**9.20%**	**21,673,625**

	ROI	INTEREST ACCRUED	PAID	OUTSTANDING	BALANCE	ROI	INTEREST
08-Feb-19	8.75%	36,458		36,458.33	2,410,000,000	8.73%	584,625.00
09-Feb-19	8.75%	36,458		36,458.33	2,260,000,000	8.73%	548,277.78
10-Feb-19	8.75%	36,458		36,458.33	2,290,000,000	8.73%	555,486.11
11-Feb-19	8.75%	36,458		36,458.33	2,290,000,000	8.73%	555,486.11
12-Feb-19	8.75%	36,458		36,458.33	1,940,000,000	8.72%	470,138.89
13-Feb-19	8.75%	36,458		36,458.33	1,770,000,000	8.73%	429,458.33
14-Feb-19	8.75%	36,458		36,458.33	1,770,000,000	8.73%	429,458.33
15-Feb-19	8.75%	36,458		36,458.33	1,770,000,000	8.73%	429,458.33
16-Feb-19	8.75%	36,458		36,458.33	1,700,000,000	8.73%	412,444.44
17-Feb-19	8.75%	36,458		36,458.33	1,730,000,000	8.73%	419,736.11

Figure 1: Deal Slip Management

1.1.2 Total Calculation for Each Day

After having everyday calculation of an each bank, in the existing system, all the banks or NBFI which are dealt with the other Bank or NBFI, for the particular day has been merged for the final calculation.

CALL BORROWING								
Name		Call Limit	Opening	Borrowing	Repayment	Closing	Available	02-Feb-19
AB Bank Ltd.		100,000,000	-			-	100,000,000	8.75%
Agrani Bank Ltd		**200,000,000**	**100,000,000**			**100,000,000**	**100,000,000**	**8.75%**
Bangladesh Commerce Bank Limited		100,000,000	-			-	100,000,000	8.75%
BASIC Bank Ltd		180,000,000	60,000,000			60,000,000	120,000,000	8.75%
Bank Asia Ltd			-			-	-	8.75%
Brac Bank Ltd		**300,000,000**	**60,000,000**			**60,000,000**	**240,000,000**	**8.75%**
Dhaka Bank Limited		**150,000,000**	-			-	**150,000,000**	**8.75%**
Dutch Bangla Bank Limited		1,300,000,000	100,000,000			100,000,000	1,200,000,000	8.75%
Eastern Bank Ltd		170,000,000	60,000,000	10,000,000		70,000,000	100,000,000	8.75%
IFIC Bank Limited		500,000,000	-			-	500,000,000	8.75%
Jamuna Bank Limited		**300,000,000**	**170,000,000**			**170,000,000**	**130,000,000**	**8.65%**
Janata Bank Ltd		**160,000,000**	**150,000,000**			**150,000,000**	**10,000,000**	**8.75%**
Meghna Bank Ltd		180,000,000	100,000,000			100,000,000	80,000,000	8.65%
Mercantile Bank Limited		200,000,000	150,000,000			150,000,000	50,000,000	8.75%
Mutual Trust Bank Limited		**200,000,000**	**90,000,000**			**90,000,000**	**110,000,000**	**8.75%**
National Bank limited		200,000,000	-			-	200,000,000	8.75%
NCCBL		-	-			-	-	8.75%
NRB BANK LTD		300,000,000	-			-		8.75%

Figure 2: Deal Slip Management

1.1.3 Main Report and Calculations

In the existing system of overnight call money system, there has maintained an excel format where all deal's basic information is inserted manually for each day, which can make risks for the bank or NBFI as the maximum profit portfolio of the company is dependent on this call money system.

FUND POSITION _14_15.xlsx [Read-Only] - Microsoft Excel

A	B	C	D	E
22-Mar-18		(AMOUNT IN BDT)		
NAME OF THE INSTITUTION	TYPE OF TRANSACTION	AMOUNT	PRINCIPAL	INTEREST/ RETURN
BEGINING BALANCE		532,975,362.23		
ACSPD				
RECEIPT		392,500,000.00	392,500,000.00	-
CITIBANK, N.A.	BBK CHECK ISSUE.-0200274008	2,500,000.00	2,500,000.00	
EASTERN BANK LTD.	CALL BORROWING	70,000,000.00	70,000,000.00	
PUBALI BANK LTD	CALL BORROWING	50,000,000.00	50,000,000.00	
SOUTHEAST BANK LTD	CALL BORROWING	110,000,000.00	110,000,000.00	
THE CITY BANK LTD.	CALL BORROWING	70,000,000.00	70,000,000.00	
UNITED COMMERCIAL BANK LTD	CALL BORROWING	90,000,000.00	90,000,000.00	
PAYMENT		384,534,722.22	384,000,000.00	534,722.22
COMMERCIAL BANK OF CEYLON PLC	BBK CHECK DEPOSIT-1802001797	6,000,000.00	6,000,000.00	
STANDARD CHARTERED BANK	BBK CHECK DEPOSIT-01613293601	15,000,000.00	15,000,000.00	
UNITED COMMERCIAL BANK LTD	BBK CHECK DEPOSIT-'0090-748-00001077	3,000,000.00	3,000,000.00	
EASTERN BANK LTD.	CALL PAY OFF WITH INTEREST	60,058,333.33	60,000,000.00	58,333.33
PUBALI BANK LTD	CALL PAY OFF WITH INTEREST	50,085,069.44	50,000,000.00	85,069.44
SOUTHEAST BANK LTD	CALL PAY OFF WITH INTEREST	100,121,527.78	100,000,000.00	121,527.78
THE CITY BANK LTD.	CALL PAY OFF WITH INTEREST	80,252,777.78	80,000,000.00	252,777.78
UNITED COMMERCIAL BANK LTD	CALL PAY OFF WITH INTEREST	70,017,013.89	70,000,000.00	17,013.89
SURPLUS (DEFICIT)		7,965,277.78		
CLOSING BALANCE		540,940,640.01		

Contacts | BANK BALANCE | Term Fund | SURPLUS | BB Deal Slip | BB CD Balance | CALL BALANCE | OD Balance | Ca

Figure 3: Deal Slip Management

1.2 Problems and Motivation

In the existing system for overnight call money system, user maintain and store the calculative part in the excel sheet and some of the other partial part has been by the existing system, which is also not automated. So that user need to entry each and individual deal along with other detail to complete the procedure manually, which is too much time consuming and hard labor.

In this project I want to present a system where user can work, maintain and store the whole system in a single integrated system, whereas users have to use multiple procedures. All data calculations, data maintain and store in an automated process and within a very short time frame. Here in this project voucher creation is also can be processed automatically. It was taken 2 hours before to create and complete all the vouchers and not it takes only 5-8 minutes to complete voucher. Also approver has the privilege to revert the partially completed process by one click if any users have entered wrong entry. So that reversion is also done in the shortest period of time. The project is also beneficiate users and the organization for the redundancy and accuracy of the data.

Chapter 2

2. Background and Literature Review

Automated system for **Overnight Call Money System** is an absolute necessity for any bank and NBFIs. In the existing system, the received call list can be inserted but cannot be listed together in the same view and payment procedure of the received calls is complex, the list of receivable and payment call cannot be viewed. Aim of this project is to make a system where detail all the payable and receivable records of an individual deal of current date and of the previous dates can be viewed with total balance, opening and closing balance, so that the cost funding can be comparable every day. This project also track any records, detail of all cheque printing and voucher can be processed and viewed. All these are integrated in one system and merged in this project.

2.1 System End Point

The System will provide following benefits:

- Quick Fund Management Process
- Redundancy and Accuracy
- Keep Previous Records
- Valid Search
- Automated Voucher Create

2.2 Background

The idea and requirements of this system has came up from a well known organization of Bangladesh named Delta Brac Housing Finance Corporation Ltd. (DBH). The central system software of this company has been developed by the IT department and Overnight Call Money System was the requirement of the Treasury Department of DBH. For this project the work load of this department will be minimize, all important data will store in a redundant way, the treasury department can make profit portfolio by comparing the previous deals with the recent one. So the company will get an immense benefit though the project.

2.3 System Hierarchy

System hierarchy is one of the main requirements of a project. The total system has been categorized by the panels. The project has two type of user panel:

- User (Employee) Panel
- Approver Panel

2.3.1 User (Employee) Panel

In this project user can view all the details and can do allthe needful actions to complete the whole system. The actions are categorized in the following:

- Create new Deal Slip
- Receiving Data Entry
- Fix the ROI with the Bank/ NBFI personnel and Pay the Interest Payable Amount to the concern Banks/ NBFIs
- View the list and Update Deal Slip records for Cheque Printing
- Cheque Printing and Generate Voucher with all details
- Generate Deal Slip Report with Closing balance after Approval
- Any Valid Search

2.3.2 Approver Panel

In the Approver end, approver needs to approve after checking all the details and approver can also revert the partially completed process if any mistake or error occur. Here also the actions are categorized in the following:

- Verified and approve Deal Slip
- Delete and Modify data of Deal Slip
- View the list
- View Deal Slip report
- Any Valid Search

Chapter 3

3. Design

3.1 Class Diagram

Class diagram provides an insight view of this project which includes detail structure of the system, quick overview of the different elements, the properties and relationships. By the class diagram the attributes and operational system of the project and modeling can be mapped properly. Class diagram of the project is shown below:

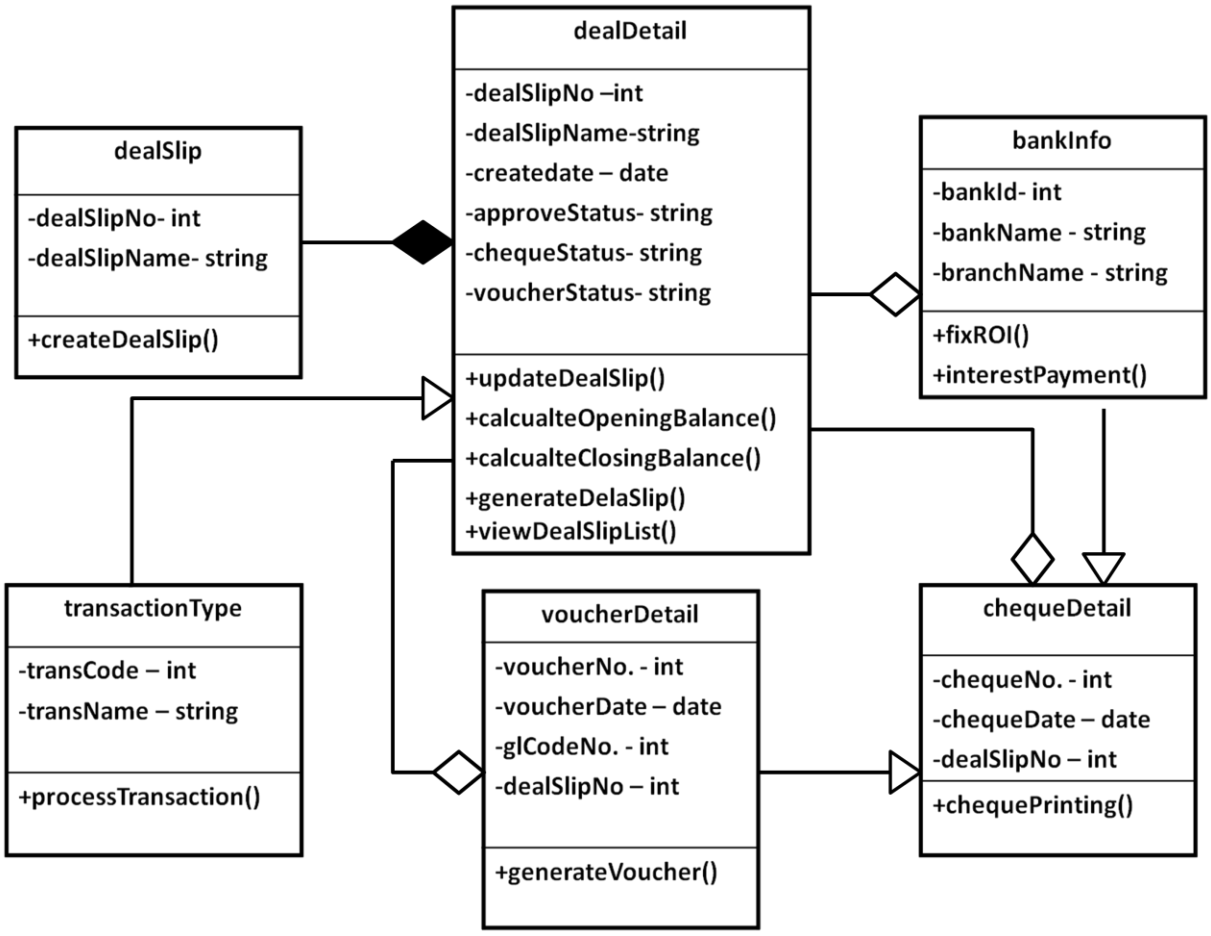


Figure 4: Class Diagram

3.2 Data Flow Diagram (DFD)

Dataflow diagram provides the pictorial or graphical representation of the system which also represents how the information can be move between the processes of this project.

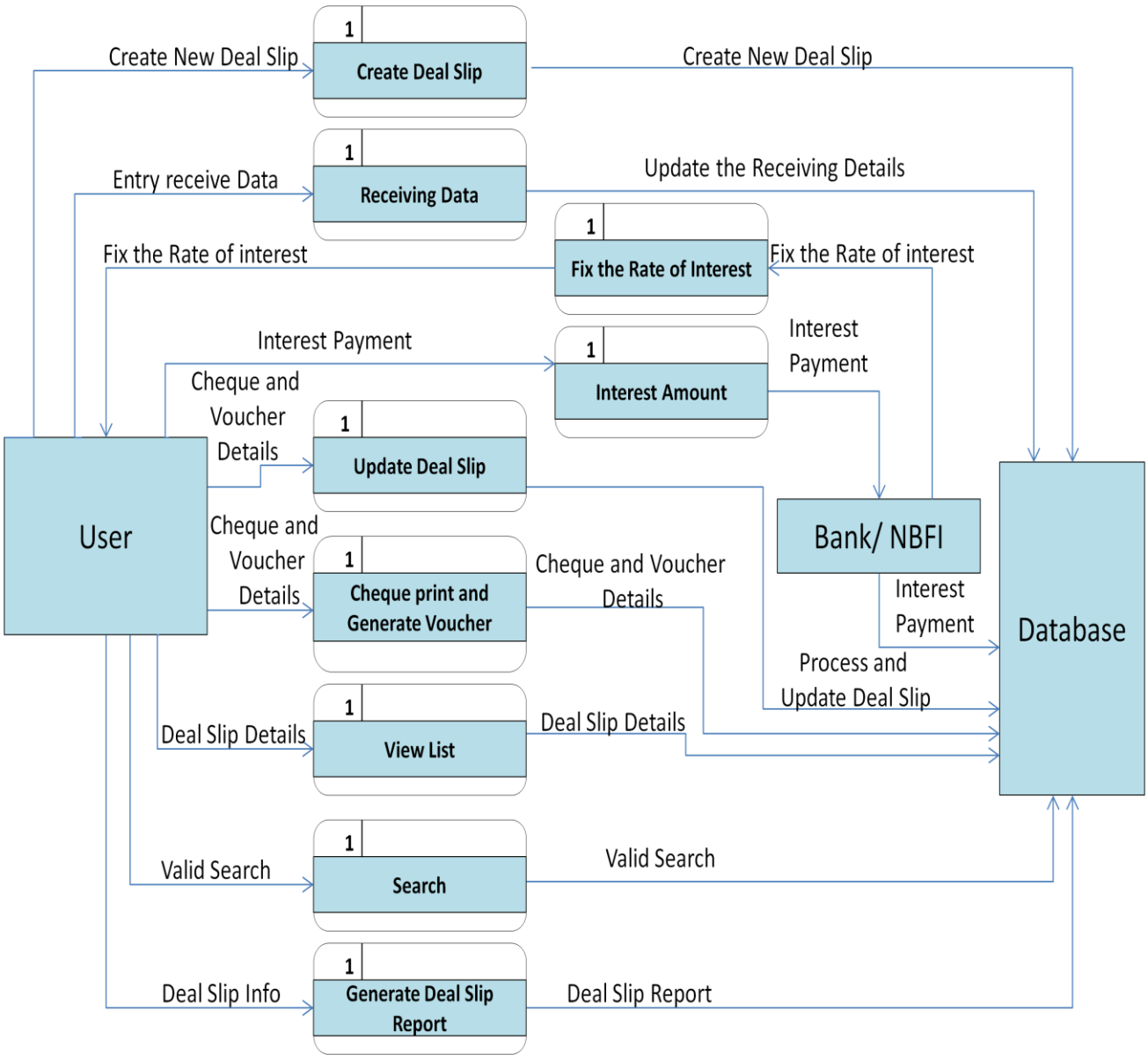


Figure 5: Data Flow Diagram

3.3 Use Case Diagram

Use Case Diagram determining the requirements and reduces risks and development time. It also gives us the idea of how the components interact with each other.

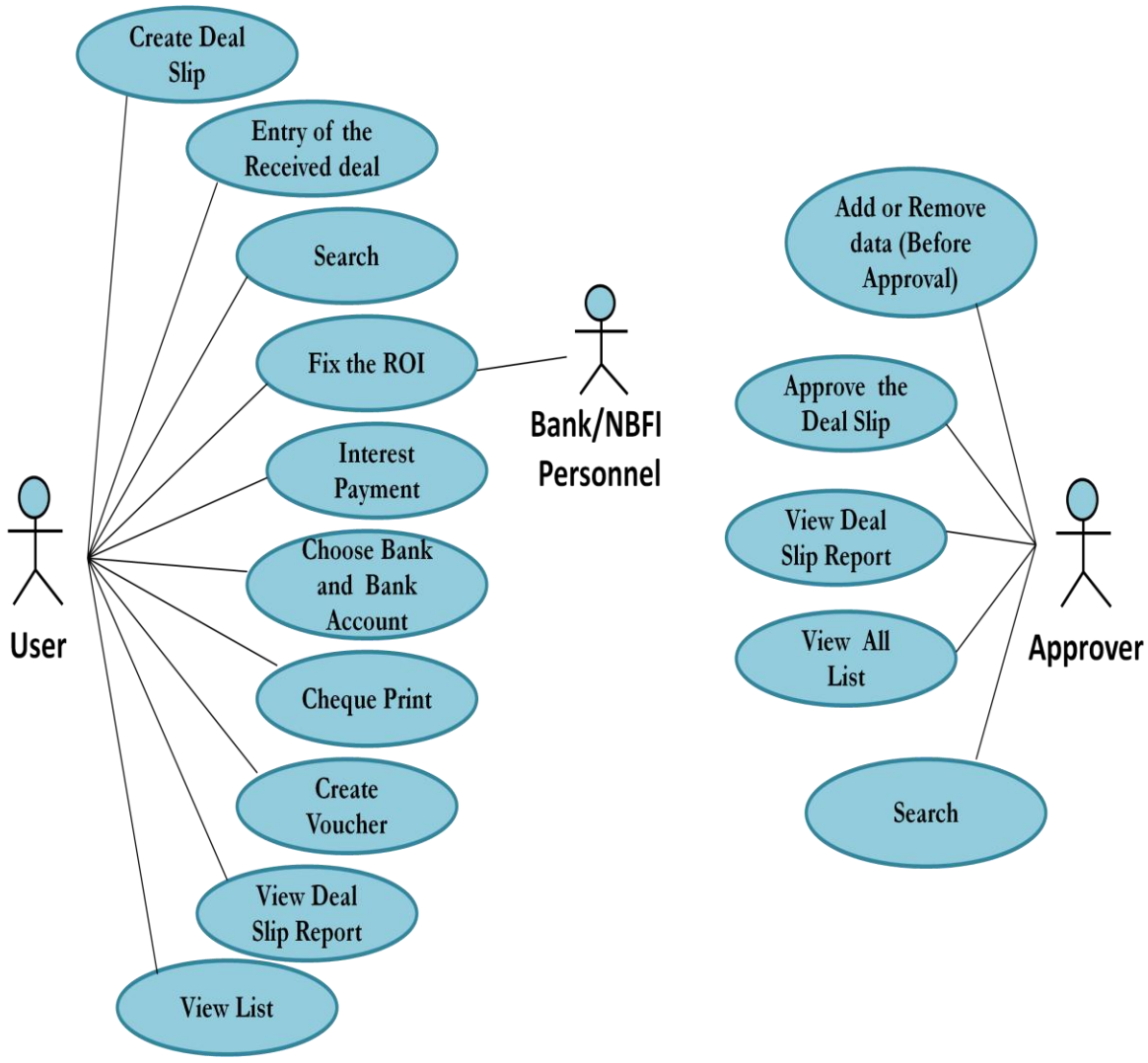


Figure 6: Use Case Diagram

3.4 Time Sequence Diagram

Time Sequence diagram is used to get the interaction logic of the system objects. It also helps to get the detailed functionality of the project.

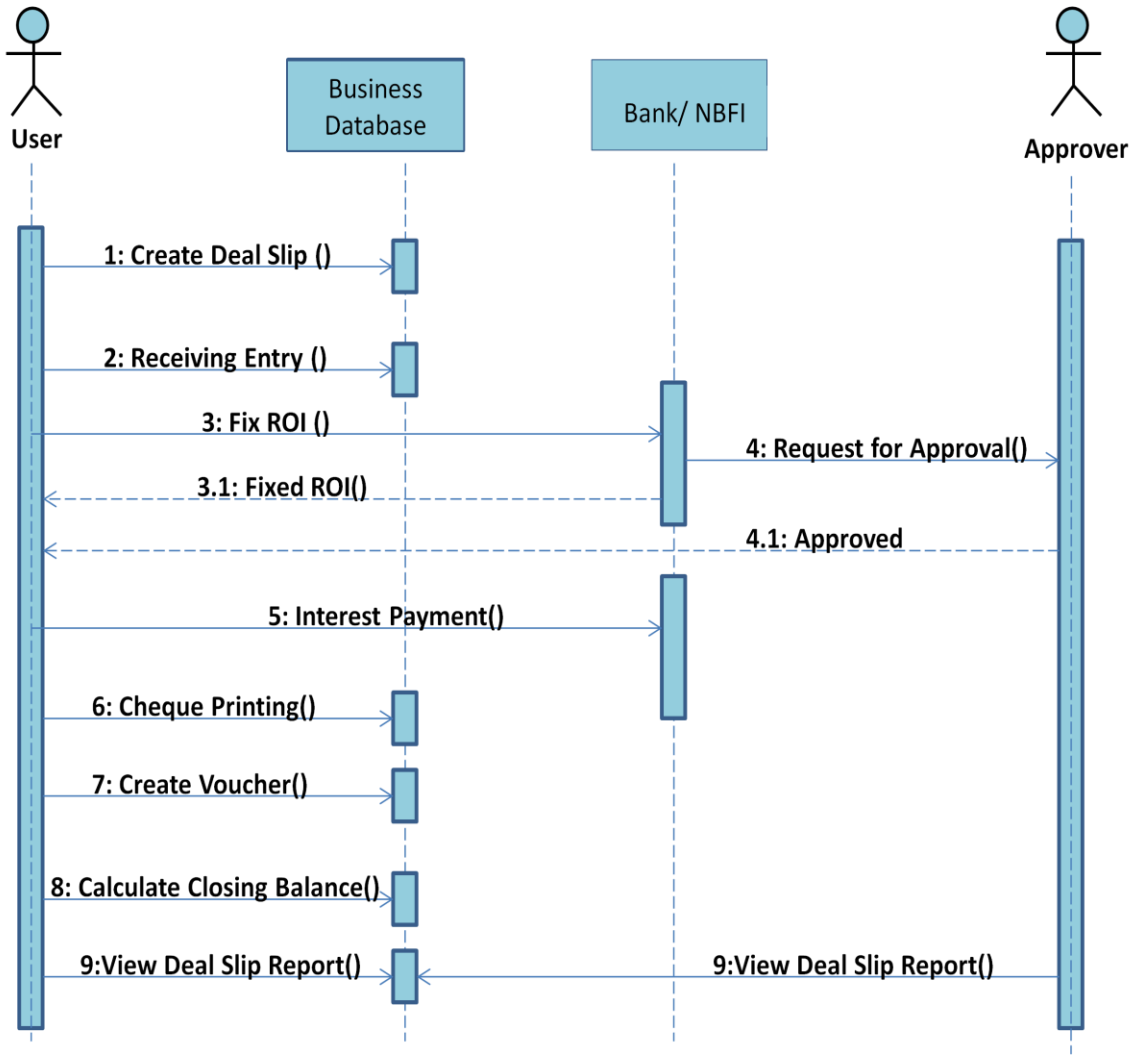


Figure 7: Time Sequence Diagram

Chapter 4

4. Implementation and Testing

4.1 Implementation Overview

This Project is made for the Banks or NBFIs. As Banks and NBFIs are dependent on this monetary system of borrowing funds, so that's assigned user and assigned approver can only have the access of this system project,

4.2 Methodology

Waterfall model has been used in this project. In the Waterfall Model, each phase has to be completed before starting of the next step so that there is no overlapping in this model. According to this model, at first I have gathered all the requirements from the treasury team of the ABC Bank and also analyze the existing system. Then before I start the designing the system according to the requirements, I have taken backups so that the system failover situation can handle redundantly. After all these I have start working on coding which follows the design of the system. Since this is a banking application project and security is the main priority so that several security checks, pop-up message boxes and audit logging features has also been implemented in the system. Then the whole project has been tested in many ways to identify the defects and deploy the project. Issues that will report after deployment will have to fix them time to time and will ensure that the system runs properly.

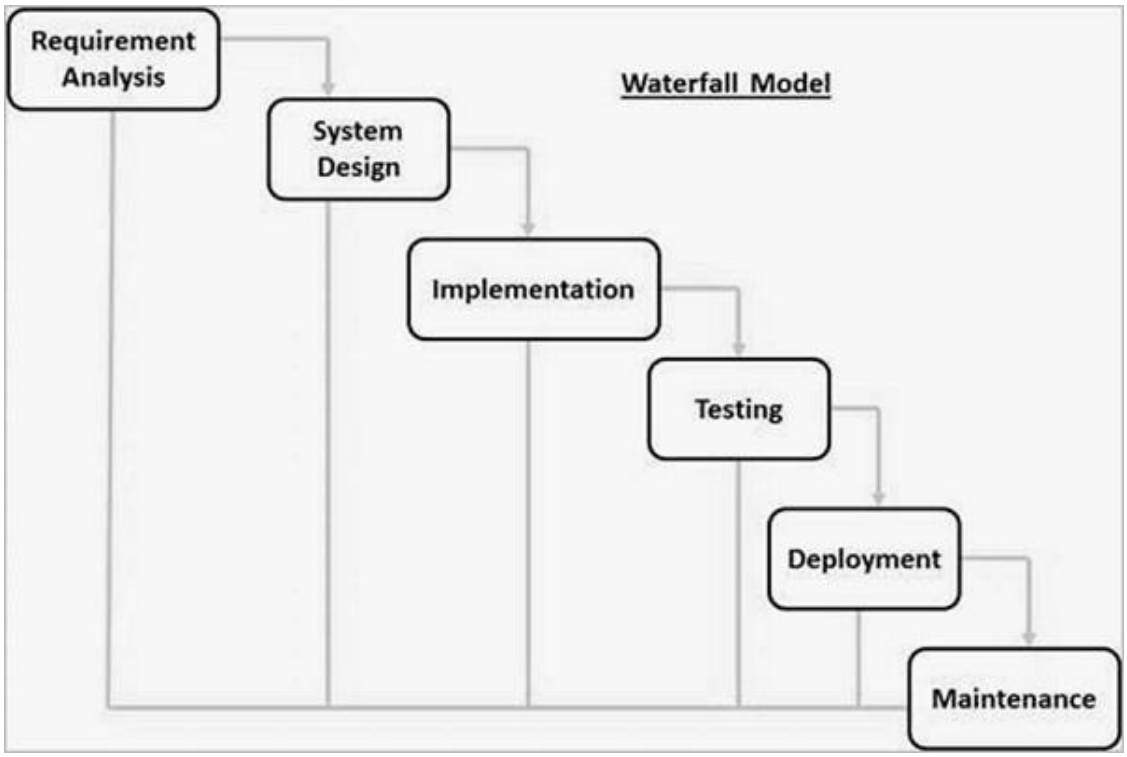


Figure 8: Waterfall Model

4.3 Technology

For managing the whole system I would like to use:

- Oracle Forms (9i)
- Toad for Oracle (11g)

4.3.1 Hardware/Software Requirements

- **Hardware Specification:**
  1. Processor – i5
  2. Hard Disk – 500 GB
  3. Memory – 4GB RAMs

- **Software Specification:**
    1. Operating System (Windows server 2007)

For designing the project in a user friendly way and make it robust and extensible I have used the SOLID principle.

This principle includes the five most important feature to design a system in a complete object oriented way. Followings are the meaning and principles of each letter of S.O.L.I.D

Single Responsibility Principle: A class should one and only one responsibility. For example, changes to only part of the requirement should only affect the specification of the class.

Open Closed Principle: Open Closed Principle refers to software entities must be open for extension and closed for modification.

Liskov Substitution Principle: Functions that use pointer to base classes must be able to use objects of derived classes without knowing it.

Interface Segregation Principle: A single module should not use as a general purpose interface.

User should never force to implement an interface which they never use or to depend on methods that they don't use.

Dependency Inversion Principle: This principle states that, the high level module should never depend on the low level module. But they should depend on the abstraction.

4.4 Testing

There are many methods of software testing but for this project I have used unit testing, black box testing and white box testing

4.4.1 Unit Testing

Unit testing is the way of testing that relates with all the requirements. It is a routine test of every functions, procedures and codes of the system. Unit testing is a type of manual testing and has been tested continuously during the developments.

4.4.2 Black Box Testing

Black box testing has tested without any information of inner usage or data. Assuming users I have set two of my colleagues to do the testing of the software and they have checked the system with all the necessary data and check the validation, searching and filtering options and the testing was successful and confirmed me that the project is running properly.

4.4.3 White Box Testing

White box testing is also known as glass box testing, open box testing, clear box testing. This test is done by the testers or the developers as well. Whoever tests, the person will have to know the ins and outs of the requirements of the project. In this case I did the white box testing as I know all the requirements, structures, codes and functionalities of the project, and I have the clear idea of my project that all functions and codes are working properly as per the requirements.

Chapter 5

5. User Interface

5.1 User Panel

User panel has been created in a elaborative way for the users to be more easy use and smooth calculative process.

5.1.1 Login Form

This is the Login form for overnight call money system. Here user and Approver both can login by their individual password. The password is wrapped and is a conceal data for security purpose. After giving the user name and the password user click on '**LogIn'** Button to logon the **Overnight Call Money System**.

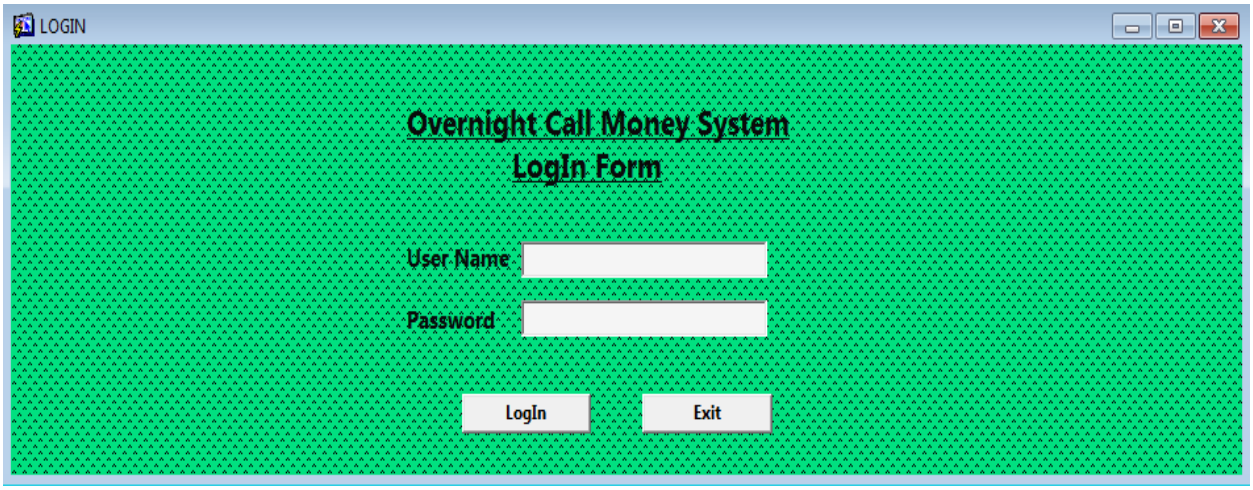


Figure 9: LogIn Form

5.1.1 Main/ Master Module

This is the main module of deal slip management process, where user can choose one by one and can go to the form they want to. Here, there are five options user can select for different purpose and the five options are organized in a sequenced way.

1. **Create Deal Slip:** Here deal slip number can be created.
2. **Interest Payment:** User can pay the interest amount and can create deal slip, search and sort the data in many ways.
3. **Deal Slip Viewer:** All the basic information of every deal are stored and viewed here.
4. **Approver Pending:** This form is to approve the deal finally and processed for the accounts.
5. **Cheque Printing and Voucher Creation:** Accounts can print cheques and create voucher of both received and payable deal.

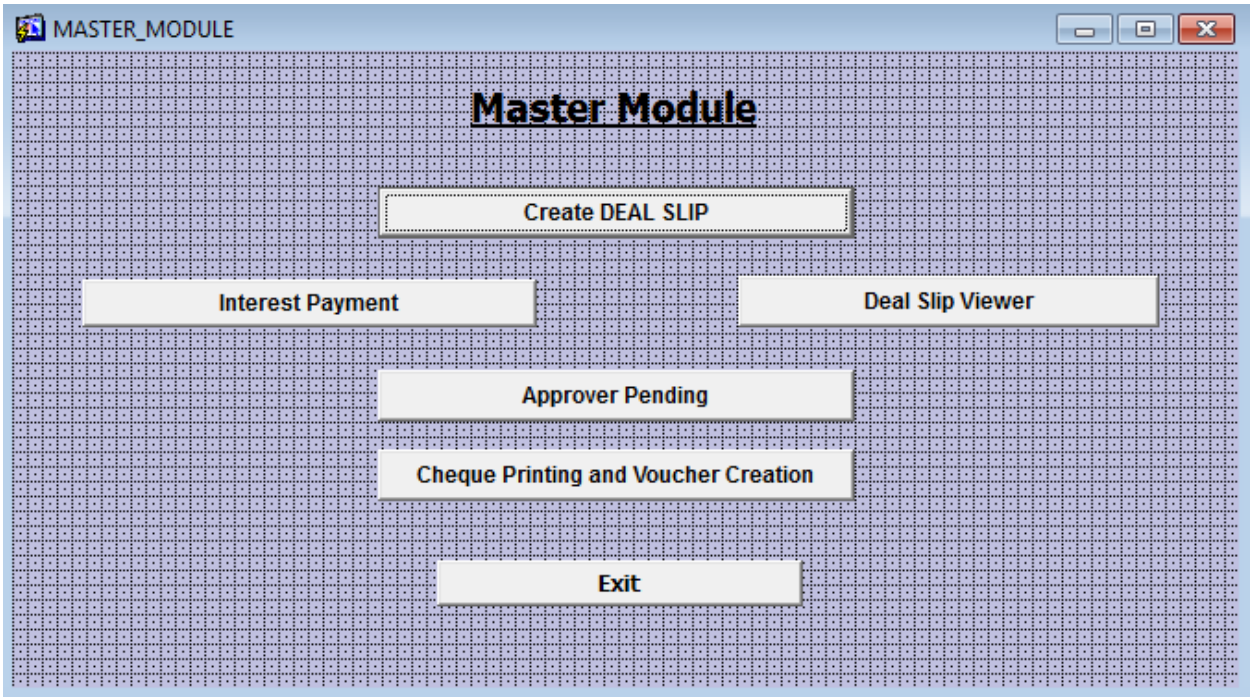


Figure 10: Deal Slip Management

5.1.3 Deal Slip Creation

This is the deal slip creation form. The name of the everyday deal slip is formed as 'DL' and the date of the individual day. The date format (yymmdd) has been clearly.

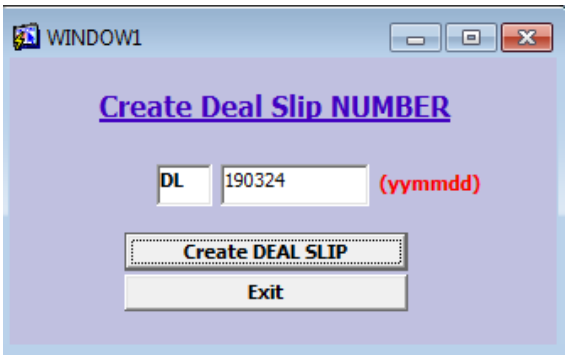
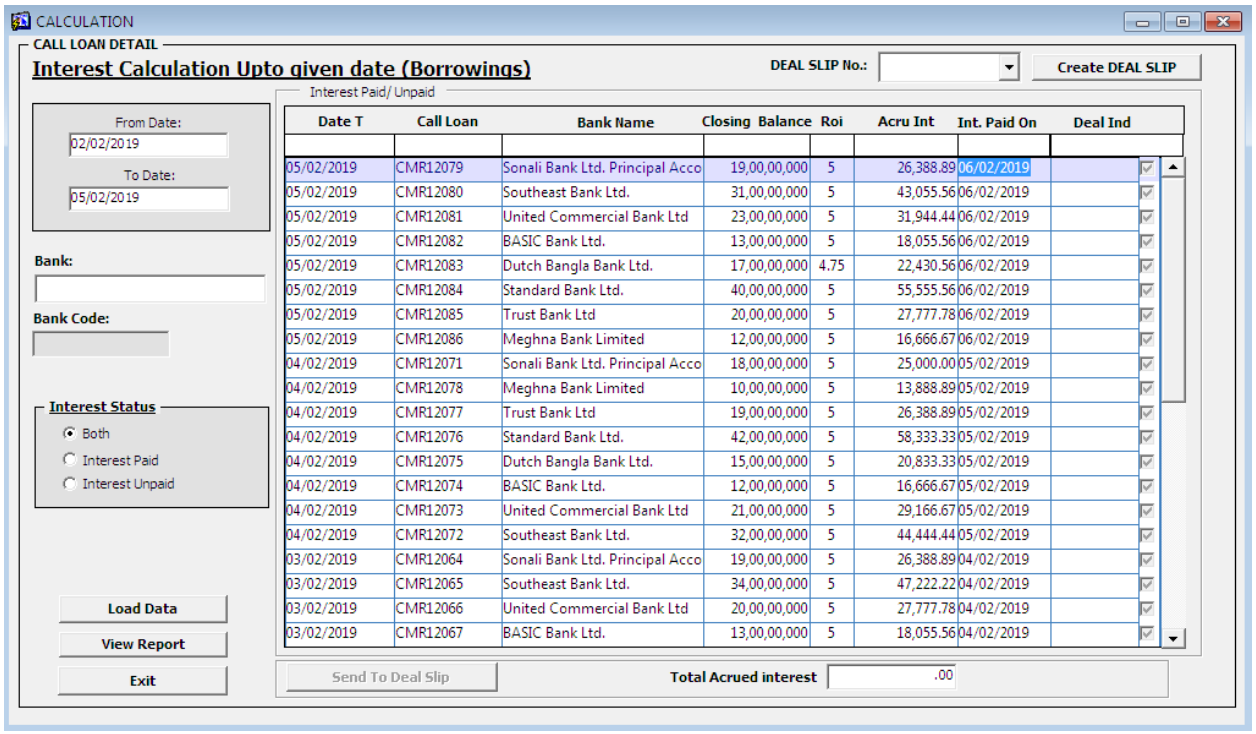


Figure 11: Deal Slip Creation

5.1.4 Interest Calculation Form

This is the interest calculation form. Here received and borrowing interest details information can be viewed. The view can also be filtered with many search options like dates, bank names with bank codes, and can also view the list of paid interest and the list of unpaid interest.

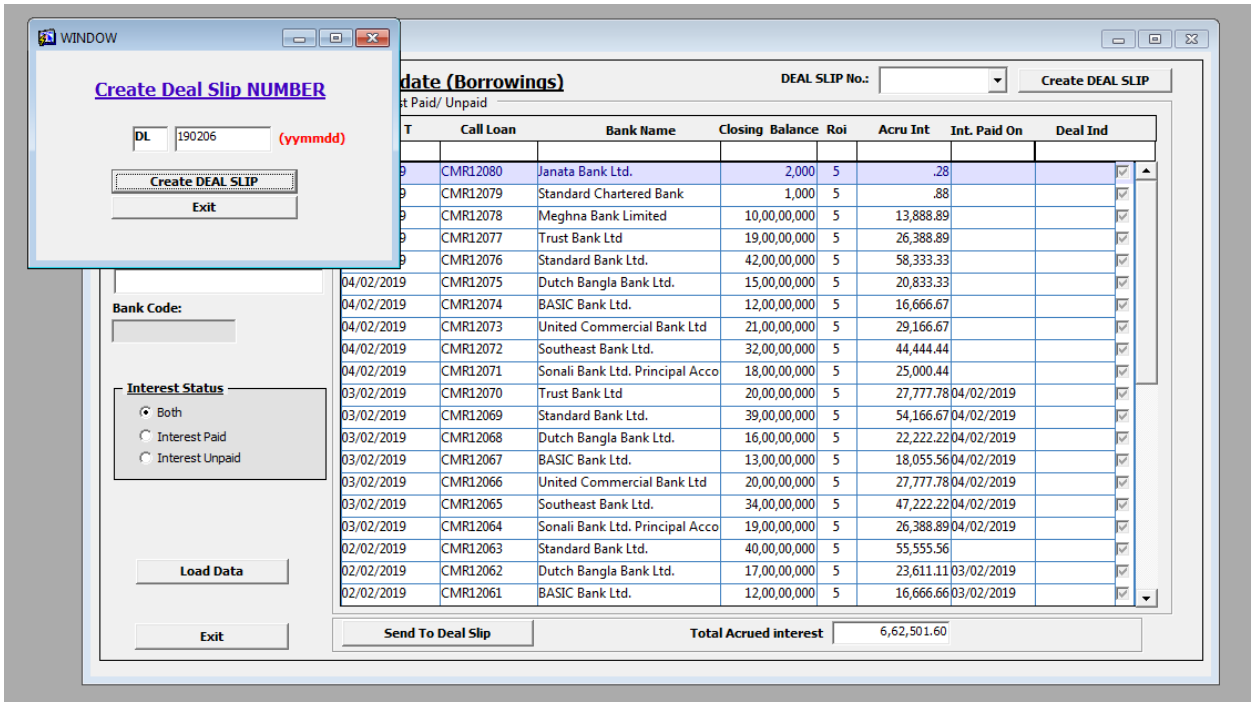


Date T	Call Loan	Bank Name	Closing Balance	Roi	Acru Int	Int. Paid On	Deal Ind
05/02/2019	CMR12079	Sonali Bank Ltd. Principal Acco	19,00,00,000	5	26,388.89	06/02/2019	
05/02/2019	CMR12080	Southeast Bank Ltd.	31,00,00,000	5	43,055.56	06/02/2019	
05/02/2019	CMR12081	United Commercial Bank Ltd	23,00,00,000	5	31,944.44	06/02/2019	
05/02/2019	CMR12082	BASIC Bank Ltd.	13,00,00,000	5	18,055.56	06/02/2019	
05/02/2019	CMR12083	Dutch Bangla Bank Ltd.	17,00,00,000	4.75	22,430.56	06/02/2019	
05/02/2019	CMR12084	Standard Bank Ltd.	40,00,00,000	5	55,555.56	06/02/2019	
05/02/2019	CMR12085	Trust Bank Ltd	20,00,00,000	5	27,777.78	06/02/2019	
05/02/2019	CMR12086	Meghna Bank Limited	12,00,00,000	5	16,666.67	06/02/2019	
04/02/2019	CMR12071	Sonali Bank Ltd. Principal Acco	18,00,00,000	5	25,000.00	05/02/2019	
04/02/2019	CMR12078	Meghna Bank Limited	10,00,00,000	5	13,888.89	05/02/2019	
04/02/2019	CMR12077	Trust Bank Ltd	19,00,00,000	5	26,388.89	05/02/2019	
04/02/2019	CMR12076	Standard Bank Ltd.	42,00,00,000	5	58,333.33	05/02/2019	
04/02/2019	CMR12075	Dutch Bangla Bank Ltd.	15,00,00,000	5	20,833.33	05/02/2019	
04/02/2019	CMR12074	BASIC Bank Ltd.	12,00,00,000	5	16,666.67	05/02/2019	
04/02/2019	CMR12073	United Commercial Bank Ltd	21,00,00,000	5	29,166.67	05/02/2019	
04/02/2019	CMR12072	Southeast Bank Ltd.	32,00,00,000	5	44,444.44	05/02/2019	
03/02/2019	CMR12064	Sonali Bank Ltd. Principal Acco	19,00,00,000	5	26,388.89	04/02/2019	
03/02/2019	CMR12065	Southeast Bank Ltd.	34,00,00,000	5	47,222.22	04/02/2019	
03/02/2019	CMR12066	United Commercial Bank Ltd	20,00,00,000	5	27,777.78	04/02/2019	
03/02/2019	CMR12067	BASIC Bank Ltd.	13,00,00,000	5	18,055.56	04/02/2019	

Figure 12: Interest Calculation Form (1)

5.1.5 Deal Slip Creation in Interest Calculation Form

User can also create deal slip in this form by clicking on 'Create Deal Slip' button. Then the deal slip number will be enlisted in the drop down box. It will be viewed after a click of the arrow of the drop down box.



T	Call Loan	Bank Name	Closing Balance	Roi	Acru Int	Int. Paid On	Deal Ind
9	CMR12080	Janata Bank Ltd.	2,000	5	.28		
9	CMR12079	Standard Chartered Bank	1,000	5	.88		
9	CMR12078	Meghna Bank Limited	10,00,00,000	5	13,888.89		
9	CMR12077	Trust Bank Ltd	19,00,00,000	5	26,388.89		
9	CMR12076	Standard Bank Ltd.	42,00,00,000	5	58,333.33		
04/02/2019	CMR12075	Dutch Bangla Bank Ltd.	15,00,00,000	5	20,833.33		
04/02/2019	CMR12074	BASIC Bank Ltd.	12,00,00,000	5	16,666.67		
04/02/2019	CMR12073	United Commercial Bank Ltd	21,00,00,000	5	29,166.67		
04/02/2019	CMR12072	Southeast Bank Ltd.	32,00,00,000	5	44,444.44		
04/02/2019	CMR12071	Sonali Bank Ltd. Principal Acco	18,00,00,000	5	25,000.44		
03/02/2019	CMR12070	Trust Bank Ltd	20,00,00,000	5	27,777.78	04/02/2019	
03/02/2019	CMR12069	Standard Bank Ltd.	39,00,00,000	5	54,166.67	04/02/2019	
03/02/2019	CMR12068	Dutch Bangla Bank Ltd.	16,00,00,000	5	22,222.22	04/02/2019	
03/02/2019	CMR12067	BASIC Bank Ltd.	13,00,00,000	5	18,055.56	04/02/2019	
03/02/2019	CMR12066	United Commercial Bank Ltd	20,00,00,000	5	27,777.78	04/02/2019	
03/02/2019	CMR12065	Southeast Bank Ltd.	34,00,00,000	5	47,222.22	04/02/2019	
03/02/2019	CMR12064	Sonali Bank Ltd. Principal Acco	19,00,00,000	5	26,388.89	04/02/2019	
02/02/2019	CMR12063	Standard Bank Ltd.	40,00,00,000	5	55,555.56		
02/02/2019	CMR12062	Dutch Bangla Bank Ltd.	17,00,00,000	5	23,611.11	03/02/2019	
02/02/2019	CMR12061	BASIC Bank Ltd.	12,00,00,000	5	16,666.66	03/02/2019	

Figure 13: Interest Calculation Form (2)

After creating a deal slip number a message box will pop-up which confirms the Deal Slip Number that user have entered.

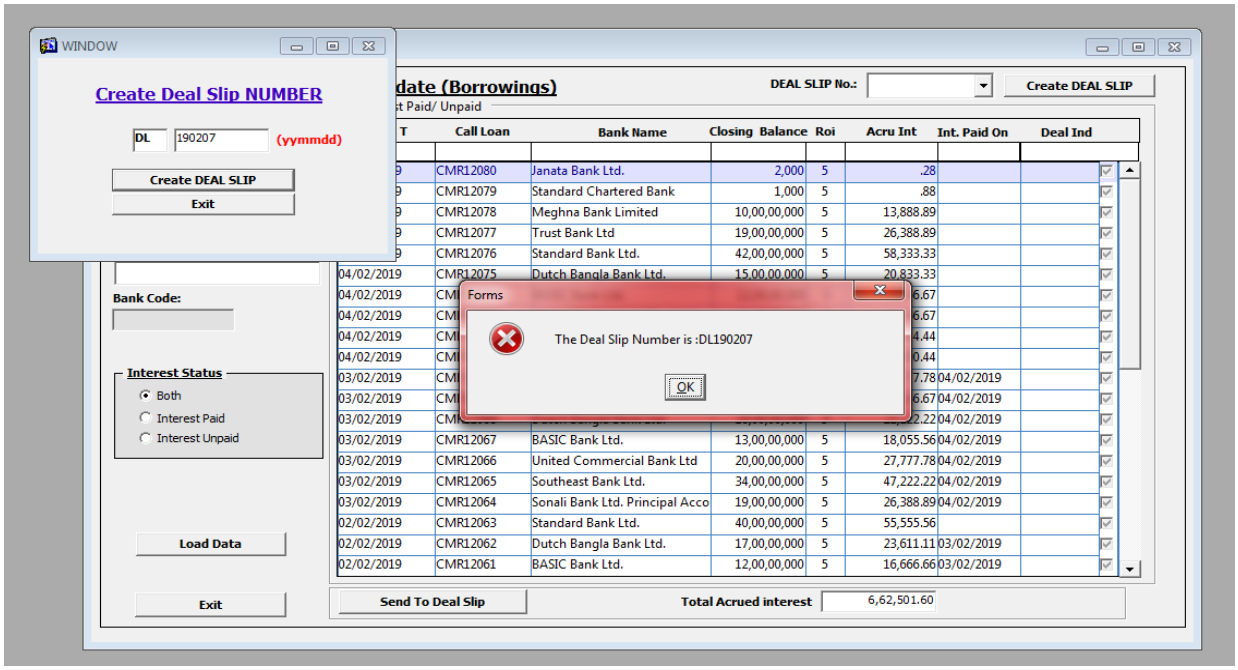


Figure 14: Interest Calculation Form (3)

If the deal slip number is already been existed and user enters the same deal slip number again then a pop-up box will appear which shows a message that deal slip number has already been exist. So that user can change the deal slip number and enters again.

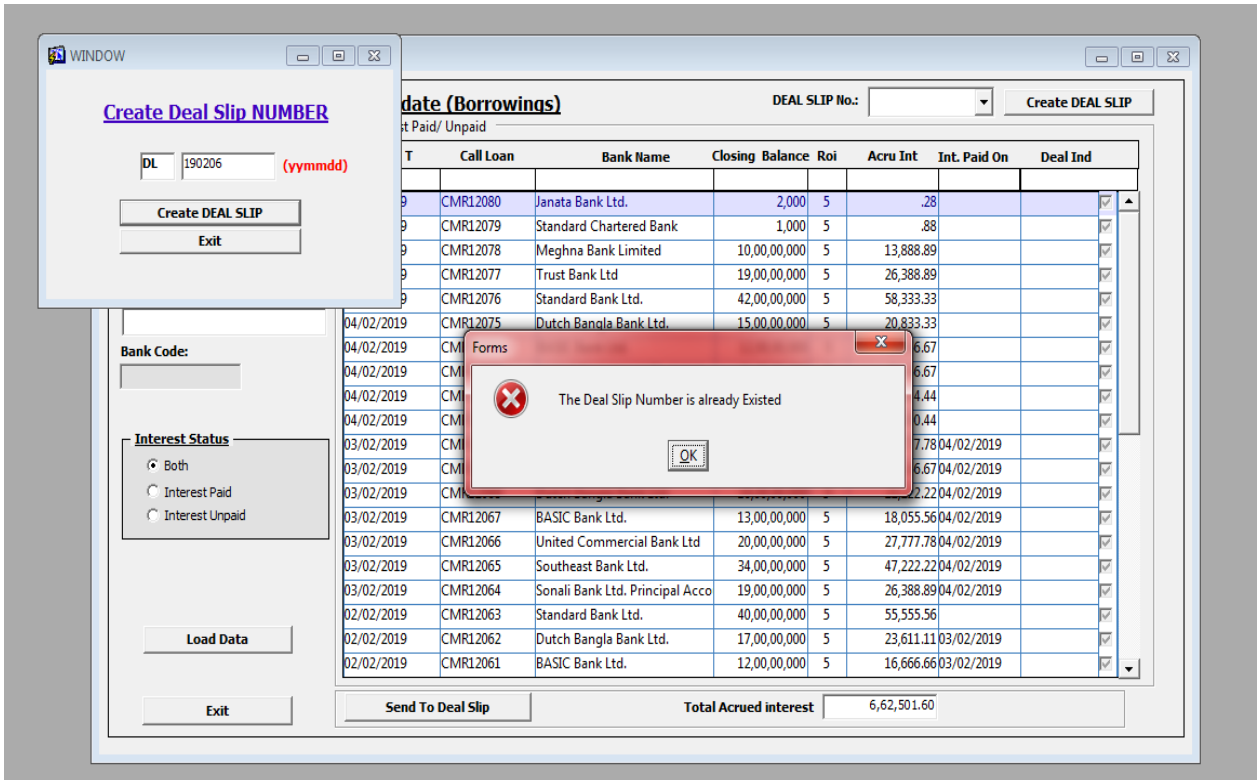
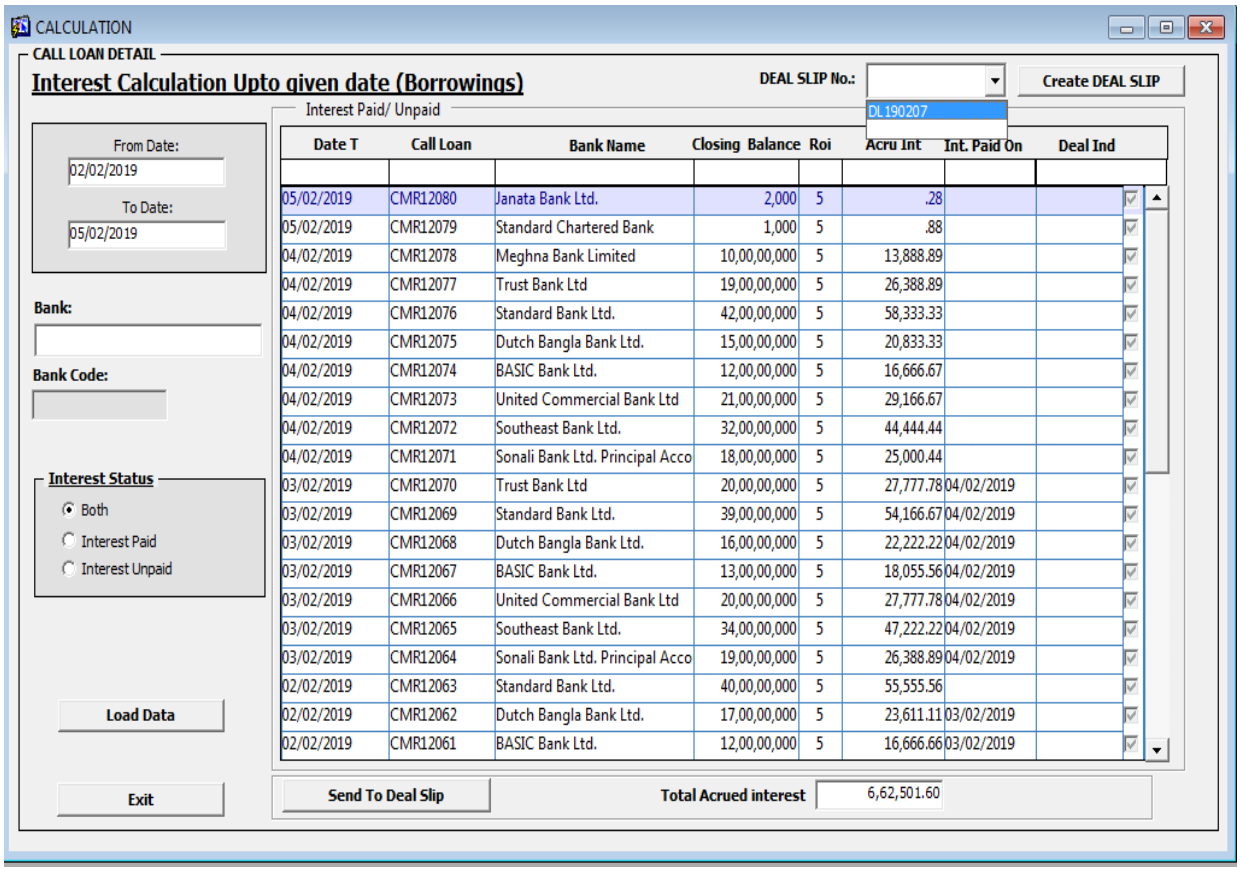


Figure 15: Interest Calculation Form (4)

After selecting the deal slip number from the drop down box which has not been locked yet, the button ‘Send to Deal Slip’ activated.



Date T	Call Loan	Bank Name	Closing Balance	Roi	Acru Int	Int. Paid On	Deal Ind
05/02/2019	CMR12080	Janata Bank Ltd.	2,000	5	.28		
05/02/2019	CMR12079	Standard Chartered Bank	1,000	5	.88		
04/02/2019	CMR12078	Meghna Bank Limited	10,00,00,000	5	13,888.89		
04/02/2019	CMR12077	Trust Bank Ltd	19,00,00,000	5	26,388.89		
04/02/2019	CMR12076	Standard Bank Ltd.	42,00,00,000	5	58,333.33		
04/02/2019	CMR12075	Dutch Bangla Bank Ltd.	15,00,00,000	5	20,833.33		
04/02/2019	CMR12074	BASIC Bank Ltd.	12,00,00,000	5	16,666.67		
04/02/2019	CMR12073	United Commercial Bank Ltd	21,00,00,000	5	29,166.67		
04/02/2019	CMR12072	Southeast Bank Ltd.	32,00,00,000	5	44,444.44		
04/02/2019	CMR12071	Sonali Bank Ltd. Principal Acco	18,00,00,000	5	25,000.44		
03/02/2019	CMR12070	Trust Bank Ltd	20,00,00,000	5	27,777.78	04/02/2019	
03/02/2019	CMR12069	Standard Bank Ltd.	39,00,00,000	5	54,166.67	04/02/2019	
03/02/2019	CMR12068	Dutch Bangla Bank Ltd.	16,00,00,000	5	22,222.22	04/02/2019	
03/02/2019	CMR12067	BASIC Bank Ltd.	13,00,00,000	5	18,055.56	04/02/2019	
03/02/2019	CMR12066	United Commercial Bank Ltd	20,00,00,000	5	27,777.78	04/02/2019	
03/02/2019	CMR12065	Southeast Bank Ltd.	34,00,00,000	5	47,222.22	04/02/2019	
03/02/2019	CMR12064	Sonali Bank Ltd. Principal Acco	19,00,00,000	5	26,388.89	04/02/2019	
02/02/2019	CMR12063	Standard Bank Ltd.	40,00,00,000	5	55,555.56		
02/02/2019	CMR12062	Dutch Bangla Bank Ltd.	17,00,00,000	5	23,611.11	03/02/2019	
02/02/2019	CMR12061	BASIC Bank Ltd.	12,00,00,000	5	16,666.66	03/02/2019	

Figure 16: Interest Calculation Form (5)

In this form all the received borrowing details are stored and using the button ‘Send to Deal Slip’ user can send each fund under the selective deal slip number to be paid on the next working day.

5.1.6 Edit Accrual Interest

User can change the accrual interest amount. To do this, user have to double click on the specific row, where they need changes in accrual interest amount. After clicking on it, another form will pop-up, where user can view the CMR number (an unique number of each deal or receivable/payable amount), present accrual interest amount and user have to enter the new accrual interest amount.

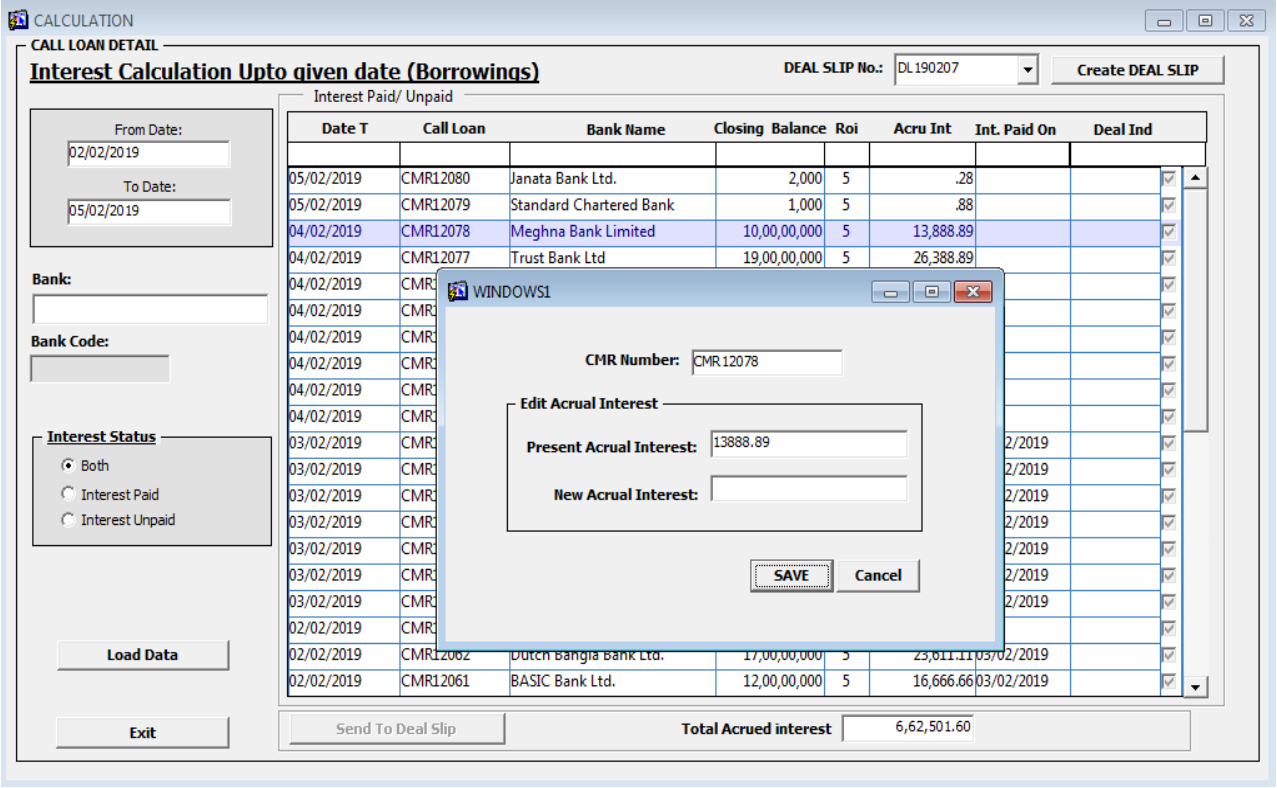


Figure 17: Edit Accrual Interest (1)

5.1.7 Add or Subtract Accrual Interest

User can add or subtract the accrual interest amount of each entry by double clicking on it. For the security purpose user can only add the interest amount up to one (+1) or subtract the interest amount up to one (-1). Other than this boundary (+1 to -1) the interest amount cannot be added or subtract.

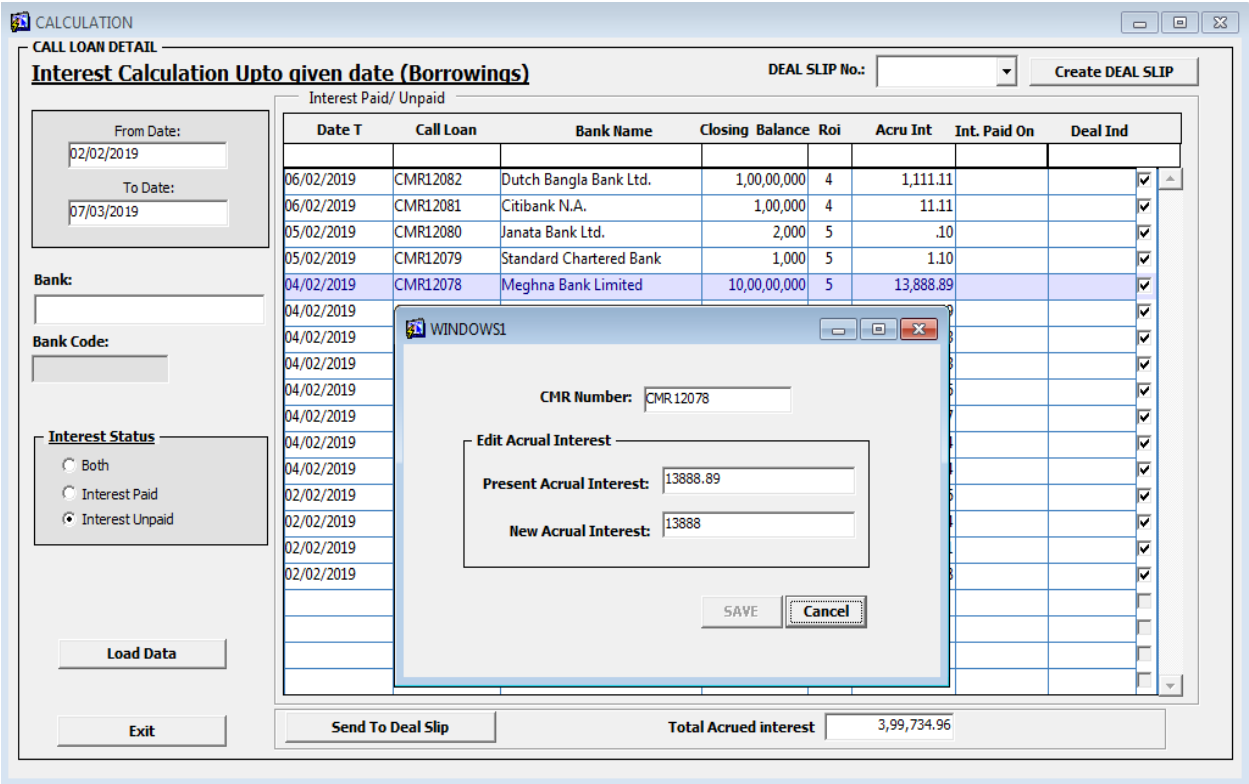


Figure 18: Edit Accrual Interest (2)

5.1.8 Valid Accrual Interest

If any user adds more than '1' with the present accrual interest, like here, when the present accrual interest was 13888.89, so I can add up to 13889.89. But here I have added 1.19 so that the amount now is 13890 and is not a valid amount, which showed in a pop-up message box.

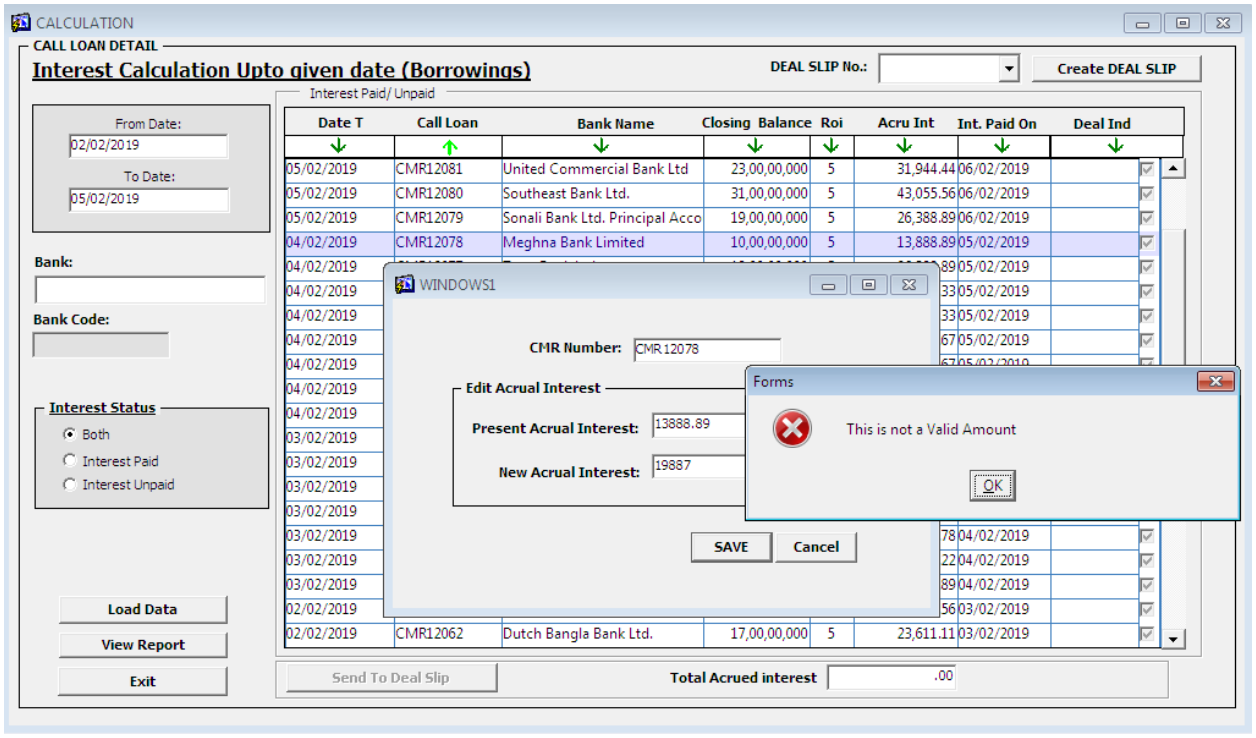


Figure 19: Edit Accrual Interest (3)

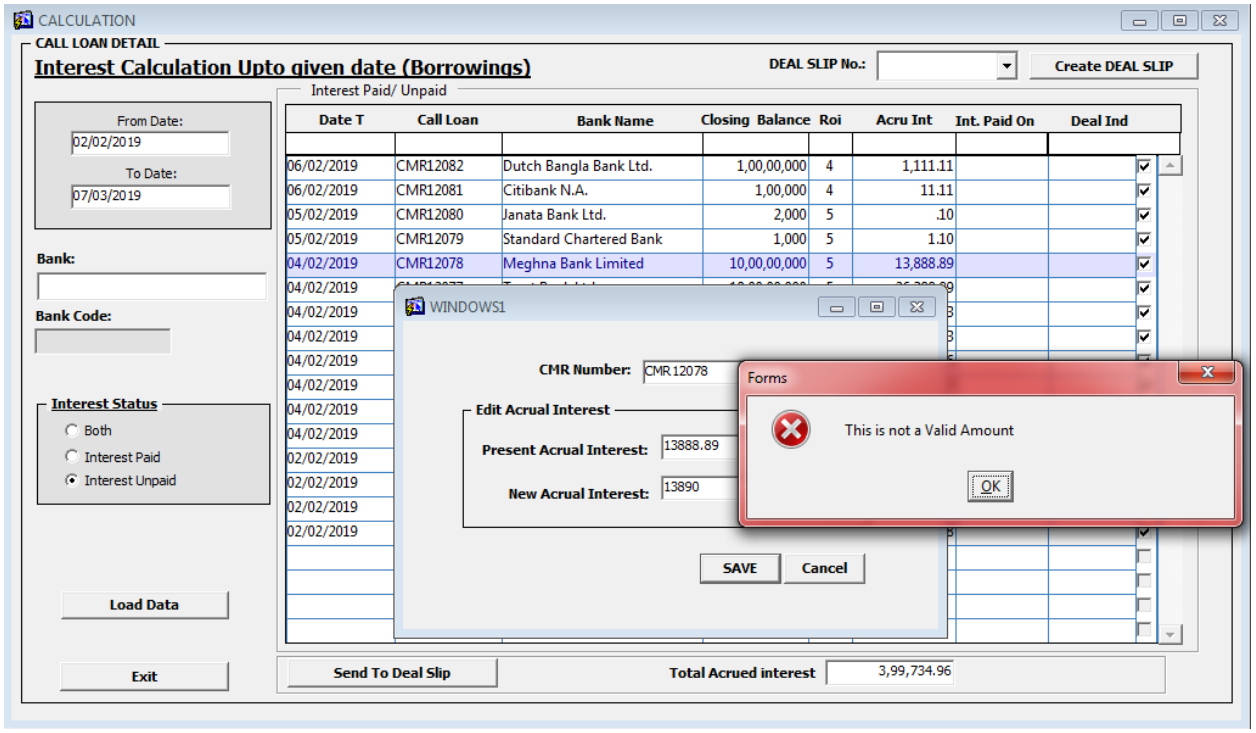
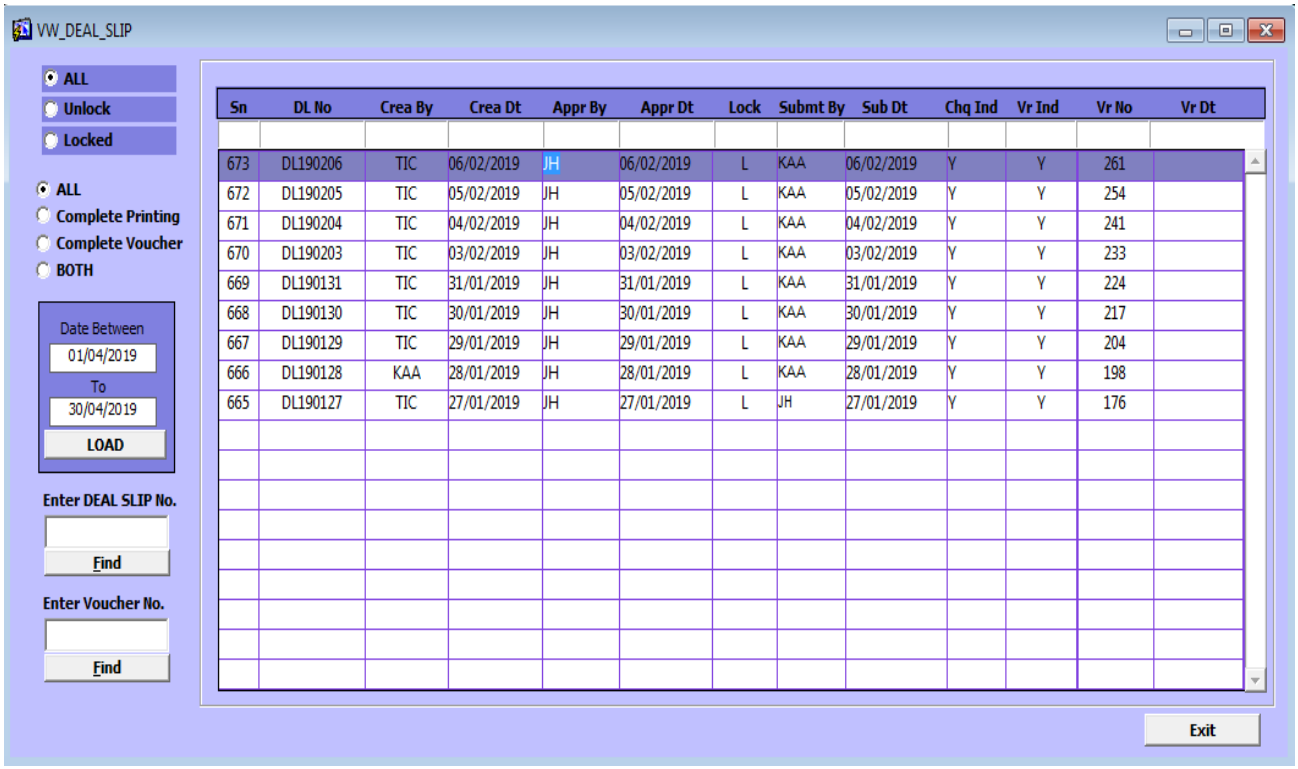


Figure 20: Edit Accrual Interest (4)

5.1.9 Deal Slip Viewer

This is the viewer form where all deals basic information are stored and viewed.

Here user can search or filter with the deal slip number, voucher number, dates, and can also view the list of different types.



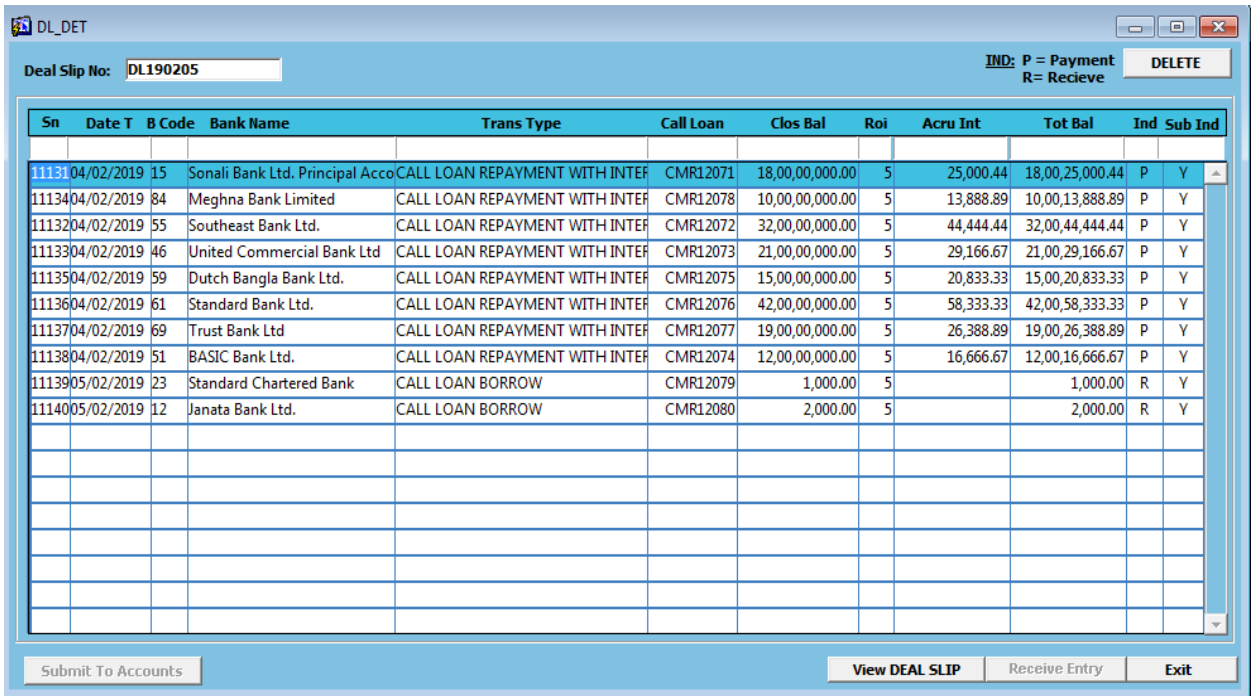
Sn	DL No	Crea By	Crea Dt	Appr By	Appr Dt	Lock	Submt By	Sub Dt	Chq Ind	Vr Ind	Vr No	Vr Dt
673	DL190206	TIC	06/02/2019	JH	06/02/2019	L	KAA	06/02/2019	Y	Y	261	
672	DL190205	TIC	05/02/2019	JH	05/02/2019	L	KAA	05/02/2019	Y	Y	254	
671	DL190204	TIC	04/02/2019	JH	04/02/2019	L	KAA	04/02/2019	Y	Y	241	
670	DL190203	TIC	03/02/2019	JH	03/02/2019	L	KAA	03/02/2019	Y	Y	233	
669	DL190131	TIC	31/01/2019	JH	31/01/2019	L	KAA	31/01/2019	Y	Y	224	
668	DL190130	TIC	30/01/2019	JH	30/01/2019	L	KAA	30/01/2019	Y	Y	217	
667	DL190129	TIC	29/01/2019	JH	29/01/2019	L	KAA	29/01/2019	Y	Y	204	
666	DL190128	KAA	28/01/2019	JH	28/01/2019	L	KAA	28/01/2019	Y	Y	198	
665	DL190127	TIC	27/01/2019	JH	27/01/2019	L	JH	27/01/2019	Y	Y	176	

Figure 21: Deal Slip Viewer

5.1.10 Deal Slip Viewer Details

Here user can view the detail of individual deal slip. This is detail view of all the deals of an individual day under the selected deal slip number.

User can give new entries, can delete any entry if inputted wrong.



Sn	Date T	B Code	Bank Name	Trans Type	Call Loan	Clos Bal	Roi	Acru Int	Tot Bal	Ind	Sub Ind
11131	04/02/2019	15	Sonali Bank Ltd. Principal Acco	CALL LOAN REPAYMENT WITH INTEF	CMR12071	18,00,00,000.00	5	25,000.44	18,00,25,000.44	P	Y
11134	04/02/2019	84	Meghna Bank Limited	CALL LOAN REPAYMENT WITH INTEF	CMR12078	10,00,00,000.00	5	13,888.89	10,00,13,888.89	P	Y
11132	04/02/2019	55	Southeast Bank Ltd.	CALL LOAN REPAYMENT WITH INTEF	CMR12072	32,00,00,000.00	5	44,444.44	32,00,44,444.44	P	Y
11133	04/02/2019	46	United Commercial Bank Ltd	CALL LOAN REPAYMENT WITH INTEF	CMR12073	21,00,00,000.00	5	29,166.67	21,00,29,166.67	P	Y
11135	04/02/2019	59	Dutch Bangla Bank Ltd.	CALL LOAN REPAYMENT WITH INTEF	CMR12075	15,00,00,000.00	5	20,833.33	15,00,20,833.33	P	Y
11136	04/02/2019	61	Standard Bank Ltd.	CALL LOAN REPAYMENT WITH INTEF	CMR12076	42,00,00,000.00	5	58,333.33	42,00,58,333.33	P	Y
11137	04/02/2019	69	Trust Bank Ltd	CALL LOAN REPAYMENT WITH INTEF	CMR12077	19,00,00,000.00	5	26,388.89	19,00,26,388.89	P	Y
11138	04/02/2019	51	BASIC Bank Ltd.	CALL LOAN REPAYMENT WITH INTEF	CMR12074	12,00,00,000.00	5	16,666.67	12,00,16,666.67	P	Y
11139	05/02/2019	23	Standard Chartered Bank	CALL LOAN BORROW	CMR12079	1,000.00	5		1,000.00	R	Y
11140	05/02/2019	12	Janata Bank Ltd.	CALL LOAN BORROW	CMR12080	2,000.00	5		2,000.00	R	Y

Figure 22: Deal Slip Viewer Details

5.1.11 Received Deal Entry Form

This is the form where user can input the loan amount, ROI, select the bank name, and select transaction type. The selected deal slip no and Call Loan Number (individual entry) has been viewed by calling within the global variables.

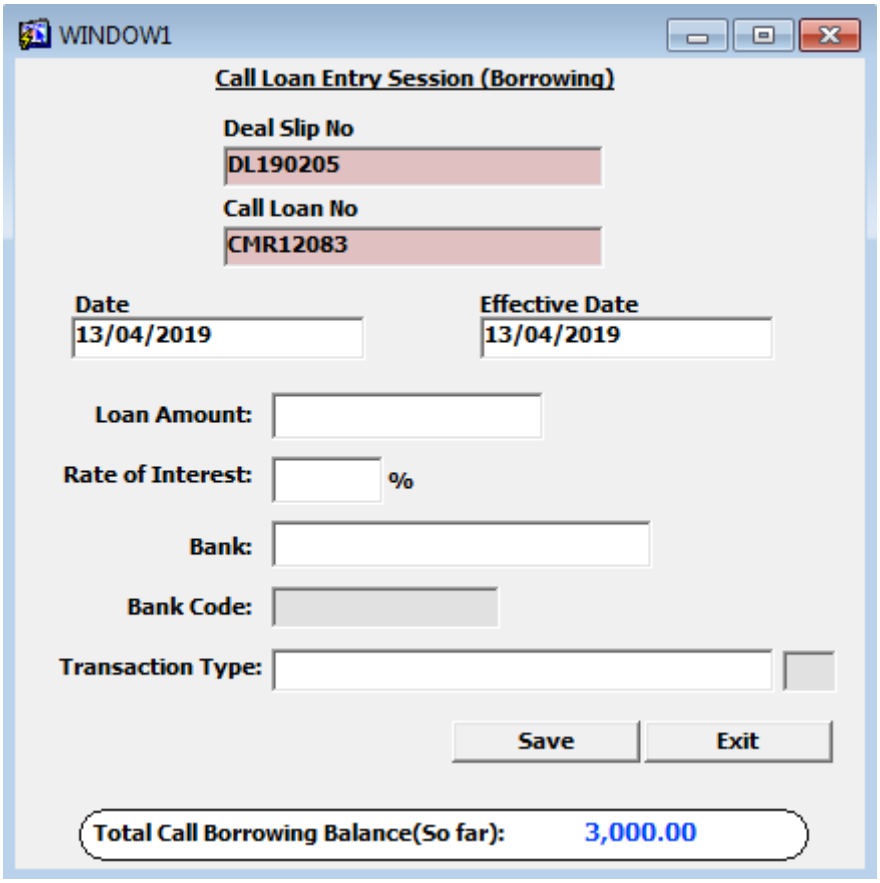


Figure 23: Received Deal Entry

5.1.12 Selection of Banks

By pressing F9 in the field of Bank, a list of bank viewed and user can select the banks, and can search the banks from there too. Along with the bank name , bank code of individual bank will also be filled up the 'Bank Code' text.

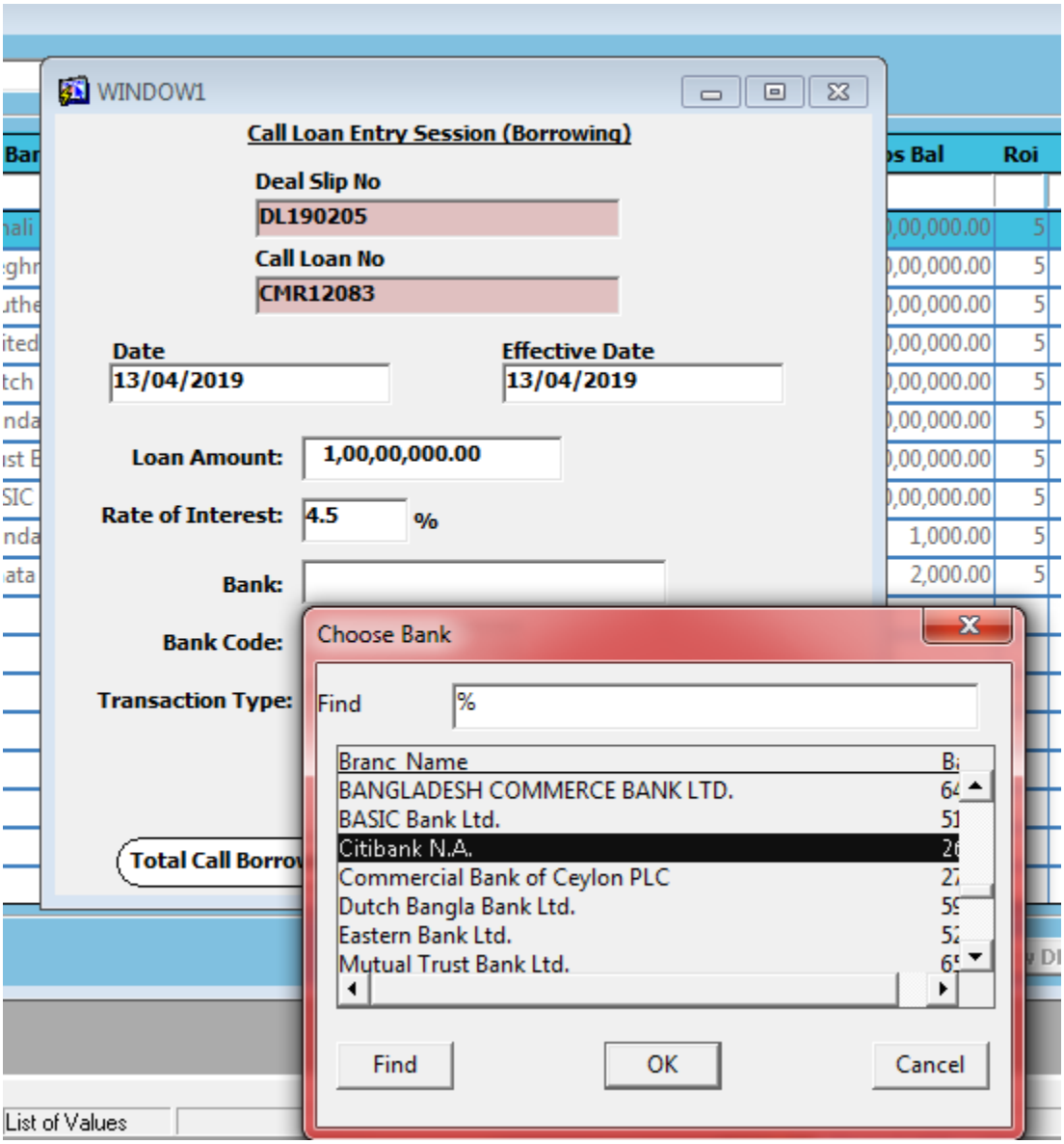


Figure 24: Selection of Banks and Transaction Type (1)

5.1.13 Selection of Transaction Type

By pressing F9 in the field of Transaction Type, a list of transaction type viewed and user can select the type of transaction, and can search the transaction type from there too. Along with the transaction type , a transaction code of individual type will also be filled up the side text field of transaction type.

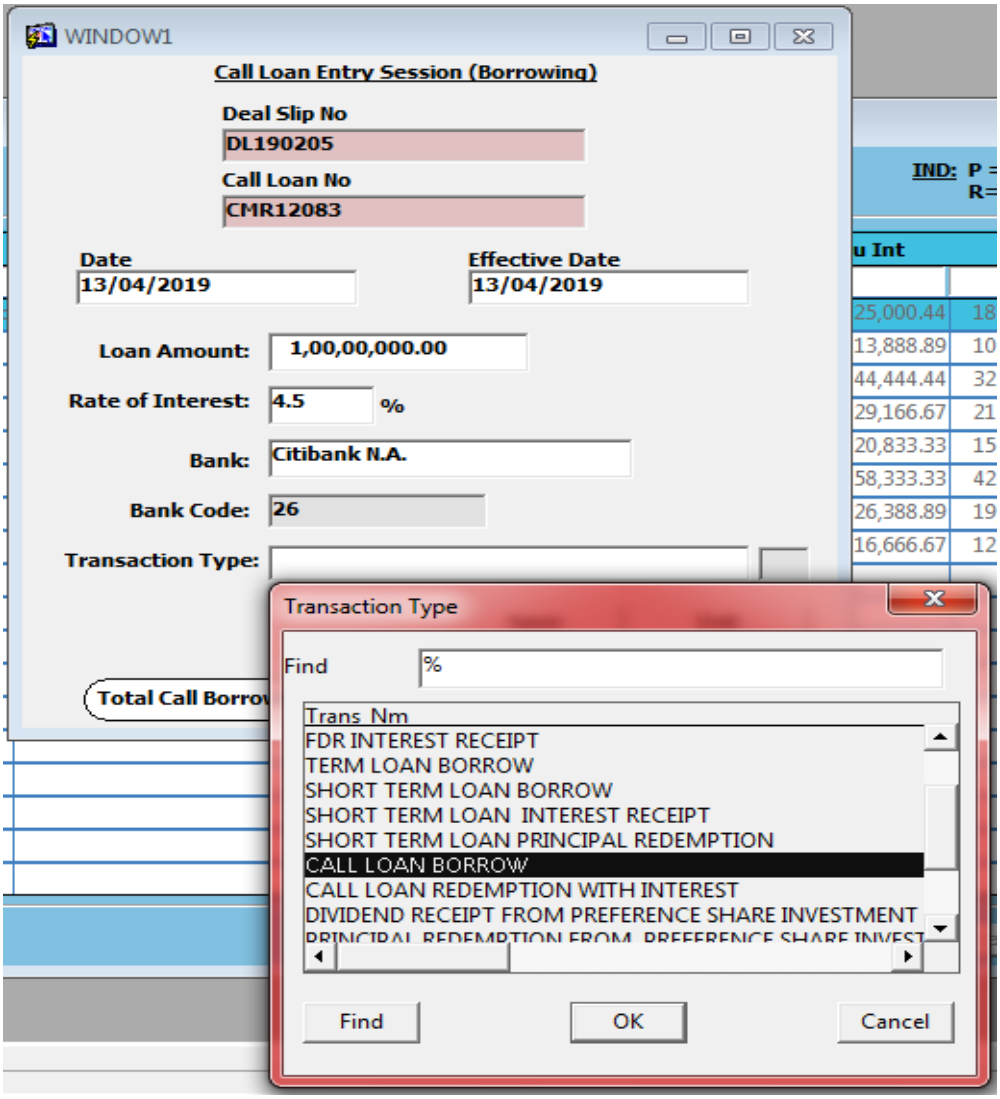


Figure 25: Selection of Banks and Transaction Type (2)

5.1.14 Full View of Received Deal Entry

After selection the banks and transaction type user will entry the loan amount and ROI. All the loan amount for the individual deal or CMR will be sum for the individual Deal Slip Number and will be viewed in the Total Call Borrowing Balance.

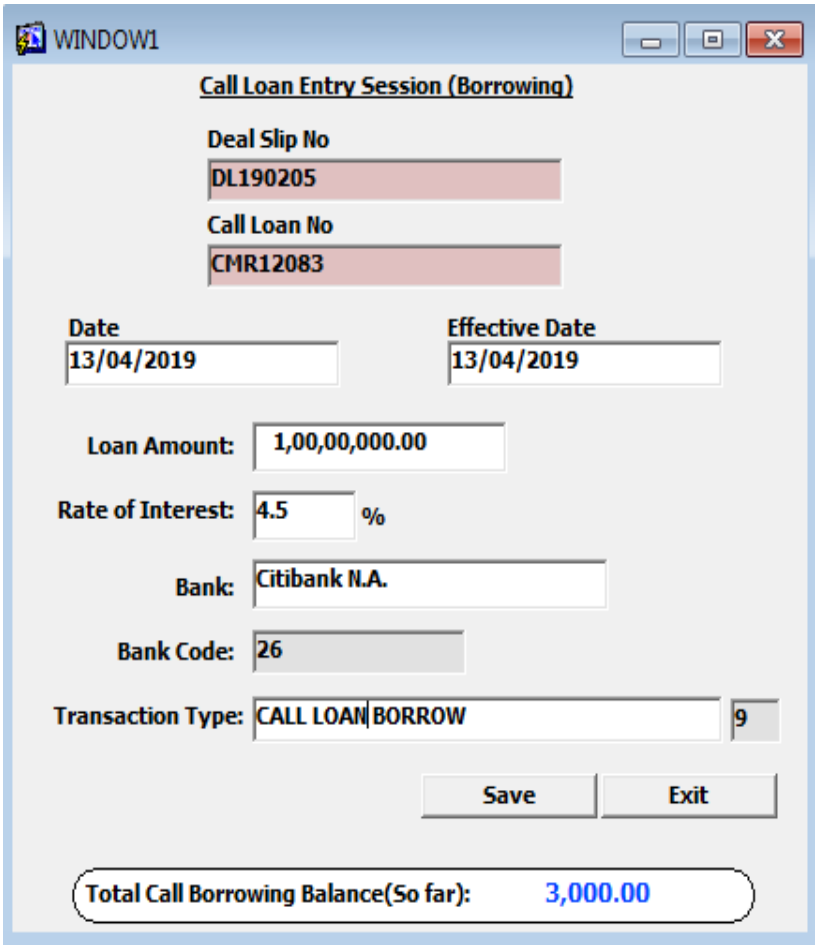


Figure 26: Full View of Receive Deal Entry

5.1.14 Summery Report of Deal Slip

This is the summery report of day to day deal slip for which all these calculations has been done in an individual manner. All the deals of everyday according to the ROI and type of transaction, the total balance, principal balance, and interest return has been calculated and summarize here in this report by clicking only a single button. Whereas user had to do the whole report manually every each day for each deal of each banks or NBFIs. The opening balance and closing balance is also been calculated everyday for each deal slip.

Deal Slip

Deal Slip No. **DL190204** *Report run on:* *July 15, 2019*

NAME OF THE INSTITUTION	TYPE OF TRANSACTION	AMOUNT	PRINCIPAL	INTEREST/ RETURN
Begining Balance		**170,73,34,662.13**		
Reciept				
Sonali Bank Ltd. Principal Account	CALL LOAN BORROW	18,00,00,000.00	18,00,00,000.00	
Southeast Bank Ltd.	CALL LOAN BORROW	32,00,00,000.00	32,00,00,000.00	
United Commercial Bank Ltd	CALL LOAN BORROW	21,00,00,000.00	21,00,00,000.00	
BASIC Bank Ltd.	CALL LOAN BORROW	12,00,00,000.00	12,00,00,000.00	
Dutch Bangla Bank Ltd.	CALL LOAN BORROW	15,00,00,000.00	15,00,00,000.00	
Standard Bank Ltd.	CALL LOAN BORROW	42,00,00,000.00	42,00,00,000.00	
Trust Bank Ltd	CALL LOAN BORROW	19,00,00,000.00	19,00,00,000.00	
Meghna Bank Limited	CALL LOAN BORROW	10,00,00,000.00	10,00,00,000.00	
South Bangla Agriculture and Commerce Bank Ltd.	OTHERS - RECEIVE(STL RECEIVED FROM 14 DAYS)	30,00,00,000.00	30,00,00,000.00	
Total:		**199,00,00,000.00**	**199,00,00,000.00**	
Payment				
Sonali Bank Ltd. Principal Account	CALL LOAN REPAYMENT WITH INTEREST	19,00,26,388.89	19,00,00,000.00	26,388.89
Southeast Bank Ltd.	CALL LOAN REPAYMENT WITH INTEREST	34,00,47,222.22	34,00,00,000.00	47,222.22
United Commercial Bank Ltd	CALL LOAN REPAYMENT WITH INTEREST	20,00,27,777.78	20,00,00,000.00	27,777.78
Trust Bank Ltd	CALL LOAN REPAYMENT WITH INTEREST	20,00,27,777.78	20,00,00,000.00	27,777.78
Dutch Bangla Bank Ltd.	CALL LOAN REPAYMENT WITH INTEREST	16,00,22,222.22	16,00,00,000.00	22,222.22
Standard Bank Ltd.	CALL LOAN REPAYMENT WITH INTEREST	39,00,54,166.67	39,00,00,000.00	54,166.67
BASIC Bank Ltd.	CALL LOAN REPAYMENT WITH INTEREST	13,00,18,055.56	13,00,00,000.00	18,055.56
Standard Chartered Bank	BB CHQ DEPOSIT:01-6132936-01	1,50,00,000.00	1,50,00,000.00	
The City Bank Ltd.	BB CHQ DEPOSIT:1131996953001	36,00,00,000.00	36,00,00,000.00	
BRAC BANK LTD.	TERM DEPOSIT INTEREST PAYMENT	81,31,250.00		81,31,250.00
Total:		**199,33,54,861.12**	**198,50,00,000.00**	**83,54,861.12**
Surplus		**-33,54,861.12**		
Closing Balance		**170,39,79,801.01**		

Figure 27: Summery Report of Deal Slip

5.2 Approver Panel

In the approver panel, the incomplete deal slip will be in the approver's pending before gone to the Accounts end. Approver will recheck all data and if found accurate then approve the deal slip and then the deal slip will be in accounts pending and accounts can start their procedure.

5.2.1 Approver's View

Here approver can approve the pending deal which has not been approved yet.

Also approver can search or filter with the deal slip number, voucher number, dates, and can also view the list of different types.



Figure 28: Approver's View

5.2.2 The Approver Pending Details

The approver check the detail of the individual deal slip and approve it or if any flaws found the approver can also revert the deal slip and the individual one will be on the pending of the users again.

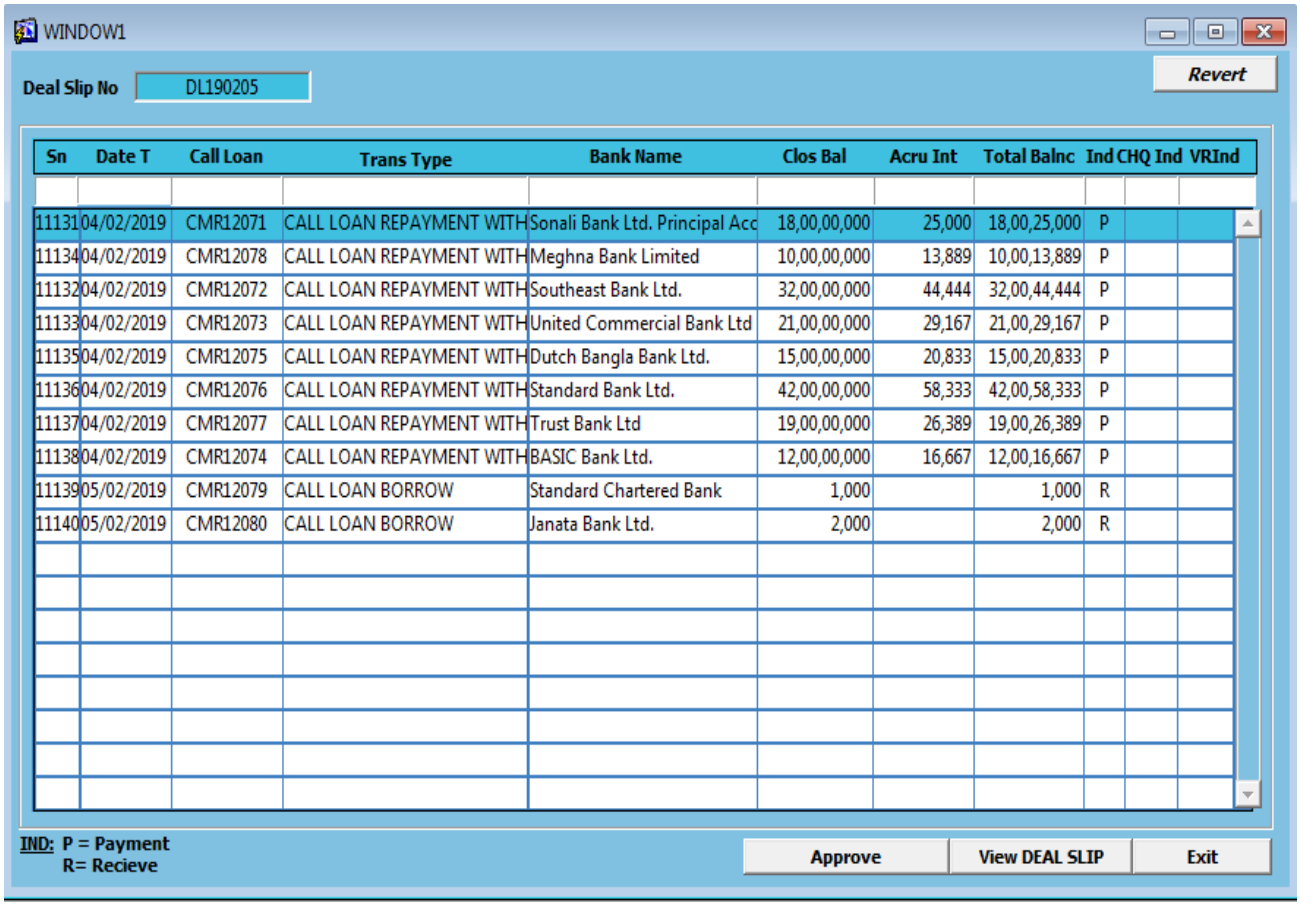


Figure 29: Approver Pending Details

5.3 Accounts Pending

5.3.1 View Accounts Pending Form

After approval of the current deal slip, the deal slip along with the all details will be in the pending of Accounts department. After approval all the rest of the procedure will be done by the Accounts Department.

Here in this Accounts pending form and some of the details like the deal slip number, after completion, the person who confirms and submitted the deal slip to the accounts pending with date, are shown for the user comfort. By double clicking on a particular deal slip number, another form will open up with all its details.

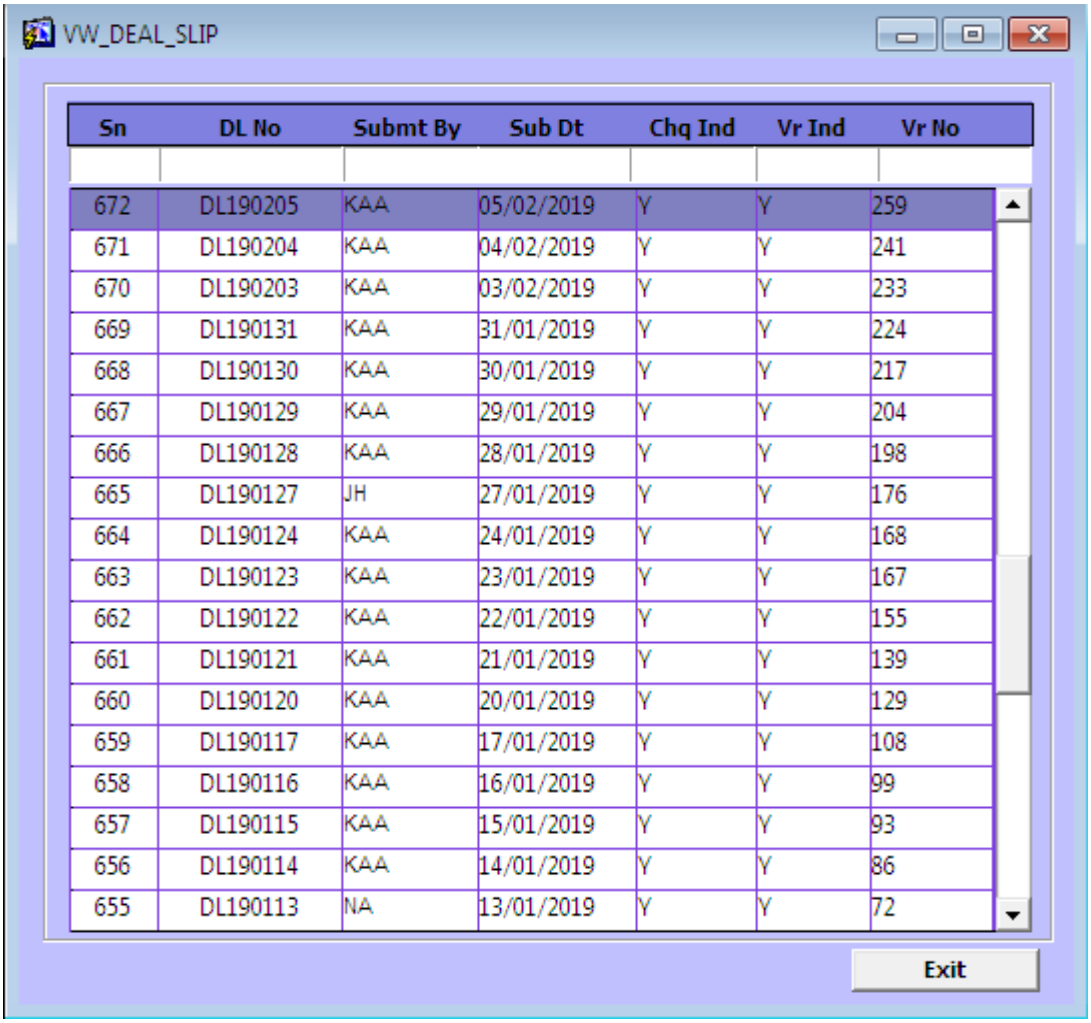
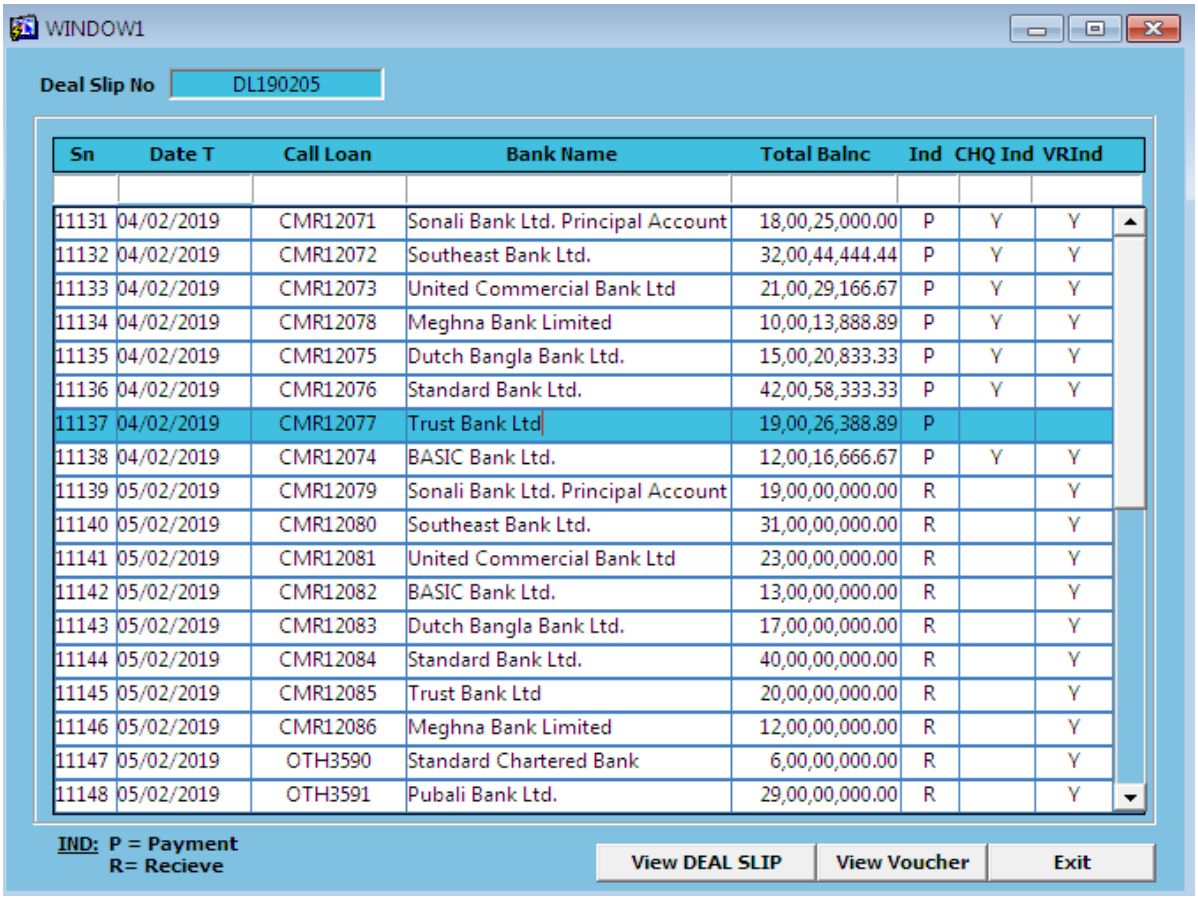


Figure 30: View Accounts Pending

5.3.2 The Accounts Pending Details

The Accounts pending detail of an individual deal slip number is viewed in this form. Here user can see all the details of each deal of the individual deal slip including bank name, total balance that need to do cheque print and voucher according to the type of (Payment and Receive) deal. After cheque printing and voucher the indicator will show Y for each deal slip whereas it was blank before any execution.



Sn	Date T	Call Loan	Bank Name	Total Balnc	Ind	CHQ Ind	VRInd
11131	04/02/2019	CMR12071	Sonali Bank Ltd. Principal Account	18,00,25,000.00	P	Y	Y
11132	04/02/2019	CMR12072	Southeast Bank Ltd.	32,00,44,444.44	P	Y	Y
11133	04/02/2019	CMR12073	United Commercial Bank Ltd	21,00,29,166.67	P	Y	Y
11134	04/02/2019	CMR12078	Meghna Bank Limited	10,00,13,888.89	P	Y	Y
11135	04/02/2019	CMR12075	Dutch Bangla Bank Ltd.	15,00,20,833.33	P	Y	Y
11136	04/02/2019	CMR12076	Standard Bank Ltd.	42,00,58,333.33	P	Y	Y
11137	04/02/2019	CMR12077	Trust Bank Ltd	19,00,26,388.89	P		
11138	04/02/2019	CMR12074	BASIC Bank Ltd.	12,00,16,666.67	P	Y	Y
11139	05/02/2019	CMR12079	Sonali Bank Ltd. Principal Account	19,00,00,000.00	R		Y
11140	05/02/2019	CMR12080	Southeast Bank Ltd.	31,00,00,000.00	R		Y
11141	05/02/2019	CMR12081	United Commercial Bank Ltd	23,00,00,000.00	R		Y
11142	05/02/2019	CMR12082	BASIC Bank Ltd.	13,00,00,000.00	R		Y
11143	05/02/2019	CMR12083	Dutch Bangla Bank Ltd.	17,00,00,000.00	R		Y
11144	05/02/2019	CMR12084	Standard Bank Ltd.	40,00,00,000.00	R		Y
11145	05/02/2019	CMR12085	Trust Bank Ltd	20,00,00,000.00	R		Y
11146	05/02/2019	CMR12086	Meghna Bank Limited	12,00,00,000.00	R		Y
11147	05/02/2019	OTH3590	Standard Chartered Bank	6,00,00,000.00	R		Y
11148	05/02/2019	OTH3591	Pubali Bank Ltd.	29,00,00,000.00	R		Y

Figure 31: The Accounts Pending Details

5.3.3 Cheque Printing Form

In the accounts list, after clicking on any individuals this form will appear. The form includes with the pay to and amount in both customer and bank part. Also from here user can select banks, bank branch, cheque book details.

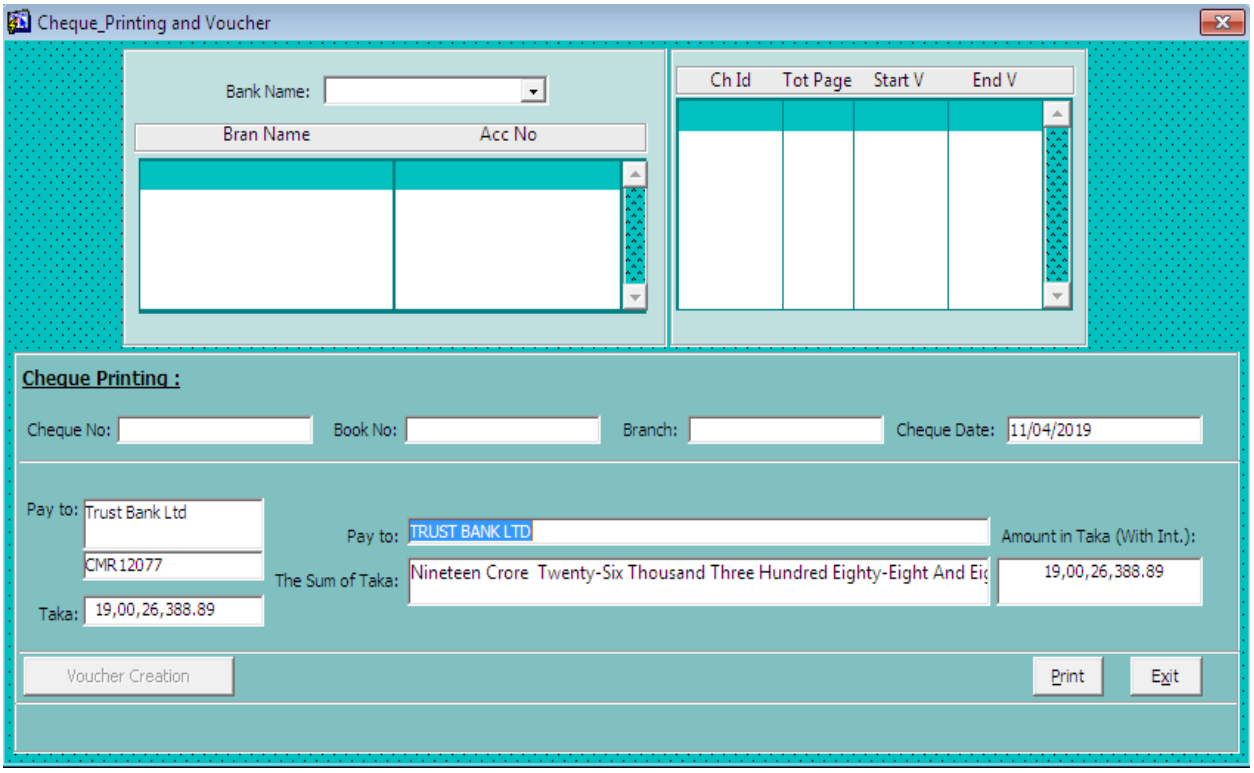


Figure 32: Cheque Printing Form

5.3.4 Selection of Bank for Cheque Printing

User can select bank name from the field 'Bank Name' for cheque printing.

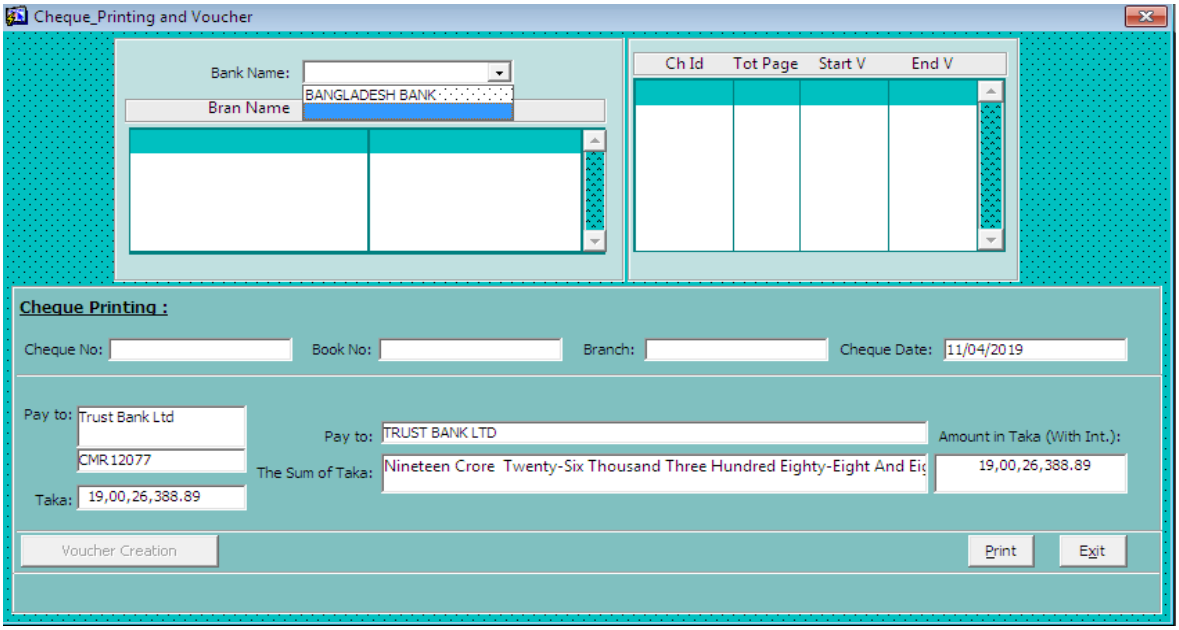


Figure 33: Selection of Bank for Cheque Printing

5.3.5 Selection of Bank Branch and Cheque Book

After selecting the bank name user have to select the branch name and cheque book details to continue the procedure.

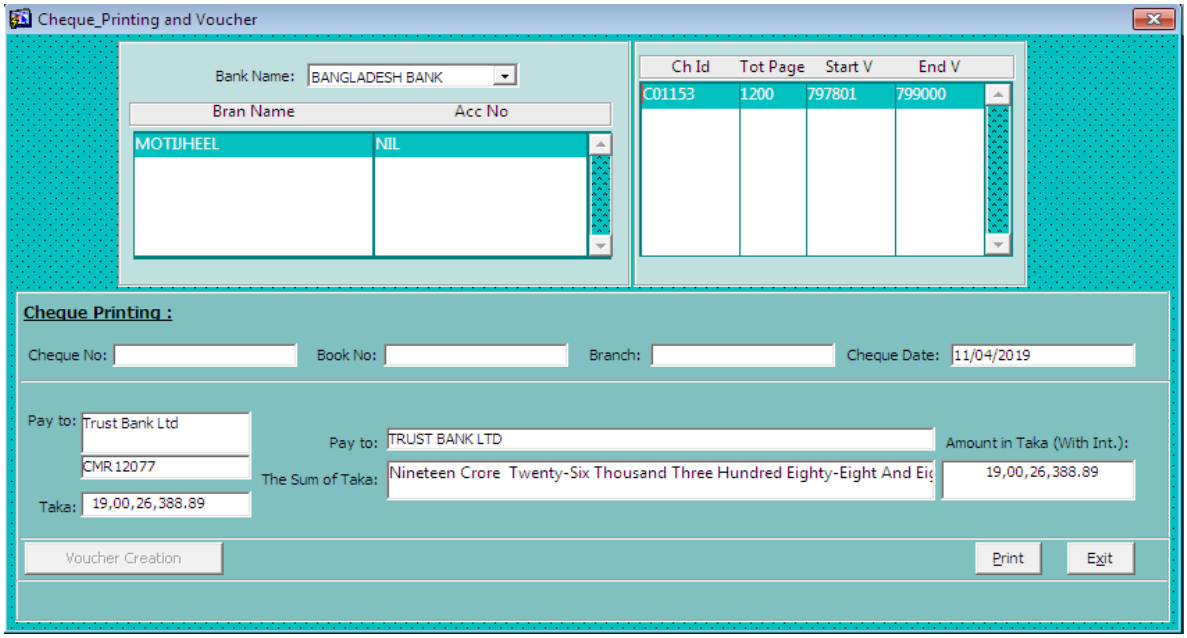


Figure 34: Selection of Bank Branch and Cheque Book Detail

5.3.6 View for Cheque Printing

For all the payment deals, here in this form after selecting bank name, branch of that bank including the cheque book details, new cheque number, with branch and date of the cheque printing will be appear. The cheque number is viewed in an incremental way for the every next deal.

In this form, after clicking on the **'Print'** button the cheque printing will be done along with appearing a report o with cheque page format. User need to click on the print button and give cheque paper to the printer to print the cheque. Now **'Voucher'** button is active and voucher can be created for this payment now.

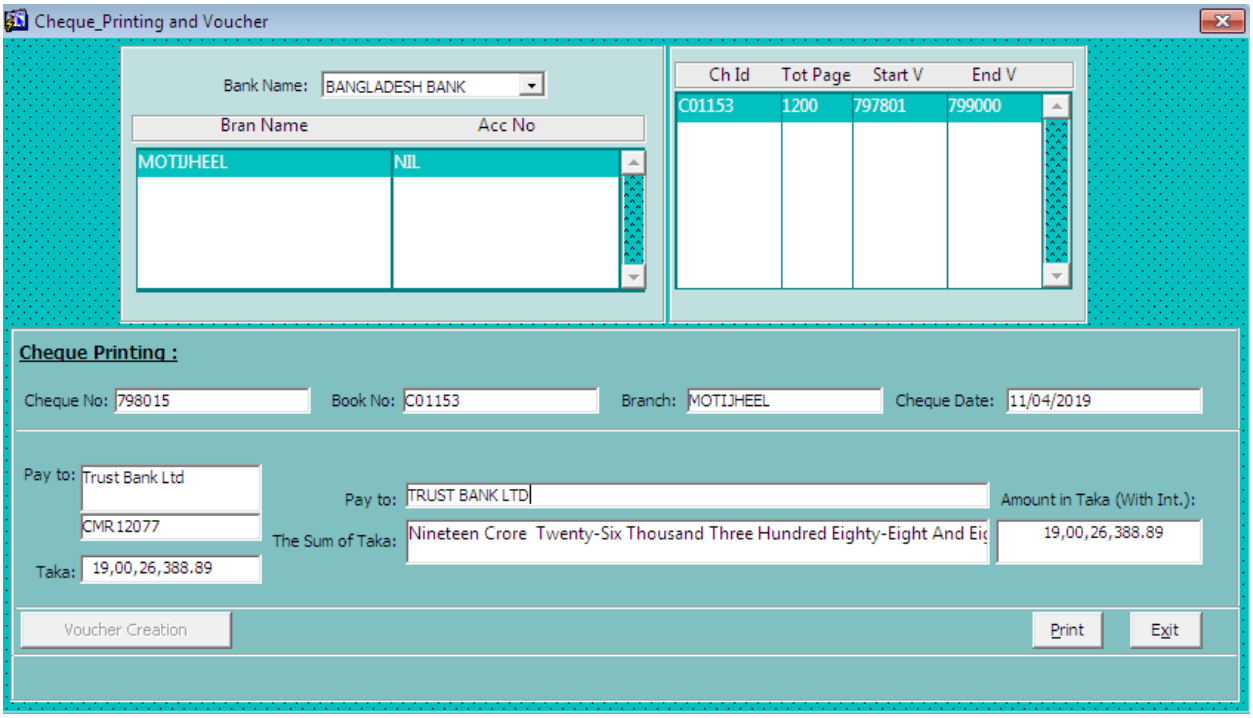


Figure 35: Final View for Cheque Printing

5.3.7 The Voucher Creation Form

This is an **Automated Voucher Creation Form**, where user can find all the details of the individual voucher by one click and no need to type any details. So that it takes one forth time to complete whole procedure.

Here user van view the deal slip number, type of voucher, voucher year, date of voucher creation and if there is any branch defined then code of that branch. After clicking the button **'Voucher Creation'** form the last form, this for will appear with all the above details and the details of Bangladesh bank GL codes, the cheque number, transaction type , bank name in both debit and credit section and the voucher amount which is viewed in the credit section for payment and for receive it will view in debit section. But if user needs to add any other type of transaction, then they can add it manually in the blank rows of the both debit and credit section to match the value of credit and debit.

Lastly, after final or last voucher saved, the whole voucher details will be viewed by clicking in the **'View'** button.

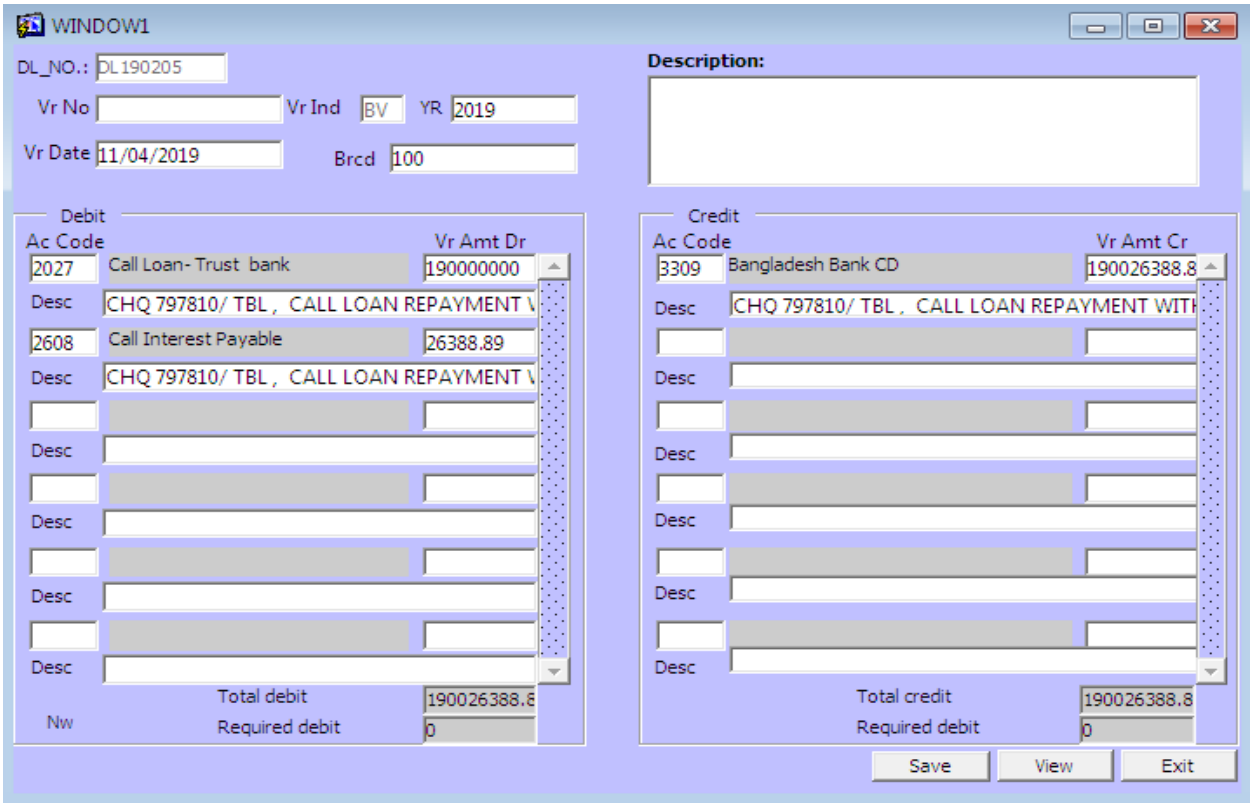
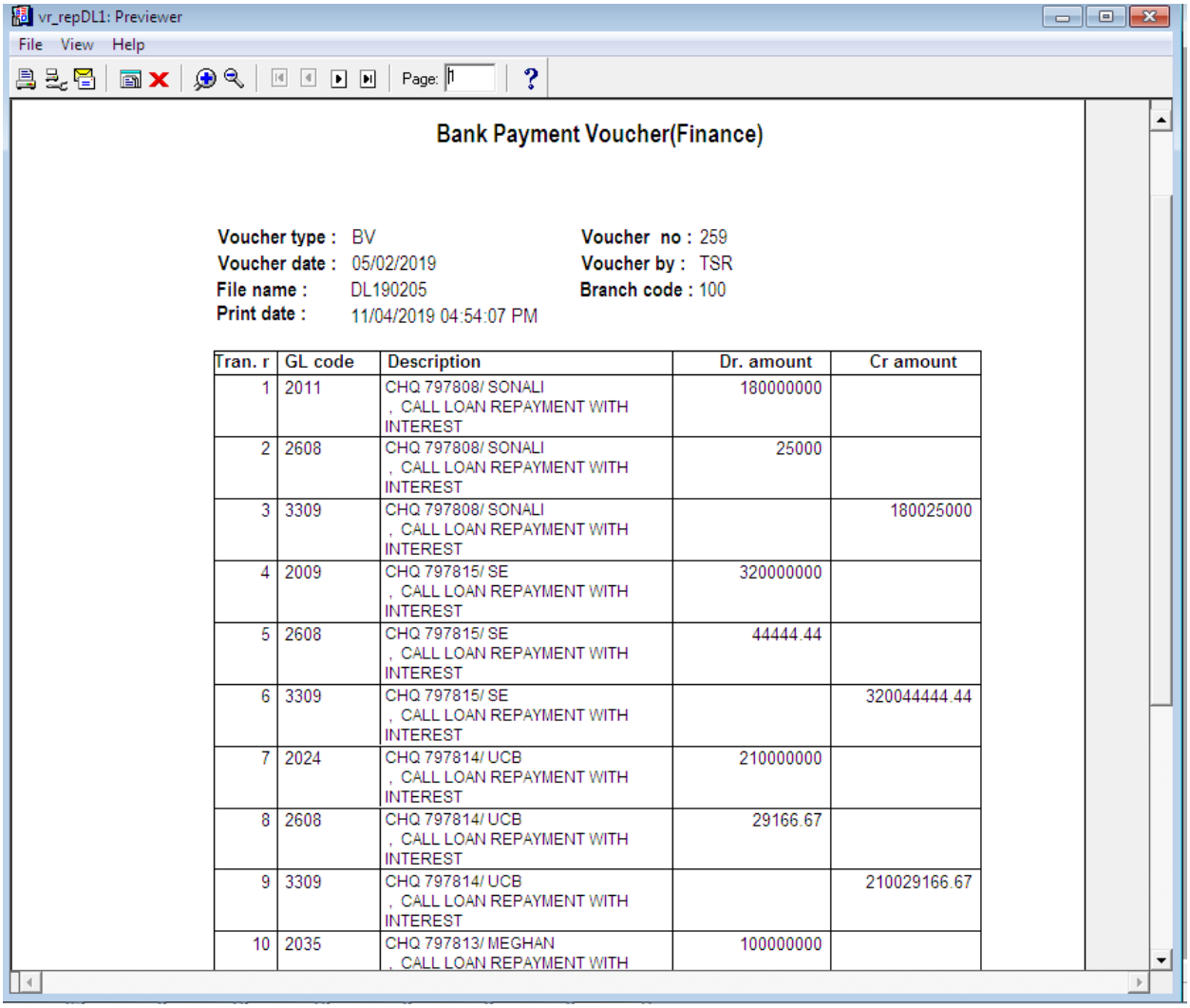


Figure 36: Voucher Creation Form

5.3.8 Final Voucher Report View

The report shows the detail view of voucher of the dated which user want to view. Here in this report also includes some more information of voucher type, date of the voucher, number of the voucher, name of the voucher, date of voucher, print date etc. The report has also GL codes, and short form of bank names with details of cheque number and call borrow type, debit amount and credit amount of the individuals.

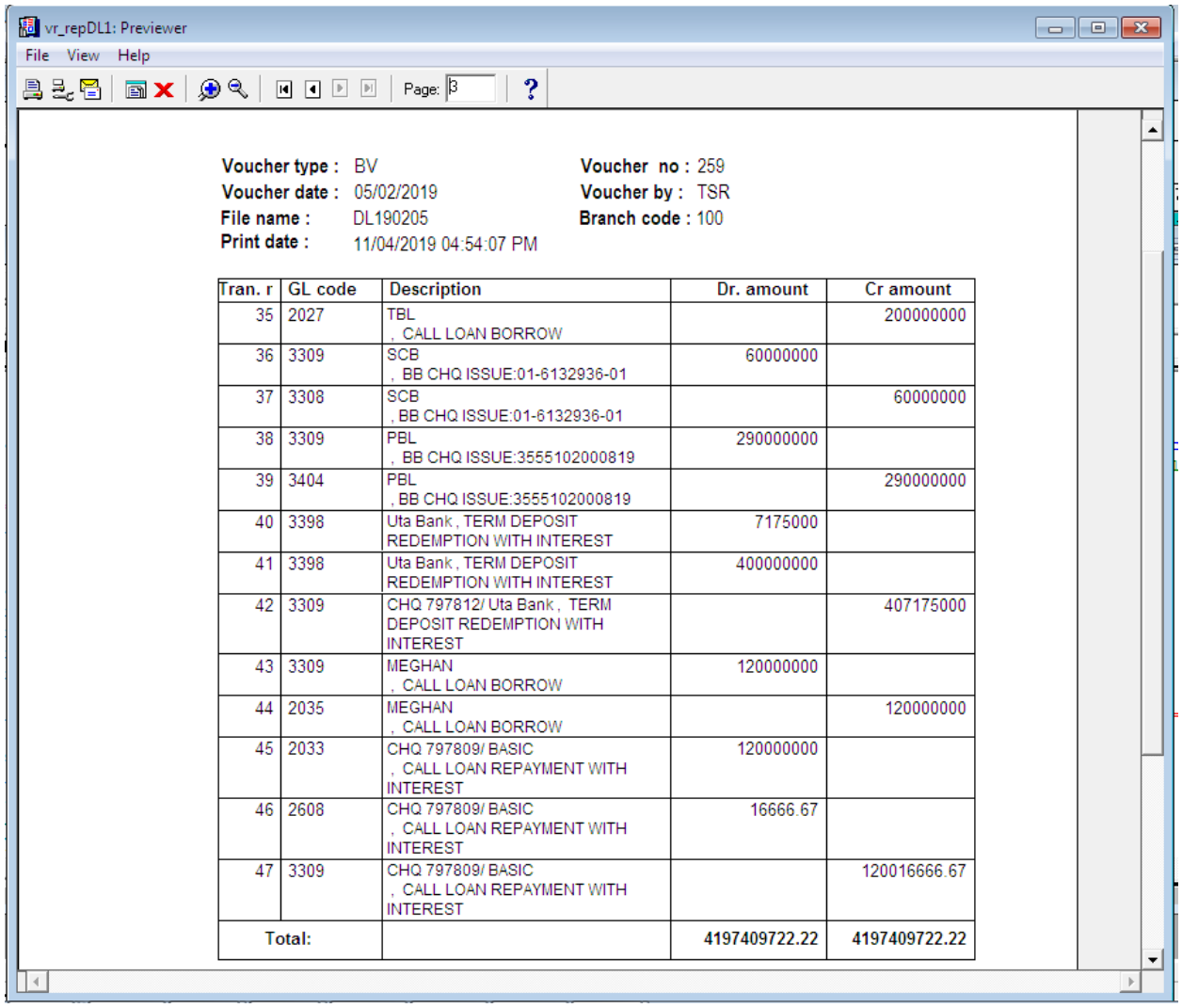
1st page of the report:



Tran. r	GL code	Description	Dr. amount	Cr amount
1	2011	CHQ 797808/ SONALI , CALL LOAN REPAYMENT WITH INTEREST	180000000	
2	2608	CHQ 797808/ SONALI , CALL LOAN REPAYMENT WITH INTEREST	25000	
3	3309	CHQ 797808/ SONALI , CALL LOAN REPAYMENT WITH INTEREST		180025000
4	2009	CHQ 797815/ SE , CALL LOAN REPAYMENT WITH INTEREST	320000000	
5	2608	CHQ 797815/ SE , CALL LOAN REPAYMENT WITH INTEREST	44444.44	
6	3309	CHQ 797815/ SE , CALL LOAN REPAYMENT WITH INTEREST		320044444.44
7	2024	CHQ 797814/ UCB , CALL LOAN REPAYMENT WITH INTEREST	210000000	
8	2608	CHQ 797814/ UCB , CALL LOAN REPAYMENT WITH INTEREST	29166.67	
9	3309	CHQ 797814/ UCB , CALL LOAN REPAYMENT WITH INTEREST		210029166.67
10	2035	CHQ 797813/ MEGHAN , CALL LOAN REPAYMENT WITH	100000000	

Figure 37: Final Voucher Report (1)

The final page of the voucher report, where debit amount and credit amount equals:



Voucher type : BV **Voucher no :** 259
Voucher date : 05/02/2019 **Voucher by :** TSR
File name : DL190205 **Branch code :** 100
Print date : 11/04/2019 04:54:07 PM

Tran. r	GL code	Description	Dr. amount	Cr amount
35	2027	TBL , CALL LOAN BORROW		200000000
36	3309	SCB , BB CHQ ISSUE:01-6132936-01	60000000	
37	3308	SCB , BB CHQ ISSUE:01-6132936-01		60000000
38	3309	PBL , BB CHQ ISSUE:3555102000819	290000000	
39	3404	PBL , BB CHQ ISSUE:3555102000819		290000000
40	3398	Uta Bank , TERM DEPOSIT REDEMPTION WITH INTEREST	7175000	
41	3398	Uta Bank , TERM DEPOSIT REDEMPTION WITH INTEREST	400000000	
42	3309	CHQ 797812/ Uta Bank , TERM DEPOSIT REDEMPTION WITH INTEREST		407175000
43	3309	MEGHAN , CALL LOAN BORROW	120000000	
44	2035	MEGHAN , CALL LOAN BORROW		120000000
45	2033	CHQ 797809/ BASIC , CALL LOAN REPAYMENT WITH INTEREST	120000000	
46	2608	CHQ 797809/ BASIC , CALL LOAN REPAYMENT WITH INTEREST	16666.67	
47	3309	CHQ 797809/ BASIC , CALL LOAN REPAYMENT WITH INTEREST		120016666.67
Total:			**4197409722.22**	**4197409722.22**

Figure 38: Final Voucher Report (2)

Chapter 6

6. Conclusion

6.1 Summary

This project is the concept of a real time requirement of the banks and NBFIs with limited theme and skill. As this is a real time experience so that this project will be easy, helpful and time consuming for the users. Multiple details can be summarized and viewed in a single report which is of one page. Users can check/search, verify and revert the completed procedure for further query, from the individual ends. So that error free system, high manageability, accuracy and redundancy can be ensured. The system will be beneficial for all the users.

6.2 Limitations

The conclusions are drawn after conducting of many opinion of the user working in the organization.

6.2.1 Availability of Data

The project report is based on the information provided by users of the organizations. Non-willingness of the respondents to answer the questionnaire about the procedures of existing software, the problems, working areas was also a hurdle

6.2.2. Reliability of Data

Reliability of data always is a prime concern. All the data are conducting from the user of the organization, including the bank or NBFI personnel who have dealt with the user or approver for the borrowing rate of interest on which all calculations are dependent. Inability to think instantly, not interested to answer, unclear questions creeps while tabulating and analyzing the data.

7. References

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8. https://www.slideshare.net/HitEshMunJal2/call-money-market?next_slideshow=1
9. https://www.slideshare.net/BaibhavAgrawal/call-money-64795087
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