

## Governors State University OPUS Open Portal to University Scholarship

---

All Capstone Projects

Student Capstone Projects

---

Spring 2015

# Mobile Banking Application with Barcode Generation

Manoj Kukkala  
*Governors State University*

Arun Teja Ledala  
*Governors State University*

Naveed Ahmad Shaik  
*Governors State University*

Follow this and additional works at: <http://opus.govst.edu/capstones>

 Part of the [Computer Sciences Commons](#)

---

### Recommended Citation

Kukkala, Manoj; Ledala, Arun Teja; and Shaik, Naveed Ahmad, "Mobile Banking Application with Barcode Generation" (2015). *All Capstone Projects*. 118.  
<http://opus.govst.edu/capstones/118>

For more information about the academic degree, extended learning, and certificate programs of Governors State University, go to [http://www.govst.edu/Academics/Degree\\_Programs\\_and\\_Certifications/](http://www.govst.edu/Academics/Degree_Programs_and_Certifications/)

Visit the [Governors State Computer Science Department](#)

This Project Summary is brought to you for free and open access by the Student Capstone Projects at OPUS Open Portal to University Scholarship. It has been accepted for inclusion in All Capstone Projects by an authorized administrator of OPUS Open Portal to University Scholarship. For more information, please contact [opus@govst.edu](mailto:opus@govst.edu).

# **ABSTRACT**

Mobile phones have become a part in our day to day life; every smart phone user is using different variety of mobile applications for various purposes. In the banking sector mobile banking is playing a major role in transferring money electronically, and to manage accounts. But to create new account, to apply loans and credit cards, and to close accounts banking customers must go to website, to make it easy and to work on it everywhere this Mobile Banking Application is used. And to make transactions easily in shopping malls (Card less Transactions) this application generates a barcode in mobile application, this barcode is been scanned by retailer to make a transaction easy.

## **Modules:**

There are two main parts of this project:

- User Interface Part
- Administrator Part

## **User Interface:**

User interface part deals with mobile banking application which has these below contents

1. New Account Creation
2. Account Information
3. Transaction's History
4. Applying loans
5. Applying Credit Cards
6. Close Account
7. Generate Barcode

## **Administrator:**

Administrator Part deals with the web application, where this is done by a authorized bank employee. This has following Contents.

1. New Account Approval
2. Loan Approval
3. Deposit Approval

## **Requirements:**

- **Software requirements**
  - WINDOWS OS (windows 8)
  - Visual Studio .Net 2012
  - Internet Information Server8.0
  - Visual Studio .Net Framework (Minimal for Deployment)
  - SQL Server 2012 Enterprise Edition
  
- **Hardware requirements**
  - INTEL I5 Processor
  - RAM 2GB
  - HDD 1 TB Hard Disk Space

# **TABLE OF CONTENTS**

<b>1. INTRODUCTION</b>	
1.1. INTRODUCTION TO PROJECT	1
1.2. HARDWARE & SOFTWARE REQUIREMENTS	4
1.3. PROPOSED SYSTEM	5
<b>2. SYSTEM DESIGN</b>	
2.1. INTRODUCTION	7
2.2. E-R DIAGRAM	7
2.3. DATA FLOW DIAGRAMS	8
2.4. DATA DICTIONARY	14
<b>3. OUTPUT SCREENS</b>	17
<b>4. QR-BARCODE GENERATOR</b>	
8.1. .NET QR- BARCODE INTRODUCTION	33
8.2. COMPATIBILITY	33
8.3. .NET QR-CODE BASIC CHARACTERISTICS	33
8.4. .NET QR-CODE ENCODING DATA SCOPE	34
<b>5. CONCLUSION</b>	35
<b>6. REFERENCES</b>	36



# 1. INTRODUCTION

## 1.1 INTRODUCTION TO PROJECT

In this fast world of Science and Technology, everything is fast and easy. It will soon become essential for most organizations with a web presence to develop for mobile devices. Mobile Banking is a same effort in the field of banking. Mobile Banking aims to make the bank transactions easy and fast. Using this application you can do any transactions through your mobile form easily.

### NUMBER OF MODULES

**There are two main parts of this project:**

- User Interface
- Administrator

### User Interface:

This system is aimed to provide banking facility to the user through mobile and to implement all the banking transactions like

1. New Account Creation
2. Account Information
3. Transactions
4. Loans
5. Miscellaneous
6. Closing An Account

First, the user needs to sign up with the system. After login, using his userid and password, the user can do any transactions or access the system. For sign up the user needs to provide his personal information like name, address, phone no, email id, mobile no, etc.

### 1. New Account Creation

After login a user can create his own account, this system facilitates to create an account in his name. The customer must provide information regarding the type of account he wants to open, amount of deposit, mode of pay, cheque or draft no, reference of a person who is having account in the same bank. An Account number and access code will be provided by the system. The user needs to remember the access code. When he needs to do any transaction, he needs

to enter his access code, but the user can do any transaction only after the administrator has approved his new Account. One user can have number of account in the bank.

## **2. Account Information**

Here user can see his account details including access code, date of opening an account, balance, etc He can also see his personal details. He needs to enter his account number and access code.

## **3. Transactions**

In transaction module, there are three options:

- **Withdraw**

All sort of banking withdraws need to be implemented in the system. The user needs to enter the information like account number, access code and amount. The system must maintain the minimum amount for each account.

- **Deposit**

All sort of banking deposits need to be implemented in the system. The user needs to enter the information like account number, access code, the mode of deposit, Demand draft/cheque No and the amount to be deposit. When the bank will get the cheque or Demand draft, the deposit will be approved by administrator and the money will be added to the respective account balance.

- **Transfer**

The system will transfer the amount from one account to another. Here the user needs to enter both the account numbers from and to account number. He needs to enter the access code for from account number and the amount to be transferred. Both accounts will get updated during the transaction.

## **4. Loans**

Here the user can apply for different types of loans and also he can check the status for applied loans whether it is sanctioned or not. The administrator will approve or reject the loan.

## **5. Miscellaneous**

Here there are two options:

- **Chequebook Issues**

Cheque books will be issued to an account holder whenever he requests and it should be on the basis of the minimum balance. The chequebook number generated by the system must be unique.

- **Stop Payments**

Using this option an account holder can add a stop on particular cheque number. The withdraws on a particular cheque will be stopped upon the request made by the customer.

## **6. Closing An Account**

Using this option, user can close his account; the amount in his account will be send to him through Draft/Cheque. After closing the account he can't do any transactions on that particular account number.

## **Administrator:**

This is the second part of the project where administrator will approve different requests of the user.

### **1. Loans Approval**

Here administrator will approve or reject the loan application applied by different users. The status of applied loan will be stored in the database and users can check this status using their mobile.

### **2. Deposit Approval**

Here administrator will approve deposits of different users. When the bank will get the Cheque/DD of amount to be deposited, the administrator will approve the deposit and the amount will be added to the respective account.

### **3. New Account Approval**

Here administrator will approve new accounts of different users. When the bank will get the Cheque/DD of amount to be deposited as initial amount, the administrator will approve the new account and the amount will be added to the respective account. After approval only, the user can do the transactions on that account.



## **PURPOSE OF THE PROJECT**

- Need of an application to make bank transactions easily and faster through mobile.

## **PROBLEM IN EXISTING SYSTEM**

- Cannot Upload and Download the latest updates.
- Risk of mismanagement and of data when the project is under development.
- No proper coordination between different Applications and Users.
- Fewer Users - Friendly.

## **SOLUTION OF THESE PROBLEMS**

The development of the new system contains the following activities, which try to automate the entire process keeping in view of the database integration approach.

1. User friendliness is provided in the application with various controls.
2. The system makes the overall project management much easier and flexible.
3. Readily upload the latest updates, allows user to download the alerts by clicking the URL.

## **1.2. HARDWARE & SOFTWARE REQUIREMENTS**

### **HARDWARE REQUIREMENTS:**

- Intel I5 Processor
- RAM 2GB
- HDD 1TB Hard Disk Space

### **SOFTWARE REQUIREMENTS:**

- WINDOWS 8.1.
- Visual Studio .Net 2013
- Visual Studio .Net Framework (Minimal for Deployment)
- SQL Server 2012 Enterprise Edition

### **1.3. PROPOSED SYSTEM**

To debug the existing system, remove procedures those cause data redundancy, make navigational sequence proper. To provide information about audits on different level and also to reflect the current work status depending on organization/auditor or date. To build strong password mechanism.

### **FUNCTIONAL FEATURES OF THE MODEL**

As far as the project is developed the functionality is simple, the objective of the proposal is to strengthen the functioning of Audit Status Monitoring and make them effective and better. The entire scope has been classified into five streams known as Coordinator Level, management Level, Auditor Level, User Level and State Web Coordinator Level. The proposed software will cover the information needs with respect to each request of the user group viz. accepting the request, providing vulnerability document report and the current status of the audit.

### **INPUT AND OUTPUT**

The main inputs, outputs and major functions of the system are as follows.

#### Inputs:

- Admin enters his or her user id and password.
- Users enter his or her user id and password.

#### Outputs:

- Admin allocate user id and password to the users.
- Updates user's profiles as well as passwords.

### **PROCESS MODULES USED WITH JUSTIFICATION**

#### **ACCESS CONTROL FOR DATA WHICH REQUIRE USER AUTHENTICATION**

The following commands specify access control identifiers and they are typically used to authorize and authenticate the user (command codes are shown in parentheses)

## **USER NAME (USER)**

The user identification is that which is required by the server for access to its file system. This command will normally be the first command transmitted by the user after the control connections are made (some servers may require this).

## **PASSWORD (PASS)**

This command must be immediately preceded by the user name command, and, for some sites, completes the user's identification for access control. Since password information is quite sensitive, it is desirable in general to "mask" it or suppress type out.

# 2. SYSTEM DESIGN

## 2.1 INTRODUCTION

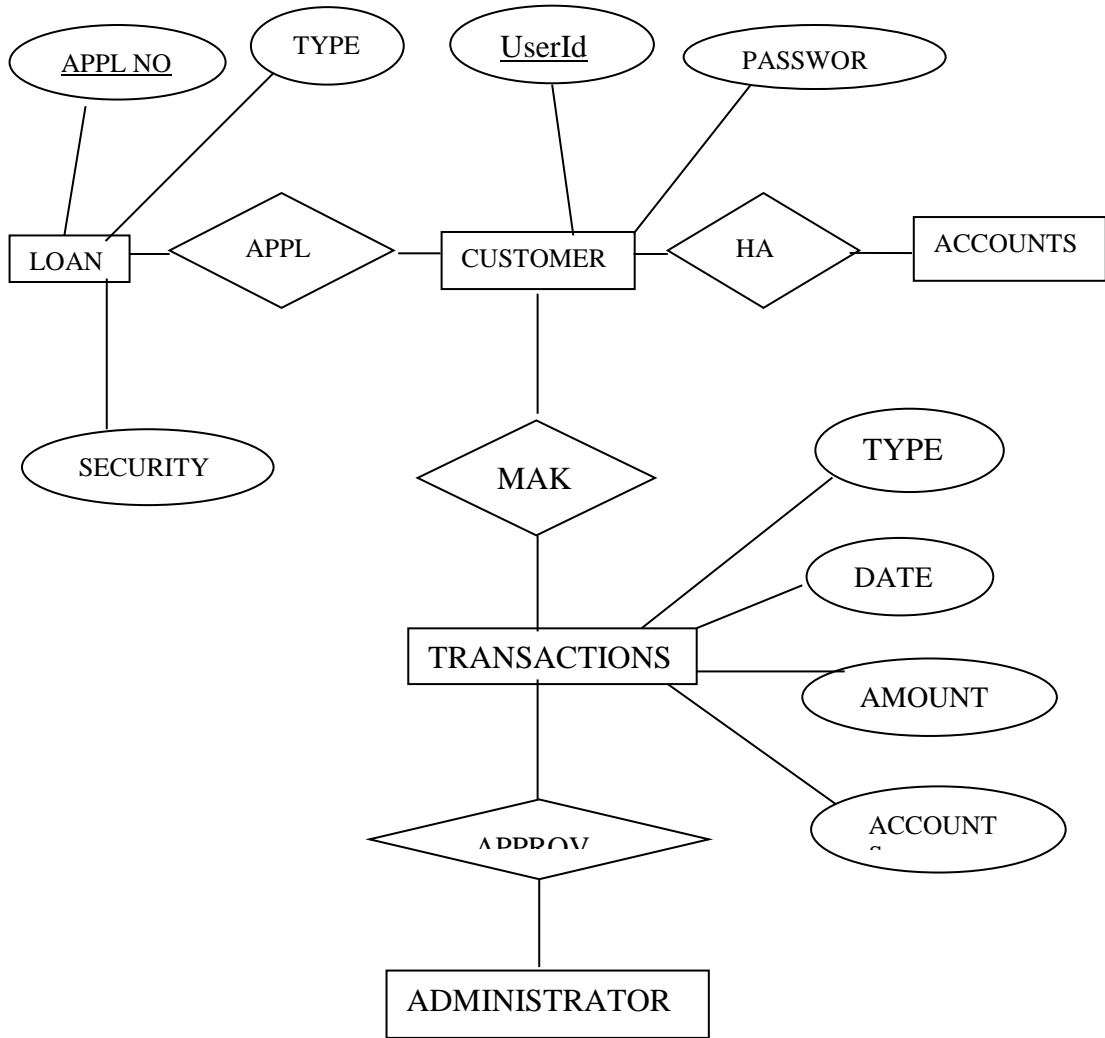
Software design sits at the technical kernel of the software engineering process and is applied regardless of the development paradigm and area of application. Design is the first step in the development phase for any engineered product or system. The designer's goal is to produce a model or representation of an entity that will later be built. Beginning, once system requirements have been specified and analyzed, system design is the first of the three technical activities - design, code and test that is required to build and verify software.

## 2.2. E – R DIAGRAMS

- The relation upon the system is structure through a conceptual ER-Diagram, which not only specifies the existential entities but also the standard relations through which the system exists and the cardinalities that are necessary for the system state to continue.
- The entity Relationship Diagram (ERD) depicts the relationship between the data objects. The ERD is the notation that is used to conduct the data modeling activity the attributes of each data object noted in the ERD can be described using a data object description.
- The set of primary components that are identified by the ERD are
  - ◆ Data object
  - ◆ Relationships
  - ◆ Attributes
  - ◆ Various types of indicators.

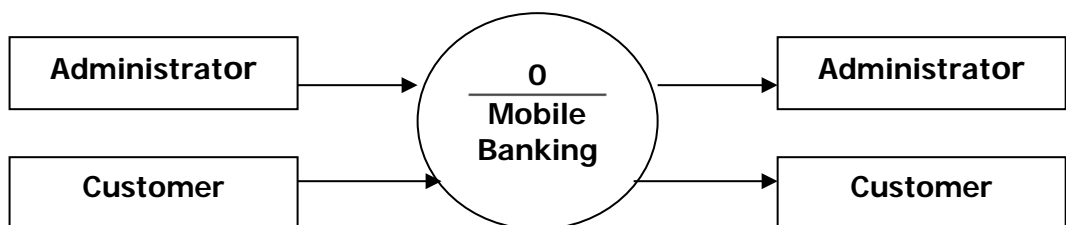
The primary purpose of the ERD is to represent data objects and their relationships.

## E-R DIAGRAM:

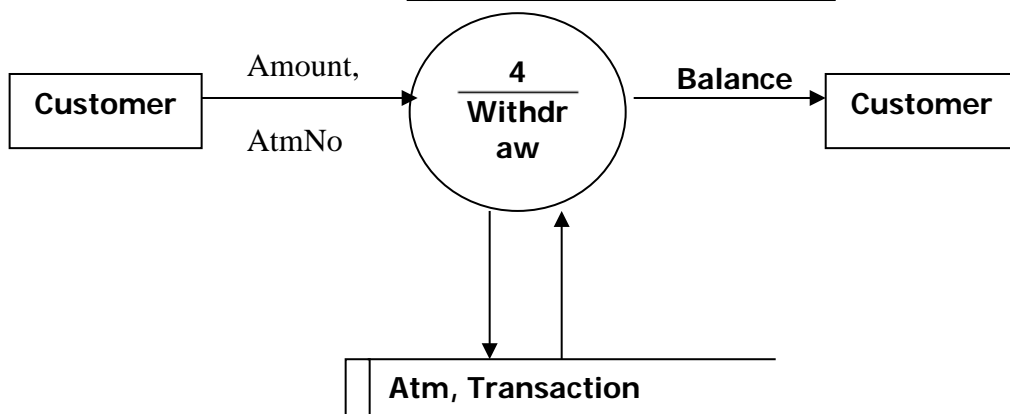
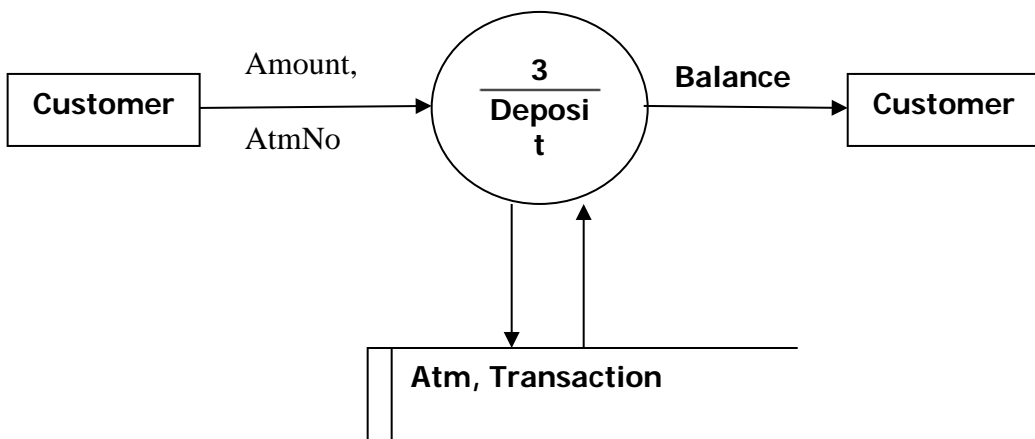
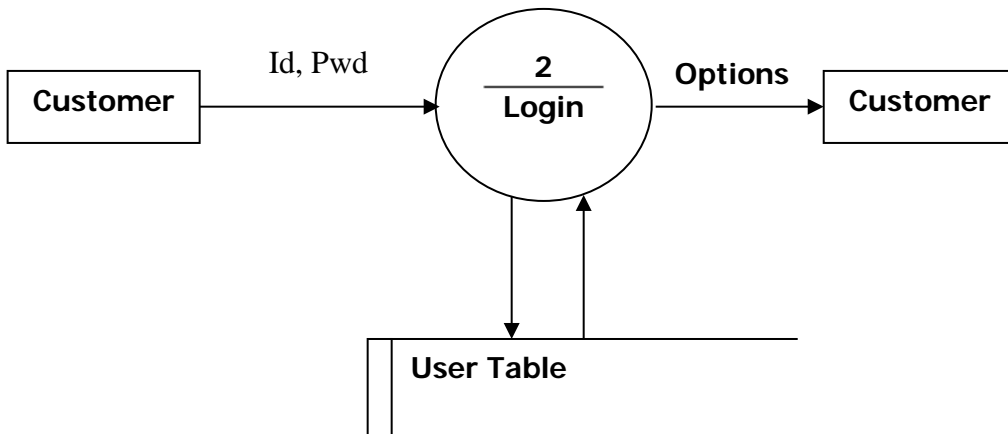
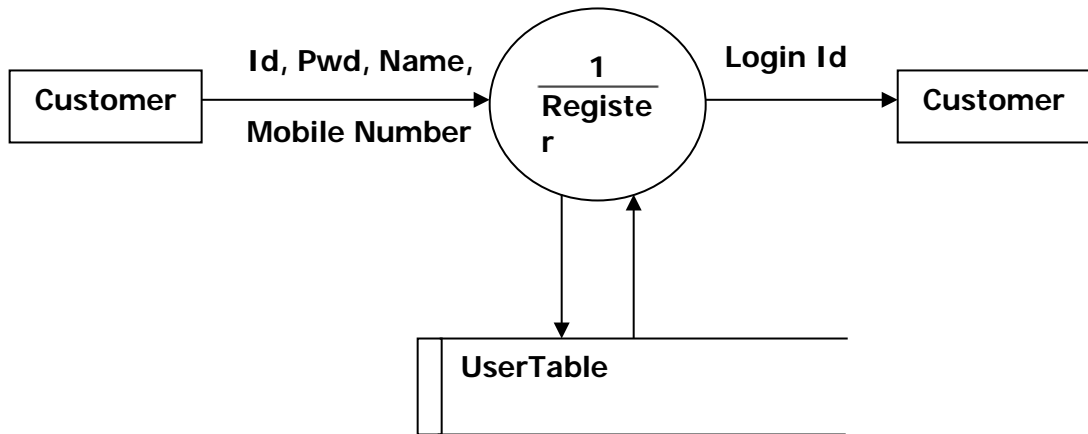


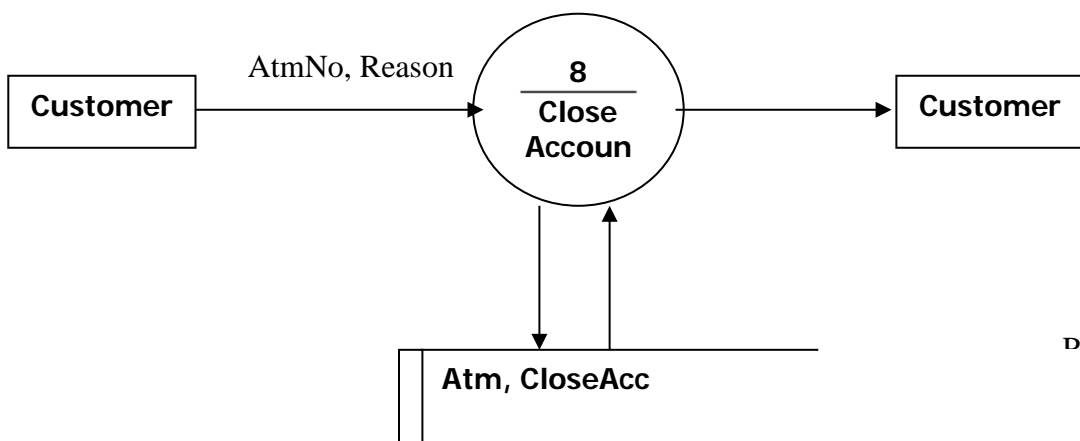
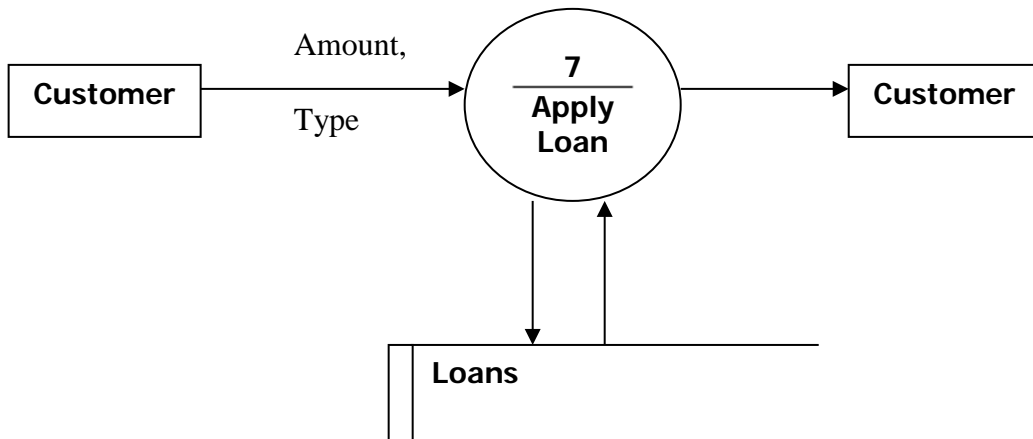
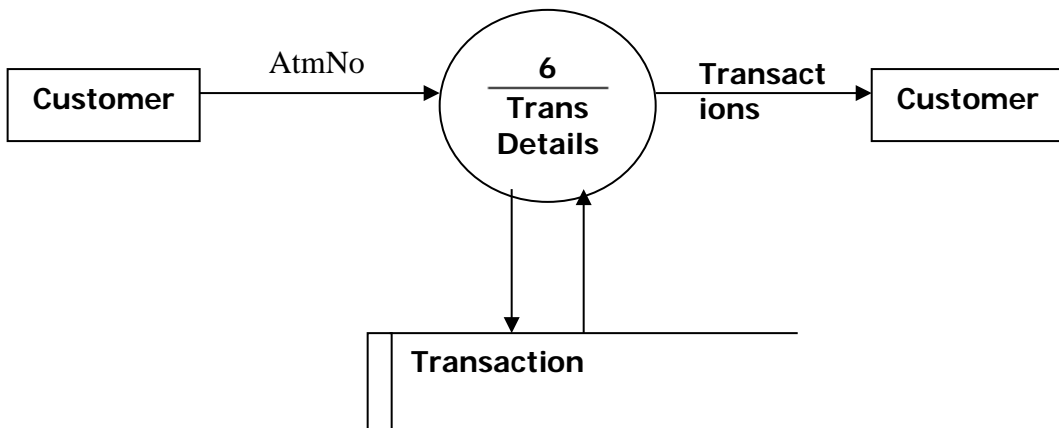
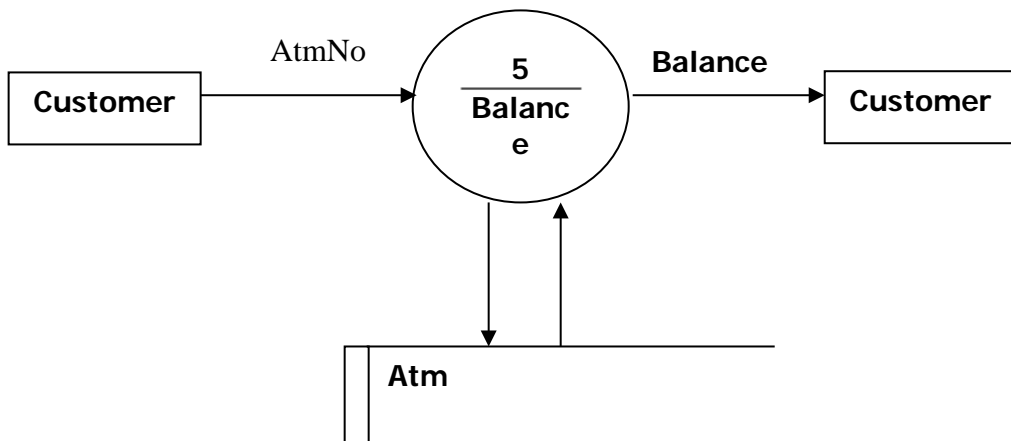
## 2.3. DATAFLOW DIAGRAMS

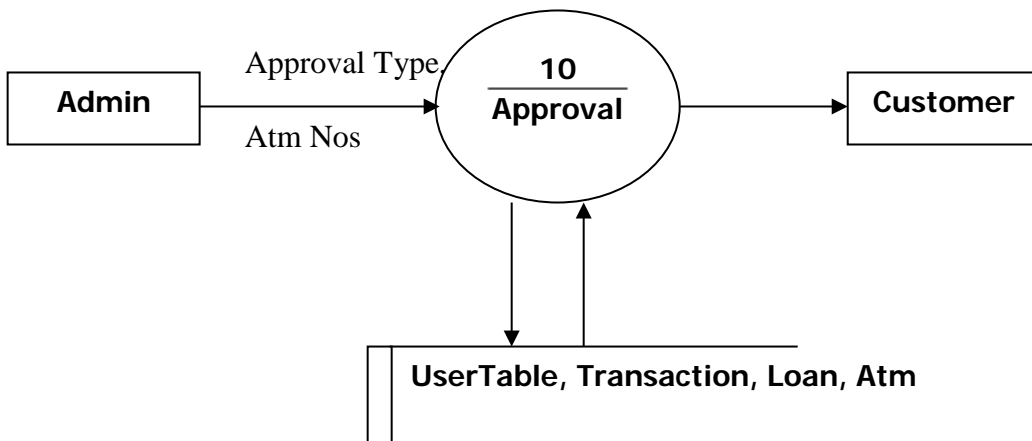
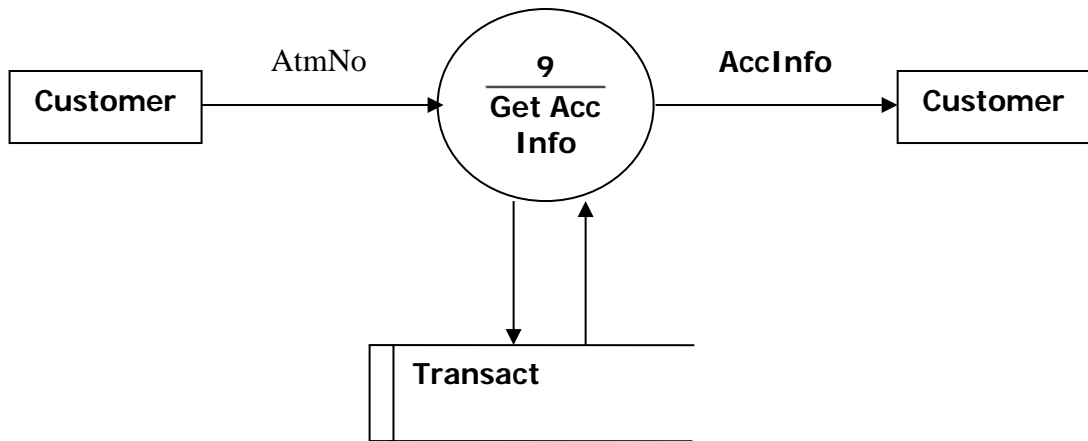
### Context Level Diagram



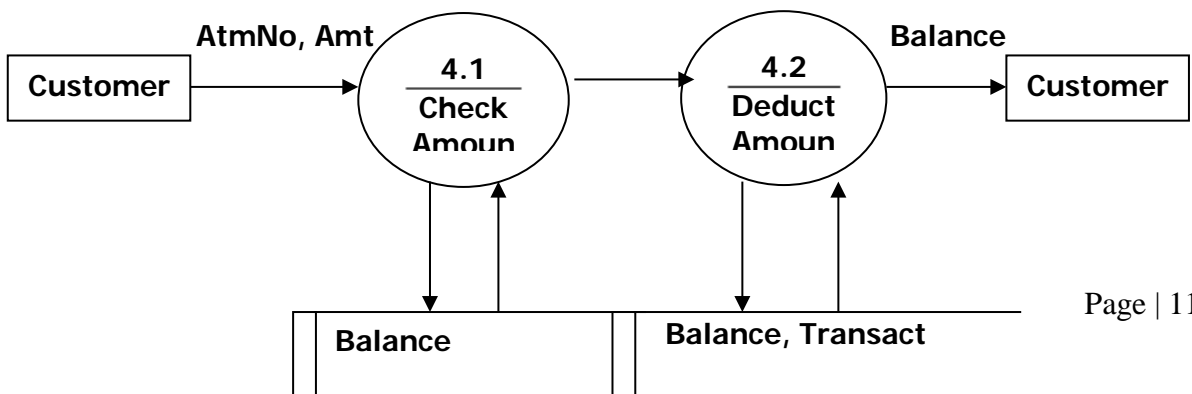
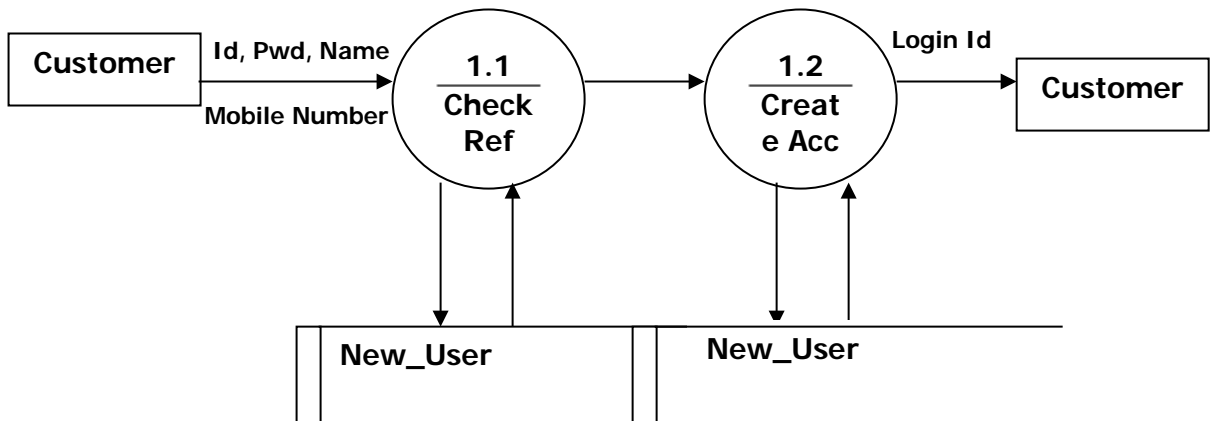
## Level – 1







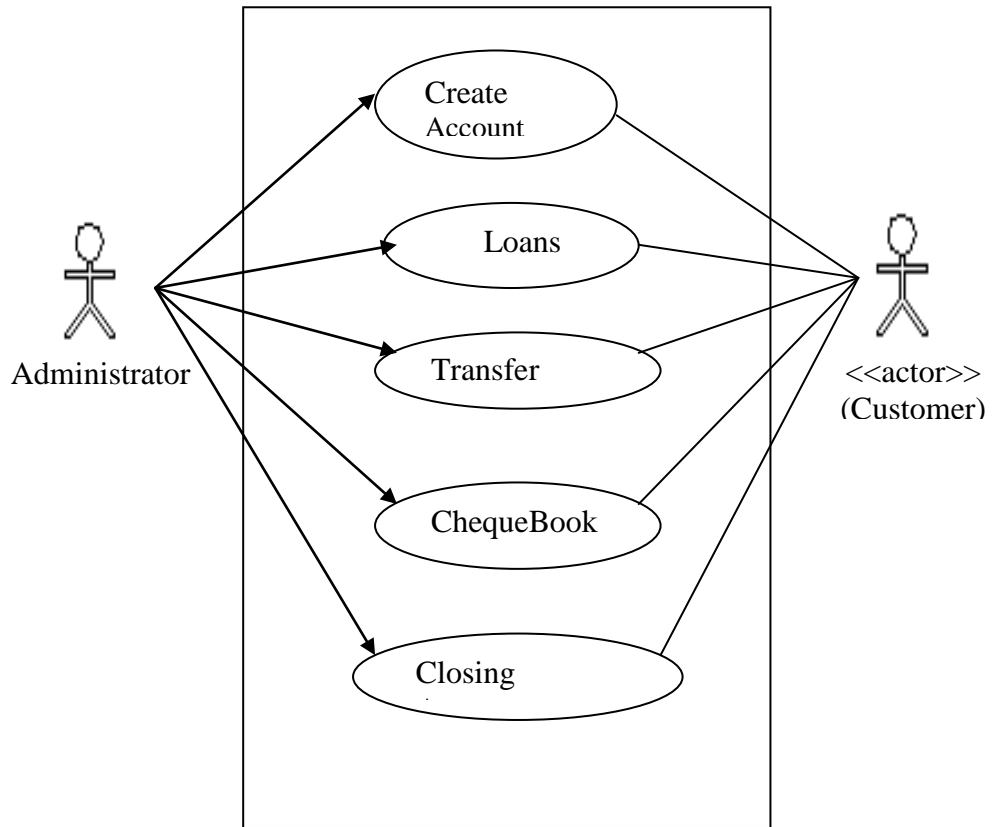
**Level – 2**



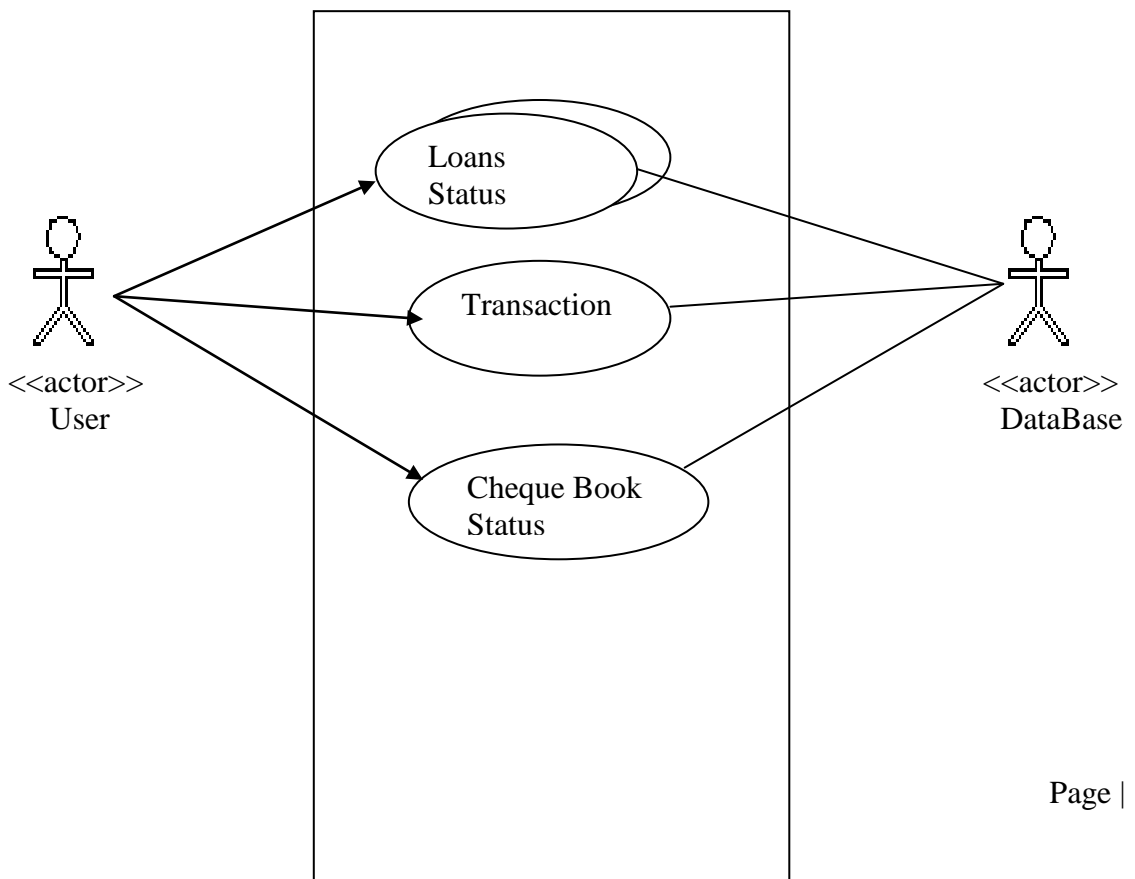


# UML DIAGRAMS :

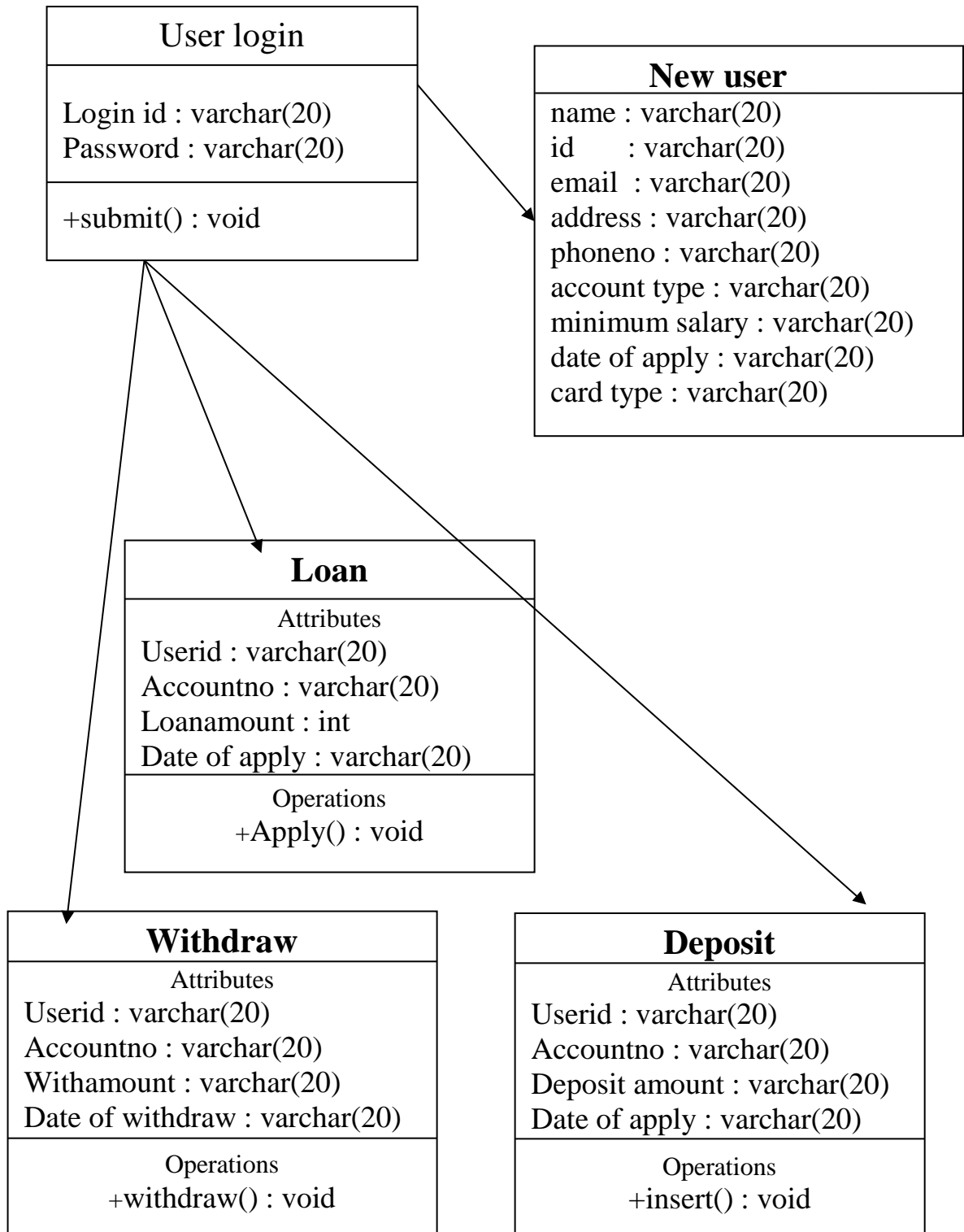
1. Customer: -



2. Administrator: -



## CLASS DIAGRAM :



## 2.4.DATA DICTIONARY

After carefully understanding the requirements of the client the entire data storage requirements are divided into tables. The below tables are normalized to avoid any anomalies during the course of data entry.

### 1. Table Name :-- ACCDETAILS

ColumnName	Data Type	Length	Key
userid	Varchar	10	
accnum	Varchar	10	PrimaryKey
acctype	Varchar	10	
balance	Money	8	
accode	Int	4	
dop	Datetime	8	
ddchnum	Nchar	10	
modeofpay	Varchar	15	
reference	Varchar	15	
reapproval	Varchar	5	
approval	Varchar	5	

### 2. Table Name :-- ACCSTATUS

ColumnName	Data Type	Length	Key
accnum	Varchar	10	PrimaryKey
accstatus	Varchar	20	
userid	Varchar	10	

### 3. Table Name :-- ADMINLOGIN

ColumnName	Data Type	Length	Key
userid	Varchar	10	
pwd	Varchar	10	

#### 4. Table Name :-- CHEQUEBOOKDETAILS

ColumnName	Data Type	Length	Key
chebookno	Varchar	10	PrimaryKey
accno	Varchar	10	
dateissued	Datetime	8	
chstartno	Varchar	10	
chendno	Varchar	10	
userid	Varchar	20	
accode	Int	4	
approve	Char	10	

#### 5. Table Name :-- DEPOSITDET

ColumnName	Data Type	Length	Key
userid	Varchar	10	
accnum	Varchar	10	
dbalance	Money	8	
accode	Int	4	
dod	Datetime	8	
modeofpay	Varchar	15	
ddchnum	Nchar	22	

#### 6. Table Name :-- LOANS

ColumnName	Data Type	Length	Key
appno	Int	4	PrimaryKey
appdate	Datetime	8	
userid	Varchar	10	
reference	Varchar	20	
purpose	Varchar	50	
docno	Varchar	10	
amount	Money	8	
reapproval	Varchar	5	
approval	Varchar	5	

**7. Table Name :-- STOPPAYMENT**

<b>ColumnName</b>	<b>Data Type</b>	<b>Length</b>	<b>Key</b>
userid	Varchar	10	
checkno	Varchar	10	
accno	Varchar	10	
instruction	Varchar	50	
accode	Int	4	

**8. Table Name :-- TRANSFER**

<b>ColumnName</b>	<b>Data Type</b>	<b>Length</b>	<b>Key</b>
userid	Varchar	10	
transid	Int	4	PrimaryKey
transdate	datetime	8	
fromaccnum	Varchar	10	
toaccnum	Varchar	10	
accode	Int	4	
balance	Money	8	

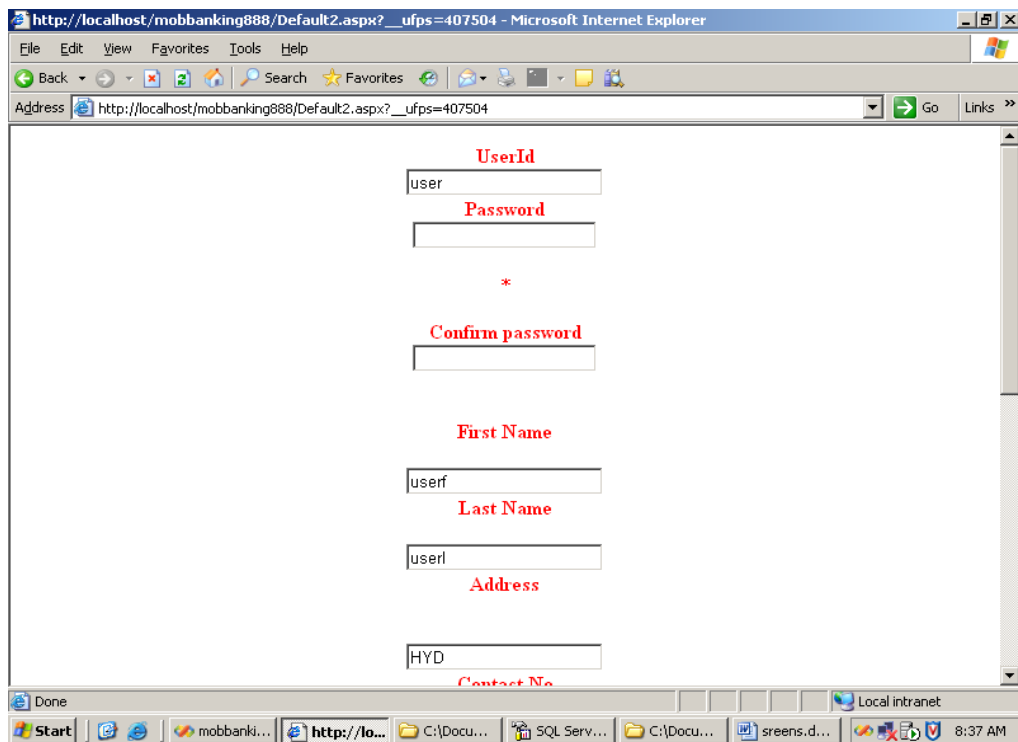
**9. Table Name :-- USERLOGIN**

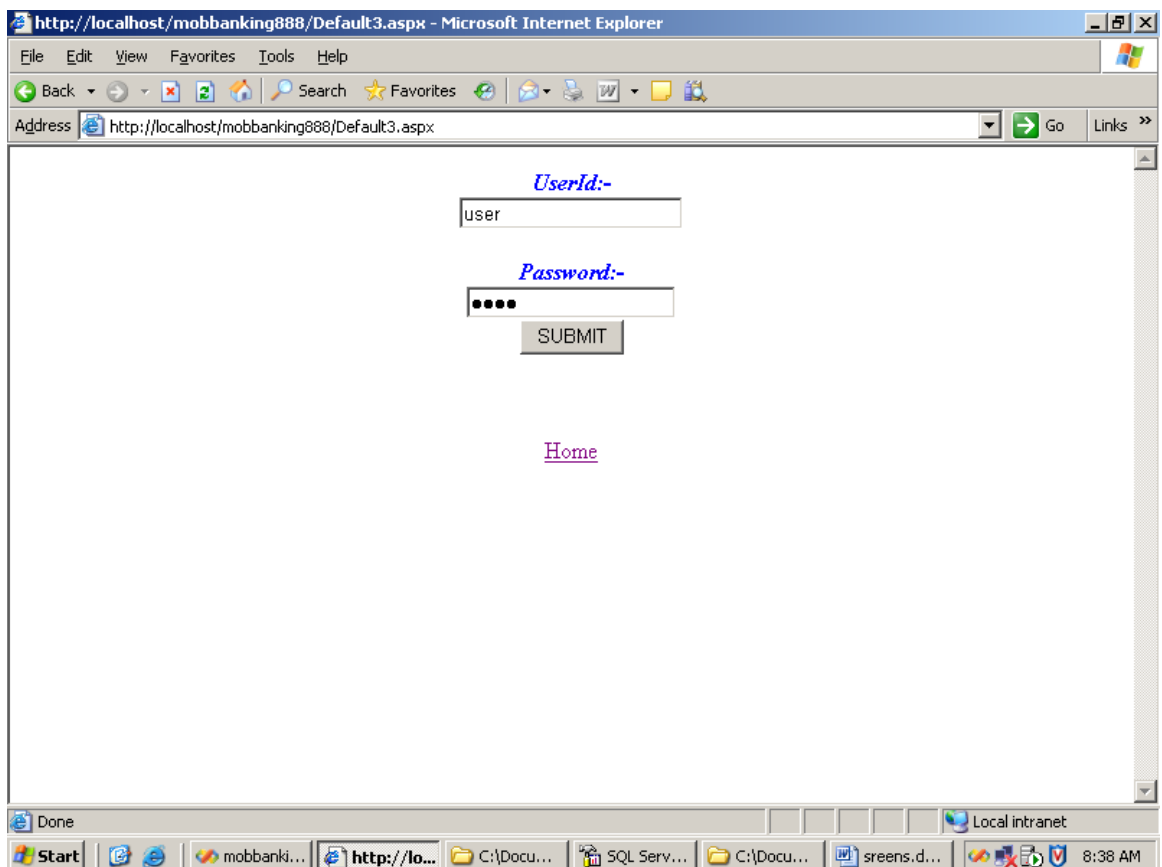
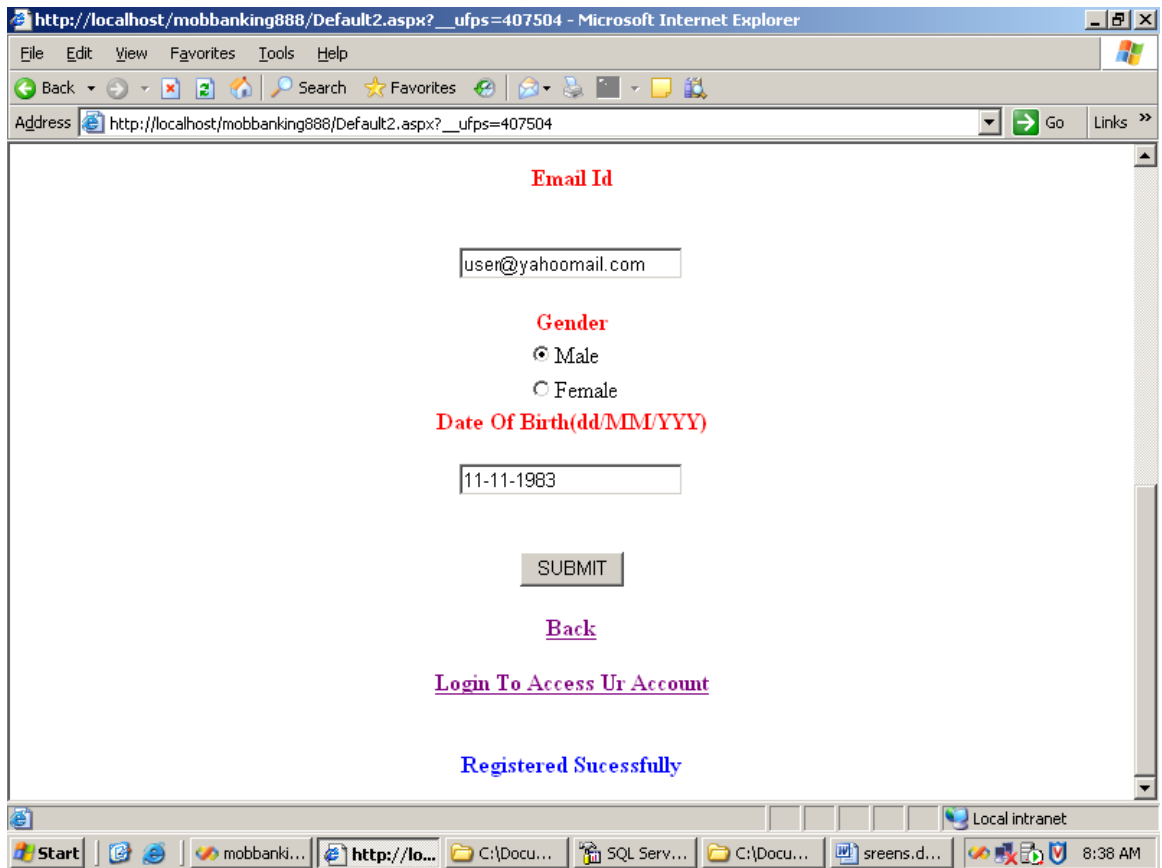
<b>ColumnName</b>	<b>Data Type</b>	<b>Length</b>	<b>Key</b>
userid	Varchar	20	PrimaryKey
password	Varchar	10	
address	Varchar	50	
contactno	Numeric	9	
email_id	Varchar	30	
firstname	Varchar	10	
lastname	Varchar	10	
dob	Varchar	50	
gender	Varchar	7	

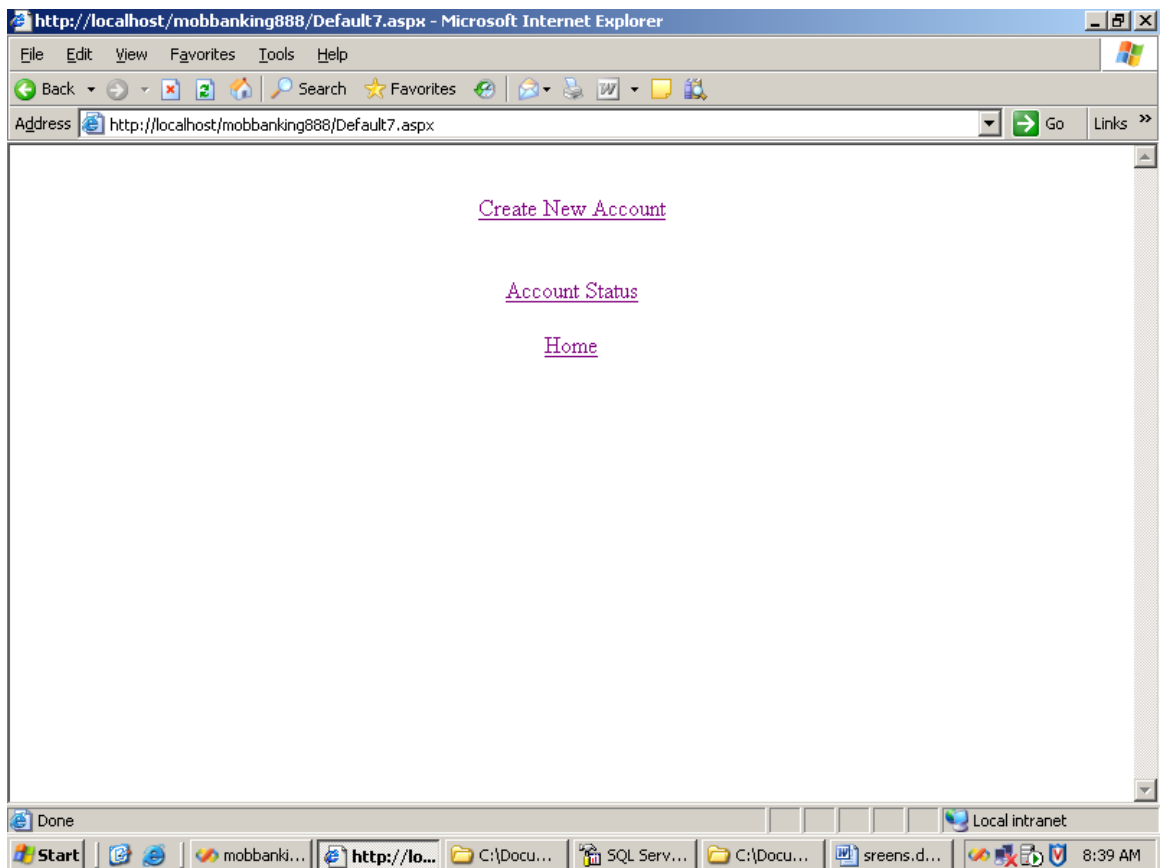
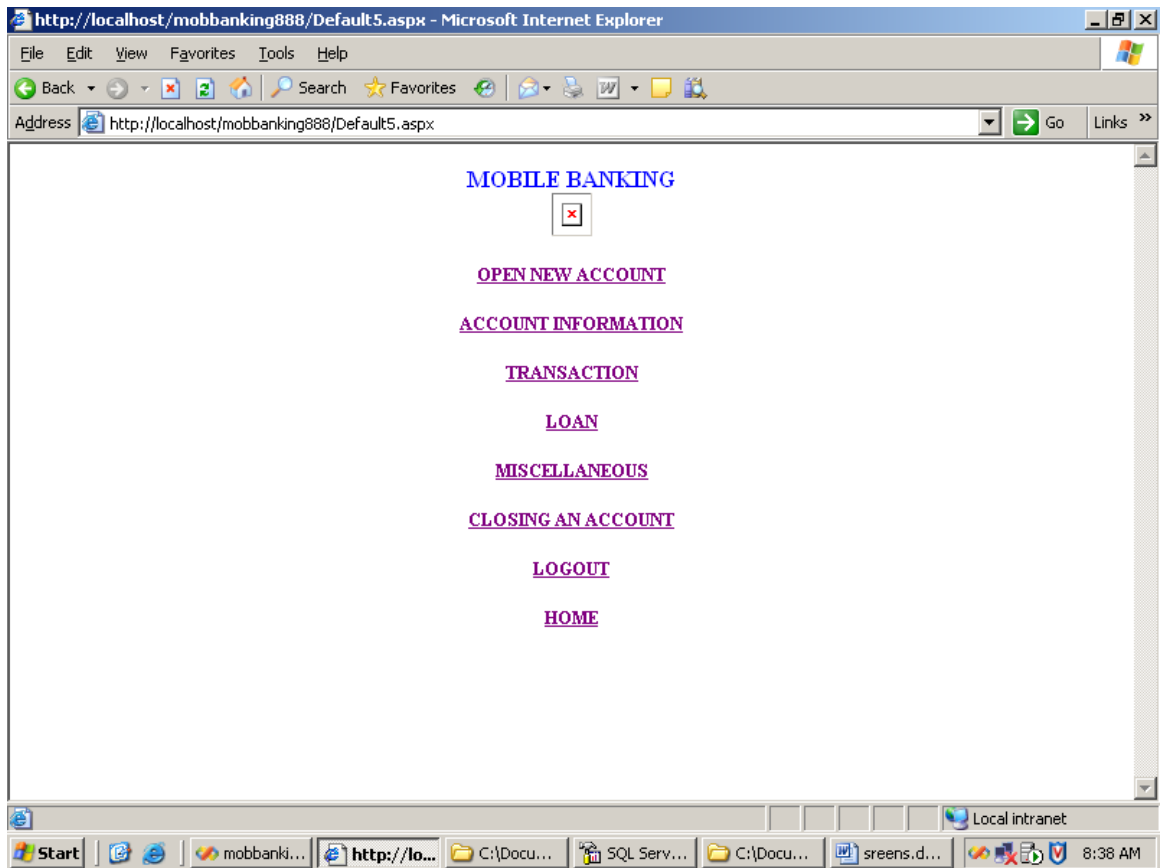
**10. Table Name :-- WITHDRAWDET**

<b>ColumnName</b>	<b>Data Type</b>	<b>Length</b>	<b>Key</b>
userid	varchar	10	
accnum	varchar	10	
wbalance	money	8	
accode	Int	4	
dow	datetime	8	
modeofpay	varchar	15	
ddchnum	Nchar	22	

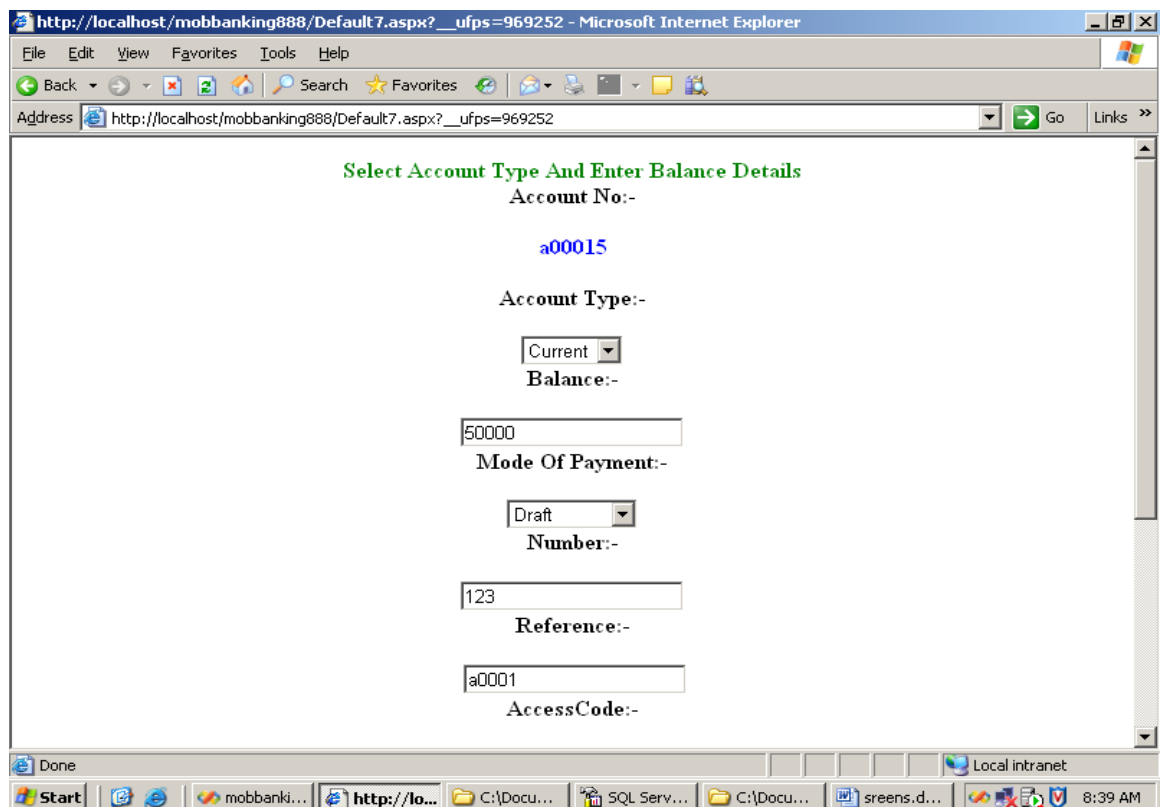
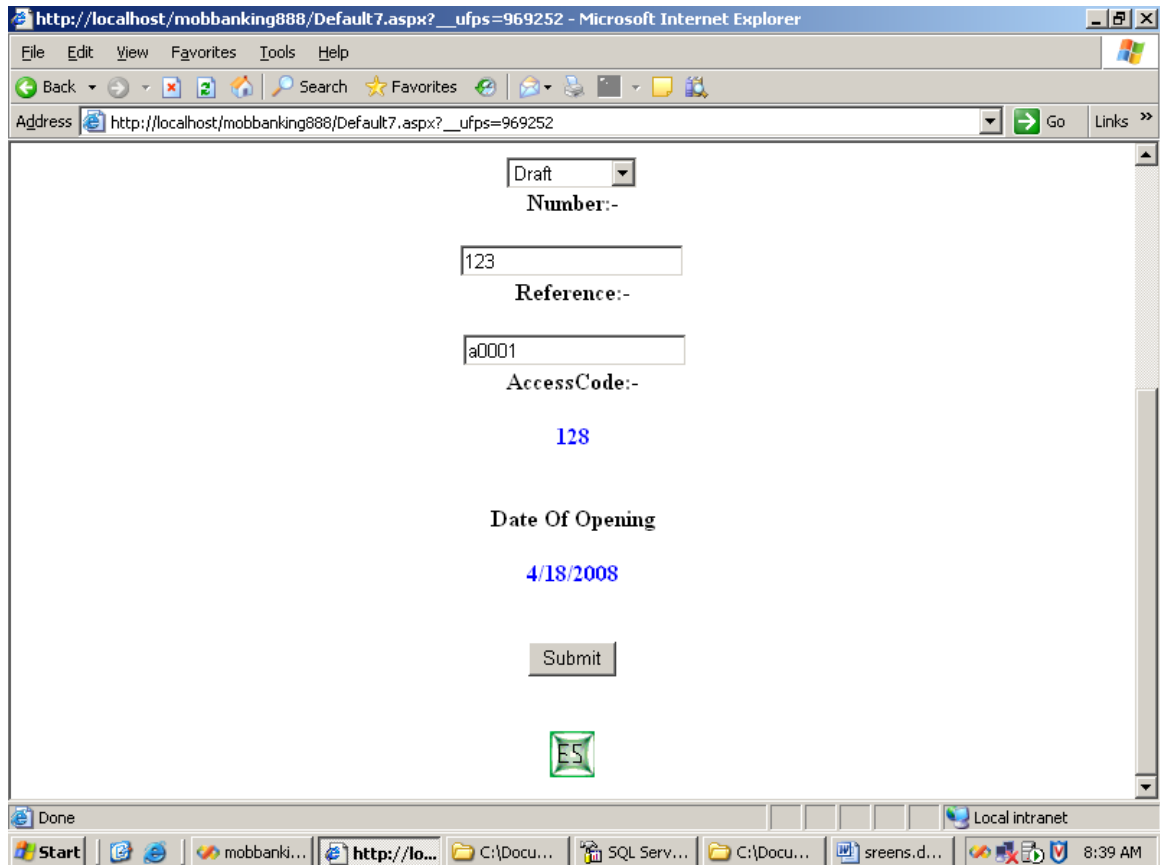
# 3. OUTPUT SCREENS

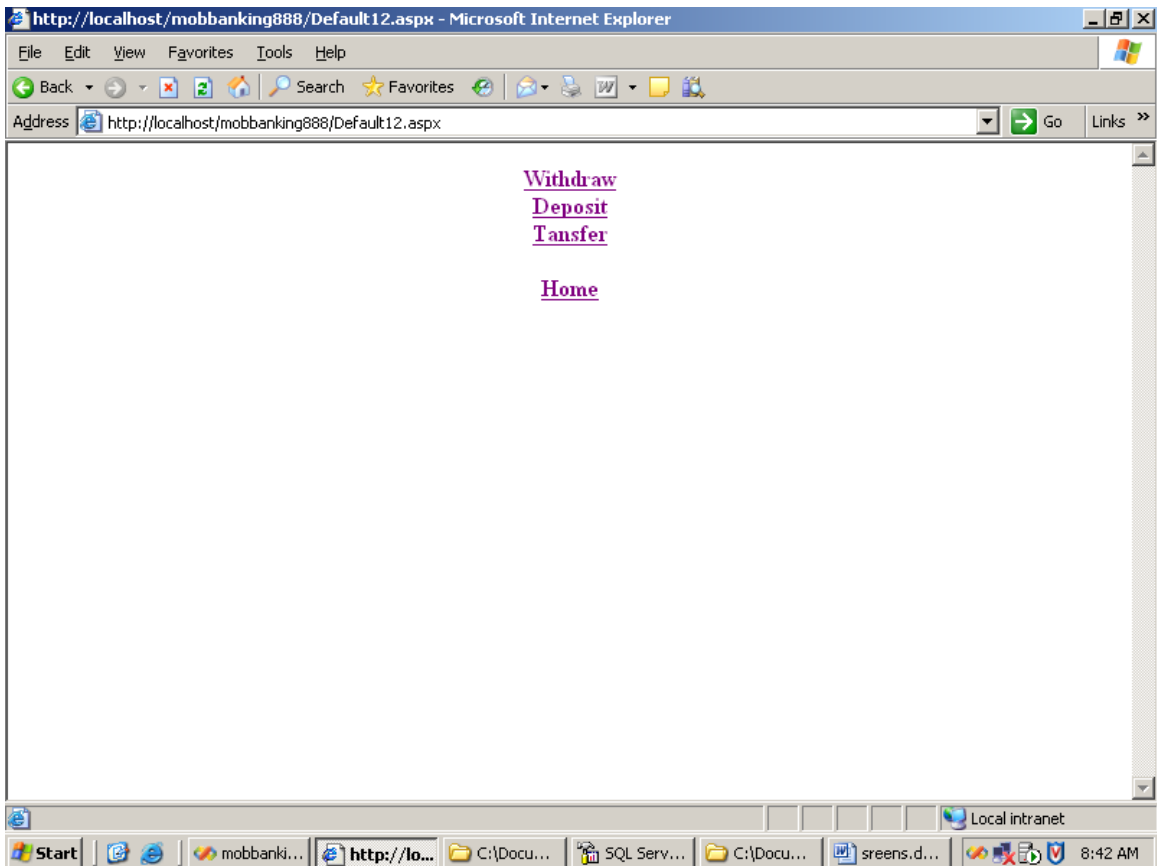
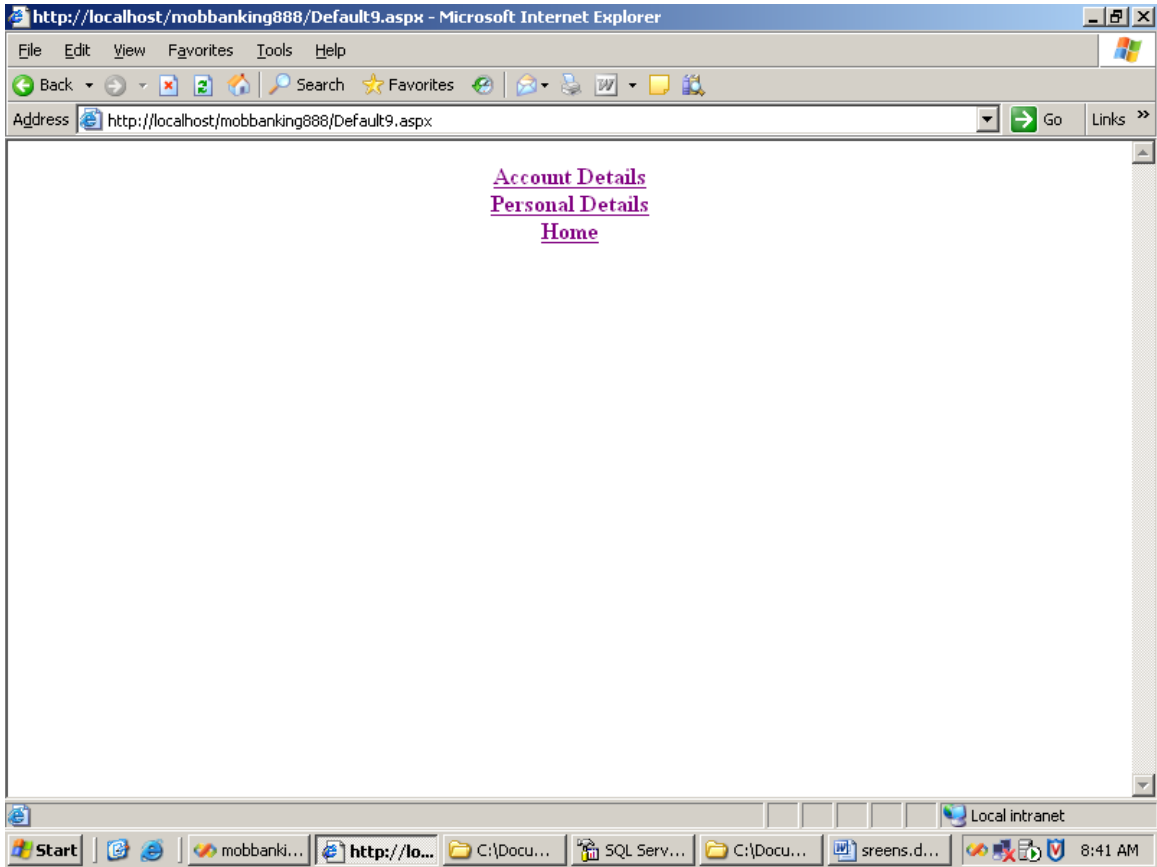


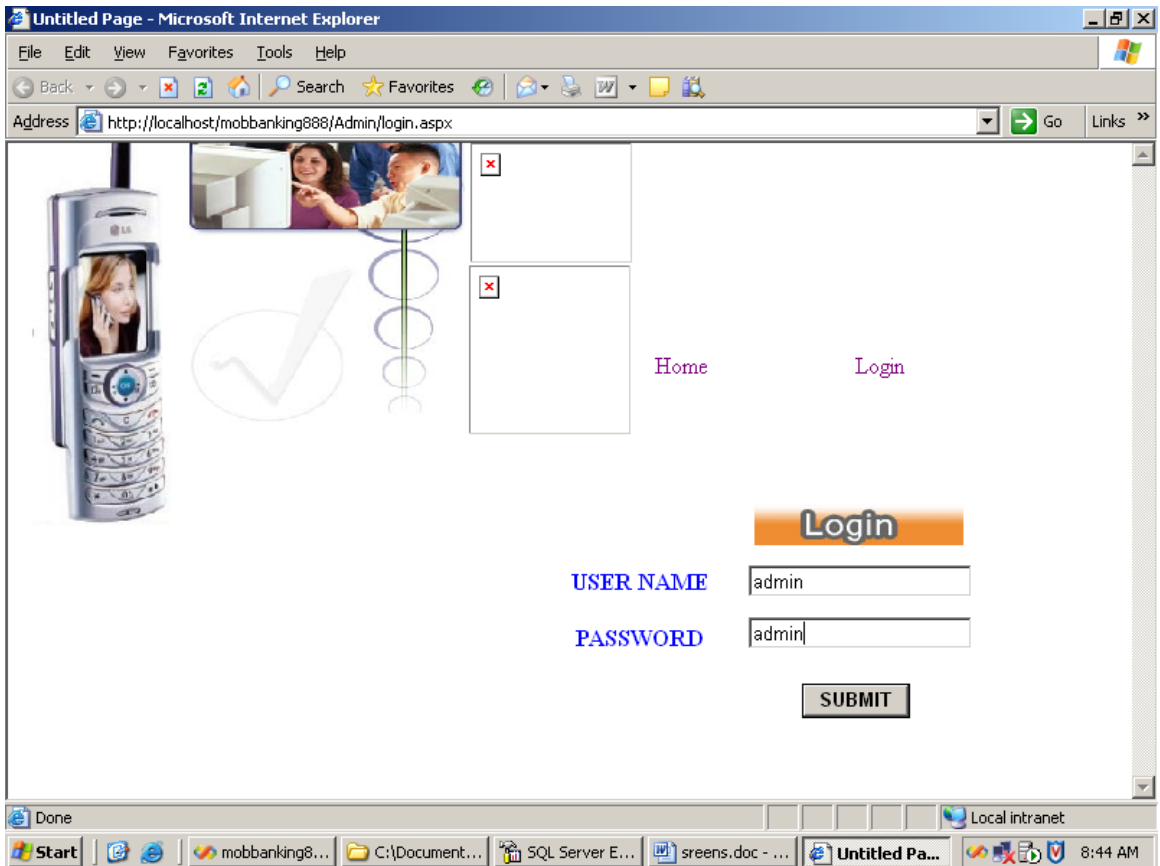
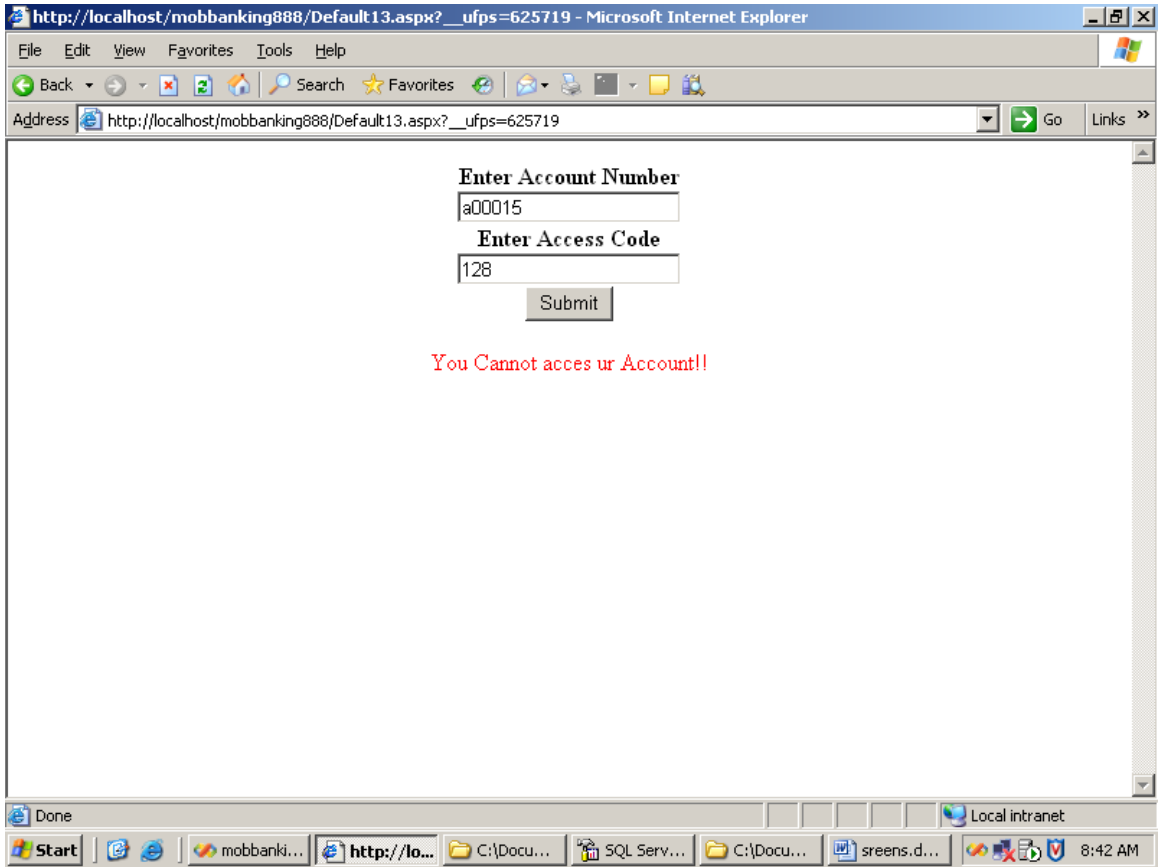


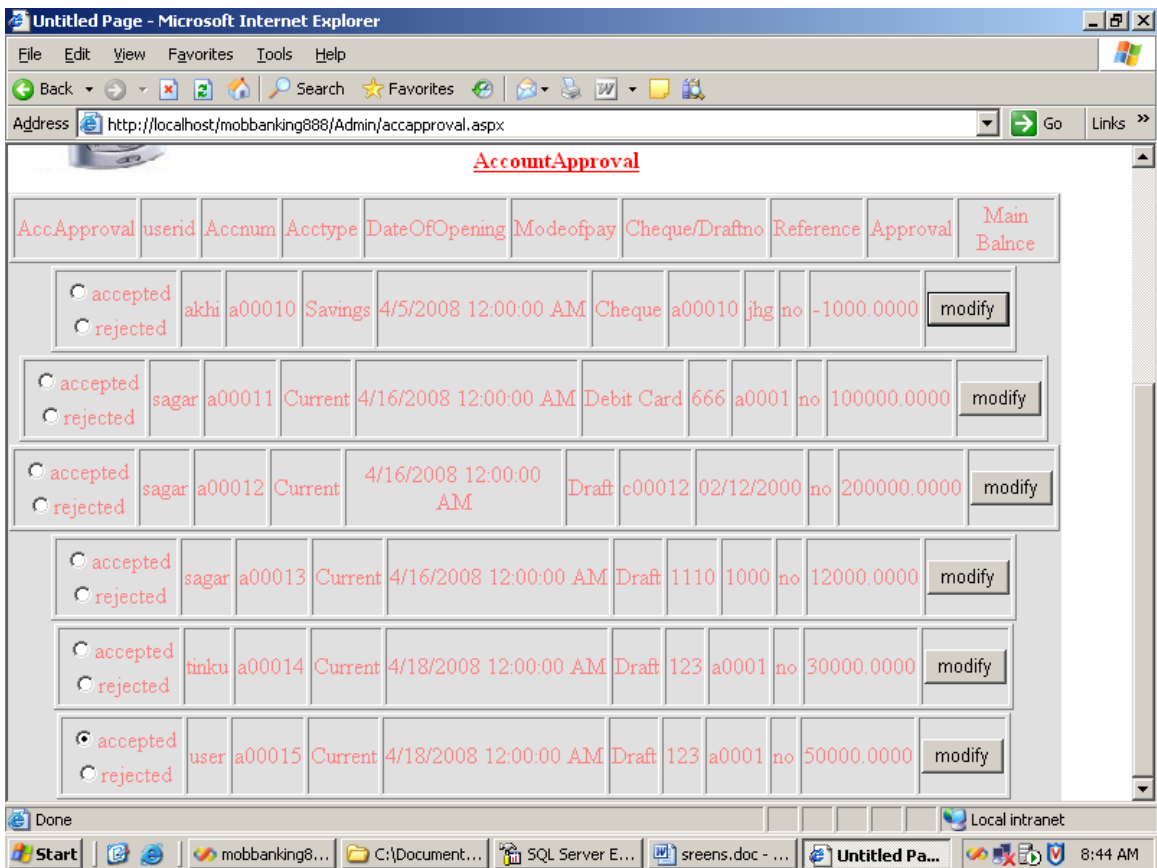
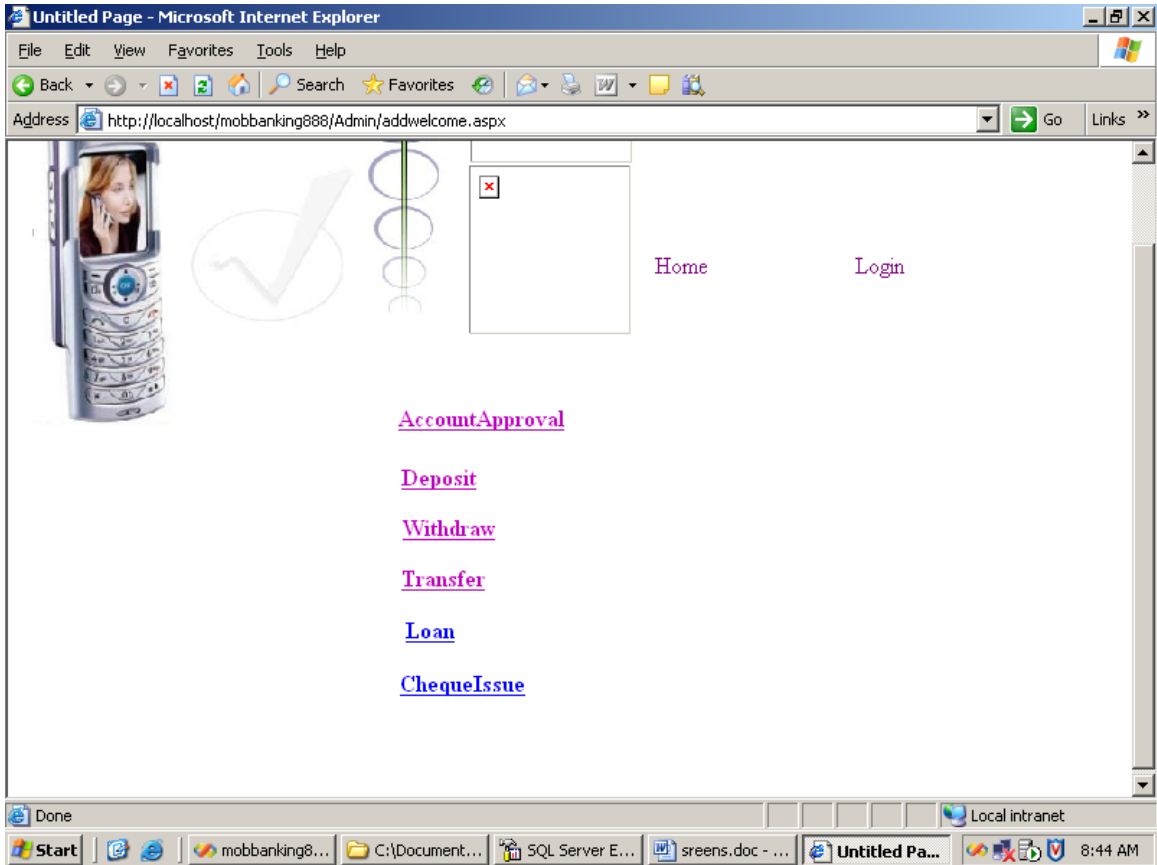


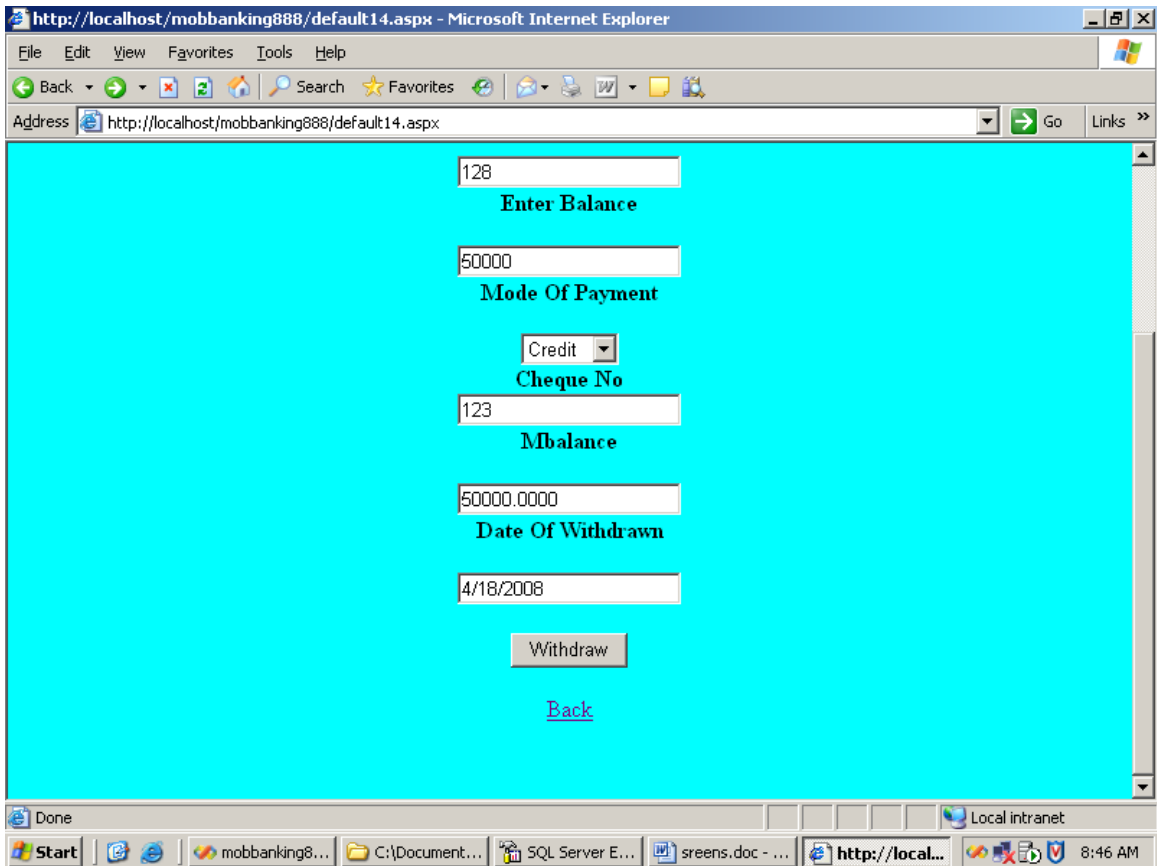
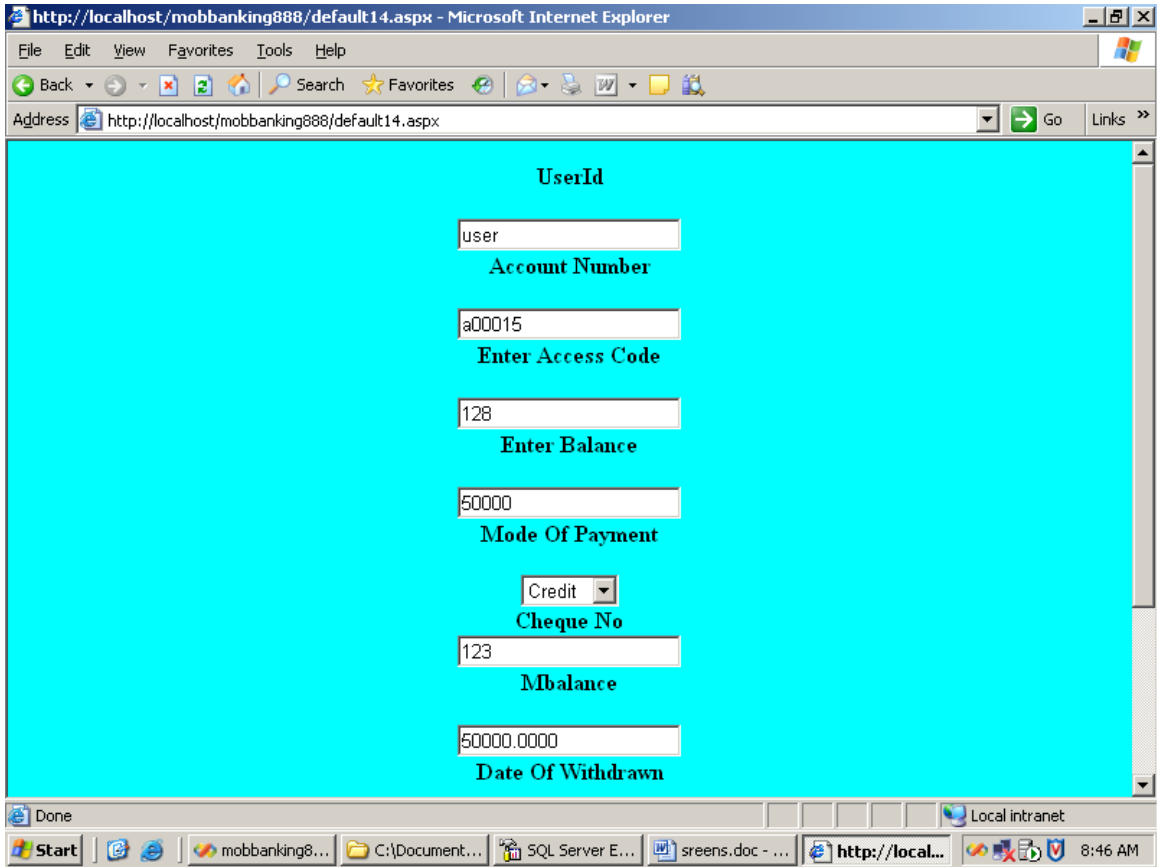


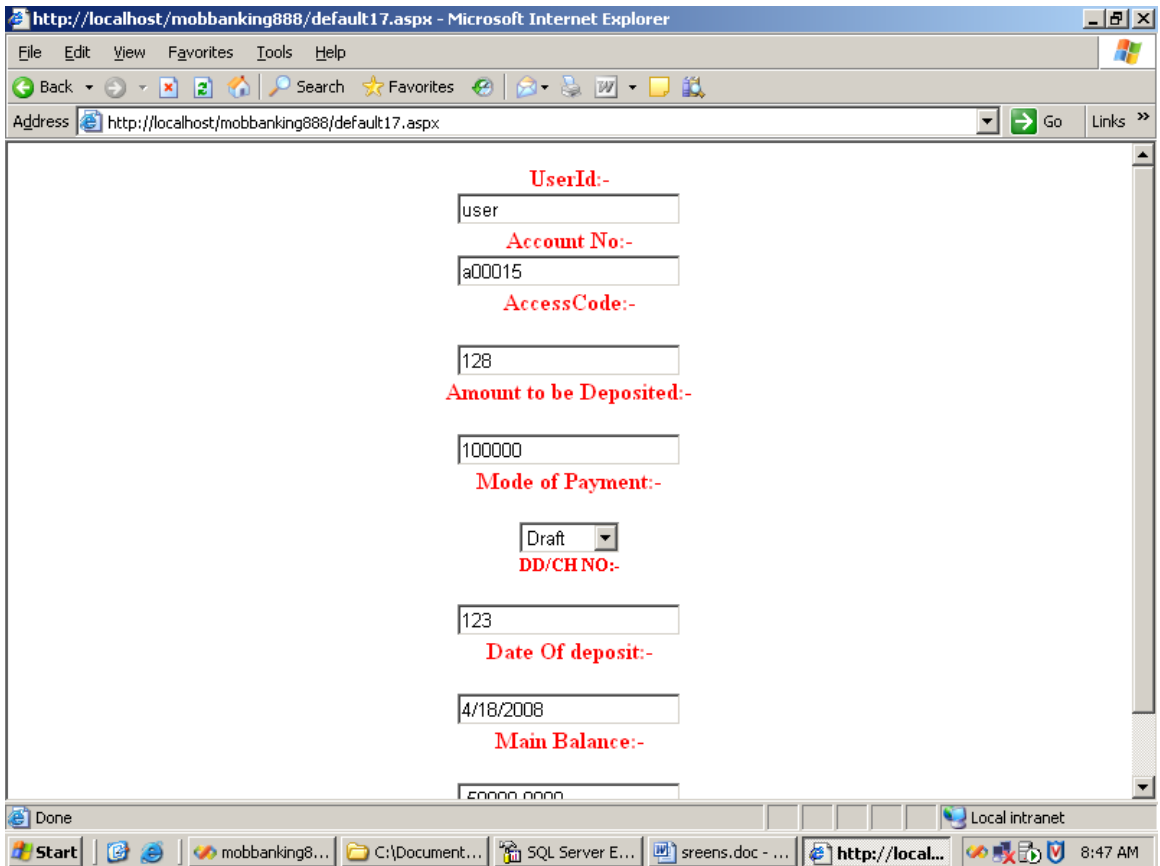
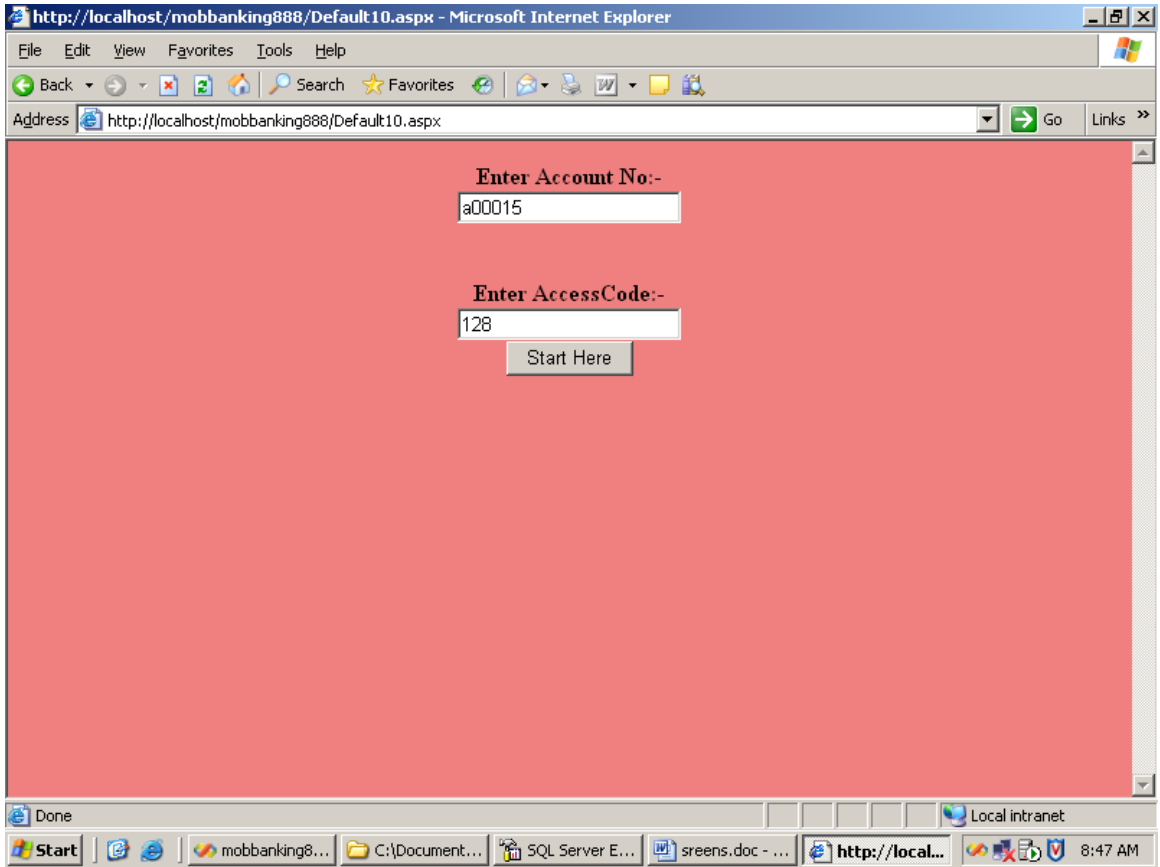


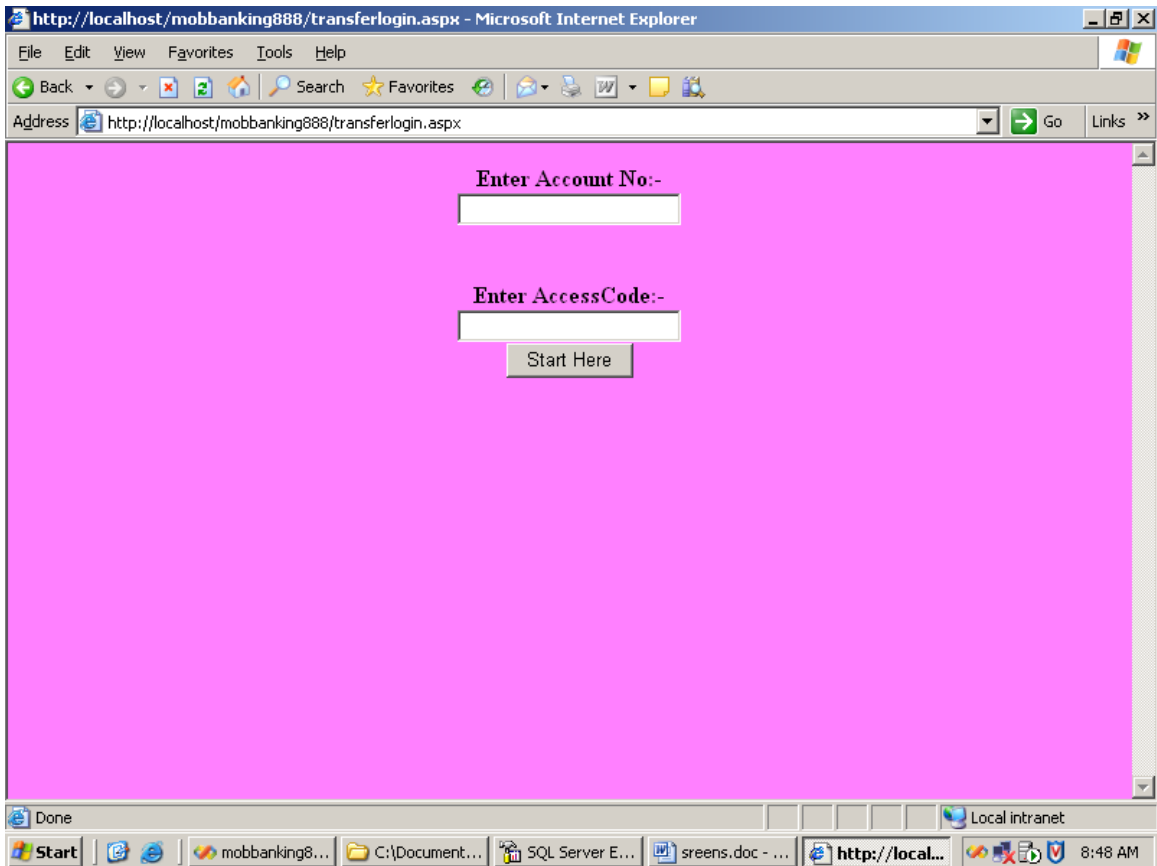
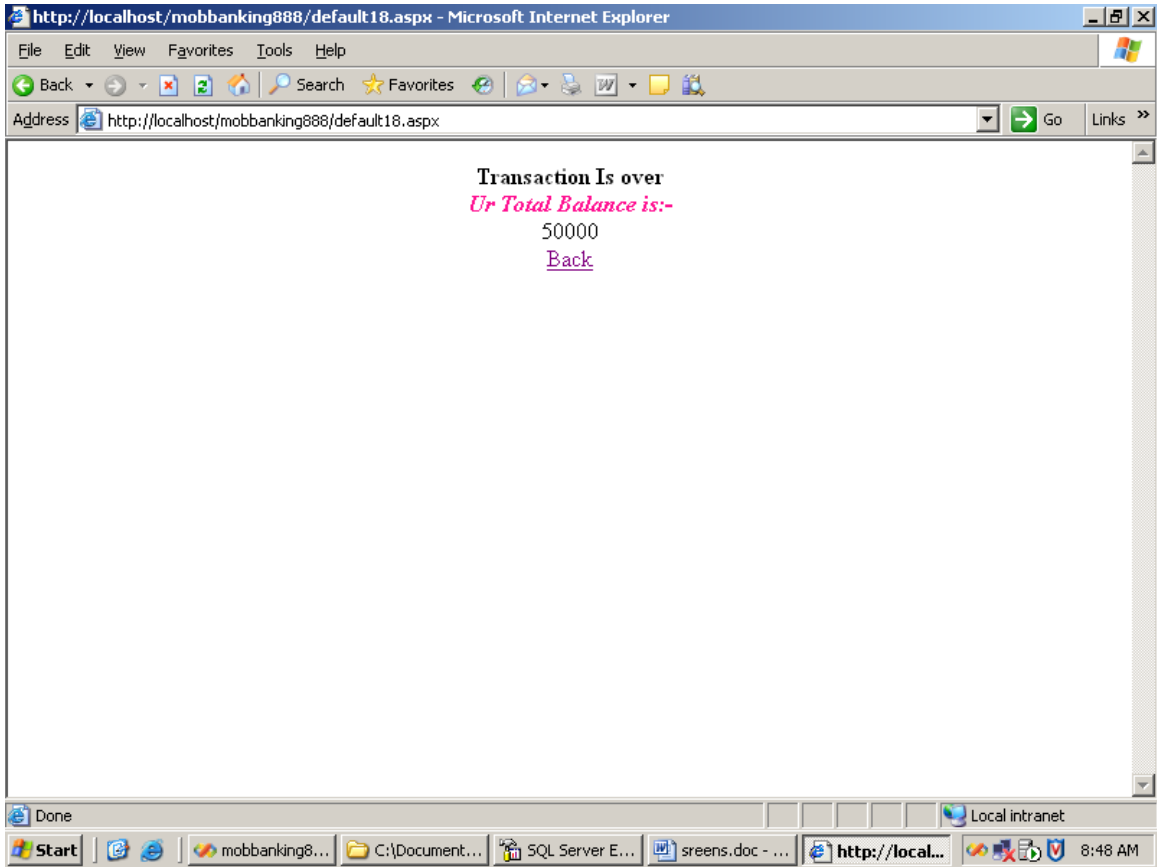


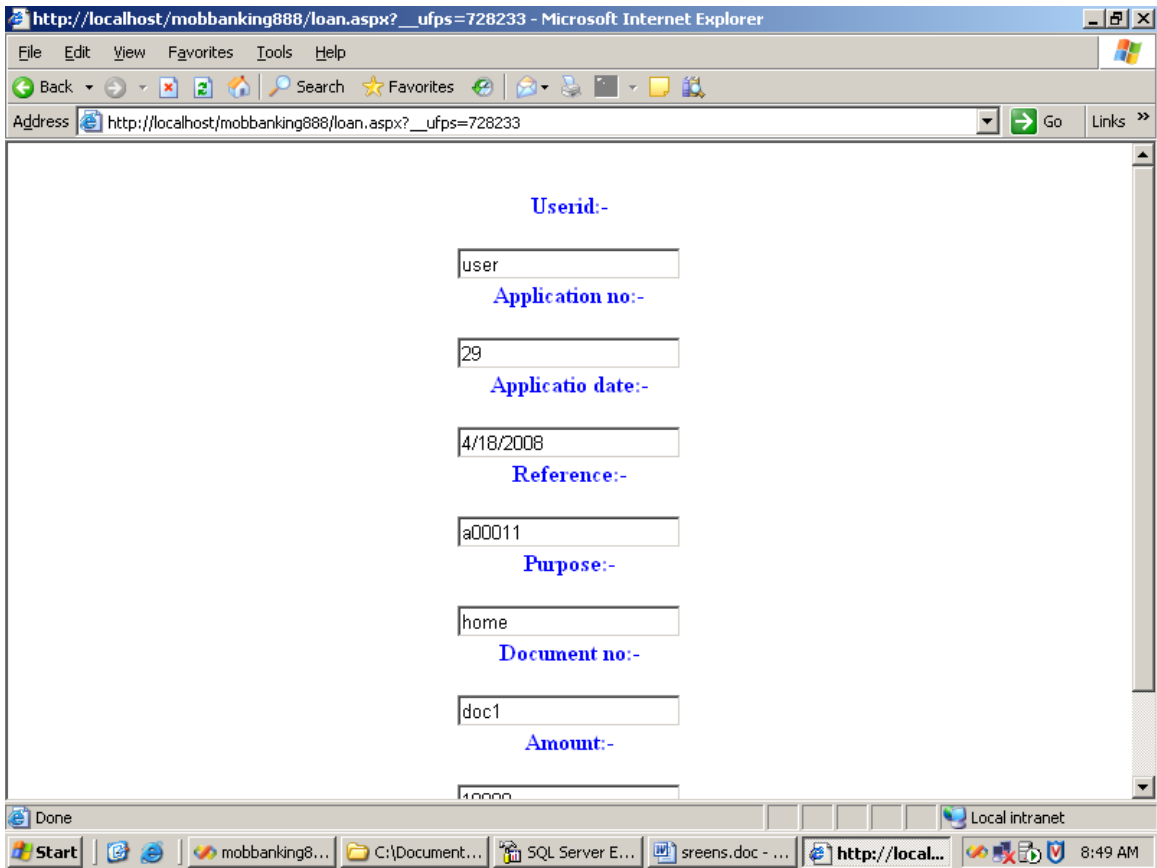
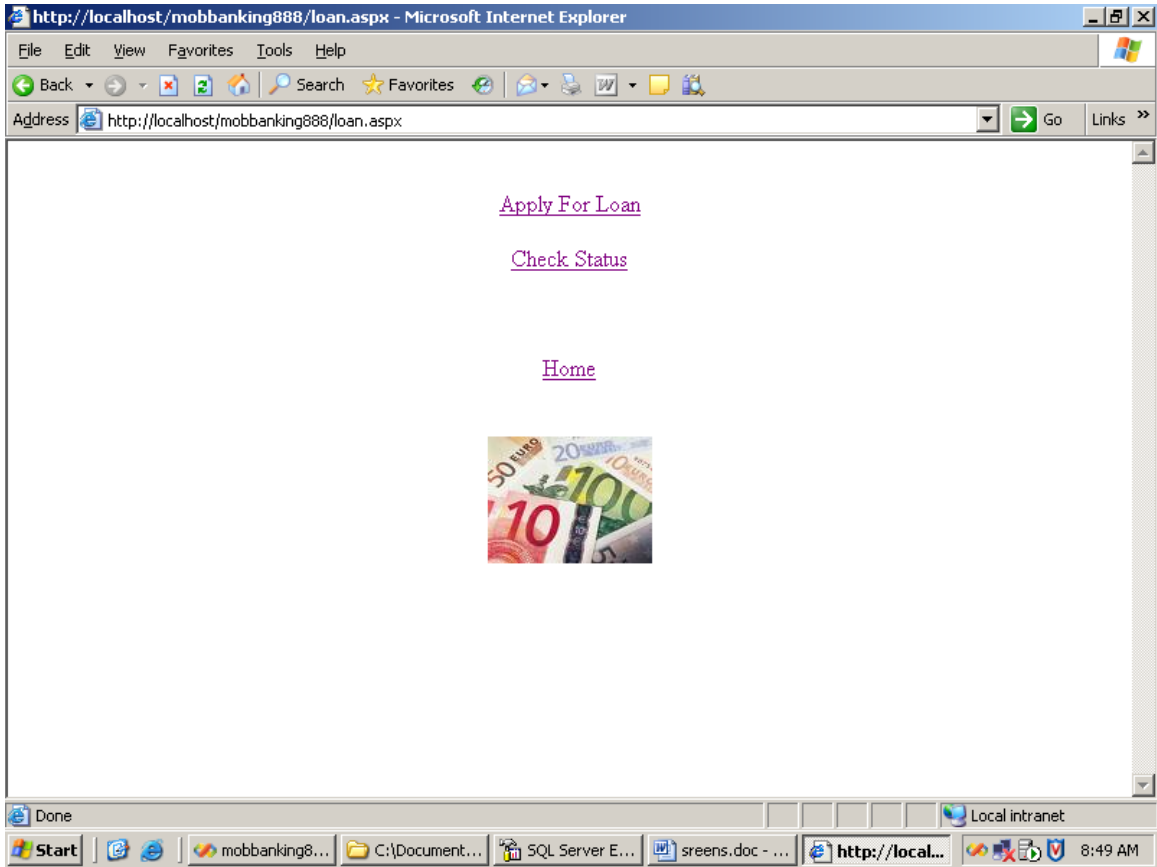




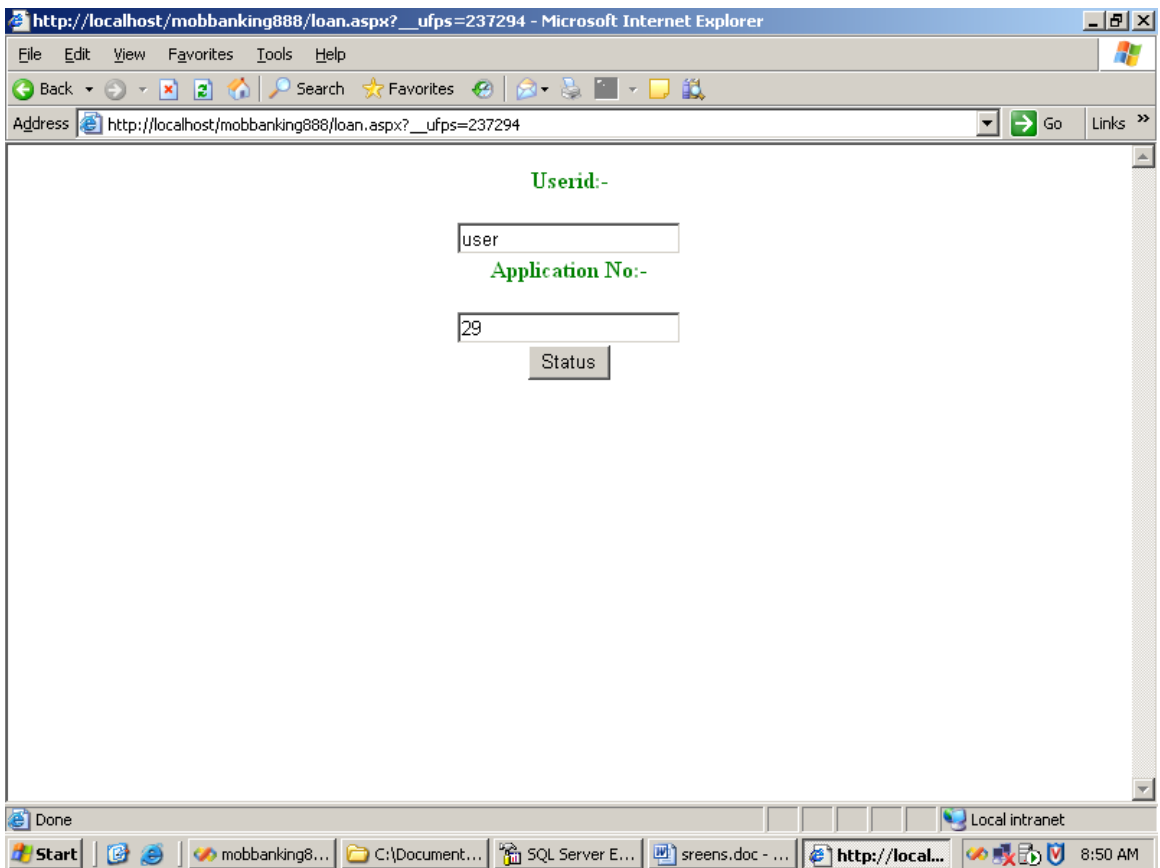
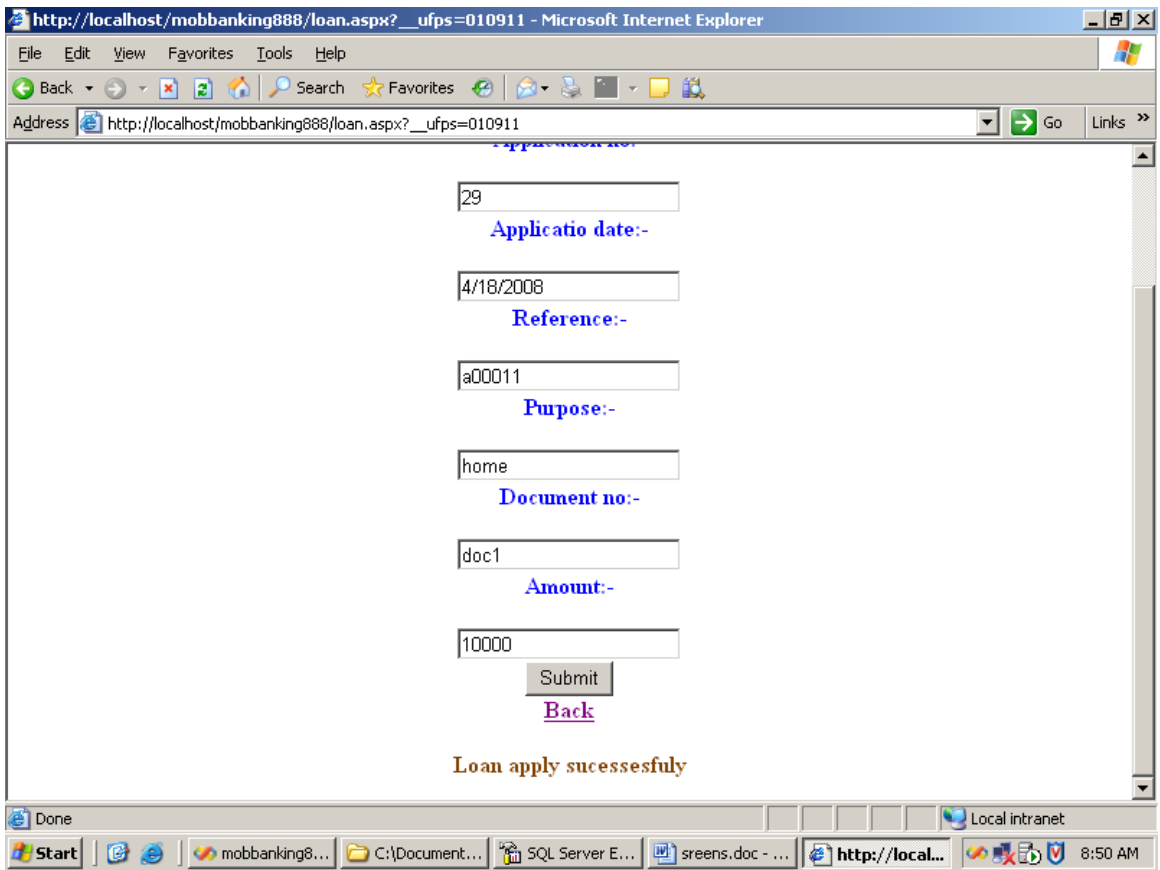












Microsoft Internet Explorer window: Untitled Page - Microsoft Internet Explorer

Address: http://localhost/mobbanking888/Admin/Loan.aspx

AccApproval	AppNo	AccNo	RefAccNo	Purpose	DocNo	AppDate	LoanAmount	ReApproval	Approval
<input type="radio"/> Approved	16	12:00:00	akhi sirisha	car	28	4/5/2008	1000.0000	yes	no <a href="#">modify</a>
<input type="radio"/> Rejected		AM							
<input type="radio"/> Approved	18	12:00:00	akhi sirisha	car	28	4/5/2008	1000.0000	yes	no <a href="#">modify</a>
<input type="radio"/> Rejected		AM							
<input type="radio"/> Approved	20	12:00:00	akhi siri	home	26	4/5/2008	1000.0000	yes	no <a href="#">modify</a>
<input type="radio"/> Rejected		AM							
<input type="radio"/> Approved	23	12:00:00	akhi sha	home	26	4/5/2008	1000.0000	yes	no <a href="#">modify</a>
<input type="radio"/> Rejected		AM							
<input checked="" type="radio"/> Approved	27	12:00:00	tinku a0001	st doc1	10000.0000	4/18/2008	10000.0000	yes	no <a href="#">modify</a>
<input type="radio"/> Rejected		AM							
<input type="radio"/> Approved	29	12:00:00	user a00011	home doc1	10000.0000	4/18/2008	10000.0000	yes	no <a href="#">modify</a>
<input type="radio"/> Rejected		AM							

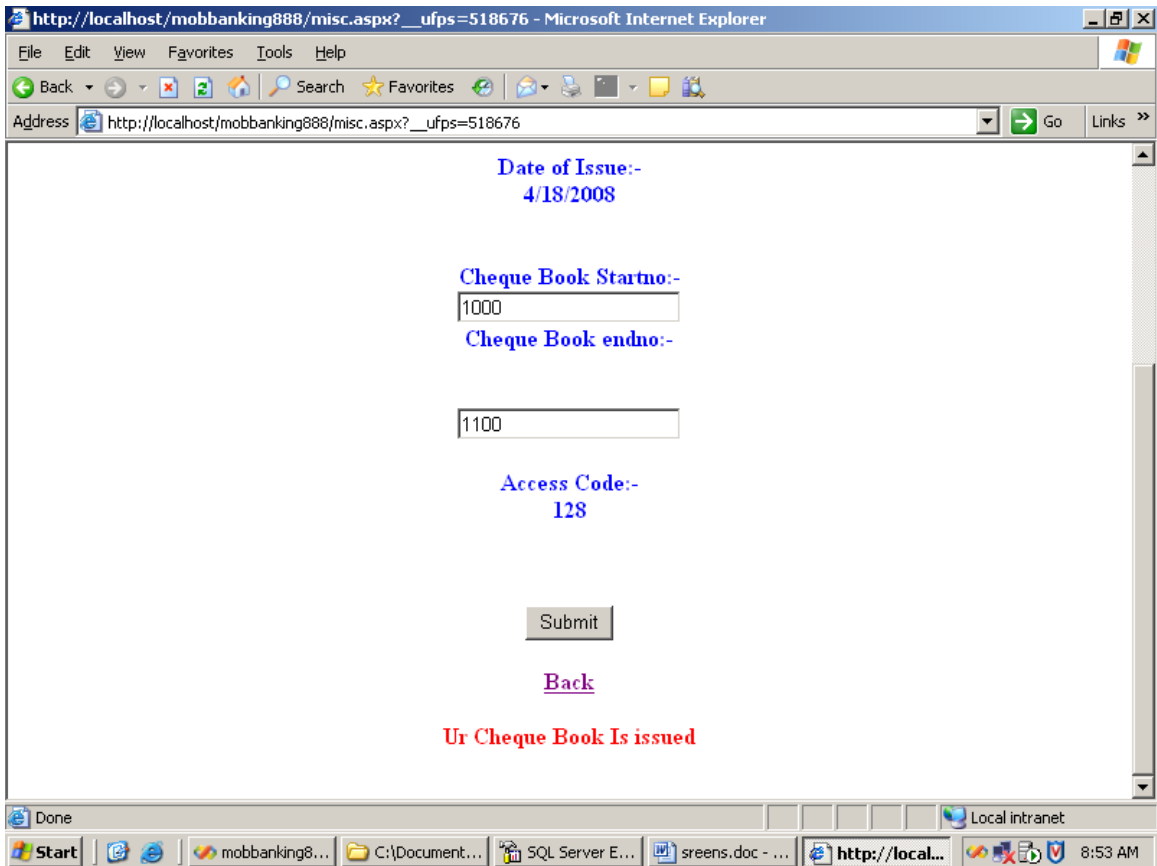
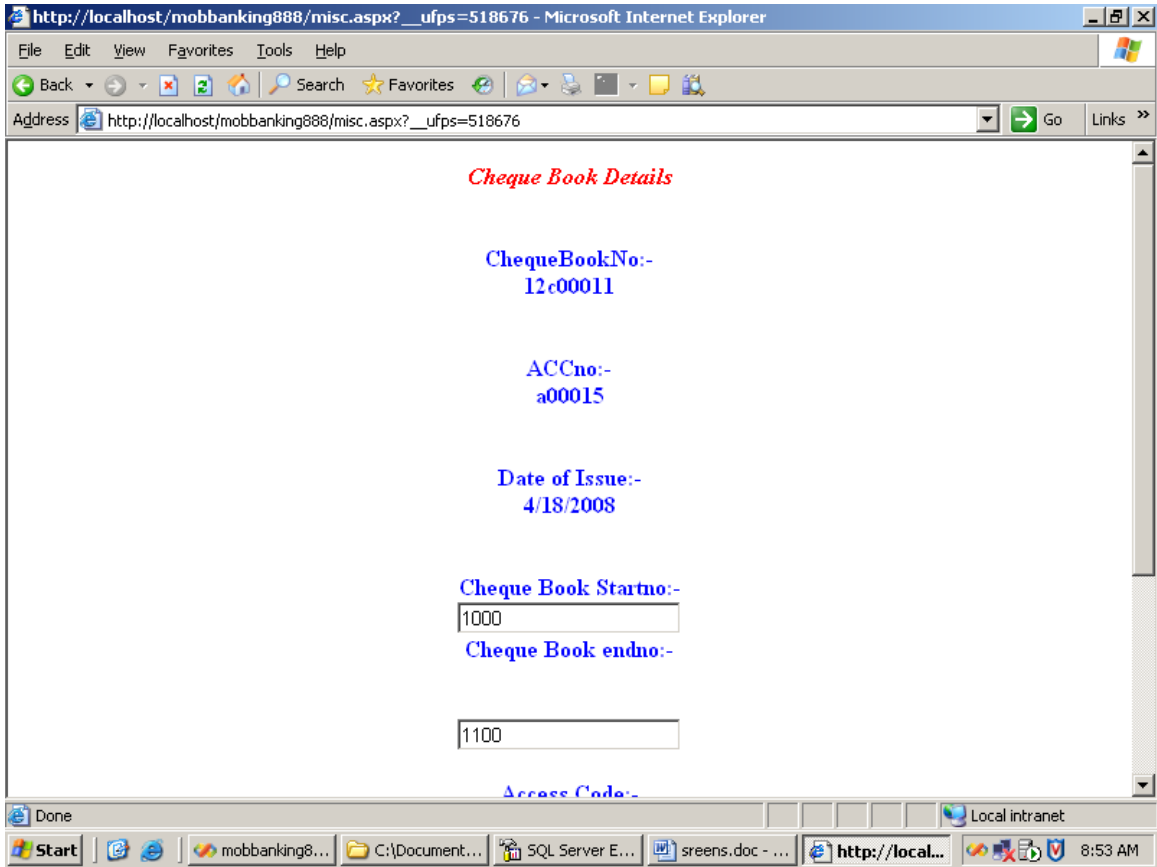
Taskbar: Start, mobbanking888, C:\Document..., SQL Server E..., screens.doc - ..., Untitled Pa..., 8:51 AM

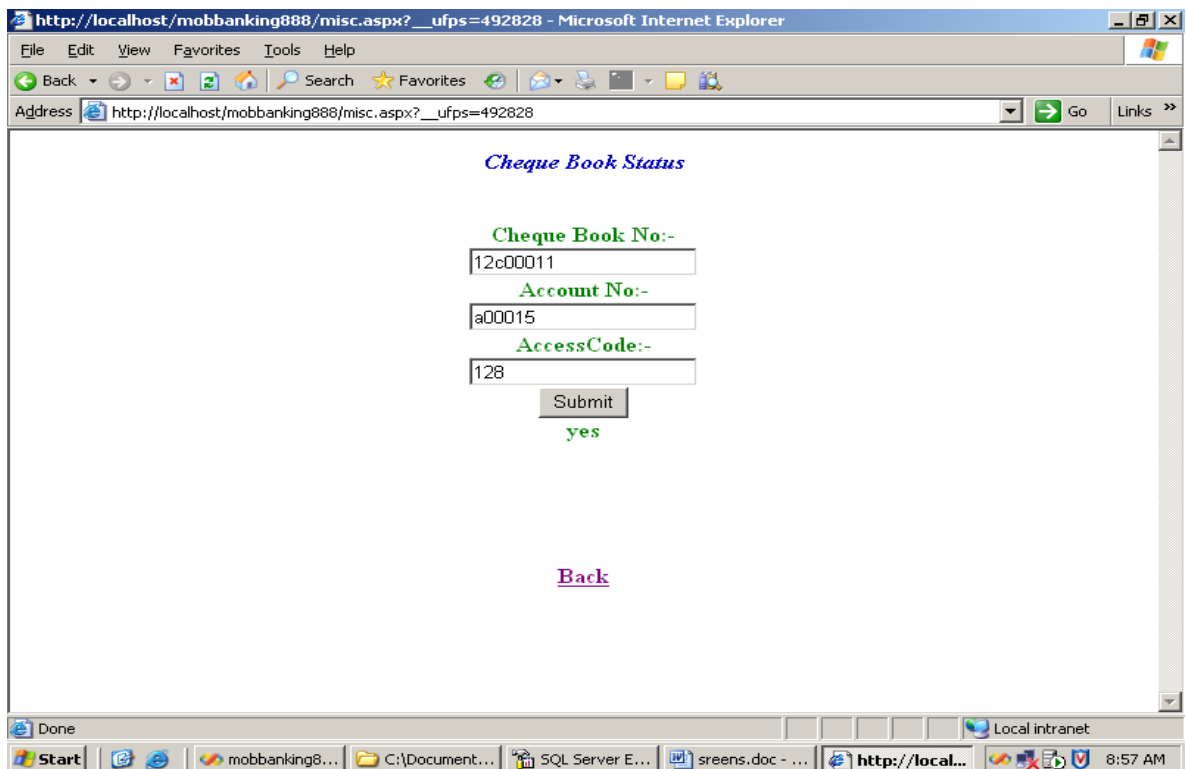
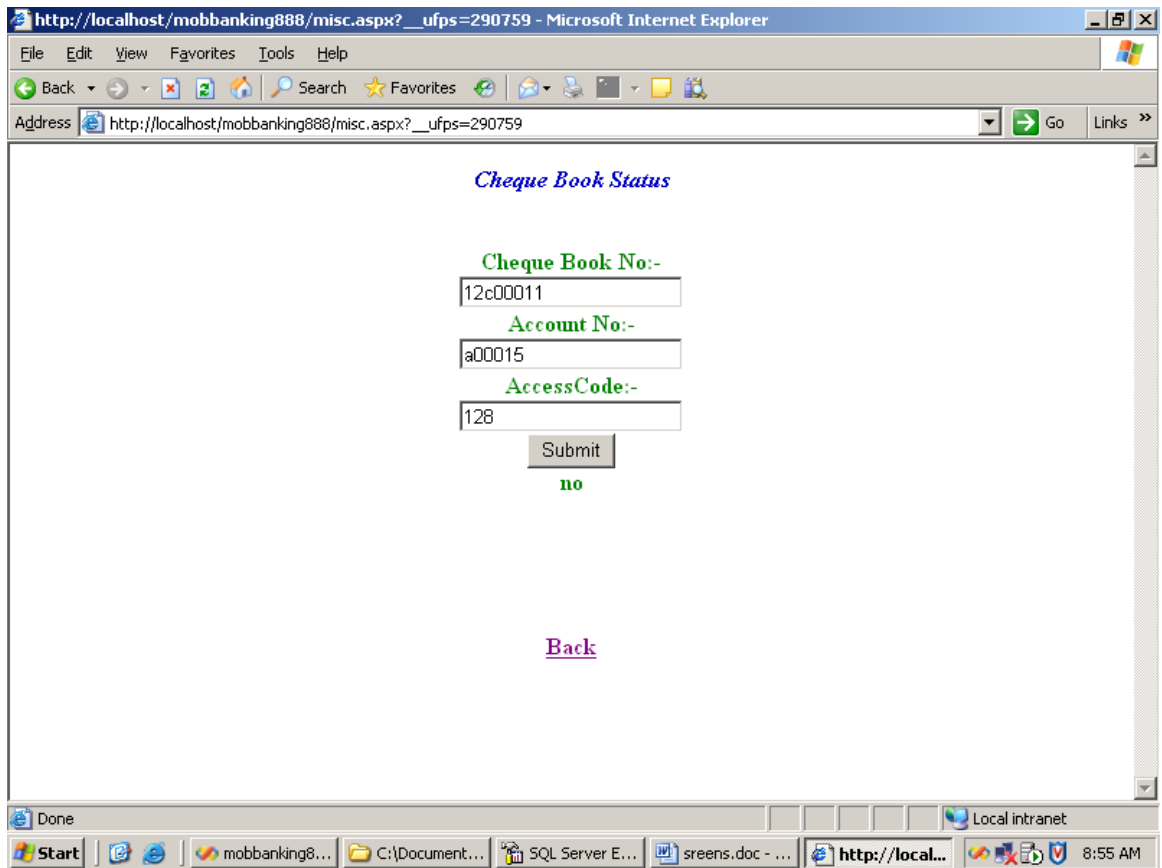
Microsoft Internet Explorer window: http://localhost/mobbanking888/misc.aspx - Microsoft Internet Explorer

Address: http://localhost/mobbanking888/misc.aspx

[ChequeBookIssue](#)  
[ChequeBook Status](#)  
[Stop Payment](#)  
  
[Back](#)

Taskbar: Done, Local intranet, Start, mobbanking888, C:\Document..., SQL Server E..., screens.doc - ..., http://local..., 8:52 AM





Microsoft Internet Explorer window showing the "Deposit List" page. The address bar indicates the URL: http://localhost/mobbanking888/Admin/Deposit.aspx.

### Deposit List

UserId	Accnum	dbalance	DOD	ModeOfPay	ddchnum
srimays	a0002	2000.0000	2/23/2008 12:00:00 AM	Cheque	2222
srimays	a0002	2000.0000	2/23/2008 12:00:00 AM	Draft	
srimays	a0002	50000.0000	2/26/2008 12:00:00 AM	Cheque	567345
ss	a0005	5000.0000	3/25/2008 12:00:00 AM	Draft	123
ss	a0005	4000.0000	3/28/2008 12:00:00 AM	Draft	122
			4/1/2008		

The browser's taskbar shows the following open applications: Start, Internet Explorer, mobbanking8..., C:\Document..., SQL Server E..., screens.doc - ..., and the current page. The system clock shows 9:00 AM on a local intranet.

Microsoft Internet Explorer window showing the "Withdraw list" page. The address bar indicates the URL: http://localhost/mobbanking888/Admin/withdraw.aspx.

### Withdraw list

Userid	Accnum	wbalance	dow	modeofpay	DDCHNUM	userid	accnum	Wbalance	dow	m
sss	a					sss	a			
srimays	a0002	308988.0000	2/22/2008 12:00:00 AM	Credit	22	srimays	a0002	308988.0000	2/22/2008 12:00:00 AM	C
srimays	a0002	3221.0000	2/22/2008 12:00:00 AM	cheque	333	srimays	a0002	3221.0000	2/22/2008 12:00:00 AM	c
srimays	a0002	3221.0000	2/22/2008 12:00:00 AM	cheque	433	srimays	a0002	3221.0000	2/22/2008 12:00:00 AM	c
srimays	a0002	1100.0000	2/22/2008 12:00:00 AM	cheque	2121	srimays	a0002	1100.0000	2/22/2008 12:00:00 AM	c
srimays	a0002	50000.0000	2/26/2008 12:00:00 AM	cheque	6767690	srimays	a0002	50000.0000	2/26/2008 12:00:00 AM	c

The browser's taskbar shows the following open applications: Start, Internet Explorer, mobbanking8..., C:\Document..., SQL Server E..., screens.doc - ..., and the current page. The system clock shows 9:00 AM on a local intranet.

# 4. QR-BARCODE GENERATOR

## 4.1. .NET QR-Code Barcode Introduction

QR-Code is also known as Denso Barcode, QRCode, Quick Response Code, JIS X 0510, ISO/IEC18004.

## 4.2. Compatibility:

Barcode for .NET component is compatible with ISO/IEC 18004 (Second edition 2006-09-01).

QR Code is a kind of 2-D (two-dimensional) symbology developed by Denso Wave (a division of Denso Corporation at the time) and released in 1994 with the primary aim of being a symbol that is easily interpreted by scanner equipment.

QR Code is capable of handling all types of data, such as numeric and alphabetic characters, Kanji, Kana, Hiragana, symbols, binary, and control codes.

The symbol versions of QR Code range from Version 1 to Version 40. Each version has a different module configuration or number of modules (the module refers to the black and white dots that make up QR Code). "Module configuration" refers to the number of modules contained in a symbol, commencing with Version 1 (21 x 21 modules) up to Version 40 (177 x 177 modules). Each higher version number comprises 4 additional modules per side. Each QR Code symbol version has the maximum data capacity according to the amount of data, character type and error correction level. In other words, as the amount of data increases, more modules are required to comprise QR Code, resulting in larger QR Code symbols.

QR Code has error correction capability to restore data if the code is dirty or damaged. Four error correction levels are available for users to choose according to the operating environment. Raising this level improves error correction capability but also increases the amount of data QR Code size. To select error correction level, various factors such as the operating environment and QR Code size need to be considered. Level Q or H may be selected for factory environment where QR Code gets dirty, whereas Level L may be selected for clean environment with the large amount of data. Typically, Level M (15%) is most frequently selected. The QR Code error correction feature is implemented by adding a Reed-Solomon Code to the original data.

## 4.3. .NET QR-Code Basic Characteristics

QR Code is a matrix symbology with the following characteristics:

1. Formats: QR Code, with full range of capabilities and maximum data capacity;
2. **Encodable character set:**
  - numeric data (digits 0 - 9);
  - Alphanumeric data (digits 0 - 9; upper case letters A -Z; nine other characters: space, \$ % \* + - . / : );

- byte data (default: ISO/IEC 8859-1);
- Kanji characters.

1. **Version (Symbol size)** (not including quiet zone): 21 x 21 modules to 177 x 177 modules (Versions 1 to 40, increasing in steps of four modules per side).

2. **Maximum QR Code symbol size**, Version 40-L:

- numeric data: 7089 characters
- alphanumeric data: 4296 characters
- Byte data: 2953 characters
- Kanji data: 1817 characters

1. Selectable **error correction level**:

Four levels of Reed-Solomon error correction (referred to as L, M, Q and H in increasing order of capacity) allowing recovery of:

- L 7% of the symbol codewords
- M 15% of the symbol codewords
- Q 25% of the symbol codewords
- H 30% of the symbol codewords

1. **Structured Append**: This allows files of data to be represented logically and continuously in up to 16 QR Code symbols. These may be scanned in any sequence to enable the original data to be correctly reconstructed.
2. **Extended Channel Interpretations**: This mechanism enables data using character sets other than the default encodable set (e.g. Arabic, Cyrillic, Greek) and other data interpretations (e.g. compacted data using defined compression schemes) or other industry-specific requirements to be encoded.
3. **FNC1 Mode**: FNC1 mode is used for messages containing specific data formats. In the "1st position" it designates data formatted in accordance with the GS1 General Specifications. In the "2nd position" it designates data formatted in accordance with a specific industry application previously agreed with AIM Inc. FNC1 mode applies to the entire symbol and is not affected by subsequent mode indicators.

#### 4.4. .NET QR-Code Encoding Data Scope

QRCode Barcode for .NET, ASP.NET supports:

- numeric data (digits 0 - 9);
- alphanumeric data (digits 0 - 9; upper case letters A -Z; nine other characters: space, \$ % \* + - . / : );
- byte data (default: ISO/IEC 8859-1);
- Kanji characters.

## 5. CONCLUSION

It has been a great pleasure for me to work on this exciting and challenging project. This project proved good for me as it provided practical knowledge of not only programming in ASP.NET and VB.NET web based application and no some extent Windows Application and SQL Server, but also about all handling procedure related with "**PROJECT NAME**". It also provides knowledge about the latest technology used in developing web enabled application and client server technology that will be great demand in future. This will provide better opportunities and guidance in future in developing projects independently.

### **BENEFITS:**

The project is identified by the merits of the system offered to the user. The merits of this project are as follows: -

- It's a web-enabled project.
- This project offers user to enter the data through simple and interactive forms. This is very helpful for the client to enter the desired information through so much simplicity.
- Sometimes the user finds in the later stages of using project that he needs to update some of the information that he entered earlier. There are options for him by which he can update the records. Moreover there is restriction for his that he cannot change the primary data field. This keeps the validity of the data to longer extent.
- Data storage and retrieval will become faster and easier to maintain because data is stored in a systematic manner and in a single database.
- Easier and faster data transfer through latest technology associated with the computer and communication.

### **LIMITATIONS:**

- The size of the database increases day-by-day, increasing the load on the database back up and data maintenance activity.
- Training for simple computer operations is necessary for the users working on the system.



## 6. REFERENCES

- FOR .NET INSTALLATION

[www.support.microsoft.com](http://www.support.microsoft.com)

- FOR DEPLOYMENT AND PACKING ON SERVER

[www.developer.com](http://www.developer.com)

[www.15seconds.com](http://www.15seconds.com)

- FOR SQL

[www.msdn.microsoft.com](http://www.msdn.microsoft.com)

- FOR ASP.NET

[www.msdn.microsoft.com/net/quickstart/aspplus/default.com](http://www.msdn.microsoft.com/net/quickstart/aspplus/default.com)

[www.asp.net](http://www.asp.net)

[www.fmexpense.com/quickstart/aspplus/default.com](http://www.fmexpense.com/quickstart/aspplus/default.com)

[www.asptoday.com](http://www.asptoday.com)

[www.aspfree.com](http://www.aspfree.com)

[www.4guysfromrolla.com/index.aspx](http://www.4guysfromrolla.com/index.aspx)