

Online Finance Management (OFM)

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ABSTRACT

Online Finance Management is a website which would manage the monthly financial activities of an individual or a household. Instead of maintaining these expenses in form of a notebook, we are trying to digitalize the process. This would mean that the user would just need to enter their daily expenses and update them, and the rest of the tracking would be done by the website. The user can maintain their bills as well as their bank accounts from this website, where majority of the work would be done by the system. This would save a lot of hassle on the side of the user.

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CHAPTER 1

INTRODUCTION

1.1 Objectives of the system

The main objectives of this system are:

- Registered user will be able to add the details of their bank accounts.
- They will be able to add their monthly expenses that will help them keep track of the finances during the entire month.
- Their monthly expenses can include their various connections like Gas, Internet Electricity and Phone connections, and their rest of miscellaneous expenses would be under the category of other expenses which would include grocery, personal shopping, travelling etc.
- When the user pays the bills or records any expenses, those changes and the source of the payment will be reflected in the bank account details.
- The user can view their account details anytime they wish to, along with viewing which bills are still to be paid and which ones are already paid.
- The users can retrieve the detailed information about their monthly expenses, which includes where they spent money and the source by which they paid. This information can be retrieved any time. This also helps the user to manage their budget accordingly.

CHAPTER 2

REQUIREMENTS

2.1 System Actors [1]

Administrator [Admin]

Description:

The singular authority which manages the registration of user in OFM. Also includes managing of just the general layout of the system. The admin cannot view any other details except personal details of the user.

KindOf: #Admin

Registered User [User]

Description:

The user manages the bank accounts and connections, as well as adds bills to his various connections and expenses. The user can also set reminders for bills to pay on the required date. The user adds payment for his connection bills and other purchases and also provides the source of payment. User can view the account summary of all the transactions.

KindOf: #User

2.2 Use Cases [1]

User Registration [register]

Description:

The user registers to the system.

Step-by-Step Description:

1. [#User] - The user submits the registration request with his personal and contact details.
2. [#User] – The user receives the notification.

Update Personal Details [updatePersonalDetails]

Description:

The user updates the personal information to the system.

Step-by-Step Description:

1. [#OFM] - System provides a page with user details to update.
2. [#User] - The user submits the new personal details (email address, contact number, name or surname).
3. [#OFM] - The system notifies the user that the details were updated.

Add Bank Account Information [bankAccountInfo]

Description:

The user adds the bank account details to the system. The user may have account details for multiple banks entered one at a time.

Step-by-Step Description:

1. [#User] - The user submits the bank account details of the bank which includes information like the bank account number, the bank name and so on.
2. [#OFM] - The system notifies the user that the details were added to the particular user's account in the system.

Update Bank Details [updateBankDetails]

Description:

The user wants to update his bank details.

Step-by-step Description:

1. [#OFM] - The system provides a page with list of all the Banks where the user has an account.
2. [#User] - The user selects the Bank whose details are to be updated.
3. [#OFM] - The system queries the bank details of the selected bank, and returns those details.
4. [#User] - The user submits the updated information.
5. [#OFM] - The system returns a confirmation message.

Add Connection [addConnection]

Description:

The user adds a connection (i.e. Gas, Electricity, Phone and Internet). The user provides details like connection provider, start date of connection, etc. for the new connection.

Step-by-step Description:

1. [#OFM] - The system provides a page containing the list of connections, and their respective details.
2. [#User] - The user selects the connection and submits the corresponding details.
3. [#OFM] - The system returns a confirmation message.

Update Connection [updateConnection]

Description:

The user wants to update any connection details.

Step-by-step Description:

1. [#OFM] - The system provides a page containing all the connections of user.
2. [#User] - The user submits the new information.
3. [#OFM] - The system returns a confirmation message.

Add Bill [addBill]

Description:

The user wants to add a new bill. The details regarding connection type, bill amount, due date for the bill and reminder for bill (optional) has to be entered.

Step-by-step Description:

1. [#OFM] - The system provides a page where the bill details are to be added.
2. [#User] - The user submits the bill information.
3. [#OFM] - The system returns a confirmation message.

Add Other Expenses [addOtherExpenses]

Description:

User adds any other expenses apart from the connection bills in the system.

Step-by-step Description:

1. [#OFM] - System gives the page for adding expense details.
2. [#User] - User submits the expense details.
3. [#OFM] - System saves the expense and returns a confirmation message.

Make payment [makePayment]

Description:

User adds the payment (made by him for paying any bills or expenses) details in the system.

Step-by-step Description:

1. [#OFM] - System gives the page with list of unpaid bills and purchases done by the user.
2. [#User] - User selects the bill/purchase for what he has done the payment and submits the payment details.
3. [#OFM] - System saves the payment details and returns a confirmation message.

Add Bank Transactions [addBankCredits]

Description:

User adds the bank transactions done outside this system to maintain the balance of the bank account.

Step-by-step Description:

1. [#OFM] - System gives the page with list of bank accounts of the user.
2. [#User] - User selects the bank account and submits the transaction details.
3. [#OFM] - System saves the transaction and returns a confirmation message.

View Account Summary [accountSummary]

Description:

The user can view the account summary. This includes the amount in the bank account, the bill details of the connections and the other expenses. The user can view any of them as he/she chooses

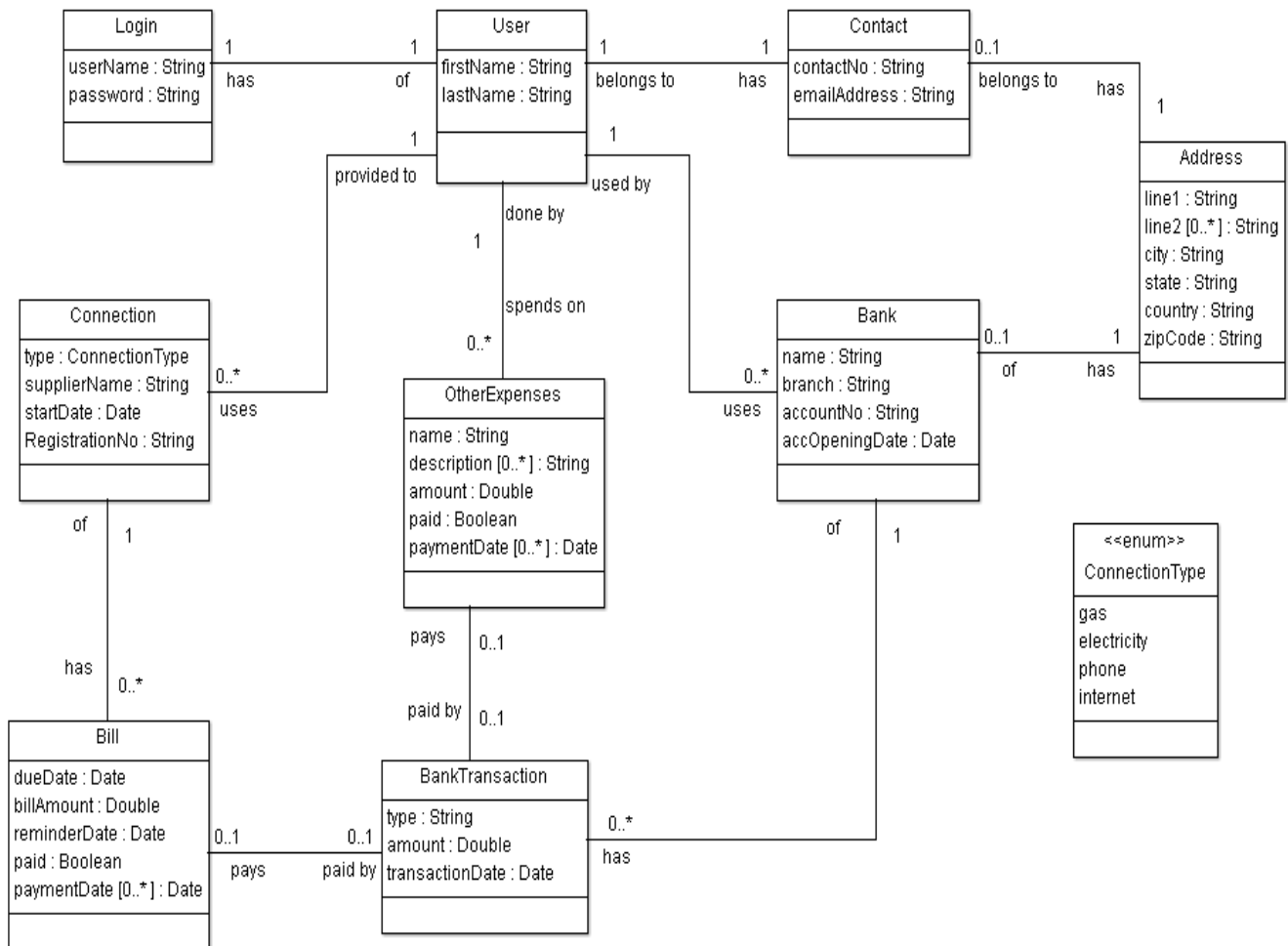
Step-by-Step Description:

1. [#User] - The user selects the field whose information he/she wants to view.
2. [#OFM] – The system fetches the details of the transactions as per the selection made by the user.
3. [#OFM] - The system displays the details of the specified information from the user's account.

CHAPTER 3

DESIGN

3.1 UML Class Diagram:



CHAPTER 4

IMPLEMENTATION

4.1 Software used for Backend

- JDBC with Apache Tomcat Server

4.2 Software used for Frontend

- HTML, CSS
- Java Server Pages (JSP)

4.3 Programming language, Database and Software

- The Programming language used is Java EE
- Database used is MySQL
- We used Eclipse for programming in Java for this system

CHAPTER 5

DISCUSSION

Example 1: Managing various Financial Activities

1. User logs in to the system.
2. On the home page of user, they are provided with various options, using which he/she can manage their financial activities.
3. The options provided are shown below.



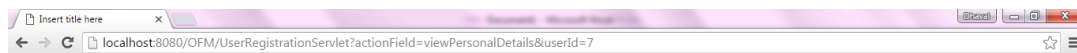
Online Finance Management

Welcome Saloni Shah,
[Update Personal Details](#)
[Add Bank Details](#)
[Update Bank Details](#)
[Add Connection](#)
[Update Connection](#)
[Add Bill](#)
[Add Other Expenses](#)
[Make Payment](#)
[Add Bank transaction](#)
[View Account Summary](#)
[Logout](#)

localhost:8080/OFM/UserRegistrationServlet?actionField=viewPersonalDetails&userId=7

Example 2: Updating Personal Details

1. After logging into the system, the user has the option of updating their personal details which they provided during registration.



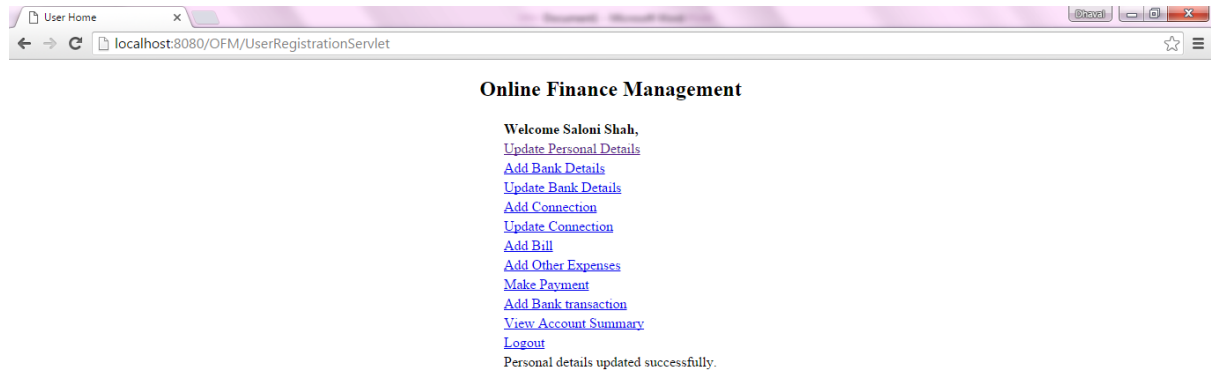
Update Personal Details

Welcome Saloni Shah,

First Name	Saloni
Last Name	Shah
Contact Number	5487645128
Email Address	saloni@gmail.com
Address Line-1	City View Apartment
Address Line-2	Apartment 54
City	Boston
State	MA
Country	United States
ZipCode	02115

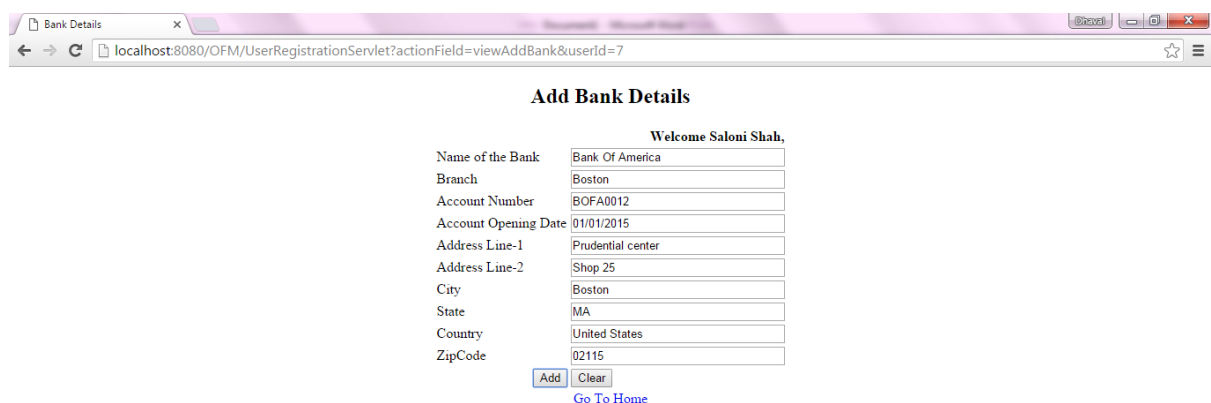
[Go To Home](#)

2. Once the user has updated his/her information, the user will be redirected to their home page where a success message about successful updating is printed.

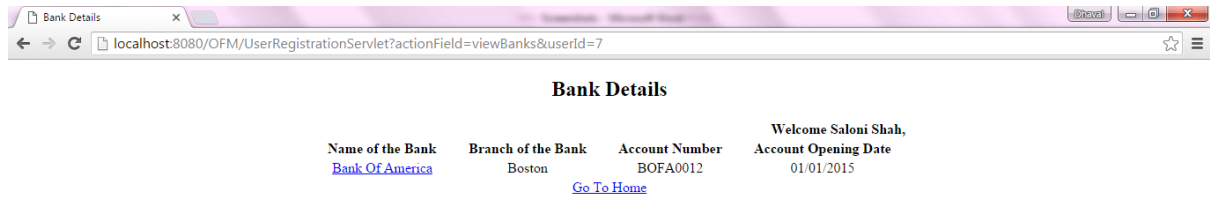


Example 3: Adding/Updating Bank Details

1. The user can enter their bank details, like bank address, account number, date of opening, etc.
2. This is useful to help user keep record of how much payment has occurred from each account.

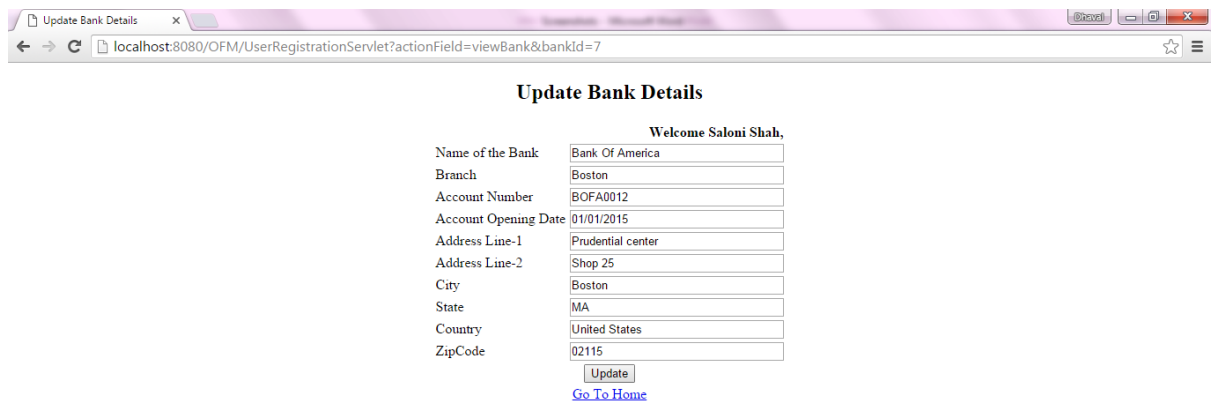


3. The user can also update such bank details by clicking on 'Update Bank Details' in their home page.
4. On clicking on the link, all the details of each bank where the user has their account is listed, as shown below.



localhost:8080/OFM/UserRegistrationServlet?actionField=goToHome&userId=7

5. The user can click on the name of bank to update the details of that bank.
6. He/she will then be redirected to a page where they can update their bank details, as shown below.



Example 4: Adding/Updating Connection

1. The user can add details about Gas, Electricity, Phone or Internet connections.
2. This will help the user maintain records about their monthly payments to each such connections.
3. The user can also add multiple records of same connection with different suppliers.

The screenshot shows a web browser window with the address bar displaying `localhost:8080/OFM/UserRegistrationServlet?actionField=viewAddConnection&userId=7`. The page title is "Connection Details". The main heading is "Add Connection". Below the heading, there is a "Welcome Saloni Shah," message. The form contains four input fields: "Type of Connection" (a dropdown menu with "Gas" selected), "Name Of Supplier" (a text box with "National Grid"), "Starting date of connection" (a text box with "01/01/2015"), and "Registration Number" (a text box with "GAS001"). Below these fields are "Add" and "Clear" buttons, and a "Go To Home" link.

-
4. The user also has the option to update details of any connections.
 5. On clicking the 'Update Connection' link in their main page, a list of all the connections that the user has will be displayed.
 6. The user can update the details of any connection by click on the link provided on Registration number of each connection.

The screenshot shows a web browser window with the address bar displaying `localhost:8080/OFM/UserRegistrationServlet?actionField=viewConnections&userId=7`. The page title is "Connection Details". The main heading is "Connection Details". Below the heading, there is a "Welcome Saloni Shah," message. The table displays the following data:

Registration Number	Type Of Connection	Name Of Supplier	Starting date of Connection
GAS001	gas	National Grid	01/01/2015

Below the table, there is a "Go To Home" link.

7. He/she will then be redirected to a page where they can update the details of the connection they selected, as shown below.

The screenshot shows a web browser window with the title 'Update Connection Detail'. The address bar displays 'localhost:8080/OFM/UserRegistrationServlet?actionField=viewConnection&connectionId=10'. The page content includes a header 'Update Connection Details' and a welcome message 'Welcome Saloni Shah,'. Below this, there is a form with the following fields: 'Type of Connection' (a dropdown menu showing 'Gas'), 'Name Of Supplier' (a text box containing 'National Grid'), 'Starting date of connection' (a text box containing '01/01/2015'), and 'Registration Number' (a text box containing 'GAS001'). There is an 'Update' button and a 'Go To Home' link.

Example 5: Adding Bills

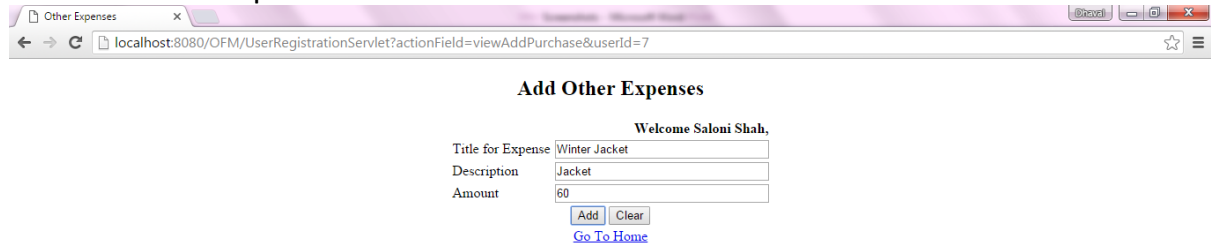
1. The user can add the details of bill for the connections he/she possess.
2. Details like amount, due date of payment and bill amount has to be entered.

The screenshot shows a web browser window with the title 'Bill Details'. The address bar displays 'localhost:8080/OFM/UserRegistrationServlet?actionField=viewAddBill&userId=7'. The page content includes a header 'Add Bill Details' and a welcome message 'Welcome Saloni Shah,'. Below this, there is a form with the following fields: 'Type of Connection' (a dropdown menu showing 'gas (National Grid)'), 'Bill Amount' (a text box containing '10'), and 'Due date of Payment' (a text box containing '12/31/2015'). There are 'Add' and 'Clear' buttons, and a 'Go To Home' link.

-
3. Adding the due date of payment will help the user keep track of all such monthly payments he/she has to make.

Example 6: Adding Other Expenses

1. Apart from bill payments for each connection, the user can also record expenses done on other things like grocery, shopping, etc.
2. The user has to enter details such as title of expense, description of expense and the expense made.

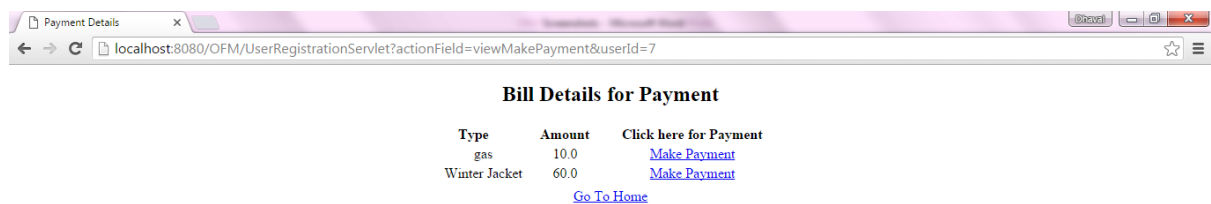


The screenshot shows a web browser window with the title 'Other Expenses'. The address bar shows the URL: `localhost:8080/OFM/UserRegistrationServlet?actionField=viewAddPurchase&userId=7`. The page content includes a heading 'Add Other Expenses' and a welcome message 'Welcome Saloni Shah,'. Below this, there are three input fields: 'Title for Expense' with the value 'Winter Jacket', 'Description' with the value 'Jacket', and 'Amount' with the value '60'. There are two buttons, 'Add' and 'Clear', and a link 'Go To Home'.

-
3. Adding such expenses will help the user maintain records about the total monthly expense including bill payments.

Example 7: Make Payment

1. When the user clicks on 'Make Payment' link on their home page, he/she is listed with all the bills or other expenses they have made.

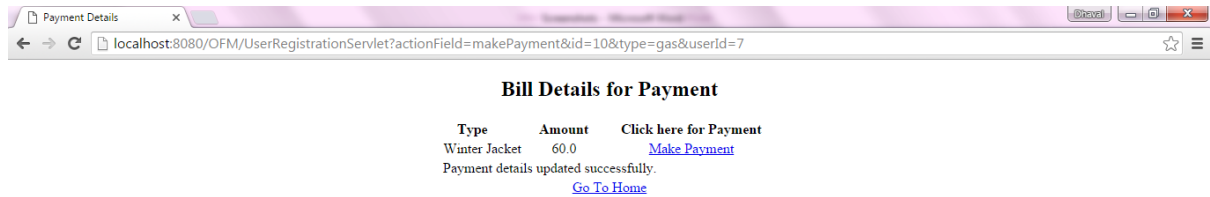


The screenshot shows a web browser window with the title 'Payment Details'. The address bar shows the URL: `localhost:8080/OFM/UserRegistrationServlet?actionField=viewMakePayment&userId=7`. The page content includes a heading 'Bill Details for Payment' and a table with three columns: 'Type', 'Amount', and 'Click here for Payment'.

Type	Amount	Click here for Payment
gas	10.0	Make Payment
Winter Jacket	60.0	Make Payment

Below the table, there is a link 'Go To Home'.

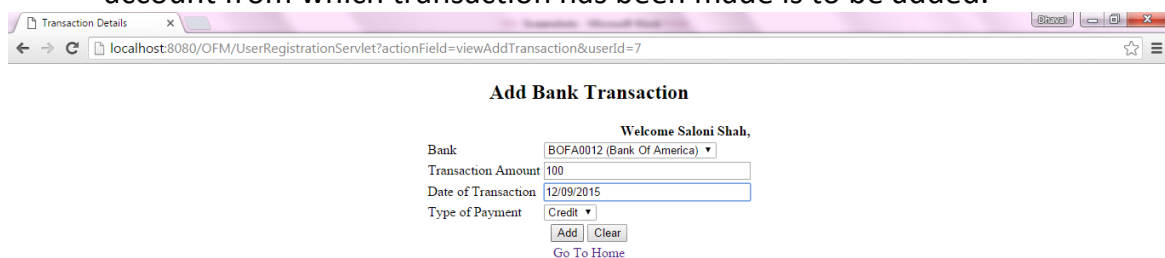
2. They can then click on the bill or the expense, and record the payment for that particular selection.



3. After recording payment, a message indicating successful payment is displayed.
4. Adding bill or other expenses only indicates that the user has made such expenses or has unpaid bills, while recording the payments for such expenses will indicate that the user has paid the entered amount.

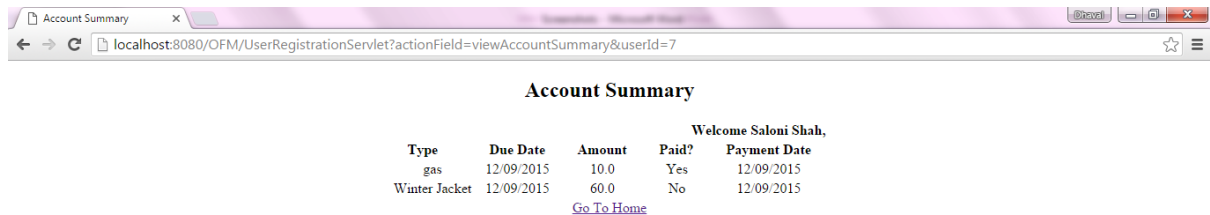
Example 8: Adding Transaction Details

1. The user also has the option of adding details about transactions that they make.
2. Details like type of transaction (credit/debit), date of transaction and the account from which transaction has been made is to be added.



Example 9: Viewing Account Summary

1. On clicking 'View Account Summary' link on home page, the user is redirected to a page where the details of all bills and expenses made till date is displayed.
2. For each bill or expense, details like due date of payment, date of payment, type of bill, whether it is paid or not and amount is displayed.



Type	Due Date	Amount	Paid?	Payment Date
gas	12/09/2015	10.0	Yes	12/09/2015
Winter Jacket	12/09/2015	60.0	No	12/09/2015

[Go To Home](#)

-
3. Such a summary helps the user keep track of all expenses made.

CHAPTER 6

CONCLUSION

The goals that were listed in CHAPTER-1 were completed successfully. Since this was a small system, there is scope for adding more functionality.

6.1 Future Work

The system will allow the user to also do the following functions:

- The users can also add reminders for bill payment, which might be a day or two earlier than the estimated date.
- Users will also be able to add their billing cycles of their various payments, which the system will record, so as to give timely reminders to the users to pay their bills.
- The user can also record the salary payment and credit payments happening on their accounts.
- The UI of the website can be improved using better CCS templates and JavaScript validations.
- JDBC implementation can be converted to JPA.

REFERENCES:

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[2] <http://www.w3schools.org>

[3] <http://www.stackoverflow.com>