DESIGN AND DEVELOPMENT OF ONLINE PERSONAL FINANCE MANAGEMENT SYSTEM

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled **"Design and Development of Online Personal Finance Management System**", submitted by Maria Akther(ID:083-20-119) and Nasrin Akter(ID:102-15-1074) to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 21-10-2012.

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Dr. Syed Akhter Hossain, Professor and Head, Department of Computer Science and Engineering,** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

Personal finance management is everyday affair in our life and this always becomes difficult to manage due to lack of information management system in relation to finance. There are many accounts information system which are commercially used in different corporate house. But there is no standard information system available for personal finance management. In this context a personal finance management information system which is online is truly important.

In this project a personal finance management based on the requirements is conceptualized and implemented. The system enables anyone to manage personal income and expenses with ease via online information system. It is designed to help users to manage their finances to understand where their money is going, pinpointing the areas of excessive expenditure and assist to take decision of cutting down unnecessary expenses. It is found that this information system helps to track finances and generate reports of all.

The system is designed and developed using XHTML,PHP, and MySQL as the backend database on Apache Server. The system is developed and implemented and the result is satisfactory. In the future this system will be enhanced based on further requirements.

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CHAPTER 1
INTRODUCTION

1.1 Objectives

The use of the web is increasing in the recent years over the world .As the number of web users increasing it is important to develop an online personal finance management system so that people can manage their personal finance via online without any cost. As the number of users accessing the web is steadily increasing, the day is not so far where we will see them using internet for the purpose of managing personal finance.

1.2 Motivation

The project has the following motivations:

- To manage personal finance effectively
- To manage budgetary requirement and control purchase
- To visualize personal profit and loss account
- Utilizing finance management with technology
- Auto time is fixed to alert budgets
- User flexible
- Security label high

1.3 Layout of the project

The objectives of this project are to develop a complete Online Personal Financial Management System. In this chapter, the objectives and motivations of the project is described.

In the 2nd chapter, the issues related to system analysis which includes fact findings, information gathering, user requirements of the system and few feasibility studies from the aspect of technical and operational conditions.

In the 3rd chapter, design of the system is described. That is proposed system design, detailed specifications, usecase diagrams, design of data organization, tools and techniques to implement the system.

In the 4th chapter, the description of the developed software and screen shots are included. And the most important part of developing a system is the testing phase to test the developed software quality is also elaborately described in this chapter.

1.4 Summary

Online Personal Finance Management system is designed and developed to meet the requirements of the users and also to remove the limitations of manual paperwork. We believe there is still a lot of improvement scope of the system.

CHAPTER 2
ONLINE PERSONAL FINANACIAL MANAGEMENT

2.1 Scope of Work

The system will enable anyone to manage personal income and expenses with ease via online. It will help users to control their finances – understand where their money is going, pinpoint the areas of excessive expenditure and cut down unnecessary expenses. It will help to track finances and generate report of all. They can access their account at anytime, from anywhere via internet.

Generally in this application there are two main modules:

User view

- Online user account registration: Everybody will be able to register their profile by filling out a form.
- Can add new account: User will be able to create account as much as they want.
- Generate report: Every registered user will be able to generate their daily or monthly report.
- Can view online transaction activities: Registered user will be able to view their financial activities in any time from anywhere via online.

Admin view

- Admin profile: Admin can create his/her own profile.
- Check and manage users: Admin will be able to renew or block users.
- Generate report: Admin will be able to check the number of monthly registered user, active user or inactive user.

2.2 Major Requirements

- Multiple user registration
- Set up any number of different accounts, such as Bank account, savings, cash.
- Secured online daily/monthly transactions
- Online loans management.
- Track budget management.
- Generate monthly report
- User and Admin management of all operations

2.3 System Development Life Cycle (SDLC)

System development life cycle means combination of various activities. In other words we can say that various activities put together are referred as system development life cycle. It explains various activities involved in the development of software systems. It presents the different approaches towards software development.

Following are the different phases of software development cycle:

1 System study/Initial Idea
2 Feasibility study
3 Requirement Analysis
4 System Analysis
5 System Design
6 Development
7 Testing
8 Implementation
9 Maintenance
10 Review

2.4 Phases of System Development Life Cycle

Let us now describe the different phases and the related activities of system development life cycle in detail.

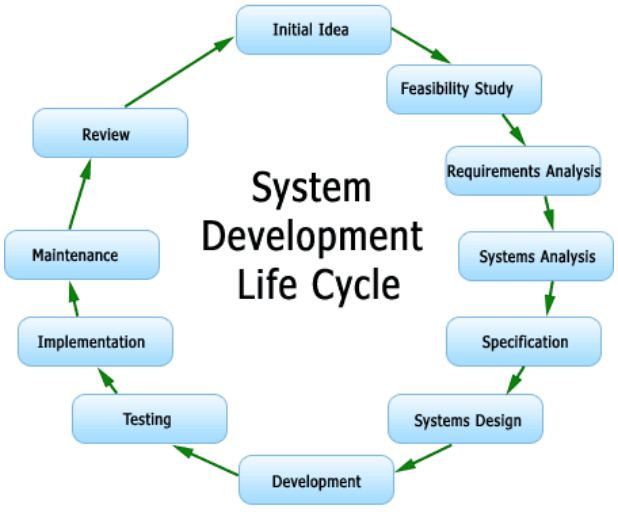


Figure 2.1: Different Phases of Software Development Life Cycle

2.4 .1 System Study/Initial Idea

System study is the first stage of system development life cycle. This gives a clear picture of what actually the physical system is? After completing the system study, a system proposal is prepared by the system. Analyst (who studies the system) and placed before the user. After that a system analyst also tries to take some feedback from users about the systems.

To describe the system study phase more analytically, we would say that study phase passes through the following steps:

a. Problem identification and project initiation

b. Background analysis

c. Inference or finding

2.4.2 Feasibility Study

The feasibility study is basically the test of the proposed system in the light of its workability, meeting user's requirements, effective use of resources and of course, the cost effectiveness. The main goal of feasibility study is not to solve the problem but to achieve the scope. In the process study, the cost and benefits are estimated with greater accuracy.

The platform chosen are XHTML, CSS, Java script, PHP, dream waiver, and Photoshop platform for the Online Personal Finance Management System. So the online Personal Finance Management system is powerful, efficient, user friendly.

2.4.3 Requirement Analysis

Requirements Analysis is the process of understanding the user needs and expectations from a proposed system or application and is a well-defined stage in the software Development Life cycle model. Requirements are a description of how a system should behave or a description of system properties or attributes. It can alternatively be a statement of 'what' an application is expected to do. The Software Requirement Analysis Process covers the complex task of eliciting and documenting the requirements of all these users, modeling and analyzing these requirements and documenting them as a basis for system design.

To properly build the system we need to learn web site designing through XHTML, Java Script, Photoshop, Adobe Dreamweaver, PHP and CSS. For database we required MYSQL and Apache Server. Simply-

- Language: XHTML, CSS
- Script: PHP, Java Script
- Design: Photoshop

- Database: MySQL
- Server: Apache Server

2.4.4 System Analysis

System analysis is an important part of the project. System analysis is needed for designing and implementation of the project. The problems are analyzed to determine the nature of the system. System Analysis finds the different phases of a system and components of system design. Online technologies offer a new range of tool and strategies and some exciting possibilities for adding new dimension to the test it in online environment. These included:

- Greater flexibility as to where, when and how assessment is conducted
- Improved capabilities for ongoing and continuous online activities in the environment.
- Users are free of assessing online
- Users can recovery password and it is well protected with his/her financial activities and personal information.

2.4.5 System Design

Based on the user requirements and the detailed analysis of a system, the new system is designed. This is the phase of a system designing. It is a crucial phase in the development of a system. Normally the design proceeds in two stages:

a. Preliminary or general design: The primary goal was to create system "Online Personal Finance Management System" user needed to build a system with features of user accounts and online personal finance process.

b. Structure or detailed design: In the planning phase are described in the following:

- Selected System Platform: XHTML, CSS, Java Script, Photoshop, MySQL, Dream waiver, Apache.
- Analyzed the system.
- Created drawing showing the future site.
- Planned which tools and forms to be used.
- System creation started.
- Created users to get feedback.

2.4.6 Development/Coding

After designing the new system, the whole system is required to be converted into computer understanding language. Coding the new system into computer programming

language does this. It is an important stage where the defined procedures are transformed into control specifications into computer instructions, which we refer as programs. The programs coordinate the data movements and control the entire process in a system.

Our development occurred in following phases:

- Platform selection: XHTML, CSS, PHP, Java Script, Macro media Dream waiver, Adobe Photoshop, My SQL.
- Observed a tutorial site of w3schools.com
- Created drawing showing the future system
- Planned which tools to be used
- Created design of the system
- Received user review

2.4.7 Implementation

After having the user acceptance of the new system developed, the implementation phase begins. Implementation is the stage of a project during which theory is turned into practice. During this phase, all the programs of the system are loaded onto the user's computer. After loading the system, training of the users starts. Main topics of such type of training are:

a. How to registration

b. How to enter the data

c. How to process the data

d. How to take out the reports

2.4.8 Testing

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test

Several testing types are available:

- Unit testing
- Module testing
- User acceptance testing

2.4.9 Maintenance

Maintenance is necessary to eliminate errors in the system during its working life and to tune the system to any variation in its working environment. It has been seen that there are always some errors found in the system that must be noted and corrected.

The online personal finance management system is undergone regular changes that were required to modify the system. Navigation was made easier for the user and the design was made much more attractive than before.

Another part of maintenance was to study the performance of the system. A system becomes more popular due to better performance. We checked this system regularity. It is observed that all the tools acted in normal speed. The speed was not compromised when the database grew bigger.

2.5 Deliverables under Project Plan

In order to fulfill the requirements of the online Personal Finance Management System, it proposes to connect the internet.

- Design and delivery of the online system
- Design and deployment of User and Admin for time and date.
- Design and deployment of online financial management user email account with Access Control and back up records of Utilization/logging history

2.6 Conclusion

If a major change to a system is needed, a new project may have to be set up to carry out the change. The new project will then proceed through all the above life cycle phases.

CHAPTER 3
SYSTEM DESIGN

3.1 Introduction

System design focuses on the technical or implementation concerns of the system. When a system designer wants to design the system, he or she should have has enough sufficient knowledge about the detail system. Few steps can simplify the task of designing coding of a system dramatically. Every designer should take time to complete each of the following steps:

- Describe precisely the core functionally & the system design using data model
- Normalization the system precisely the core functionally the system designs using Normalization and draws the DFD of the system
- Describe precisely the core functionality & the system design using data model as DFD

We now look at the database design requirements of the online Personal finance management system. However we have attempted to design every aspect of the database design of this system.

3.2 Ideas of DBMS

Data: Data are raw material for producing information.
Information: Information is process data.

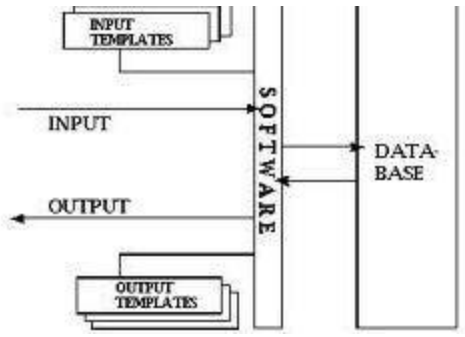


Figure 3.1: Database Management System [source: Internet]

Data Base: The collection of data usually referred to as the database. One or more large structured set of persistent data usually associated with software to update and query the data. A simple database might be a single file containing record, each of which contains the same sat of file where each file is certain fixed width. Each record in a database is

composed of the important elements of information of a particular item. Each record is composed of a set of field.

Data model: Data model is a collection of conceptual tools for describing data, data relationship, data semantics, and consistency constrains.

Database Administrator: The person who has full control over a system is called the Database Administrator (DBA).

Database Users: We can specify the user in four categories-

- Application programmers are computer professionals who interact with the system through DML calls.
- Sophisticated users interact with the system without writing programs.
- Specialized users are sophisticated users who write specialized database application.
- Naïve users interact with the system invoking one of the permanent application programs that has been written previously.

Database Management System (DBMS):

A database management system consists of a collection of interrelated data and set of programs to access those data. The collection of data usually referred to as a database, contain information about one particular enterprise. The primary goal of a DBMS is to provide an environment that is about convenient and efficient to use in retrieving and storing database information. Database system is designed to manage large bodies of information. The database system provide for the safety of the information store, despite system crashes or attempts at unauthorized access. If data are to be shared among several users, the system must avoid possible anomalous result.[4]

3.3 Use Case Diagram

A use case is a description of set of sequences of actions that a system perform that yields an observable result of value to a particular actor. A use case diagram displays the relationship among actors and use cases. The two main components of a use case diagram are use cases and actors.[6]

3.3.1 Use Case Model of Admin

The Admin has the following sets of use cases:

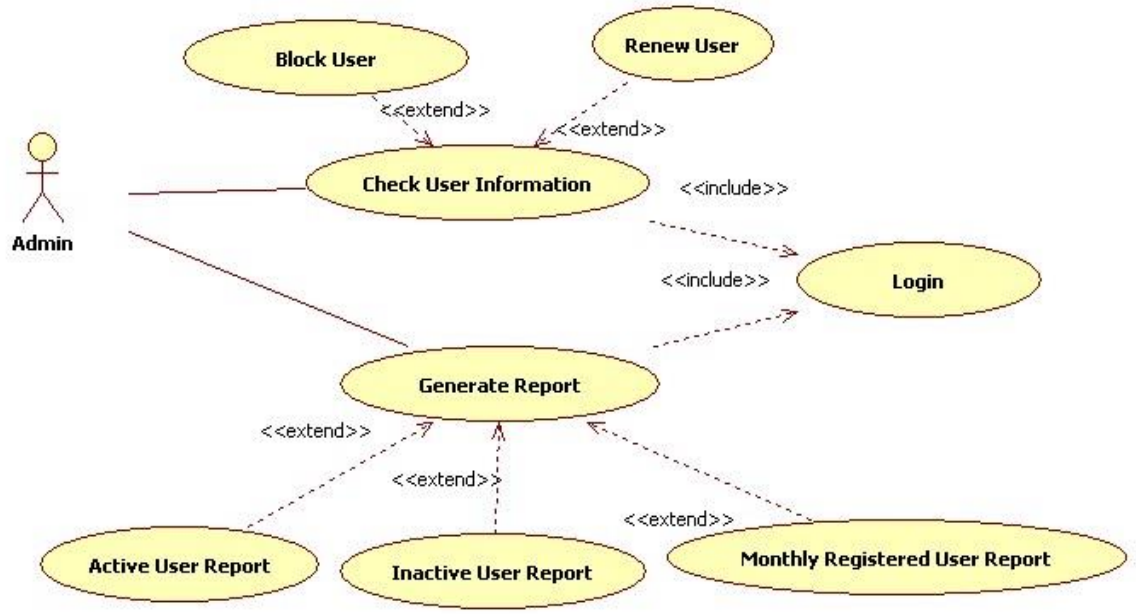


Figure 3.2: Use Case Model of Admin

Check User Information of Admin :

Brief Description

Admin can check user information.

Initial Step-by-Step Description

Before this use case can be initiated, the Admin has already accessed the Online Personal Finance Management System

1. The Admin will select check user information.
2. System will give the options of add block or renew options.
3. The admin will select one and the system will guide the admin according to the selection
4. After saving selected action, admin can view his updated data.

Report generate use case of admin

Brief Description

The Admin can generate various kinds of report for decision making. System will generate the reports instantly based on the selected criteria. This report will use form decision making and forecasting.

Initial Step-by-Step Description
Before this use case can be initiated, the Admin has already accessed the Online Personal Finance Management System.

1. Admin will select the Report.
2. System will give various options for generating report.
3. System will generate report according to the selection criteria and the admin can view and print the reports.

3.3.2 Use Case Model of User

The User has the following sets of use cases:

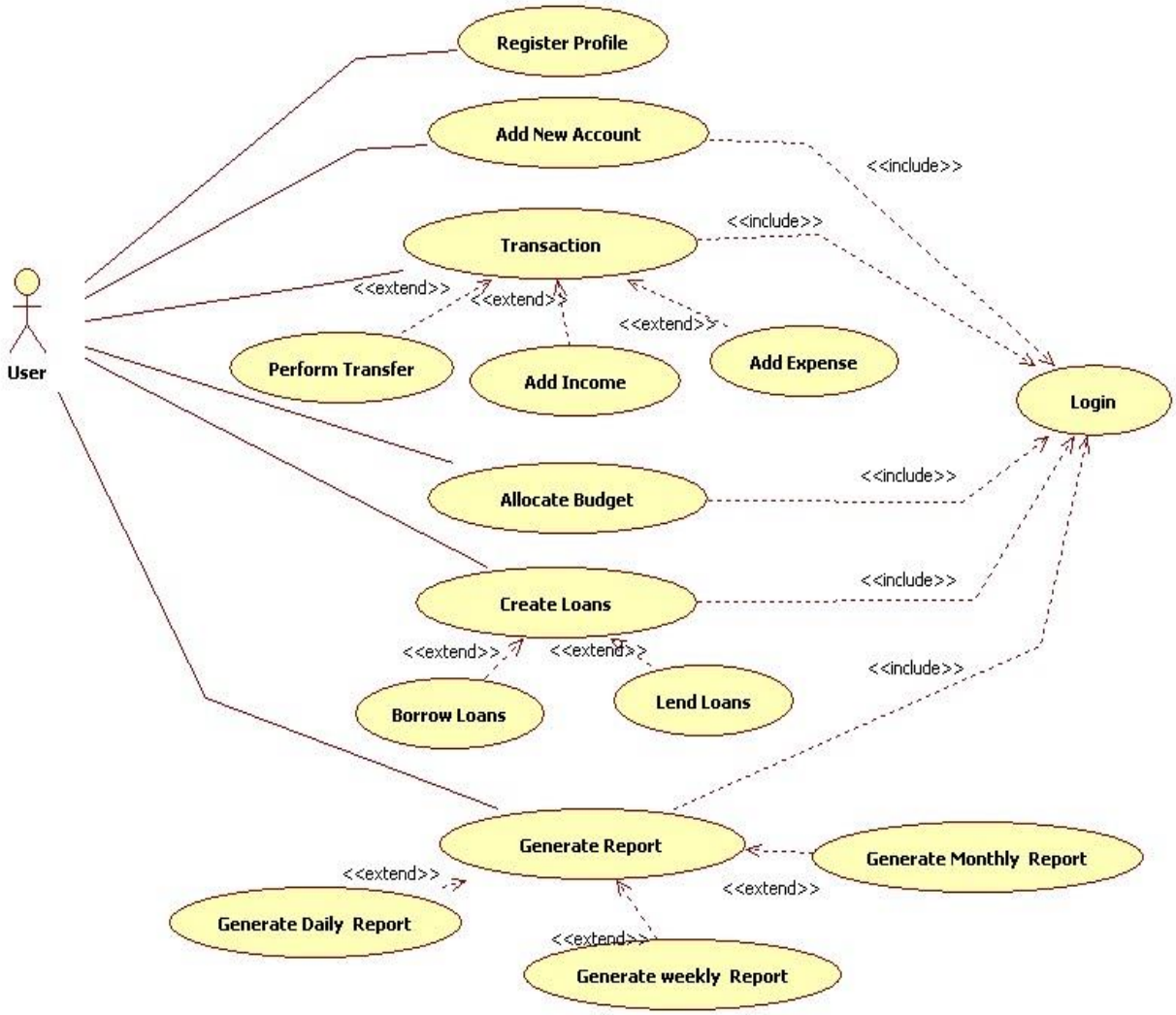


Figure 3.3: Use Case Model of User

Add New Account use case of user :

Brief Description
User can create multiple numbers of new accounts.

Initial Step-by-Step Description
Before this use case can be initiated, the User has already accessed the Online Personal Finance Management System.

1. The user will select for add new account.
2. System will give the form to fill account type, account name and initial balance to the user.
3. The user will fill the form and the system will guide the user according to the selection
4. After saving action, user can view his updated data.

Transaction use case of user :

Brief Description
User can perform transfer. They can also add income /expenses.

Initial Step-by-Step Description
Before this use case can be initiated, the User has already accessed the Online Personal Finance Management System.

1. The User will select for transaction.
2. System will give the options of add income, expense, transfer options.
3. The user will select one and the system will guide the user according to the selection
4. After saving selected action, user can view his updated data.

Allocate Budget use case of user :

Brief Description
User can allocate his/her monthly budget.

Initial Step-by-Step Description
Before this use case can be initiated, the User has already accessed the Online Personal Finance Management System.

1. The User will select for budget allocation.
2. System will give the options of add income, expense for budget.
3. The user will select one and the system will guide the user according to the selection
4. After saving selected action, user can view his updated data.

Create Loan use case of user :

Brief Description

User can create loan.

Initial Step-by-Step Description

Before this use case can be initiated, the User has already accessed the Online Personal Finance Management System.

1. The User will select for loan.
2. System will give the options of lend or borrow for loan.
3. The user will select one and the system will guide the user according to the selection
4. After saving selected action, user can view his updated data.

3.4 Entity sets designation

Here we begin to identified entity sets and their attributes:

- Admin entity set with attributes, id password and email
- User entity set with attributes id, password and email.

3.5 Entity relationship (E-R) Diagram

E-R diagram can express the overall logical structure of a database graphically. Such a diagram consists of the following major components:

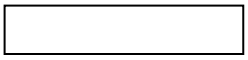
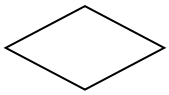
-  Rectangle which represents entity set.
-  Ellipses which represent attributes.
-  Diamonds which represents relationship sets.
- Lines which link attributes to entity sets and entity sets to relationship sets [2]

Figure 3.4: Entity relationship symbol

3.5.1 E-R diagram of proposed system

The next step is to develop the logical design of the system. In the following figure we will encounter a style of E-R diagram.

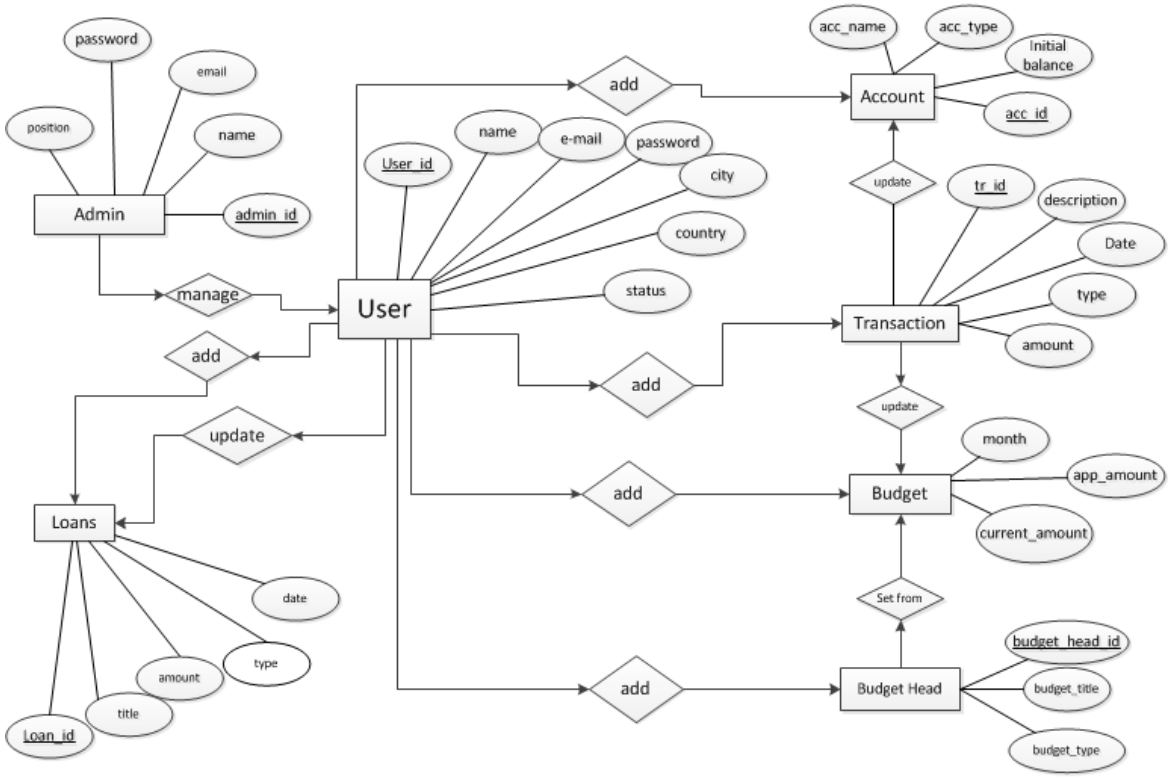


Figure 3.5: ER diagram of the system

The entity relationship diagram and data model is based on as perception of real world that consists of a collection of objects called entities, and of relationship among these entities.

3.5.2 Data model diagram of the proposed system

The proposed system has the following data model view:

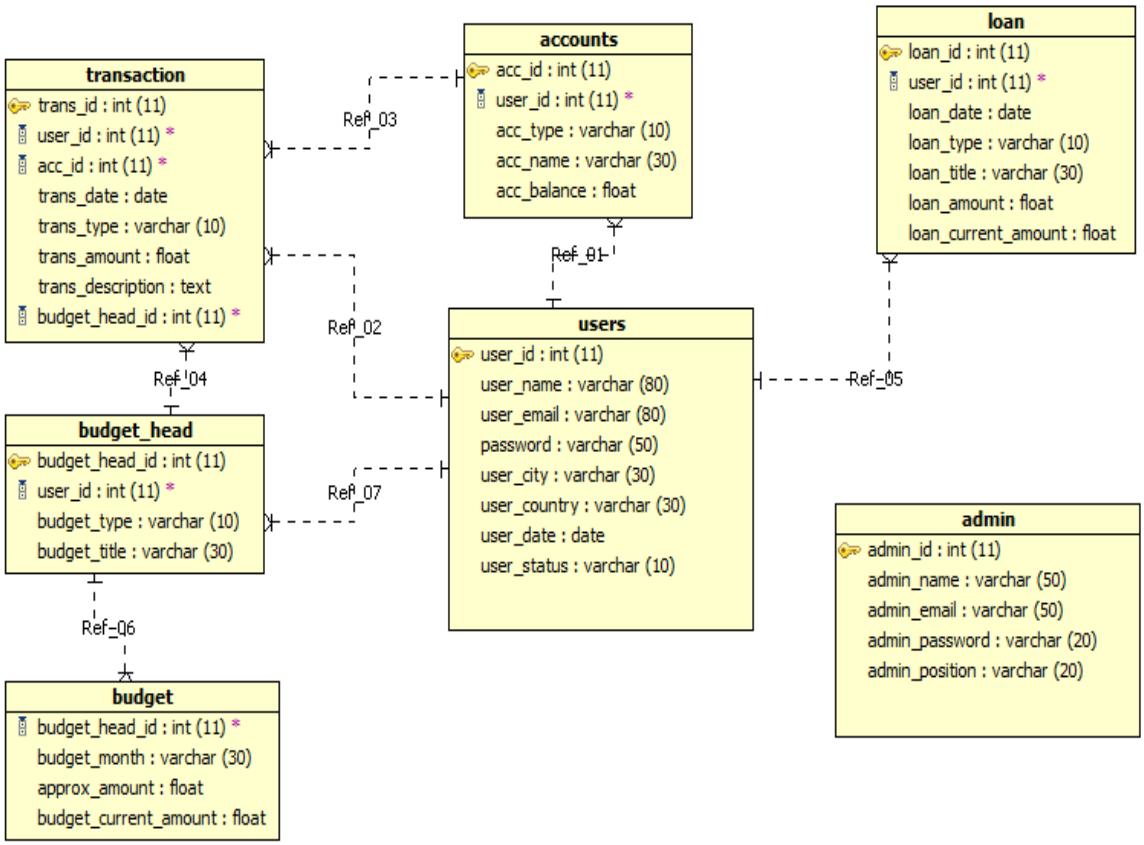


Figure 3.6: Data model diagram of the system

User Information:

Field Name	Data Type	Size	Allow Null	Primary Key	Example
User_id	Int	11	No	Yes	001
User_name	Varchar	80	No	No	Maria Akther
User_email	Varchar	80	No	No	maria@gmail.com
User_password	Varchar	50	No	No	123456
User_city	Varchar	30	No	No	Dhaka
User_country	Varchar	30	No	No	Bangladesh
Registration_date	Date		No	No	2012-09-17
User_status	Varchar	10	Yes	No	Active/Inactive

In this relation (table), user information such as user _id (Primary Key), user _name, user _email, user _password, user _city, user _country, registration_date, user _status, is stored.

Admin Information:

Field Name	Data Type	Size	Allow Null	Primary Key	Example
Admin_id	Int	11	No	Yes	0011
Admin_name	Varchar	50	No	No	Admin1
Admin_email	Varchar	50	No	No	admin@myfinancier.net
Admin_password	Varchar	20	No	No	100001
Admin_position	Varchar	20	No	No	Super admin

In this relation (table), Admin Information like admin _id (Primary Key), admin _name, admin _email, admin _password, admin_position is stored.

Loan Information :

Field Name	Data Type	Size	Allow Null	Primary Key	Example
Loan_id	Int	11	No	Yes	0110
User_id	Int	11	No	Yes	001
Loan_date	Date		No	No	2012-09-17
Loan_type	Varchar	10	No	No	Lend
Loan_title	Varchar	30	No	No	To Nasrin
Loan_amount	Float		No	No	12000.00
Loan_current_amount	Float		No	No	6000.00

In this relation (table), Loan Information such as loan_id(Primary Key), user_id loan_date, loan_type , ,loan_title , loan_amount , loan_current_amount is stored.

Budget_head Information :

Field Name	Data Type	Size	Allow Null	Primary Key	Example
Budget_head_id	Int	11	No	Yes	1001
User_id	Int	11	No	Yes	001
Budget_type	Varchar	10	No	No	Expense
Budget_title	Varchar	30	No	No	Food

In this relation (table), Budget_head Information such as budget_head_id(Primary Key), user_id, budget_type, budget_title is stored.

Budget Information :

Field Name	Data Type	Size	Allow Null	Primary Key	Example
Budget_head_id	Int	11	No	Yes	1001
Budget_month	Varchar	30	No	No	September
Approx_amount	Float		No	No	5000.00
Budget_current_amount	Float		No	No	3000.00

In this relation (table), Information such as budget_head_id(Foreign Key), budget_month, approx_amount, budget_current_amount is stored.

Transaction Information :

Field Name	Data Type	Size	Allow Null	Primary Key	Example
Transaction_id	Int	11	No	Yes	011
User_id	Int		No	Yes	001
Acc_id	Int		No	Yes	0010
Transaction_date	Date		No	No	2012-09-21
Transaction_type	Varchar	10	No	No	Expense
Transaction_amount	Float		No	No	2000.00
Transaction_description	Text		Yes	No	Buying books
Budget_head_id	Int	11	No	Yes	1001

In this relation (table), Transaction Information such as transaction_id(Primary Key), user_id(Foreign key), acc_id(Foreign key), transaction_date, transaction_type, transaction_amount, transaction_description, budget_head_id(Foreign key) is stored.

Account Information :

Field Name	Data Type	Size	Allow Null	Primary Key	Example
Acc_id	Int	11	No	Yes	0010
User_id	Int	11	No	Yes	001
Acc_type	Varchar	10	No	No	Bank
Acc_name	Varchar	30	No	No	Maria-DBBL
Acc_balance	Float		No	No	10000.00

In this relation (table), Account Information such as acc_id (Primary Key**)**, user_id(Foreign key), acc_type, acc_name, acc_balance is stored.

3.6 Conclusion

The process of doing database design generally consists of a number of steps which will be carried out by the database designer. Usually, the designer must determine the relationships between the different data elements and superimpose a logical structure upon the data on the basis of these relationships.

CHAPTER 4
IMPLEMENTATION AND TESTING OF THE SYSTEM

4.1 Introduction

A web site is a resource of information that is suitable for the World Wide Web that can be accessed through a web browser. The online personal finance management system has the following environment which has two active actors:

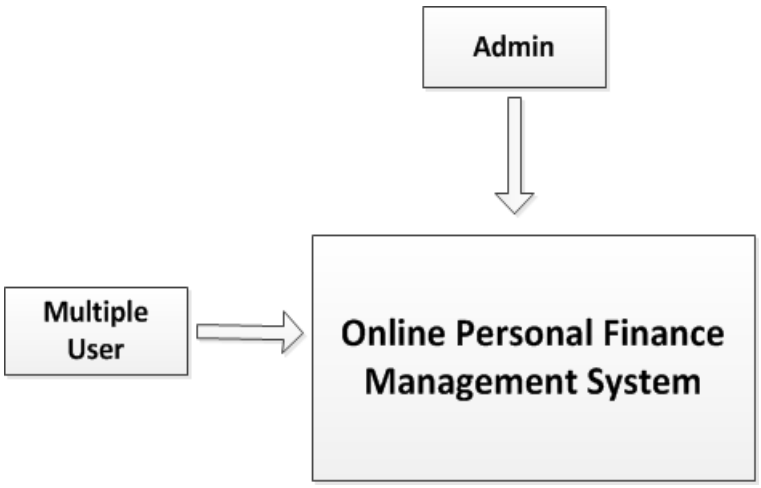


Figure 4.1: System Environment

4.2 Web Page Design

Web page design is the process of content and images on a web page for the purpose of implementation our ideas and information to visitors and users coming across our website. This web application is compatible with all major browsers like Mozilla Firefox, Internet Explorer, Opera etc.

4.3 Overview of the system Development

The login page is used for secure access of this system by authorized admin and user. Admin and user must need to log in using his/her email account and password for accessing the system.

Application URL: www.myfinancier.net

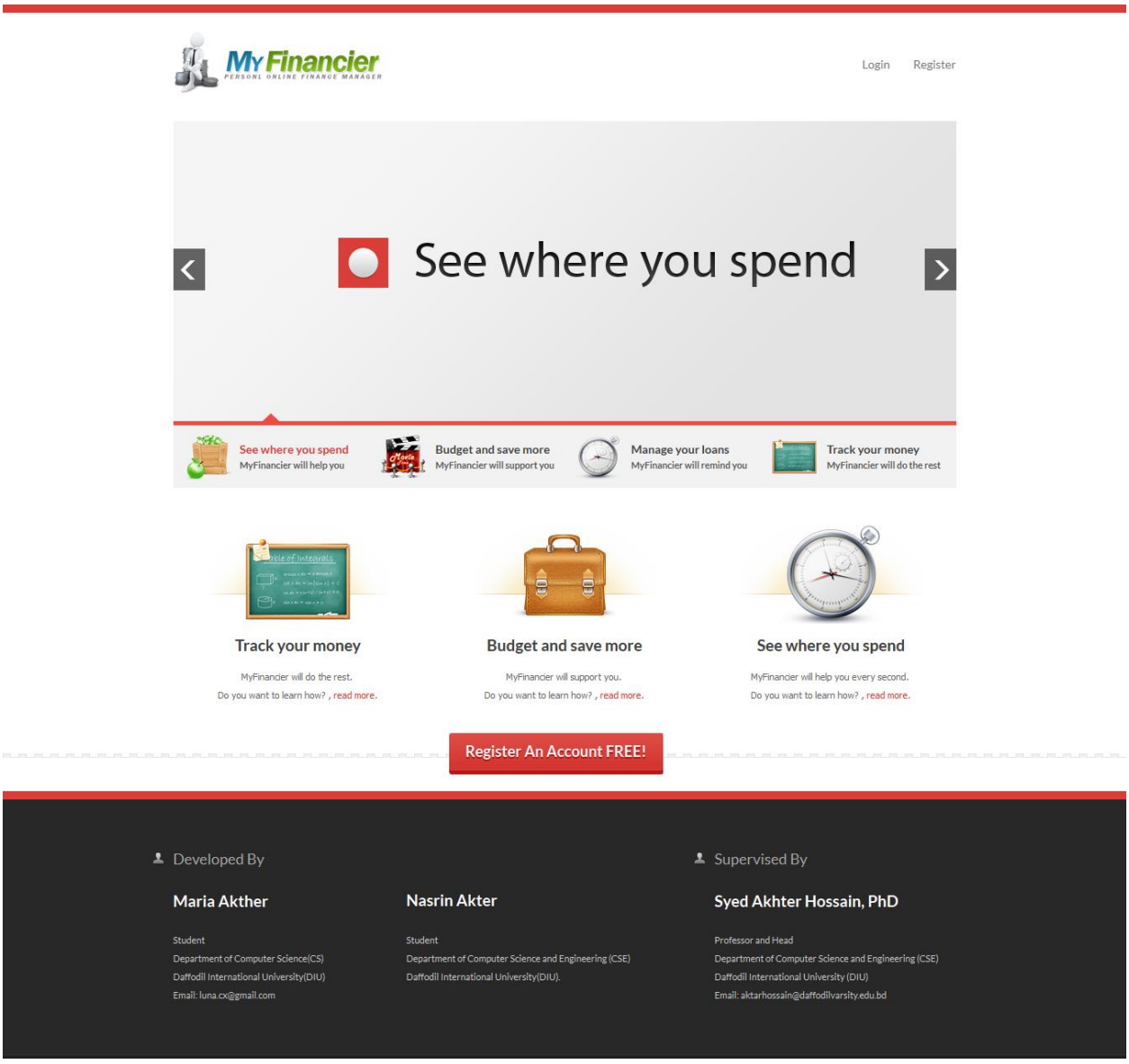


Figure 4.2: Home page of the system

This is the home page where the registered user can login to perform the desired activities and unregistered user find the registration form.

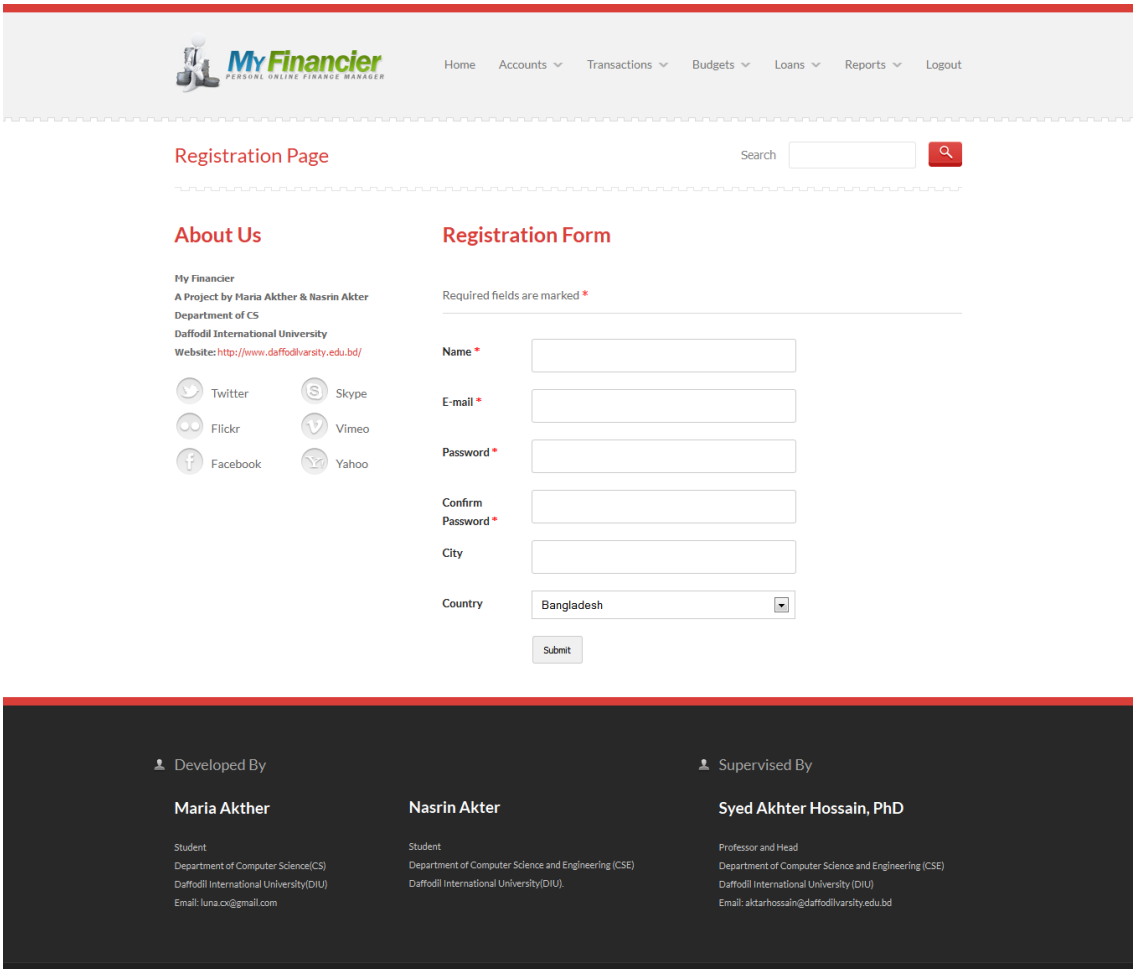


Figure 4.3: User registration form

User must have to register before sign in by filling out the registration form.

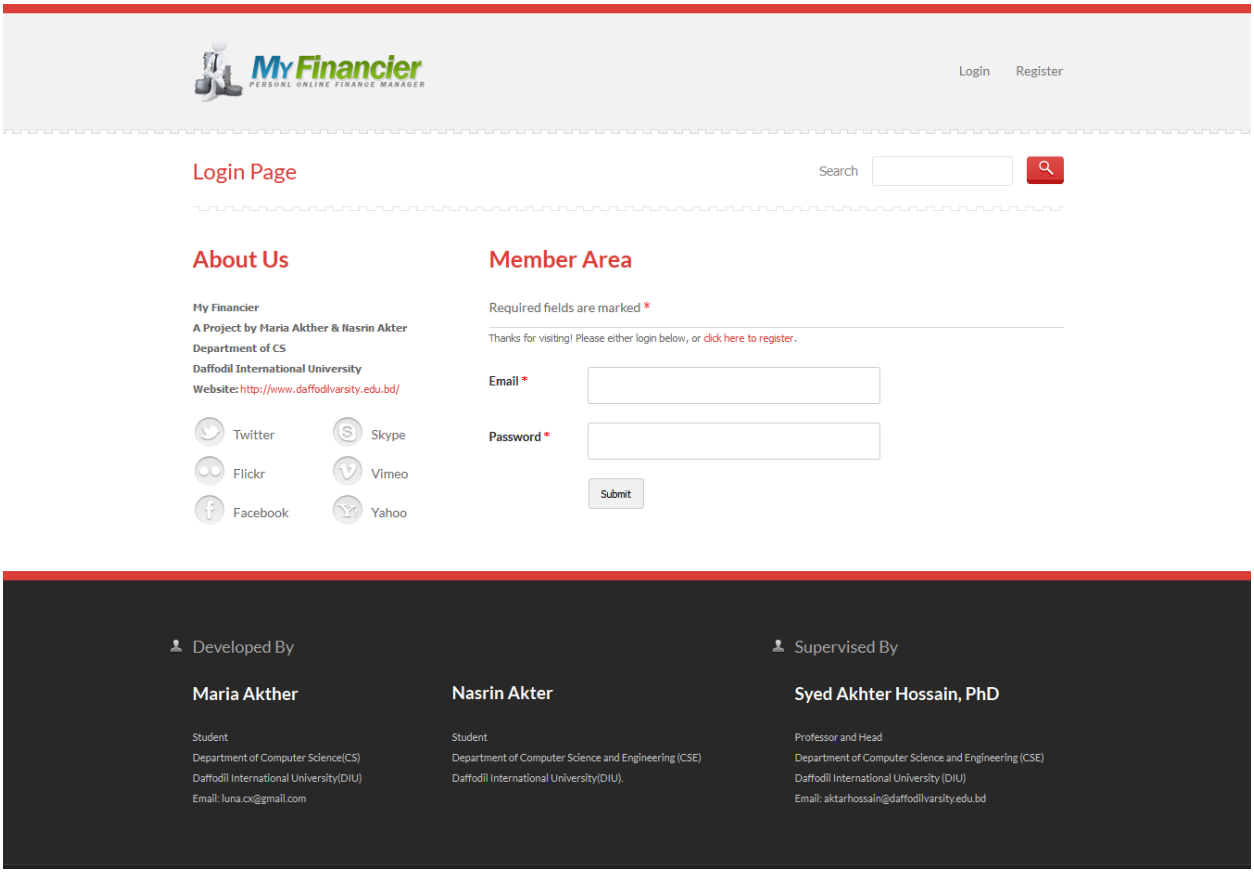


Figure 4.4: Login page for user

In the home page, admin and user can sign in with the email account and password.

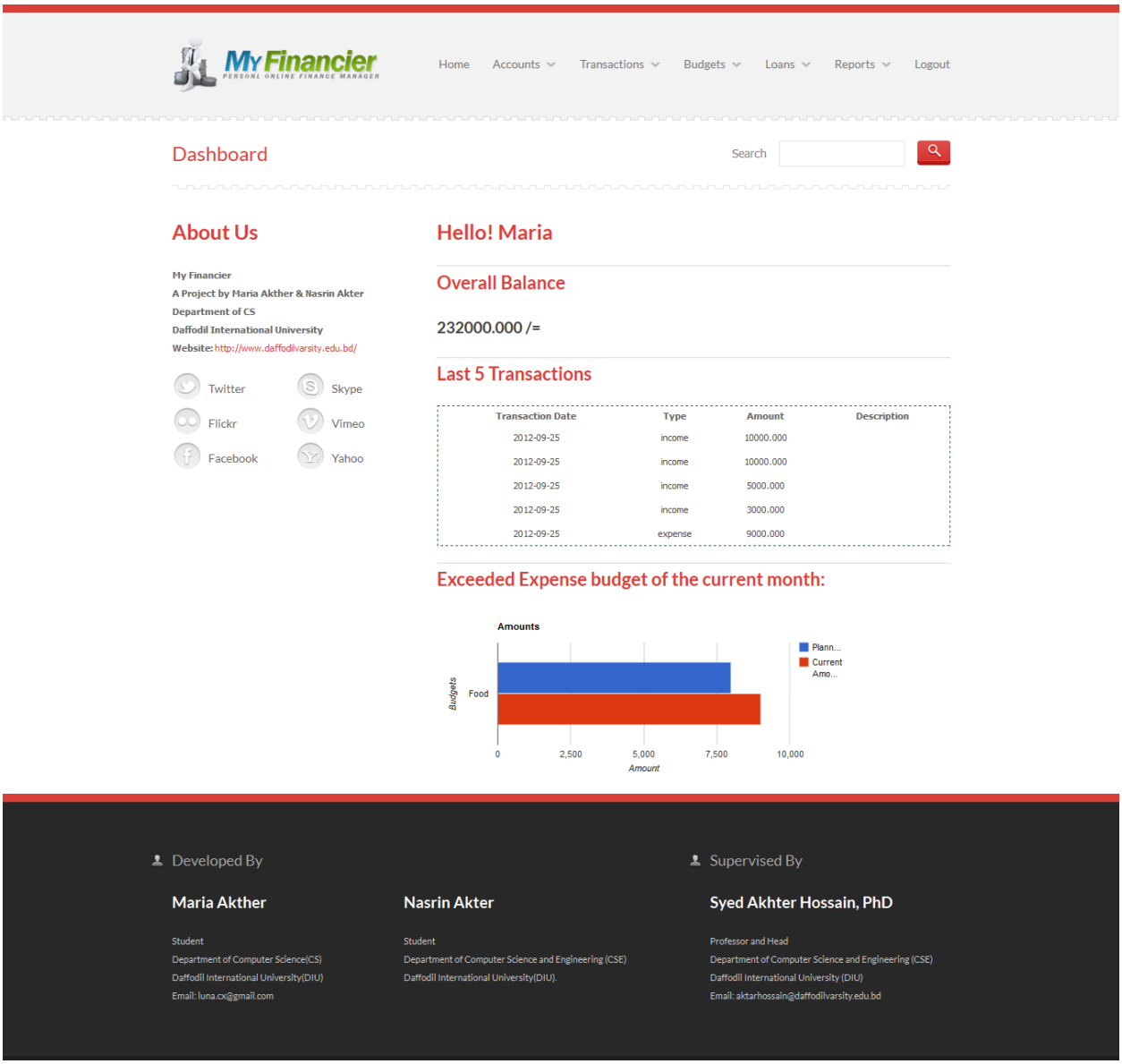


Figure 4.5: User dashboard

After login, user can see the overall balance, last five transactions and a graphical representation of exceeded budget of the month.

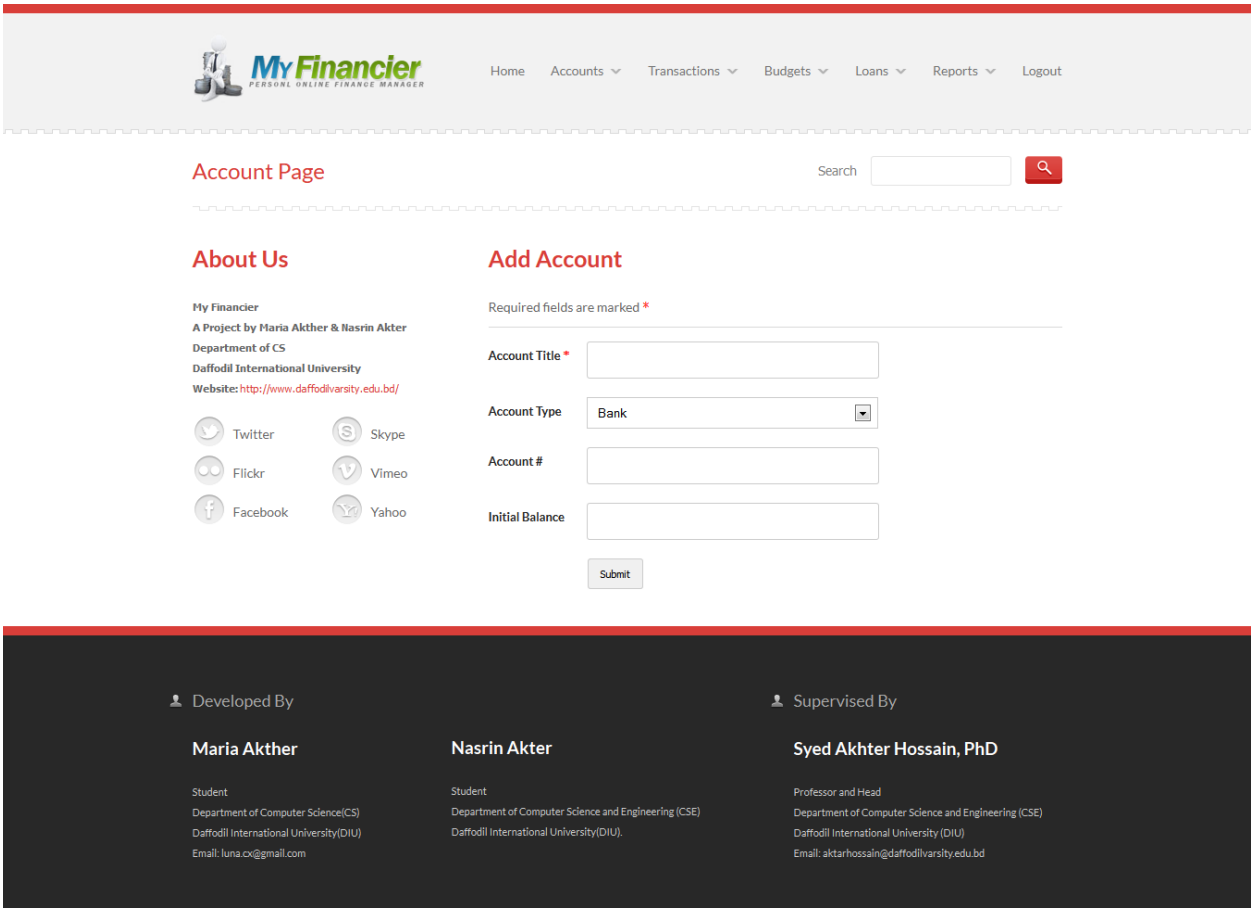


Figure 4.6: User add account form

User can add multiple numbers of accounts with account title, account type and initial balance.

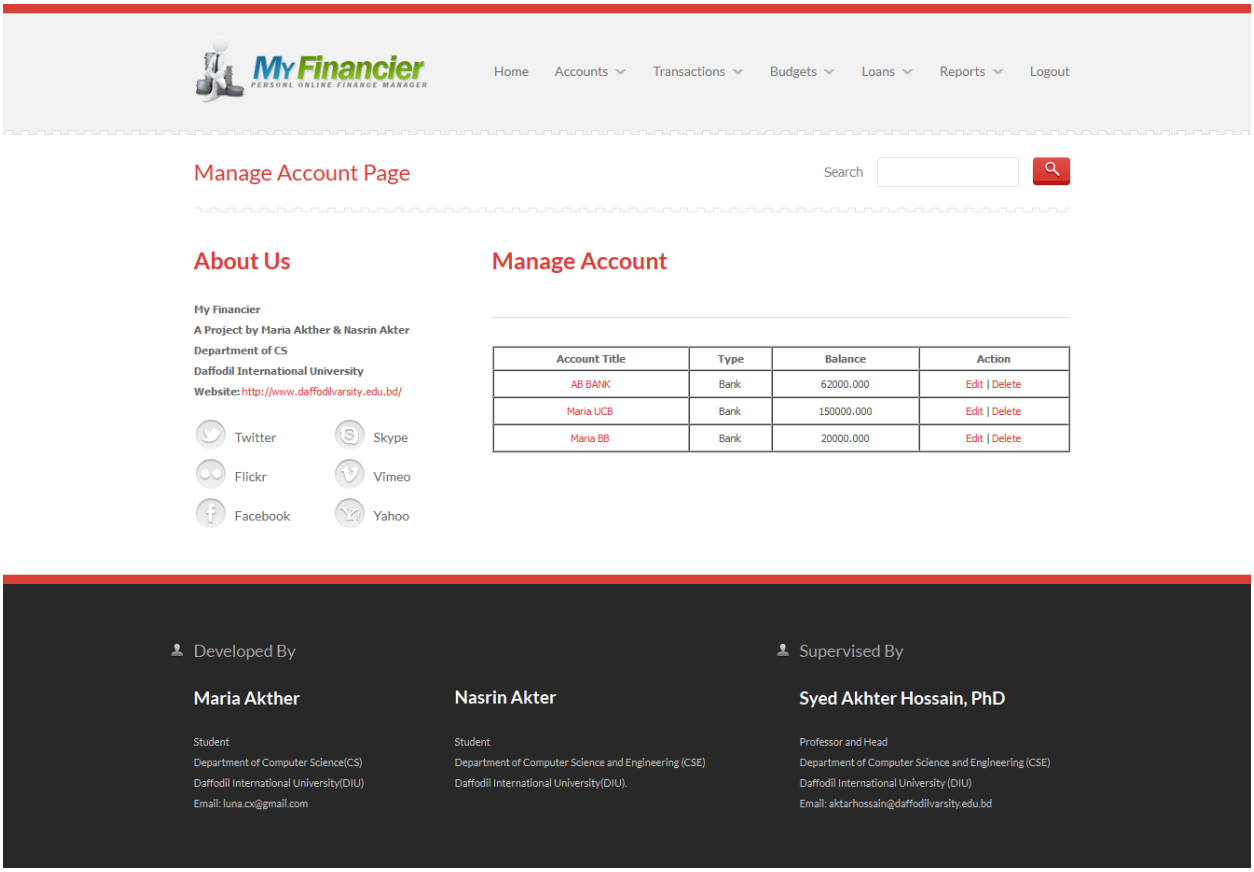


Figure 4.7: User manage account form

User can edit or delete their accounts.

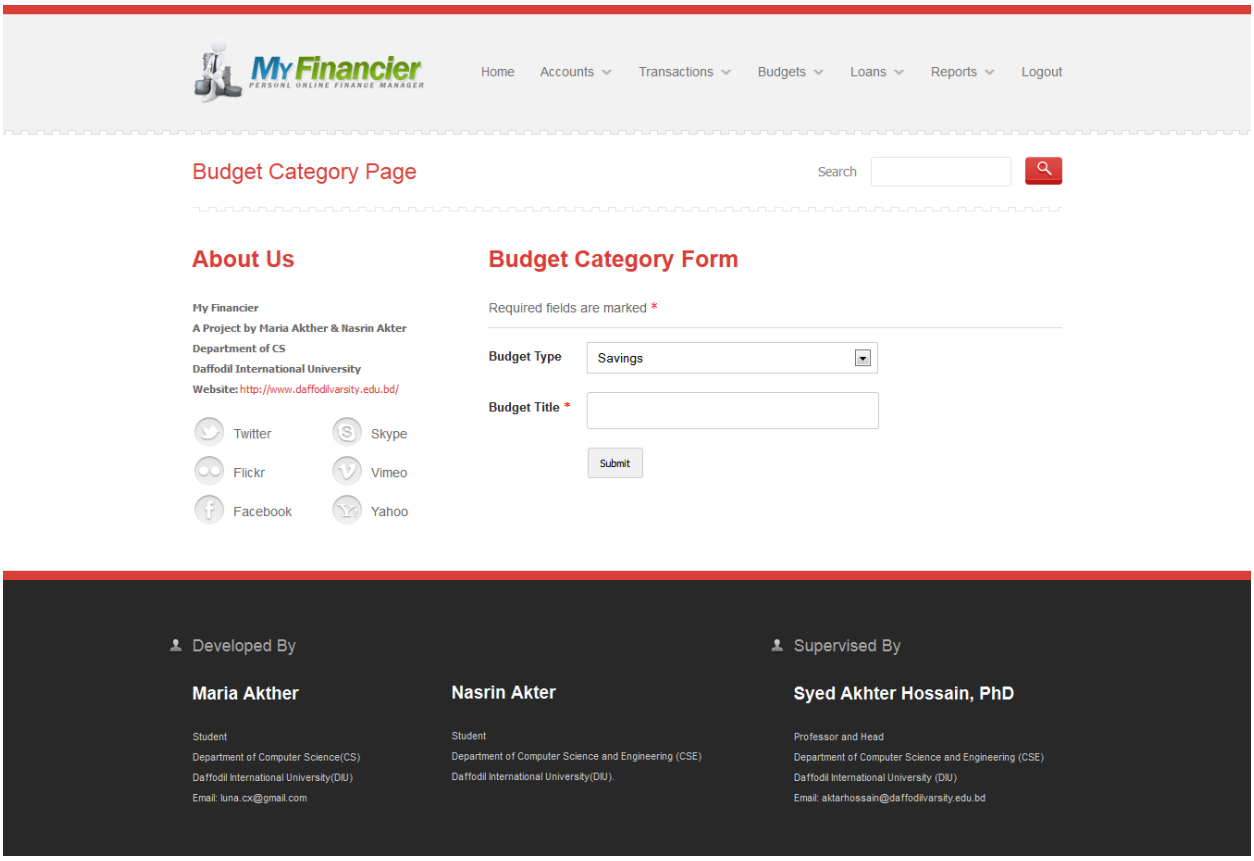


Figure 4.8: User budget category form

User can create any number of budget categories by filling out the form.

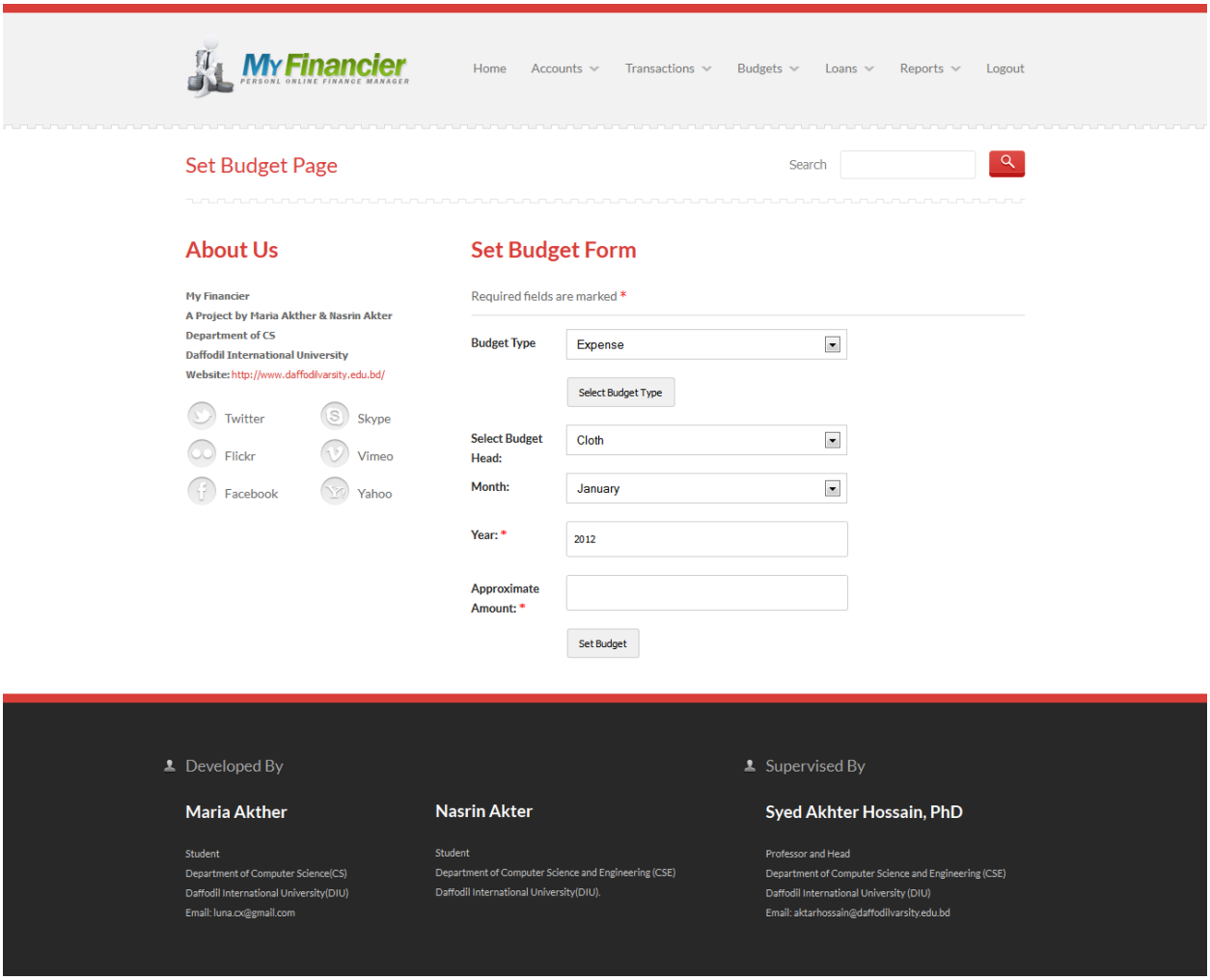


Figure 4.9: User set budget form

User can set budget for any month by selecting budget type, budget category,month,year and approximate amount.

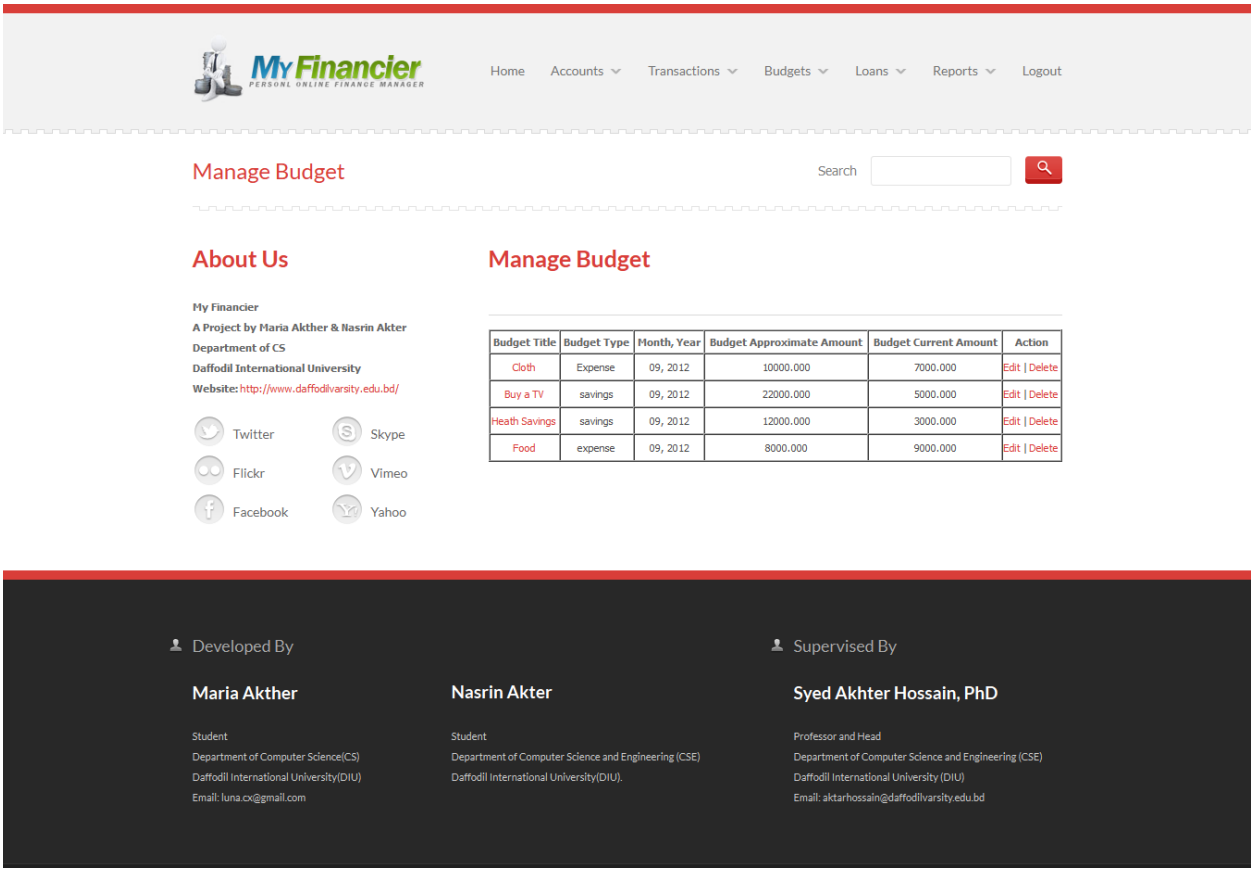


Figure 4.10: User manage budget page

User can manage budget by editing or deleting.

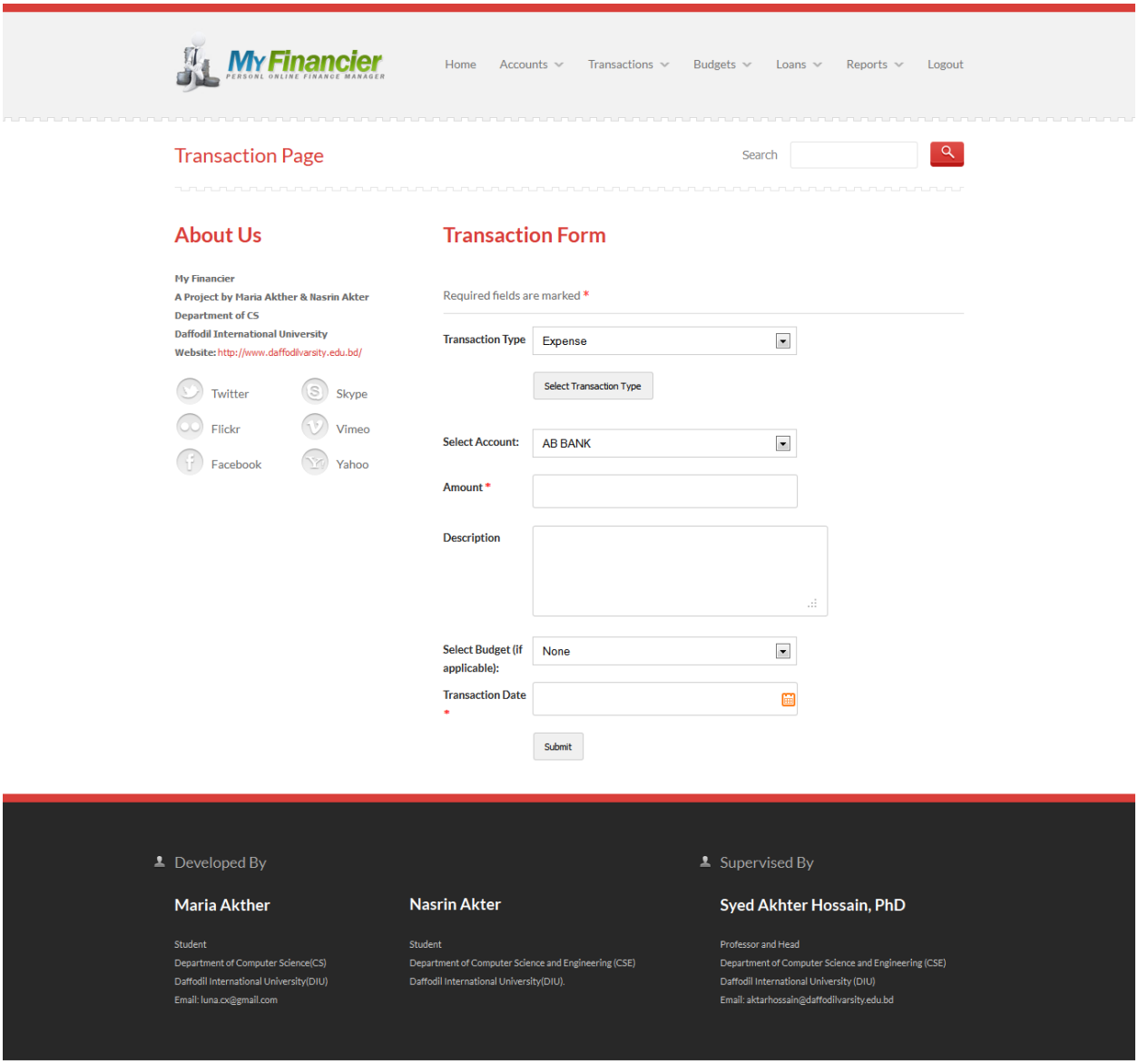


Figure 4.11: User add transaction form

User can add a transaction such as income or expense.

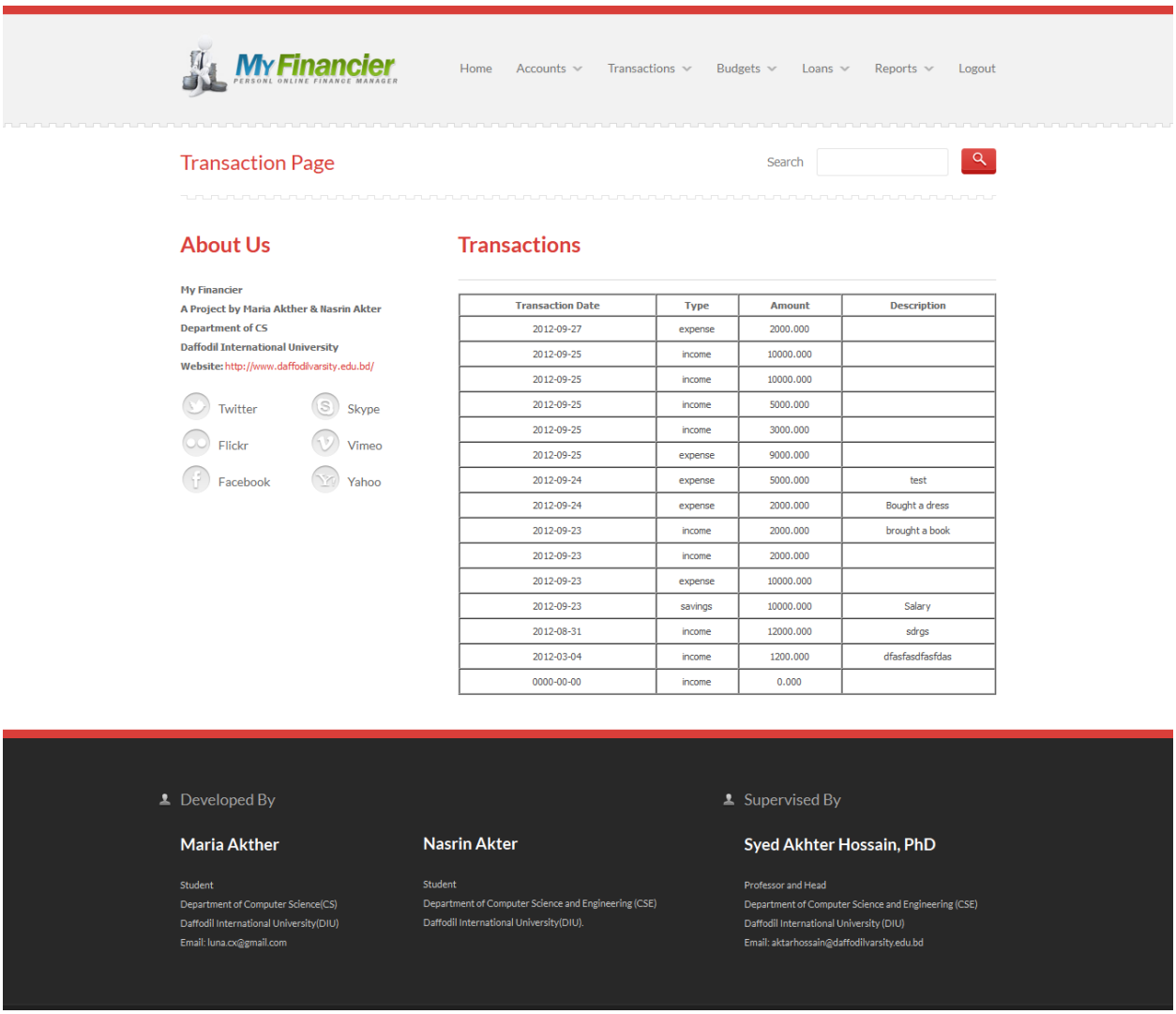


Figure 4.12: User view transaction page

User can view the whole transactions.

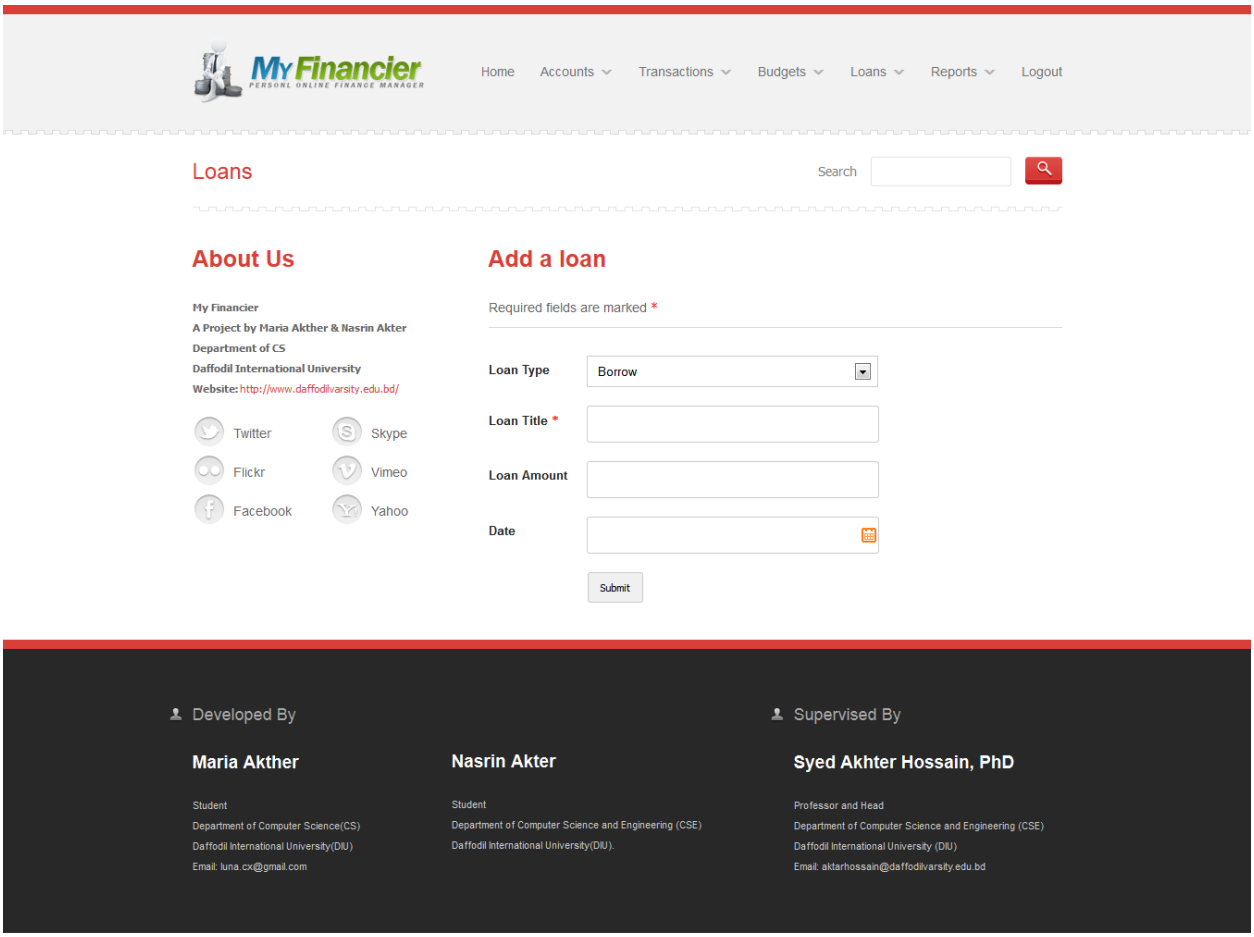


Figure 4.13: User add loan form

User can add a loan such as borrow or lend by filling loan type, loan title, loan amount and date.

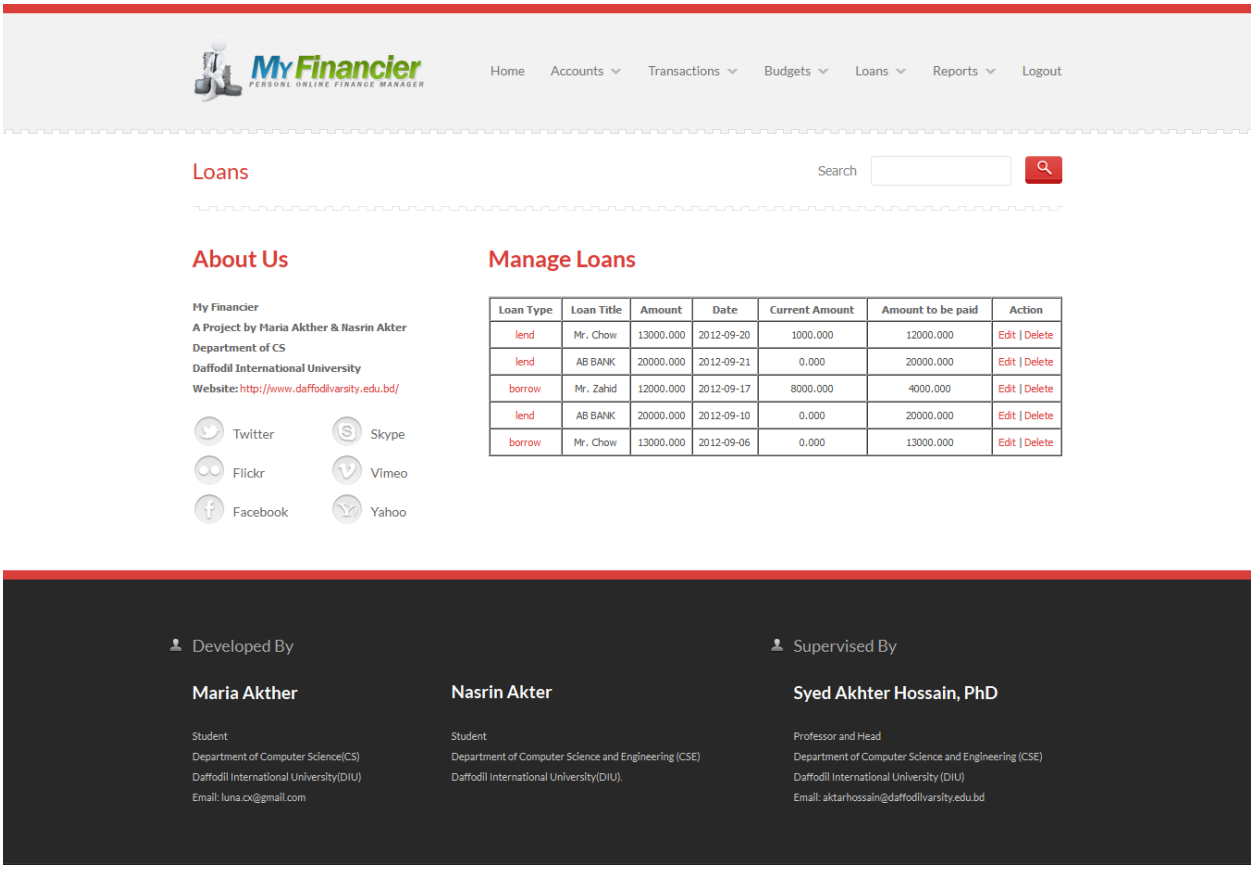


Figure 4.14: User manage loan form

User can manage loan by editing or deleting any field of the form.

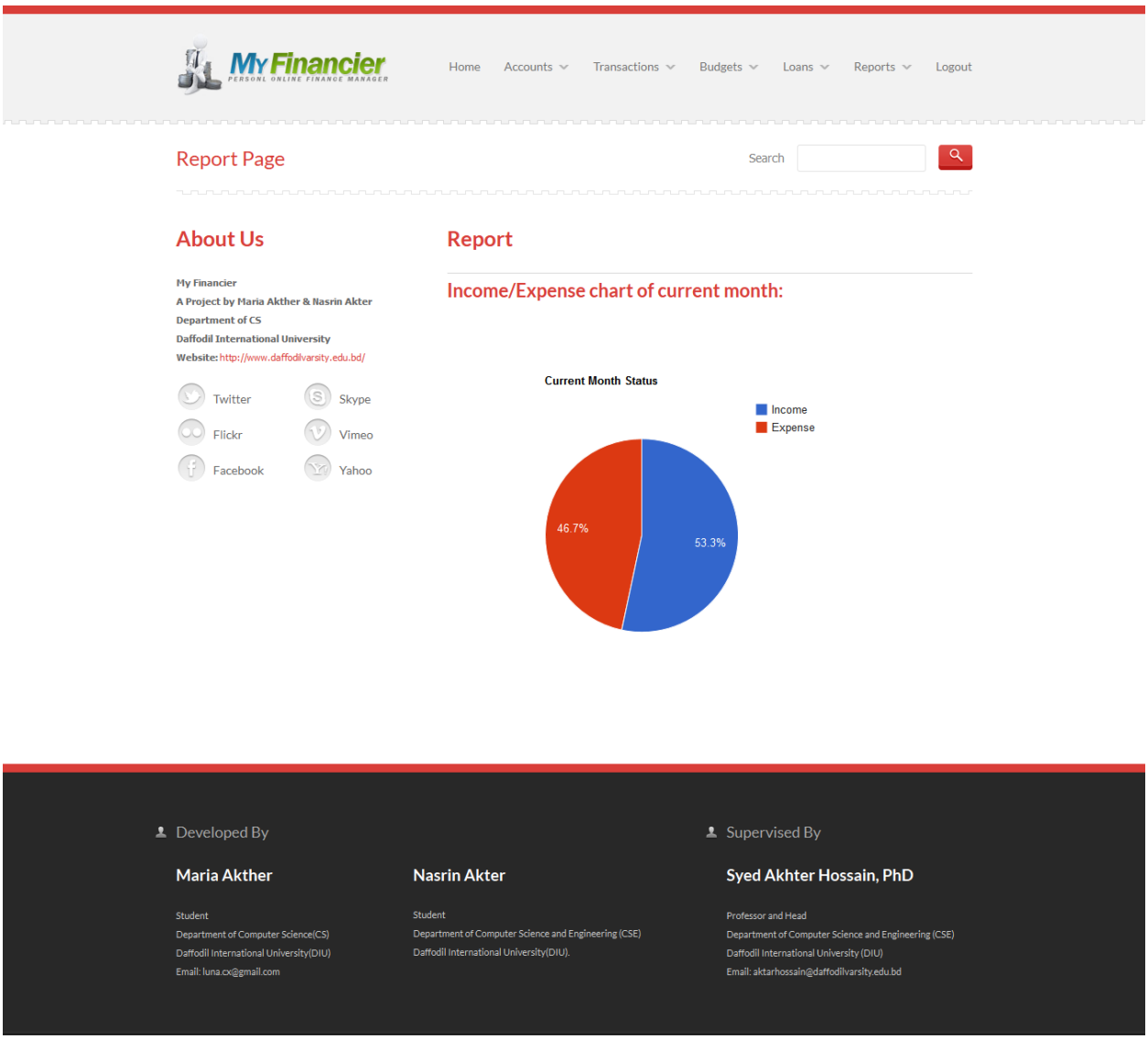


Figure 4.15: User monthly income/expense report

User can see the graphical representation of monthly income or expense report.

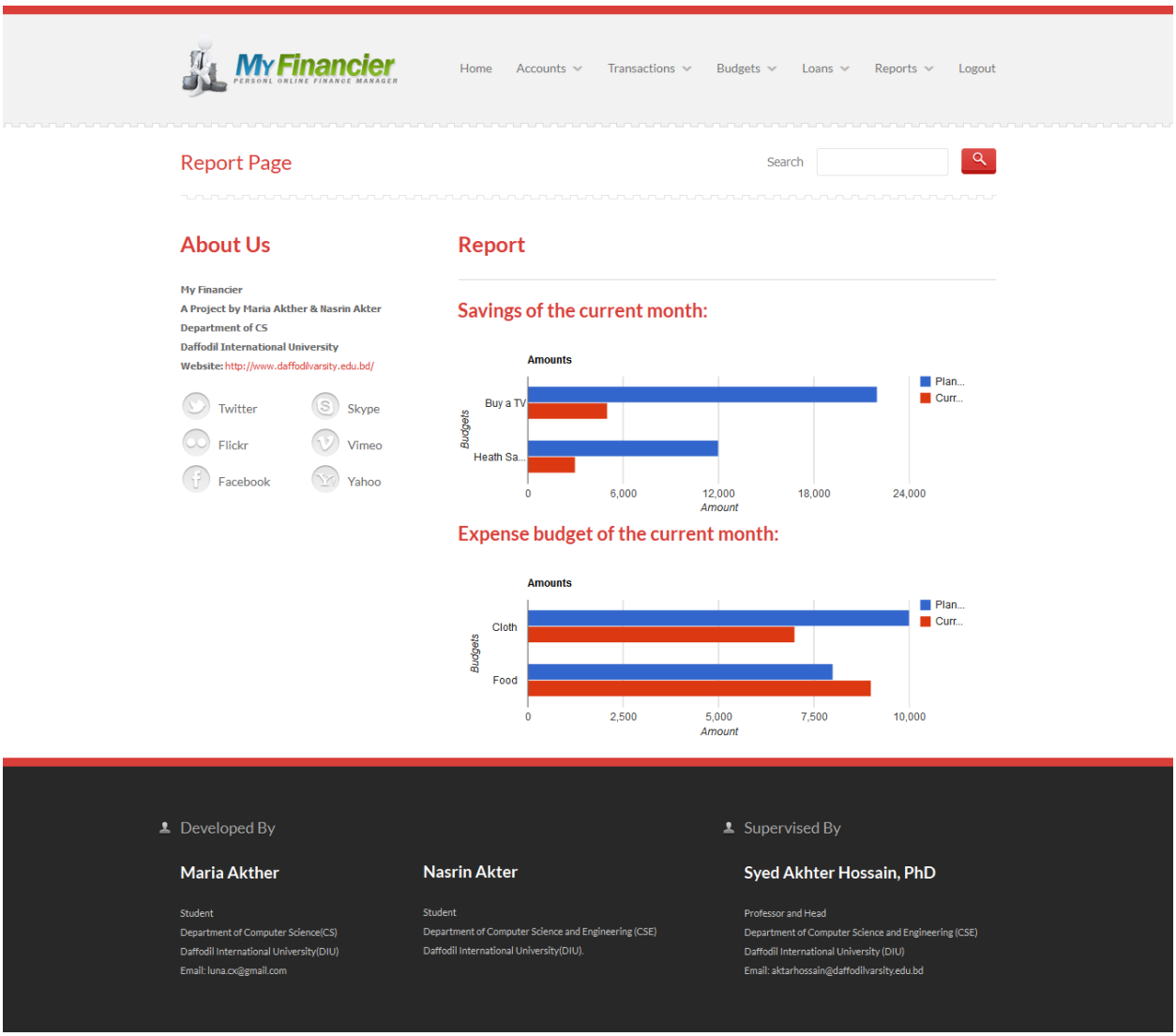


Figure 4.16: User budget status report

User can also see the budget (savings and expense) status report.

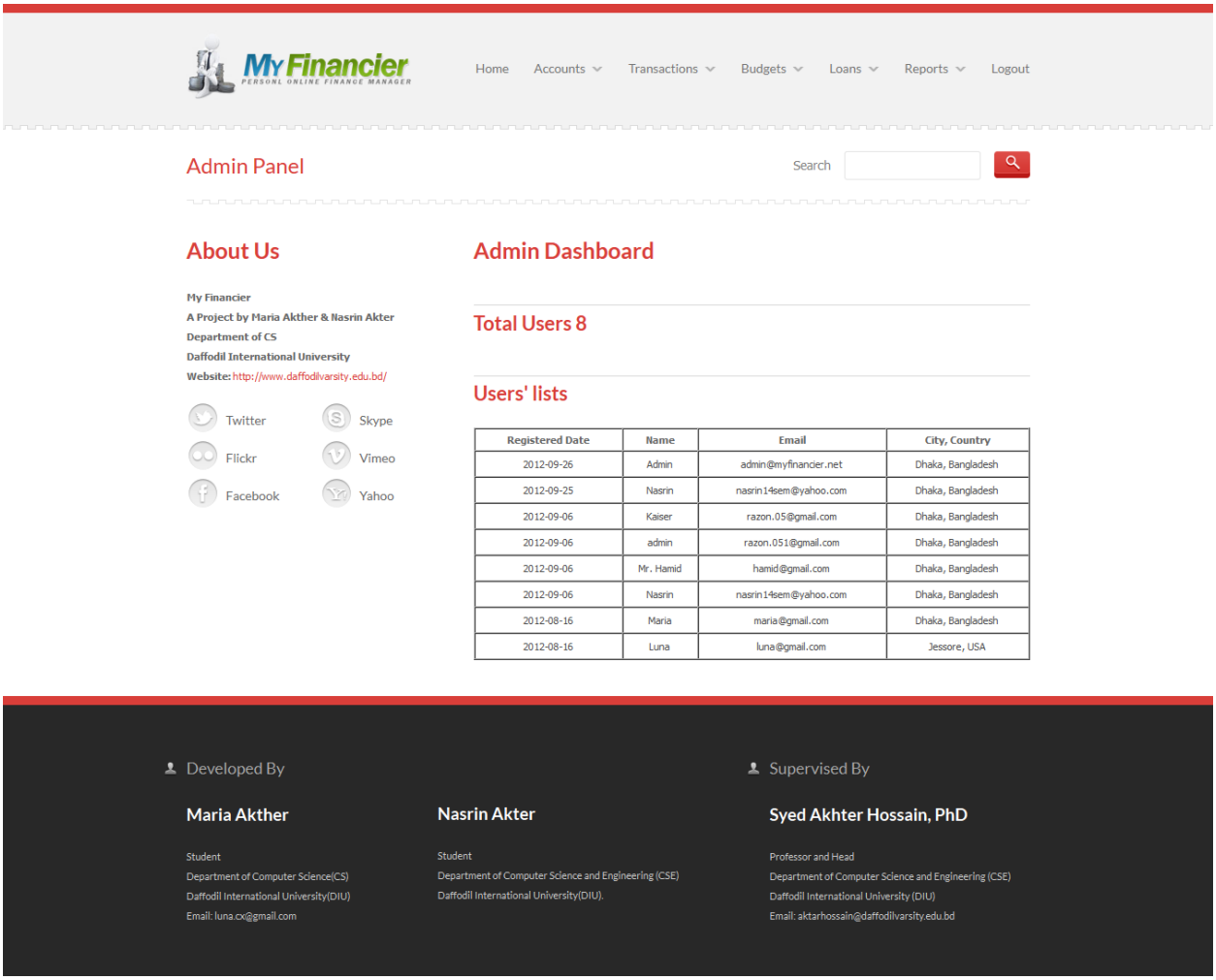


Figure 4.17: Admin dashboard

After login, admin can see the report of registered user.

4.4 Testing

4.4.1 Introduction

To improving the efficiency of a system, make sure that the process is well defined and well tested. When the integration of the system is completed, then the entire system is given for testing. There are simple ways to make things go easier to test the system using computers and the errors can be overlooked. Testing ensures proper execution of system by checking errors.

4.4.2 Security Testing

Security testing is the basic testing for a web based system. Security testing is the term of measure which protects against the disclosure of information to parties other than the intended recipient that is by no means the only way of ensuring the security.[11]

a. To access the system need user email account and password. So it prevents normal hackers to access the system.

b. In case of security testing, this system is more securing since here we used MySQL and PHP which both are popular to maintain security. In PHP, we have created session that maintains the security of every page when session starts.

c. In this system the admin area is fully secured. Without knowing the right password nobody can enter the admin area. And without entering in the admin area nobody can change the settings and other features of our system.

4.5 Test Cases

We have tested our software in three steps which are:

a. Unit Testing: Here we complete small portion of a function and then testing it.

b. Module Testing: Here we test each function of the software.

c. User Acceptance Testing: After testing each module of the system successfully, we select some user and they use our software some days. Finally when they inform us it works properly we confirm then it is successfully completed.

4.6 Summary

This testing has been carried out to ensure that the program can meet the demands of the use. The test would point the areas that need to be modified and any omission or deficiencies that the way system works.

CHAPTER 5
CONCLUSION AND FUTURE SCOPE

5.1 Conclusion

People always want to find the way to make their life easy and comfortable. Currently, we depend on the web pages much for everything such as- searching, purchase desire goods etc as there are many web applications depend on various requirements. Today's web applications are rich internet applications and developers are much concerned about applications security issues while they are developing their products. A user friendly system becomes popular rapidly and thus benefits both the system developer and its users. So we decided to develop this web application which will be user friendly, highly security protected with their financial activities and personal information and everybody will be able to manage their personal finance daily with ease via internet.

Finally we try to work about the online web based system and develop the online personal financial management system.

5.2 Future Scope

So far we are confident that we have done this web application successfully, but we have a plan to make this application more efficient, so we think about some features that can be added for future development, ideas are followings-

- We will try to make Mobile version of our project so that everybody can manage their personal financial account using mobile.
- The software will be improved further with enhanced functionality so that people of all languages can use it.

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