

Software Architecture of Online Personal Finance Management System

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Abstract— Online personal finance management system play important roles in managing finance at the personal level and of everyday use. There are different finance management systems on the world-wide web either in the form of open source or proprietary systems. But most of the systems are having specific context of usage and based on specific rules. In this work, we present reliable software architecture and corresponding system architecture of a system for personal financial planning on the web. Using through investigation and analysis, the application architecture is designed which is related to the business requirements, and the system architecture is related to information technology. The architecture is implemented using an open source web technology which uses an analysis model from the context of an industry model. The implemented system was tested and validated through feedback.

Keywords— Online system, Finance management system, Architecture, Open source, Model

I. INTRODUCTION

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].

The knowledge domain of personal financial planning is well supplied with different textbooks. In all the books, the knowledge guides to handle personal financial problems, for example, maximize wealth, achieve various financial goals, determine emergency savings, maximize retirement plan contributions, and so forth. There are also papers in journals ranging from the popular press to academic journals [2].

In general understanding, financial planning is the process of meeting one's goals of life through the proper management of the finances. These goals may include buying a home, saving for the child's education, or planning for the retirement. The financial planning also provides direction and

meaning to the required financial decisions as well. It allows and extends understanding on how each financial decision can affect other areas of the finances. Let us say for example, buying a particular investment product might help someone pay off his or her mortgage faster, or it might delay someone's retirement significantly. By investigating and observing each financial decision as part of a whole, one can consider its short and long-term effects on his or her life goals. One can also adapt more easily to life changes and feel more secure that his or her goals are on the track and driven towards target.

In this paper, after analysis and review of existing online finance management system, we worked on developing scope for the proposed system architecture as well as required implementations. The proposed system architecture is implemented using open source web technologies.

The paper is organized as follows: Section II discuss the requirements and use case model scenario of the proposed system, Section III discuss the detail about the data model requirements and finally Section IV discuss the implementation and show some of the snapshots of the application with conclusion in Section V.

II. REQUIREMENTS AND USE CASE MODEL

The requirements of the proposed online finance management system based on the different user perspectives are as follows:

From the perspective of the general user view, the user will be required with the functions: (a) user account registration: user will be able to register their profile by filling out the form; (b) User can add new account: user will be able to create account as much as they want; (c) Generate report: every registered user will be able to generate their daily or monthly report; (d) Can view online transaction activities: Registered user will be able to view their financial activities in any time from anywhere via online.

The use case diagrams [3] of the requirements are shown in the following Fig. 1 and Fig. 2.

From the perspective of the admin view, the system will provide: (a) Admin profile: Admin can create his/her own profile; (b) Check and manage users: Admin will be able to renew or block users; (c) Generate report: Admin will be able to check the number of monthly registered user, active user or inactive user.

The major requirements include (a) Multiple user registration; (b) Set up any number of different accounts, such as Bank account, savings, cash; (c) Secured online

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daily/monthly transactions; (d) Online loans management; (e) Track budget management; (f) Generate monthly report; (g) User and Admin management of all operations.

During checking of the user information, the Admin has already accessed the Online Personal Finance Management System and the user will select check user information. The system will give the options of add block or renew option and the user will select one and the system will guide the admin according to the selection and after saving selected action, admin can view his updated data.

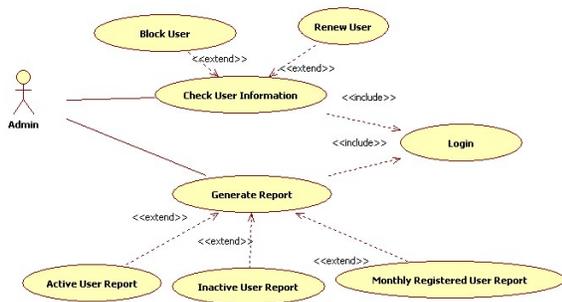


Fig.1. Use case model of Admin user

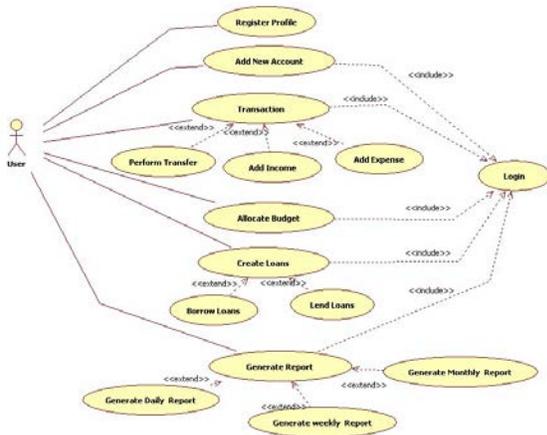


Fig.1. Use case model of general user

The Admin can generate various kinds of report for decision making. The system will generate the reports instantly based on the selected criteria. This report will be used form decision making and forecasting. Before this use case can be initiated, the Admin has already accessed the Online Personal Finance Management System. Admin select the Report and system will give various options for generating report; system will generate report according to the selection criteria and the admin can view and print the reports.

As can be seen from the Fig. 2, the general user can create multiple numbers of new accounts. Before this use case can be initiated, the user has already accessed the Online Personal Finance Management System. The user will select for add new account. The system will give the form to fill account type, account name and initial balance to the user. The user will fill the form and the system will guide the user according to the selection After saving action, user can view his updated data.

As shown in the proposed model, the user can perform transfer. They can also add income /expenses. Before this use case can be initiated, the user has already accessed the Online Personal Finance Management System. The User will select for transaction. The system will give the options of add income, expense, transfer options. The user will select one and the system will guide the user according to the selection. After saving selected action, user can view his updated data.

The User can allocate his/her monthly budget. Before this use case can be initiated, the User has already accessed the Online Personal Finance Management System. The User will select for budget allocation. The system will give the options of add income, expense for budget. The user will select one and the system will guide the user according to the selection. After saving selected action, user can view his updated data.

The user can create loan. Before this use case can be initiated, the User has already accessed the Online Personal Finance Management System. The User will select for loan. The system will give the options of lend or borrow for loan. The user will select one and the system will guide the user according to the selection. After saving selected action, user can view his updated data.

III. DATA MODEL REQUIREMENTS

The data model [4]-[6] requirements of the proposed online finance management system is shown in the Fig. 3.

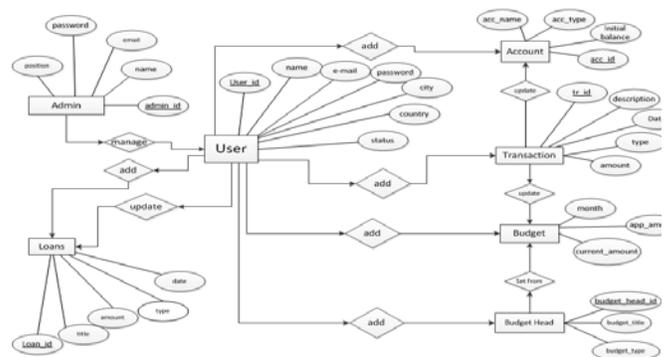


Fig.3. Data model of the proposed system

The entity relationship diagram and data model is based on the perception of real world that consists of a collection of objects called entities, and of relationship among these entities. The data model of the proposed system is shown in the Fig. 3.0. Based on the metadata requirements, the database schema is shown in the following Fig. 4.0.

Requirements analysis used the process of understanding of the user needs and expectations from the proposed system or application. Requirements are well defined of how the proposed system should behave. The software requirement analysis process also covered 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.

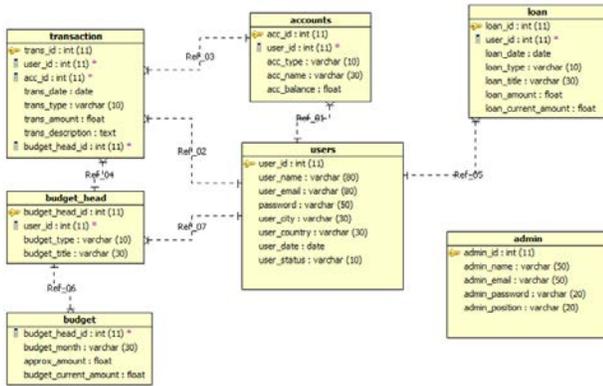


Fig.4. Schema of the proposed system

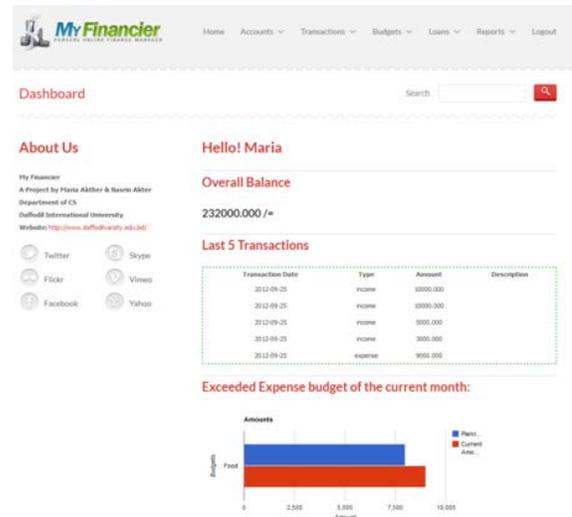


Fig.6. Transaction scenario of the proposed system

IV. IMPLEMENTATION AND TESTING

The proposed model is implemented using PHP [7]-[12] object model and a well known MVC framework called CodeIgniter.

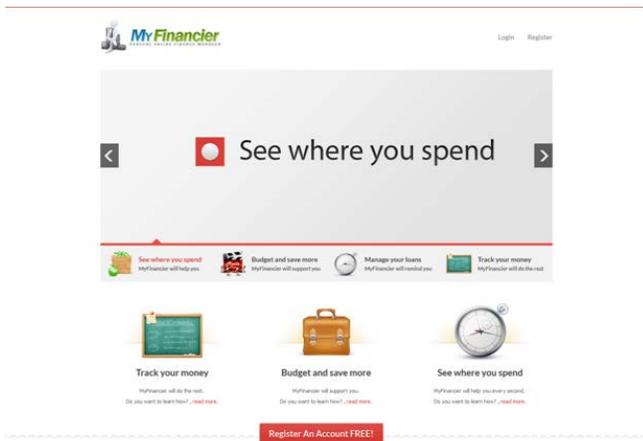


Fig.5. Homepage of the proposed system

As shown in the Fig. 5, the home page contains different elements of the proposed system which includes both the transaction and tacking components. The user, soon after the registration on the site, take care of the necessary accounts settings and start his or her personal financial management. All the transactions are recorded with all the necessary audit trails to ensure the transparency and credibility of the system in providing services. The transaction scenario and the budget status reporting is shown in Fig. 6 and Fig. 7.



Fig.7. Budget analysis report from the proposed system

V.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 as there are many web applications depending upon various requirements. The financial management system developed has shown to be very effective information system and thus benefited both the system developer and its users. The proposed system application also demonstrated proper security requirements with the financial activities and personal information.

The proposed system could also integrate e-Payment systems incorporating different payment gateways.

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