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# Web Application framework for GNUKhata using MVC Technology

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**ABSTRACT**

**GNUKhata is Free and Open Source financial accounting software developed and use in India. GNUKhata is completely flexible software for accounting and inventory management in service sectors of economy which requires auditing of accounts. GNUKhata serves such traditional accounting requirements, its special feature is that it can support emerging sectors of the economy The software is now in production use, and has several innovative features that target profit and Non-profit organizations. As it is a free and open source accounting software which already has a desktop based browser less front-end but there is no browser based INTERNET oriented solution for the front-end and the middleware. So by applying MVC based front end so that we have a 0 installation, ready to use front-end at the client side. GNUKhata is technologically highly customizable, robust, and scalable and also give its open source nature as an important milestone for FOSS communities in India... It can be easily transformed into regional Indian languages, largely unreached by existing software solutions. GNUKhata is soon to be extended to become a tool for remote banking and including payroll section.**

***Keywords:*** **Free and Open Source Software(FOSS), Model-View-Controller(MVC) Technology, Accounting and Inventory.**

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## I. INTRODUCTION

Today's Computer world serves us the needs of IT and business management with great coverage of information technologies, emerging new technologies, and career related information and analysis of various technology trends. A Free and Open-Source Computer Software provides users, freedom to run the software and right to study and modify which gives full access to its source code for any users on demand as well as to study, change, and distribute the software and the adapted versions. Software in the public domain is free if the source code is in the public domain and also available without any restrictions.

For computer programs which are covered by copyright law due to its licenses copy or other technical aspects like patents ,Digital Restrictions Management's authors grants users the aforementioned freedoms and also an stop from exercising their rights, and thus prevent software from being free. The FOSS software is not freeware or shareware, which are both significantly different to open source.

Before the advent of PCs, that is in the era of Mainframes, hardware manufacturers usually gave software for that particular hardware to run it on computers with free of cost to users. Manufacturers did this for two main purposes:

1) There were not many programmers who could write programs in machine specific language of that particular machine.

2) The cost of preparing software was negligible as compared to the cost of manufacturing hardware.

In fact, the manufacturer of computers, without any bug, used to distribute source code of the specific software hence the users could customize software according to their demands. When the PCs started appearing in the market in large numbers with much lower price, all this changed. Therefore, for the computer manufacturers, it is difficult to give free software along with hardware, because compared to Mainframes, the PCs price gets lower down. The buyers of PCs did not have the abilities to develop their personal on-demand software and observing this, the PC manufacturers started selling PCs with loaded software. And soon the

 

selling of the software for the PCs became an independent profit-making activity. They developed software by protecting their rights by patenting or copy righting it.

Obviously, this should be un-noticed, or that no one raised any voice against it. So, one such crusader was Richard M. Stallman ("RMS") forcefully advocated that computer software should not be patented or copy righted. To beat the software developing companies in their own game, he started developing software first single-handedly and then as a member of a community that believed in his philosophy.

To give open access and to use software developed by him and his community, he released the same under a new licence called the General Public License (GPL).Basically GPL is developed for such software which are Free and Open Source Software, and the right associated with it as 'Copy left' right. Later on, substantial quantity of software, in various kinds of domains, came to be released under GPL.

The construction of Financial Accounting Software followed the same path as other software. It was substantially in the private domain, that is, the software was copyrighted. Not that accounting software under GPL was not available there are a few of them, but somehow these are not appropriate for the Indian environment. This gap has been since addressed by the release of GNUKhata under GPL which is completely functional accounting software.

Accounting:

GNUKhata is a Free Accounting Software which can be deployed by both profit making and non-profit making organizations.

This software is designed to facilitate:

1) Creation of organization or Selection of existing organization.

2) Creation of Accounts under various Groups.

3) Data entry.

4) Preparation of Bank Reconciliation Statement.

5) Creation of Report.

a) Ledger.

b) Trial Balance, Net Trial Balance, Gross Trial Balance and Extended Trial Balance.

c) Project Incomings and Outgoings Statement.

d) Cash Flow Statement.

e) Balance Sheet in conventional format and Sources and Application Funds.

f) Income & Expenditure Account or Profit & Loss Account.

## II. PROPOSED SYSTEM

GNUKhata being a Free Accounting Software (note that free here does not mean free of cost but freedom), it has a distributed architecture so the core logic which is implements all the features/functionality is separated from UI(User Interface). This makes it possible to develop various kinds of Clients such as a Web client or tablet based app.

All these Clients will consume the service of the core logic so that they can use all the features of GNUKhata, so the Core Engine which implements Core Logic. Core Engine exposes it's all functionality in an XMLRPC Server system. This makes it possible for a client with some controller middleware to connect with the RPC based GNUKhata core .This makes it possible for any client with some controller middleware to contact RPC server and use it's features entire by taking data and sending it to the views or take input from views as request and converting it to the RPC packages and sending to core while views could be in HTML and JAVASCRIPT.

The middle logic right now is in PYTHON and we propose to move the system to REST API the control logic does the work for brocading request and response by using Core Engine as a service.

### MVC Architecture

We describe the MVC architecture and defined as the model-view-controller, in this section.

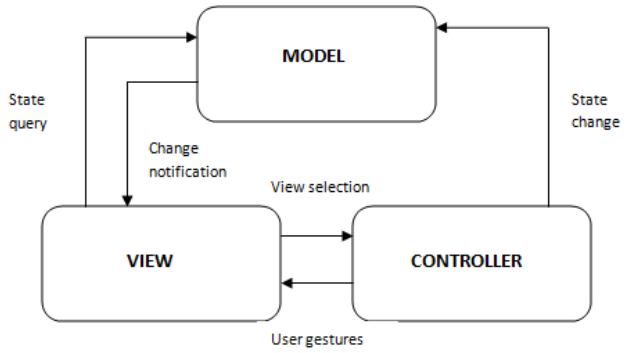


**Fig 1.** MVC System Architecture

MVC Architecture has become widely accepted among programmers and web application developers that designing Web applications in explicit conformity to these frameworks facilitate the re-use of code and the experience which is gleaned by the best and bright world software development efforts.

### What is MVC?

MVC (Model-View-Controller ) defines the is a design pattern for the architecture of web applications. MVC is a widely adopted by various pattern, across many languages and implementation frameworks .The main purpose of this technology is to achieve a clean separation between three components of most any web application , those three components are Model ,View and Controller.

 

## III. PROPOSED MODULE

Model: business logic & processing
View: user interface (UI)
Controller: navigation & input

The architecture of the MVC is shows in fig 1. As shown in Figure 1, the architecture consists of the following parts:

1. **Model :**

In the model section it again divided into three parts mainly are as follows:

• Application State: This data model defines objects abstractly.

• Application Rules: Business logic if the particular Application.

• Persistent data: Long-term storage of the data and time-frame of the user's session in the application.

2. **View :**

The View layer is made up of web pages that user can sees and it also includes core data(the subject of page's business) , business logic widgets e.g. Modification buttons such as save or edit, navigation widgets e.g. navigation bar and Skin (standard look of the site: logos, colors, footer, copyright, etc.).Views in a web application that can be accessed by non-traditional browsers, such as PDAs or cell-phones, and also include user interfaces for each supported device or browser type.

3. **Controller:**

The Controller contains business logic of the application and it performs the following functionalities such as:

• Parse a user request ("reading data and decode it")

• Validating the requests of users (i.e., assurance to Conformation of application's requirements)

• Determining the action of user (Based on URL, request parameters, And/or form elements)

• Obtaining data from the Model include in responding to user if necessary.

Hence, the sequencing of calls to the Model (business-logic layer), and/or the sequencing of views and required input from the user defines the application's work flow. In short the total Workflows thus defined in the Controller layer of the application.

Hence, the MVC provides us benefits into multiple categories: such as separation of concerns in the database, parallel development by separate teams, developer's specialization and focus.

## IV. CONCLUSION

Due to distributed architecture of GNUKhata it has become unique free software in the field of finance. Other proprietary and FOOS based solutions don't give the freedom of different clients with the same core logic. GNUKhata has provided a free solution which satisfied a big range of users from enterprise customers who need a web based solution till the individual users who need a stand-alone system all getting same scalability and future set.

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