

Inventory Management System using Struts Framework Architecture

Mr. Shreyas Borwankar

Student, Computer Engineering, D.Y. Patil College of Engineering, Pune, Maharashtra, India

ABSTRACT

Every organization needs inventory for smooth running of its activities. It serves as a link between production and distribution processes. The System maintains computerized information related to the Organization. Which maintains and saves data in the form of excel sheets which are being accessed by the organization admin and its employees which is a very tedious job. Security is very low as anyone can access the data, even the ones who are not having permissions to access the database. To reduce these problems the new system is providing a level-wise authorization for the security purposes. The System is related to the processing of information on NPD (New Project Development) which will be including the product activity tracking till the product dispatch. This system also will be providing additional features level-wise authorization for the security purpose.

KEYWORDS: Cloud, inventory, MVC Model, Struts Framework, etc

How to cite this paper: Mr. Shreyas Borwankar "Inventory Management System using Struts Framework Architecture"

Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-5 | Issue-4, June 2021, pp.139-143, URL: www.ijtsrd.com/papers/ijtsrd41202.pdf



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1. INTRODUCTION

Inventory is a technique of maintaining the inventory at different authorized level, so that the production and management applied on different level. Inventory Management is tracking of Information Services and data. In this system four main areas are concern:-

- **Maintaining enough inventory-**
An organization needed to manage the inventory such that (Stock, Employee info, Product, PO, Quotation) Management.
- **Authorization access in inventory**
Authorization is important for security purpose. Authorization is the function of specifying access rights to resources related to information security in general and to access control in particular.
- **Tracking Inventory**
The tracking system is important in inventory system because it will use for track the inventory and analyze the inventory.
- **Maintain Flow of control**
In this flow of control manage the level wise control to handle inventory system.

1.1. MVC Architecture:

The Model-View-Controller is a design phase of web based application pattern. Using MVC architecture make a multi layer web based application.

Model is a principle of application part. Another name of this layer is an application logical layer. Using this model record the data in database. View is presentation layer part. In this present the client side information and it will major function is it's provide UI (User Interface). Controller is control the data and UI of client or server side or response of all operation and performs more functionality.

1.2. Struts Framework architecture

The Struts framework is a used for developing well architected web application. This struts framework work like MVC architecture (Model, View, and Controller).

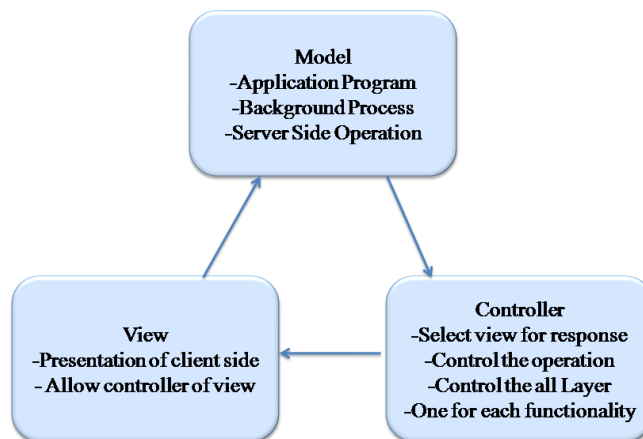


Figure 1.1 MVC Architecture

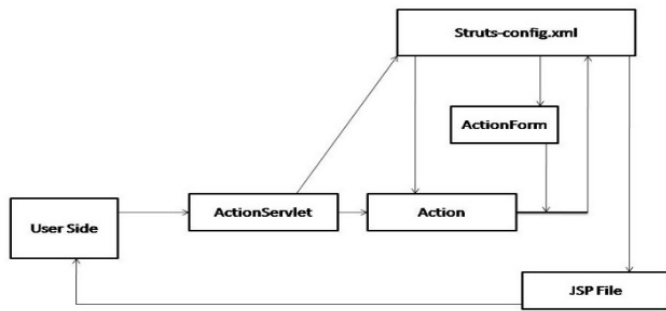


Figure 1.2.1 Struts Architecture Flow

This architecture use for interaction between view to action and action to view. In this system use this architecture because the Model is use for application state, View is used for presentation of data (JSP file) and Controller is used for controlling the application of flow.

2. LITERATURE SURVEY:

A. Development of Inventory management System.

This paper introduces Agent technology into domestic storage management and uses the autonomy, reactivity and sociality of Agent to realize the seamless connection among enterprises by defining interaction and cooperation mechanisms among different Agents, thereby achieving the aim of reducing and even eliminating inventory, so it is a feasible thought and method for enterprises to realize effective storage management. This paper mainly designs a storage management system model based on multi-Agent and describes main Agent cooperation processes of the system.

B. Design and Application of Java Web Software Architecture Based on the SH Middleware.

Some technical problems in developing Java Web application software are discussed. With introduction of SH (Struts + Hibernate) middleware, the advantages of SH in J2EE software development are analysed, and a feasible B/S software architecture is proposed in this paper. The interface coupling between different layers of software architecture reduces the influence on the whole software system caused by the change of certain layer. At presentation layer, utilizing Struts2 frame can separate the display and control at the data layer. Therefore, the mapping between the object and the relation is realized with the use of Hibernate3 framework. In order to manage Hibernate systematically and to provide services for DAO, it is necessary to design Hibernate management tool class. In such framework, POJO is always used as a transfer parameter between different layers from the front stage JSP to the back stage Hibernate. It encapsulates the client data at presentation layer and maps the database table at the data layer.

C. Agricultural Inventory Management System.

Agricultural Inventory Management System makes agricultural production pattern accessible to the detail of agricultural parcel and farmer. Moreover, animal and agricultural mechanization assets and their details are recorded at village and farmer level. Thus, it becomes possible to produce agricultural statistics which leads national agricultural policies and strategies by using reliable, insight data and support national commerce policies by annually, semi-annually, quarterly and monthly periods. In addition, with online up to-date data warehouse and data mining services, on-field checks of agricultural supports; monitoring agricultural activity seasonally; planning and timing activities like expropriation and land consolidation that can harm the crops; detection of production and farmers

that are affected by natural disasters are made possible. System is controlled and managed by Control Centre.

D. Business Processes Solution with Apache Struts Framework, Su Su Khin, Department of Engineering Physics, Mandalay Technological University, Mandalay.

A web application is a software system that contains the computing and networking technologies required for use through web browsers on the Internet Web application has now become one of the major forms of the information systems over the computer network based on the World Wide Web technology. The fundamental feature of web applications is that its behavior is specified by the interaction between the environment and the system. One of the major platforms to build web applications is J2EE based on the MVC model. A framework gives a concrete method for the building pattern. A framework based on the MVC model such as Struts. This paper is concerned with the use of Apache Struts Framework. This framework is analyzed at designing educational Web Application "Library" Reservation System and focused on the action processes of model (Model) have been created new component.

E. An Efficient Implementation of SHA-1 Hash Function.

The latest cryptographical application demands in a typical embedded system demand both high speed and small area. Hash function has been widely used in the digital signature, message authentication. In this paper, a new area efficient SHA-1 implementation is proposed. The proposed design was captured using VHDL hardware language and also implemented on Xilinx FPGA. The correctness of the functionality has been verified using simulation tools and the test vectors. A comparison between the proposed SHA-1 hash function implementation with other related works show that it occupies very small area while also achieving a high throughput, thus it could be adopted in an embedded system where area constraint is a concern.

3. OBJECTIVE:

To provide a system driven approach to that companies which have been depending on personnel for getting the work done. With the increasing attention to the infrastructure sector in India, different companies are fronting massive burden in retaining expert manpower and streamlining the operations. This system ensures the perform inventories operations, even in such high mobility environment. And maintaining daily and proper level of stock.

4. PROPOSED SYSTEM:

This System will focus on individuals and small businesses' users. The primary use for the Inventory Management System is to track and monitor sales and available inventory of a business. Moreover, the functionalities needed by Organization are Items, Orders, Suppliers, Customers, Users and Authentication". In this system manage the inventory on web-based application with authentication.

In this system all their activity are available for performing operation on inventories. When organization needed to maintain the daily work, daily selling, Producing Stock Management, Employee information, Purchase order, Quotation. This system is a using JAVA (JSP) technology use for developing the inventories WEB-Based Application. Using the struts framework many security are provided with authentication algorithm also applied by using java source code because java platform independent language and one

more thing it will supported by JAVA programming languages. In this system will be use 3-layerd architecture for making the operation on inventory. First layer will be use for a GUI user side, second layer will be operational layer and third layer will be database side. The database is used for MySql for store and updates the data in inventory for managing and eliminating the cost of managing the inventories.

This system implementation using web-based technology so they can easily access anywhere and any platform without interruption.

This system multi layered architecture functions are:

The Client Layer

J2EE support the many kinds of client types. The main body of program sun in server side but the presentation will be run on client side (Client Layer).In this system client side will run on JSP file (Presentation of WebPages) and the other operation will be perform in server side suing struts framework architecture

The Presentation Layer

In presentation layer is also called as web layer. The presentation layer Major functions are deals with HTTP request and response.

The Persistence Layer

In this layer function is performed background operation server side. controller manage the persistence also manage the presentation.

4.1. ALGOTITHMS:

A. Hashing Algorithm

Any function that can be used to map data of random size to data of fixed size can be called as a Hash Function. The hash codes, hash sums, or simply hashes are the values returned by a hash function. Hashing Algorithm uses a data structure called a hash table, which is widely used in computer software's for rapid data lookup. Hash functions accelerate the search process by detecting replicated records in a large file.

Hashing algorithm is a cryptograph has function. This algorithm is used for authentication in inventory management system for security purpose. The SHA-1 algorithm is used for encryption string. The hashing algorithm process are setting the hash initial value, parsing, padding, constants, and hash values and for loop operation also included. in this algorithm the fixed length also observed.

MySQL sha1() function calculates a SHA-1 160-bit checksum for a string. The function returns a value as a binary string of 40 hex digits. If the string supplied as argument is NULL, the function returns NULL.

Eg. SHA1(str)

Query for SHA Encryption:

```
SELECT SHA1('admin');
```

Explanation: - The above MySQL statement returns SHA1 checksum of admin string. The return value is d228359c41174cede6b3c401eb8d11746a4ad1eb.

4.2. ADVANTAGES:

- Centralized data storage
- Organizational efficiency and improved profitability
- Authentication of all users with data.

- Efficient user friendly.
- Resolves all the issues related to inventory management system which can be Multi Location Inventory, Deployment Man-Power and Billing of products, Multiple Site Monitoring, Purchase order management, etc.

5. MATHEMATICAL MODEL

- Let S be the solution perspctive of the given problem such that,
- $S = s, x, y, DD, NDD, Fme, cpucorecnt, failure, success,$
- S - s be the initial state
- X - x be the input of the system.
- Y - y be the output of the system.
- Fme - be the main algorithm resulting into outcome y.
- DD - The DD be the deterministic data,it help identifying the user Validation record.
- NDD - NDD be the non-deterministic data of the system to be solved. These being computing function or CPU time or Alu time complexity.
- CPU core cnt -is the no of core of the CPU.
- Success- desired output is generated.
- Failure -Desired output not generated,forced exit due to system error.
- In our problem statement:
Input $X=X1$
Initial success can be defined by giving
Login validation details
- Input Analysis:
- Let $X1=\{x0,x1,x2,x3,x4,x5,x6,x7,x8,x9,x10,x11,x12,x13,x14,x15,x16,x17,x18,x19\}$
- Be such that
- x0 be the id.
- x1 be the Name.
- x2 be the Address.
- x3 be the Contact No.
- x4 be the email-id.
- x5 be the Quantity.
- x6 be the Price.
- x7 be the Vendor Name.
- x8 be the User Type.
- x9 be the password.
- x10 be the date.
- x11 be the month.
- x12 be the stock id.
- x13 be the Quantity In.
- x14 be the Quantity Out.
- x15 be the Site Location.

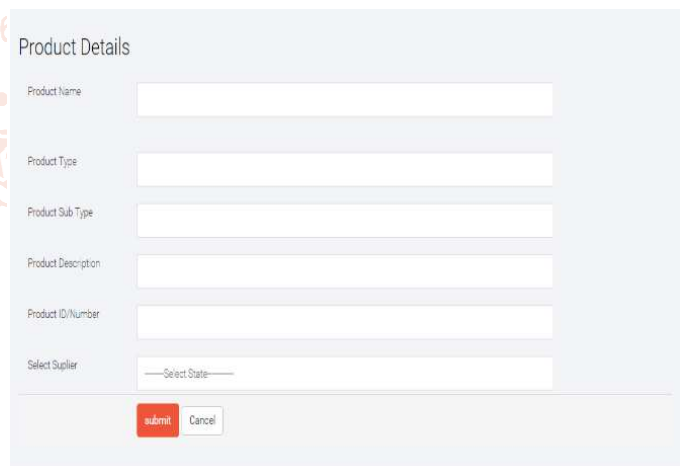
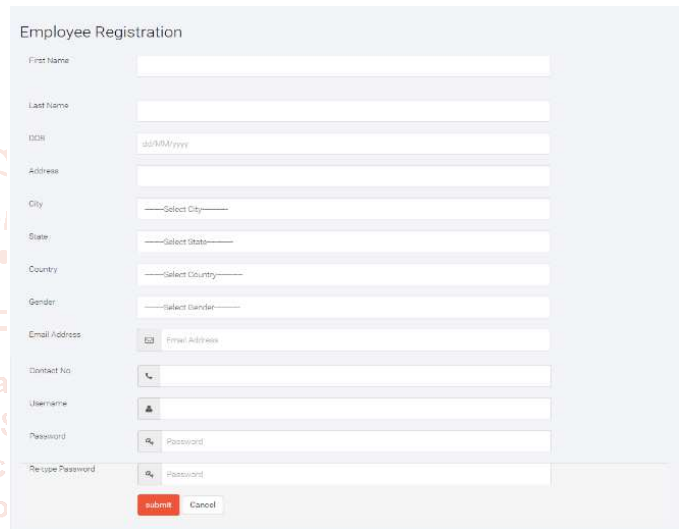
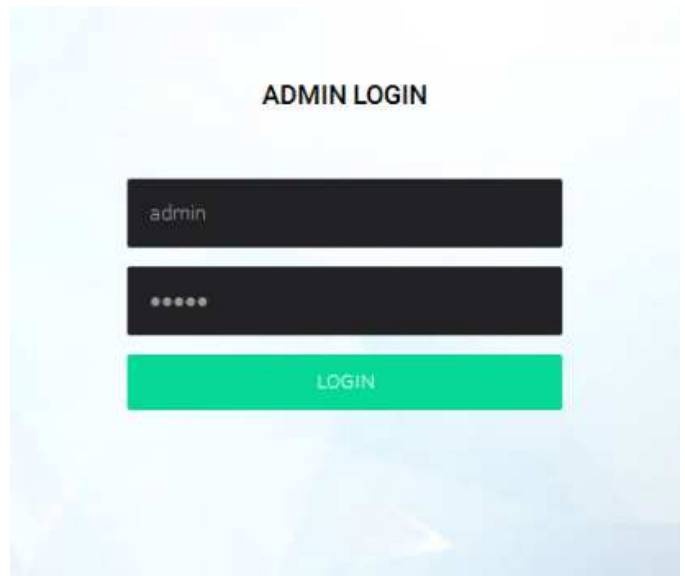
- x16 be the User Id.
- x17 be the User Name.
- x18 be the Quotation Id.
- x19 be the Billing Id.
- Memory requirement based on the data:
- These are the necessary system dependencies to be included.
- Hence, • $F = \{f1, f2, f3, f4, f5, f6, f7, f8, f9, f10, f12, f13\}$
- f1 be the Purchase Order.
- f2 be the Billing History.
- f3 be the Login.
- f4 be the Logout.
- f5 be the Add New User.
- f6 be the Display.
- f7 be the Export.
- f8 be the Edit.
- F9 be the Save.
- F10 be the Enquiry Details.
- F11 be the Follow Up.
- F12 be the Quotation Info.
- F13 be the Billing Info.
- Outcome analysis:

Let Fme be a function that perform the core function in the problem to be executed successfully. $Fme - y1 - x1$

6. RESULTS

Comparative Analysis:

Parameters	ABC analysis technique	Proposed Algorithm
Increase inventory optimization	Maintains lower stock for lower value and low consumption items	Maintains adequate stock for all items.
Cloud support	No such facility	Provides centralized data storage
Undersupply or oversupply issue	It looks at high dollar-based values so there is risk of running out of lower cost items.	Maintains stock based on current stock and demand of each item
Loss risk	Due to high dollar-based approach excess stock may increase risk	Minimizes loss risk
Low information Extraction	Does not provide all statistical data of inventory.	Maintains all data related to inventory in simplified way



7. CONCLUSION

This paper has presented an inventory management system, the database needs to be updated every day or before inventories so that new eligible data may be enrolled and those who are useless are removed from the database. In this paper the inventory related discussed and in general and the focus is on making the Inventory system more user friendly and faster than other. Also we have discussed Struts framework architecture based MVC Model technique to managed correctly action to view and view to action flow. This Inventory management system helps a particular organization or companies to manage the inventories without any problem.

ACKNOWLEDGEMENT

We might want to thank the analysts and also distributors for making their assets accessible. We additionally appreciate to commentator for their significant recommendations furthermore thank the school powers for giving the obliged base and backing. We would also like to thank all the faculty members of SRTTC for their critical advice and guidance without which this project would not have been possible. Last but not the least we place a deep sense of gratitude to my family members and my friends who have been constant source of inspiration during the preparation of this project work.

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