

A Java Approach for Implementing Organizational Information System on NetBeans Integrated Development Environment

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Abstract—An organizational information system (OIS) has been designed and implemented using visual web Java Server Faces (JSF) on NetBeans Integrated Development Environment (IDE) 6.5 in Instrumentation and Informatics Research Laboratory, Department of Electronics Science, Gauhati University, INDIA. The database for the system is developed using My Structured Query Language Version 5.0 (MySQL). The connectivity with the database tables are implemented using visual web JSF data provider components. The applications have been created using the framework of visual web JSF. This paper describes in details the aspects of software, design and technique for implementation of the system.

Index Terms—ACID, JDBC, MySQL, NetBeans IDE, OIS, RDBMS.

I. INTRODUCTION

Most of the organization, (e.g. Universities, Industries and Corporate sectors) uses computers and information technology for storing and retrieving information. It is essential for them to implement web technology in their activities for the resources available to them or through vendor services. Web-based services are important for them in various types of transmission and reception of information. Nowadays every organization has their own web application, which gives its related information to the users across the world which becomes beneficial for both the organization and the user.

For effective decision making in due course of action, an organization needs reliable and accurate data handling. As per the requirement of different sector, different software tools are used to get the required output. In present scenario, for all-round growth of an organization, implementation of information technology is quite essential. All organizations need to store adequate data and retrieve them with an option for addition and deletion of data as required. The process can make information and resources sharing possible without regard to the physical location of the resource and the user.

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An OIS can be designed by using Extensible Markup Language (XML) based proprietary software platform e.g. .NET [1] or Java based open source platform, e.g. NetBeans IDE. The Java based system design is not only cost effective but also platform independent. It is open source software tools mainly used for simplifying developer's task. This IDE is written entirely in Java. It mainly supports the development of all types of Java applications. It includes JSF based components which are used to build rich User Interface (UI) [2]. Open source Database Management System (DBMS) have reached a high grade of evolution and are seen as a cost effective and functionally adequate alternative to commercial DBMS by many research organizations and business establishments [3]. In such a system data is stored in tabular form and user queries are made to get the required information. The MySQL database supports Atomicity, Consistency, Isolation and Durability (ACID) [4].

Apache Tomcat can be used as the servlet container for such a system, which is fully compliant with the JSF 1.2 [5]. It is an implementation of the java Servlet and is developed in an open and participatory environment [6].

Keeping this in mind we have developed our system using NetBeans IDE6.5 with inbuilt application server Apache Tomcat 6.0 and MySQL server for storing data.

II. THE PRESENT SYSTEM

The block diagram for the present system is shown in fig.1. The system has been developed by considering the profile of the department of Electronics Science, Gauhati University as sample data. The connectivity with the database tables are implemented using visual web JSF data provider components. Create, Read, Update and Delete (CRUD) operation is performed to get the required output. CRUD is an operation in which data is created, retrieved, updated and deleted according to requirement.

The system is designed in such a way that users can access the information according to their requirement. But the user is not permitted for creation, modification and deletion of data. These can only be done by the administrator.

A. Software Aspect

The system has been developed to facilitate the user to retrieve the information about the resources available in

the department (e.g. Information about the faculty members, office staffs, students, their addresses, phone

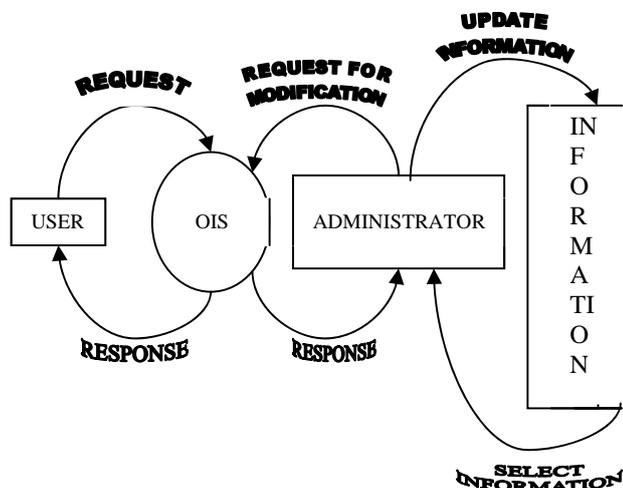


Fig1: Block diagram of the system

numbers, the course description like paper names, paper schedule, available equipments etc.) The system has been designed in such a way that users can only retrieve the information. They are not authenticated to modify or delete the data. The flowchart of the software is shown in fig.2.

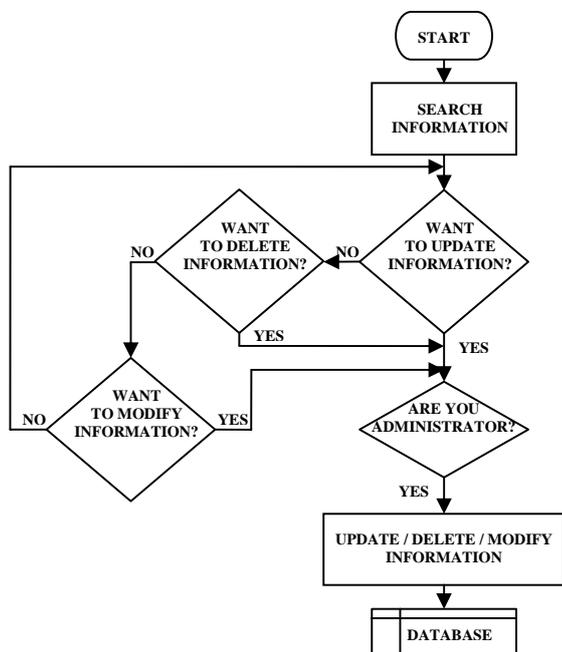


Fig2: Flowchart of the system

The flowchart is self explanatory. The home page provides the facility to view, edit and delete the database information. For the users, a user form is provided for query. They have to fill up the form for their desired

information. The duly filled form can be submitted by just clicking the “submit” button provided in the form. Once the query form is submitted the response is generated automatically.

III. DESIGN AND IMPLEMENTATION

The visual web JSF feature of the NetBeans IDE is used to create easy, intuitive drag and drop interface to develop rich UIs for the applications. The system is then connected to the database by writing necessary codes. Thus, the application can be used to connect the database. The events are made and they are listened accordingly. The various steps for getting the Java Database connectivity (JDBC) are given below:

Step I: Loading Driver: The first step is the loading database driver in making JDBC connection. Before attempting the connection to the database, the JDBC driver is loaded.

Step II: Establishing Connection: After the loading process completes, the connection is established to the database with user name and password.

Step III: Executing Statements: After establishing the connection, it’s time to execute query against the database. Any kind of query can be made here.

Step IV: Getting result: In this step we get the result of the executed statements.

Step V: Closing database connection: At the end, it is important to close the database connection and free the used resources.

Snapshot of a sample table is given in fig.3 below.

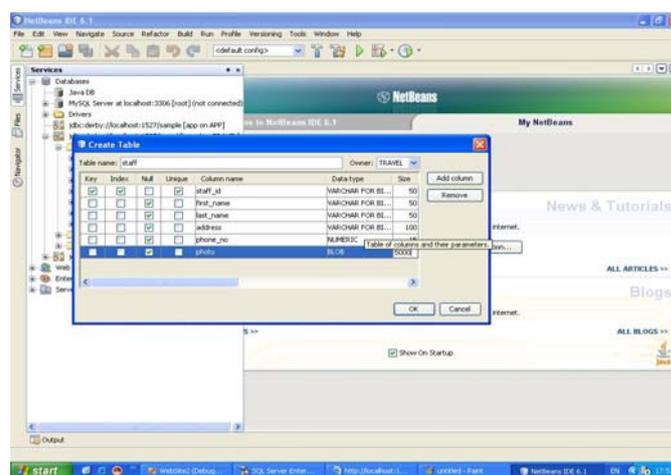


Fig.3: Sample snapshot 1

Snapshot of the table binding with the data is shown in fig.4.

IV. DISCUSSION AND CONCLUSION

The objective of the system is to keep the software simple, easy to understand and to add advanced features and options. The important features that the system provides is that it is highly secure, platform independent and very much cost effective. The flexible customization of our system allows for retrieving information by the user. The UI of the system being simple and easy to use and one can be benefited by using it. Our next goal is to develop a web service using this technology and we will try to deploy this system in the same along with other.

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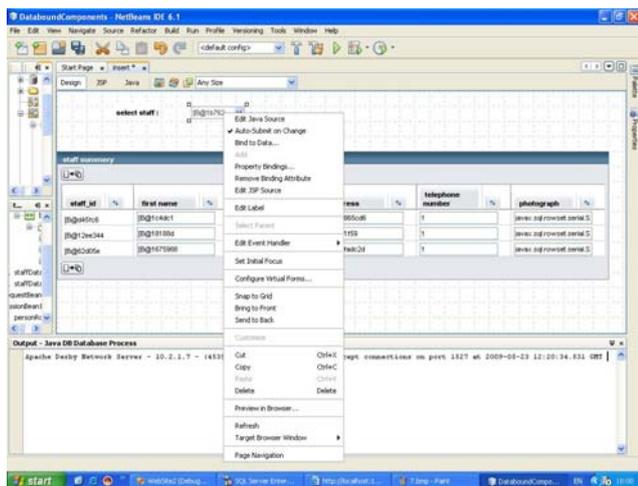


Fig. 4: Sample snapshot 2

The flow diagram for the connection procedure is shown in fig.5 below.

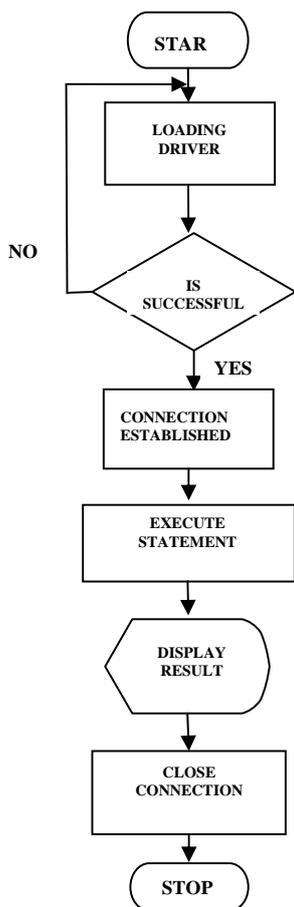


Fig. 5: Flowchart