Design and Implementation of Graphical User Interface for Relational Database Management System and Data Switching From Database

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Abstract— this paper will explain the concept of creating a Graphical User Interface for Relational Database Management Systems and switching through different database servers. There exists many database management systems with GUI, but they are exclusive to only one database. Also they do not facilitate switching between different databases. These limitations of the existing system are conquered by our system. This Software helps a user to do all database operations through a GUI provided with minimal knowledge of the database. Here user can do all database activities like Creating Table, Inserting Data, Joining two tables etc without knowledge of queries. Moreover, the queries can be executed very easily, since the user needs not to type any queries, but can simply select the appropriate options according to their requirements. The user can access the same database through different database servers by switching. Switching between the databases reduces the work of rewriting the queries for each of the database thus saving time.

Also a Training mode is provided where user can learn a query for a particular database activity while performing it. Also user can listen to the query through a speak mode.

I. INTRODUCTION

DBMS consists of a collection of interrelated data and a set of programs to access those data. This collection of data is referred to as a database.

A collection of conceptual tools for describing data, data relationships, data semantics and consistency constraints is called a data model. There are different data models, among which Relational Database Management System (RDBMS) is the most popular choice for large scale application.

The RDBMS uses a collection of tables to represent both data and the relationships among those data. Each table has multiple columns and each column has unique name and fixed data type. Each table in the database has a unique name assigned to it.

RDBMS is now being used in numerous applications outside the domain of traditional data processing.

To interact with the database and work with the tables in it, one need to use Structured Query Language (SQL) which includes features on defining structure of the data, for modifying data in the database and for specifying security constraints.

The project entitled 'Graphical user interface for RDBMS is aimed at providing a user friendly and single interface for working with Oracle.

Querying through GUI to execute complex as well as simple queries has proved to be an efficient system to people who do not have much knowledge about databases. Switching between the databases reduces the work of rewriting the queries for each of the database thus saving time. The Graphical User Interface generates the queries using Oracle as the database. Similarly other databases can also be used in order to execute the queries using databases such as MySQL, Sqlserver, MS access, etc with the GUI. This use of databases to generate the queries can be successfully implemented so that the work of writing full queries can be reduced and a non-technical user can also use it without having any knowledge of databases.

II. EXISTING SYSYTEM

We have many database management systems available in the market, many of them with friendly Graphical User Interfaces, using which the users can execute queries and handle tables and other objects. However, the GUIs provided by each database server are exclusive to its own database.

Moreover, a person with little technical knowledge will find it difficult to use one.

Also our system provides the facility of switching from one database to another. This facility is also not provided by any GUI based database server.

Limitations of the Existing System

1) GUIs provided by most of the database is exclusive to its own database
2) Working with different databases through a single friendly interface is impossible
3) A GUI that provides a friendly environment to a user with little knowledge of SQL in such a way that he can work with more than one type of databases is hard to find.
4) Also the existing system does not provide the facility of switching the data from one database to other without making any changes to the data and in an easier way.

III. PROPOSED SYSTEM

The product entitled GUI for RDBMS is developed with the keen intention of creating a Graphical User Interface for commonly used Relational Database Management System like My SQL, Oracle. This is a general-level GUI, which can be connected to more than one database residing on the system. As a result, any database manipulation can be performed using a single product. Moreover, the queries can be executed very easily, since the user need not type any queries, but can simply select the appropriate options according to their requirements. Also helps in switching

amongst different databases so that the person who has no clue about one database can switch the data from that database into the data of the known database server. Thus, this product can be used by a person with no knowledge of SQL.

This software is developed using Java as front end and Oracle, MS SQL Server and MS Access as backend.

1) Following features of Oracle SQL will be covered in making the software i.e.

  a) Create Table

  b) Alter Table

  c) Drop Table

  d) View Data (Basic Select Queries)

  e) View Table Structure

  f) Insert / Update / Delete Data

  g) Create Views

  h) Drop Views

  i) Display Data through Views

  j) Summary Queries

  k) Security

  l) Create User

  m) Grant Rights

  n) Revoke Rights

  o) Drop User

2) Along with it, user can switch the database Table, Data etc from One DBMS to other DBMS without rewriting the queries. For e.g.:
  a) *Oracle*
  b) *MySQL*
  c) *SQL Server*
  d) *Access*
3) Database Switching includes execution of queries on different machines connected in LAN with different backend without rewriting the queries.
4) User just has to select the Source DBMS and Table from that DBMS and a switch file is created on a click of a button. Now this switch file can be used in any machine (can be a remote machine) to switch data in any of the DBMS mentioned above.
5) Also a Training mode is provided where user can learn a query for a particular database activity while performing it. Also user can listen to the query through a speak mode.

The steps involved in the GUI system are as follow:

1) First connect to Oracle with correct server name, user name and password
2) Then perform operations such as create table, update table, drop table, delete, insert values, etc.
3) From the list of existing tables the user can view the contents of the existing table
4) The user can also create views for the existing tables.
5) The user can click on the "read" button to listen to the query using speech mode.

6) There is an option for Query Analyzer using which user can type and execute different queries
7) The answer for the query will be generated on the click of a button

The steps involved in database switching are as follow:

1) Specify which database to use as data source for transfer.
2) Specify the destination database and connection information.
3) Select the data and tables to be transferred from the source database.
4) Switch file will be now created.
5) Now this switch file can be used in any machine (can be a remote machine) to switch data in any of the DBMS mentioned above.
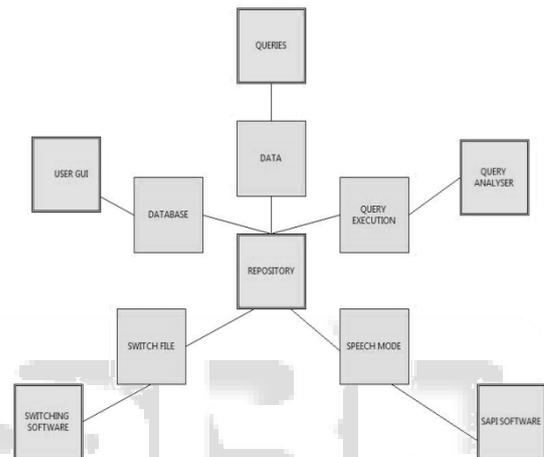
IV. SYSTEM DESIGN

Fig. 1: System Architecture

User selects appropriate database system such as Oracle, My SQL. After selecting database system user will perform either DDL or DML commands. Query execution unit will execute a query and make changes to databases. Query execution unit will also provide result to user.

While switching, the user will first select the data from the database to be switched. Then will create the switch file for that data. This switch is then used in other database to retrieve the data.

Also an additional facility of hearing the query is provided with the help of SAPI software.

V. SCREEN LAYOUTS

A. To start using the SQL commands, first connect to oracle with a correct server name, username and password.
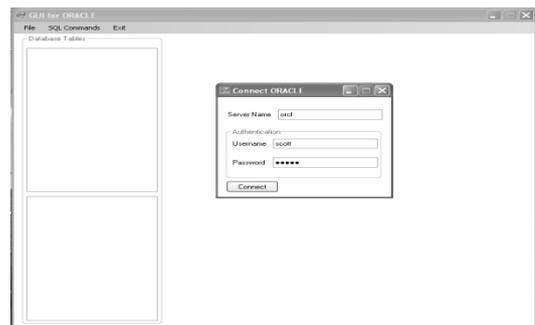

Fig. 2: User Login

B. After connecting to oracle, the following list of tables appear that exist already

Fig. 3: Existing tables

C. Adding a new field to the existing table

Fig. 4: Alter table

D. Drop table drops the table from the list of database tables.

Fig. 5: Drop table

E. A user can be created that requires Username and a password.

Fig. 6: Create User

F. Creating .dsf file from source database

Fig. 7: Saving the Switched File

G. Switching done to the destination database

Fig. 8: Switching file to Access

VI. CONCLUSIONS

The system is developed aiming at helping a user easily access and work with databases in different RDBMS, even he/she have little knowledge of SQL. Also the developed

system provides a single interface for communicating with more than one type of RDBMS. The new system is developed in VB.net, My SQL and Oracle. This part of the system deals with generating and executing queries and Listening to the queries through speech mode using SAPI software. User can select among the four databases such as oracle, MySQL, MS access, Sqlserver from which the file is to be switched and can switch the file to be executed in any of the four databases.

VII. FUTURE DEVELOPMENT

For making the system adaptive to the changing environment, it will be necessary that the system will be required to handle some more functions in the future to satisfy the requirements, we can write separate program modules and combine them to the main program. For e.g.: the system can be further enhanced to handle nested queries, sub queries etc. An option for backing up databases and restoring them is another enhancement.

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