

## Database Editor – Novice to Expert

Sanjay Kumar

*M.Tech, Sat Priya college, Rohtak, Haryana*

### Abstract

Now a day's every government department is moving to E-work or already moved to E-governance. This requires lot of data management in electronic form.

We have numerous of applications that are developed for the government departments. But neither of the application provide user to peep into the backend database and backend reports. There are multiple of instances on which end user especially government sectors employee may require to see the backend data like front end failed temporary, identify the problem in real time, judgment in case of fatal failure of operation, to Co-ordinate with vendors etc.

This paper describes research on design the solution for the same, so that end user can be facilitated with the most important information portion of the data that they are using. *Just like Google search engine* where user doesn't require technical knowledge.

In case of novice user, user just requires to input general English language unstructured string and would get the result back.

Also in case of expert user, this innovative design can help them to get the information regarding complex part of the database like help in to select the efficient Join, hint/ options about creating efficient query, float useful information like indexes, primary keys, constraints that helps to create better queries for fast response.

### Introduction

There are multiple of instances on which end user *especially government sectors employees* may require to see the backend data which are as follows:

- Most of the time software applications are provided in iterative manner; in which vendor provide multiple version of application during the time frame. If any version have problem that can be identified and catch by the end user.
- In case of front end fail, user has the ability to see the information/ data.
- In case application is provided in phase manner and some data needs to be modified by backend for some time.

- Identify the problem in real –time.
- Managers/ Directors in government IT department can see the backend picture as one of the important report.

Just like search in Google doesn't require any technical knowledge, here also user can expect to peep into the database for crucial information, just by input general unstructured English language's words. Below is the diagram representation, where in first pane user would input the string to get the desire information.

Select Creditors Transaction information/ details

---

**Creditors Transaction Details**  
Data would be fetched from the join of transaction and creditors tables where only transaction would be displayed which are transact for the creditors.

**Creditors Details**  
Data would be fetched from the creditors table.

**Transaction Details**  
Data would be fetched from the transaction table.

---

Creditor Name	Transaction Date	Transaction amount	Transaction Type	Balance
Robert	12-April-2014	5000.00	Debit	20000.00
John	13-April-2014	100000.00	Credit	80000.00
Dinesh	14-April-2014	45098.00	Credit	99766.00

**Fig: 1.0**

In second pane user can see the summary of results. Here result means the available tables in database that matches with the user input.

When user click on one of them result, then result data would be displayed to user in third pane as in above Figure 1.0.

### Design

As we require to search into our database just like Google search engine. It means we need to have some mechanism where we can maintain the general words or we can say daily used work or common word. These common words ultimately have some specific meaning. It means we need to maintain general to specific mapping which as per analysis we can maintain as follows:

**I) GeneralToSpecific**

s.no.	general_words	specific/ operation
1	Get	Read
2	Select	Read
3	Update	Update
4	Find	Read
5	Delete	Delete
6	Where	Condition
7	Case	Condition

**II) General To Specific Tables**

This table would be used to have the mapping information about general words to specific table. By looking into the table, one can find the table name by searching the general words input by user.

**III) General To Specific Columns**

After operation and table is selected, remaining words would be used to search into this General To Specific Column table for column name. If any mapping would be found, then corresponding field would be used while query the database.

**IV) Table\_Column\_Mapping**

This table would have the mapping of table name and default fields. After selecting the operation, table name and column name. Some basic field name/ column should always be displayed as default. This table also has the information about the join that would be used to get the information about join.

**ORM Framework**

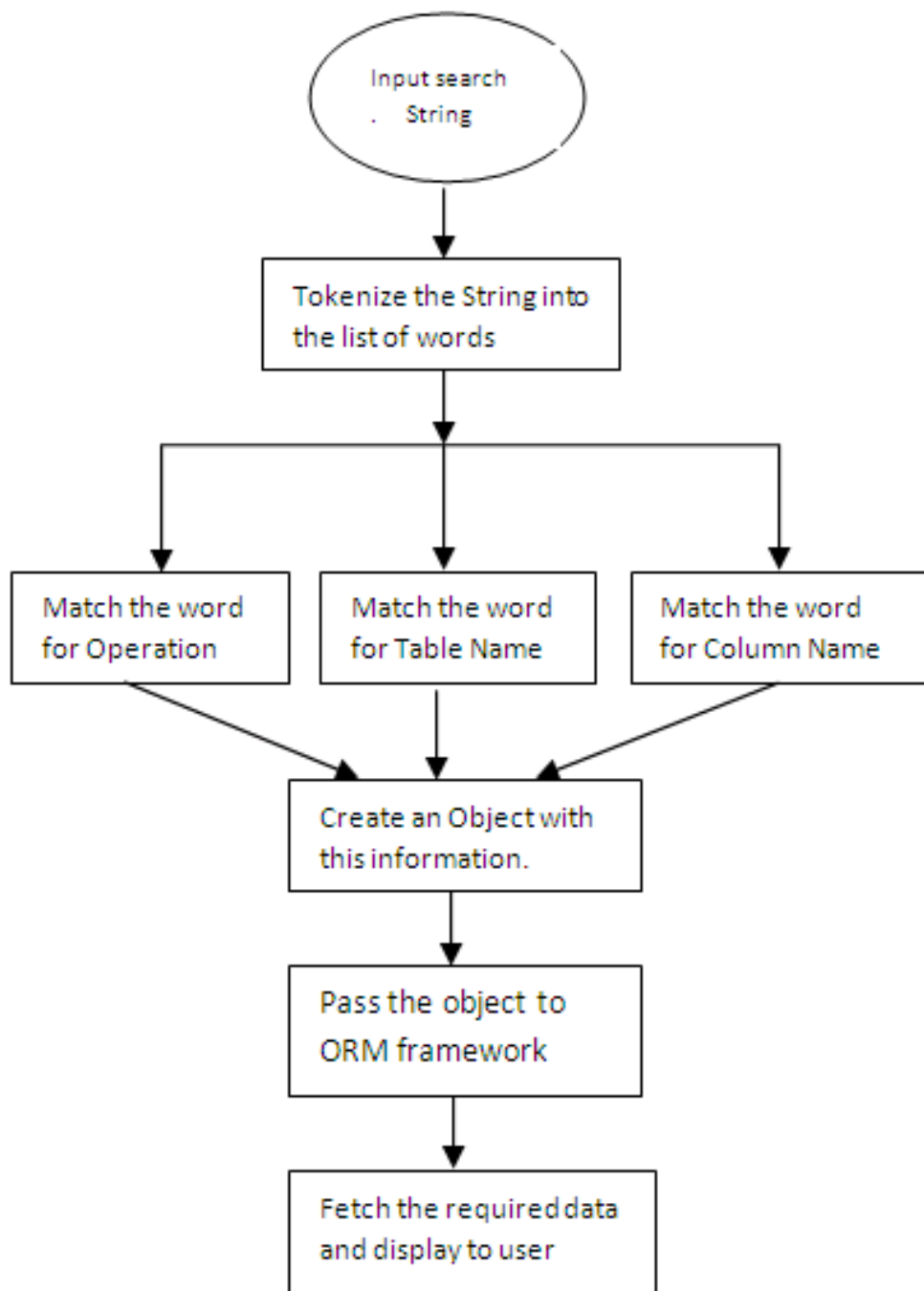
ORM stands for Object Relational Mapping, this concepts helps to map between object and database table. Using this concept we introduce a layer that take cares to build the queries as per the database. This layer called ORM framework. Using ORM framework we works only with objects and it's mapping, we don't need to take care of the database queries and corresponding database. We can connect any type of database as a backend. ORM framework can be utilized in this context.

**Advantages of the ORM framework:**

1. Abstract the database queries, just need to take care of object and its mapping.
2. Any database can be use, independent of database.
3. Optimize queries would be used.

**Functional Flow diagram and Algorithm**

Following would be the flow diagram of the system. Where system input would be the String, this would be the general unstructured English language string. And output would be the search result from the database, which user is expecting.



Algorithm is the key part of any system. In this system also algorithm is a key part and following would be the algorithm for this system.

- User would input string in unstructured manner and in very general language. Tokenize that string into the list of words.
- Iterate the list of words.
- First try to find out what is the operation, user is looking for. This can be done by match the word by *GeneralToSpecific's general\_word* field. If any word gets matched then corresponding operation field value would be the operation. If no match found, then treat *SELECT* operation as a default operation.
- Also match the word to find out table name. Match the word with *GeneralToSpecificTable's general\_word* field. If match found then use the corresponding *table\_name* field for table name.
- Also match the word to find out the column name. Match the word with *GeneralToSpecificColumns's general\_word* field. If match found then use the corresponding *column\_name* to query the database. If no match found, then use the default columns available in *table\_column\_mapping's select\_default\_columns* table.
- Up to this point we would have the all the required information like what is the operation, table name and column name. Use this information and build an object, that further would be consumed by the ORM framework to fetch the required information.
- Display the information/ search result to the user.

## References

- [1] <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.127.1814&rep=rep1&type=pdf> Witthawaskul, Weerasak. A customizable database editor based on an adaptive object model. MS thesis. University of Illinois at Urbana-Champaign, 2001.
- [2] <http://hdl.handle.net/10945/26450> Err:509, Monterey, California. Naval Postgraduate School, Design and implementation of a query editor for the Amadeus system, 1993-09
- [3] <http://www.simpleorm.org/sorm/whitepaper.html> Dr Anthony Berglas, August 2009, SimpleORM v 3.

