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Dynamic Query Forms for Database Queries Based on Ranking Mechanism.

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***Abstract*—**A database is only a collection of large amount of data. We can persist, update, and delete the data to or from the database. To perform such a manipulation, we require a query interface. A user can communicate with the database. Problem here is traditional databases can't give output as user's satisfaction. To recover such a problem, we used Dynamic question type system: DQF, a question interface that is capable of dynamically generating question forms for users, different from document retrieval system. In information retrieval area, the users always perform several rounds of actions (refinement of question conditions) until they will get satisfaction. Some normal users can't understand such programming languages. Even SQL, Oracle, etc databases are well-structured query languages, it can be challenging. Goal of this Project is to show that the advantages of using dynamic query forms for database over the existing static forms for database. We reach to user satisfaction using ranking attribute

Keywords- *Dynamic Query, Static Query, Ranking etc.*

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I. INTRODUCTION

Query form is a user interfaces for querying databases. Traditional query forms are designed by developers or DBA in all database management systems. As growth of internet and science goes on increasing, requirement of modern databases is increased and it becomes more complex. To recover such a problem, we used Dynamic question type system: DQF, a question interface that is capable of dynamically generating question forms for users, different from document retrieval system. In information retrieval area, the users always perform several rounds of actions (refinement of question conditions) until they will get satisfaction.

The main purpose of DQF is to understand the user interests about query form and to adapt the question type repeatedly. The question type iteration consists of two sorts of user interactions: it contains attributes of the information. The interaction continues between the user and the system till the user satisfies with query results. Goal of this Project is to show that the advantages of using dynamic query forms for database over the existing static forms for database. We reach to user satisfaction using ranking attribute.

II. LITERATURE REVIEW

"Automating the design and construction of Query form" H.V. Jagadish has proposed a system, where the tools provided by the database clients to help developers generate the query forms, such as Easy Query, Cold Fusion and so on. They provide User interfaces for creating query forms. The problem of those tools is that, the tool can understand only to professional developers. The author also allows end-users to create the existing query form at run time. If the database schema is very large, it is difficult for end user to find appropriate database entities and attributes. [2]

"Automating the design and construction of Query form" M. Jayapandian presented a data-driven method. It first finds a set of data attributes, which are most likely queried based on the database schema and data instances. Then, the query forms are generated based on the selected attributes. [3]

"Probabilistic information retrieval approach for ranking of database query results" In this paper, Chaudhuri, G. Das, V. Hristidis, and G. Weikum proposed a Probabilistic Information Retrieval-based ranking (PIR-based) ranking function. PIR-based ranking extends the original query by drawing on available knowledge of previous user preferences for the unspecified attribute values. We also adopt the attribute ordering techniques developed in Datasets. [4]

"A Survey on Database Queries by using Dynamic Query Forms" In this proposed paper, Vinayak Jadhav and Amrit Priyadarshi has focused on generation of dynamic query form. DQF helps user for generating the query forms dynamically. In this paper, the proposed system will capture user preferences as historical queries and runtime response. General analysis has shown that the dynamic approach generates greater success rates and easier query forms than a static approach. They proposed to implement the probabilistic model for achieving the DQF. They also planned to develop multiple other methods to capture the user's preferences for the queries instead of click feedback. [5]

"Dynamic Query Form with query Refinement and Database encryption". Meenu Joy Bhruguram T M Adi Shankara presented a dynamic query form generation approach which helps users dynamically generate query forms. They use a probabilistic model for ranking form components based on user preferences. The proposed system captures user preference. The ranking of form components also makes it easier for users to use desired query forms. [6]

III. PROPOSED SYSTEM

A. *Dynamic Query Form*

Traditional databases can't give output as user's satisfaction. i.e. Some normal users can't understand such programming languages. To overcome the drawback of previous technique, the dynamic query form is generated. Dynamic query form handles the database without having knowledge of query languages. It is not required to have expertise in any database query language to deal with data by using this system.

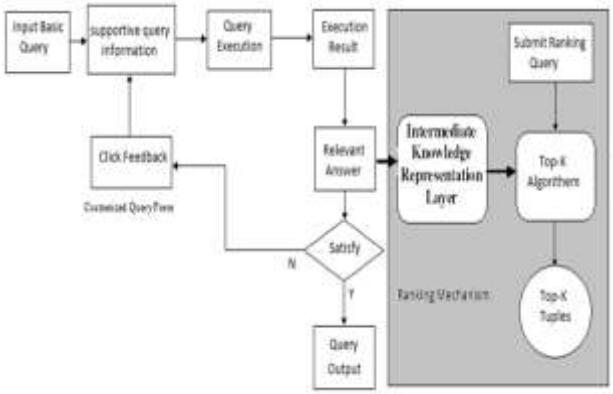

Figure 1 Proposed Dynamic Query Form System

B. *Proposed Method*

The system proposes DQF, a novel database query form interface, which is able to dynamically generate query forms. The system is proposed to have the following modules.

1. Query Form Enrichment.
   - DQF recommends a ranked list of query form components to the user.
   - The user selects the desired form components into the current query form
2. Query Execution.
   - The user fills out the current query form and submits a query.
   - DQF executes the query and shows the results.
   - The user provides the feedback about the query results
3. Customized Query Form.
   The system provides visual interfaces for developers to create or customize query forms. Problem of those tools is that, this s are provided for the professional developers who are familiar with their databases, not for end-users.
4. Database Query Recommendation.
   Recent studies introduce collaborative approaches to recommend database query components for database exploration. Its treat SQL queries as items in the collaborative filtering approach, and recommend similar queries to related users.

C. *Methodology*

DQF will actually work in two phases one is Query Execution and other is Query enhancement.

1. Query Execution:
   In Query execution user will fill the query form with desired form components, query form will be executed by the system and result will be displayed. If user gets desired output of that query form then user will rank the query form for future use. Depending on the ranking, query form will be restored for further use. And user can exit from the systems else user can get another query form by selecting other form components of his desire to get expected query result. After that user will execute the query form and the process will repeat until user will get desired output.
2. Query Enhancement
   As said in above query execution method, if user is not satisfied with query results then again he will select the query component, fill the form and he will get the results. If user is satisfied then use the query from ranking list, otherwise he will select another form component. By this query component enhanced based on user choice and query form improvement and efficiency is increased.
3. User Action
   To decide whether a query form is desired or not, a user does not have time to go over every data instance in the query results. In addition, many database queries output a huge amount of data instances. In order to avoid this "Many-Answer" problem [10], we only output a compressed result table to show a high-level view of the query results first. Each instance in the compressed table represents a cluster of actual data instances. Then, the user can click through interested clusters to view the detailed data instances. Fig. 2 shows the flow of user actions.

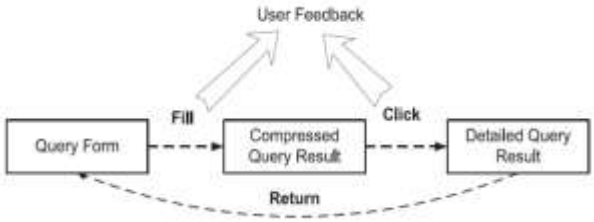

Figure 2 User Action

4. Ranking Metric:
   There are two measures for evaluating the quality of the query results: precision and recall. Expected precision and expected recall to evaluate the expected performance of the query form.

   Expected precision is the expected proportion of the query results which are interested by the current user.

$$PrecisionE(F) = \frac{\sum_{d \in XAf} Pc(dAf)P(dAf)P(af|d)N}{\sum_{deXAf} P(dAf)P(af|d)N} \quad (1)$$

   Expected recall is the expected proportion of user interested data instances which are returned by the current query form.

$$RecallE(F) = \frac{\sum_{d \in XAF} Pc(dAf)P(dAf)P(af|d)N}{\alpha N} \quad (2)$$

$$Rankscore(Q, Aj) = \frac{1}{log(r(Aj))+1} \quad (3)$$

The calculation of ranking score is an entity is by the averaged F-Score. Rank score is used to calculate the accuracy. Initially the user select the components from more no of components and the ranking are calculated for selected components has the highest rank.

IV. RESULTS & COMPARISON

A. Static Query Form:

In Static Query Form, User generates the query forms using database query languages. i.e. in static query form, user need to know about the query languages for generating any query form. But normal users can't understand the programming language. To overcome this problem, the system introduced Dynamic Query Form. Fig. shows the example of static query form.

Figure 3 Static Query Form Example

Step 1: Generate query

The system provides a form window. User needs to select the generate query tab and he need to select the tables, attributes of the table and operation to be performed (ie. Insert, delete and update method).

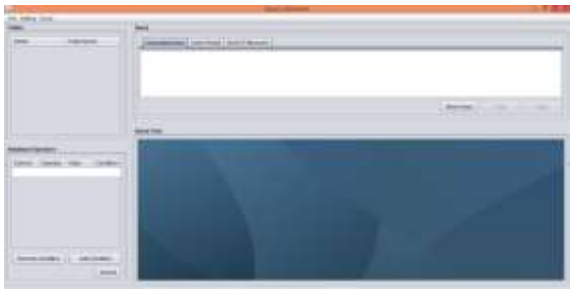

Figure 4 Generate query

Step 2: Query results

Once user selects all the details in generate query tab, he will click on show query. Based on the given values the system will display the query results.

Figure 5 Query results

Step 3: Rank

Rank stores the query results for future use and restores when user executes another query in future. Using rank it is possible to know the user interest and we make query enhancement.

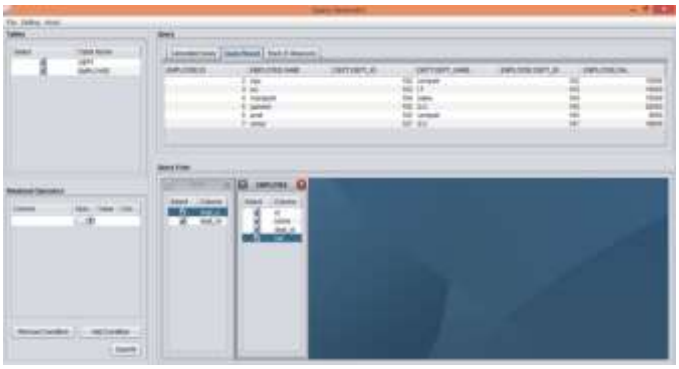

Figure 6 Show rank results

V. CONCLUSION:

Traditional method is fails to satisfy user's results. So world is moving to dynamic query forms. In this dissertation we provide dynamic query form which uses only selection of attributes and condition for generate query. Also we added facility of ranking to query components based on

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