Multi-Tenant Based College Finder using Ontology

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Abstract— Multi-tenant database is a new cloud computing paradigm that has recently attracted attention to deliver database functionalities for multiple tenants to create, store, and access their databases over the internet. In this paper we propose an application for students to search for a college they wish to get the details of. This application combines multi-tenant relational tables and virtual relational tables and makes them work together to act as one database for each tenant. This application is suitable for multi-tenant database environment that can run any business domain database by using a combination of a database schema, which contains shared physical structured tables and virtual structured tenant's tables

Key words: multi-tenant, cloud, ontology

I. INTRODUCTION

In today's technical world the smart phones have reduced most of the human work load by providing the services online. The smart phone users are increasing at a very fast rate and the student community contains the most number of users. So in this paper we propose an application specially for students that will provide required information to them about educational institutions along with relevant information of same genre. We will use the concept of multi-tenant database system wherein the system will provide multiple tenants to create, store, and access their databases over the internet. The automated system will fetch the required result and reply back to the user using ontology. The users must register themselves first, for this they will get the GUI and they have to enter their required details. Then the system will verify the details and save the data. The result status will be displayed to the users. After registering the users must login to the application for viewing the information. Then the users will enter the college name to be searched and the results will be displayed to the users. However, provision for administrator is available to update the database easily if any new educational institution is built. Similarly, the admin can also delete information from the database if the institution no more exists. The admin can also update the details of the college and approve the comments of the users. The application will be useful to all the students and even the faculty to avail any knowledge of any college at anytime of the year. Since no such application is there in existence till now for Mumbai University, this application will be very useful for all the users. Also any updates and changes can be done at the admin panel.

A. Problem Statement:

Now-a-days there are number of colleges for different courses available. So getting information of each college by going from college to college is a very tedious task. Also, all the colleges are not well known or reputed so it becomes very difficult for the student to decide which college to opt for and where. So in this era of smart phones, to make this task less tedious we are developing an android application for searching the colleges anytime and from anywhere.

B. Aims and Objectives:

Multi-tenant database is a new cloud computing paradigm that has recently attracted attention of many developers to deliver database functionalities for multiple tenants to create, store, and access their databases over the internet. In our application, we propose an architecture design to build an intermediate database layer to be used between software applications and Relational Database Management Systems (RDBMS) to store and access multiple tenants' data in the Elastic Extension Table (EET) multi-tenant database schema. Our application will reduce the expenditure and time of the users who are seeking admission or any information related to any college in Mumbai. We will build an android application that will allow users to search for colleges from anywhere and anytime. And even the college authority will get the admin rights to update their college information as per requirement.

C. Scope:

It provides a simple way to search for any educational institution based on user relevancy. This is an automated application where system automatically fetches the desired result from the database without any interaction from the administrator. It has a simple interface, it has predefined format for searching, if user types the searching information in a wrong format he will be provided with the correct format along with example for better understanding.

II. PROPOSED SCHEME

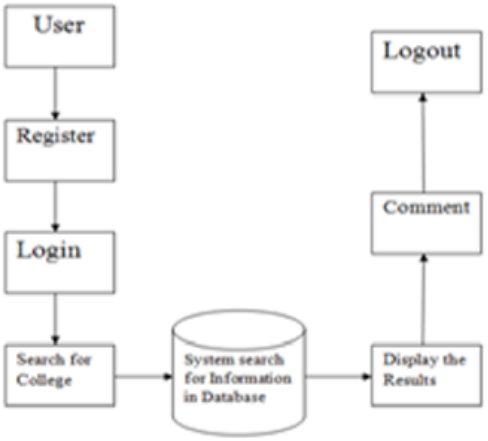

Fig. 1: Block diagram of user side

The above diagram consists of the blocks comprising of the user's side. The explanation of above figure is as follows:

The user who wishes to use our application for searching any college first needs to register to the application. Then the user must login to the account. After logging in, the user will enter the relevant search query to search for the college. The automated system takes the query and finds the related terms in the remote database that is provided. The

search for the result is done using the Apriori algorithm. After the results are found they are displayed on the GUI for the user. The user can then comment on the search or the application. Finally, the user can log out when the search is done

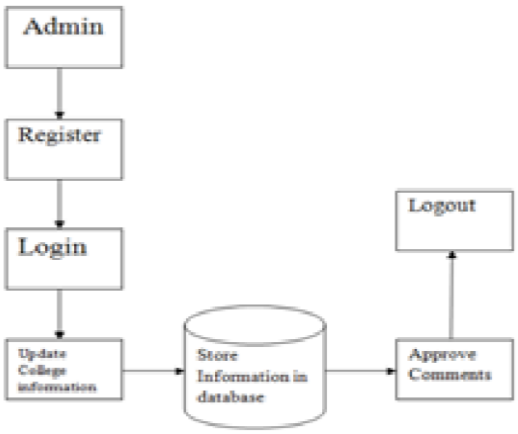

Fig. 2: Block diagram of admin side

The above diagram consists of the blocks comprising of the admin panel. The explanation of above figure is as follows:

The admin who wishes to use our application for displaying their college information must register themselves first. After registration the admin must login to enter or update the information. The information updated is stored in the remote database server. The admin has the rights to display any extra information they intend to display. After entering or updating the database, admin can approve the comments placed by the user as per the relevance. The admin must logout after the process is complete.

III. ALGORITHM

Apriori is a classic algorithm for learning association rules. As is common in association rule mining, given a set of item sets. The algorithm attempts to find subsets which are common to at least a minimum number of the item sets. Apriori uses a "bottom up" approach, where frequent subsets are extended one item at a time (a step known as candidate generation), and groups of candidates are tested against the data.

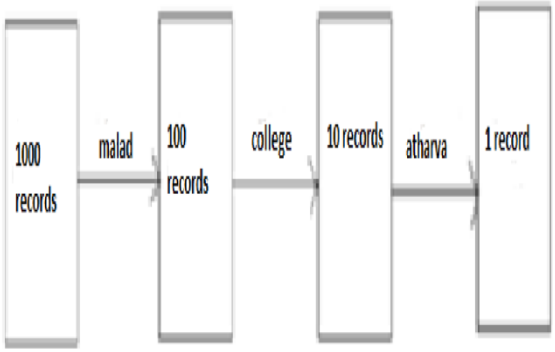

Fig. 3: Working of Apriori algorithm in the application

A. *Explanation Of Apriori Algorithm:*

Step 1: Start
Step 2: Get frequent items
Step 3: Generate candidate item sets
Step 4: Get frequent item sets
Step 5: If generated set is NULL then generate strong rules else return to step 3
Step 6: Stop

B. *Working of Apriori Algorithm in Our Application:*

Step 1: Start
Step 2: User registration and login
Step 3: Search the area of the required institution
Step 4: Get the institutions present in the area
Step 5: Search for specific institution in that area
Step 6: If the institution is present in the area then display the result else go to step 4
Step 7: Logout and Stop

C. *Advantages:*

1) Search results with Ontology: - User can search any information regarding educational institutes all over Mumbai.
2) Automation: - Administrator will not search or fetch the data manually; the system will automatically search the data and display it to the user.
3) Easy Updation and Deletion: - The system contains a form through which a new entry can added into the database or updated, data can be deleted from the database if the record no longer exists.

IV. CONCLUSION

The Project aims at developing a system for searching the product or service in the education domain located in the database using the concept of Ontology. Using the concept of Ontology it will provide semantic data along with the desired search result. It is a simple system with no complex GUI's on the user side. The only thing user will have to do is enter a search term which includes the search Query. As the system will be controlled by an administrator it will provide a high level of security. The system will receive the Query from the user & will search the relevant data in the database. If the data is found then it will return the search result along with the semantic data. Else only the correlated data will be sent to the use. This "Ontology based Interactive Automated System" will provide all the above features in a single system along with proper security and reliability.

V. IMPLEMENTATION AND RESULT

A. *Login Module*

The first page is login page as shown in Figure, where admin enters their login details correctly to proceed further. If the login credentials are invalid, then a popup will appear showing 'invalid username/password'.

Fig. 4:

B. Admin Panel

The admin can add, update, delete and view colleges. In the college details section, the admin can add new details, update existing details or delete details. The admin can also add college photos for reference to the users. When the process is complete then the admin can logout.

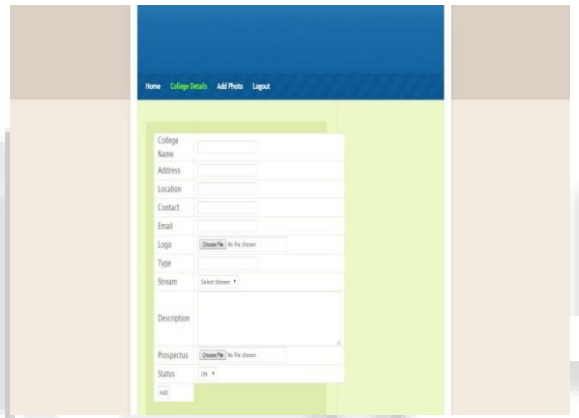

Fig. 5:

C. User Panel

The user panel is the application interface. When the application is run on the smart phone, the login screen appears. If the user is new he/she has to register first. Another option on the login page is forgot password option. The user can get the password if he/she wants.

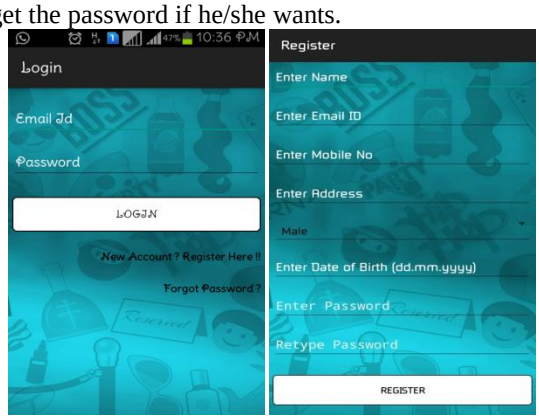

Fig. 6:

After logging in, the college finder page will appear. There are four option as shown in the figure i.e. Search college, streams, change password and exit. If the user wants to search by streams then he/she can choose the streams option and the stream selection page will appear. The user can search as per the requirements.

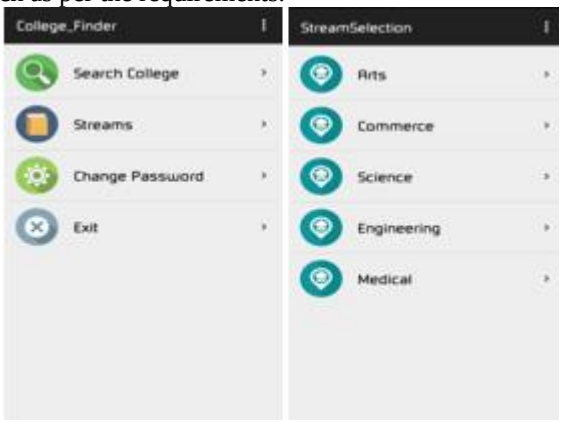

Fig. 7:

If the user wants to search by college name then he/she can click on search college option. The user will then enter the college name, location and stream.

When the user clicks on a stream or enters the search query, the results will appear. The user can browse through the colleges and get the information of a particular college by clicking on it.

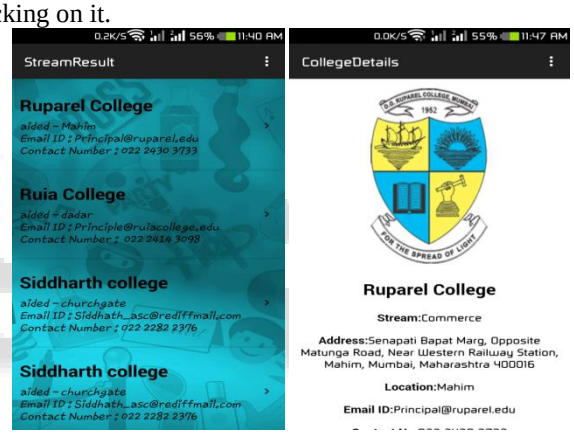

Fig. 8:

When the user clicks on the college, the information regarding the college appears. Even the similar college in the same vicinity can be located by using ontology.

VI. ACKNOWLEDGMENT

It gives us great pleasure in presenting this paper report titled: "Cloud based College Finder using Ontology".

On this momentous occasion, we wish to express our immense gratitude to the range of people who provided invaluable support in the completion of it. We express our gratitude to our paper guide Prof Komal Mahajan, who provided us with all the guidance and encouragement and making the lab available to us at any time. We are eager and glad to express our gratitude to the Head of the Information Technology Dept. Prof Neelima Pathak, for her approval of this paper. We are also thankful to her for providing us the needed assistance, detailed suggestions and also encouragement to do. We would like to deeply express our sincere gratitude to our respected principal Prof. Dr. Shrikant Kallurkar and the management of Atharva College of Engineering for providing such an ideal atmosphere with well equipped library with all the utmost necessary reference materials and up to date IT Laboratories. We are extremely

thankful to all staff and the management of the college for providing us all the facilities and resources required.

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