ORIGINAL RESEARCH PAPER

Computer Science

ROLE OF DATABASE AND INFORMATION SYSTEM IN EDUCATION

KEY WORDS: Database, Information System, Information Technology, Data Tuning.

Vijay Deep Gaur Assistant Professor of Computer Science Government College, Narnaul (Mohindergarh) Haryana, India.

ABSTRACT

In this paper I, examined that the database is playing vital role in education and their institutions for maintaining the up to date information system for their staff and stakeholders. The Fundamental skill of database is required for exploring information for all types of information technology strategy and their allied approaches. Such skills are often lacking in courses of database management systems. In this study, I have examined the assumption that database tuning is missing in the present IT curriculums. In this study I have conducted a survey among the academic and who have multiple skills to determine the significance of database tuning and to shed light on its function the curriculum of students studying database subject and information system which is backbone for an institutions.

1. INTRODUCTION

In the field of education the database tuning is a major concept that is important for successful database related skills and applications. In other words, an organization that implements a database application to minimize errors, enhance consistency and maximize the effective of employees should first enlighten the employees of its advantages. It is without a doubt that the system under par performance can adversely affect the perceptions of among employees about it and this could result in the employees' resistance to its use regardless of its accurate and improved functionality. Added to this, the customers' first application access will create their first impression of its ease and speed. For instance, if the organization offers the bill payment and claim service functions, it is crucial that the Web pages are easy to navigate and that the transactions occur in a timely manner as both can impact customer satisfaction with the network database system for an organization.

A wide variety of database types are available today. It affects the way companies work together. Costs will be determined if the company or organization does not have a database. Without a system, companies that use a database system are confusing and difficult to separate. Databases are created to help keep the business clean and configurable. MySQL is one of the most used databases. It is a database used by many individuals because it is free. By providing its database, we can reap other benefits. Each company has shifted the critical focus that has been proven by its own needs. There are countless drivers we can find in its database. It allows us to change specific areas of the data handler. The system allows us to process much data efficiently and has an easy to use interface. It is commonly used by various buyers and is rated with consistent quality.

Most companies today use business databases is essential to ensure that screen characters are obtained on an appropriate basis. No one needs to do anything. It is why its database aims to help all business owners. The operator data system helps the personal computer when there is a personal bonus on the screen. Likewise, its link database system helps to follow government and state rules.

2. Review of Literature of Database and Information System

A collection of information and data which is used for an organization and that information can fetch anytime, anywhere by the authorized user. Database tuning meaning entails several factors that surpass database and the understanding of such factors allows the assessment of the concepts integration into the courses of database management. The first step entails the operational activities weakness and deterioration that arises from performance tightness. Such a performance arises when a database organization is appropriated more work that it could handle at one time, which it is incapable of achieving. The bottlenecks may also extend further than the database and cover other external elements like the client server concept implementation system communication, working systems, among other combinations. As such, it is important for the database administrator to know the components and their interaction in order to be successful. This will assist in distinguishing performance tightness and highlighting the reason behind it and to provide alternative solutions.

The next sequential component is the central processing unit which stored database tools for online/offline connection of all the remote users. This component arises when there are considerable resources competing for computer processing time simultaneously. The database administrator performs to opt for a joint resolution of making use of physical resources and restructuring the system of resolve the tightness.

After the CPU the RAM and network are also perform there important role to act an uninterrupted connectivity for the database user, where RAM akin to the CPU refers to a physical resource of the server to the extent that other processes running on it will use the available RAM in the database system. Moreover, if the database system service is utilized as a network field controller, RAM may also be depleted for the process. This necessitates that the database service be a network member server and not a primary or backup domain controller system. Another bottleneck component is the network bottleneck that is linked to the traffic issues in the network and the manner of behavior displayed by the database server in the network. This poor database performance precipitated by network traffic should be looked into by an expert network administrator for resolution.

Moreover, application decomposition is considered to be the highest network stress stemming from poorly structured client or server application. It is crucial for applications running over networks to use the client/server system architecture, wherein server-side processing mitigates traffic within the network. In this context, client applications are enabled to issue basic requests through views, stored procedures and triggers employing the least number of bits. On the database server side, it receives, operation and resends little of the information over the network to meet the demand of the client. This architecture is referred to as the thin client/fat-server architecture.

Normalization is a major and important technique to improve online system but denormalization is a method to shift from greater database modeling forms to lower ones to expedite access to the database. This method is used during the derivation of a physical information model from reasonable form and more often than not, tables have to be weakness by

combining them to decrease the number of joins needed for the extraction of the required outcomes. Evidently, this necessitates incurring costs for data duplication, which results in inconsistencies in data and in the enforcement of integrity constraints. The challenge comes from determining how far the table combinations have to be conducted and when the process should stop producing the required performance improvement.

For database applications to function accurately and in a timely manner in order to satisfy customers are of the consensus of how important it is for applications to meet the expectations of users, and on this basis, students of IT should be capable of solving performance issues that are linked with end-user's dissatisfaction of the application. Students of IT should be well-versed in database analysis and the effectively application of systems. With the occurrence of performance issues, IT students have to able to address the weaknesses in the performance and time of performance. This study aims to highlight the important and indication of database tuning among database who have multiple skills and academics, to provide an insight into the extent of database turning provided by the education offered to undergraduate and graduate students, as well as to examine the theoretical components of database tuning in the IT curriculum of the university. The students were majoring in various departments, with Information Systems department as one of them.

3. Methodology Used

In the database management system the appropriate method may be adopted for designing of database for an organization. The factors used and presented in discussed in the paper can negative influence the performance of the database systems regardless about database vendor. Therefore, the core implication is that the variables need examination also consideration in totality rather than individually, when working towards enhancing performance. This implication has been supported by the Oracle Corporation, in the concept called Total Performance Management.

In the database tuning is examined holistically to transform it from a reactive, micro-level method that tackles arising issues, to a proactive macro-level one that pinpoints and offsets degrading performance. More specifically, TPM method provides a staying holistic experience that is distinct from either a top-down. Staying better holistic approach may be explanation through the approach of attacking problems from different dimension and providing a organized way for the synthesis of paraphernalia and technicality in a dynamic computing surrounding. Its staying aspect is attributed to its programs evolution to satisfy the requirements and that are run selectively and with purpose rather than routinely. The methodology views the database such entity whose size and complications, grows over time and hence, the important of performance management grows with it. The approach moves within three steps continuously. With the reevaluation and changing of the established better methodology, the system has to be adjusted accordingly. Several factors including the version of database, upgrades and the overall users influence the database system performance, necessitating the continuous database tuning process.

In this line of advocacy, Microsoft Corporation supports the integration of performance monitoring with database configuration in the SQL Server system for an organization. Microsoft, time and again stressed the fact that the customized tools provided use database versions conduct most for database tuning processes with higher effectiveness and this includes data warehouse. They stated that the SQL Server aims to let go of manual configuration and database tuning as it has become obsolete and archaic. However, because these manual practices are still used to options, suggested of database director do not do so but rather enable SQL Server to tune itself automatically.

Furthermore, SQL Server 9.0, oracle 11i has successfully made automatic adjustments for performance enhancements and the version after it, SQL Server 2003 has enhanced on the self-adjusting methods. Despite the fact that the level to which the self-tuning of the database is still ambiguous, the level and manner in which preceding versions of SQL Servers tuning is expected to exchange within upgrades to 9.0, also SQL 2003. This will only handle a part of the problem in that although the process will be enhanced, a holistic approach is expected to generate long- term solutions and prevent indiscriminate patchwork. Prior authors have more general perspective of database tuning that is not dependent on a specific database vendor and that lays down a premise appropriate for teaching the fundamental database tuning concepts. This viewpoint on database tuning would enable students of IT to delve deeper into the main issues that are needed to resolve issues of performance.

4. Higher Education Database Scenario

Graduating IT students are provided with coursework and internships enable them to develop and modify database applications for the company employing them in the future. However, the current IT curriculums and internships fail to provide graduate students with the skill to solve issues of poor database performance – a topic that is still ambiguous and debatable. Because students are unable to use their academic and internship experience to guide them through the resolution of issues, they are left to their own devices. It appears as if the topic has largely been ignored in IT curriculums in most universities. In this background, the researcher may reach to the conclusion that database tuning is conducted in an ad-hoc manner without a structured formal method or theoretical basis that could be appropriately integrated into the course curriculum. It can also be concluded is the existence of more general range of computer topics are required to be introduced into the curriculum to shed light on database tuning, giving room to study the topic extensively.

More importantly, aside from the above study derived by the writer, it is notable that a thin line frequently distinguishes traditional high education curriculums from vocational technology learning. Therefore, subject, including database tuning that generally linked within particular software vendors instead of intellectual disciplines that can form a niche in university curriculums. In this context, the traditional university education aims to stand students intellectually within contributing to their learning ability instead of providing job training to them.

5. Teachers and Students Database Scenario

Literature is clear on the innumerable factors entailed in database tuning and the existence of the underlying theoretical component that is distinct from any specific software vendor. Hence, an in-depth understanding of the database tuning topic is only possible if there are more extensively offered database courses. The researcher carried out a survey to measure the perceived importance of such courses among database professionals. The researcher also carried out a survey from each group of University and College and database who have skills to determine their opinion of database tuning role in the realm of traditional University and College education.

The Indian Council on Education, an umbrella organization for the Indian Colleges and Universities, described its core values as the values of inclusiveness and diversity that acknowledges the responsibility of higher education to the society, and it personifies the belief of extensive. In this study

some institutions of higher learning aim to go on to offer a traditional, overall plan to undergraduate and graduate and post graduate students, while others opt to hone their distinction and concentrate focus on what they offer, believing that mission specificity will drive them to meet the needs of learners from diverse backgrounds.

6. RESULTS AND DISCUSSION

Online survey was adopted and distributed among database academics and users, who have skills of database improvisers, leader and designers. The results generated from various colleges, university, database professionals and students who are using database as a software tool and the respondents indicating few enjoyable insights into database tuning in academia, experience and their practice. The result showed that courses outnumbered graduate courses – with 73% taught at the undergraduate level, and 25% in graduate field. Also, 45% for cases were educated in the two levels and noting the two programs, it was evident that database tuning was not introduced in majority about subjects, and database tuning was covered only one single topic out of sundry in half of the courses. Among the respondents who related that tuning of database is only offered as part of a whole subjects, few respondents highlighted the amount of time dedicated to tuning of database.

Moreover, majority of the respondents who did not learn of tuning of database indicated their conviction that it should be taught in some capacity and over believed that it should mostly be taught to undergraduate students. This indicates that at present, no great stress has been given on learning tuning of database as a subject in traditional institutions of higher learning. Evidence was compounded by the fact that on pairing the faculty responses with 92% of the practitioners' responses, database tuning was not offered throughout the coursework, notwithstanding whether the students were studying under the disciplines of Computer Science, Computer/Management Information Systems or others. Regardless of the bleak conclusions, 85% of the college users who did not learn the subject related that like to cover the topic as a portion of current courses. Added to this, 92% of the professionals lacked database tuning background, while 84% related that the introduction of such topic in the curriculum would have been helpful.

In the surveyed professionals indicated that database tuning knowledge was not importance at their jobs and just 32% to be importance. Among the respondents who did not learn it in university and college, 37% were accepted to be useful and 59% stated that it was not useful. An interesting difference can be noted in providers' responses as they believe that tuning of database not a key role in their professional jobs but they like to be taught the subject in their prior educational experience. The above highlighted inconsistency calls for future studies to provide insight although initial analysis may attribute it to two probable reasons; first, have weakness of learning and grasp of the subject, and second, the rigors of specific endeavors throughout the professional experience like the demands and performance expectations of the tasks related to employment.

7. Future Scope and Recommendations

The aim of study to determine the viewpoint of database academics and who have skills concerning the topic of database tuning. The study used to obtain data, which produced limited number of both group respondents received from various university and college professionals across the country. The survey was dependent on the self-categorization of the respondents as database faculty and professionals, and this could have had a significant impact on the results. This was conducted to obtain the highest number of respondents possible. In this study shed light on the way database tuning is perceived by academics and professionals. Several of the study aspects may be explored in this section including the establishment of a focused group of respondents that the researcher referred to as database faculty and professionals and their answers to some adequate questions. The questions raised by database professionals may be addressed in future work to determine the viewpoints and thoughts in teaching and using database tuning. The researcher also aims to conduct future works to examine the discrepancy of the practitioners' responses in their perception of the topic and to conduct software vendor independent studies that include a proposed method appropriate for advanced database course.

8. CONCLUSION

In this study I have focused and evaluate the value about including tuning of database such portion of the curriculum of the university's computer information systems. From the examination of institutions of higher learning, it appeared that only certain database tuning factors are covered in undergraduate subject, without extensive topic coverage. Despite the several factors involved in teaching the topic, it needs to be taught at the micro-level as well as the macro-level through a structured strategy. This is particularly pertinent as tuning of database had a theoretic institute that can occupy a considerable part of a subject, with not solely centering on any specific database vendor package. That not however exclude requirement about shaking hands practical database training.

REFERENCES

[1] Adham Mohsin Saeed (May 2015) Role of Database Management Systems (DBMS) in Supporting Information Technology in Sector of Education, researchgate.net.
[2] Agrawal, S., Chaudhuri, S., Kollar, L., Marathe, A., Narasayya, V., & Syamala, M. (2005, June). Database tuning advisor for microsoft SQL server 2005: demo. In *Proceedings of the 2005 ACM SIGMOD international conference on Management of data* (pp. 930-932).
[3] Chaudhuri, S., &Narasayya, V. (1998). AutoAdmin "what-if" index analysis utility. *ACM SIGMOD Record*, *27*(2), 367-378.
[4] Chaudhuri, S., &Narasayya, V. R. (1997, August). An efficient, cost-driven index selection tool for Microsoft SQL server. In *VLDB* (Vol. 97, pp. 146-155).
[5] American Council on Education (2003b), "Connection to the Future Challenges of a new century." http://www.acenet.edu/plan/challenges.cfm.
[6] Hoxmeier, J. A., &DiCesare, C. (2000). System response time and user satisfaction: An experimental study of browser-based applications. *AMCIS 2000 Proceedings*, 347.
[7] McGehee, B. (2003a), "Best SQL Server Performance Tuning Tips." http://www.sql-server-performance.com
[8] McGehee, B. (2003b), "Tips on Optimizing SQL Server Indexes." http://www.sql-server-performance.com
[9] Miller, J. H., & Lau, H. (2001). Microsoft SQL Server 2000 RDATABASE Performance Tuning Guide for Data Warehousing.
[10] Mohamed, Azeem(2002). *A Successful Performance Tuning Methodology*, California, Quest Software, Inc.
[11] Niemiec, R., & Brown, B. D. (2003). *Oracle9i Performance Tuning Tips & Techniques*. McGraw-Hill, Inc.