

# Efficient Query Evaluation over Wide Sparse Table

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**Abstract:** This paper presents how efficiently the data can be retrieved from wide sparse table. The term wide sparse table refers to database table which consists of several attribute values. In traditional database we use SQL queries to retrieve the data. There are several existing mapping techniques that deliver satisfactory query performance. Here the concept of indexing is used to map XML data to wide sparse database. Also we translate XML queries into SQL queries.

**Keywords:** indexing, query, SQL, Wide sparse Table, XML.

## 1. Introduction

Internet is an important media used by humans as part of their life. XML (Extensible Markup Language) is recently used as standard to represent data over internet. Usually we use relational database to store data. Relational database is collection of multiple dataset organized in the form of tables. Normally table is made up of rows and columns. XML data can be mapped to rows and columns of relational table i.e. called as shredding. In case sparse database is table which contains several attributes values such as e-commerce database, storing and retrieving sparse data in traditional database can be done. There are several issues with relational database approach for sparse database storage and retrieval, they are storage space, time consumption.

In traditional database during normal retrieval of sparse data from database SQL (Structured Query Language) queries are used which needs to scan entire sparse database which is not efficient. Writing SQL queries for sparse database table is challenging task since there are several attributes. To overcome this problem the concept of mapping of xml data to sparse database is used. The advantage of this approach is data storage, retrieval is optimized and it is time efficient. The rest of the paper is organized as follows: Section II presents literature survey, section III presents methodology IV provides the expected outcome, and section V concludes the paper.

## 2. Literature Survey

Liang Jeff Chen proposed [1] XML data is mainly supported by SQL database system. It explains about sparse mapping and selective sparse mapping. Sparse mapping is entire xml document is mapped to sparse columns. Selective sparse mapping is an index mechanism that maps interested part of xml document to sparse table. The main disadvantage of this approach is data which is relevant cannot be retrieved. D. Chamberlin and D. Florescu proposed that [2] how XML functionality fits into relational database management systems. It also explains storing XML in relational database system, querying and manipulating XML data, XML typing and validation

L. Beckmann, A. Halverson proposed [3] in relational database tuple may have null values for several attributes. This acts as challenging task for relational database. Suppose horizontal schema is used to store such data set in database, then it might require large storage space. In this proposed approach vertical schema is used so that storage of dataset can be done in better way.

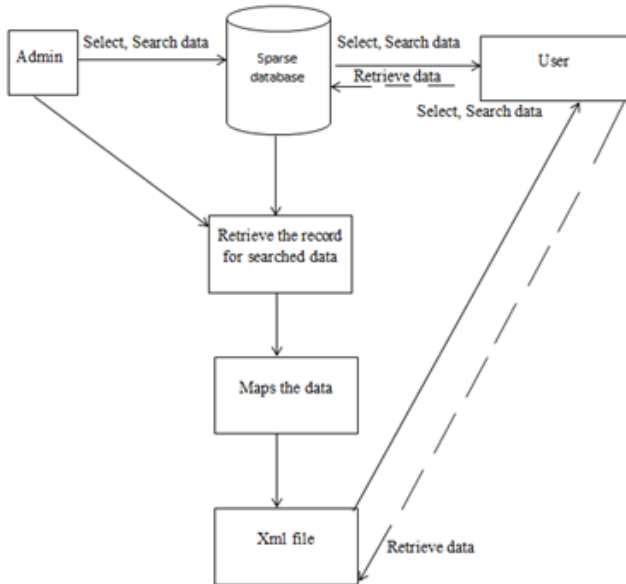
I. Tatarinov, S. Viglas, K. S. Beyer, J. Shanmugasundara, E. J. Shekita and C. Zhang proposes [4] that XML is mainly used exchange data over internet. Storing and querying these XML document is challenging task. It also specifies that researchers have proposed that relational database systems can be used to satisfy these requirements by shredding XML documents into relations, and translate XML queries into SQL queries over these relations. It also specifies the order encoding method that is normally used to represent XML order. It also describes algorithm to translate ordered XML queries to SQL. The disadvantage of this approach is relational optimizer may not understand XML hierarchical structure.

## 3. Methodology

We considered an example related to student database for University. Every University will have student database consisting large amount of student details. Retrieving these data using SQL queries is time consuming. Here the numerical indexing technique is used. Figure 1 shows the block diagram of proposed system. The proposed system consists of two modules

- 1) Admin
- 2) User

Here registered user login first selects attribute, searches the attribute values. The data is retrieved from the sparse database along with it time is displayed if data is not present in xml files. Now admin login with valid username and password. Admin similarly searches the attribute value, selects and map the data to xml files. Now when again login and searches for data, now the data is present in the xml files, time is displayed. Here the concept of translation of XML queries in to SQL is used.



**Figure 1:** Block diagram

widespread table” *IEEE Transactions on Knowledge and Data Engineering*, vol. 26, no. 6, June 2014

[2] M. Rys, D. D. Chamberlin, and D. Florescu, “XML and relational database management systems: The inside story,” in *Proc. SIGMOD*, Baltimore, MD, USA, 2005.

[3] J.L. Beckmann, A. Halverson, R. Krishnamurthy, and J. F. Naughton, “Extending RDBMSs to support sparse datasets using an interpreted attribute storage format,” in *Proc. 22nd ICDE*, Washington, DC, USA, 2006.

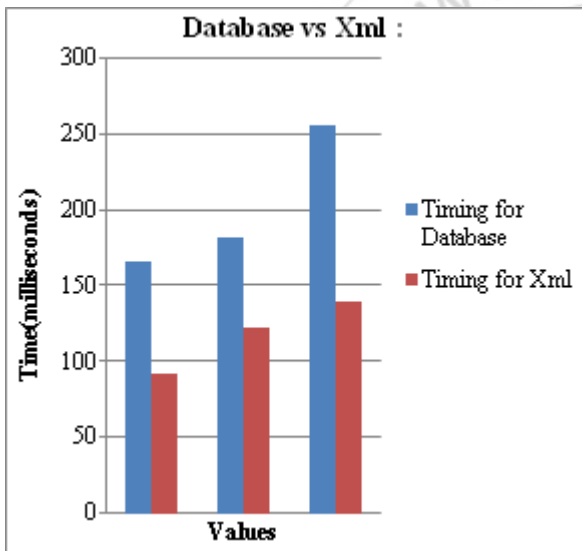
[4] I. Tatarinov, S. Vigiass, K.S. Beyer, J. Shanmugasundaram, E. J. Shekita, and C. Zhang. “Storing and querying ordered XML using a relational database system,” in *Proc. SIGMOD*, Madison, WI, USA, 2002.

[5] P.E. O’Neil, E.J. O’Neil, S. Pal, I. Cseri, G. Schaller, and N. Westbury, “ORDPATHs: Insert-friendly XML node labels,” in *Proc. SIGMOD*, Beijing, China, 2004.

[6] A. Arion, A. Bonifati, I. Manolescu and A. Pugliese, “Path summaries and path partitioning in modern XML databases,” *World Wide Web*, vol. 11, no. 1, pp. 117–151, 2008

#### 4. Expected Outcome

#### Author Profile



**Figure 2:** Comparison graph



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The above Figure 2 shows the expected results which is represented graphically. It shows time taken to retrieve data from xml mapping approach is less compared to time taken to retrieve data from database.

#### 5. Conclusion

The proposed system mainly focuses on the efficiency of data retrieval. XML data is mapped to sparse table and queried. It also measures time taken to retrieve data using XML and SQL queries from sparse table is calculated and compared.

#### References

[1] Liang Jeff Chen, Philip A. Bernstein, Peter Carlin, Dimitrije Filipovic, Michael Rys, Nikita Shamgunov, James F. Terwilliger, Milos Todoc, Sasa Tomasevic, and Dragan Tomic “Mapping XML to