A Comparative Study between Two Model Mapping Approaches for Storing XML documents in Relational Databases

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Abstract: --- XML has becomes defacto standard for representing data over the internet .Relational databases provides a mature way to store and query these documents. There are two categories of storing of XML documents in databases: Model mapping storage, structured mapping storage. In this paper, we compare two model mapping storage approaches for storing XML documents in relational databases.

Index Terms:—XML, Databases, Model Mapping.

I.   INTRODUCTION

XML has emerged as a standard for interchanging data over the internet .There are two kinds of approaches arise when we want to store XML data: Model mapping and Structured Mapping. In Model mapping approach, there is no DTD or schema is associated with XML document. Firstly XML document is converted in to a tree and nodes of tree are stored in database [4][5][6][7][8][9][10] .In structured based approach,   XML schema or DTD is associated with the XML document . At first we resolve DTD and then we make DTD graph and then we generate relational schema [1][2][3] . In this paper we compare two model mapping approaches by their database size and show how our proposed approach is better than the previous approach.

II.   STRUCTURE OF XRECURSIVE AND OUR APPROACH

In XRECURSIVE, The database schema is as follows:
Tag structure (tag name, ID, PID)
Tag value (tag ID, value, type)

In tag _structure table, ach elemnt id, its parent id and its name is stored. In tag value table each element id , its value and type of element is stored .This approach also presents an algorithm for storing XML documents in database .Where as on other hand , our proposed approach has the following structure :-
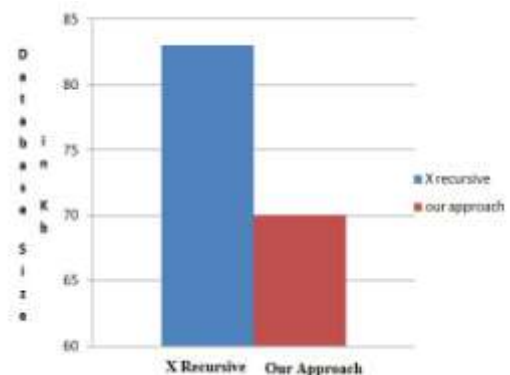Node (Node id, Node name)
Data (Doc id, Node id, Parent id, Node value, Node type, Node pos)

Table Node stores all node id's with their names in it. We assign a unique id to each node of the XML document.
Node name attribute represents the name of the node. In data table , Doc id attribute specify the id of the particular XML document .Node value attribute represents the value of the node i.e. it stores text values in it . Parent id is the id of the parent node of a node. Node type attribute is used to indicate whether the node is an element or an attribute or a text. Node Pos attribute is a position of the node among its siblings in the XML data graph.

III COMPARISON

We compare Recursive and our proposed approach their databases sizes and found that data base size of our approach is much less than X RECURSIVE.

As We can see that database size of XRECURIVE is 83kb and database size of our approach is 70kb wh Ich is much less than XRECURIVE and and also our approach requires less number of join operations in query processing .

III. CONCLUSION

In this paper, we present a comparative study between two model mapping approaches and compare them by their database sizes. We found that our approach is much suitable for storing and querying XML data because it's compact and also takes much less size and also it requires less number of join operations in query processing.

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