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Analyzing Flexible Processing Platform for XML Data

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Abstract: *In this article we have discussed different ways for processing of XML data into understandable language. Here, we have considered only two methods for processing one using DOM Data model and other using XPath Data Model. We have done the comparative study of the two models in terms of SQL query with practical implementation and concluded that processing of xml data using XPath Model is better than processing of xml data using DOM.*

Keywords: *XML, Data Model, DOM, XPath, SQL Query.*

1. INTRODUCTION

XML (Extensible Markup Language) documents are self-describing, and provide a platform independent means to describe data and therefore, can transport data from one platform to another. With XML, data can be stored in separate XML files. This way we can concentrate on using HTML for layout and display, and be sure that changes in the underlying data will not require any changes to the HTML.A markup language is a mechanism to identify structures in a document. The XML specification defines a standard way to add markup to documents.

2. XML DATA MODEL

If we think of an XML document as a linearization of a tree structure, at every node in the tree there are several character strings. The tree structure and the character strings together form the information content of an XML document. The tree that an XML document represents has a number of different types of nodes: element, document, Processing instruction, comment, data.

2.1. Processing XML Data Using XML DOM Model

The XML DOM defines a standard way for accessing and manipulating XML documents. The DOM presents an XML document as a tree-structure. Knowing the XML DOM is a must for anyone working with XML.

2.2. Processing XML Data Using XPath Data Model

XPath is used to navigate through elements and attributes in an XML document. XPath is a major element in W3C's XSLT standard-and XQuery and XPointer are both built on XPath expressions. In XPath, there are seven kinds of nodes: element, attribute, text, namespace, processing-instruction, comment, and document nodes.XML documents are treated as trees of nodes. The topmost element of the tree is called the root element.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<bookstore>
  <book>
    <title lang="in">Computer networks</title>
    <author>Tanenbaum</author>
  </book>
</bookstore>
```

Nodes present in the XML document above:
<bookstore> (root element node)
<author> Tanenbaum </author> (element node)
lang="en" (attribute node)

3. COMPARATIVE STUDY OF XML DATA PROCESSING USING DOM AND XPATH DATA MODEL IN TERMS OF SQL QUERY

In XML DOM, SQL queries can be easily implemented like

```
<Book>
<BookID>1</BookID>
<Bookname>computer networks</Bookname>
</Book>
```

This is a small xml program, if we want to query Book name using SQL then it will look like:

```
Select xmlelement(name "Book",
    Xmlelement(name "BookID", b.BID),
     Xmlelement(name "Bookname", b.Name),
from Book b
```

The XPath query can be specified as part of a URL or within a template. The mapping schema determines the structure of this resulting fragment, and the values are retrieved from the database. This process is conceptually similar to creating views using the CREATE VIEW statement and writing SQL queries against them.

An XML document consists of nodes such as an element node, attribute node, text node, and so on. For example, consider this XML document:

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```
<root>
 <Customer cid= “C1” name=”John” city=”Hisar”>
  <Order oid=”O1" date=”1/20/2009" amount=”3.5" /
>
        <Order oid=”O2" date=”4/30/2009"
amount=”13.4">Customer was very satisfied</Order>
 </Customer>
 </root>
```

We can write the XPath queries in a template and specify the template in the URL. For example, this is a template with an XPath query:

```
<ROOT xmlns:sql=”urn:schemas-microsoft-com:xml-
sql”>
  <sql:xpath-querymapping-schema=”FilePath/
AnnotatedSchemaFile.xml”>
 Specify the XPath query </sql:xpath-query></ROOT>
```

4. CONCLUSION AND FUTURE WORK

Hence we can conclude that there can so many other ways to process XML data but out of the two methods discussed above XPath Data Model is improved one because Xpath takes time only to create Template which is one time investment but that template can be reused as a standard in other programs or Applications of XPath.XML data processing using XPath Model can be enhanced with more advanced features.

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