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Microsoft



Combined XML/XQuery Generator

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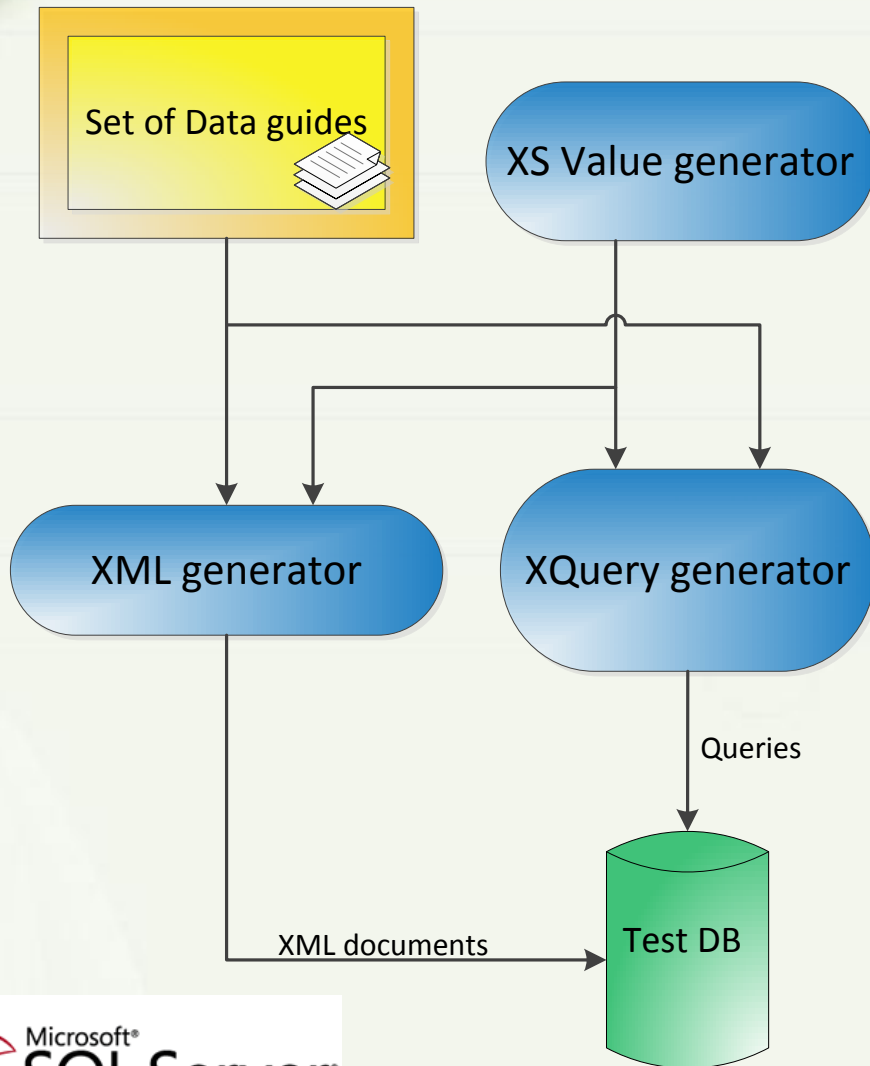
Overview

- ◆ Introduction
- ◆ How the generator works
 - Data guide structure
 - XS Value generator
 - XML Generator
 - XQuery generator
- ◆ Generator usage example
- ◆ Conclusion
- ◆ Q&A

Introduction

- ◆ Testing of the enhanced XML indexing support in Microsoft SQL Server 2012
- ◆ Problem of preparing large amount of XML data and the corresponding XQueries
- ◆ XML/XQuery Generator as proposed solution

How the generator works



◆ XS Value Generator

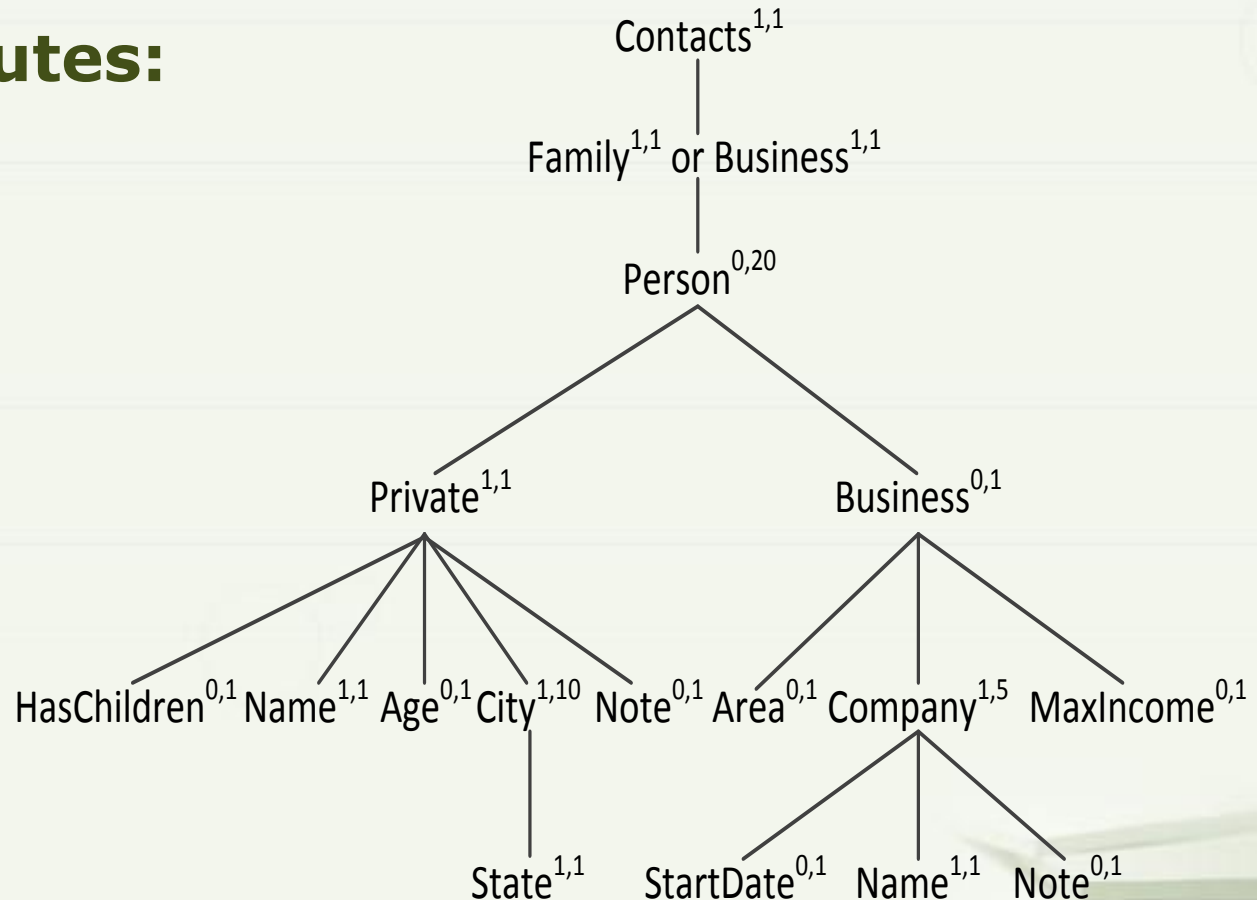
◆ XML Generator

◆ XQuery Generator

Data guide structure

DG node attributes:

- ◆ nodeType
- ◆ minOccurs, maxOccurs
- ◆ dataType
- ◆ nsuri
- ◆ xqueryRole
- ◆ useDictionary

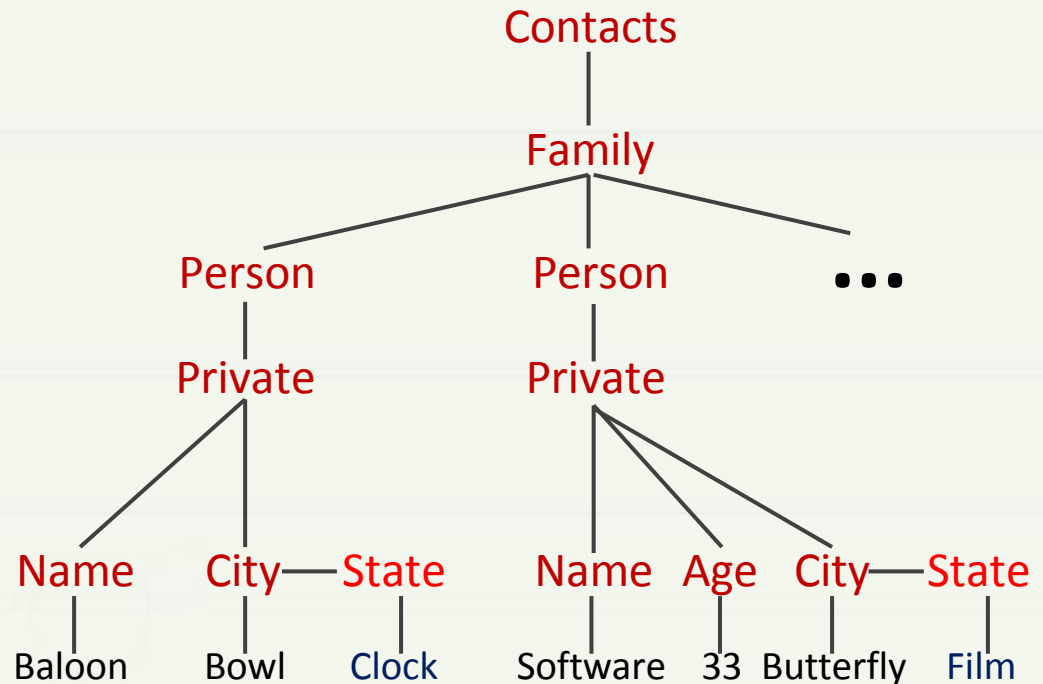


XS Value Generator

- ◆ Supports all built-in primitive and derived XS types
- ◆ Generation of random values
- ◆ Use of dictionaries

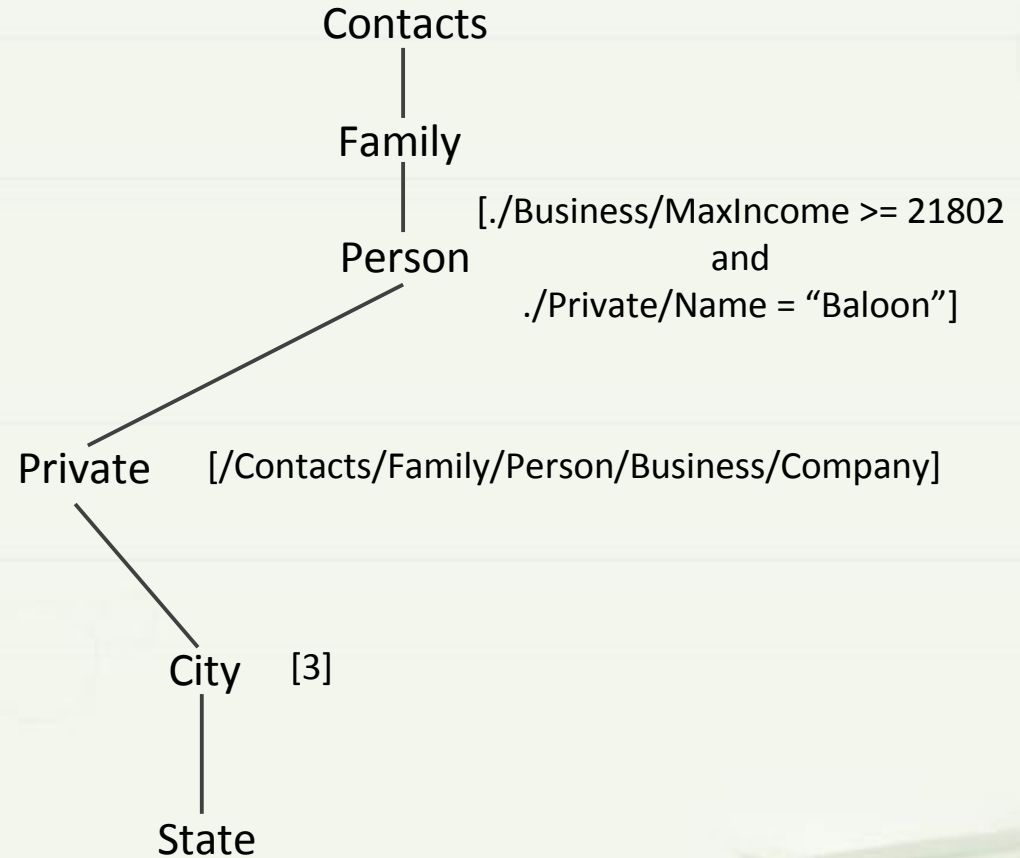
XML Generator

- ◆ DG node – input value
- ◆ Recursive method that traverses DG tree using Depth-First algorithm
- ◆ XML tree – output value



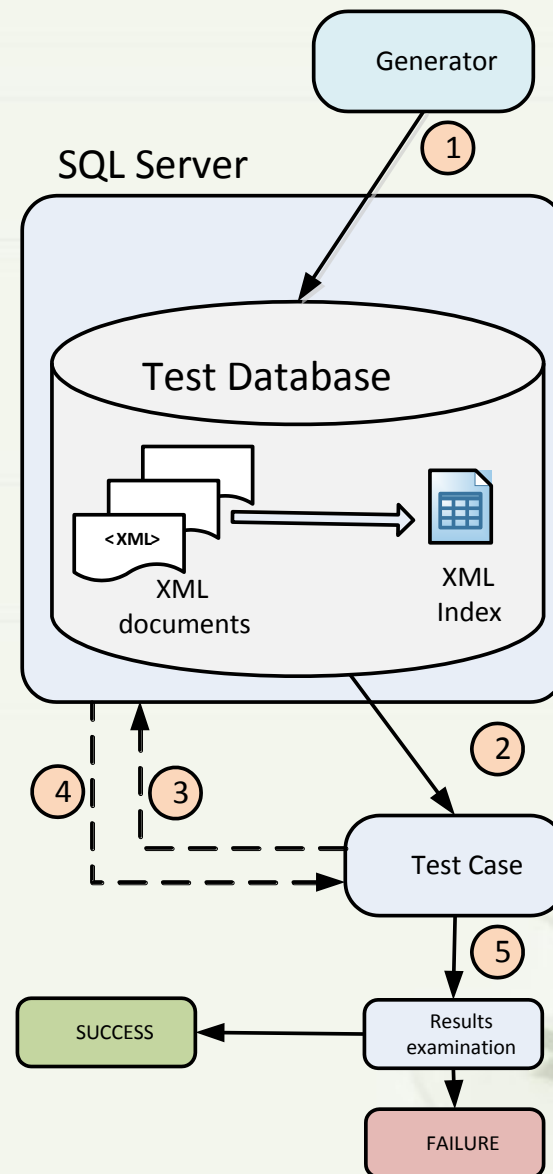
XQuery Generator

- ◆ DG node – input value
- ◆ Recursive method that chooses random path in DG tree
- ◆ XQuery Expression – output value



Generator usage example

- ◆ Select Data Guide
- ◆ Produce XML data and XQueries
- ◆ Save output to Test Database
- ◆ Insert each XML into test table and witness table
- ◆ Create XML index only on the test table
- ◆ Testing framework creates test case for each generated XQuery
- ◆ SQL Server executes XQuery on both tables for each test case
- ◆ Test framework compares the result sets and returns success or fail



Conclusion

- ◆ Synthetic XML data generation
- ◆ Method for controlling XML data structure
- ◆ Controlled randomness in XML data generation
- ◆ Rich support for data types
- ◆ Support for custom value generation strategies
- ◆ Generation of XQueries that are compatible with generated XML data
- ◆ Can be used in testing and benchmarking various XML based systems and applications

Questions?



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