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Semistructured extensions

I. Creating and storing XML's

We created tables with XMLType attribute, in which we stored XML created from corresponding relational table. Additionally Payment table is stored also as CLOB.

XML created from table:	Stored as:
Airplane	XMLType
Airport	XMLType
Carrier	XMLType
Client	XMLType
Country	XMLType
Flight	XMLType
Passenger	XMLType
Payment	XMLType, CLOB
Reservation	XMLType

Storing XML's as char wasn't possible due to limited capacity of this datatype.

XML's were created using XMLElement and XMLForest functions.

II. Operations on semistructured data

1. DOM – insert

Inserts a new flight into Flight XML using DOM.

Method	Execution time [s]
SQL	0,047
DOM	0,406

2. DOM – query

Returns ID's of 'Mercedes-Benz' airplanes using DOM.

Method	Execution time [s]
SQL	0,062
DOM	1,625

3. updateXML and xPath

Changes Brand, Model and SeatNo of airplanes of brands 'Fiat', 'Opel', 'Ford', 'Citroen', 'Renault' to 'Mercedes', 'CLS', 200 using updateXML function with xPath.

Method	Execution time [s]
SQL	0,047
updateXML & xPath	163,994

4. xQuery

Returns ID's of flights where arrival date is between 01.01.2015 and 01.01.2016 using xQuery.

Method	Execution time [s]
SQL	0,078
xQuery	1,883

5. xQuery

Returns ID's of payments done by card, where amount paid was bigger than 6000 using xQuery.

Method	Execution time [s]
SQL	0,078
xQuery	5,685

Execution times comparison			
Operation	SQL time [s]	Operation on XML time [s]	Used Tool
1	0,047	0,406	DOM
2	0,062	1,625	DOM
3	0,047	163,994	updateXML & xPath
4	0,078	1,883	xQuery
5	0,078	5,685	xQuery

In each case operation on XML data took a lot more time than corresponding SQL operation.