Schema Evolution and Reproducibility of Long-term Hydrographic Data Sets at the IOW

Motivation

Unification of Evaluation, Provenance and Evolution:

- Evaluation Query
- Provenance Query
- New Query
- Evolution

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Data increase at IOW:

- IOWDB Timeline: data per year - new parameters - events and innovations

Schema Evolution at IOW

Specification of Schema Changes:
- adding and deleting attributes
- creating relations
- adding and deleting primary keys
- renaming attributes
- merging and splitting attributes

Detected Schema Changes:

<table>
<thead>
<tr>
<th>Specification</th>
<th>basic version</th>
<th>extended version</th>
</tr>
</thead>
<tbody>
<tr>
<td># changes</td>
<td>percentage</td>
<td># changes</td>
</tr>
<tr>
<td>CREATE Table</td>
<td>1</td>
<td>1.6%</td>
</tr>
<tr>
<td>ADD Column</td>
<td>45</td>
<td>72.6%</td>
</tr>
<tr>
<td>DROP Column</td>
<td>15</td>
<td>24.2%</td>
</tr>
<tr>
<td>RENAME Column</td>
<td>1</td>
<td>1.6%</td>
</tr>
<tr>
<td>SPLIT Column</td>
<td>4</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

Example:

ADD Column StartDate AS func1(Date) INTO Cruises;
ADD Column EndDate AS func2(Date) INTO Cruises;
DROP Column Date FROM cruises.

func1 = SUBSTRING(Date, 1, 10),
func2 = SUBSTRING(Date, 11, 10).

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