DataMaster

a Plug-in for importing schema and data from databases into Protégé

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Background and Motivation

• The BioSTORM project
• Integration of multiple data sources
• Protégé plug-in available to the user community
• Use cases:
  – Ontology to Relational DB mapping
  – Import of DB content
Functionality

DB

DB Schemas
DB Tables
Table Columns
Primary Keys
Foreign Keys

Ontology

Classes
Slots/Properties
Instances
The DataMaster Plug-in
Import in Protégé Frames
Import in Protégé OWL

• 3 options for representing DB Tables
  – As OWL classes
  – As instances of Relational.OWL classes
  – As OWL classes, instances of Relational.OWL classes
Import in Protégé OWL
- Represent Tables as OWL Classes -

Namespace Prefixes

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Namespace</th>
</tr>
</thead>
<tbody>
<tr>
<td>xsd</td>
<td><a href="http://www.w3.org/2001/XMLSchema#">http://www.w3.org/2001/XMLSchema#</a></td>
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<tr>
<td>rdfs</td>
<td><a href="http://www.w3.org/2000/01/rdf-schema#">http://www.w3.org/2000/01/rdf-schema#</a></td>
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<td>rdf</td>
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</tr>
<tr>
<td>owl</td>
<td><a href="http://www.w3.org/2002/07/owl#">http://www.w3.org/2002/07/owl#</a></td>
</tr>
<tr>
<td>dbs</td>
<td><a href="http://www.dbs.cs.uni-duesseldorf.de/RDF/relational.owl#">http://www.dbs.cs.uni-duesseldorf.de/RDF/relational.owl#</a></td>
</tr>
</tbody>
</table>

Asserted Hierarchy

For Class: db:PRODUCT

- db:ForeignKey
- db:CUSTOMER
- db:INVOICE
- db:LINE
- db:PRODUCT
- db:VENDOR

Property

- rdfs:comment
- db:hasForeignKeys
- db:hasPrimaryKeyFields
- db:isBridgeTable

Columns:
- db:PRODUCT.P_CODE (single int)
- db:PRODUCT.P_DESCRIPT (single string)
- db:PRODUCT.P_DISCOUNT (single float)
- db:PRODUCT.P_INDATE (single date)
- db:PRODUCT.P_MIN (single int)
- db:PRODUCT.P_ONHAND (single boolean)
- db:PRODUCT.P_PRICE (single float)
- db:PRODUCT.V_CODE (single int)
Import in Protégé OWL

- using the Relational.OWL ontology -

- The Relational.OWL ontology:
Import in Protégé OWL
- Represent Tables as instances of Relational.OWL classes -
Import in Protégé OWL
- Represent Tables as classes AND Relational.OWL instances -
## DB Concept Representations

<table>
<thead>
<tr>
<th>Ontology</th>
<th>Protégé Frames</th>
<th>Protégé OWL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Type I</td>
</tr>
<tr>
<td>Database</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB Schema</td>
<td>-</td>
<td>Implicitly by namespace</td>
</tr>
<tr>
<td>DB Table</td>
<td>Class</td>
<td>Class</td>
</tr>
<tr>
<td>Table Column</td>
<td>Template slots</td>
<td>Datatype Properties</td>
</tr>
<tr>
<td>Primary Key</td>
<td>Primary Key Fields slot</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Key</td>
<td>Foreign Key instances</td>
<td>ForeignKey instances</td>
</tr>
</tbody>
</table>
Conclusions

• DataMaster: A plug-in available as part of the Protégé distribution
• Works with Protégé Frames and Protégé OWL
• Imports schema (and data) from DB
• Multiple import options
• Intuitive user interface