

Guidelines for the Data Preparation and Integration part of the Data Curation Project

1. Consider the domain and the data-sets within that domain that you have chosen for the *Data Profiling* project (among those presented for the *Data Profiling* module).
2. Model the domain of interest by means of an ontology/mediated schema. The ontology should represent all information that is relevant for the domain of interest, and it should be rich enough (at least 10 classes, plus the corresponding object and data properties).
3. Represent the ontology/mediated schema using the graphical notation introduced in the course (or similar).
4. Represent the ontology in Protégé.
5. Consider the relational database that you have designed for the Data Profiling module, including the relevant constraints that you have specified and/or extracted from the data.
6. Design VKG mappings to connect the ontology to the database, using the *Ontop Plugin for Protégé* (or *Ontopic Studio*).
7. Develop an application (e.g., in Java) for your domain that makes use of Ontop as a SPARQL endpoint to query the database through the ontology, extracting information that is of interest for your domain of choice.

As an example for the kinds of queries that could be posed via your application, you can consider the queries underlying travel booking sites, where some parameters of a request are filled in via a form (e.g., the departure city, departure and arrival date and time, etc.), and answers are retrieved using those parameters. (You have to take into account the SPARQL fragment that is supported by the current version of Ontop.)

Notes:

- The project can be developed either alone, or in a group of two. For projects developed by a group of two, only one of the two students should submit the project.
- Before starting the effective development of the project, present and discuss with the lecturer the domain and the data sources that you intend to use, and the application that you intend to develop.
- Any doubt that you have should be discussed before taking decisions that then might force you to revise your work.
- The documentation produced for the project should include a *self-contained pdf document*, which will be the basis for the discussion of the project during the oral exam. The document should contain:
 1. a header with title of the project, name(s) of the student(s) that have developed it, name of the course (i.e., *Data Preparation and Integration*), and academic year;
 2. a description of the domain of interest;
 3. a description of the content and format of the selected data sources, and an indication of how and where these data sources can be accessed;
 4. a description of the main functionalities of the (Java) application that you have developed;
 5. the ontology/mediated schema of the domain of interest, expressed in OWL 2 QL; the ontology should be represented in the document adopting the graphical notation presented in the course;
 6. a (possibly graphical) representation of the relevant relations in the relational schema, indicating attributes, keys, and foreign keys;
 7. a specification of the mappings between the ontology and the relational database, expressed in the Ontop mapping language; you might include in the document only a representative subset of the whole set of mappings, in order to avoid to specify many mappings that are very similar in their form.
- The documentation should include also:
 - the .owl, .obda, and .properties files that make up the Ontop VKG specification of the project;
 - the SQL export of the relational database schema;
 - the csv and/or json files and/or a dump of the SQL database mapped to the ontology (provided they are not larger than 10MB – if the files are larger, a subset of the rows should be extracted);
 - some SPARQL queries that have been used either for testing or in the developed application.
- All documents specified in the previous two items have to be bundled in a single ZIP file and have to be uploaded to MS Teams within the “Data Curation Project” assignment.
- The software part of the project (ontology, specification of the mediated schema, mappings, application) will be discussed and demoed during the oral exam.
- The deadline for submitting the project will be communicated in Teams (typically it is at 23:55 two days before the oral exam date, which is the day set for the project discussion).