Semantic Web

Assignment 9

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Some of the tasks may require you to do additional research extending the lecture. Please keep the citation rules in mind.

For all the assignment questions that require you to write a code, make sure to include the code in the answer sheet, along with a separate python file. Where screen shots are required, please add them in the answers directly and not as separate files.

Team Name: XXXX
Team Members: XXXX

1 OBDA

Consider the following Global Schema (G)

$$
\begin{aligned}
G = \ \{ & \\
& \mathsf{Product} && \sqsubseteq && (\exists \mathsf{hasName}.\top) \sqcap (\exists \mathsf{belongsToBrand}.\top) \sqcap (\exists \mathsf{hasPrice}.\top) \\
& \mathsf{ElectronicProduct} && \sqsubseteq && \mathsf{Product} \\
& \mathsf{Customer} && \sqsubseteq && \exists \mathsf{buys}.\mathsf{Product} \sqcap \exists \mathsf{hasGender}.\top \ \}
\end{aligned}
$$

and the following data sources: $S = S_1 S_2$, $S_1 = R_1(productName, brand, price)$, where electronic products prices are less than 1000 euros; and $S_2 = R_2(productName, customer)$, where products prices ranges from 50 to 800 euros.

1.1 GAV **2 points**

Formalize GAV mappings for the global schema (G) and data source (S).

1.2 LAV

Formalize LAV mappings for the global schema (G) and data sources (S).

2 Query Formalism

Formalize the following queries:

2.1

Show customers who purchased Samsung products

2.2

Show all the products priced less than 60 Euro that were purchased by female customers

2.3

Show Apple products which were bought by male customers

2.4

Show female customers who bought products with a price of 750 Euro.

Important Notes

Submission

- Solutions have to be submitted to the OLAT repository Submission in the respected folder.
- The name of the group and the names of all participating students with matriculation numbers must be listed on each submission.
- Solution format: all solutions as *one* PDF document. Programming code has to be submitted as Python code to the OLAT repository. Upload *all* `.py` files of your program! Use `UTF-8` as the file encoding. *Other encodings will not be taken into account!*
- Check that your code compiles without errors.
- Make sure your code is formatted to be easy to read.
  - Make sure you code has consistent indentation.
  - Make sure you comment and document your code adequately in English.
  - Choose consistent and intuitive names for your identifiers.
- Do *not* use any accents, spaces or special characters in your filenames.

Acknowledgment

This pdfLaTeX template was adapted by Jun Sun and Iryna Dubrovska based on the LuaLaTeX version by Lukas Schmelzeisen.

LaTeX

Use `pdflatex assignment_X.tex` to build your PDF.