9. Perfect Reformulation

Exercise 9.1 Rewriting of conjunctive queries with respect to a *DL-Lite* ontology with PerfectRef.

1. Compute the perfect reformulation for the following queries:

   (a) $q(x, y) \leftarrow A(x), R(x, y), C(y)$

   (b) $q(z) \leftarrow S(y, z)$

   (c) $q(z) \leftarrow S(x, y), S(y, z)$

   with respect to the TBox $\mathcal{T}$ consisting of the following inclusion assertions:

   $$A \sqsubseteq \exists R$$
   $$\exists R^- \sqsubseteq B$$
   $$B \sqsubseteq A$$
   $$R^- \sqsubseteq S$$

2. Answer the above queries over the ontology $\langle \mathcal{T}, \mathcal{A} \rangle$, where $\mathcal{A} = \{A(c)\}$ by:

   - Evaluating the perfect reformulations calculated in Point 1 over the ABox $\mathcal{A}$ viewed as a database;

   - Evaluating the queries over the canonical model of $\langle \mathcal{T}, \mathcal{A} \rangle$.

   Do the answers coincide?