

## SemCheck - Exercise

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The goal of the exercise is to add a simple process modeling language ('miniBPMN') to the ENTITY-RELATIONSHIP data modeling language and then to link the two. Further, you shall create analysis queries to check the correctness of the linkage. You need to install ConceptBase.cc for this exercise from <http://conceptbase.sourceforge.net/CB-Download.html>

Consider the ER modeling language formalized in <http://merkur.informatik.rwth-aachen.de/pub/bscw.cgi/d4201412/ER.sml.txt>. Copy and paste the definition to a CBIva User Interface and 'tell' it to the ConceptBase database.

**Part 1:** The construct ATTRIBUTE currently does not specify the domain. For example, the domain of ISBN should be 'String'. Extend the modeling language by providing a linkage between ATTRIBUTE and the new construct DOMAIN! Extend the library example to utilize this new construct.

**Part 2:** Define another modeling language for 'miniBPMN' in the same ConceptBase database as the ER language. The language should have constructs for the process start event, the process end event, and tasks. Further, the language should allow to link those elements by sequence links.

**Part 3:** The tasks of miniBPMN shall get the ability to have ENTITY's and RELATIONS as data input or output of the tasks. Provide this new linkage that crosses from miniBPMN to the ER language. Also provide a small example, e.g. the user registration at a library or borrowing a book at the library.

**Part 4 (difficult):** Define queries or constraints for the following semantic tests:

R1: Each ATTRIBUTE must have exactly one domain.

R2: Each ENTITY/RELATION must occur as input and output of at least one BPMN process.

R3: Each task of BPMN lies on a path from a start event to an end event.