Ontology and Database Systems
Knowledge Representation and Ontologies

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Overview of the Part on “KR and Ontologies” I

1. Modeling information through ontologies
   - 1. Introduction to ontologies
   - 2. Using logic for representing knowledge
   - 3. Ontology languages
   - 4. UML class diagrams as FOL ontologies

2. Description Logics
   - 1. Brief introduction to computational complexity
   - 2. Introduction to Description Logics
   - 3. Description Logics and UML Class Diagrams

3. Query answering in databases and ontologies
   - 1. Querying databases and ontologies
   - 2. Query answering in Description Logics

4. Ontology-based data access
   - 1. The DL-Lite family of tractable Description Logics
   - 2. Linking ontologies to relational data
Overview of the Part on “KR and Ontologies” II

5 Reasoning in the \textit{DL-Lite} family
   1 TBox reasoning
   2 TBox & ABox reasoning and query answering
   3 Beyond \textit{DL-Lite}

6 Reasoning in the \textit{ALC} family
   1 Properties of \textit{ALC}
   2 Reasoning over \textit{ALC} concept expressions
   3 Reasoning over \textit{ALC} knowledge bases
   4 Extensions of \textit{ALC}
   5 Reasoning in extensions of \textit{ALC}
   6 \textit{SHOIQ} and \textit{SROIQ}