

# 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

- 5 Reasoning in the *DL-Lite* family
  - 1 TBox reasoning
  - 2 TBox & ABox reasoning and query answering
  - 3 Beyond *DL-Lite*
  
- 6 Reasoning in the *ALC* family
  - 1 Properties of *ALC*
  - 2 Reasoning over *ALC* concept expressions
  - 3 Reasoning over *ALC* knowledge bases
  - 4 Extensions of *ALC*
  - 5 Reasoning in extensions of *ALC*
  - 6 *SHOIQ* and *SROIQ*