

# Ontology and Database Systems

Ontology-based Systems

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# Overview of the Part on “Ontology-based Systems” 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*