

# DEVELOPING A KNOWLEDGE GRAPH FOR A QUESTION ANSWERING SYSTEM TO ANSWER NATURAL LANGUAGE QUESTIONS ABOUT GERMAN GRAMMAR

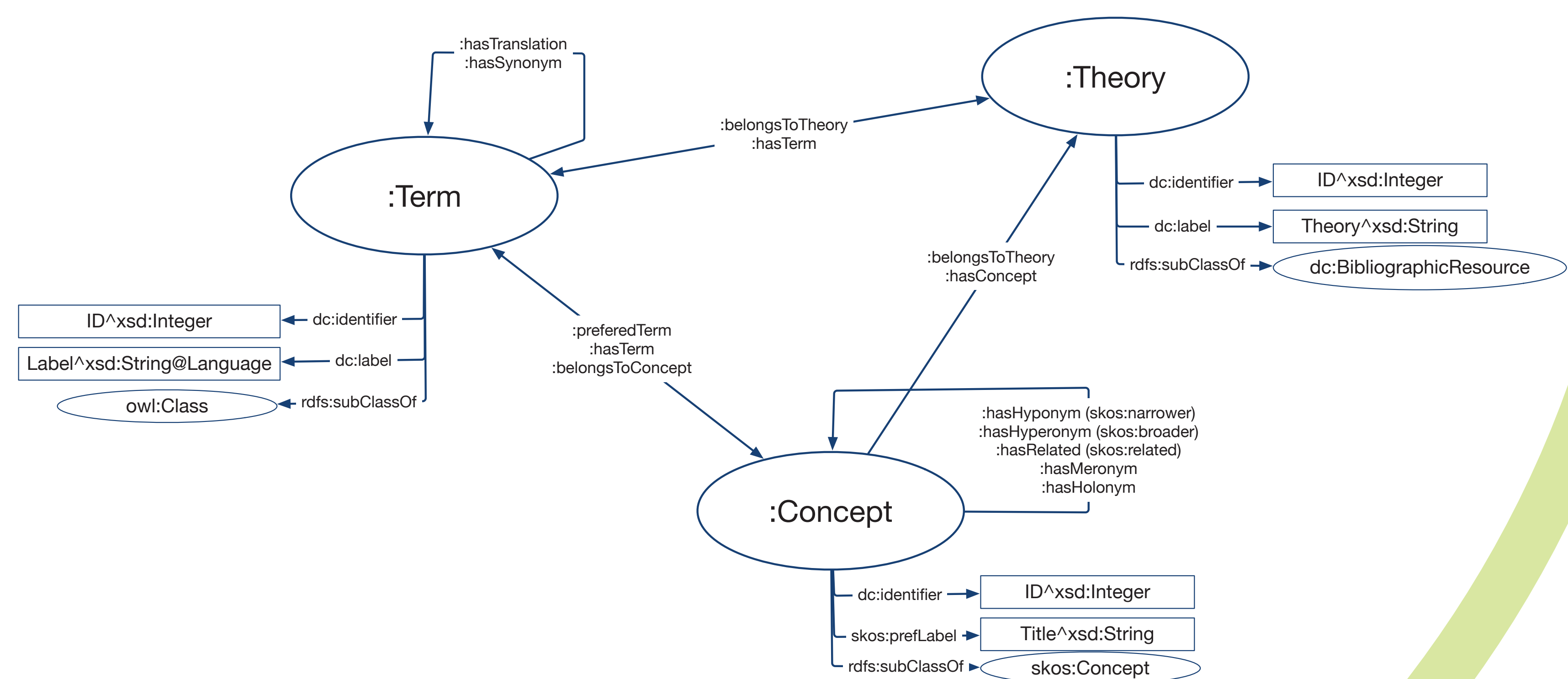
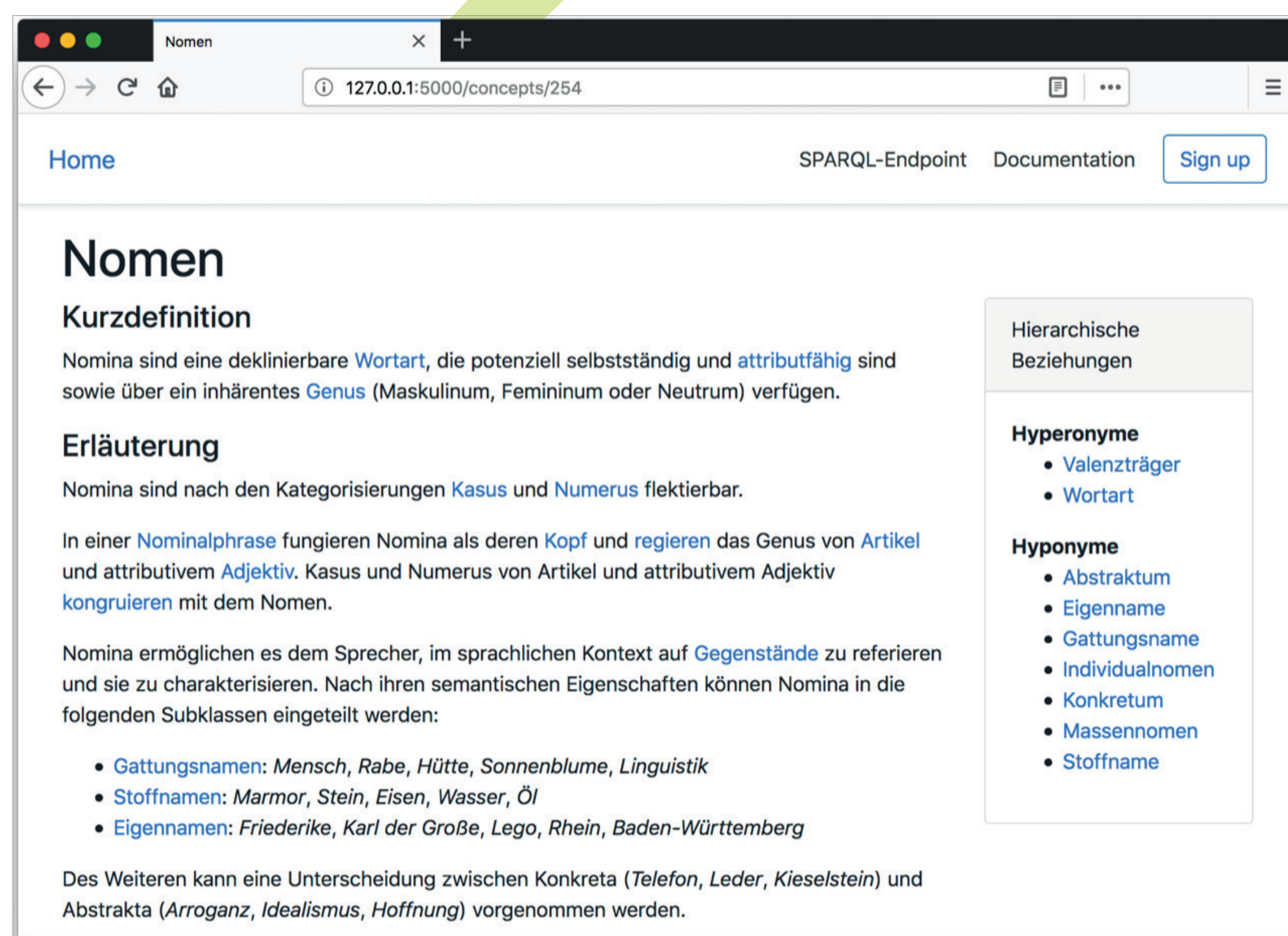
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## TASK

The overall task is to develop a Question Answering System to answer natural language questions about a specific grammatical question.

## RESEARCH QUESTIONS

- [RQ1] How does the knowledge graph need to be built to support a Question Answering System for questions about German grammar?
- [SRQ1] What entities and relations does the ontology need to consist of?
- [SRQ2] Can existing QA system frameworks be extended to answer questions about German grammar?
- [SRQ3] Could additional (external) resources be used to improve the question answering?



## EVALUATION

- High precision (P@5, P@10) before high recall
- Performance and scalability will be measured using the query time
- Two types of answers: qualitative and quantitative
  - o Quantitative answers are categorized as correct, false, and not answered
  - o Qualitative answers are categorized as correct, incomplete, false, or not answered

## PRELIMINARY RESULTS

- The dictionary of grammatical terms (Wissenschaftliche Terminologie, <https://grammis.ids-mannheim.de/terminologie>) and the orthographical dictionary (Datenbank Rechtschreibwortschatz, <https://grammis.ids-mannheim.de/rechtschreibwortschatz>) have been transferred into RDF and build a KG with 48,924 triples
- Local web application built with Flask (Flask – A Python Microframework, <http://flask.pocoo.org>) to navigate through the graph along hierarchical relations
- SPARQL queries can be entered using the SPARQL endpoint

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