

Project Description: Building a Focused Web Application with Graph Database Queries

Knowledge-Based Systems (Balaj)

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1 Introduction

As part of this course, students will implement a focused web application to apply their knowledge of graph databases and Cypher queries in a practical setting. The goal is to design and develop a functional application that allows users to interact with a graph database, execute Cypher queries, and visualize results in a user-friendly manner.

2 Select or Collect Data

Students may use a provided graph dataset or choose an open-source graph dataset relevant to their application idea. If external data sources are used, proper citation is required. The dataset should be structured in a way that allows meaningful graph queries and result visualization.

3 Design the Application

Students should develop an interactive application that allows users to:

- Input or select query parameters,
- Execute Cypher queries and retrieve results dynamically,
- Explore query results in a clear and understandable format (e.g., graph visualizations or tables of nodes and relationships).

The application may be implemented using any modern framework or programming environment. Emphasis should be placed on functionality, usability, and clarity, rather than on complex visual design or decorative elements.

4 Formulate and Implement Queries

Each student or group should implement at least three to five meaningful Cypher queries that demonstrate different aspects of graph data access and analysis. These queries should answer practical questions related to the chosen dataset and should be well-documented in the code and the report.

5 Documentation and Presentation

Each project must include:

- A short README file describing the setup, usage, and structure of the application,
- Cypher scripts used in the project,
- A concise documentation of the development process and key design decisions.

The final presentation should include:

- An overview of the graph dataset used,
- A demonstration of the application and its main functionalities,
- Examples of executed Cypher queries and their results,
- Insights gained from the implementation process.

6 Enhancements

Students may extend their projects with additional features such as:

- Interactive elements (sorting, filtering, search),
- Graph visualizations (highlighting nodes, relationships, or paths),
- Error handling and input validation,
- Simple user authentication.

7 Evaluation Criteria

Projects will be evaluated based on the following aspects:

1. Functionality and correctness of implemented Cypher queries,
2. Usability and clarity of the interface,
3. Code quality and documentation,
4. Creativity and completeness of the application.