

NIE-PDB: **Advanced Database Systems**

<http://www.ksi.mff.cuni.cz/~svoboda/courses/NIE-PDB/>

Practical Class 5

Neo4j

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Data Model

Database system structure

Instance ($\rightarrow$ **database**) $\rightarrow$ single **graph**

Property graph = directed labeled multigraph

- Collection of vertices (**nodes**) and edges (**relationships**)

Node

- Internal identifier
- Set of **labels**, set of **properties**

Relationship

- Internal identifier
- **Direction**, start and end node
- Exactly one **type**, set of **properties**

First Steps

Connect to our NoSQL server

- SSH / PuTTY and SFTP / WinSCP
- **nosql.kti.in.fit.cvut.cz:42222**

Start Cypher shell and access our database

- `cypher-shell -u login -p password`
 - Password option can be omitted, you will then be prompted

Get familiar with basic commands

- `:help`
- `:exit`

Exercise 1

Express the following Cypher query

- **Find movies with identifier *medvidek***
- Return movie nodes together with title properties

Exercise 2

Express the following Cypher query

- **Find actors born in 1965 or later**
- Return actor names and years they were born
- Sort the result using years (in descending order) and then names (in ascending order)

Exercise 3

Express the following Cypher query

- **Find titles of movies in which *Jiri Machacek* played**

Exercise 4

Express the following Cypher query

- **Find movies where at least one actor played**

Exercise 5

Express the following Cypher query

- **Find actors who played with *Ivan Trojan***

Exercise 6

Express the following Cypher query

- **Find all friends of actor *Ivan Trojan***
- Include friends of friends etc.
- Return actor names

Exercise 7

Express the following Cypher query

- **Find pairs of movies and their actors**
- Include movies without actors as well

Exercise 8

Express the following Cypher query

- **Find actors who played in movies having above average number of actors**
- Return actor names

References

Cypher query language

- <https://neo4j.com/docs/cypher-manual/4.4/>

Cypher reference card

- <https://neo4j.com/docs/cypher-cheat-sheet/4/>