

# B4M36DS2, BE4M36DS2: Database Systems 2

<https://cw.fel.cvut.cz/b221/courses/b4m36ds2/>

Practical Class 11

## Neo4j

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# Data Model

Database system structure

Instance → 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.felk.cvut.cz`

## Start Cypher shell

- `cypher-shell`

## Get familiar with basic commands

- `help`
- `exit`

## Sample data (common database)

- See `/home/DS2/neo4j/data.cypher`

# 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

Embedded database and traversal framework

- <https://neo4j.com/docs/java-reference/current/>

JavaDoc

- <https://neo4j.com/docs/java-reference/current/javadocs/>

Cypher query language

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

Cypher reference card

- <https://neo4j.com/docs/cypher-refcard/current/>