

# NDBI040: **Modern Database Concepts**

<http://www.ksi.mff.cuni.cz/~svoboda/courses/191-NDBI040/>

Practical Class 3

## **SPARQL**

**Martin Svoboda**

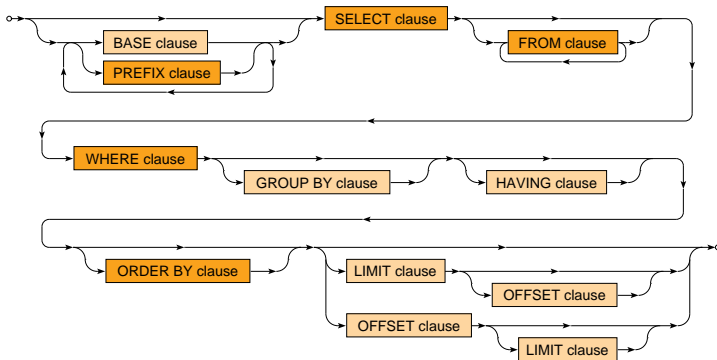
svoboda@ksi.mff.cuni.cz

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**Charles University**, Faculty of Mathematics and Physics

# Select Queries

## Clauses of **SELECT** queries



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## Clauses of **SELECT** queries

- BASE – base address for all relative identifiers
- PREFIX – base addresses for prefixed names
- SELECT – **variables to be projected**
- FROM – **data graphs to be queried**
- WHERE – **graph patterns to be matched**
- GROUP BY – variables to be used for grouping
- HAVING – conditions these groups must satisfy
- ORDER BY – criteria used to sort solutions
- LIMIT – number of solutions to be included
- OFFSET – number of solutions to be skipped

# NoSQL Server

Use your web browser to access our **SPARQL endpoint**

- <https://nosql.opendata.cz/sparql>

Explore the contents of our **RDF data graph**

- Identifier: <http://nosql.opendata.cz/school/>

# Exercise 1

Express the following SPARQL query

- **Select all students**
- Return personal numbers, first and last names

?n	?f	?l
2	Petr	Skoda
4	Tomas	Knap
6	Jakub	Klimek

# Exercise 2

Express the following SPARQL query

- **Select all courses** with codes starting with *NPRG*
  - Use *regex(string, pattern)* function
- Return course codes and titles
- Order the courses using their titles

?c	?t
NPRG030	Programming I
NPRG036	XML Technologies

# Exercise 3

Express the following SPARQL query

- **Find students and their e-mail addresses**
  - Note that e-mail addresses might be missing
- Return personal numbers and e-mails

?n	?e
2	skoda@uni.cz
4	knap@uni.cz
6	

# Exercise 4

Express the following SPARQL query

- **Select students, their e-mails, and web pages**
  - Note that both e-mails and web pages might be missing
- Return personal numbers, e-mails, and web pages

?n	?e	?w
2	skoda@uni.cz	http://www.uni.cz/~skoda/
4	knap@uni.cz	
6		http://www.uni.cz/~klimek/



# Exercise 5

Express the following SPARQL query

- **Select courses that are taught on Mondays or Fridays** during winter semester *2019/20*
- Return course references and codes

?p	?c
s:course7	NPRG036
s:course5	NSWI096

# Exercise 6

Express the following SPARQL query

- **Select courses that are not taught on Mondays or Fridays** during winter semester *2019/20*
- Return course references and codes

?p	?c
s:course3	NPRG030

# Exercise 7

Express the following SPARQL query

- **Select courses that are not taught on Mondays or Fridays during winter semester 2019/20**
- Return course references and codes
- **Do not use NOT EXISTS and nor MINUS constructs**

?p	?c
s:course3	NPRG030

# Exercise 8

Express the following SPARQL query

- **Return average study results for all students**
  - Assume only courses in winter semester *2019/20*
- Ignore enrollments with undefined results
- Describe students by their full names
- Include students with at most 10 courses only