

B4M36DS2, BE4M36DS2: **Database Systems 2**

<http://www.ksi.mff.cuni.cz/~svoboda/courses/211-B4M36DS2/>

Practical Class 4

SPARQL

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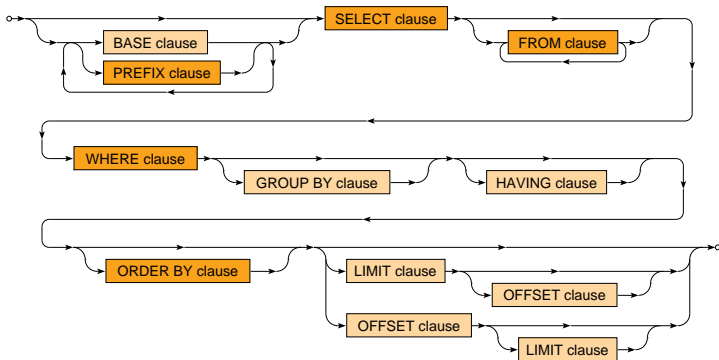
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Select Queries

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/`
 - Preserve every tiny detail, i.e., lowercase, `http` and not `https`, slash symbol at the end

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
8	Jakub	Starka

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	
8	

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/
8		

Exercise 5

Express the following SPARQL query

- **Select courses that are taught on Mondays or Fridays** during winter semester *2021/22*
- Return course references and codes

?p	?c
<http://nosql.opendata.cz/school/course7>	NPRG036
<http://nosql.opendata.cz/school/course5>	NSWI096

Exercise 6

Express the following SPARQL query

- **Select courses that are not taught on Mondays or Fridays** during winter semester *2021/22*
 - Including courses that are not taught at all in this semester
- Return course references and codes

?p	?c
<http://nosql.opendata.cz/school/course3>	NPRG030
<http://nosql.opendata.cz/school/course1>	NSWI090

Exercise 7

Express the following SPARQL query

- **Select courses that are not taught on Mondays or Fridays during winter semester 2021/22**
 - Including courses that are not taught at all in this semester
- Return course references and codes
- **Do not use NOT EXISTS and nor MINUS constructs**

?p	?c
<http://nosql.opendata.cz/school/course3>	NPRG030
<http://nosql.opendata.cz/school/course1>	NSWI090

Exercise 8

Express the following SPARQL query

- **Return average study results for all students**
 - Assume only courses in winter semester *2021/22*
- Ignore enrollments with undefined results
- Describe students by their full names
- Include students with at most 10 courses only