NDBI040: **Big Data Management and NoSQL Databases**

http://www.ksi.mff.cuni.cz/~svoboda/courses/2016-1-NDBI040/

Practical Class 6

XQuery and XPath Languages

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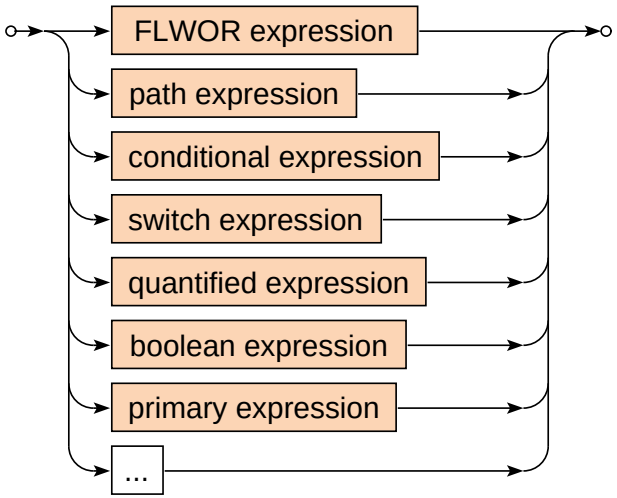
XQuery Expressions

Expressions



- **FLWOR** expressions
  - `for … let … where … order by … return …`
- **Conditional** expressions
  - `if … then … else …`

XQuery Expressions

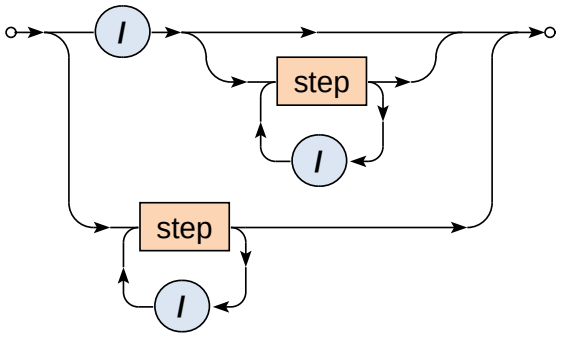
Expressions

- **Quantified** expressions
  - `some|every … satisfies …`
- **Boolean** expressions
  - `and`, `or`, `not` logical connectives
- **Path** expressions
  - Selection of nodes of an XML tree
- **Primary** expressions
  - Literals, variable references, function calls, **constructors**, …
- …

Path Expressions

Path expression

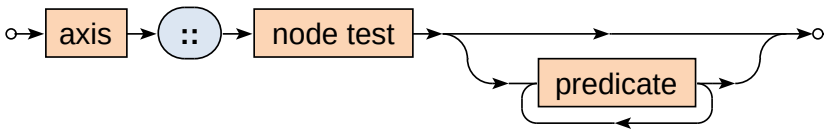
- Absolute / relative paths



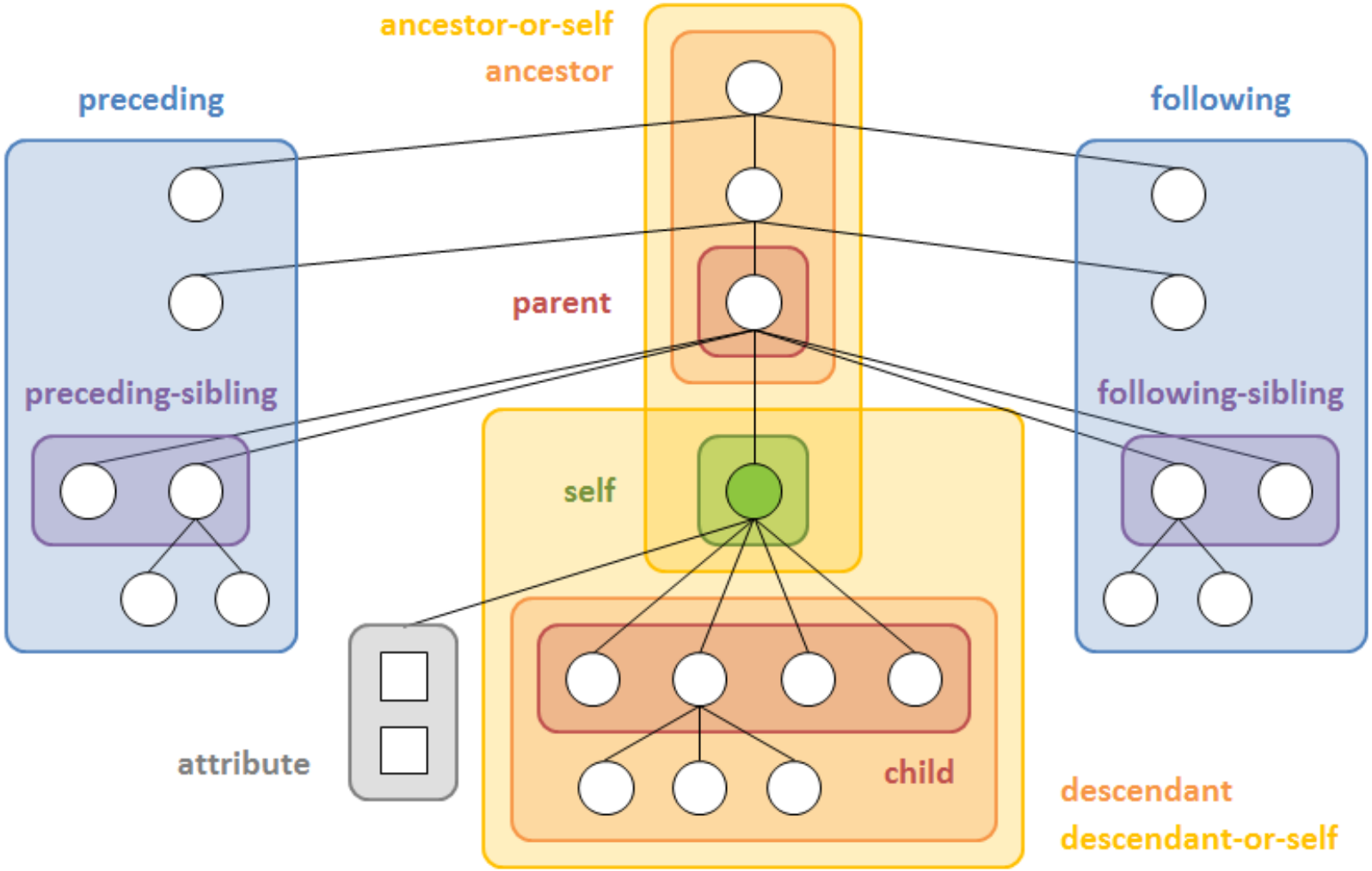
Path Expressions

Steps of path expressions

- **Axis**
  - Specifies the relation of nodes to be selected for a given node
- **Node test**
  - Filters nodes selected by the given axis using basic tests
- **Predicates**
  - Filter the nodes again, this time using advanced conditions



Path Expressions: Axes



Exercise 1

Express the following XPath queries

- Return titles of all movies
- Return names of all actors (just text content)
- Return identifiers of all movies (their values)
- Return all genres (without duplicities)

Exercise 2

Express the following XPath query

- **Return titles of movies that were filmed in *2005* or later and that have a director specified**

Exercise 3

Express the following XPath query

- **Return titles of movies having their length above the overall average**

Exercise 4

Express the following XPath query

- **Return title of the very last movie in the document**

Exercise 5

Express the following XPath query

- **Return years of birth of actors that played at least in one movie**

Exercise 6

Express the following XQuery query

- **Return a sequence of all the movies filmed in *2005* and later**
- Respect the following output structure

```
<movie title="movie-title">
  <actor>actor-name</actor>
  ...
</movie>
...
```

Exercise 7

Express the following XQuery query

- **Return a sequence of titles of movies that have a rating above the overall average**
- Order the movies according to their ratings (ascending order) and then also years (descending order)

Exercise 8

Express the following XQuery query

- **Find movies in which all the following actors played**
  - *Jiří Macháček*
  - *Jitka Schneiderová*
- Return titles of these movies
- Use quantified expression

Exercise 9

Express the following XQuery query

- **Generate an XHTML table with data about movies**

```
<table>
  <tr>
    <th>Title</th><th>Director</th><th>Actors</th><th>Genres</th>
  </tr>
  <tr>
    <td>movie-title</td>
    <td>director-name-or-unknown</td>
    <td>number-of-actors</td>
    <td>comma-separated-list-of-genres</td>
  </tr>
  ...
</table>
```

- Use `<i>Unknown</i>` when a director is missing