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Knowledge Graphs

Exercise 1: XML

For editing and validation of xml you can also use software like "XML Copy Editor" or "XMLSpear", or any online tool mentioned in the tasks

1.1. XML

Look at the following XML. Why is it not well-formed? How could you fix it?

```
<?xml version="1.0" encoding="UTF-8"?>
<book isbn="2314783420">
<bestseller>
    <author>Tim Jones</author>
    <title>The book of everything</title>
    <publisher>
        <company>Books ltd.</company>
        <address>
            <street>Main st. 15</street>
            <city>Manhattan</city>
        </address>
    </publisher>
</book>
<book isbn="4389098312">
    <author>Jack Stephens</author>
    <author>Paul Williams</author>
    <title>The book of nothing</title>
    <publisher>
        <company>The Publishers Inc.</company>
        <address>
            <street>Harbour road 210</street>
            <city>Boston</city>
        </publisher>
    </address>
</book>
```

Once you have fixed the XML, you can check whether you found all errors via:

- XML Copy Editor:  buttons
- online tools: by clicking on "validate" button

Useful links:

- http://www.w3schools.com/xml/

Online tools:

- https://www.xmlvalidation.com/
- *https://www.truugo.com/xml_validator/*

1.2 DTD

How could a DTD look like? Define your own and check if it is valid.

Once you are done, you can also create DTDs automatically via:

- XML Copy Editor : go to "XML" -> "Generate Schema"
- online tool: https://xml.mherman.org

Compare the generated XML with your definition.

Invalidate your xml by adding “<abstract>This abstract</abstract>” to one of the books and check that the validation fails.

Useful links:

- http://www.w3schools.com/xml/xml_dtd_intro.asp

Online tools:

- https://www.xmlvalidation.com/
- *https://www.truugo.com/xml_validator/*

1.3 XML Schema

How could a XML schema look like? Define your own and check if it is valid.

Useful links:

- http://www.w3schools.com/schema/

Online tools:

- *https://www.freeformatter.com/xml-validator-xsd.html*

1.4 XPath

Download the Mondial XML database from

http://www.dbis.informatik.uni-goettingen.de/Mondial/#XML

Formulate XPath queries that answer the following questions:

- Names of all countries whose population is larger than 5,000,000 inhabitants
- Names of all countries which are not members of the UN
- Names of country capitals
- Names of countries traversed by the river Rhein

Note: Sometimes, the retrieved information does not reflect the real world situation. The XML file may miss some data.

Useful links:

- http://zvon.org/comp/r/tut-Xpath_1.html
- http://www.w3schools.com/xsl/xpath_intro.asp

Online tools (only works with a very limited xml file – thus use the subset file in Ilias or use XML Copy Editor):

- *http://xpather.com*
- *https://www.freeformatter.com/xpath-tester.html*
- *https://extendsclass.com/xpath-tester.html*
- *https://www.online-toolz.com/tools/xpath-tester-online.php*

Note: task 1.4 based on the previous Semantic Web Technologies course taught by Prof. Dr. Johanna Völker.