Data and Web Science Group
Prof. Dr. Heiko Paulheim
B6,26 – B1.16
68159 Mannheim

Semantic Web Technologies

Exercise 1: XML

For editing and validation of xml you can use "XML Copy Editor" or "XMLSpear".

1.1. XML, DTD, and XML Schema

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

```xml
<?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 (✓ ✓ buttons in XML Copy Editor).

How could a DTD or XML schema look like? Define your own first.

Once you are done, you can also create DTDs and XML schemas automatically (go to "XML" -> "Generate Schema". Compare the generated XML with your definition.

Use the generated XSD schema and add another book. Check the validity of your document (green tick).

Useful links:

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

1.2. XPath

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

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

Now, create your own queries!

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