3. Unit: XQuery & Mondial

Information about the XML course, recommended tools as well as the Mondial Database, is found under
`http://www.stud.informatik.uni-goettingen.de/xml-lecture`

The following exercises use the *Mondial* database and should be solved using XQuery.

Exercise 3.1 (Mondial - Maximum Population) Give name and population of the country with the highest population.

Exercise 3.2 (Mondial - order organizations by inhabitants)

For each organization, return its name and the sum of the population of its members (in descending order, ignore different member types).

Exercise 3.3 (Mondial - Sunrise in Dakar)

Consider the moment of sunrise in Dakar on 21st of September. Which is the city where the sun rises next?

Exercise 3.4 (Mondial - Sharing Waters with Russia)

Which lakes, seas and rivers does Russia share with *exactly one* other country?

Exercise 3.5 (Mondial - European Countries and Seas)

Compute all pairs of european countries that are adjacent to the same set of seas.

Exercise 3.6 (Mondial - The Caribbean)

How many countries are adjacent to (or ecompassed by) the the Caribbean Sea? How much area do they cover altogether?

Exercise 3.7 ("Every" and "Some" - a Comparison)
Consider again Exercise 3.30. Solve each of the below queries by using the "every ... satisfies" or "some ... satisfies" construct. Give also an XPath 1.0 solution if possible. Discuss the alternative variants.

- Give the names of all organizations that have no european member countries.
- Give the names of all organizations that have at least one european member country.
- Give the names of all organizations that have *only* european member countries.
- Give the names of all organizations where *all* european countries *which are members of at least 2 organizations* are members.

Exercise 3.8 (Mondial - Population of Neighbors)

For all countries, give the sum of the population of all its neighbors.

Exercise 3.9 (Mondial - Biggest Cities) For each country with at least 3 cities, compute the sum of the inhabitants of the three biggest cities.

Exercise 3.10 (Mondial - Cities population above average)

Give all cities that have more inhabitants than the average of all cities in that country.

Exercise 3.11 (User-defined Function: Functional Programming – Faculty) Write a recursive function that computes the faculty of a natural number.