DD1368 VT18 Introduction to Databases

LABORATION 3: XQUERY

RULES

This lab takes a lot of time and effort. Read the rules to make sure that your solutions are allowed, or you *will* have to redo them.

#1: The labs must be done in groups of exactly two people. No larger groups are allowed, and if you have extraordinary extenuating circumstances that force you to do the labs alone, you must obtain permission to do so from the course leader. Both students in a group must be able to present all of the lab for the group to pass.

#2: You must present correct and valid solutions to all the given problems to pass the lab.

#3: This is a xquery lab. No other programming languages are allowed.

#4: You are not allowed to hard-code anything except that which has been explicitly given to you in the problems.

#5: All your answers must be *well formed* XML and pass the XML validator at https://www.w3schools.com/xml/xml_validator.asp

GENERAL HINT

Similar to SQL CTE constructs, you can inline xquery FLWR-derived sequences to be used by later sequences. You are encouraged to employ this method to split your solutions into manageable parts. While direct translation of SQL logic is possible, it is often not nearly the best way to solve the problems with xquery, which has a host of expressive capabilities that make problems easier to deal with. In particular, familiarize yourself with xquery functions.

DATABASE TO USE

Find the database to use for this lab, Mondial, at
https://www.dbis.informatik.uni-goettingen.de/Mondial/
Download the XML file and process it with either the `xqilla` command at the CSC computers or by an xquery parser of your choice on your own computer. BaseX recommended.

PROBLEMS

A 1-9. Find solutions to all the problems in Lab 1, but using the XML version of Mondial with xquery. The hints in Lab 1:Problem 8 are equally applicable to the xquery version. Note that recursion is implemented by functions in xquery.

B. Which countries are members of *all* the organizations whose names start with the word "International" and are headquartered in Europe?

C Consider land border crossings. Starting in Sweden, you can reach Norway and Finland with one border crossing. Russia with two. A whole host of countries with 3, and so on. This assumes, of course, that you are never allowed to double back over a border you've crossed already.

1. Generate a list of all the countries that are reachable by land border crossing from Sweden under the above conditions, by showing the countries that you can reach at each new border crossing and the crossing number for each such group of countries.

2. Generate a list of countries that are have the highest crossing number of possible border crossings to some other country, and show which countries those most distant countries are for each such starting country.

D. Download the **songs.xml** database from the Lab 3 files on Canvas. Now write a query that inverts all the sub elements of the /*music* element so that their own sub elements become attributes and their attributes become sub elements. For those sub elements that lack sub elements of their own, their data content should become an attribute with the name "value".