LADM Practical Exercise

Introduction

This exercise is based on the upcoming LADM Book to demonstrate in a practical way the concepts presented in the book. This is a 3 part exercise.

1. In the ***exploration*** part you will explore the data and functions available for the practical setup.
2. In the ***create*** part you will create a few records based on scenarios given in the LADM Book's visual format.
3. In the ***extract*** part you will use QGIS functions and SQL to query and extract information from the dataset.

The exercise uses the LADM Book practical setup. The setup consist of a QGIS project which includes data, SQL functions (trigger functions), and QGIS models to extract vertices (corners) of polygons in the data. The data includes both spatial and non-spatial (parties, RRR, administrative units) data. The following description assumes that you have extracted practical demo setup to the folder **\...\ladm_exercise**.

Exploration

In this part of the exercise you will explore the data and the QGIS setup.

1. Open the project file ***water_river_village.qgz***
2. Review the layer attributes by selecting each layer and clicking on *Open Attribute Table*.
3. The ***spatial_unit*** layer holds the spatial data. Right-click the layer and select *Properties...*
4. Go to *Symbology* and review the layer classifications and rules used to realize them.
5. Open the *Processing* menu and select *Graphical Modeler…* In the ***Model Designer*** window that open click on the *Open Model* button and navigate to the folder **\ladm_exercise\models\.** Open the **model3** files one at a time and run them. Try to understand what the model is doing by inspecting the model structure and observing the results (Tip: it's in the models name). Explore the models further at will by changing actions in an operation of the model (click on the three dots to see what action is taken during the operation).
6. Finally, we will try to determine which data contributes to the scenario in Fig. 1.
7. Right-click on the ***rrr***, ***party***, and ***rights_and_parties*** layers then select *Open Attribute Table*. On a piece of paper note which rows of which tables you need to reconstruct the scenario shown in Fig. 1.

Create

In this part of the exercise you will make two changes to the data and observe the results.

1. The first task is to sell the car park belonging to Monique to Carlos – after all, Monique doesn't have a car. What needs to be done? Here is an option:
   1.1. Open the attributes table for the ***rrr*** and ***spatial_unit*** layer and investigate which attributes can be changed to achieve the desired effect.
   1.2. Under the *Database* menu open the *DB Manager*, right-click on *GeoPackage*, select *New Connection…*, navigate to the folder **\ladm_exercise\data** and open the **water_river_village.gpkg** file.
   1.3. Write a query (or a series of [independent] queries) that finds the right spatial unit and

transfers it to the correct BA Unit. Note: if this doesn't work you also try this in the QGIS Attribute tables.

2. Next let's change a geometry by editing one of its parcel corners.
   2.1. Select the ***spatial_unit*** layer click on *Edit*. Open the attribute table and select the row for spatial unit **WR02** (attribute ***sunit_id***). Finally click on the *Edit* button in the attributes pop-up window.
   2.2. Go back to the main QGIS window and select the *Vertex Tool*. Hover over the selected geometry and select the vertex at the bottom left corner. Move the vertex into any position within the surface of the geometry **WR01**.
   2.3. Click on *Save*, and exit the edit mode.
   2.4. Go to the ***hist_spatial_unit*** layer to visualize the changes (you may need to *zoom to layer* and/or *zoom to layer*).

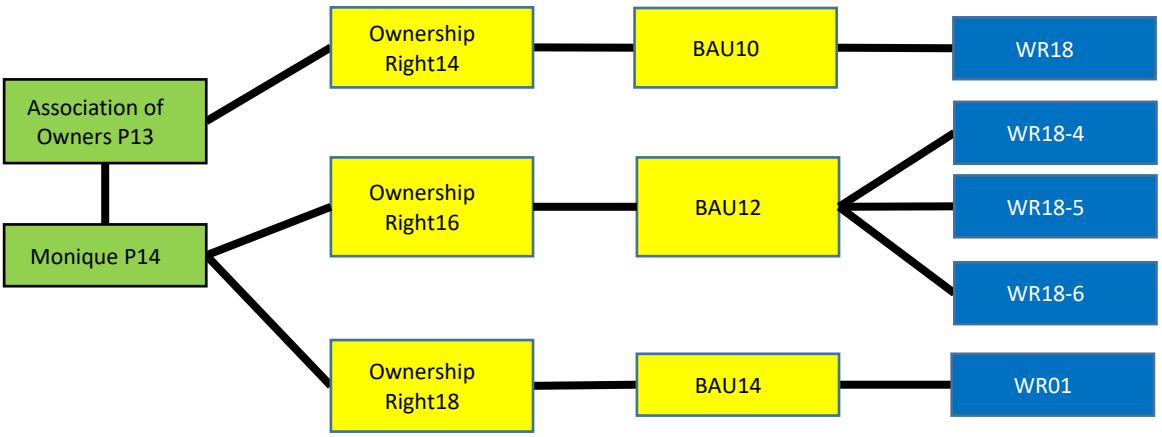

Figure 1. Tenure data for a party and a group party invloving multiple BA Units and Spatial Units.

Extract

In this part of the exercise you will run a query to do further exploration of the data.

1. This task involves identifying overlapping spatial units. Open the database query editor with the *GeoPackage* **water_river_village.gpkg**.
   1.1. Use the *extract boundary vertices* model to visualize the offending boundary vertices.
   1.2. Write an SQL spatial query to identify the overlapping geometries (Tip 1: you could use a table join on ***spatial_units*** with itself. Tip 2: you could check for vertices of one geometry the are contained in another geometry. Tip 3: in both cases the ***part_of*** column is your friend).
   1.3. (Optional) Extend the query to identify which parties are involved in the potential conflict.
2. The second task we want to execute is one that explores the kinds of land class that we have in the database.
   2.1. Write a query that identifies which parcels (Spatial Units) are taxable.
   2.2. Write a query that identifies which urban Spatial Units are NOT taxable.
3. The last task involves checking Monique's situation. Find out how many spatial units Monique has ownership rights to.

Conclusion

The exercises may seem challenging at first but the practical setup offers **visual** you tools to check the results of each of the tasks above. More tips will be provided during the session.