Gothenburg University
Department of Earth Sciences

Exercise 2 – Tables

In this exercise you will learn the basic usage of attribute tables in QGIS and some useful SQL expressions.

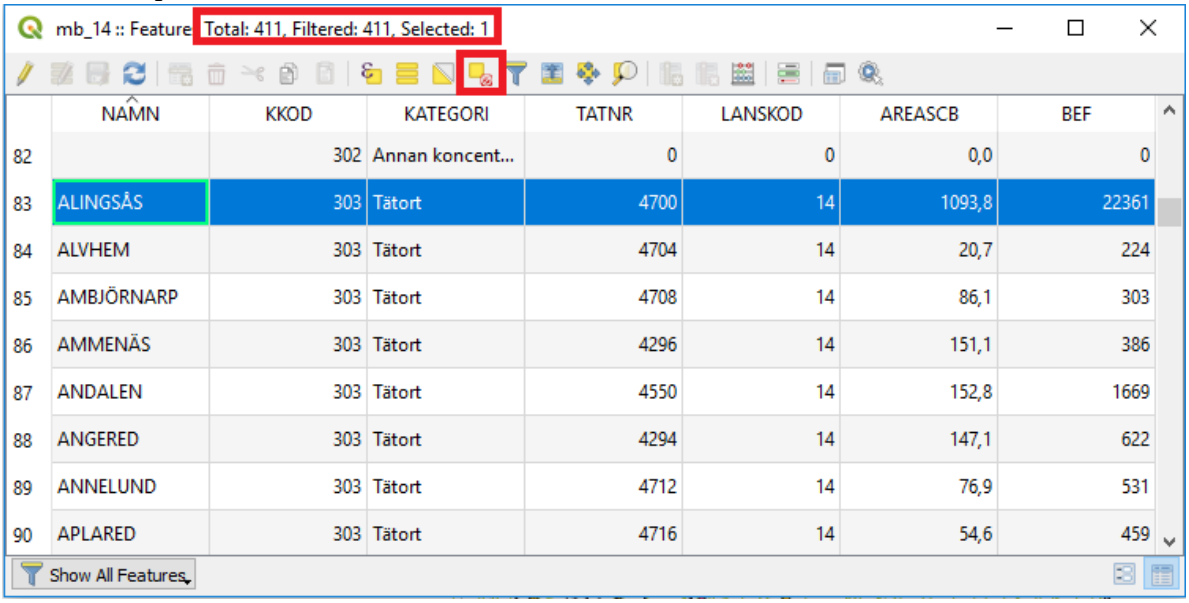
Assignment: The hand in shall consist of a print screen of the final Attribute table in which an additional field which describes if the object is an urban center has been added. Remember to hand in a print screen that shows both YES and NO (see example on the last page). Paste the image in a word document and hand in a **PDF copy** on GUL.

1. Preparations

Open QGIS Desktop and start a new project where you add the layers va_14.shp, mb_14.shp and ms_14.shp. Edit the layers so they look nice! We are still using the coordinate system SWEREF99 TM (ESPG:3006).

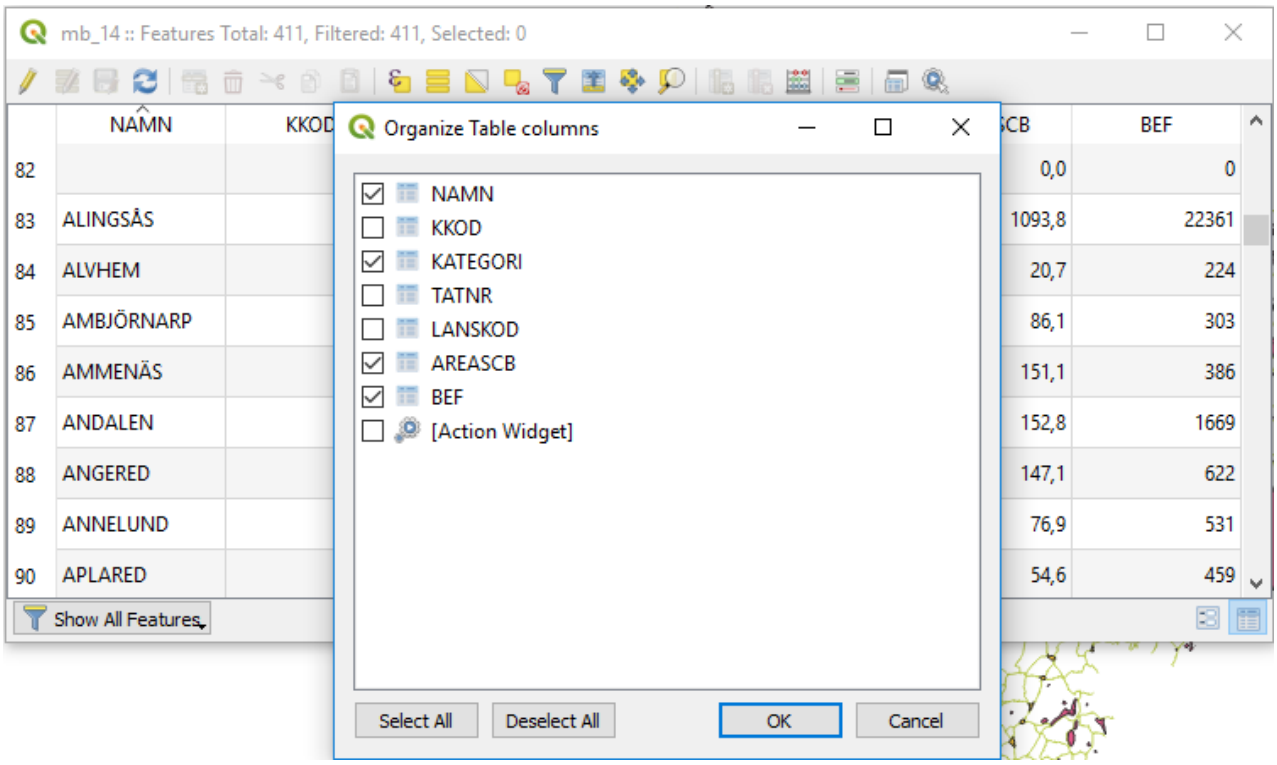
2. Open and change appearance of an attribute table

Right click the layer mb_14 and choose **Open Attribute Table.** This is the attribute data connected to each polygon in mb_14. There are 411 entries in the table, each representing an urban center. Select the entry "ALINGSÅS" in the table by left clicking the square to the left of the column NAMN (name). You will now see the connection between table and map since the polygon that represents the urban center of Alingsås is highlighted in yellow in the map window. At the bottom of the attribute table you can choose whether want to see all values (default) or just the selected ones. To unselect the entry Alingsås simply press the symbol Unselect all, marked in red in the picture below.



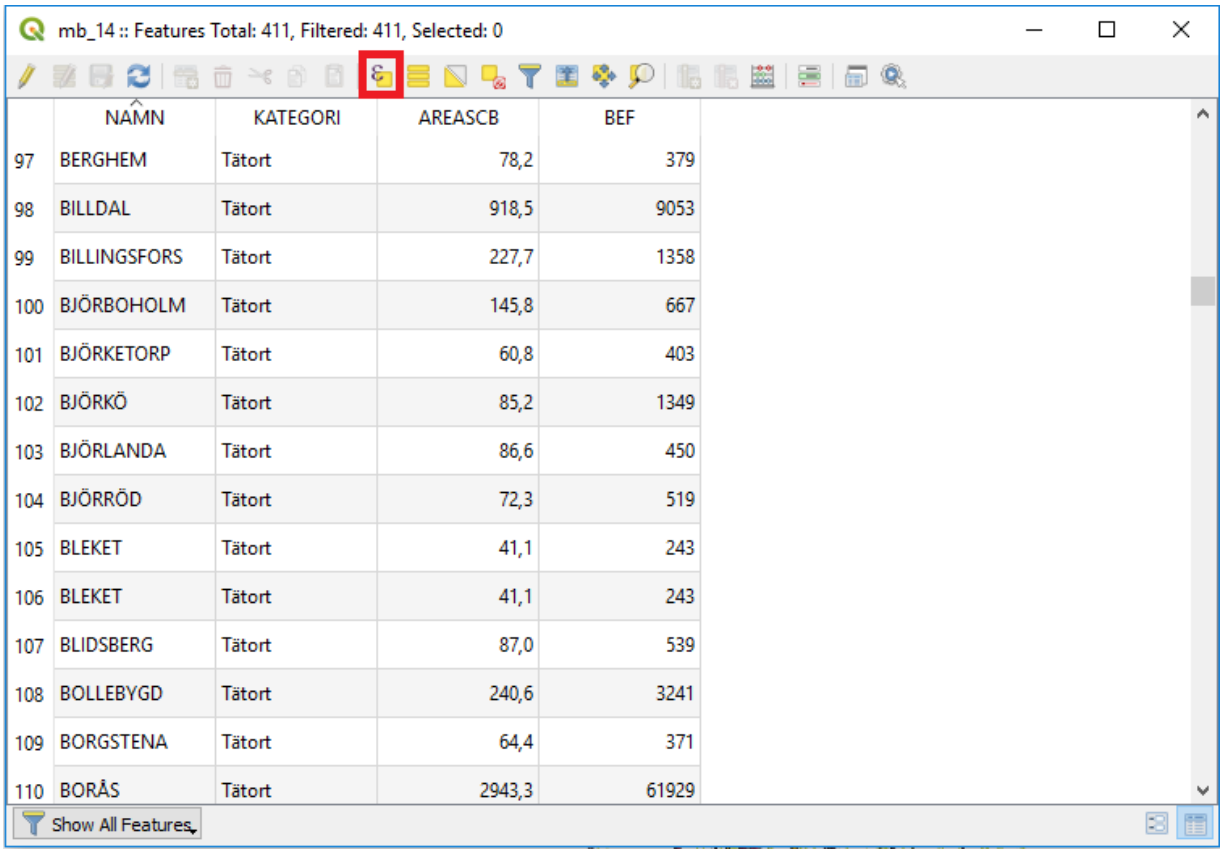
	NAMN	KKOD	KATEGORI	TATNR	LANSKOD	AREASCB	BEF
82		302	Annan koncent...	0	0	0,0	0
83	ALINGSÅS	303	Tätort	4700	14	1093,8	22361
84	ALVHEM	303	Tätort	4704	14	20,7	224
85	AMBJÖRNARP	303	Tätort	4708	14	86,1	303
86	AMMENÄS	303	Tätort	4296	14	151,1	386
87	ANDALEN	303	Tätort	4550	14	152,8	1669
88	ANGERED	303	Tätort	4294	14	147,1	622
89	ANNELUND	303	Tätort	4712	14	76,9	531
90	APLARED	303	Tätort	4716	14	54,6	459

You can also decide which columns that will be shown in the attribute table. To hide a specific column in the attribute table, right-click on its header and click **Hide column**. To show it again, right-click again on any column header and click **Organize columns**. Leave only fields of NAMN, KATEGORI, AREASCB and BEF (population) visible. Press **OK.**



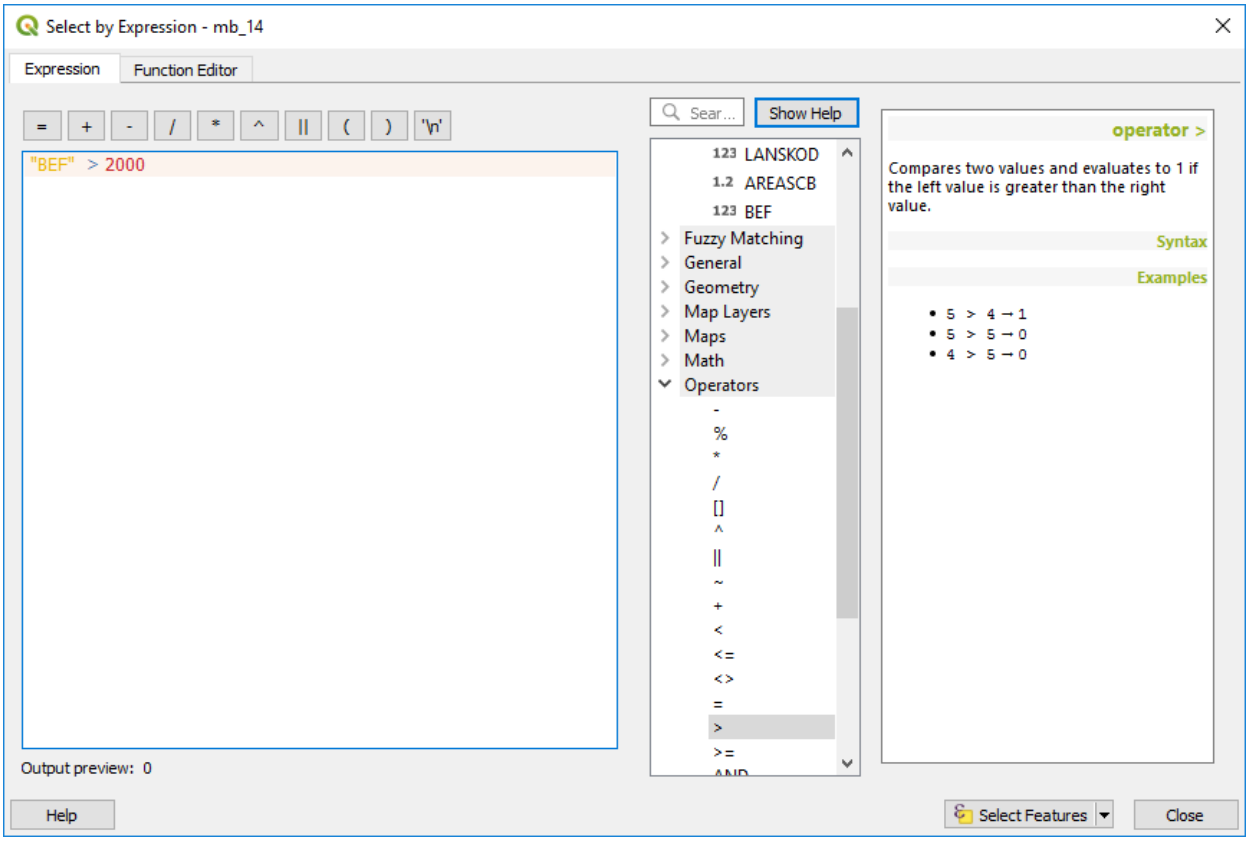
3. Make a selection in the attribute table

Right click the layer mb_14 and choose **Open Attribute Table** (if the table is not already open). In the table you can see the 411 entries (urban centers) mentioned above.



	NAMN	KATEGORI	AREASCB	BEF
97	BERGHEM	Tätort	78,2	379
98	BILLDAL	Tätort	918,5	9053
99	BILLINGSFORS	Tätort	227,7	1358
100	BJÖRBOHOLM	Tätort	145,8	667
101	BJÖRKETORP	Tätort	60,8	403
102	BJÖRKÖ	Tätort	85,2	1349
103	BJÖRLANDA	Tätort	86,6	450
104	BJÖRRÖD	Tätort	72,3	519
105	BLEKET	Tätort	41,1	243
106	BLEKET	Tätort	41,1	243
107	BLIDSBERG	Tätort	87,0	539
108	BOLLEBYGD	Tätort	240,6	3241
109	BORGSTENA	Tätort	64,4	371
110	BORÅS	Tätort	2943,3	61929

You will now select all the urban centers with a population over 2000 inhabitants. Click **Select features using an expression** (as shown in the picture above).

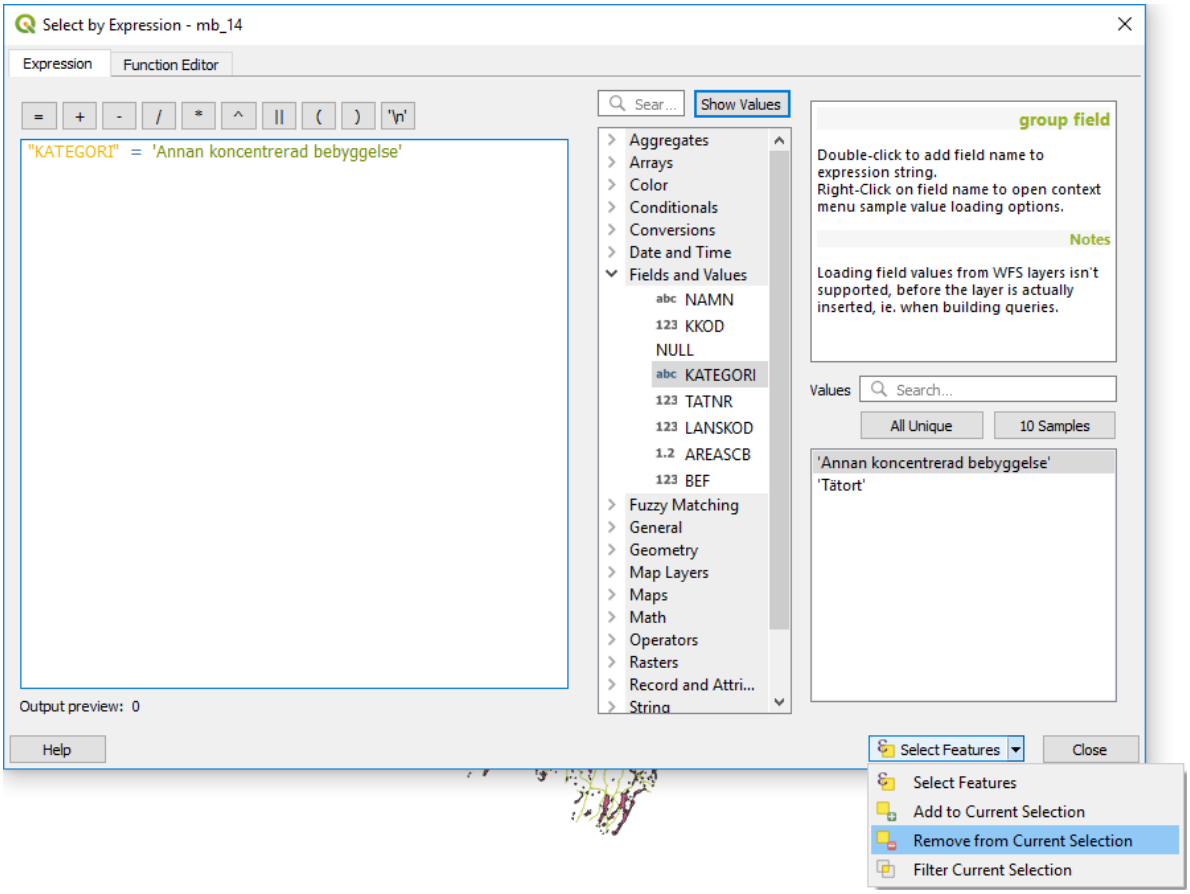


Double-click “BEF” found under Field and Values, click the > symbol found under Operators and write 2000 by hand in the Expression box. Press **Select (Välj)** to complete the selection. You should end up with 74 urban centers with more than 2000 inhabitants. The selected entries are now shown in the attribute table.

4. A more advanced selection

Now you will find out the average number of people in urban centers with less than 2000 inhabitants. To figure this out you can use the selection you have. Click on the **Invert Selection** symbol ( ). The selection now includes “Tätort” (Urban center) and “Annan koncentrerad bebyggelse” (other settlements), the latter needs to be removed. Open **Select features using an expression** again, write “KATEGORI” = in the expression field. Then click **All unique** under

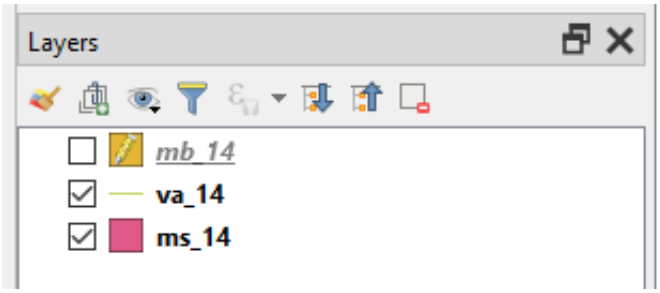
load values and double-click on “Annan koncentrerad bebyggelse”. To remove the values, press the arrow next to **Select (Välj)** and choose **Remove from Selection (Ta bort från urval)**, as shown in the picture below. Close the window (don't click Select!). 255 entries should now be selected in the attribute table. If you have fewer or more, try again.



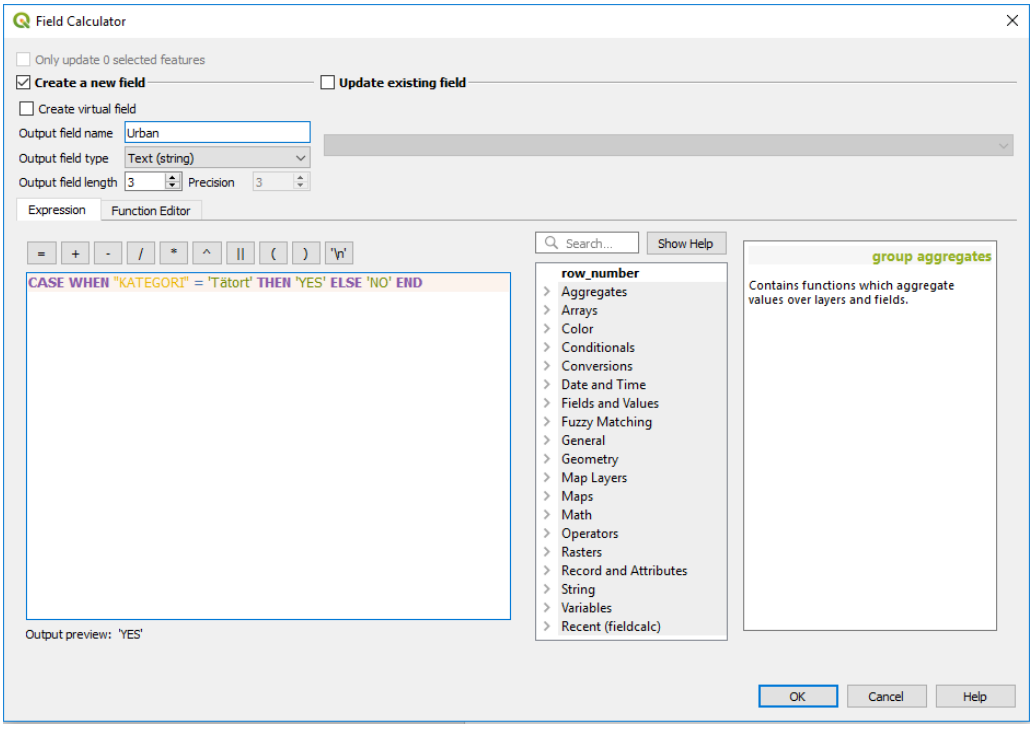
This selection can also be created using a single expression. Here are two alternatives: ”BEF”<2000 AND ”BEF” > 0 or ”BEF” <2000 AND ”KATEGORI” = ’Tätort’. Before you continue the entries must be unselected which is done by clicking **Unselect all** (in the attribute table) or **Deselect Features from all Layers** (in the map window).

5. Add new fields

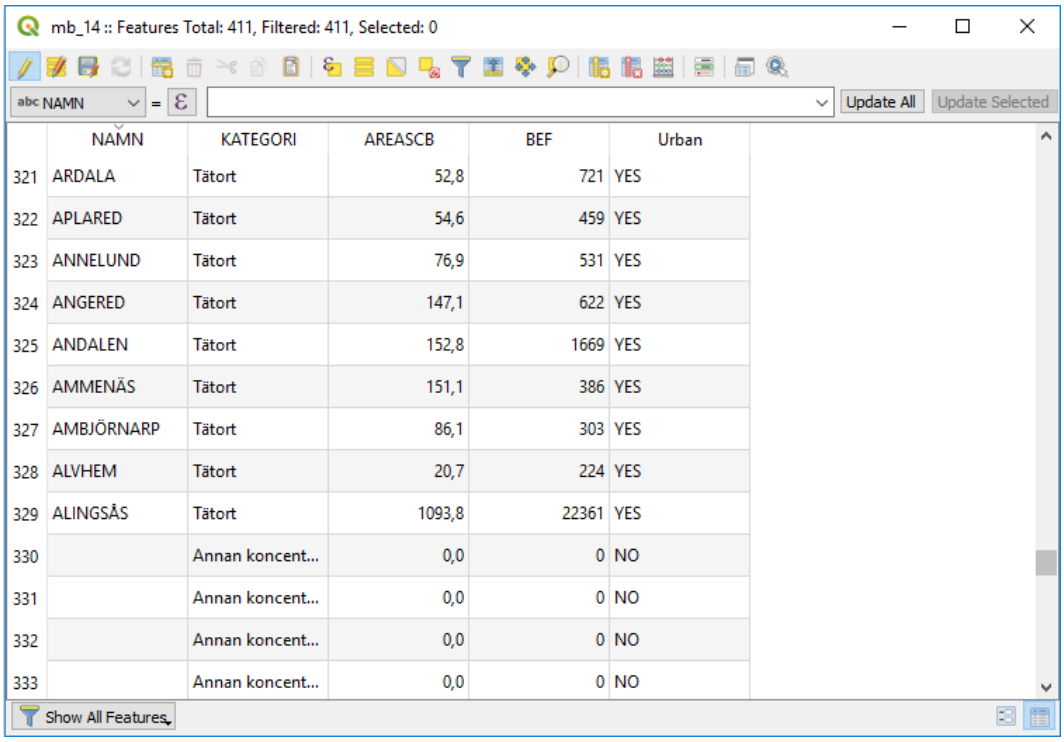
To add new columns you first need to start editing mode. This is done by clicking the symbol **Toggle editing mode** in the Attribute table. Then click on the symbol **Open field calculator.** When you turn on the editing mode a yellow pencil icon will appear next to the layer name in the list of layers. This is just to remind you that the layer is in the editing mode. Before saving and closing your map document, always make sure that the editing mode is turned off for all layers. Otherwise, even if you save the map project, the changes made in the editing mode might not be saved.



Now you can create a new field which will determine if the fields are urban centers or not, by giving them values YES or NO Choose an appropriate **Output field name** in capital letters. **Output field type** should be Text (string) and **Output field length** 3. Then add a conditional expression. CASE is an effective expression for this selection, it can be found under Conditionals. Double-click CASE and fill out the expression according to the picture below. Press OK to create the new column.



Check the attribute table to see if the new column has been created.



	NAMN	KATEGORI	AREASCB	BEF	Urban
321	ARDALA	Tätort	52,8	721	YES
322	APLARED	Tätort	54,6	459	YES
323	ANNELUND	Tätort	76,9	531	YES
324	ANGERED	Tätort	147,1	622	YES
325	ANDALEN	Tätort	152,8	1669	YES
326	AMMENÄS	Tätort	151,1	386	YES
327	AMBJÖRNARP	Tätort	86,1	303	YES
328	ALVHEM	Tätort	20,7	224	YES
329	ALINGSÅS	Tätort	1093,8	22361	YES
330		Annan koncent...	0,0	0	NO
331		Annan koncent...	0,0	0	NO
332		Annan koncent...	0,0	0	NO
333		Annan koncent...	0,0	0	NO

Save and close down the project!

Additional information: you can add optional text in a table by enabling editing (through the symbol **Toggle editing mode)** and double-clicking on the field you want to edit.

End of exercise 2!

Do not forget to hand in a print screen that shows both JA and NEJ (as seen in the example above). It shall be uploaded on GUL as a PDF.