Working with Attributes

QGIS Tutorials and Tips

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Translations by

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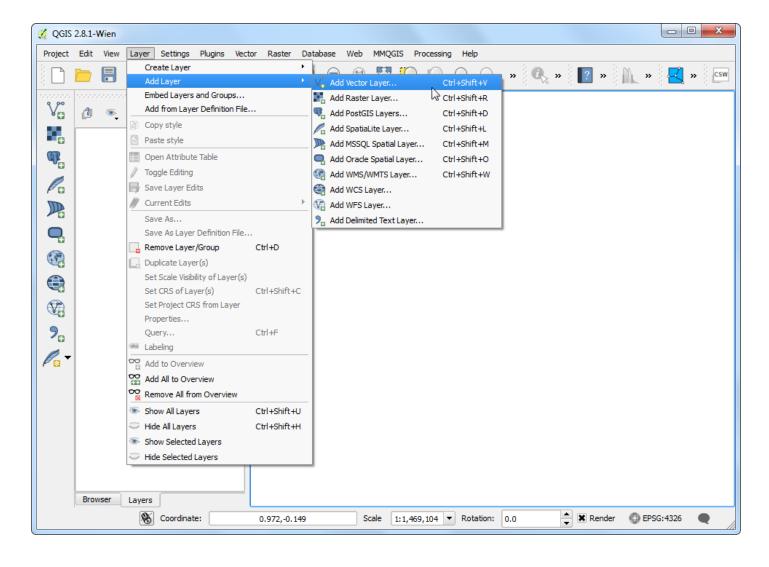
GIS ■■■■ ■■■■ ■■■■. ■■■ ■■. ■■■ ■ ■■■ ■■ ■■■■■■■■. ■ ■■■■■■■ QGIS■■ ■■■ ■■■ ■■ ■■■ ■■ ■■ ■■■■■ ■■■■■.

■ ■■■■■ ■■■■■ ■■■ ■■■■■ ■■ ■■■ ■■■■ ■■■■. ■■■ ■ ■■■ ■■■■ ■■ 1,000,000■■ ■■■■■ ■■■ ■■ ■■■ ■■■■■.

Other skills you will learn

- Select features from a layer using expressions.
- Deselect features from a layer using the *Attributes* toolbar.
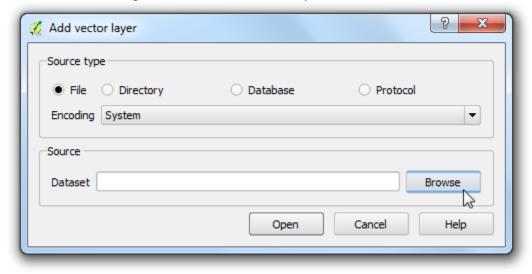- Using *Query Builder* to show a subset of features from a layer.

Natural Earth has a nice Populated Places dataset. Download the simple (less columns) dataset

For convenience, you may directly download a copy of datasets from the link below:

ne_10m_populated_places_simple.zip

■■■ ■■ [NATURALEARTH]

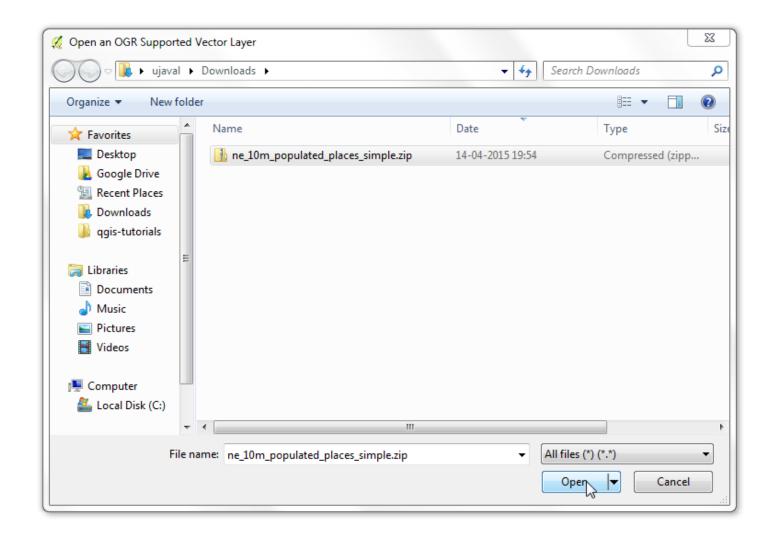1. Once you have downloaded the data, open QGIS. Go to *Layer* ■ *Add Layer* ■ *Add Vector Layer*.

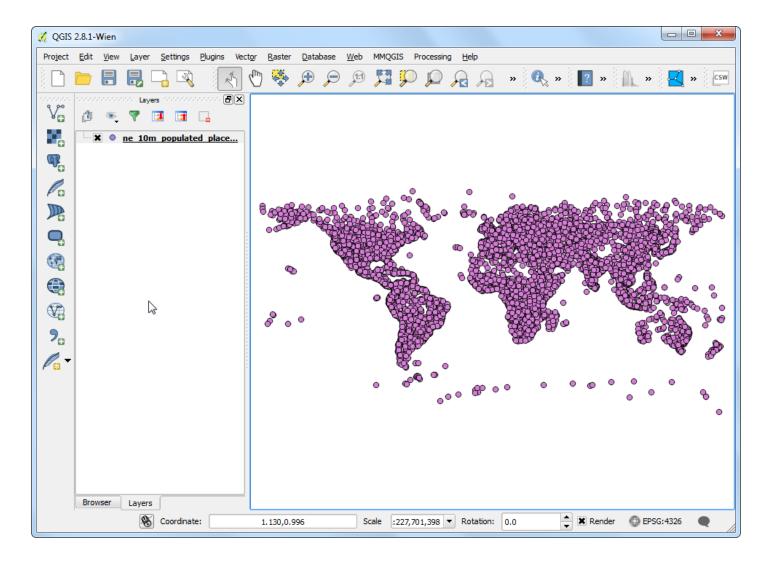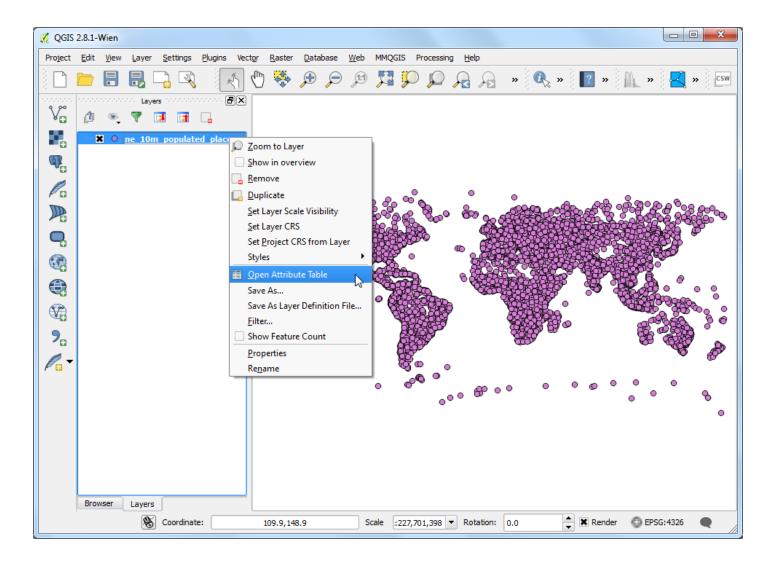2. Click on *Browse* and navigate to the folder where you downloaded the data.

3. Locate the downloaded zip file *ne_10m_populated_places_simple.zip*. You do not need to unzip the file. QGIS has the ability to read zip files directly. Select the file and click *Open*.

4. ███ ████ QGIS█ ████ █████ █████ ████ ██ ███ ██ ███.

5. Right-click the layer and select *Open Attribute Table*.

6. ███ ███ ██ ███ █████.

Attribute table - ne_10m_populated_places_simple :: Features total: 7322, filtered: 7322, selected: 0

	scalerank	natscale	labelrank	featurecla	name	namepar	namealt
0	10	1	8	Admin-1 capital	Colonia del Sacra...	NULL	NULL
1	10	1	8	Admin-1 capital	Trinidad	NULL	NULL
2	10	1	8	Admin-1 capital	Fray Bentos	NULL	NULL
3	10	1	8	Admin-1 capital	Canelones	NULL	NULL
4	10	1	8	Admin-1 capital	Florida	NULL	NULL
5	10	1	8	Admin-1 capital	Bassar	NULL	NULL
6	10	1	8	Admin-1 capital	Sotouboua	NULL	NULL
7	10	1	7	Admin-1 capital	Medenine	NULL	NULL
8	10	1	7	Admin-1 capital	Kebili	NULL	NULL
9	10	1	7	Admin-1 capital	Tataouine	NULL	NULL
10	10	1	7	Admin-1 capital	L'Ariana	NULL	NULL
11	10	1	7	Admin-1 capital	Jendouba	NULL	NULL
12	10	1	7	Admin-1 capital	Kasserine	NULL	NULL
13	10	1	7	Admin-1 capital	Sdid Bouzid	NULL	NULL
14	10	1	7	Admin-1 capital	Siliana	NULL	NULL
15	10	1	7	Admin-1 capital	Mahdia	NULL	NULL
16	10	1	7	Admin-1 capital	Monastir	NULL	NULL
17	10	1	7	Admin-1 capital	Zaghouan	NULL	NULL
18	10	1	5	Admin-1 capital	Tay Ninh	NULL	NULL

Show All Features

7. ██ █████ ███ ███ ███, `pop_max`█ ██ █████. ██ ███ █████ █████ ███ █
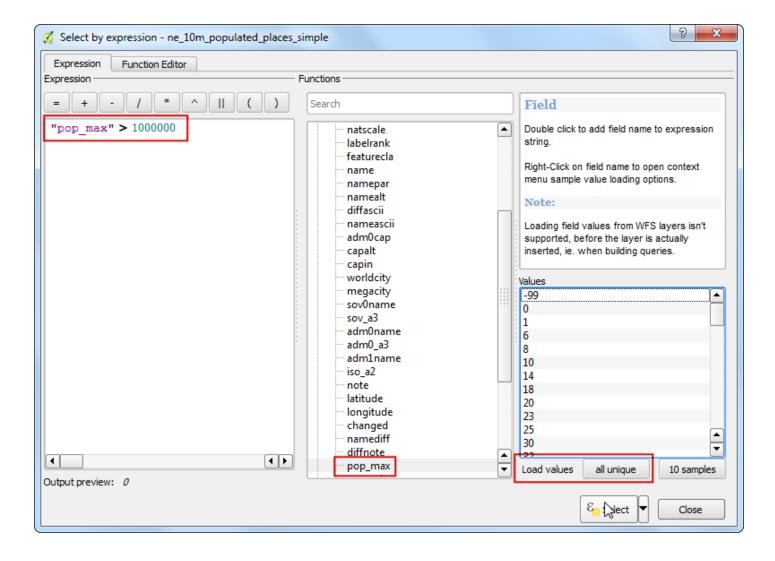█████.

8. Now we are ready to perform our query on these attributes. QGIS uses SQL-like expressions to perform queries. Click *Select features using an expression.*
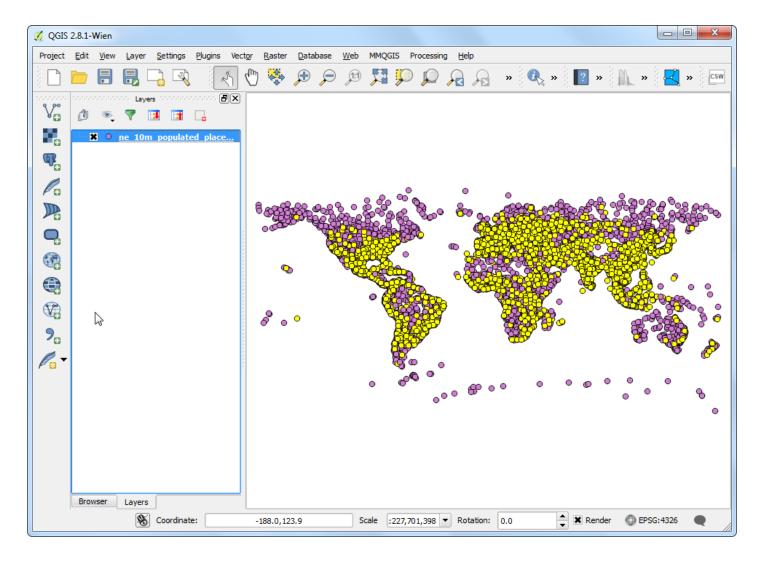
	longitude	changed	namediff		diffnote	pop_max	pop_min	pop_other
7312	139.75140742900			0	NULL	35676000	8336599	1294525
7297	-73.98001692880	0.00000000000		0	NULL	19040000	8008278	929260
7303	-99.13098820170	0.00000000000		0	NULL	19028000	10811002	1001844
7313	72.85698929740	0.00000000000		0	NULL	18978000	12691836	1242608
7318	-46.62501998040	0.00000000000		0	NULL	18845000	10021295	1152294
7221	77.23000402720	4.00000000000		0	Changed feature...	15926000	7633213	674738
7311	121.43650467800	0.00000000000		0	NULL	14987000	14608512	1680357
7316	88.32467565810	4.00000000000		1	Name changed. ...	14787000	4631392	778371
7248	90.40857946670	5.00000000000		0	Changed scale ra...	12797394	7000940	1499553
7290	-58.39753137370	0.00000000000		0	NULL	12795000	10929146	1027145
7295	-118.17998051100	0.00000000000		0	NULL	12500000	3694820	14226
7168	66.99000891000	5.00000000000		0	Changed scale ra...	12130000	11624219	1157027
7310	31.24996821970	0.00000000000		0	NULL	11893000	7734614	1372055
7317	-43.22502079420	0.00000000000		0	NULL	11748000	2010175	182148
7280	135.46014481500	4.00000000000		0	Changed feature...	11294000	2592413	963078
7306	116.38828568400	0.00000000000		0	NULL	11106000	7480601	903323
7274	120.98221716200	0.00000000000		0	NULL	11100000	3077575	238128
7302	37.61552282590	0.00000000000		0	NULL	10452000	10452000	1058538
7299	29.01000158560	0.00000000000		0	NULL	10061000	9945610	965148

Show All Features

9. In the *Select By Expression* window, expand the *Fields and Values* section and double-click the `pop_max` label. You will notice that it is added to the expression section at the bottom. If you aren't sure about the field values, you can click the *Load all unique values* to see what the attribute values are present in the dataset. For this exercise, we are looking to find all features that have a population greater than `1,000,000`. So complete the expression as below and click *Select*.

```
"pop_max" > 1000000
```

Select by expression - ne_10m_populated_places_simple

Expression | Function Editor

Expression

`"pop_max" > 1000000`

Output preview: 0

Functions

Search

- natscale
- labelrank
- featurecla
- name
- namepar
- namealt
- diffascii
- nameascii
- adm0cap
- capalt
- capin
- worldcity
- megacity
- sov0name
- sov_a3
- adm0name
- adm0_a3
- adm1name
- iso_a2
- note
- latitude
- longitude
- changed
- namediff
- diffnote
- pop_max

Field

Double click to add field name to expression string.

Right-Click on field name to open context menu sample value loading options.

Note:

Loading field values from WFS layers isn't supported, before the layer is actually inserted, ie. when building queries.

Values

-99
0
1
6
8
10
14
18
20
23
25
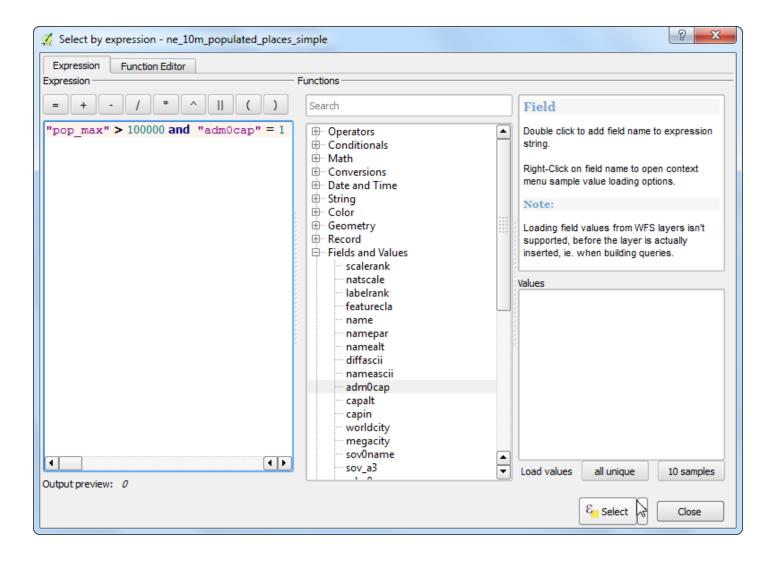30

Load values | all unique | 10 samples

Select | Close

10. Click on *Close* and return to the main QGIS window. You will notice that a subset of points is now rendered in yellow. This is the result of our query and you are seeing all places from the dataset that have the `pop_max` attribute value greater than `1,000,000`.
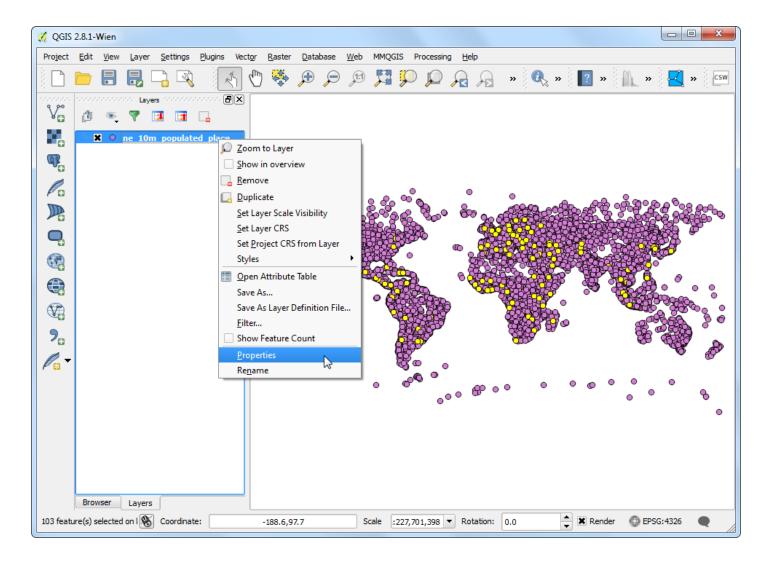
11. The goal for this exercise is to find the places that are country capitals. The field containing this data is *adm0cap*. The value `1` indicates that the place is a capital. We can add this criteria to our previous expression using the `and` operator. Let's refine our query to select only those places which are capitals. Click on the *Select feature using an expression* button in the attribute table and enter the expression as below and click *Select* and then *Close*.
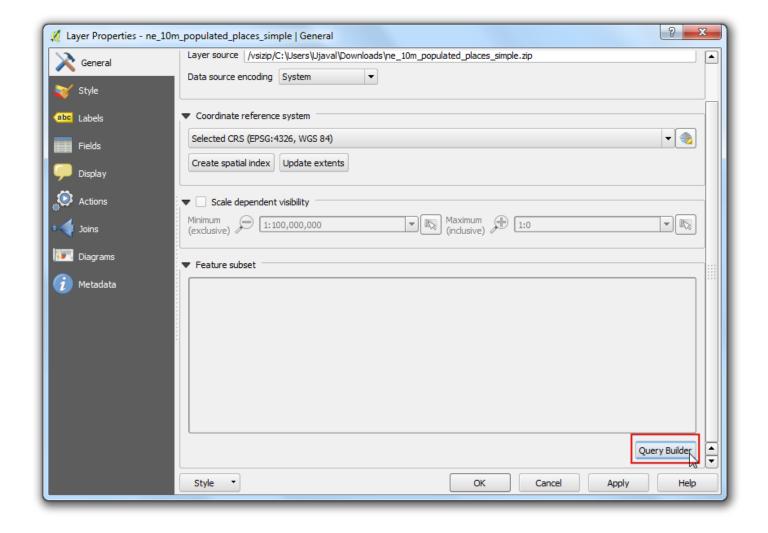
```
"pop_max" > 1000000 and "adm0cap" = 1
```

Select by expression - ne_10m_populated_places_simple

Expression | Function Editor

Expression

`=` `+` `-` `/` `*` `^` `||` `(` `)`

`"pop_max" > 100000 and "adm0cap" = 1`

Output preview: *0*

Functions

Search

⊞ Operators
⊞ Conditionals
⊞ Math
⊞ Conversions
⊞ Date and Time
⊞ String
⊞ Color
⊞ Geometry
⊞ Record
⊟ Fields and Values
    scalerank
    natscale
    labelrank
    featurecla
    name
    namepar
    namealt
    diffascii
    nameascii
    adm0cap
    capalt
    capin
    worldcity
    megacity
    sov0name
    sov_a3

Field

Double click to add field name to expression string.

Right-Click on field name to open context menu sample value loading options.

Note:

Loading field values from WFS layers isn't supported, before the layer is actually inserted, ie. when building queries.

Values

Load values | all unique | 10 samples

ε Select | Close

12. Return to the main QGIS window. Now you will see a smaller subset of the points selected. This is the result of the second query and shows all places from the dataset that are country capitals as well as have population greater than 1,000,000. If we wanted to do some further analysis on this subset of data, we can make this selection persistent. Right-click the `ne_10m_populated_places_simple` layer and select *Properties*.

13. In the *General* tab, scroll down to the *Feature subset* section. Click *Query Builder*.
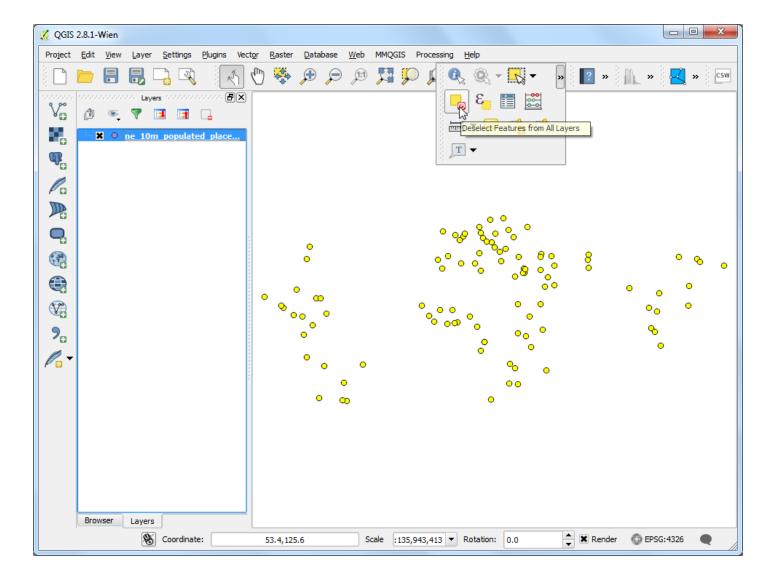
14. Enter the same expression you had entered earlier and click *OK*.

```
"pop_max" > 1000000 and "adm0cap" = 1
```

15. Back in the main QGIS window, you will see rest of the points disappear. You may now perform any other analysis on this layer and only the features that match our expression will be used. You will notice that the points still appear in yellow. This is because they are still selected. Find the *Deselect Features from All Layers* button under the *Attributes* toolbar and click on it.

16. You will see that the points are now de-selected and rendered in their original color.