

# Find Neighbor Polygons in a Layer

QGIS Tutorials and Tips



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Natural Earth□ [Admin 0 – Countries](#) □□□□ □□ □□□.

Download the [Admin 0 – countries shapefile](#)..

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Download the *neighbors.py script* and save it to your disk.

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1. □□ □□□ --> □□ □□□ □□ `ne_10m_admin_0_countries`` □ □□ `ne_10m_admin_0_countries`` □□□□ □□□□.





3. `PyQt5.QtGui.QMenu` --> `PyQt5.QtGui.QMenu` :menuselection: `Plugins --> Python Console` `PyQt5.QtGui.QMenu`.



4. Phthon □□ □□□ □□□ □□□ Show Editor □□□ □□□□.



5. `Editor`` `Open file` `neighbors.py`  
`Open``.



6. □□ □□□□ □□□□□, □□ □□ □□□□ □□ □□ ***\_NAME\_FIELD``■``\_SUM\_FIELD***  
 □□ □□□□. □□ `ne\_10m\_admin\_0\_countries` □□□□ □□ □□ □□ □□ □□  
 □□ □□ □□□□. □□ □□ □□ □□ □□ □□ Editor` □□□□ □□ :guilabel:`Save` □  
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7. `ne_10m_admin_0_countries` `:guilabel: 'Open Attribute Table'`.





8. You will notice 2 new attributes called **NEIGHBORS** and **SUM**. These were added by the script.

Attribute table - ne\_10m\_admin\_0\_countries :: Features total: 255, filtered: 255, selected: 0

ID	REGION_WB	NAME_LEN	LONG_LEN	ABBREV_LEN	TINY	HOMEPART	NEIGHBORS	SUM
0	Latin America & ...	5.00	5.00	5.00	4.00	-99.00	NULL	0
1	Asia	11.00	11.00	4.00	-99.00	1.00	Iran,Turkmenista...	1621125240
2	Sub-Saharan Africa	6.00	6.00	4.00	-99.00	1.00	Namibia,Zambia,...	86676756
3	Latin America & ...	8.00	8.00	4.00	-99.00	-99.00	NULL	0
4	Europe & Central...	7.00	7.00	4.00	-99.00	1.00	Macedonia,Greec...	15281164
5	Europe & Central...	5.00	13.00	5.00	5.00	-99.00	NULL	0
6	Europe & Central...	7.00	7.00	4.00	5.00	1.00	France,Spain	104582794
7	Middle East & No...	20.00	20.00	6.00	-99.00	1.00	Saudi Arabia,Oman	32104718
8	Latin America & ...	9.00	9.00	4.00	-99.00	1.00	Bolivia,Paraguay,...	235606259
9	Europe & Central...	7.00	7.00	4.00	-99.00	1.00	Georgia,Turkey,I...	156089287
10	East Asia & Pacific	14.00	14.00	9.00	3.00	-99.00	NULL	0
11	Antarctica	10.00	10.00	4.00	-99.00	1.00	NULL	0
12	East Asia & Pacific	23.00	27.00	7.00	-99.00	-99.00	NULL	0
13	Sub-Saharan Africa	22.00	35.00	10.00	2.00	-99.00	NULL	0
14	Latin America & ...	17.00	19.00	6.00	4.00	1.00	NULL	0
15	East Asia & Pacific	9.00	9.00	4.00	-99.00	1.00	NULL	0
16	Europe & Central...	7.00	7.00	5.00	-99.00	1.00	Italy,Hungary,Slo...	175681436
17	Europe & Central...	10.00	10.00	4.00	-99.00	1.00	Georgia,Turkey,R...	290858866
18	Sub-Saharan Africa	7.00	7.00	4.00	-99.00	1.00	Rwanda,Tanzani...	120214356
19	Europe & Central...	7.00	7.00	5.00	-99.00	1.00	France,Netherla...	163595324
20	Sub-Saharan Africa	5.00	5.00	5.00	-99.00	1.00	Nigeria,Niger,Bur...	186301451
21	Sub-Saharan Africa	12.00	12.00	4.00	-99.00	1.00	Mali,Niger,Ghana...	87234511
22	South Asia	10.00	10.00	5.00	-99.00	1.00	India,Myanmar	1214216958

Show All Features

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```
#####
# Copyright 2014 Ujaval Gandhi
#
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#Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.
#
#####
from qgis.utils import iface
from PyQt4.QtCore import QVariant

# Replace the values below with values from your layer.
# For example, if your identifier field is called 'XYZ', then change the line
# below to _NAME_FIELD = 'XYZ'
_NAME_FIELD = 'NAME'

# Replace the value below with the field name that you want to sum up.
# For example, if the # field that you want to sum up is called 'VALUES', then
# change the line below to _SUM_FIELD = 'VALUES'
_SUM_FIELD = 'POP_EST'
```

```

# Names of the new fields to be added to the layer
_NEW_NEIGHBORS_FIELD = 'NEIGHBORS'
_NEW_SUM_FIELD = 'SUM'

layer = iface.activeLayer()

# Create 2 new fields in the layer that will hold the list of neighbors and sum
# of the chosen field.
layer.startEditing()
layer.dataProvider().addAttributes(
    [QgsField(_NEW_NEIGHBORS_FIELD, QVariant.String),
     QgsField(_NEW_SUM_FIELD, QVariant.Int)])
layer.updateFields()
# Create a dictionary of all features
feature_dict = {f.id(): f for f in layer.getFeatures()}

# Build a spatial index
index = QgsSpatialIndex()
for f in feature_dict.values():
    index.insertFeature(f)

# Loop through all features and find features that touch each feature
for f in feature_dict.values():
    print 'Working on %s' % f[_NAME_FIELD]
    geom = f.geometry()
    # Find all features that intersect the bounding box of the current feature.
    # We use spatial index to find the features intersecting the bounding box
    # of the current feature. This will narrow down the features that we need
    # to check neighboring features.
    intersecting_ids = index.intersects(geom.boundingBox())
    # Initialize neighbors list and sum
    neighbors = []
    neighbors_sum = 0
    for intersecting_id in intersecting_ids:
        # Look up the feature from the dictionary
        intersecting_f = feature_dict[intersecting_id]

        # For our purpose we consider a feature as 'neighbor' if it touches or
        # intersects a feature. We use the 'disjoint' predicate to satisfy
        # these conditions. So if a feature is not disjoint, it is a neighbor.
        if (f != intersecting_f and
            not intersecting_f.geometry().disjoint(geom)):
            neighbors.append(intersecting_f[_NAME_FIELD])
            neighbors_sum += intersecting_f[_SUM_FIELD]
    f[_NEW_NEIGHBORS_FIELD] = ','.join(neighbors)
    f[_NEW_SUM_FIELD] = neighbors_sum
    # Update the layer with new attribute values.
    layer.updateFeature(f)

layer.commitChanges()
print 'Processing complete.'

```