

# 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. □□ □□□□ --> Phtyon □□ :menuselection: `Plugins --> Python Console` □ □□□□.



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



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



6. □□ □□□□ □□□□□, □□ □□ □□□□ □□ □□ ***\_NAME\_FIELD` `■ ` `\_SUM\_FIELD***  
 □□ □□□□. □□ ` ne\_10m\_admin\_0\_countries` □□□□ □□ □□ □□ □□ □□  
 □□ □□ □□□□. □□ □□ □□ □□□□ □□ Editor` □□□□ □□ :guilabel:`Save` □  
 □□□□. □□ □□□□ □□□□ □□ □□□□ □□ :guilabel:`Run script` □□ □□□□.



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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#along with this program; if not, write to the Free Software
#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.'

```