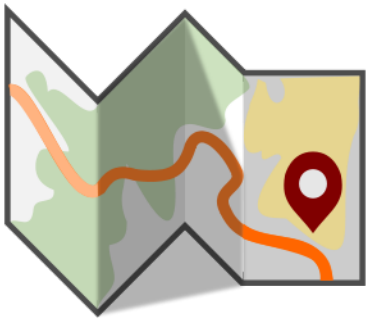
Find Neighbor Polygons in a Layer

QGIS Tutorials and Tips



Author

Ujaval Gandhi

http://google.com/+UjavalGandhi

Translations by

Marina Pavlova Ilya Trofimov Fayçal Fatihi

[redacted]

[redacted] Python [redacted] QGIS [redacted].

[redacted]

[redacted].

[redacted]

[redacted] Admin 0 - Countries [redacted] Natural Earth.

[redacted] shape-[redacted] Admin 0 - countries..

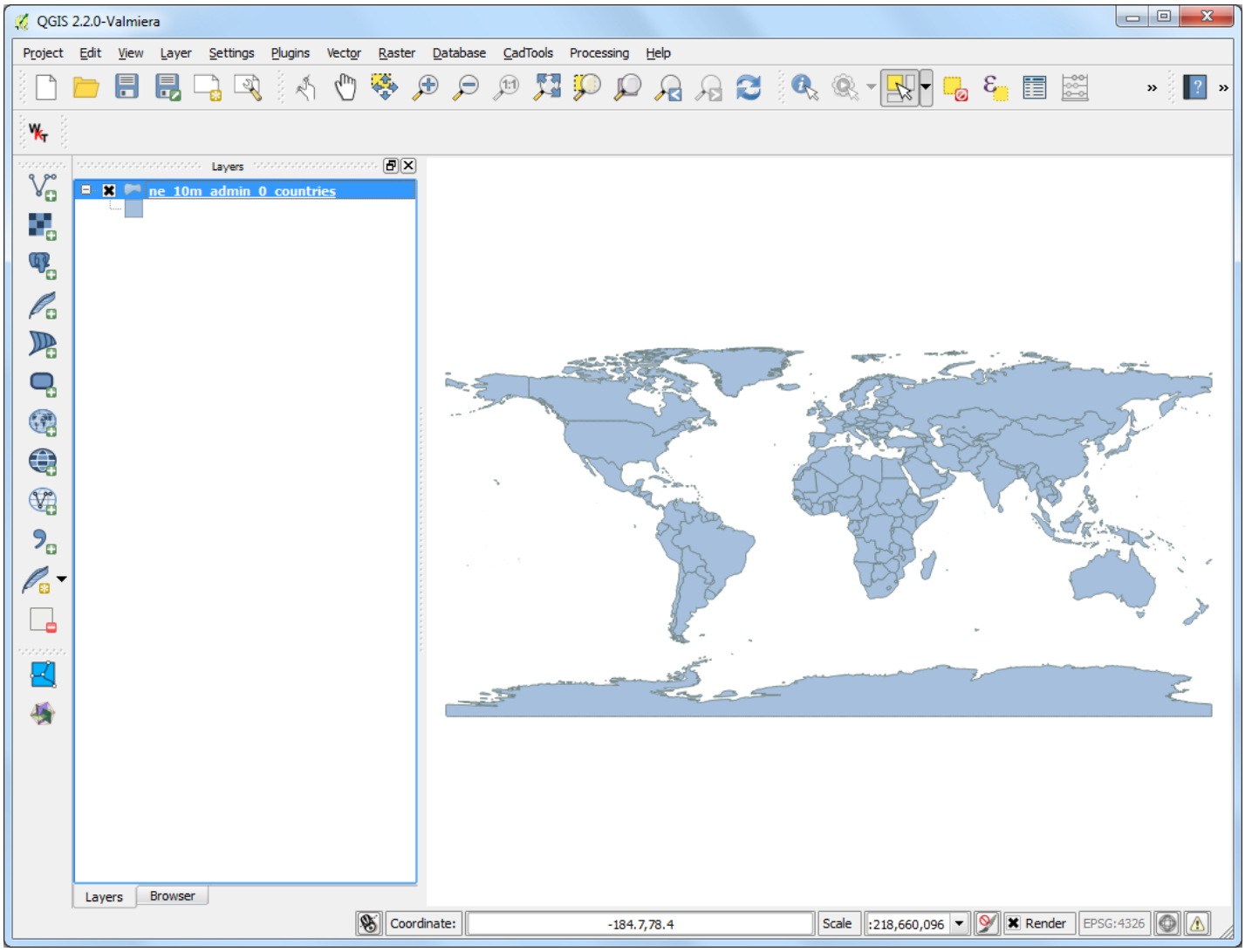
[redacted]: [NATURALEARTH]

[redacted]

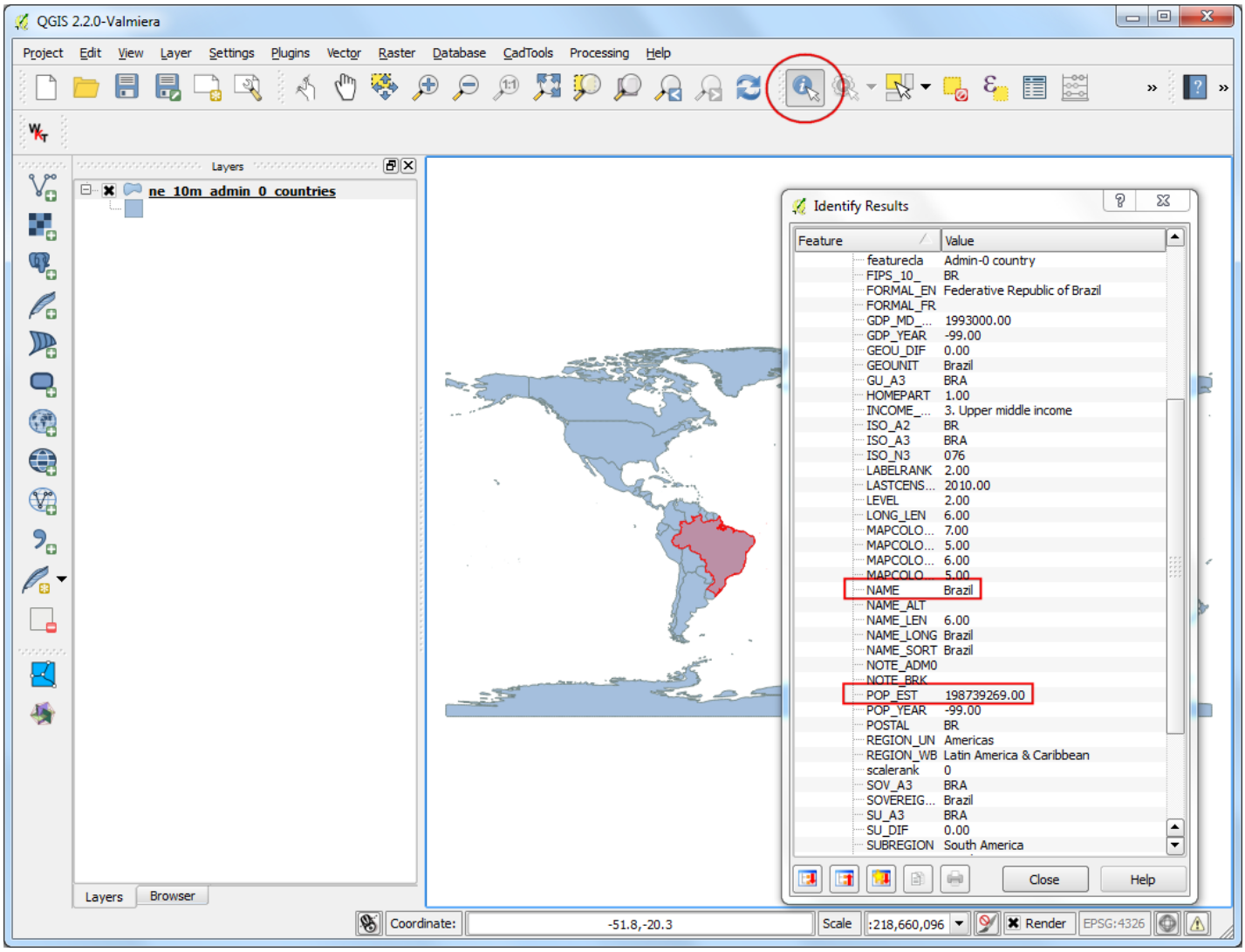
[redacted] `[redacted] neighbors.py` [redacted].

[redacted]

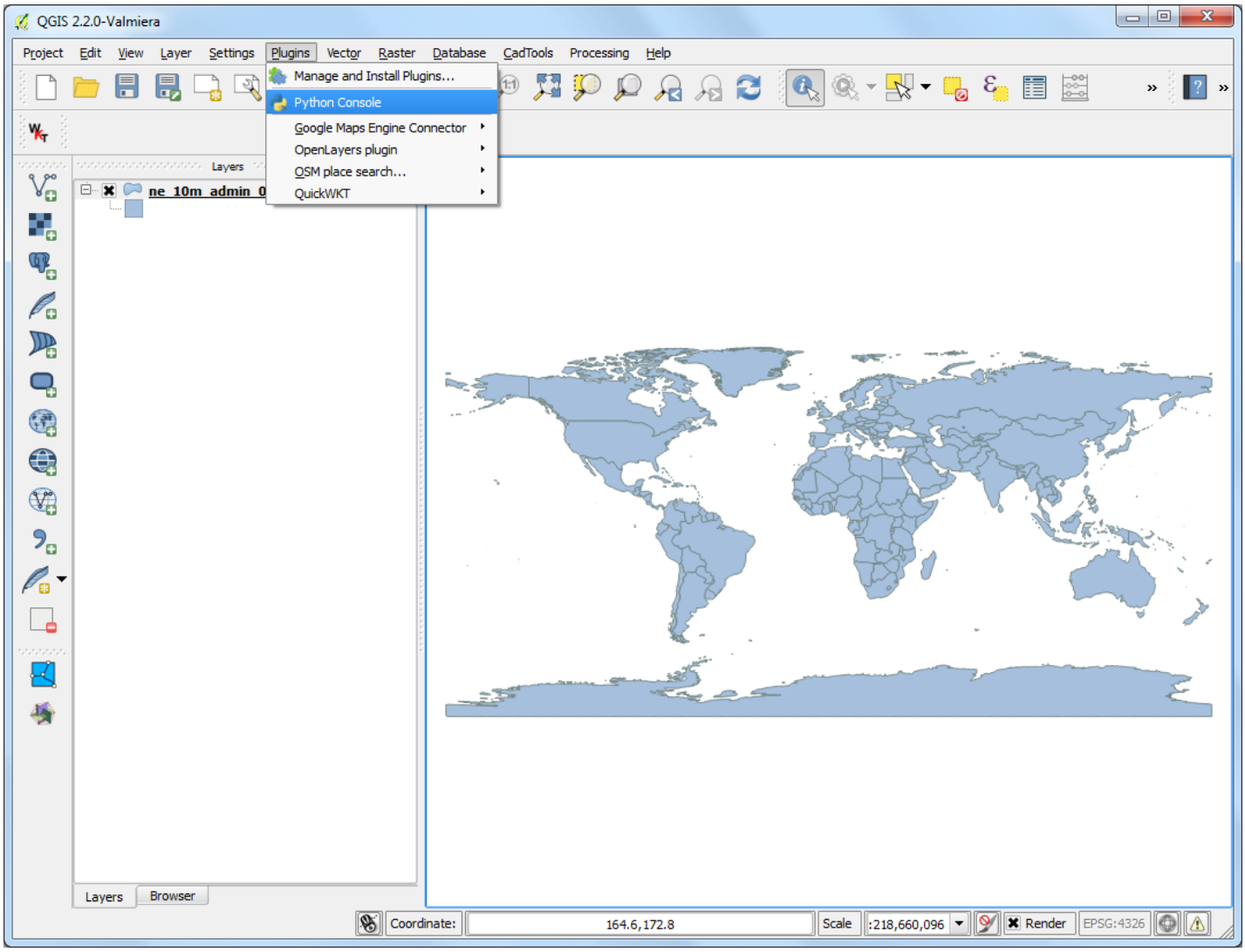
1. [redacted] `ne_10m_admin_0_countries` [redacted] *Layer* [redacted] *Add Vector Layer*.



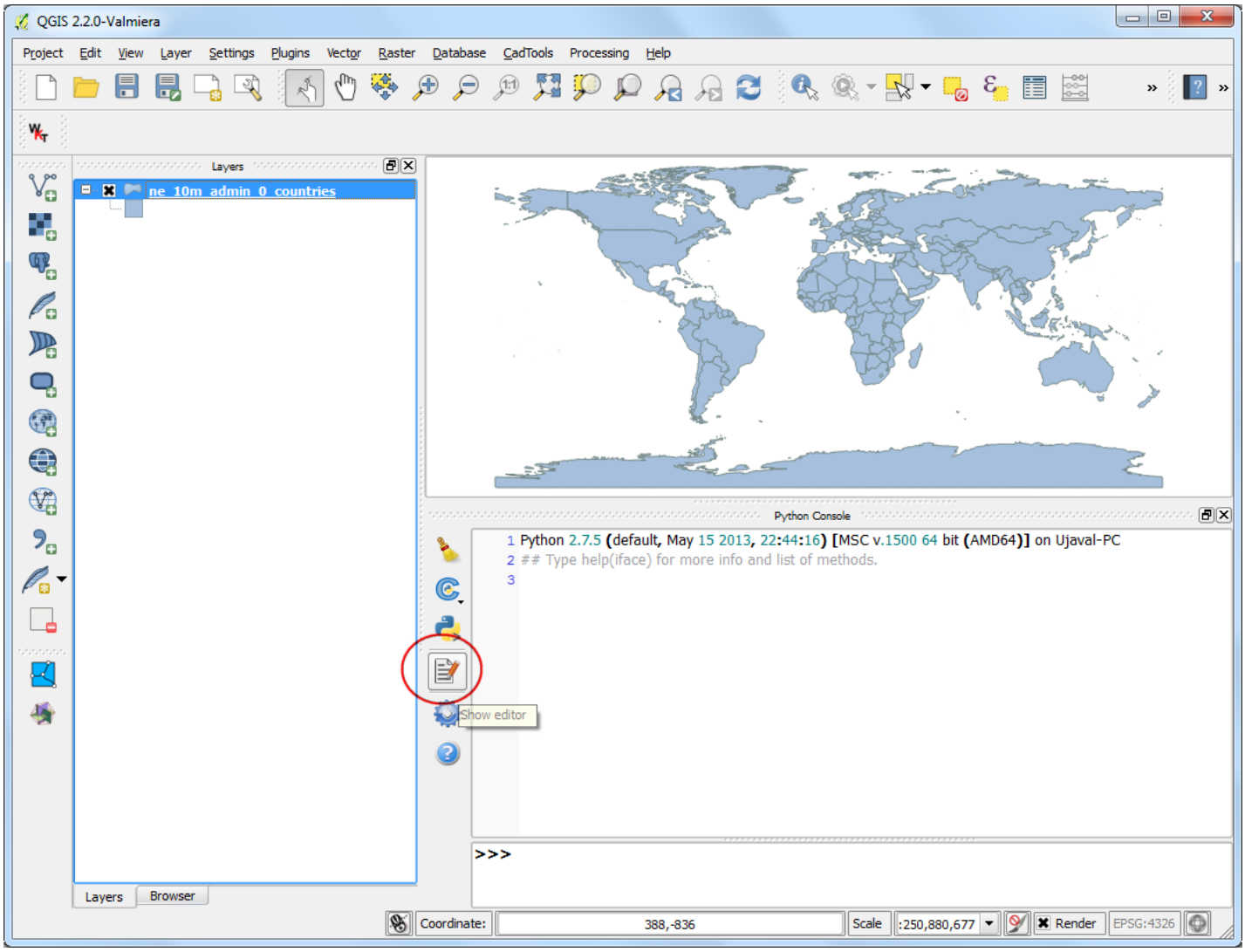
2. ▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇ 2 ▇▇▇▇▇ ▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇. ▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇ ▇ ▇▇▇▇▇, ▇▇▇▇▇▇▇▇▇ ▇▇ ▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇. ▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇ *Identify*, ▇▇▇▇▇▇ ▇▇▇▇▇▇▇ ▇▇ ▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇ ▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇. ▇ ▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇ **NAME**, ▇ ▇▇ ▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇ ▇▇▇▇▇ **POP_EST**.



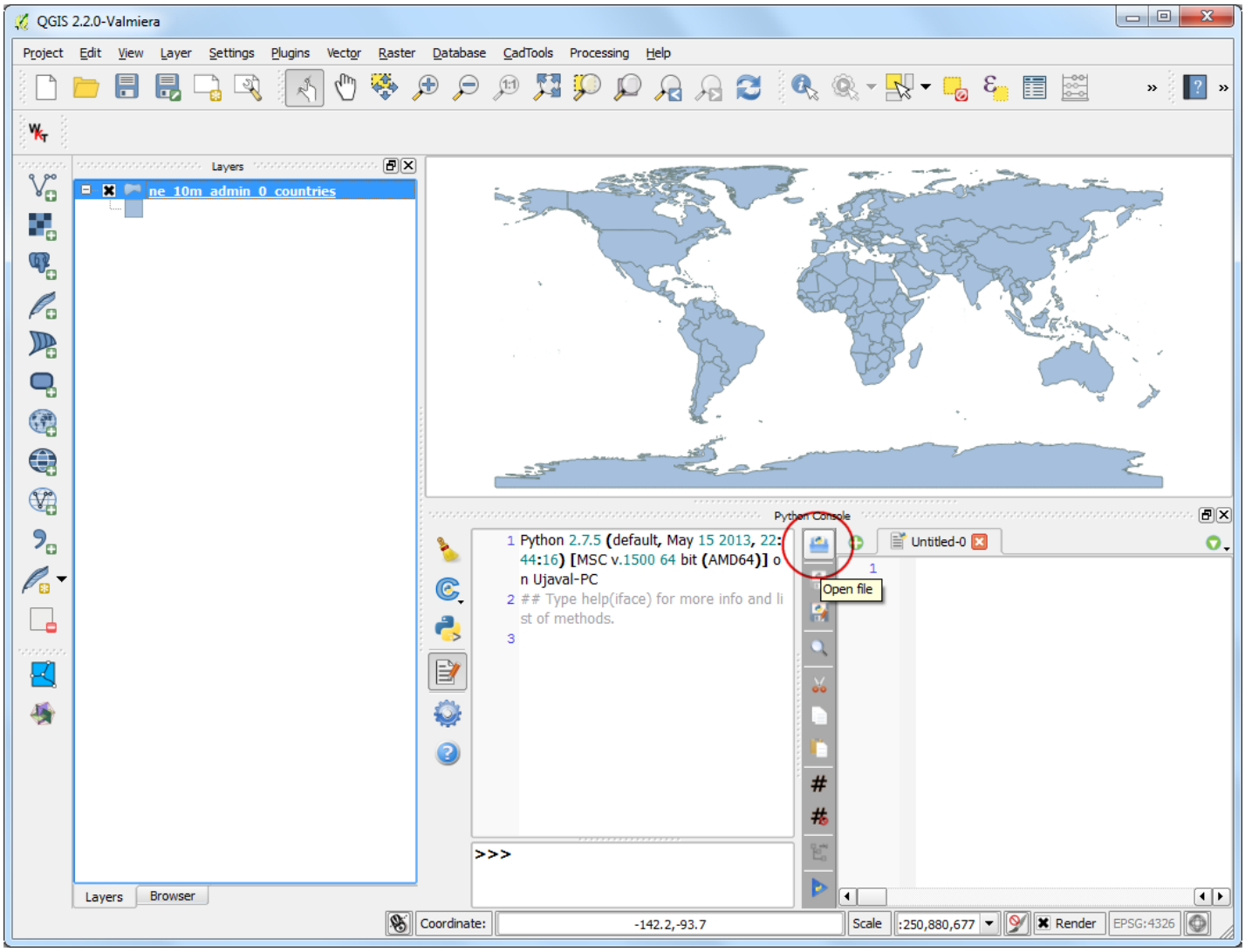
3. ■■■■■■■■■ ■ ■■■■ *Plugins* ■ *Python Console*.



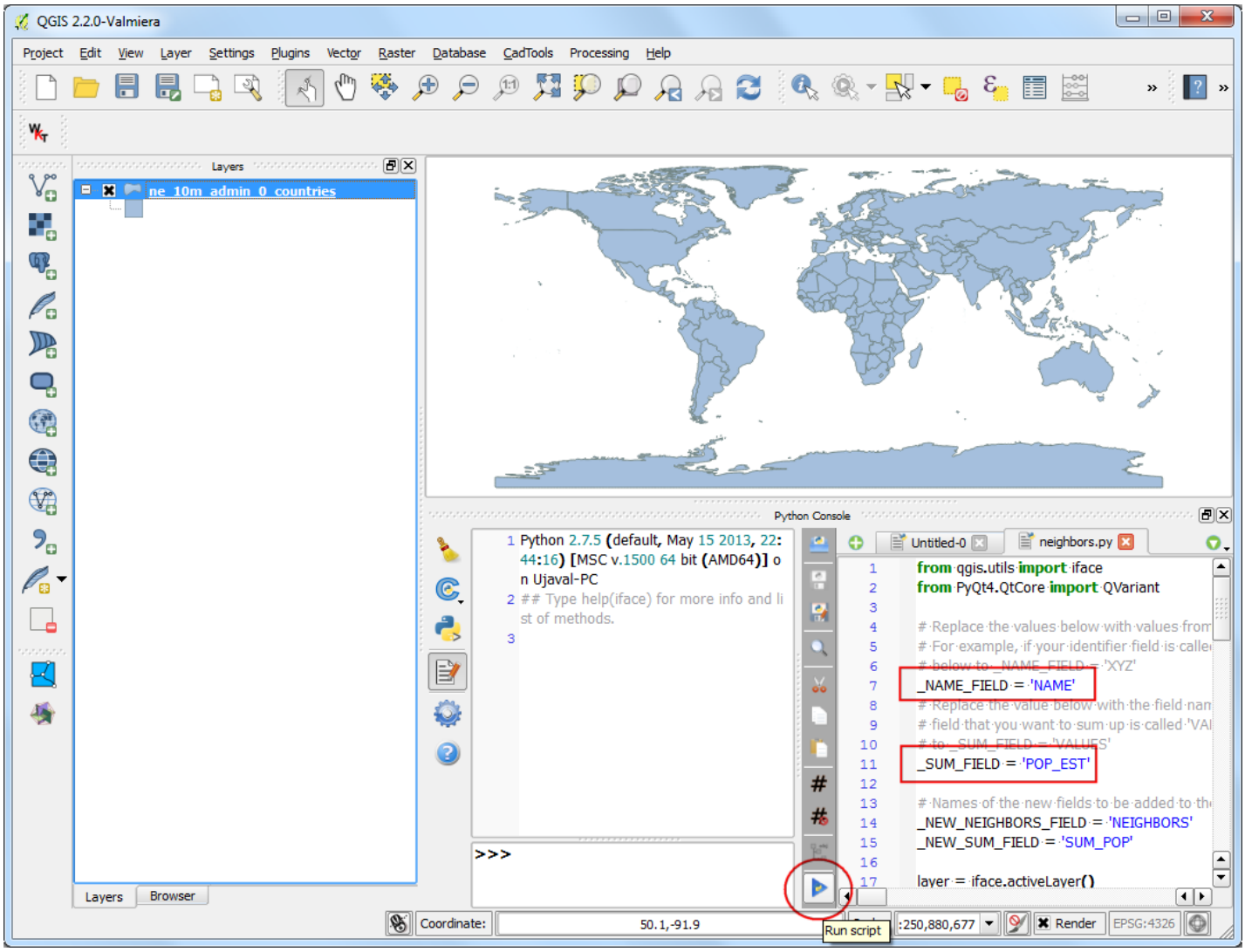
4. ■ ■■■■ *Python Console* ■■■■■■■ ■■ ■■■■■■ *Show Editor*.



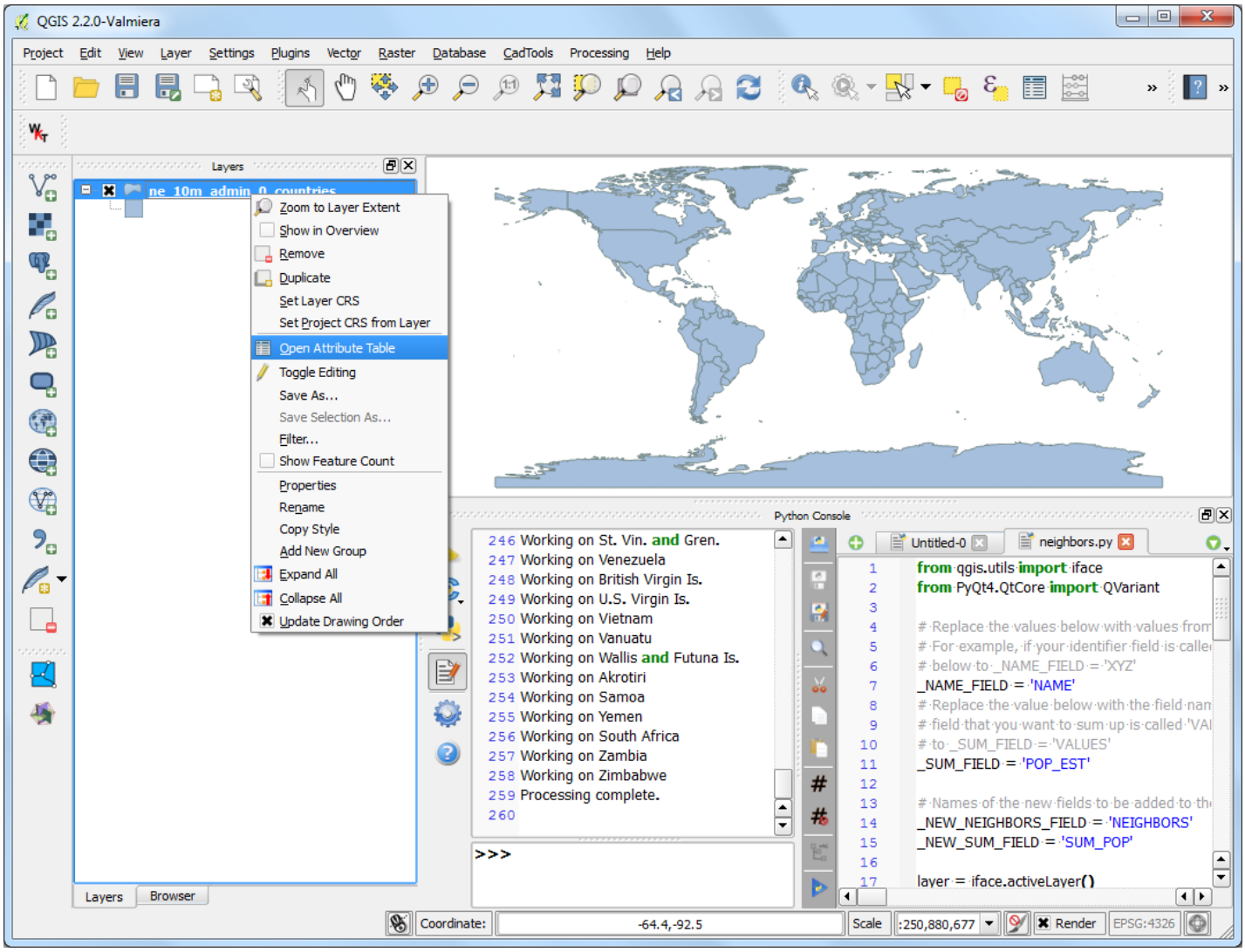
5. ■ ■■■■■■ *Editor* ■■■■■■■■ ■■ ■■■■■■ *Open file* ■ ■■■■■■■■■■ ■ ■■■■■■■■■■■■■ ■■■■■■■■■ `neighbors.py`, ■■■■■■ ■■■■■ ■■■■■■■■ *Open*.



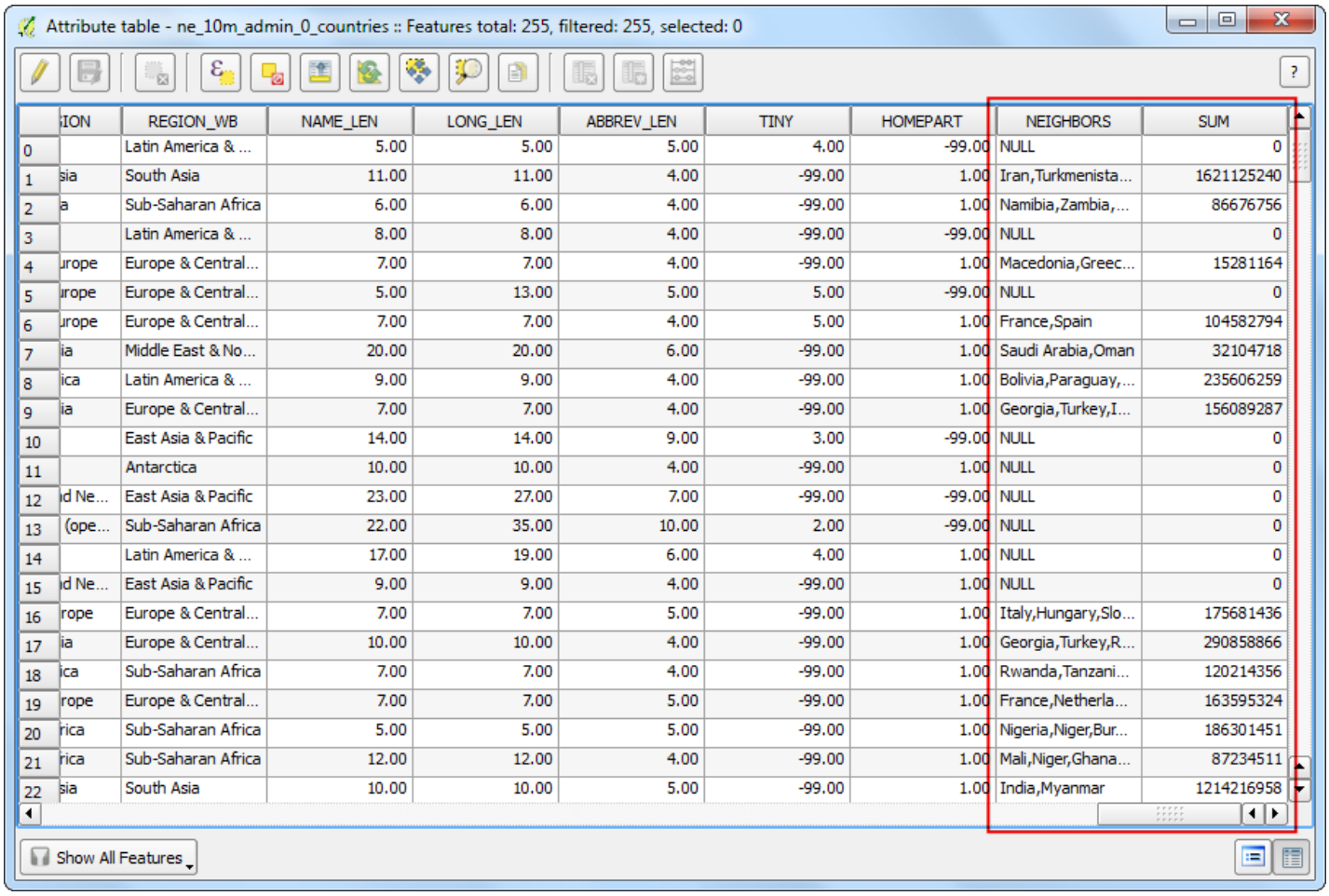
6. ▇▇▇▇▇▇ ▇▇▇▇▇, ▇▇▇▇ ▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇, ▇▇ ▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇ _NAME_FIELD ▇ _SUM_FIELD ▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇ ▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇. ▇▇▇▇▇ ▇▇ ▇▇▇▇▇▇▇▇▇▇▇ ▇▇ ▇▇▇▇▇▇ ne_10m_admin_0_countries, ▇▇ ▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇, ▇▇▇▇ ▇▇▇▇▇. ▇▇▇▇▇▇▇▇▇: guilabel: *save* ▇▇▇▇▇▇▇ ▇: guilabel:` ▇▇▇▇▇▇▇ Editor`, ▇▇▇▇▇ ▇▇ ▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇-▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇. ▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇: guilabel: ▇▇▇▇▇▇▇ *Run script*, ▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇.



7. [illegible] [illegible], [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ne_10m_admin_0_countries [illegible] [illegible] *Open* [illegible] *Table*.



8. ■■ ■■■■■■■■,2 ■■■■■ ■■■■■■■■■ ■■■ ■■■■■■■■■■ NEIGHBORS ■ SUM. ■■■ ■■■■■ ■■■■■■■■■■ ■■■■■■■■■■.



	ION	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	sia	South Asia	11.00	11.00	4.00	-99.00	1.00	Iran,Turkmenista...	1621125240
2	a	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	urope	Europe & Central...	7.00	7.00	4.00	-99.00	1.00	Macedonia,Greec...	15281164
5	urope	Europe & Central...	5.00	13.00	5.00	5.00	-99.00	NULL	0
6	urope	Europe & Central...	7.00	7.00	4.00	5.00	1.00	France,Spain	104582794
7	ia	Middle East & No...	20.00	20.00	6.00	-99.00	1.00	Saudi Arabia,Oman	32104718
8	ica	Latin America & ...	9.00	9.00	4.00	-99.00	1.00	Bolivia,Paraguay,...	235606259
9	ia	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	d Ne...	East Asia & Pacific	23.00	27.00	7.00	-99.00	-99.00	NULL	0
13	(ope...	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	d Ne...	East Asia & Pacific	9.00	9.00	4.00	-99.00	1.00	NULL	0
16	rope	Europe & Central...	7.00	7.00	5.00	-99.00	1.00	Italy,Hungary,Slo...	175681436
17	ia	Europe & Central...	10.00	10.00	4.00	-99.00	1.00	Georgia,Turkey,R...	290858866
18	ica	Sub-Saharan Africa	7.00	7.00	4.00	-99.00	1.00	Rwanda,Tanzani...	120214356
19	rope	Europe & Central...	7.00	7.00	5.00	-99.00	1.00	France,Netherla...	163595324
20	rica	Sub-Saharan Africa	5.00	5.00	5.00	-99.00	1.00	Nigeria,Niger,Bur...	186301451
21	rica	Sub-Saharan Africa	12.00	12.00	4.00	-99.00	1.00	Mali,Niger,Ghana...	87234511
22	sia	South Asia	10.00	10.00	5.00	-99.00	1.00	India,Myanmar	1214216958

[redacted]

```
##############################################################################
# Copyright 2014 Ujaval Gandhi
#
#This program is free software; you can redistribute it and/or
#modify it under the terms of the GNU General Public License
#as published by the Free Software Foundation; either version 2
#of the License, or (at your option) any later version.
#
#This program is distributed in the hope that it will be useful,
#but WITHOUT ANY WARRANTY; without even the implied warranty of
#MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
#GNU General Public License for more details.
#
#You should have received a copy of the GNU General Public License
#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())
    # Initalize 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.'
```