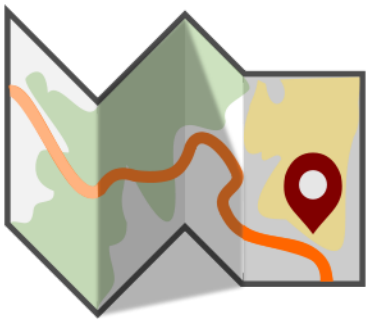
Find Neighbor Polygons in a Layer

QGIS Tutorials and Tips



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Menemukan Polygon Neighbor atau Tetangga pada Layer

Ada beberapa kasus penggunaan dimana anda ingin menemukan semua polygon yang posisinya dekat atau tetangga pada sebuah layer. Dengan sebuah skrip phyton pendek. Kita dapat melakukannya dan banyak hal lagi di QGIS. Berikut sebuat contoh skript yang anda dapat gunakan untuk menemukan semua poligon yang mengshare batasnya dengan poligon lain pada sebuah layar dan juga menambah nama mereka pada tabel attribut. Sebagai bonus tambahan, skript ini juga menjumlahkan attribut pilihan anda dari semua poligon tetangga tadi.

Tinjauan Tugas

Untuk mendemonstrasikan bagaimana skript bekerja, kita akan menggunakan sebuah layer dari poligon negara dan menemukan negara yang berbagi batas negara. Kita juga ingin menghitung total puplasi dari negara tetangga.

Mendapatkan data

Kita akan menggunakan dataset Admin 0 – Countries dari Natural Earth.

Unduh Admin 0 – countries shapefile..

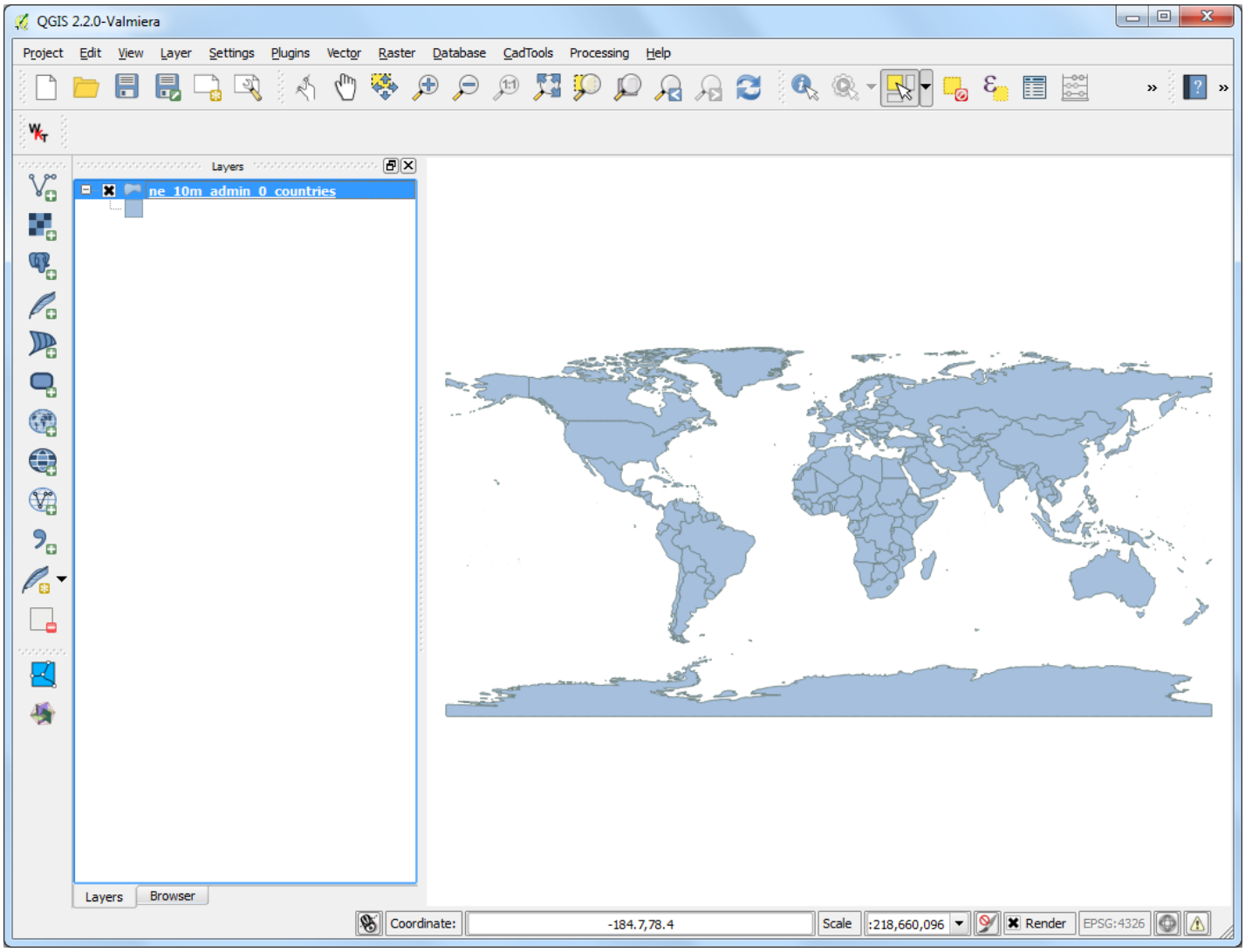
Sumber data [NATURALEARTH]

Mendpatkan skript

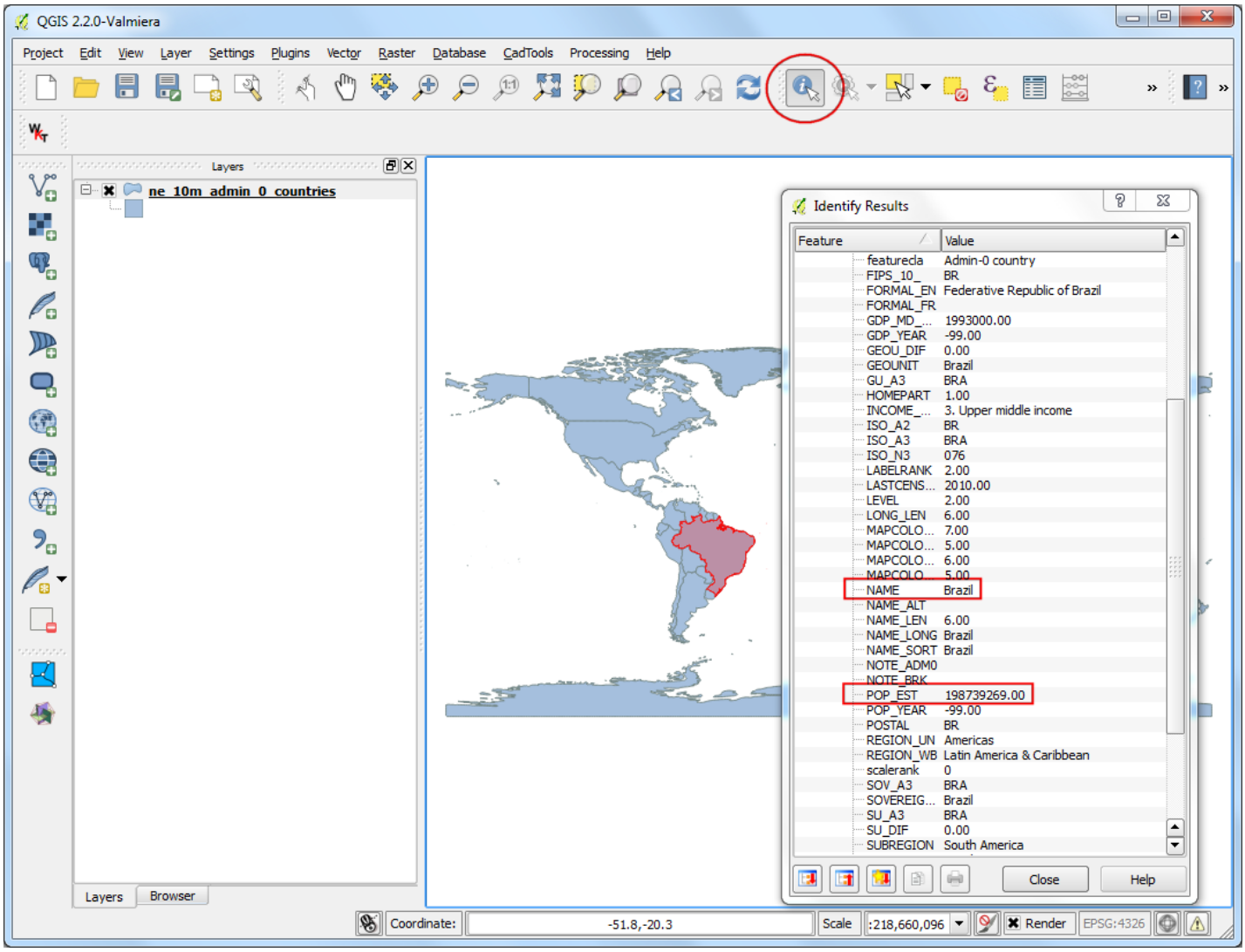
Unduh ***`neighbors.py script`*** dan simpan pada disk anda.

Prosedur

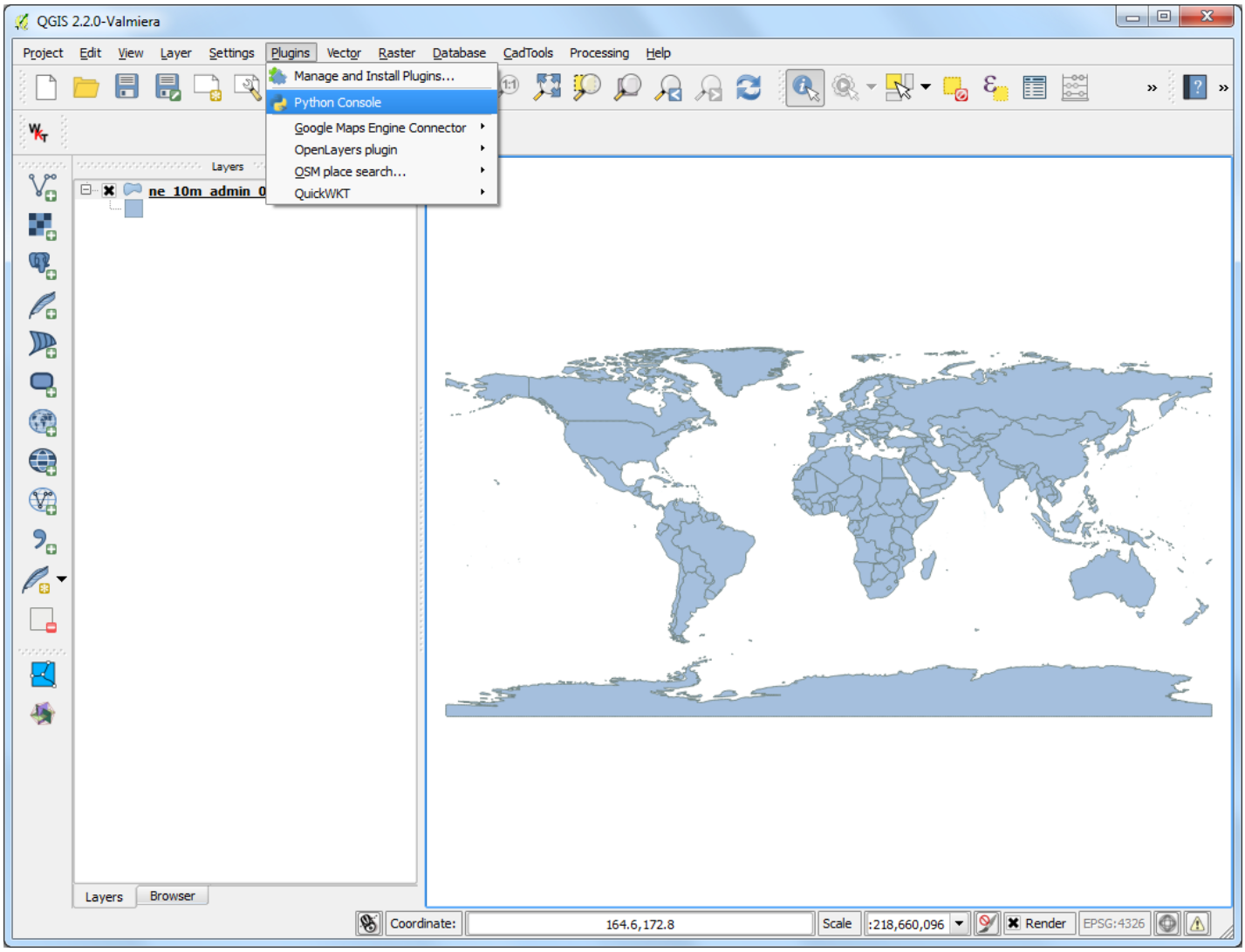
1. Buka layer ***`ne_10m_admin_0_countries`*** dengan mengakses Layer ‣ Add Vector Layer.



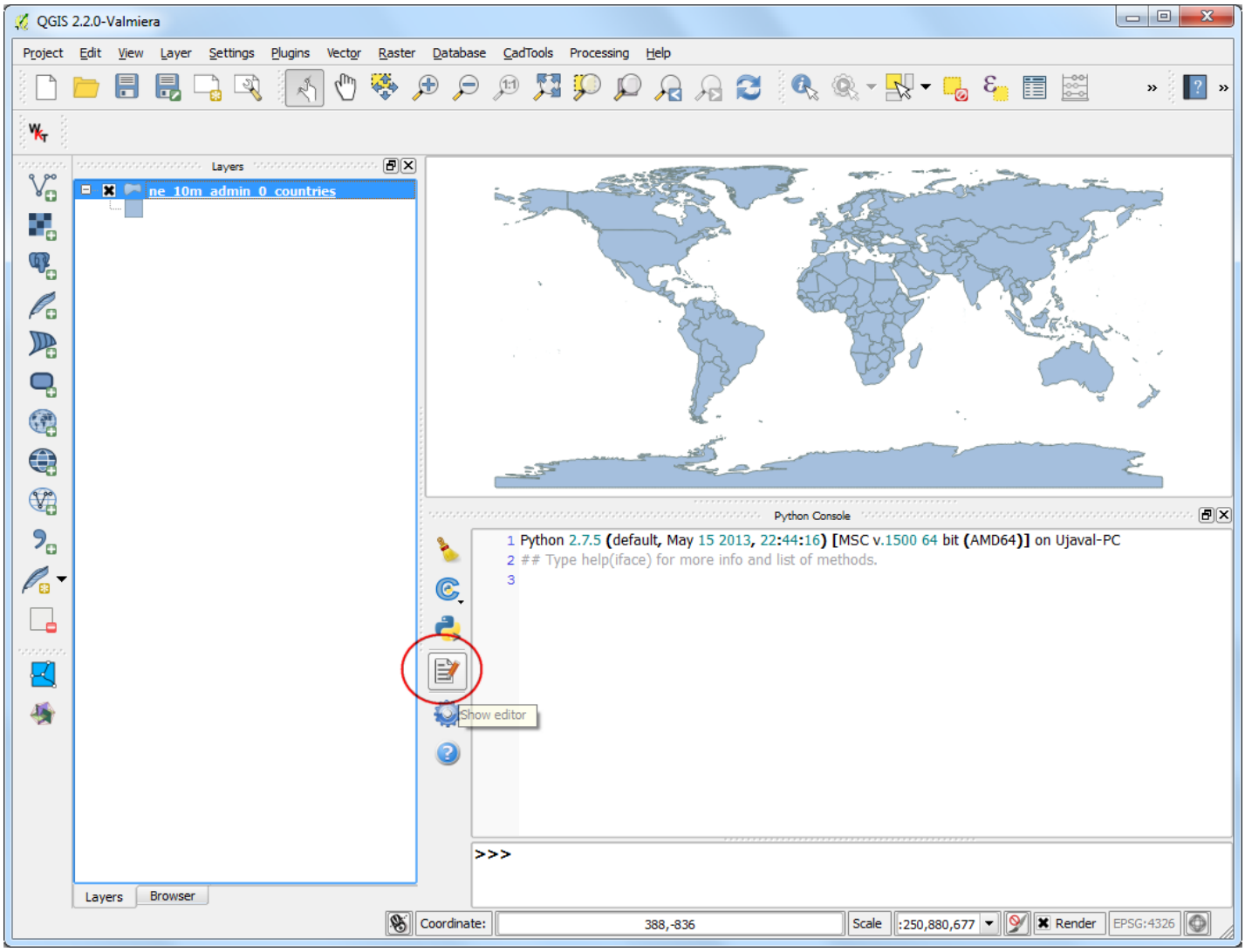
2. Skript menggunakan 2 field untuk melakukan pekerjaanya. Sebuah field nama dan sebuah field yang ingin anda jumlahkan. Gunakan tool Identify untuk mengklik fitur mana saja dan memeriksa attributnya. Pada kasus ini, field nama adalah NAME dan kita ingin menjumlahkan perkiraan populasi dari field POP_EST.



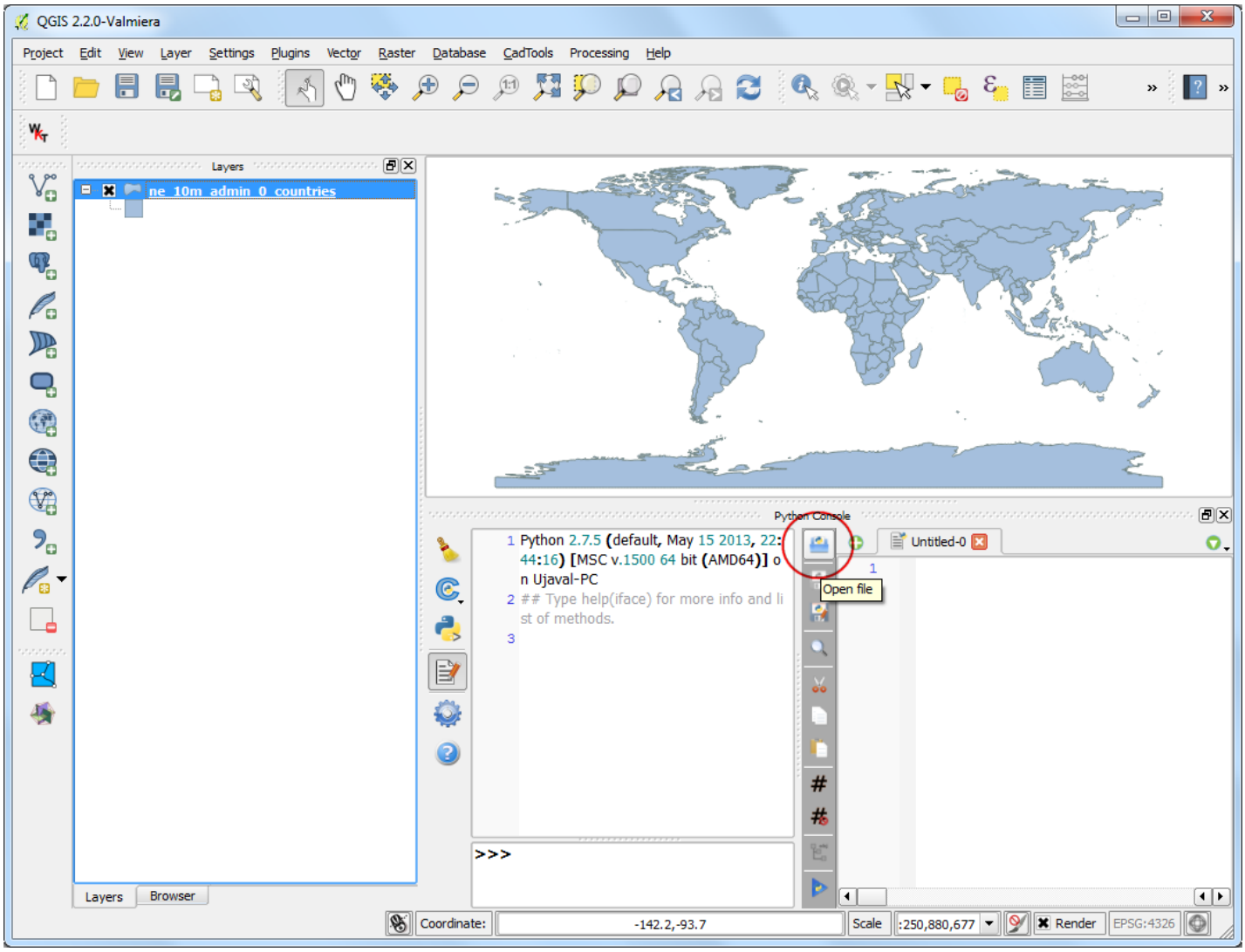
3. Akses Plugins ‣ Python Console.



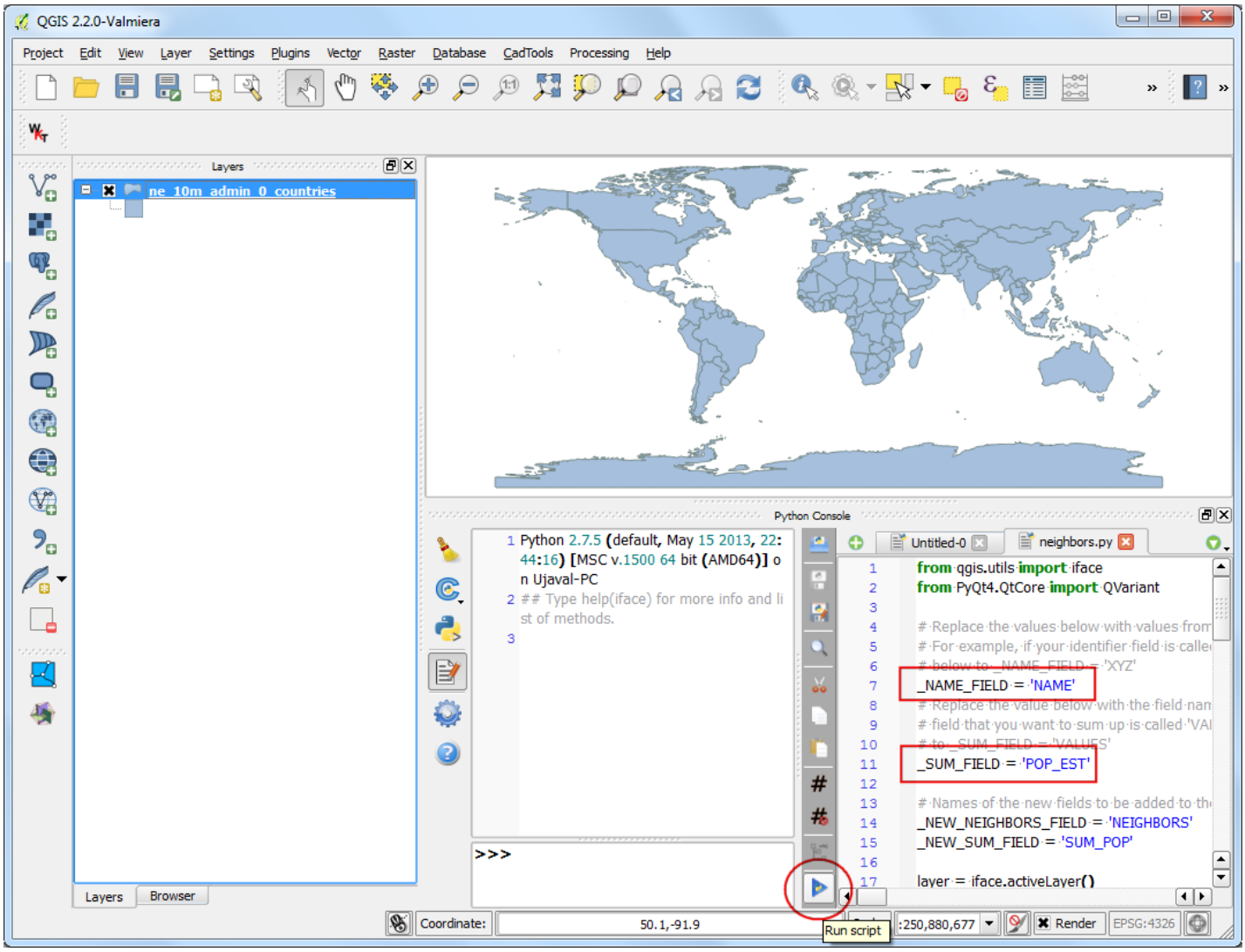
4. Pada jendela Python Console , klik tombol Show Editor



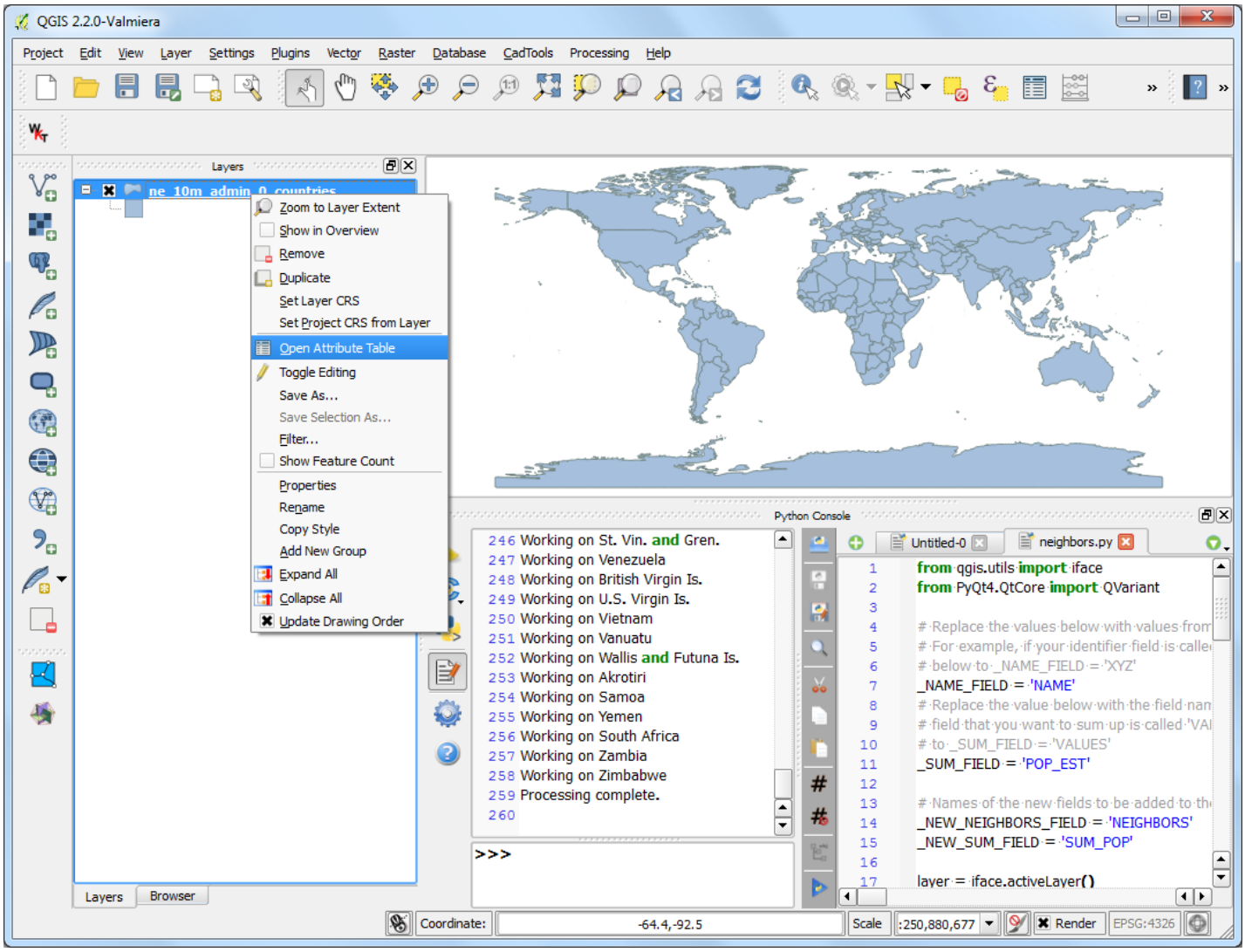
5. Pada panel Editor , klik tombol Open file dan jelajah skript unduhan anda yakni ***neighbors.py*** dan klik Open.



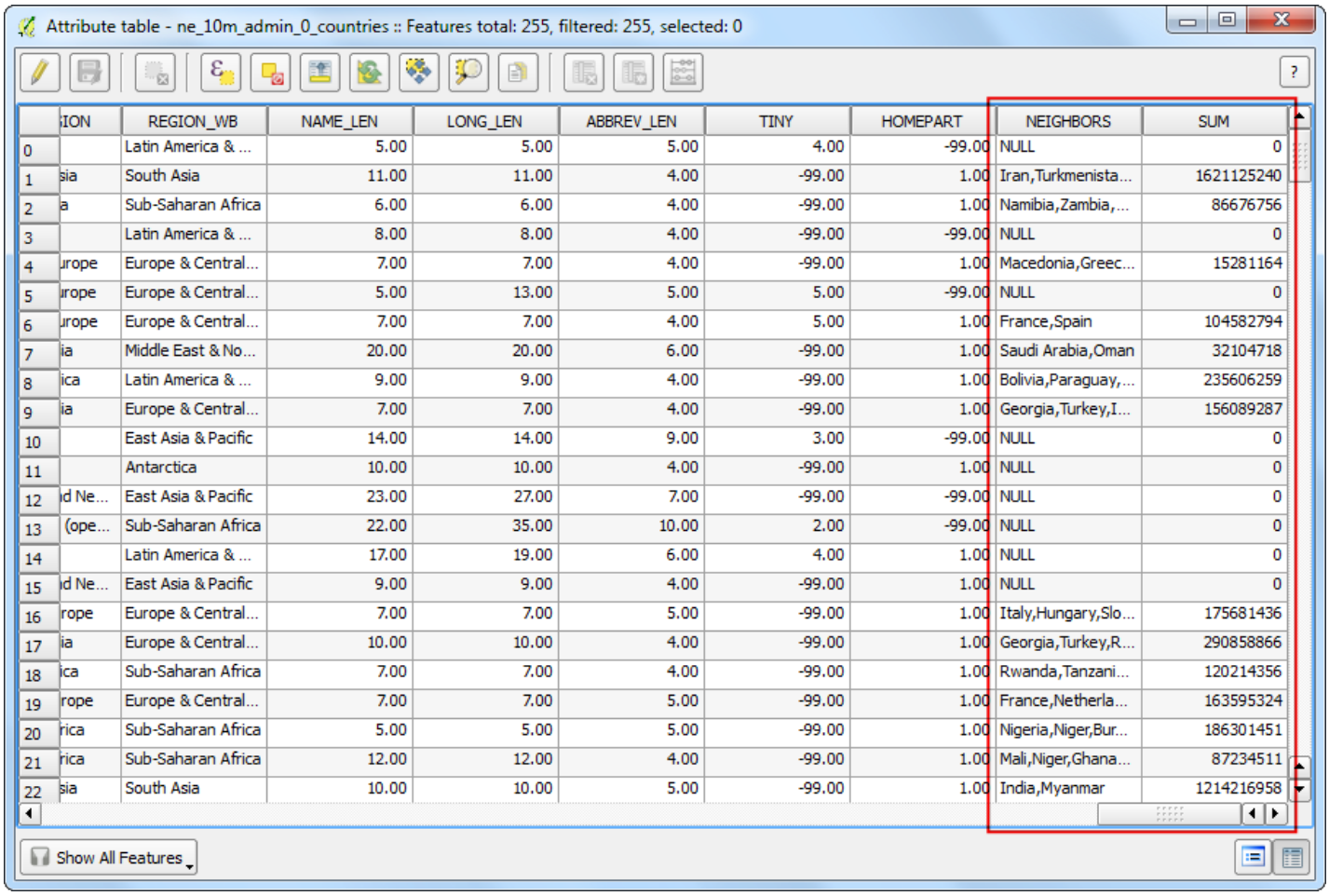
6. Ketika skript sudah terbuka, mungkin anda ingin mengubah nilai ***_NAME_FIELD*** dan ***_SUM_FIELD*** untuk menyesuaikan attribut dari layer anda. Jika anda bekerja dengan layer ***ne_10m_admin_0_countries*** , anda dapat membiarkannya seperti sedia kala. Klik tombol Save pada panel Editor jika anda membuat perubahan. Sekarang klik tombol Run script untuk mengeksekusi skript.



7. Ketika skript selesai , klik kanan layer ***ne_10m_admin_0_countries*** dan pilih Open Attribute Table.



8. Anda akan melihat 2 attribut baru yang bernama ***NEIGHBORS*** dan ***SUM*** . Attribut ini ditambahkan oleh skript.



	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

Di bawah adalah skript lengkap untuk referensi. Anda bisa memodifikasinya bergantung kebutuhan anda.

```
##############################################################################
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#
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#modify it under the terms of the GNU General Public License
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#of the License, or (at your option) any later version.
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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())
    # 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.'
```