

# Exercise 1

I was created a function which return the *refcursor* with all addresses which satisfy with condition of task

```
1 CREATE FUNCTION retrieve_addresses_without_cur() RETURNS refcursor AS $$
2 DECLARE
3     ref refcursor;
4 BEGIN
5     OPEN ref FOR SELECT address_id, address, city_id FROM address WHERE address LIKE '%11%' AND city_id > 399 AND city_id < 601;
6     RETURN ref;
7 END
8 $$ LANGUAGE plpgsql
9
```

After that I called this function and got such results:

```
1 SELECT * FROM retrieve_addresses_without_cur();
2 FETCH ALL FROM "<unnamed portal 14>";
```

Data Output Explain Messages Notifications

	address_id [PK] integer	address character varying (50)	city_id smallint
1	4	1411 Lillydale Drive	576
2	6	1121 Loja Avenue	449
3	378	1191 Tandil Drive	523
4	366	114 Jalib al-Shuyukh Manor	585
5	379	1133 Rizhao Avenue	572
6	511	1152 al-Qatif Lane	412
7	507	1197 Sokoto Boulevard	478
8	127	117 Boa Vista Way	566
9	245	1103 Bilbays Parkway	578
10	324	1145 Vilnius Manor	451
11	297	1192 Tongliao Street	470
12	528	1176 Southend-on-Sea Manor	458
13	602	1101 Bucuresti Boulevard	401
14	603	1103 Quilmes Boulevard	503

Create the columns by queries in the pdAdmin and create the python script:

```
ALTER TABLE address
ADD COLUMN latitude FLOAT,
ADD COLUMN longitude FLOAT;
```

```
import psycopg2
from geopy.geocoders import Nominatim

con = psycopg2.connect(database="dvdrental", user="postgres",
                      password="VRV175IV**", host="localhost", port="5432")

print("Database opened successfully")
cur = con.cursor()
geolocator = Nominatim(user_agent="I")

my_var = cur.callproc('retrieve_addresses_without_cur')
row = cur.fetchone()

cur.execute(f'FETCH ALL IN "{row[0]}"')
ids = []

for row in cur.fetchall():
    ids.append(row[0])

cur.execute("SELECT address_id, address FROM address")

for id, address in cur.fetchall():
    try:
        if id not in ids:
            raise Exception
        location = geolocator.geocode(address)
        print((location.latitude, location.longitude))
        cur.execute(f"UPDATE address SET latitude = {location.latitude}, longitude = {location.longitude} WHERE address_id = {id}")
        con.commit()
    except Exception:
        cur.execute(f"UPDATE address SET latitude = 0, longitude = 0 WHERE address_id = {id}")
        con.commit()
```

In the result, I got such table:

```
1 SELECT address_id, address, address2, district, city_id, postal_code, phone, last_update, latitude, longitude
2 FROM public.address
3 ORDER BY latitude DESC;
```

Data Output	Explain	Messages	Notifications
address_id [PK] integer	address character varying (50)	address2 character varying (50)	district character varying (20)
1	324 1145 Vilnius Manor		Mxico
2	528 1176 Southend-on-Sea Manor		Southern Tagalog
3	602 1101 Bucuresti Boulevard		West Greece
4	4 1411 Lillydale Drive	[null]	QLD
5	379 1133 Rizhao Avenue		Pernambuco
6	511 1152 al-Qatif Lane		Kalimantan Barat
7	40 334 Munger (Monghyr) Lane		Markazi
8	41 1440 Fukuyama Loop		Henan
9	42 269 Cam Ranh Parkway		Chisinau
10	380 1519 Santiago de los Caballeros Loop		East Kasai
11	460 659 Gatineau Boulevard		La Paz
12	195 1077 San Felipe de Puerto Plata Place		Rostov-na-Donu
13	196 9 San Miguel de Tucumán Manor		Uttar Pradesh
14	359 519 Nyeri Manor		So Paulo
15	247 1483 Pathankot Street		Tucumán
16	248 582 Papeete Loop		Central Visayas
17	249 300 Junan Street		Kyonggi
18	250 829 Grand Prairie Way		Paran
19	251 1473 Changhwa Parkway		Mxico
20	252 1309 Weifang Street		Florida
21	253 1760 Oshawa Manor		Tianjin
22	487 1785 So Bernardo do Campo Street		Veracruz

Successfully run. Total query runtime: 77 msec. 603 rows affected.