Worksheet 7

Considering the set of tables that we have already seen:
- taxi_stands;
- taxi_services;
- tracks;
- cont_caop_aad2018

answer with SQL expressions the following questions and use
Matplotlib to graphically show what is requested in each query.

1. Use st_simplify and st_union to create and show a polygon with the boundary of the municipality of Porto.
2. Which track in the Busy state crosses the most municipalities? Show graphically the path of the track and the polygons of each of the municipalities crossed;
3. Considering the taxi_services table and its final_point attribute, create a map with all the services that started in the municipality of Porto and ended less than 20 km from the centroid point of the polygon that delimits the municipality of Porto. In addition to the points, your map must represent the polygons of all parishes where services end in these conditions;
4. Create a function that, given the id of a track, draws a graph of instantaneous speed in km/h. Filter speed errors that correspond to wrong GPS readings;
5. Consider the figure below that lists the tariff rules that are applied in taxis. Create a function given the id of a track and return the value of the taximeter corresponding to that track. If the status is not 'BUSY', it must return 0.

TARIFA URBANA

N.º lugares	Bandeirada		Km	hora	Frações			
	metros	€	€	€	metros	€	seg.	€
4 passageiros								
Tarifa 1								
- diurna	1390	3,25	0,51	16,10	196,08	0,10	22,36	0,10
- noturna	1112	3,90	0,61	19,30	163,40	0,10	18,65	0,10
+ 4 passageiros								
Tarifa 1								
- diurna	1390	3,25	0,65	16,10	153,85	0,10	22,36	0,10
- noturna	1112	3,90	0,78	19,30	128,21	0,10	18,65	0,10
VEÍCULOS S/ DISTINTIVO								
4 passageiros	1112	3,90	0,61	19,30	163,93	0,10	18,65	0,10
+ 4 passageiros	1112	3,90	0,73	19,30	136,99	0,10	18,65	0,10