

1 The Data

In this exercise you are to implement a pedestrian tracker for the city. Specifically the data will be over a patch of North East Stockholm centered on KTH obtained from the OPENSTREETMAPS.

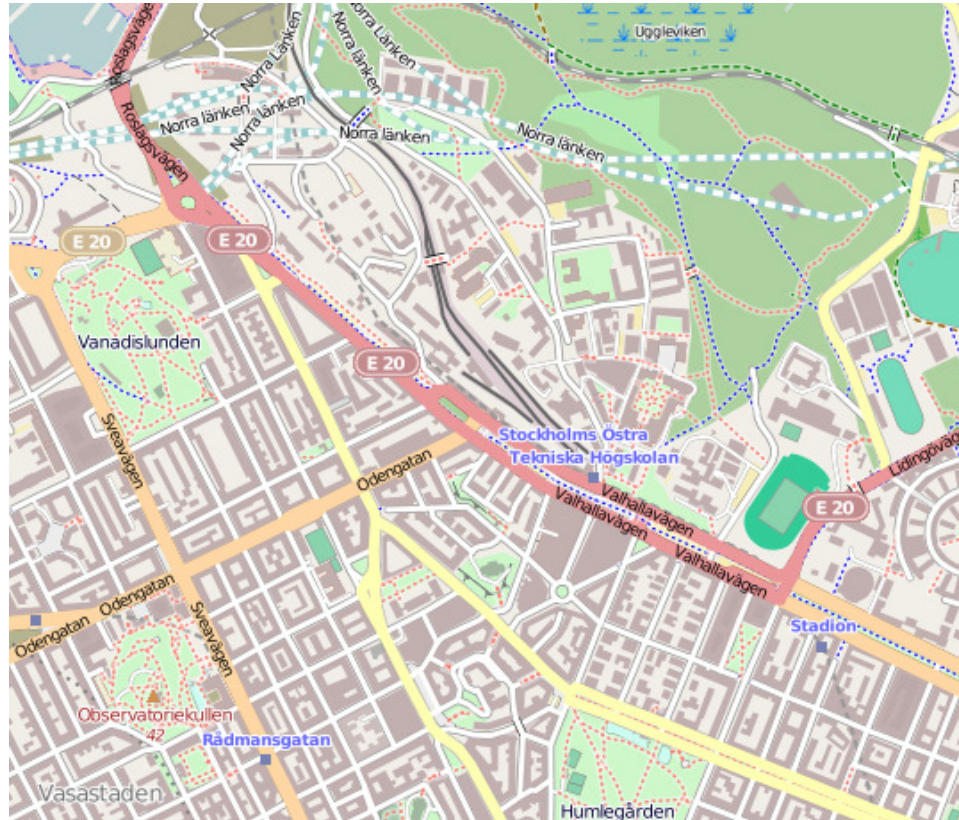


Figure 1: The area immediately outside of KTH

The static input to the problem is a data file (named `kth.sql`) that asserts information (e.g. buildings, streets, cafes, etc.) on the part of Stockholm surrounding KTH. The dynamic input to the problem (named `walk.sql`) is a time series of position measures of a pedestrian that goes for a walk.

2 The Tasks

- 1.) Import the database in the file `kth.sql` into your PostGIS enabled database and study the schema. **Note that you must load a fresh copy** of `kth.sql` off the course website (<http://www8.cs.umu.se/kurser/5DV052/VT11/>). The version used in lab is now out of date. This import will take about 10 minutes – please be patient and let it run to completion. The file `schema.pdf` lightly documents this schema. Answer the following queries over the static schema:
 - a. How many buildings is the point longitude 18.0821843, latitude 59.341359 inside of?
 - b. Give the names of all the restaurants within 700 meters of the building named 'E'.
 - c. Which streets 'cross' the street named 'Odengatan'? By 'cross' we mean any street that turns onto, into or over. In short any street touching 'Odengatan'.
- 2.) For this portion of the assignment you will load in the file `walk.sql` that will be published on the course web-site. Currently there is a test-walk file named `test-walk.sql` on the site. The real file `walk.sql` will be uploaded to the website after the final exam.
 - d. Using POSTGRESQL rules, print the message "Cafe X within distance D" (X is the name of the Cafe and D is the distance from the user's position) when the user is less than 50 meters of a Cafe. It is OK to repeat the message as long as $D < 50$.
- 3.) Now you are to analyze the user's trajectory.
 - e. Give total distance covered by the pedestrian.
 - f. Which streets did the pedestrian walk on?
 - g. Did the user pass within 100 meters of the Building F?

3 What to hand in

Send me an email with the exactly the following form:

SUBJECT: [DB2] Assignment 2

Exercise 2 (Due June 14, 2011)

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...

Include in this email the following two attachments: `queries.txt`, `results.txt`. Note these exact names must be used and the format must be straight ASCII. **any .pdf or .doc attachments will be immediately rejected.**

The `queries.txt` file must contain, in order, the SQL used to answer (or define rules) for items a.-g. above. Clearly label which SQL corresponds to which item. For example:

A:

```
select count(*)  
from ...
```

B:

...

The `results.txt` file must contain the results from the runs of each of your queries.

A:

```
count  
-----  
1
```

B:

...

In the body of the email please write a paragraph or two about your impressions and reflections. Describe in general terms the performance (remember in databases ‘performance’ means ‘run time’!) of your solutions. Did you use any indexing strategies? What aspects of the assignment were easy? What was difficult? What would you change in this assignment? What other cool queries can you dream up that would be interesting to ask?