Advanced Databases & noSQL (INFDEV03-5)
Assignment 3

Instructions

- The assignment must be submitted within 9/11/2015 at 23:59.
- The assignment must be implemented using Neo4j.
- Deliver the cypher queries into a text file (not word!).
- Deliver also the database folder of Neo4j (your `database_name.graphdb`).

Assignment

Consider the Entity-Relationship diagram in Figure 1 representing the model for an airport database.

- Give a graph database implementation in Neo4j. Fill in the database with data satisfying the following constraints:
  - At least 6 airports, two of which must be name 'Schiphol', and 'Venezia Marco Polo', two must be located in 'London', and one in 'Rome'.
  - The values of `size` in `airports` must be 'Small', 'Medium', or 'Large'.
  - At least one airport must be 'Large'.
  - Each airport must have at least 5 terminals.
  - 'Venezia Marco Polo' must have a terminal 'B'.
  - At least 5 companies, two of which must be 'Lufthansa' and 'KLM'.
  - At least 5 flights, one of which must be scheduled before 15:00.
  - At least 3 gates per terminal.
  - The values for `state` in `gates` must be either 'Boarding' or 'Closed'.
  - There must be a 'Boarding' gate for terminal 'B' in 'Venezia Marco Polo'.
- Implement the following queries in cypher:
  1. Write the SQL queries to generate the tables according to the previous definitions.
  2. Fill the database with data (you can actually check for real airport names).
  3. Find the name and the capacity of all 'Large' airports.
  4. Find the total capacity of the airports in the same city. Output the name of the city and the total capacity.

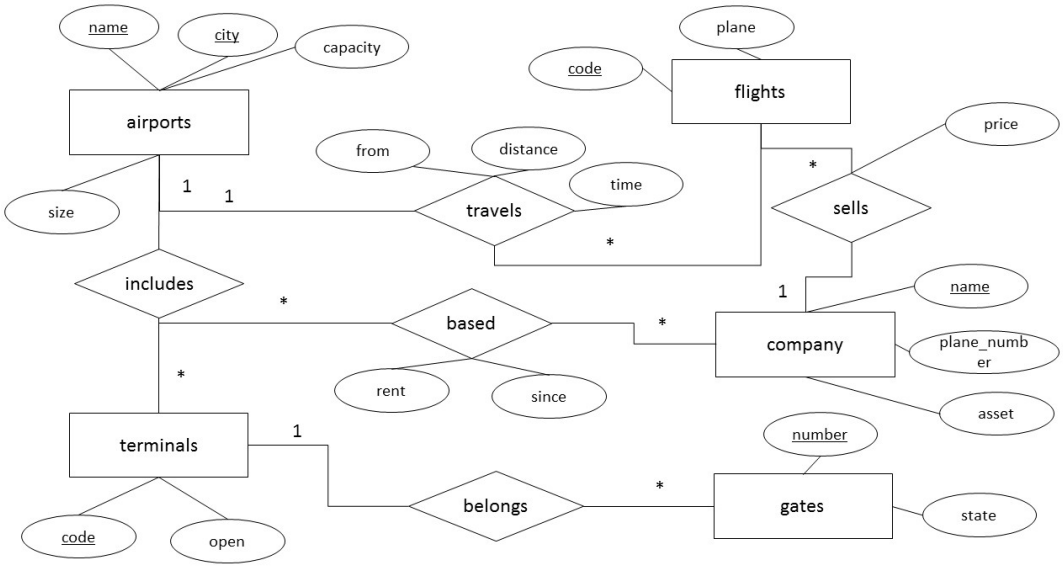

Figure 1: ER Diagram for the assignment

5. Find the name of the airport with the highest capacity. Output the name and the capacity.
6. Find all the opened terminals in 'Schiphol'. Output the code.
7. Find all the terminals of the airports in 'London'. Output the code.
8. Find all the gates that are boarding in 'Venezia Marco Polo' for terminal 'B'. Print the number and the state.
9. Find all the flights landing in 'Rome' for 'Lufthansa' and 'KLN'. Print the code and the plane.
10. For each company find the amount of flights going to 'Rome' leaving before 15:00. Print the company name and the total of flights.