Databases Project – Spring 2019

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# Deliverable 1

## Assumptions

The weak entities (House\_properties, Economic\_properties, Administrative\_properties, Review\_scores) linked to the Listing exist only if the listing exists. The attributes of Review\_scores can be *null* if the Listing is new and was not yet evaluated.

Both the Listing and the Neighbourhood are linked to a city, therefore we have decided to relate a Listing to a Neighbourhood, that is itself linked to a City. We assumed it would avoid having the same information twice (*is in a City - relation*).

The Review is written by exactly one Reviewer and for exactly one Listing. If a Reviewer unsubscribes of the Airbnb platform, we have decided that the Review shall still exist. Also, if a Listing disappears, we suppose that the Review still exists.

We suppose that City in this database has a unique name inside their country. Hence we can use city\_name and country\_code as primary key.

## Entity Relationship Schema

|  |  |
| --- | --- |
| **Entities** | **Description** |
| Listing | Represents a listing in an AirBnb service. |
| Host | Person that hosts a listing. |
| Neighbourhood | Part of a city. |
| City | City. |
| House\_properties | Properties of the accommodation. |
| Economic\_ properties | Costs related to the rent of the accommodation. |
| Administrative\_ properties | Rules related to the rent of the accommodation. |
| Review | Review in the Airbnb system of a listing. |
| Reviewer | Person who writes a review about a listing. |
| Review\_scores | Scores related to a listing of a review in different domains. |
| Calender | Availabilites of a listing. |
| Location | Location on a map of a listing. |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Entity** | **Relation** | **Entity** | **Constraints** |
| a Listing | has | House\_properties | one-to-one relationship (Listing‘s weak entity) |
| a Listing | has | Economic\_properties | one-to-one relationship (Listing‘s weak entity) |
| a Listing | has | Administrative\_properties | one-to-one relationship (Listing‘s weak entity) |
| a Listing | has | Review\_scores | one-to-one relationship (Listing‘s weak entity) |
| a Host | owns | a Listing | each listing has exatcly one host |
| a Listing | occupies | a Calender | a listing has availabilities in time. Each date has the corresponding listing's availability |
| a Review | reviews | a Listing | a review reviews exaxtly one listing |
| a Reviewer | writes | a Review | a review has exactly one reviewer |
| a Listing | is in | a Neighbourdhood | a listing is in exactly one neigbourhood |
| a Listing | is in | a City | a listing is in exactly one city |
| a Neigbourhood | is in | a City | a neigborhood is in exactly one city |

### Schema

<Add the figure of the ER schema> //TODO

## Relational Schema

|  |  |  |
| --- | --- | --- |
| **Table** | **Referes to** | **Relates with** |
| Listing | Listing (entity) | Host\_id (owns) |
| Host | Host (entity) |  |
| Neigbourhood | Neigbourhood (entity) | City (is in) |
| House\_ properties | House\_properties (entity) | Listing (has) |
| Economic\_ properties | Economic\_properties (entity) | Listing (has) |
| Administrative\_ properties | Administrative\_ properties (entity) | Listing (has) |
| Review\_scores | Review\_scores (entity) | Listing (has) |
| Review | Review (entity) | Reviewer (writes), Listing (reviews) |
| Reviewer | Reviewer (entity) |  |
| Calender | Calender (entity) | Listing (occupies) |
| City | City (entity) |  |
| Location | (relation) | Listing, Neighbourhood, City (is in) |

### DDL

<Provide the DDL> //TODO

## General Comments

For this first work, we thought it was important to work the three together to understand the database correctly. We designed the basis of the ER model, and modified it until the three of us were satisfied. Then we split the work (SQL commands, report, creation of ER model).

# Deliverable 2

## Assumptions

<In this section write down the assumptions you made about the data. Write a sentence for each assumption you made>

## Data Loading

## Query Implementation

<For each query>

### Query a:

#### Description of logic:

<What does the query do and how do I decide to solve it>

#### SQL statement

<The SQL statement>

## Interface

### Design logic Description

<Describe the general logic of your design as well as the technology you decided to use>

### Screenshots

<Provide some initial screen shots of your interface>

## General Comments

<In this section write general comments about your deliverable (comments and work allocation between team members>

# Deliverable 3

# Assumptions

<In this section write down the assumptions you made about the data. Write a sentence for each assumption you made>

## Query Implementation

<For each query>

### Query a:

#### Description of logic:

<What does the query do and how do I decide to solve it>

#### SQL statement

<The SQL statement>

## Query Analysis

### Selected Queries (and why)

#### Query 1

<Initial Running time:

Optimized Running time:

Explain the improvement:

Initial plan

Improved plan>

#### Query 2

<Initial Running time:

Optimized Running time:

Explain the improvement:

Initial plan

Improved plan>

#### Query 3

<Initial Running time:

Optimized Running time:

Explain the improvement:

Initial plan

Improved plan>

# Interface

### Design logic Description

<Describe the general logic of your design as well as the technology you decided to use>

### Screenshots

<Provide some initial screen shots of your interface>

# General Comments

<In this section write general comments about your deliverable (comments and work allocation between team members>