

Data Science And Database Technology

Homework 1

An Italian company operating in the ticketing sector for musical events wants to analyze the revenues and the number of tickets purchased based on the purchase date, location and date of the event.

The tickets of an event are characterized by the name of the tour of a specific singer/band (e.g. “Evolve World Tour” of the band “Imagine Dragons”), date and location where the event took place (e.g. 06/09/2018, “Milano Area Expo”).

A tour is characterized by one or more musical genres. The list of the possible genres is known and of limited size (“rock”, “pop rock”, “elettopop”, “pop”, “metal”, ..., “jazz”). For example, the tour “Evolve World Tour” is associated to “pop rock” and “elettopop” genres.

The company records the purchase date of the ticket and the information related to its purchase, such as the payment method (credit card, prepaid card, etc.). A ticket can be purchased in three ways: online, in authorised ticket offices or directly at the entrance of the event location.

The company is interested in performing the analysis based on:

- tour name and musical genres,
- singer/band and nationality,
- event location, city, province, region (e.g., “Milano Area Expo”, Milan),
- date (e.g. 06/09/2018), month and year of the event, working days or holidays,
- date (e.g. 12/06/2018), month, month of the year, two-month period, three-month period, four-month period, semester and year of the purchase,
- purchase mode (online, authorised ticket offices, event location),
- payment method (credit card, prepaid card, etc.)

Homework tasks

1. Design the data warehouse to address the specifications and to efficiently answer to all the provided frequent queries. Draw the conceptual schema of the data warehouse and the logical schema (fact and dimension tables).
2. Write the following frequent queries using the extended SQL language.
 - (a) Separately for each purchase mode and for each purchase month, analyze:
 - i. the average daily revenue
 - ii. the cumulative revenue from the beginning of the year
 - iii. the percentage of tickets related to the considered purchase mode over the total number of tickets of the month
 - (b) Considering the events that took place in 2017, separately for each singer/band nationality and for each city, analyze:
 - i. the average revenue for a ticket
 - ii. the percentage of revenue over the total revenue for the corresponding province
 - iii. the percentage of revenue over the total revenue for the corresponding region