Database Management Systems

Homework 3

1. Data Warehouse Design

   A worldwide fast-food company is interested in analyzing its revenues.

   The fast-food services are divided into lunches (around noon) and dinners (in the evening). The company is interested in analyzing the purchases paid with different payment methods (each purchase can be paid only with a specific method). In particular, the company is interested in analyzing the purchases that used promotions. Promotions can be of different types: coupons, fidelity points, or menu discounts. Different promotions can be used together for the same purchase.

   The company is interested in analyzing the average revenue per purchase (receipt) according to:

   - region, state, and continent,
   - ~~date, day of the week, holiday, month, quarter, year,~~ month of the year, and quarter of the year,
   - lunch or dinner
   - payment type
   - type of promotions used

   (a) **Design.** Design the data warehouse to address the specifications and to efficiently answer to all the provided frequent queries.

   (b) **Queries.** Write the following frequent queries using the extended SQL language.

   1. Separately for each region and each quarter, select
      (a) the average revenue per receipt,
      (b) the percentage of the number of receipts with respect to the total number of receipts of the whole year,
      (c) the percentage of the number of receipts with respect to the total number of receipts of the state.

   2. For each state, select
      (a) the quarterly cumulative revenue,
      (b) the average daily revenue of each quarter.