Polytechnic University of Turin

Master of Science in Computer Engineering

Database Management Systems' third homework

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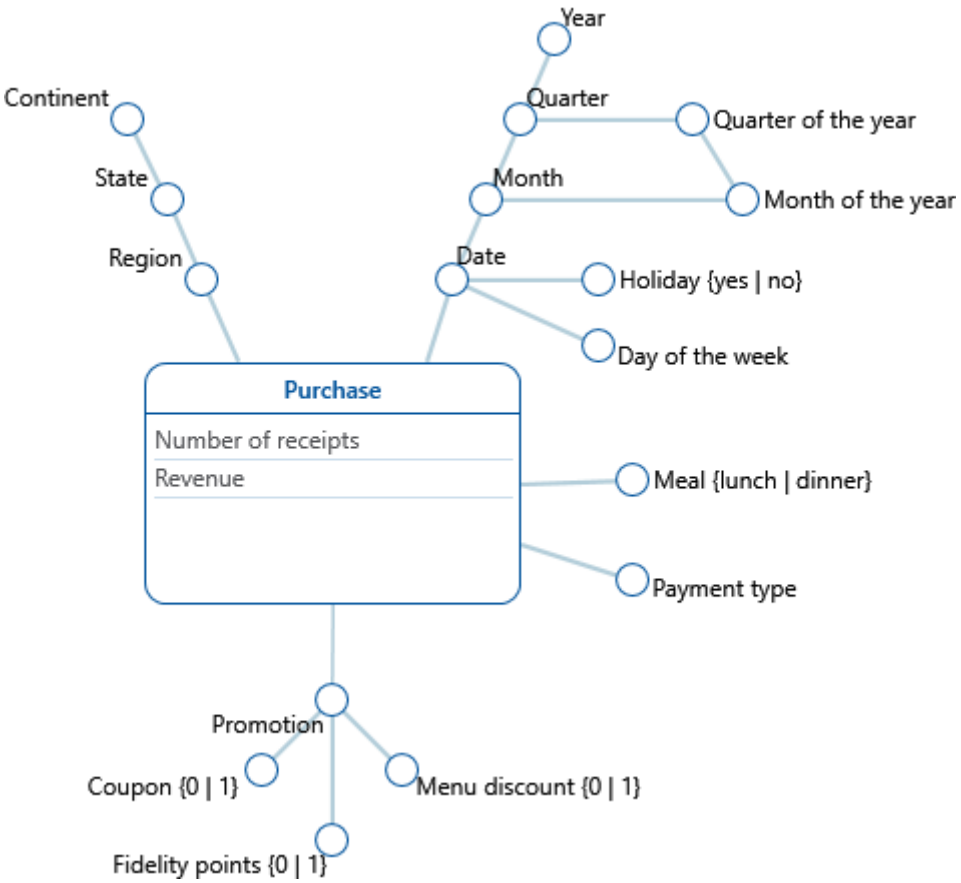
1 Conceptual design



2 Logical design

Primary keys are underlined.

Facts

PURCHASE(PromotionID, TimeID, LocationID, Meal, PaymentType, NumberOfReceipts, Revenue)

Dimensions

TIME(TimeID, Date, Holiday, DayOfTheWeek, Month, MonthOfTheYear, Quarter, QuarterOfTheYear, Year)
PROMOTION(PromotionID, Coupon, FidelityPoints, MenuDiscount)
LOCATION(LocationID, Region, State, Continent)

3 Queries

3.1 Query 1

Separately for each region and each quarter, select

- the average revenue per receipt,
- the percentage of the number of receipts with respect to the total number of receipts of the whole year,
- the percentage of the number of receipts with respect to the total number of receipts of the state.

```
SELECT      L.Region,
            T.Quarter,
            SUM(P.Revenue) / SUM(P.NumberOfReceipts)
                AS AverageRevenuePerReceipt,
            T.Year,
            SUM(P.NumberOfReceipts) / SUM(SUM(P.NumberOfReceipts)) * 100 OVER (
                PARTITION BY L.Region, T.Year
            ) AS YearReceiptsPercentage,
            L.State,
            SUM(P.NumberOfReceipts) / SUM(SUM(P.NumberOfReceipts)) * 100 OVER (
                PARTITION BY L.State, T.Quarter
            ) AS StateReceiptsPercentage
FROM        PURCHASE P,
            TIME T,
            LOCATION L
WHERE       P.TimeID = T.TimeID
            AND P.LocationID = L.LocationID
GROUP BY    L.Region,
            T.Quarter,
            T.Year,
            L.State
```

3.2 Query 2

For each state, select

- the quarterly cumulative revenue,
- the average daily revenue of each quarter.

```
SELECT      L.State,
            T.Quarter,
            SUM(SUM(P.Revenue)) OVER (
                PARTITION BY    L.State
                ORDER BY        T.Quarter
                ROWS            UNBOUNDED PRECEDING
            ) AS QuarterCumulativeRevenue,
            SUM(P.Revenue) / COUNT(DISTINCT T.Date)
                AS AvarageDailyRevenuePerQuarter
FROM        PURCHASE P,
            TIME T,
            LOCATION L
WHERE       P.TimeID = T.TimeID
            AND P.LocationID = L.LocationID
GROUP BY    L.State,
            T.Quarter
```