

## Extended SQL

The following relations are given (primary keys are underlined, optional attributes are denoted with \*):

Customer(CustomerID, CustomerSurname, Province, Region)

Category(CategoryID, CategoryName)

Agent(AgentID, AgentSurname, Agency)

Time(TimeID, Month, Quarter, Semester, Year)

Sales(TimeID, CustomerID, ItemCategoryID, AgentID, TotAmount, NumSoldItems, TotDiscount)

- a) Show for each category of items,
  - The category
  - The total sale amount for the category
  - The total number of sold items within the category
  - The rank of the category according to its total sale amount
  - The rank of the category according to its total number of sold times
  - Sort the result for increasing value of total number of sold times within the category
  
- b) Show, for each province
  - The province
  - The region of the province
  - The total sale amount for the province
  - The rank of the province according to its total sale amount, separately for each region
  
- c) Show, for each province and month
  - The province
  - The region of the province
  - The month
  - The total sale amount for the province in the current month
  - The rank of the province according to its total sale amount, separately for each month

NB: The same month, in different years, should be managed as a different month. For example, the month January in 2007 is different from the month January in 2006.

- d) Show, for each region and month
  - The region
  - The month
  - The total sale amount for the region in the current month
  - The cumulative sale amount for increasing months, separately for each region

NB: The same month, in different years, should be managed as a different month. For example, the month January in 2007 is different from the month January in 2006.

### Queries

- a) `SELECT CategoryName, SUM(TotAmount), SUM(NumSoldItems)  
 RANK() over (ORDER BY SUM(TotAmount) DESC) as RANK_ TotAmount,  
 RANK() over (ORDER BY SUM(NumSoldItems) DESC) as RANK_ NumSoldItems,  
FROM Sales S, Category C  
WHERE S.ItemCategoryID = C.CategoryID  
GROUP BY C.CategoryID, CategoryName  
ORDER BY RANK_ NumSoldItems;`
- b) `SELECT Province, Region, SUM(TotAmount),  
 RANK() over (PARTITION by Region ORDER BY SUM(TotAmount) DESC)  
 as RANK_ TotAmountRegion  
FROM SALES S, CUSTOMER C  
WHERE S.CustomerID = C.CustomerID  
GROUP BY Province, Region;`
- c) `SELECT Province, Region, Month, Year, SUM(TotAmount),  
 RANK() over (PARTITION by Month, Year  
 ORDER BY SUM(TotAmount) DESC) as CumulativeAmount  
FROM SALES S, CUSTOMER C, TIME T  
WHERE S.CustomerID=C.CustomerID AND S.TimeID=T.TimeID  
GROUP BY Province, Region, Month, Year;`
- d) `SELECT Region, Month, Year, SUM(TotAmount),  
 SUM(SUM(TotAmount)) over (PARTITION by Region  
 ORDER BY Year, Month  
 ROWS UNBOUNDED PRECEDING) as CumulativeAmount  
FROM SALES S, CUSTOMER C, TIME T  
WHERE S.CustomerID=C.CustomerID AND S.TimeID=T.TimeID  
GROUP BY Region, Month, Year;`