

# Extended SQL

## ***Problem specifications***

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)

Solve the following queries in SQL.

1. 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 items
  - Sort the result for increasing value of total number of sold items within the category
  
2. 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
  
3. 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
  
4. 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

## Draft solution

1. 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;
2. 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;
3. SELECT Province, Region, Month,  
SUM(TotAmount),  
RANK() over (PARTITION by Month 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;
4. SELECT Region, Month,  
SUM(TotAmount),  
SUM(SUM(TotAmount)) over (PARTITION by Region  
ORDER BY 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;