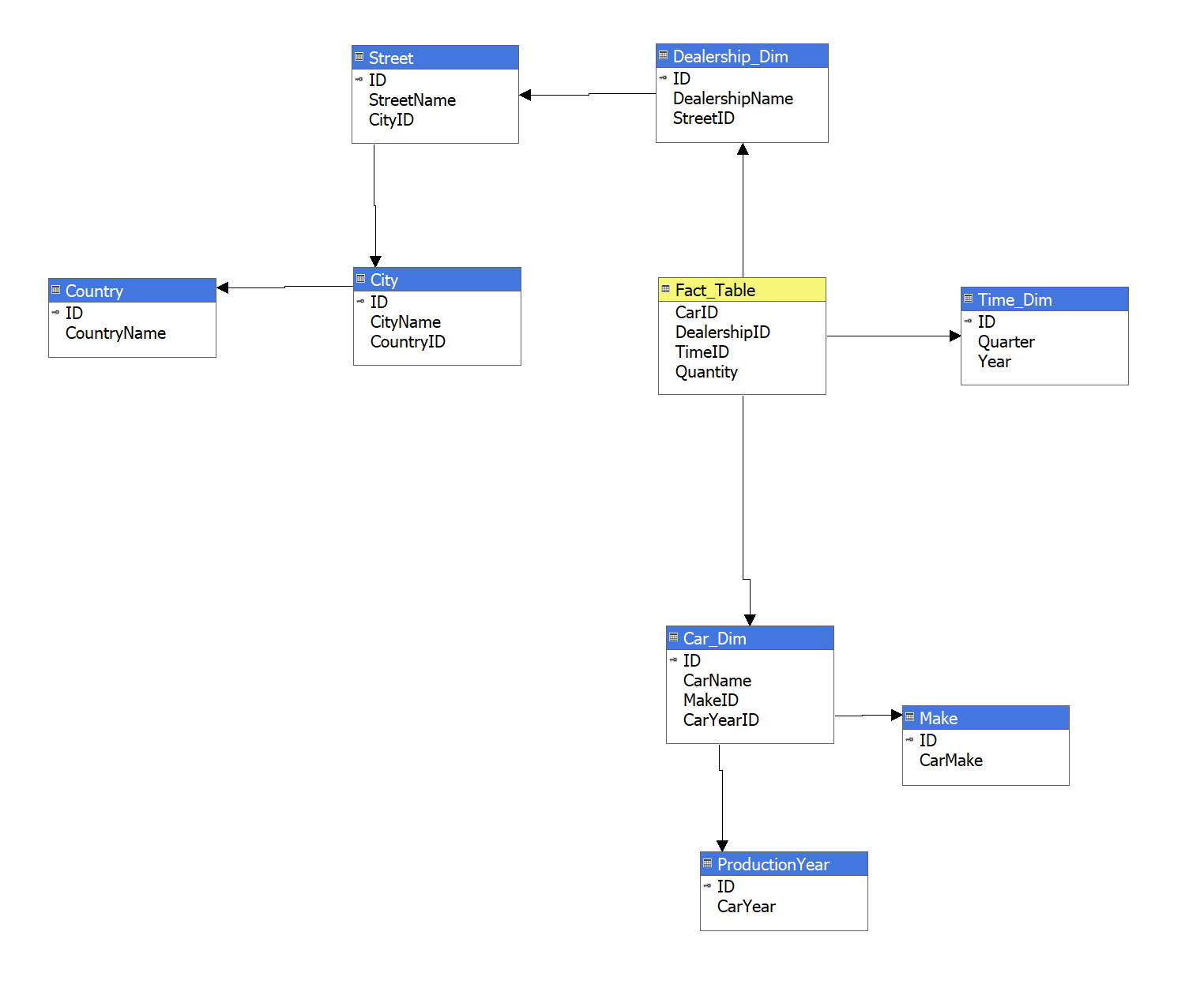
Let us consider a data cube of Dealerships supply chain with three dimensions: Car, Time, Dealership and one measure Quantity. The dimension Car contains information about CarName, Make and CarYear. The hierarchy of the dimension Dealership contains DealershipName, street, city and country. However the dimension Time records data about quarter and year.

1. Give a full snowflake schema for the Dealerships supply cube.
2. Give query samples for the OLAP operations: drill-down, roll-up, slice.
3. In SQL format.
4. Using SQL Data Tools 2013.
5. Using SQL Data Tools 2013, give a table that allows you to display information of supply quantity by considering all levels of dimension hierarchies.
6. SnowFlake Schema:



2.A.1: Drill Down using SQL:

Select Dealership\_Dim.DealershipName,City.CityName ,Time\_Dim.ID as TimeID, Time\_Dim.Quarter, Time\_Dim.Year, ProductionYear.CarYear,Car\_Dim.CarName ,Sum (Fact\_Table.Quantity) as Quantity

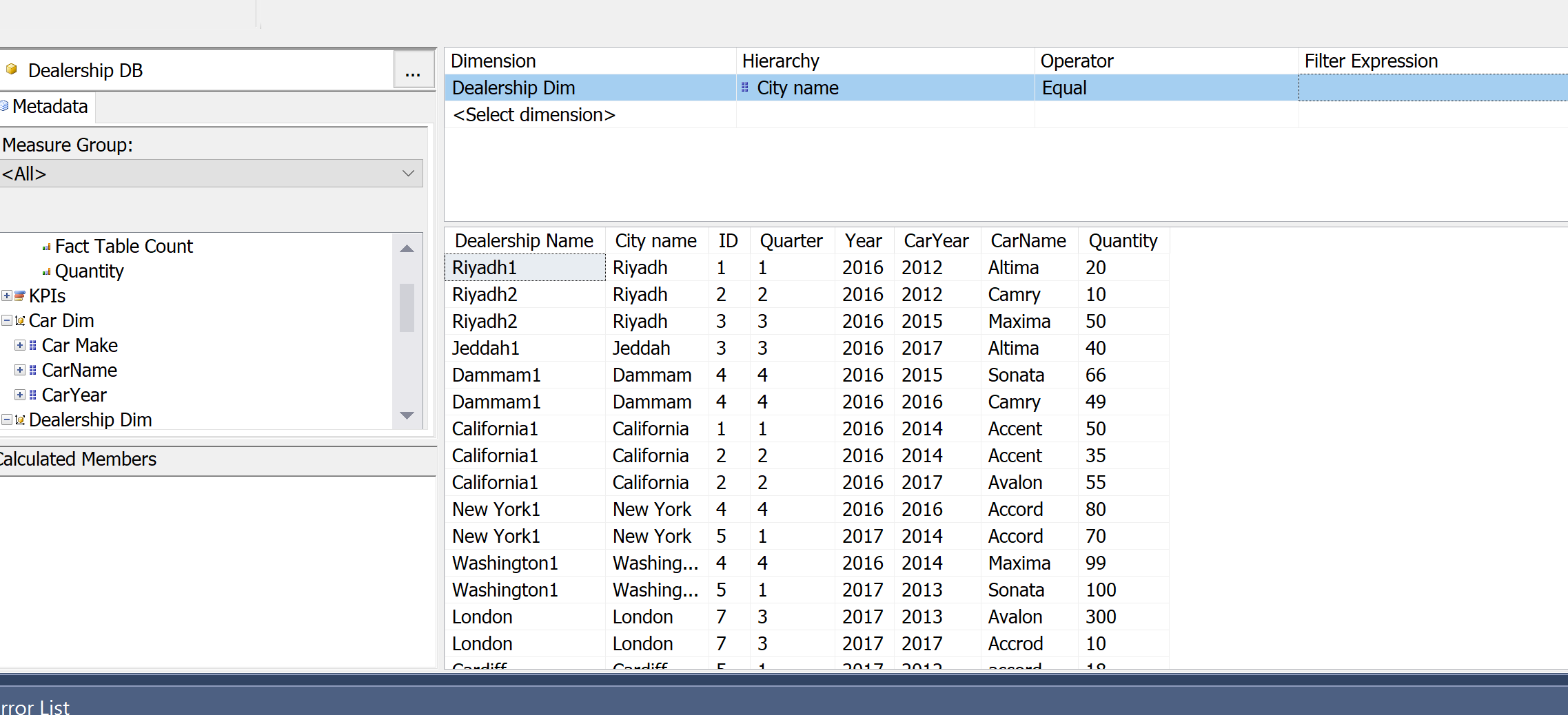
from Dealership\_Dim , City, Time\_Dim, Car\_Dim,Fact\_Table, Street, Country, ProductionYear

where Dealership\_Dim.ID=Fact\_Table.DealershipID AND Fact\_Table.CarID=Car\_Dim.ID AND

Fact\_Table.TimeID =Time\_Dim.ID and Street.ID = Dealership\_Dim.StreetID and Country.ID=city.CountryID and Street.CityID = City.ID and ProductionYear.ID=Car\_Dim.CarYearID

GROUP By Dealership\_Dim.DealershipName,City.CityName, Time\_Dim.ID , Car\_Dim.CarName, Time\_Dim.Quarter, Time\_Dim.Year, ProductionYear.CarYear

2.B.1: Drill Down using SQL Data Tools 2013:



2.A.2: Roll Up using SQL Query:

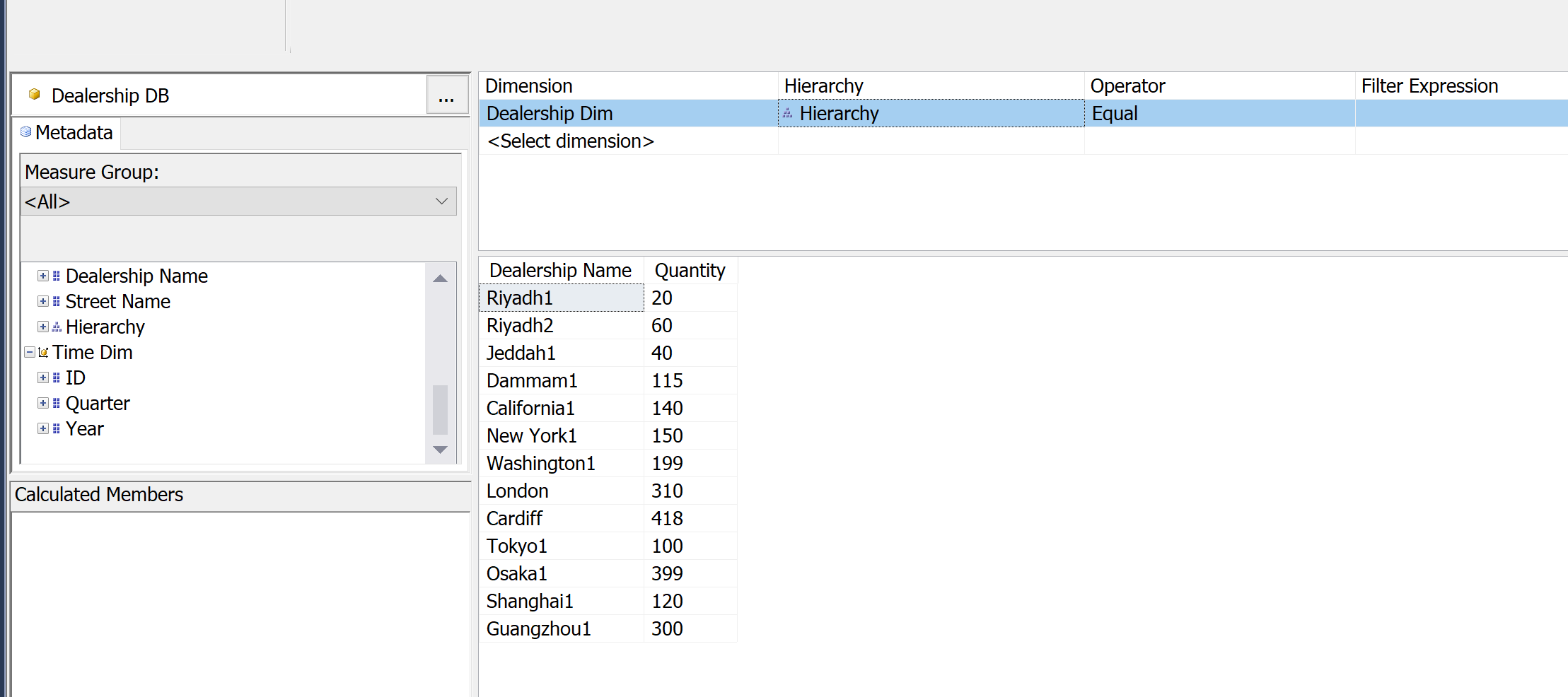
Select Dealership\_Dim.DealershipName,SUM(Fact\_Table.Quantity)

From Dealership\_Dim,Fact\_Table

where Dealership\_Dim.ID=Fact\_Table.DealershipID

Group By Dealership\_Dim.DealershipName

2.B.2: Roll Up using SQL Data Tools 2013:



2.A.3: Slice Operation using SQL Query:

SELECT Car\_Dim.CarName, Dealership\_Dim.DealershipName , City.CityName,Time\_Dim.ID

,SUM(Fact\_Table.Quantity)

From Dealership\_Dim,City,Time\_Dim,Car\_Dim, Street, Country,Fact\_Table

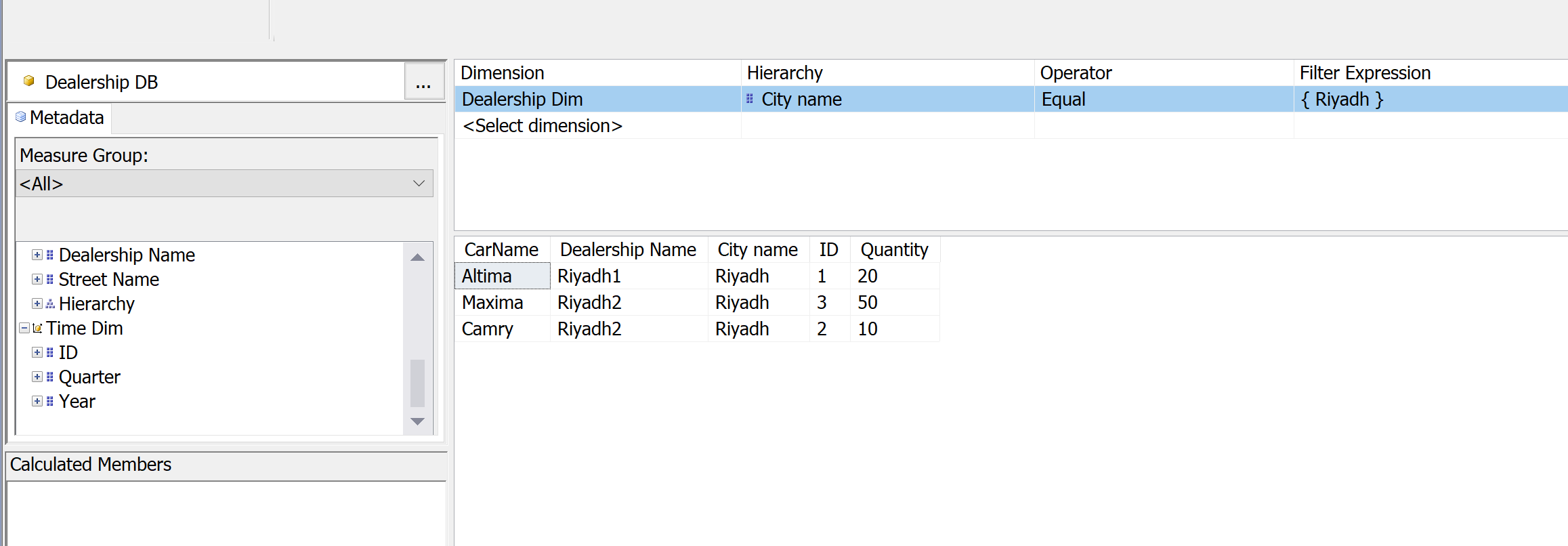
where Dealership\_Dim.ID=Fact\_Table.DealershipID AND

Fact\_Table.CarID=Car\_Dim.ID AND

Fact\_Table.TimeId = Time\_Dim.ID and Street.ID = Dealership\_Dim.StreetID and Country.ID=city.CountryID and Street.CityID=City.ID AND City.CityName='Riyadh'

Group by Car\_Dim.CarName, Dealership\_Dim.DealershipName,City.CityName, Time\_Dim.ID

2.B.3: Slice Operation using SQL Data Tools:



3. Overall look considering all levels of dimension hierarchy:

