# Exercise: Data Warehouse design for a wholesale furniture company

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# Exercise

## Wholesale furniture company

Design the data warehouse for a wholesale furniture company. The data warehouse has to allow to analyze the company's situation at least with respect to the Furniture, Customers and Time.
Moreover, the company needs to analyze:

- the furniture with respect to its type (chair, table, wardrobe, cabinet...), category (kitchen, living room, bedroom, bathroom, office...) and material (wood, marble...)
- the customers with respect to their spatial location, by considering at least cities, regions and states

The company is interested in learning at least the quantity, income and discount of its sales.

# Exercise

## Questions

1. Identify facts, dimensions and measures
2. For each fact:
   - produce the attribute tree and fact schema
   - design the star or snowflake schema and write the following SQL queries:
     - Find the quantity, the total income and discount with respect to each city, type of furniture and the month
     - Find the average quantity, income and discount with respect to each country, furniture material and year
     - Determine the 5 most sold furnitures during the May month

# A possible solution

## Facts, dimensions, measures, attribute tree, fact schema

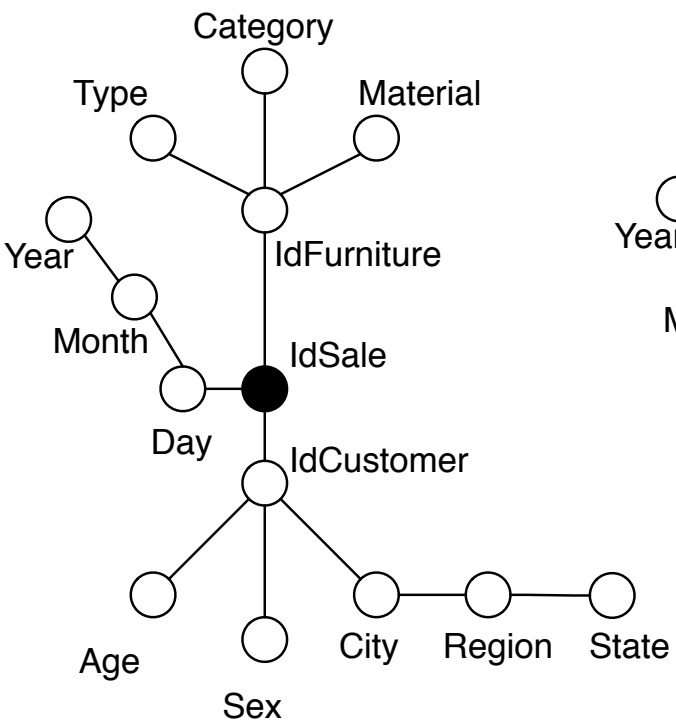
FACT Sales

MEASURES Quantity, Income, Discount

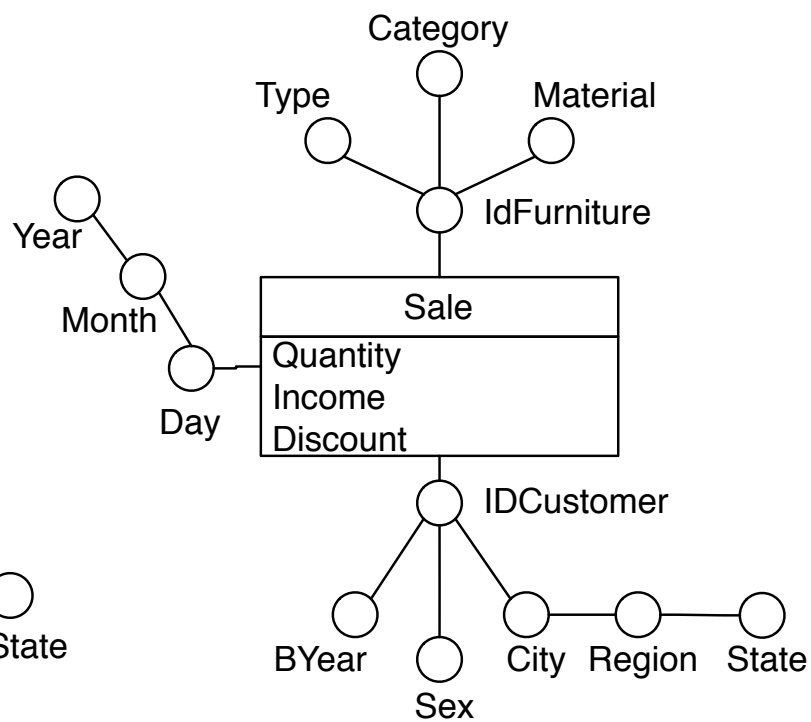
DIMENSIONS Furniture (Type, Category, Material)

Customer (Age, Sex, City → Region → State)

Time (Day → Month → Year)



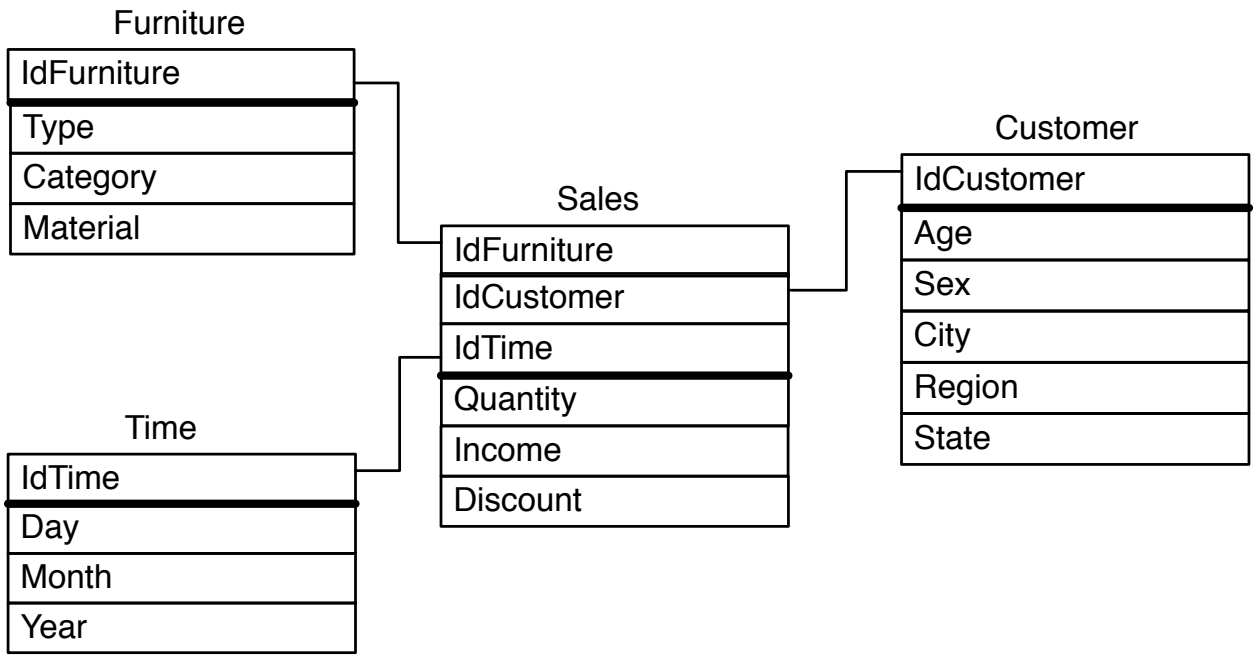

Attribute tree




Fact schema

# A possible solution

## Star schema



# A possible solution

## SQL Queries

- Find the quantity, the total income and discount with respect to each city, type of furniture and the month

```
SELECT C.City, F.Type, T.Month,
       SUM(S.Quantity), SUM(S.Income), SUM(S.Discount)
FROM Sales S, Customer C, Time T, Furniture F
WHERE S.IdCustomer = C.IdCustomer AND
       S.IdTime = T.IdTime AND
       S.IdFurniture = F.IdFurniture
GROUP BY T.Month, F.Type, C.City
```

# A possible solution

## SQL Queries

- Find the average quantity, income and discount with respect to each country, furniture material and year

```
SELECT C.Country, F.Material, T.Year,
       AVG(S.Quantity), AVG(S.Income), AVG(S.Discount)
FROM Sales S, Customer C, Time T, Furniture F
WHERE S.IdCustomer = C.IdCustomer AND
       S.IdTime = T.IdTime AND
       S.IdFurniture = F.IdFurniture
GROUP BY T.Year, C.Country, F.Material
```

# A possible solution

## SQL Queries

- Determine the 5 most sold furnitures during the May month

```
SELECT F.Type, SUM(S.Quantity)
FROM (
   SELECT F.Type, SUM(S.Quantity) AS TotQuantity,
      RANK() OVER (ORDER BY SUM(S.Quantity) DESC)
                              AS Rank
   FROM Sale S, Furniture F, Time T
   WHERE S.IdFurniture = F.IdFurniture AND
            S.IdTime = T.IdTime AND
            T.Month = "May")
WHERE rank <=5
```