

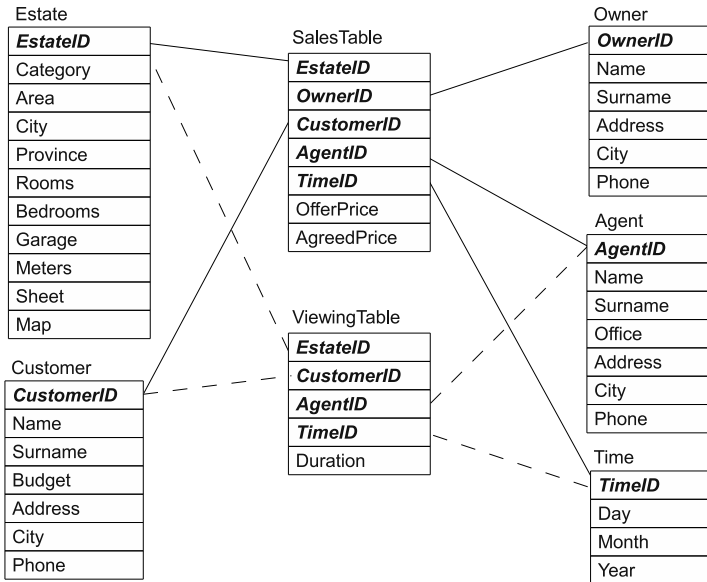
Data warehousing - SQL Queries

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Exercise 1

Schema of the data warehouse of a real estate agency



Exercise 1: queries

- ▶ Write the following SQL queries:
 - ▶ How many customers have visited properties of at least 3 different categories?
 - ▶ What is the average duration of visits per property category?
 - ▶ Who has paid the highest price among the customers that have viewed properties of at least 3 different categories?
 - ▶ Who has bought a flat for the highest price w.r.t. each month?
 - ▶ What kind of property was sold for the highest price w.r.t each city and month?

Exercise 1

- ▶ How many customers have visited properties of at least 3 different categories?

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```
SELECT COUNT(*)  
FROM Customer  
WHERE CustomerID IN  
    (SELECT V.CustomerID  
     FROM ViewingTable V, Estate E  
     WHERE V.EstateID = E.EstateID  
     GROUP BY V.CustomerID  
     HAVING COUNT(DISTINCT E.Category)>=3)
```

Exercise 1

- ▶ Average duration of visits per property category

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```
SELECT E.Category, AVG(V.Duration)
FROM ViewingTable V, Estate E
WHERE V.EstateID = E.EstateID
GROUP BY E.Category
```

Exercise 1

- ▶ Who has paid the highest price among the customers that have viewed properties of at least 3 different categories?

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```
CREATE VIEW Cust3Cat AS
  SELECT V.CustomerID
  FROM ViewingTable V, Estate E
  WHERE V.EstateID = E.EstateID
  GROUP BY V.CustomerID
  HAVING COUNT(DISTINCT E.Category) >=3

SELECT C.CustomerID
FROM Cust3Cat C, SalesTable S
WHERE C.CustID = S.CustID AND S.AgreedPrice =
  (SELECT MAX(S.AgreedPrice)
   FROM Cust3Cat C1, SalesTable S1
   WHERE C1.CustomerID = S1.CustomerID)
```

Exercise 1

- ▶ Who has bought a flat for the highest price w.r.t. each month?

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```
SELECT S.CustomerID, T.Month, T.Year, S.AgreedPrice
FROM SalesTable S, Estate E, Time T
WHERE S.EstateID = E.EstateID AND S.TimeID =
T.TimeID AND E.Category = "flat" AND (T.Month,
T.Year, S.AgreedPrice) IN (
    SELECT T1.Month, T1.Year,
    MAX(S1.AgreedPrice)
    FROM SalesTable S1, Estate E1, Time T1
    WHERE S1.EstateID = E1.EstateID AND
    S1.TimeID = T1.TimeID AND E1.Category =
    "flat"
    GROUP BY T1.Month, T1.Year)
```

Exercise 1

- ▶ What kind of property was sold for the highest price w.r.t each city and month?

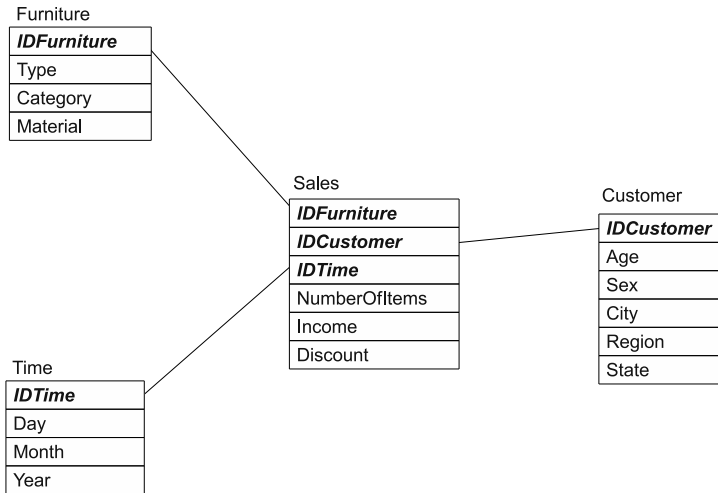
Exercise 1

- ▶ What kind of property was sold for the highest price w.r.t each city and month?

```
SELECT E.Category, E.City, T.Month, T.Year,  
       E.AgreedPrice  
  
FROM SalesTable S, Time T, Estate E  
WHERE S.TimeID = T.TimeID AND E.EstateID =  
S.EstateID AND (P.AgreedPrice, P.City, T.month,  
T.year) IN (  
    SELECT MAX(E1.AgreedPrice), E1.City,  
           T1.Month, T1.Year)  
FROM SalesTable S1, Time T1, Estate E1  
WHERE S1.TimeID = T1.TimeID AND  
E1.EstateID = S1.EstateID  
GROUP BY T.Month, T.Year, E.City)
```

Exercise 2

Schema of the data warehouse of a real furniture company



Exercise 2

- ▶ Find the total number of items, the total income and the total discount with respect to each city, type of furniture, and year

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```
SELECT C.City, F.Type, T.Year,  
       SUM(S.NumberOfItems), 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 C.City, F.Type, T.Year
```


Exercise 2

- ▶ Find the average income per item with respect to each city

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- ▶ Find the average income per item with respect to each city

```
SELECT C.City,  
       SUM(S.Income)/SUM(S.NumberOfItems)  
       AS AvgIncomePerItem  
FROM Sales S, Customer C  
WHERE S.IdCustomer = C.IdCustomer AND  
GROUP BY C.City
```

Exercise 2

- ▶ Find the average monthly income for each city

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- ▶ Find the average monthly income for each city

```
SELECT C.City,  
       SUM(S.Income)/COUNT( DISTINCT  
                             concat(T.Month, "/", T.Year) )  
       AS AvgMonthlyIncome  
FROM Sales S, Customer C, Time T  
WHERE S.IdCustomer = C.IdCustomer AND  
S.IdTime = T.IdTime  
GROUP BY C.City
```

- ▶ `concat(T.Month, "/", T.Year)` returns the concatenation of the value of `T.Month`, the string `"/"` and the value of `T.Year`

Exercise 2

- ▶ Find the most sold type of furniture during May 2009

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```
CREATE VIEW TypeNumItems (type, NumberOfItems) AS
  SELECT type, SUM(NumberOfItems)
  FROM Sales S, Furniture F, Time T
  WHERE S.IdTime=T.IdTime
  AND S.IdFurniture=F.IdFurniture
  AND month = 'may' AND year = 2009
  GROUP BY type
```

```
SELECT type
FROM TypeNumItems
WHERE NumberOfItems = (SELECT MAX(NumberOfItems)
                       FROM TypeNumItems)
```

Exercise 2

- ▶ For each City, find the most sold type of furniture during May 2009

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```
CREATE VIEW TypeNumItems (city, type, NumberOfItems) AS
  SELECT city, type, SUM(NumberOfItems)
  FROM Sales, Furniture, Time
  WHERE S.IdTime=T.IdTime
  AND S.IdFurniture=F.IdFurniture
  AND month = 'may' AND year = 2009
  GROUP BY city, type
```

```
SELECT city, type
FROM TypeNumItems TN1
WHERE NumberOfItems = (SELECT MAX(NumberOfItems)
                       FROM TypeNumItems TN2
                       WHERE TN2.City=TN1.City)
```