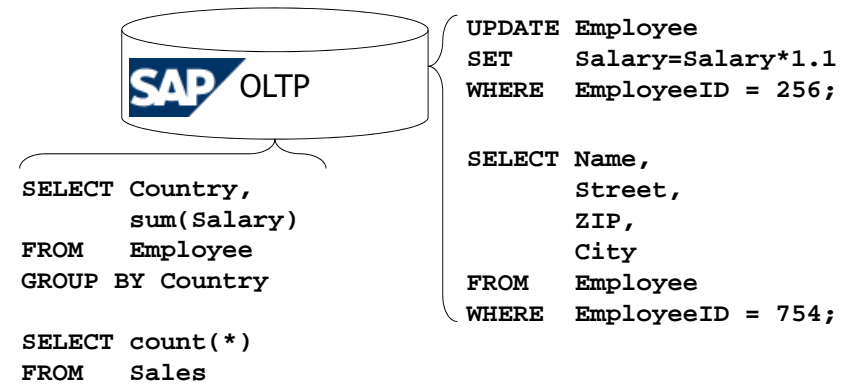


Star Schema

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OLTP

- An OLTP (Online Transactional Processing) system is designed to handle SELECT, INSERT, UPDATE and DELETE statements that affect a single row.

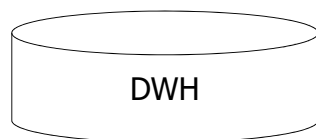


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DWH

- During day only SELECT statements are submitted to the DWH (data warehouse) system .



```
SELECT Country,
       sum(Salary)
FROM Employee
GROUP BY Country
```

```
SELECT Year,
       Month,
       City,
       count(*)
FROM Sales
GROUP BY ...

SELECT Year,
       Month,
       count(*)
FROM Sales
GROUP BY ...
```

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Star Schema

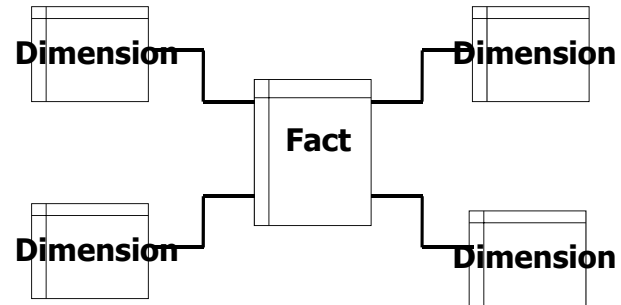
- Many adhoc queries SELECT the same tables (Sales), dimensions (City) and measures (number of sales).
- A Star Schema represents multidimensional data.
- It is easy (especially OLAP Cubes) for the end users to handle data and to create their own reports.
- OLAP queries outperform relational database queries.
- A Star Schema contains:
 - dimension tables
 - fact tables

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Tables

- One large central fact table is connected to multiple dimension tables.
- The arrangement of dimension tables and the fact table resembles a star.



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



Fact table

- The fact table contains the following columns:
 - multiple dimension ids
 - multiple measures
- The dimension id is a foreign key for joining with the corresponding dimension table.
- The foreign key ensures referential integrity.
!!! NO LEFT OUTER JOIN !!!
- The unique primary key of the fact table is a composite key of all dimension ids.

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Fact table

Sales1	
	SalesDate
	ProductID
	ChannelID
	Returned
	Customer_CityID
	Duration
	Clicks
	Pieces
	Transactions

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Dimension table

- Every dimension table consists of the following columns:
 - dimension id
 - description
 - hierarchy
- The dimension id is the unique primary key.

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Dimension table

Product	
ProductID	
BookTitle	
BookAuthor	
NuberOfPages	
BookPublisher	
PublishDate	
ListPrice	
Price	
Department	
Category	
Subject	
BookReader	

City	
CityID	
CityName	
ZIP	
SizeHA	
Buildings	
Residents2001	
Residents2005	
DistrictId	

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Dimension table

- A hierarchy is a logical structure that allows the aggregation of structured data based on different levels of detail.

Date	2007-03-12
Week	11
Month	March
Quarter	Q1
Year	2007

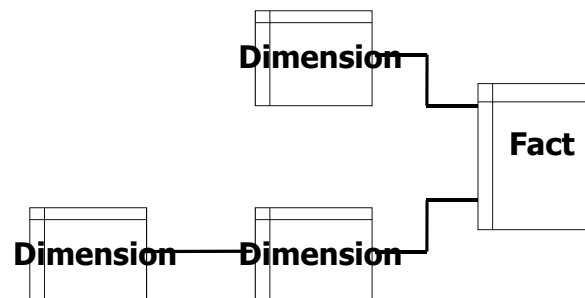
EmployeeID	163
Group	west
Department	key account
Division	sales
Companies	1062

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Snowflake Schema

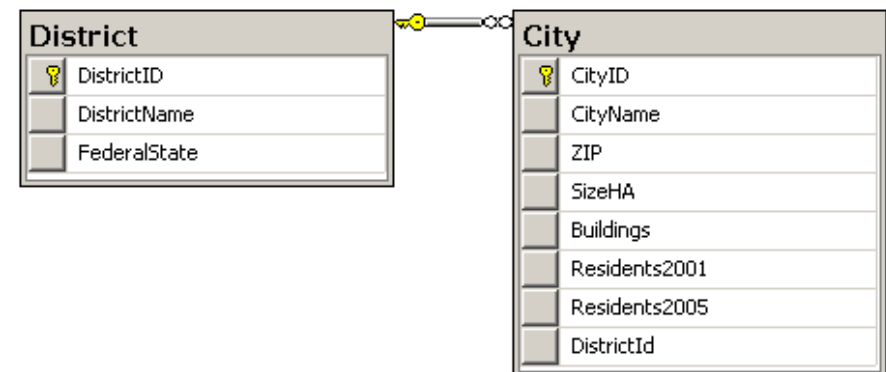
- In the Snowflake Schema several tables are joined to from a dimension.
- Sample: City District



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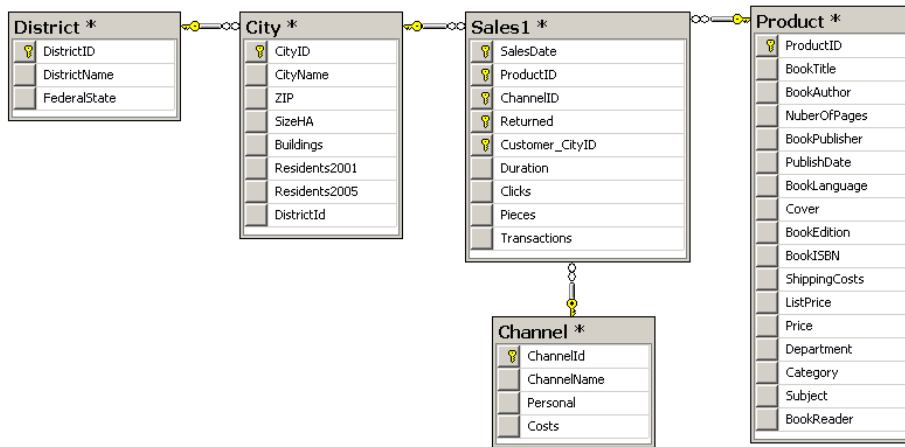
Dimension table



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Sample



Star Schema

- Instead of using a single fact table it can be better to split the large table into a couple of smaller fact tables to handle the diverse requirements of different departments.

