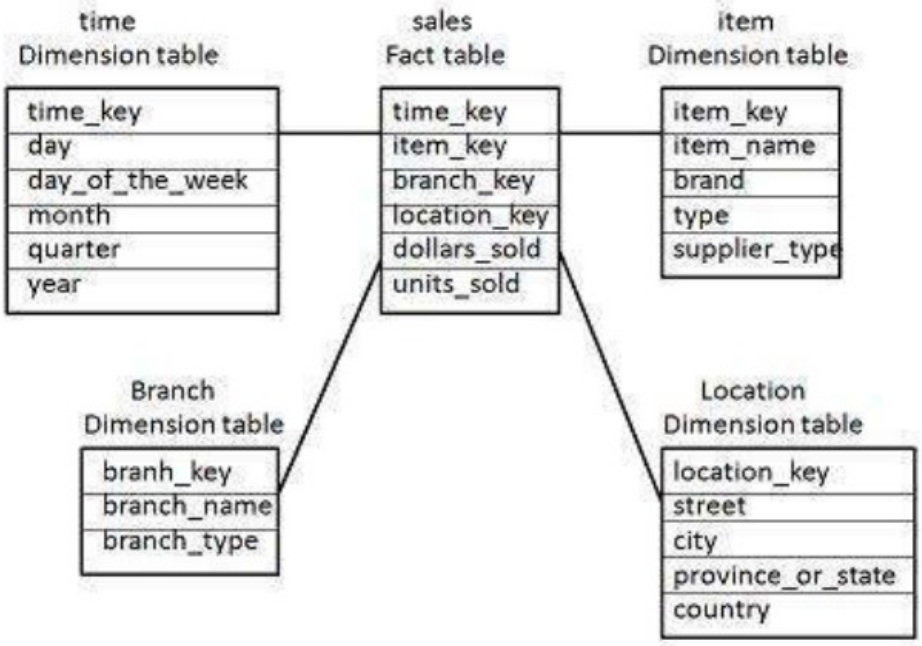
Multidimensional schema is defined using Data Mining Query Language (DMQL). The two primitives, cube definition and dimension definition, can be used for defining the data warehouses and data marts.

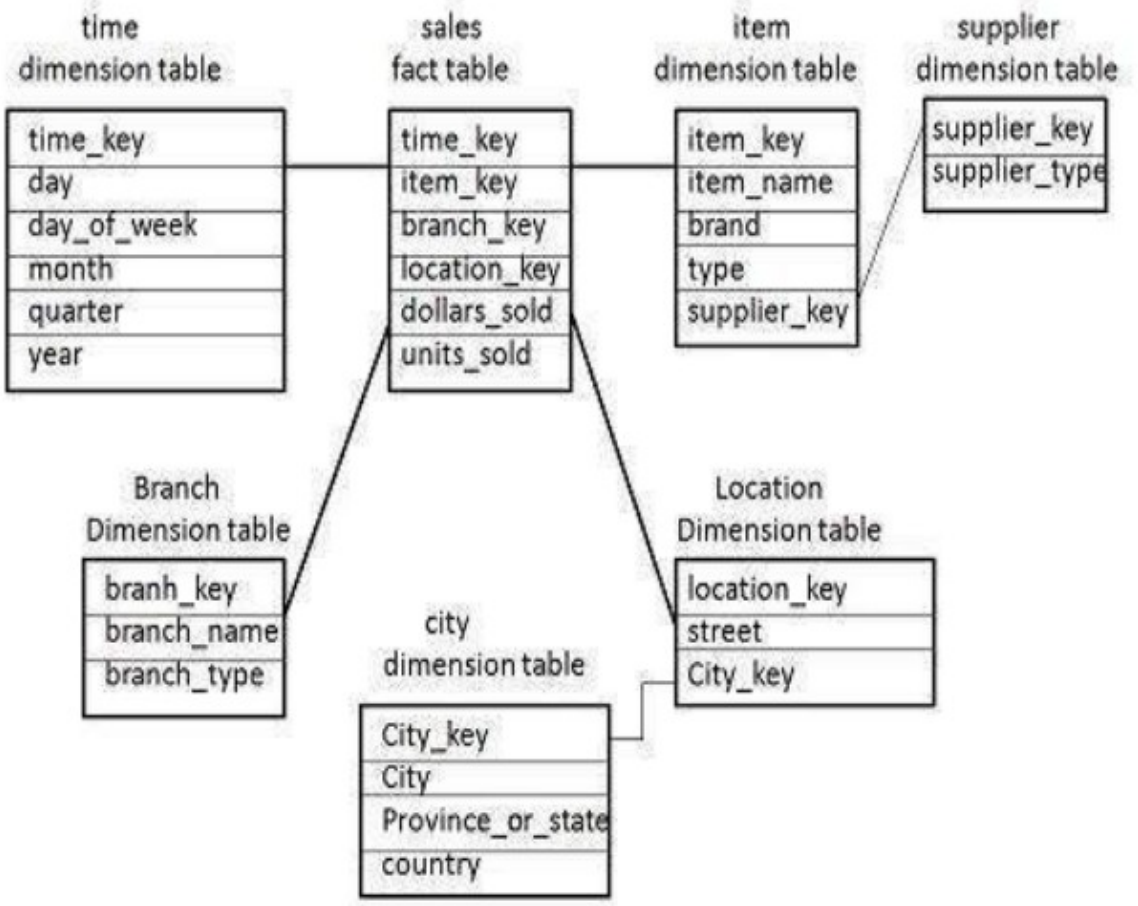
1.Star Schema:

- Each dimension in a star schema is represented with only one-dimension table.
- This dimension table contains the set of attributes.
- The following diagram shows the sales data of a company with respect to the four dimensions, namely time, item, branch, and location.
- There is a fact table at the center. It contains the keys to each of four dimensions.
- The fact table also contains the attributes, namely dollars sold and units sold.



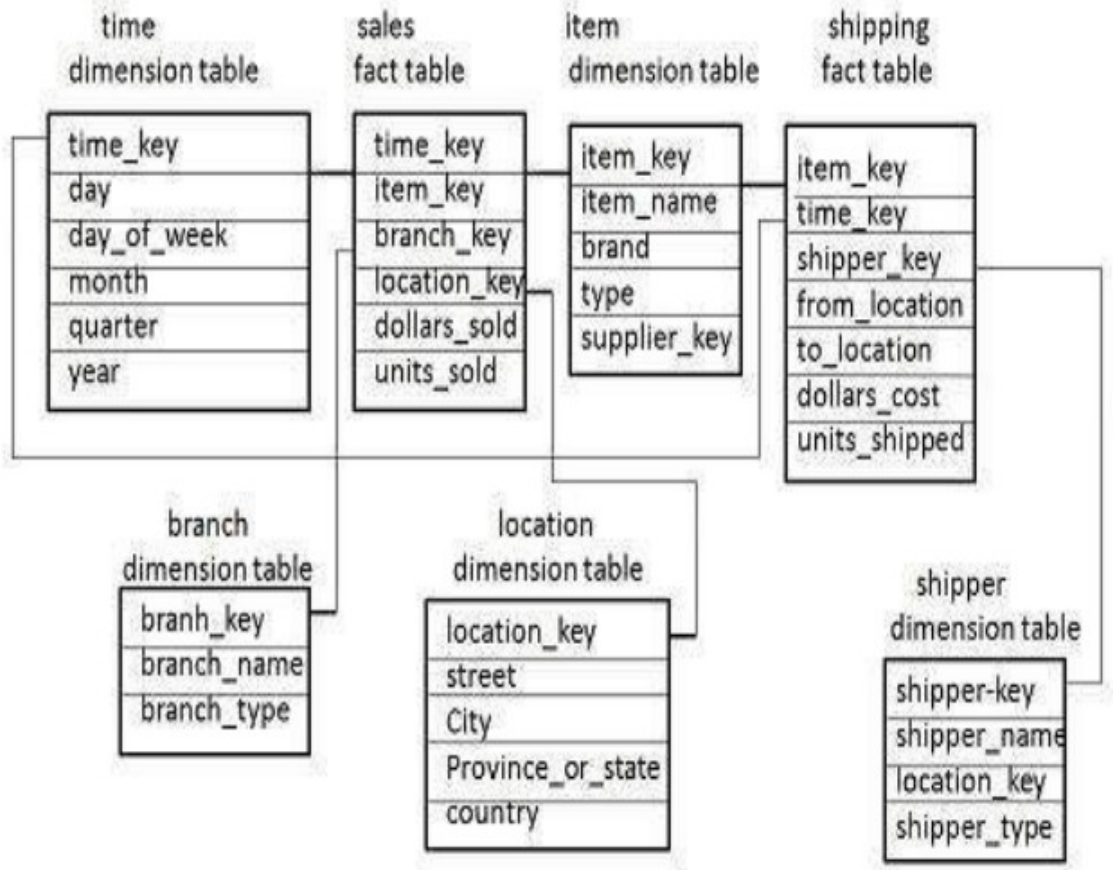
2.Snowflake Schema:

- Some dimension tables in the Snowflake schema are normalized.
- The normalization splits up the data into additional tables. Unlike Star schema, the dimensions table in a snowflake schema is normalized. For example, the item dimension table in star schema is normalized and split into two dimension tables, namely item and supplier table.
- Now the item dimension table contains the attributes item_key, item_name, type, brand, and supplier-key.
- The supplier key is linked to the supplier dimension table. The supplier dimension table contains the attributes supplier_key and supplier_type.



3.Fact Constellation Schema :

- A fact constellation has multiple fact tables. It is also known as galaxy schema.
- The following diagram shows two fact tables, namely sales and shipping.
- The sales fact table is same as that in the star schema.
- The shipping fact table has the five dimensions, namely item_key, time_key, shipper_key, from_location, to_location. The shipping fact table also contains two measures, namely dollars sold and units sold.
- It is also possible to share dimension tables between fact tables. For example, time, item, and location dimension tables are shared between the sales and shipping fact table.



Hospital Management System

DataWarehouse consists of Dimension Table and Fact Table.
Remember the following :
Dimension
The dimension objects(Dimension):
-Name
-Attributes levels,with one primary key
-Hierarchies
One time dimension is must.
About levels and hierarchies
Dimension objects(dimension) consists of set of levels and set of hierarchies defined over those levels .The levels represents level of aggregration.Hierarchies describe parent child relationships among a set of levels.
For example,a typical calender dimension could contain 5 levels.Two hierarchies can be defined on these levels:

H1: YearL>QuarterL>MonthL>WeekL>DayL
H2: YearL>WeekL>DayL

The hierarchies are described from parent to child,so that year is the parent of quater,Quater the parent of month,and so forth.
About Unique Key Constraint:

When you create a definition for a hierarchy,Warehouse builder creates an identifier key the key for each level of the hierarchy and a unique key constraint on the lowest level(base level).

Q1. Design a Hospital Management System DataWarehouse(TARGET) consits of dimensions Patient,Medicine,Suppliers,Time. Where measures are 'No Units' ,Unit Price. Assume the relation database (Source) table schema as follows:

- TIME(Day,Month,Year)
- PATIENT(Pateint_name,Age,Address,etc)
- MEDICINE(Medicine_brand_name,Drug_name,Supplier,No_units,Unit_price,etc)
- SUPPLIER(Supplier_name,Medicine_brand_name,Address,etc)

If each dimension has six levels,decide the levels and hierarchies,assume the level names suitably.

Q. Design a Hospital Management System DataWarehouse using all schemas.Given the example 4-D cube with assumptions names.

==> Dimension table for TIME:

Name: TIME

Attributes: timekey
day
day_of_week
month
quarter
year

==> Dimension table for PATIENT:

Name:PATIENT

Attributes:patient_name
patient_key
age
address
gender
health_condition

Hierarchy: problem_key
problem_name
health_condition_status

==> Dimension table for MEDICINE

Name:MEDICINE

Attributes:medicine_key
medicine_brandname
drug_name
supplies
no_units
dosage level
side effects

==> Dimension table for SUPPLIERS

Name:SUPPLIER

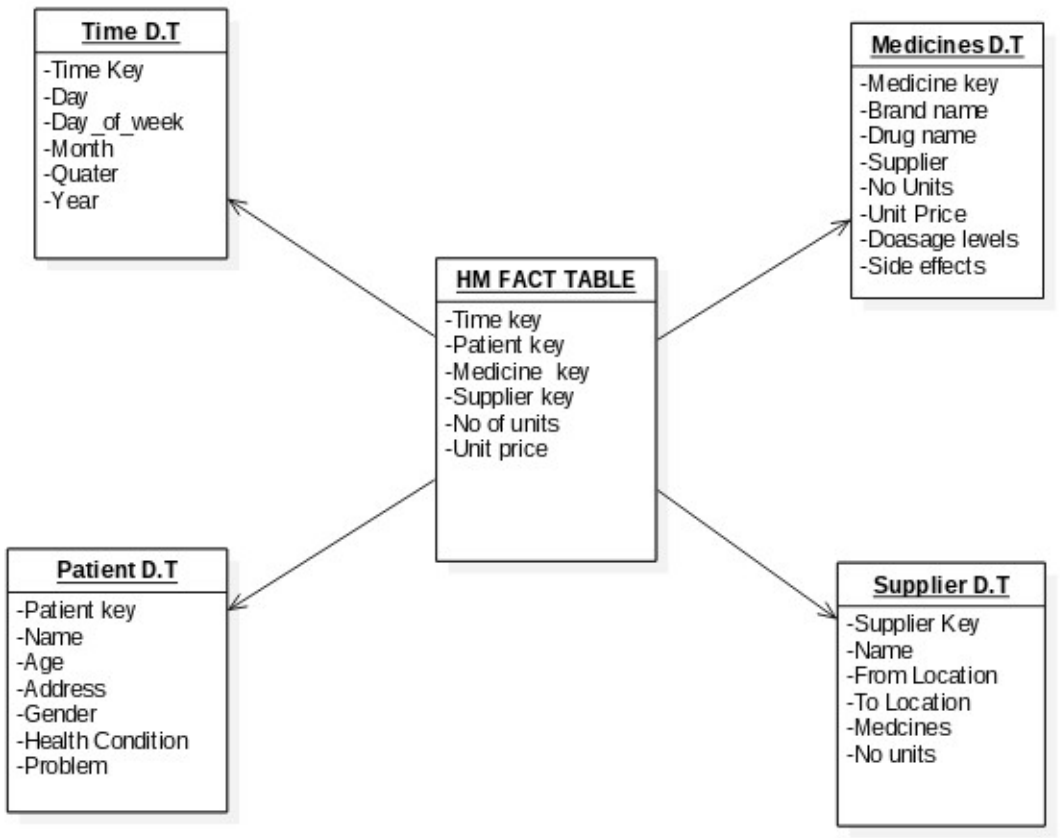
Attributes: supplier_key
supplier_name
from_location,to_location
medicine_brandname
no_units

==> FACT TABLE:

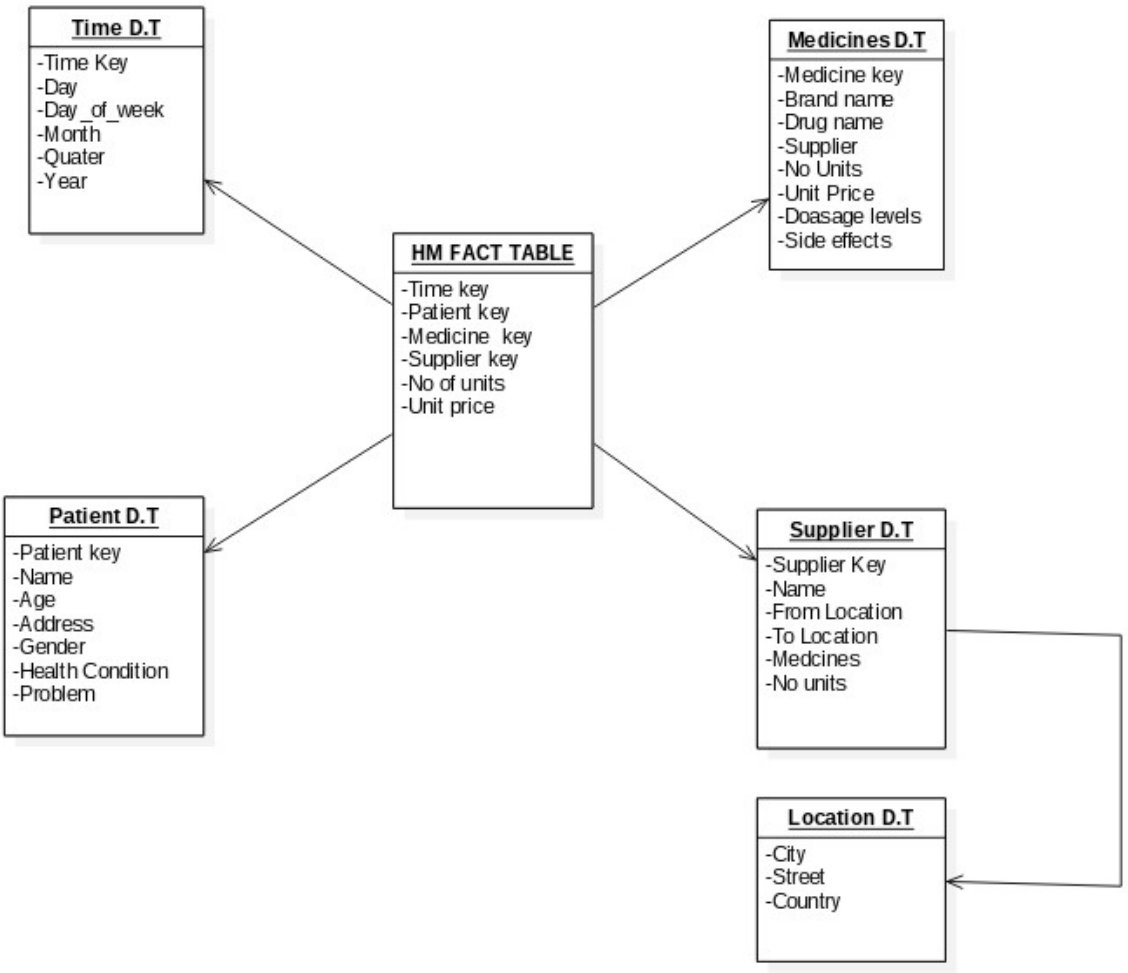
Name:Sales

Attributes: time_key
patient_key
medicine_key
supplier_key
no_units
unit_price

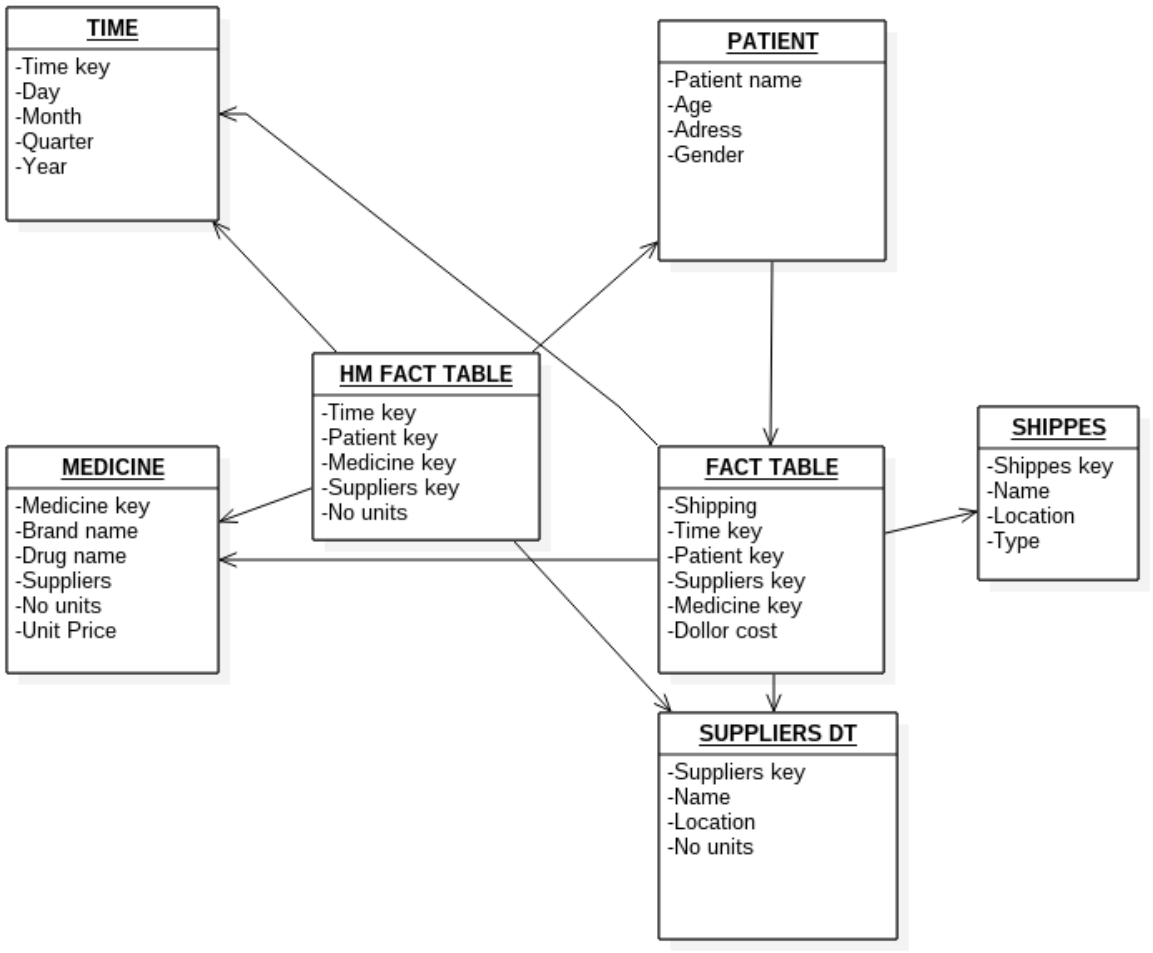
STAR SCHEMA



SNOWFLAKE SCHEMA



FACT CONSTELLATION SCHEMA



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