

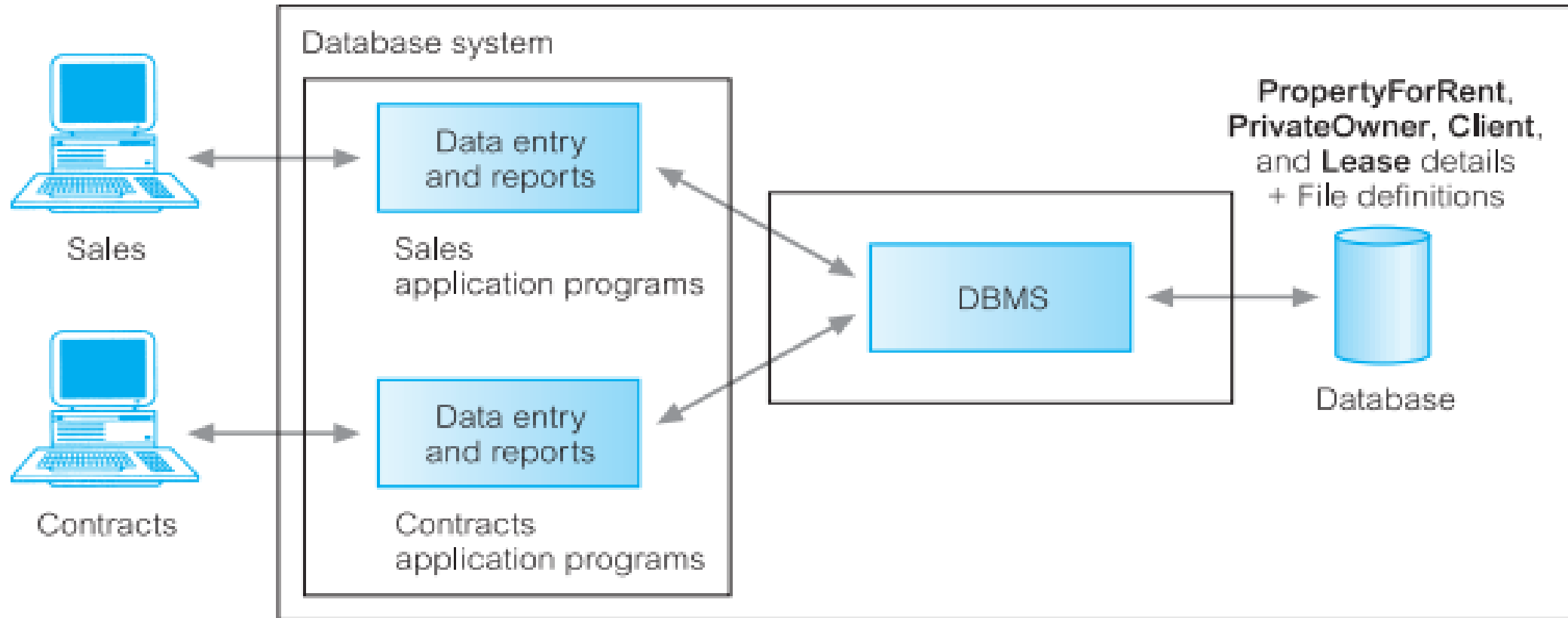


# **SISTEM BASIS DATA**

## **SESI 2 — KONSEP DASAR SBD**

Fadly Febriya M.Kom

# DATABASE APPROACH



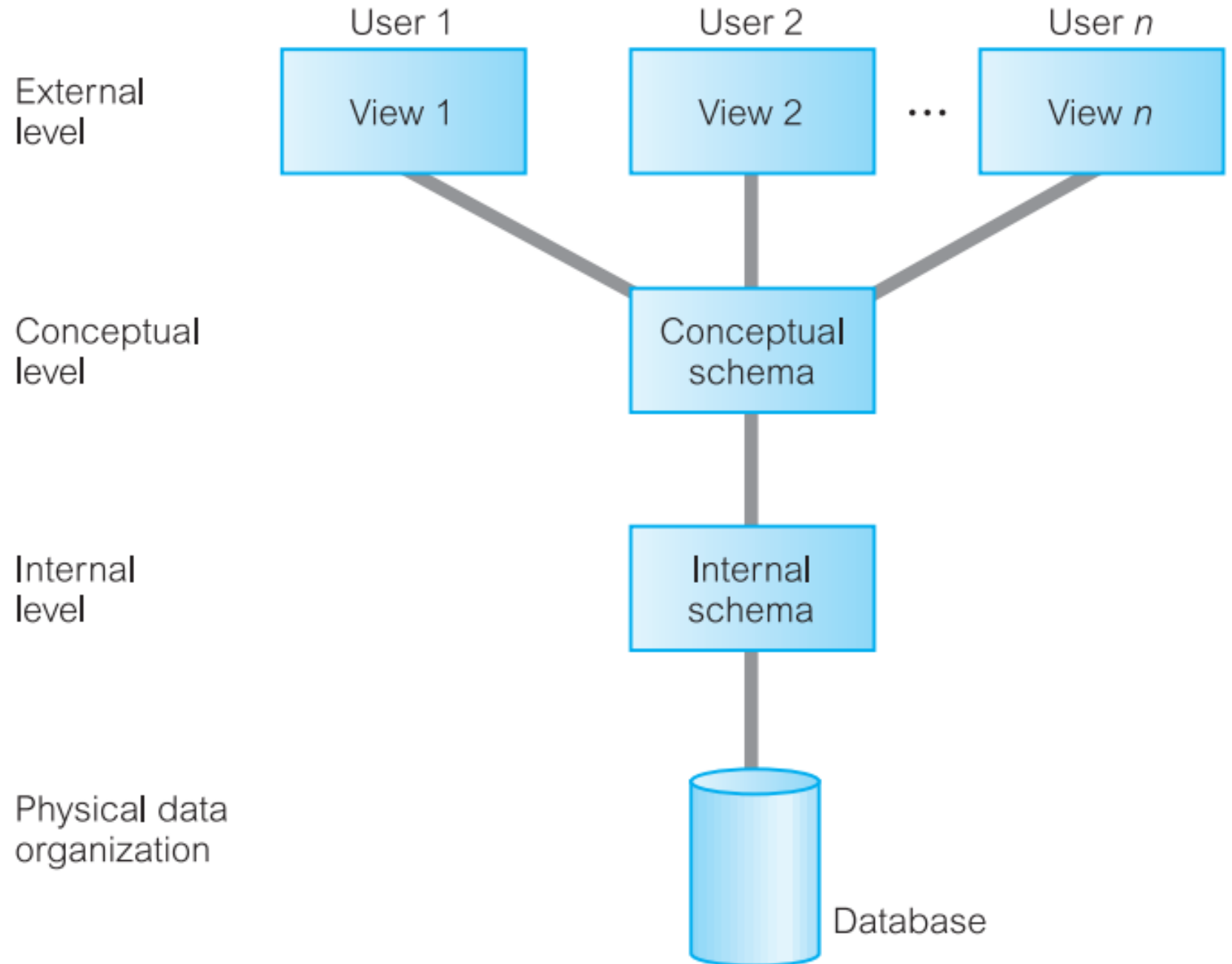
**Figure 1.7**  
Database  
processing.

Important things in this approach :

**Database system**

**Database Management System (DBMS)**

# THE ANSI-SPARC THREE-LEVEL ARCHITECTURE.



# THREE LEVEL ARCHITECTURE

(DAFTAR PUSTAKA)

**External level** The users' view of the database. This level describes that part of the database that is relevant to each user.

**Conceptual level** The community view of the database. This level describes *what* data is stored in the database and the relationships among the data.

**Internal level** The physical representation of the database on the computer. This level describes *how* the data is stored in the database.

# DIFFERENCES!

External view 1

sNo	fName	lName	age	salary
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External view 2

staffNo	lName	branchNo
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Conceptual level

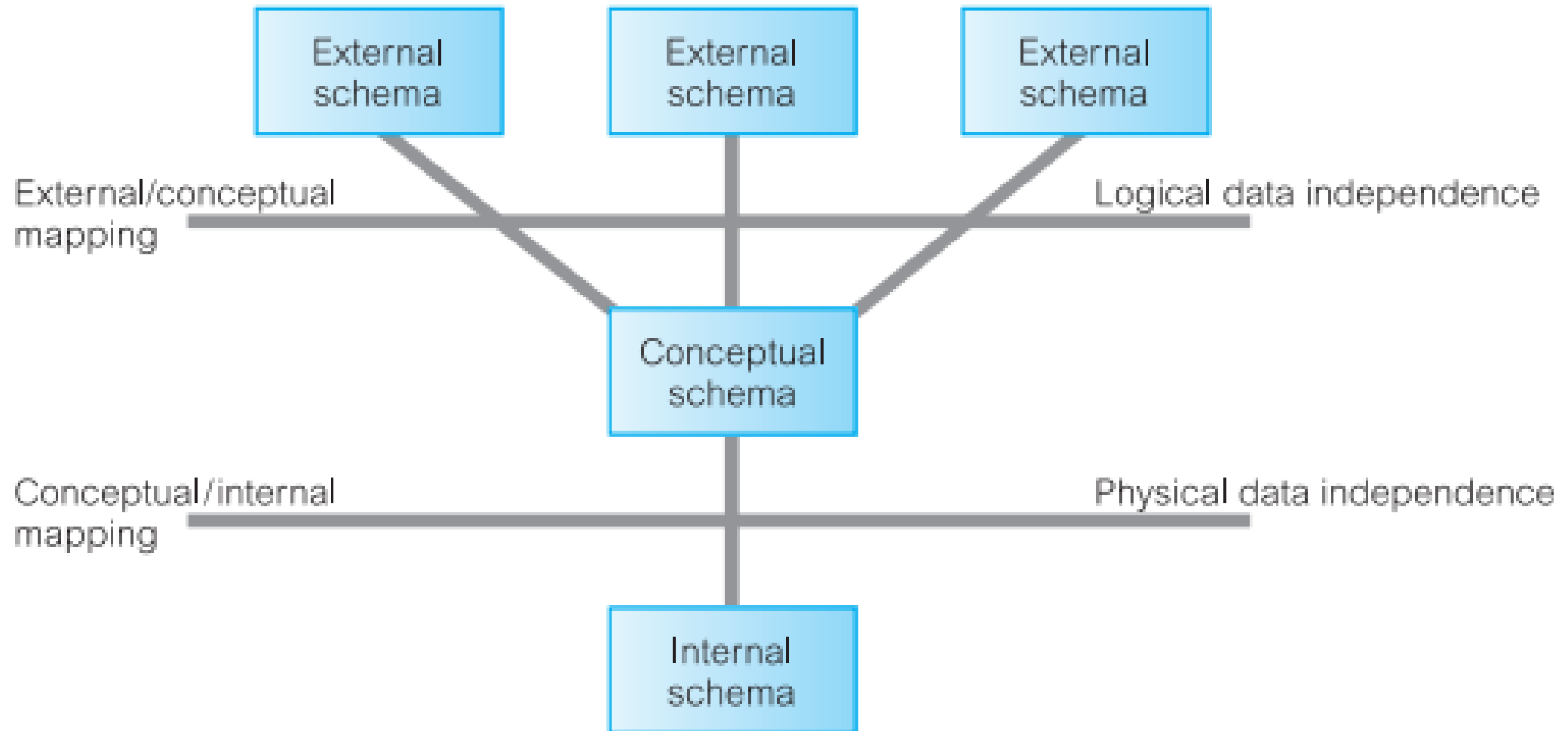
staffNo	fName	lName	DOB	salary	branchNo
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Internal level

```
struct STAFF {  
    int staffNo;  
    int branchNo;  
    char fName [15];  
    char lName [15];  
    struct date dateOfBirth;  
    float salary;  
    struct STAFF *next;  
};  
index staffNo; index branchNo;
```

/\* pointer to next Staff record \*/  
/\* define indexes for staff \*/

# DATA INDEPENDENCE



# DATA INDEPENDENCE

(DAFTAR PUSTAKA)

## **Logical data independence**

Logical data independence refers to the immunity of the external schemas to changes in the conceptual schema.

## **Physical data independence**

Physical data independence refers to the immunity of the conceptual schema to changes in the internal schema.

# DATA MODELS

**Data model** An integrated collection of concepts for describing and manipulating data, relationships between data, and constraints on the data in an organization.

Many Approach :

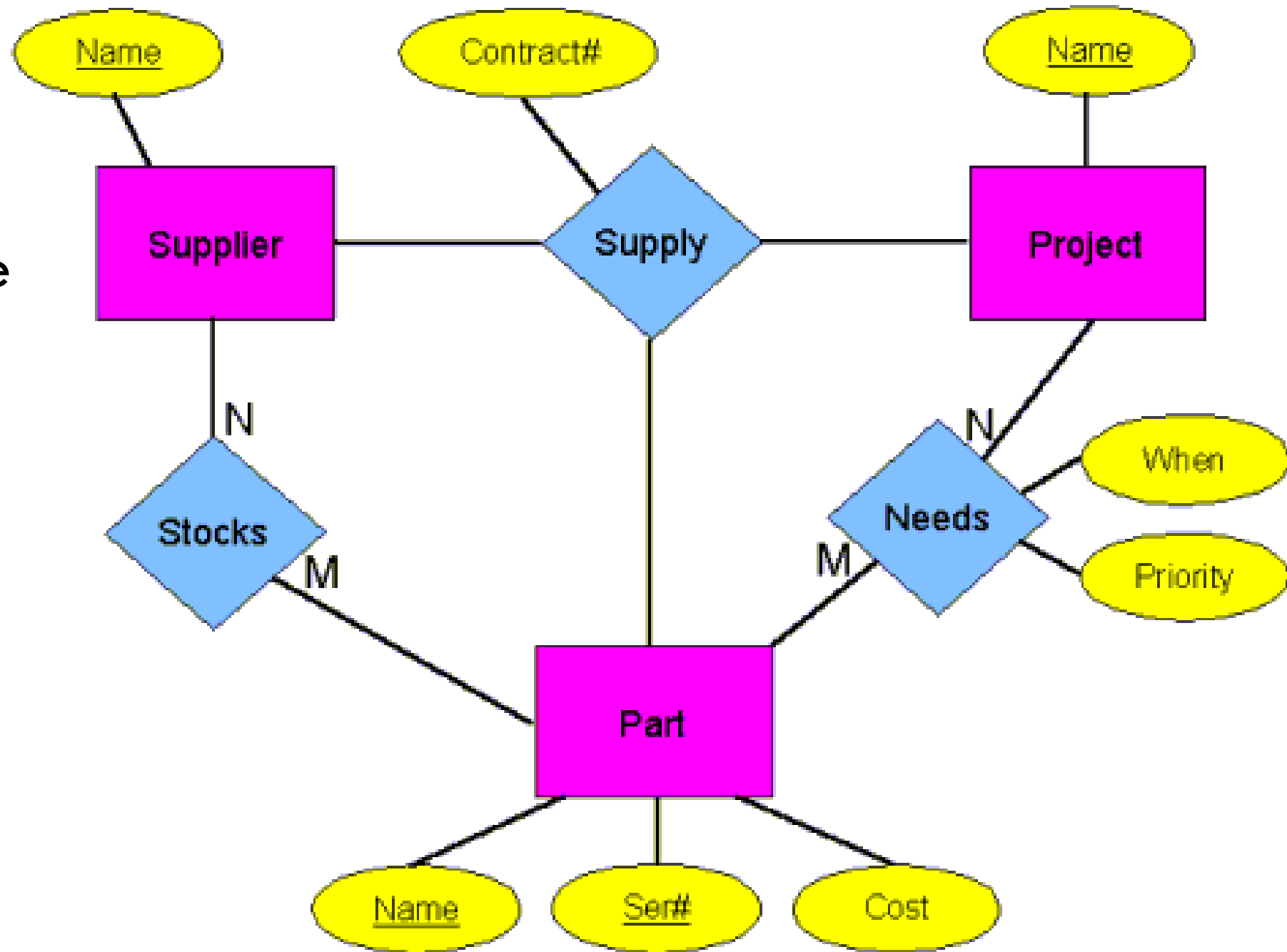
**1. ER Model**

**2. Normalization**

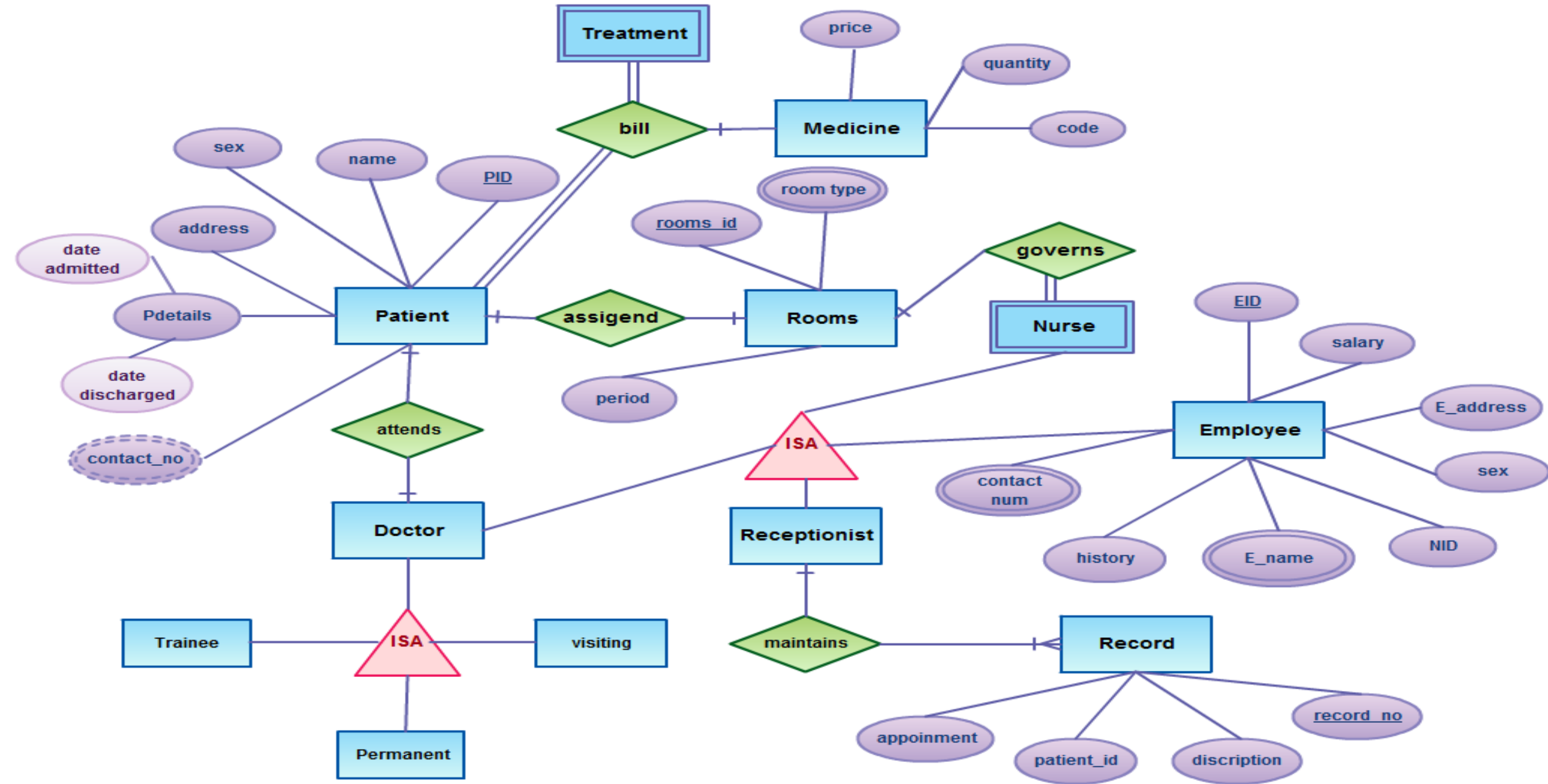


# ER MODEL

Between Entities,  
Attributes, &  
Relationships.



# E-R Diagram for Hospital Management System



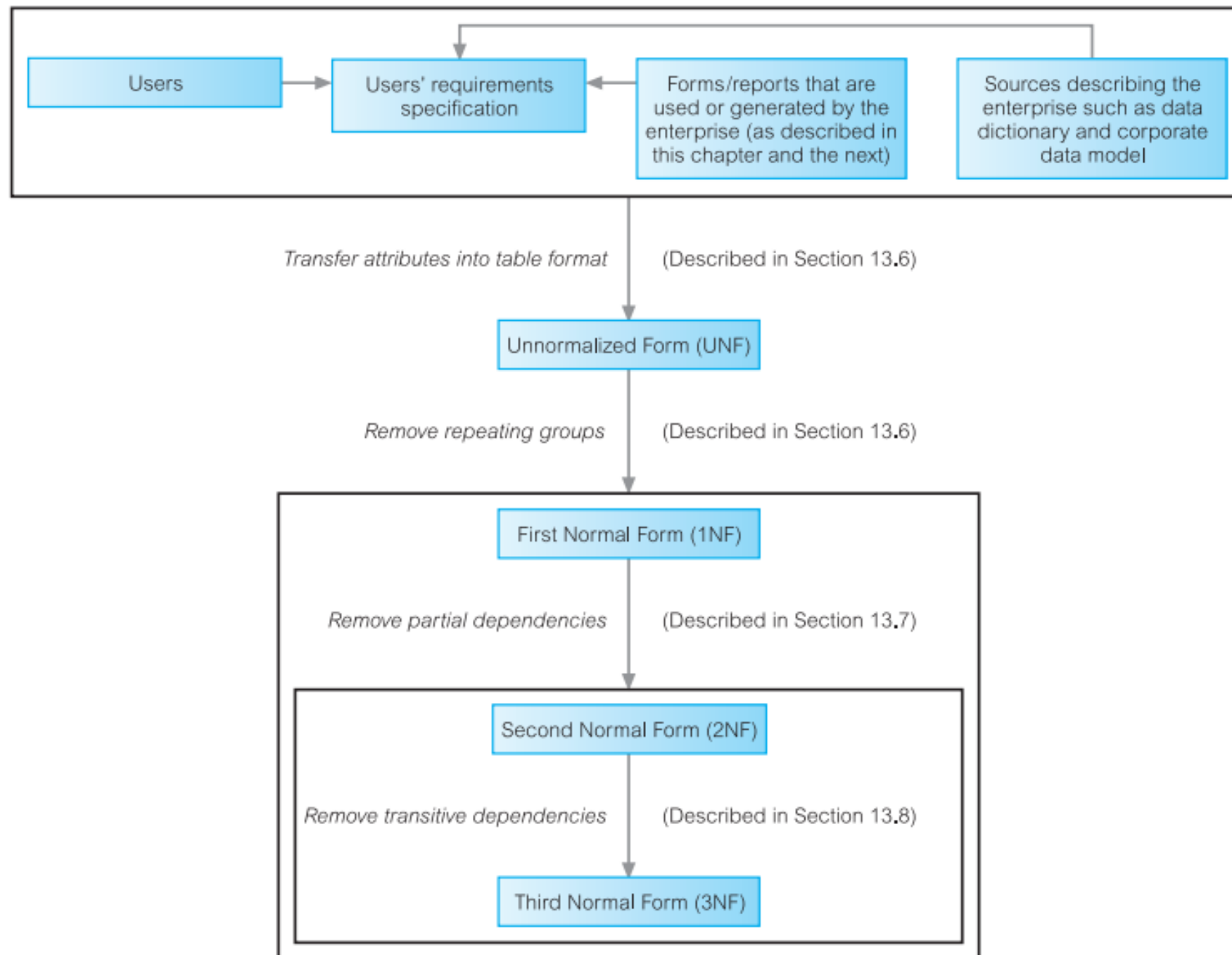
# NORMALIZATION

A formal technique for analyzing relations based on their primary key (or candidate keys) and functional dependencies (Codd, 1972b)

Three normal forms were initially proposed called

- First Normal Form (1NF),
- Second Normal Form (2NF),
- Third Normal Form (3NF).

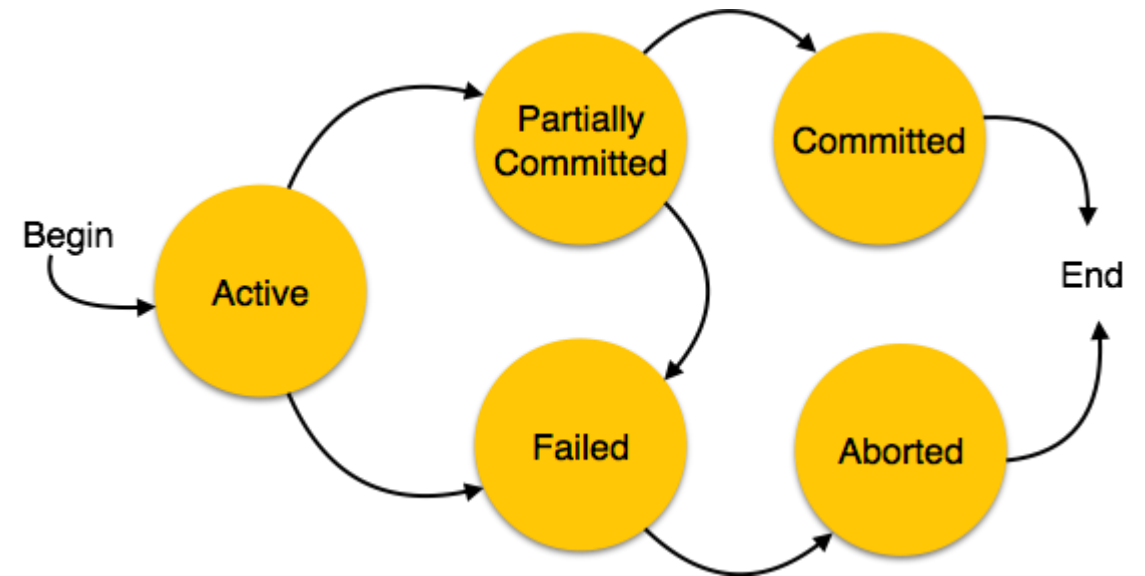
## Data sources



# TRANSACTION MANAGEMENT

There are properties that all transactions should possess.

The four basic, or so-called **ACID**, properties of a transaction are (Haerder and Reuter, 1983).



# ACID

***Atomicity*** The ‘all or nothing’ property.

A transaction is an indivisible unit that is either performed in its entirety or is not performed at all. It is the responsibility of the recovery subsystem of the DBMS to ensure atomicity.

***Consistency***

A transaction must transform the database from one consistent state to another consistent state. It is the responsibility of both the DBMS and the application developers to ensure consistency. The DBMS can ensure consistency by enforcing all the constraints that have been specified on the database schema, such as integrity and enterprise constraints.

## ACID (2)

***Isolation.*** Transactions execute independently of one another. In other words, the partial effects of incomplete transactions should not be visible to other transactions. It is the responsibility of the concurrency control subsystem to ensure isolation.

***Durability.*** The effects of a successfully completed (committed) transaction are permanently recorded in the database and must not be lost because of a subsequent failure. It is the responsibility of the recovery subsystem to ensure durability.



ENTITY RELATIONSHIP DIAGRAM

ERC



# TUGAS KELOMPOK

Buatlah 1 buah soal studi kasus untuk ERD,

Masing-masing kelompok harus memiliki tema yang berbeda  
(tidak boleh sama)