



# **SNS COLLEGE OF ENGINEERING**

Kurumbapalayam (Po), Coimbatore - 641 107

**An Autonomous Institution**

Accredited by NAAC - UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**COURSE NAME : 19CS402 - DATABASE MANAGEMENT  
SYSTEMS**

**II YEAR / IV SEMESTER**

**Unit 1- Introduction to Data Base**

**Topic 4 : View of Data & Data Models**



# VIEWS OF DATA



- It refers that how database is actually stored in database, what data and structure of data used by database for data. So describe all this database provides user with views and these are
  - **Data abstraction**
  - **Instances and schemas**



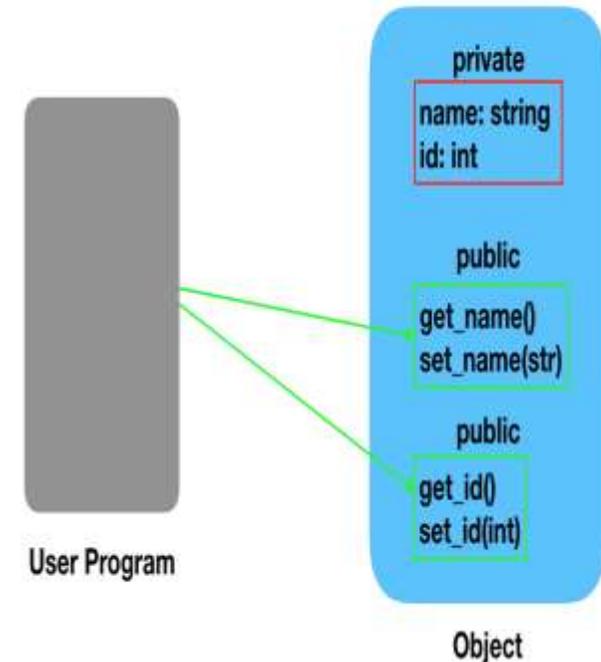
- **Data abstraction**

- As a data in database are stored with very complex data structure so when user come and want to access any data, he will not be able to access data if he has go through this data structure.
- So to simplify the interaction of user and database, DBMS hides some information which is not of user interest, a this is called data abstraction:- **So developer hides complexity from user and store abstract view of data.**

CONT..



## Data Abstraction

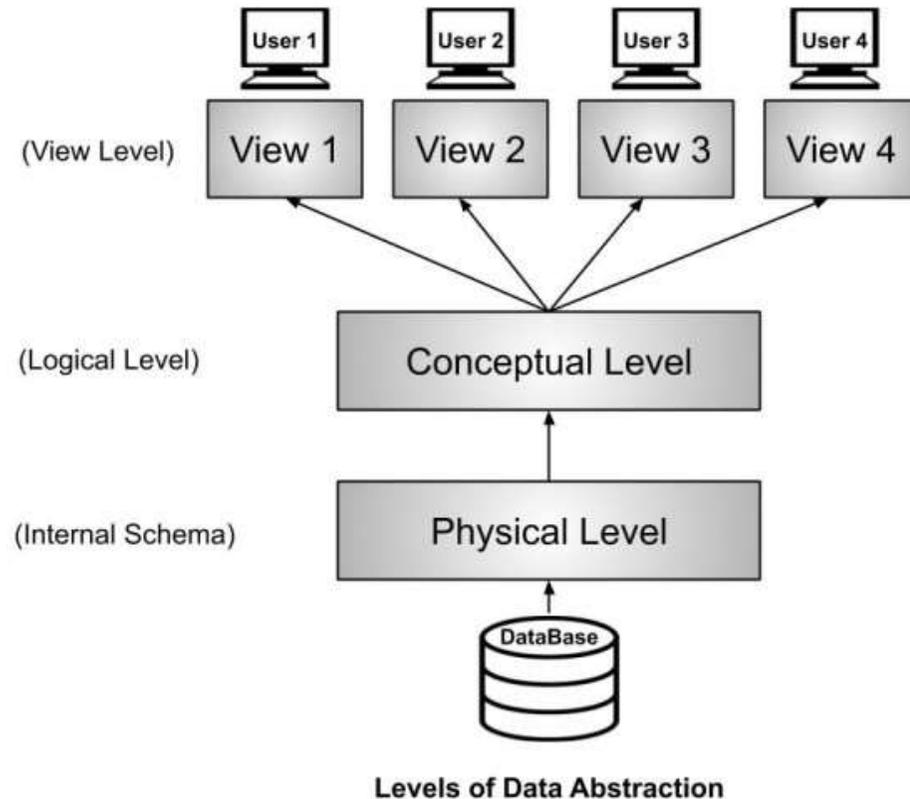




## Data abstraction has three level of abstractions



- level / internal level
- Logical level / conceptual level
- view level / external level





# Data abstraction –Cont..



- **Physical level:-** this is the lowest level of data abstraction which describe How data is actual stored in database.  
  
This level basically describe the data structure and access path /indexing use for accessing file.
- **Logical level:-** The next level of abstraction describe what data are stored in the database and what are the relationship existed among those of data.
- **View level:-** In this level user only interact with database and the complexity remain unview . user see data and there may be many views of one data like chart and graph



Break





## Different types of data model

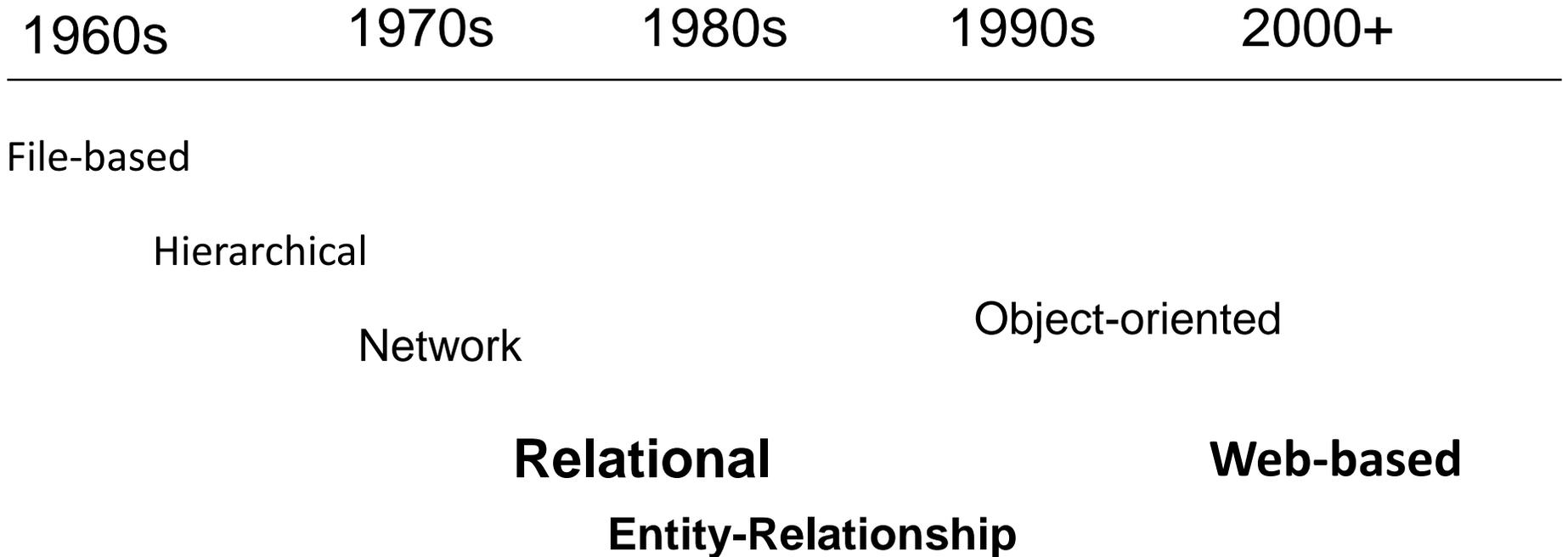
- Entity – Relationship (E-R) Model.
- Relational Model
- Object –Based Data Model
- Semi structured Data Model
- Network Model
- Hierarchical data model



# Evolution of Data Models



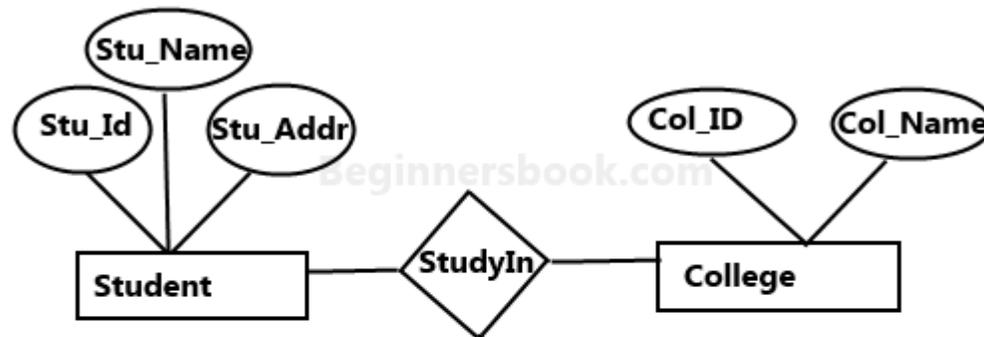
- Timeline





# Entity Relationship Model

- ER Model consists of a collection of basic **objects** called **entities**
- **Relationships** among these objects.

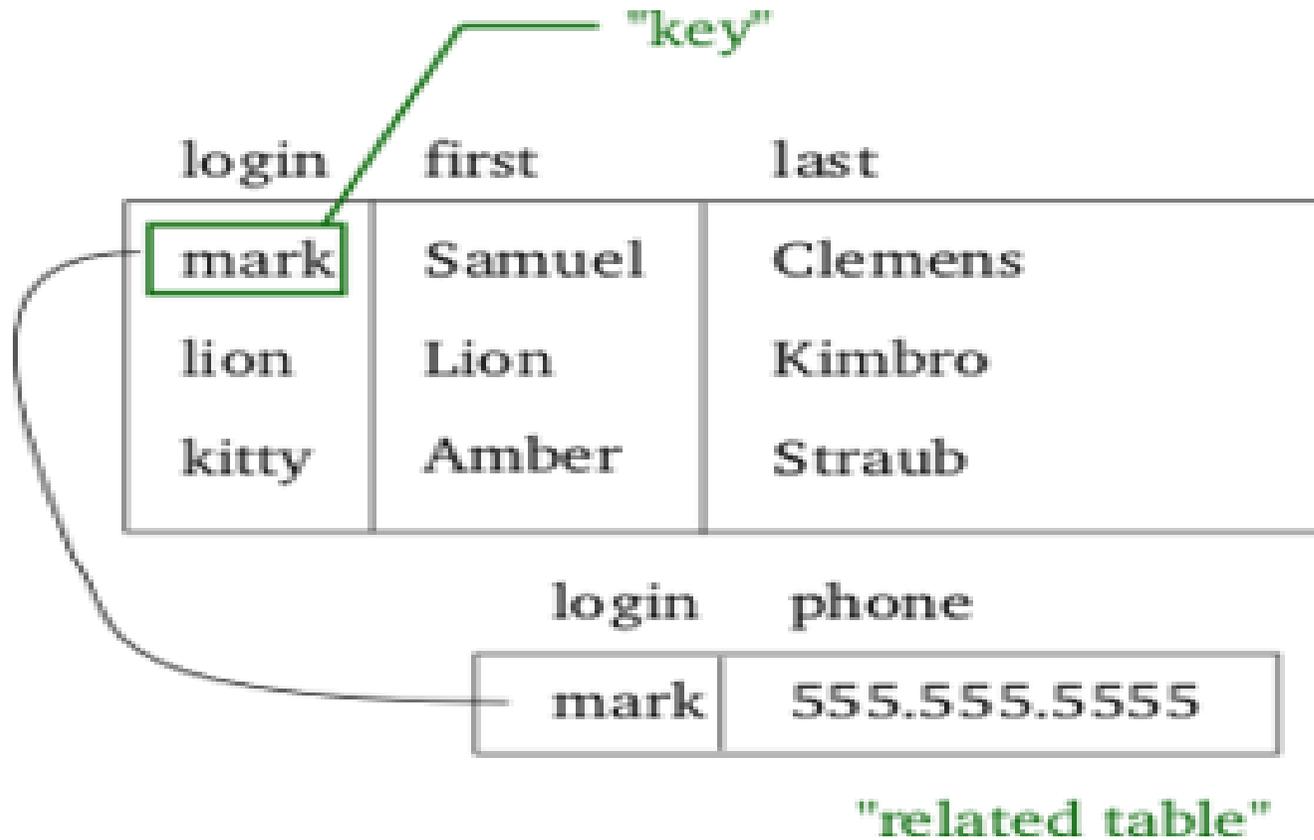


Sample E-R Diagram



## Relational Model

- The relational model uses a **collection of tables** to represent both data and the **relationships among those data**.
- It is **record based model**
- Each table contains records ( **fields or attributes**)





# Object –Based Data Model



- The object oriented model can be seen as extending the E-R model with notions of encapsulation methods (**functions**) and **object** identity.



## Object-Oriented Model

**Object 1: Maintenance Report**

Date	
Activity Code	
Route No.	
Daily Production	
Equipment Hours	
Labor Hours	

**Object 1 Instance**

01-12-01
24
I-95
2.5
6.0
6.0

**Object 2: Maintenance Activity**

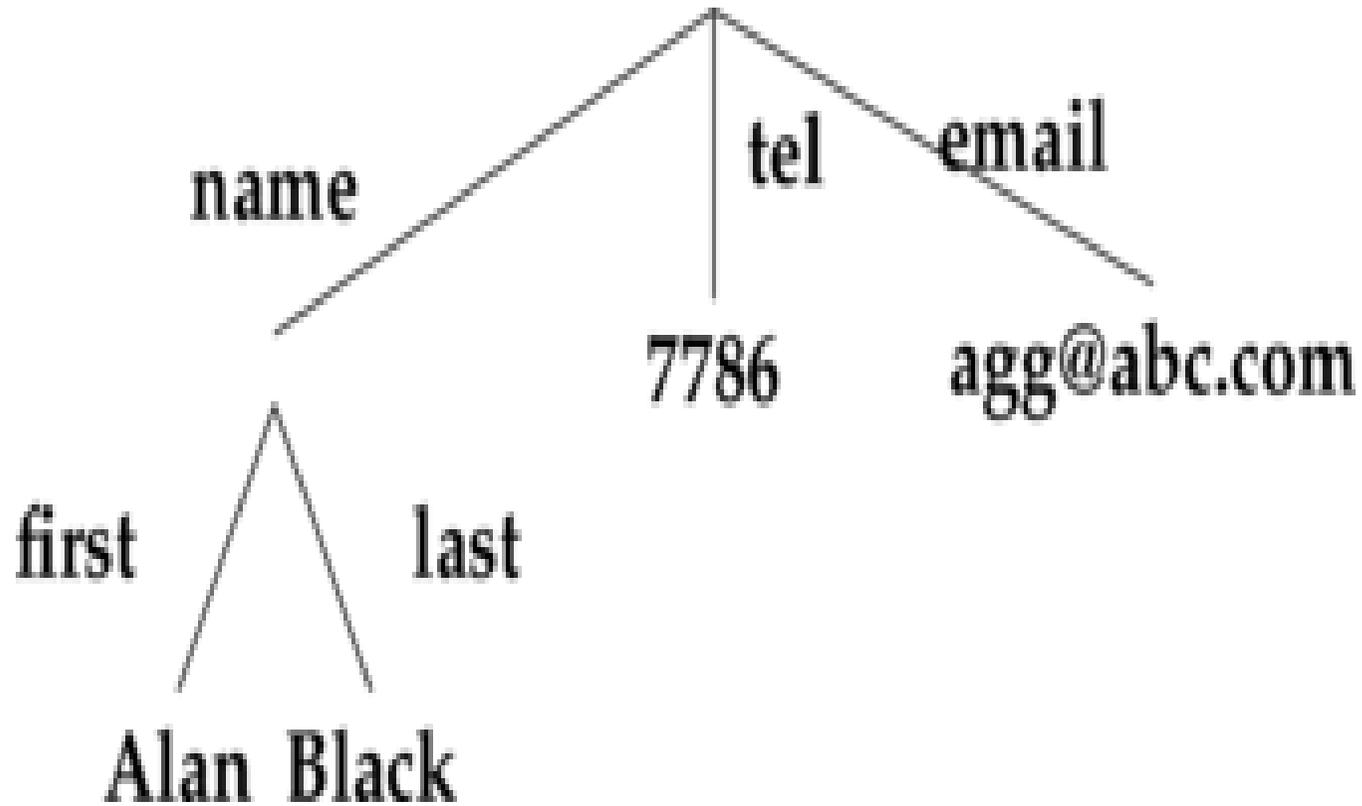
Activity Code	
Activity Name	
Production Unit	
Average Daily Production Rate	





## Semi structured data model

- The semi structure data model permits the specification of data where **individual data items** of the same type have different set of attributes.
- Example
  - **XML** ( Extensible Markup Language)

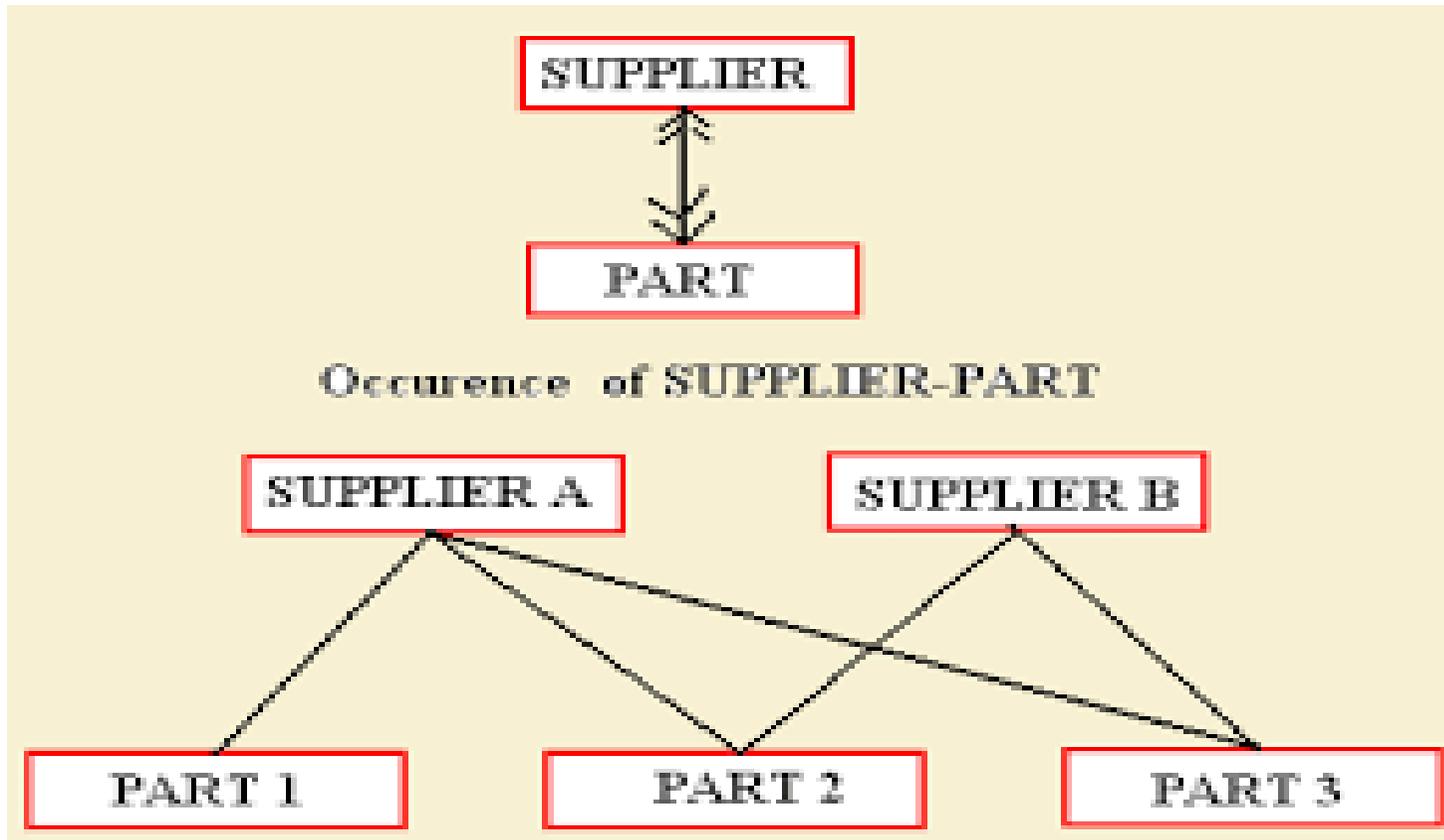




# Network Model



- It is data structure diagram
- **Advantage**
  - Data independence
  - Conceptual simplicity
  - Easy to design
- **Disadvantage**
  - Lack of structure independence





# Hierarchical Model



It uses tree structure diagram

## Advantage

Simple

Easy to update

Design is simple

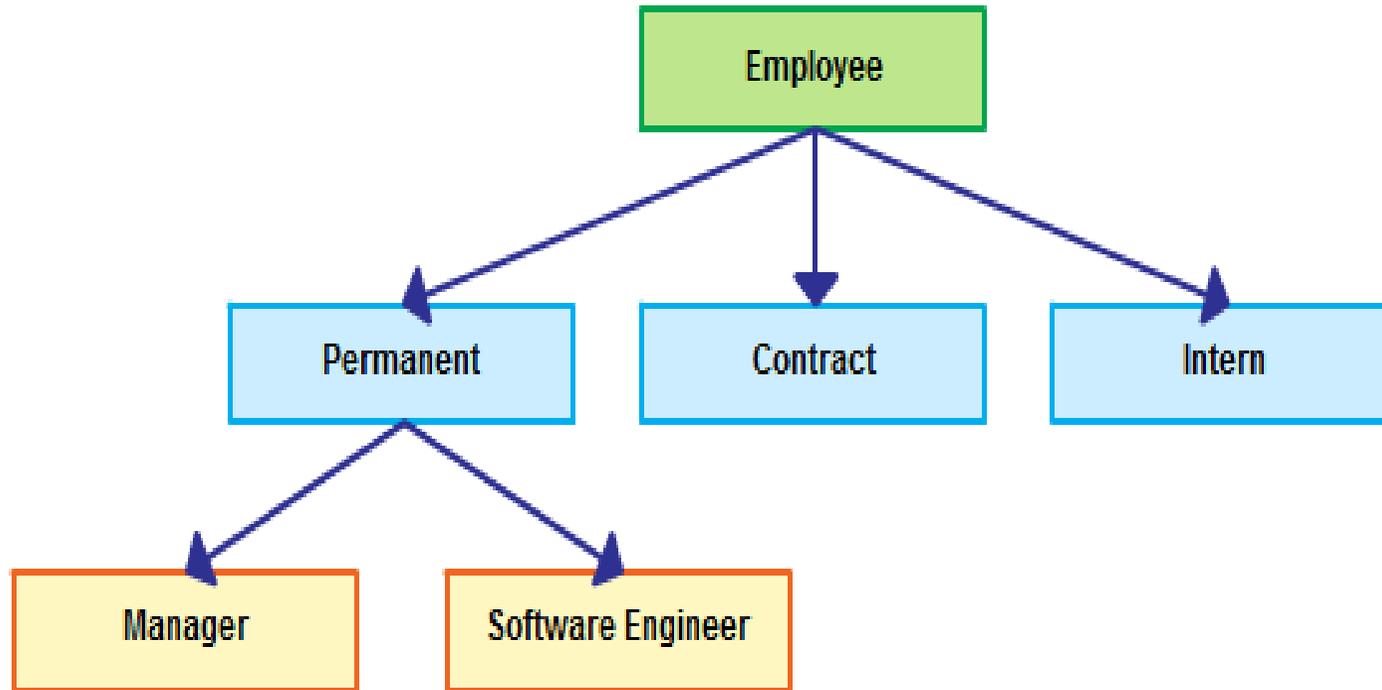
Database security

Efficiency

## Disadvantage

Implementation complexity

Difficult to manage





## Advantages

### Conceptual **simplicity**

groups of data could be related to each other

related data could be viewed together

### **Centralization** of data

reduced redundancy and promoted consistency

## Disadvantages

### **Limited** representation of data **relationships**

did not allow Many-to-Many (M:N) relations

### Complex implementation

required in-depth knowledge of physical data storage

### **Structural Dependence**

data access requires physical storage path

### Lack of Standards

limited portability



# EVALUATION



## 1. Advantage of data models

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

## 2. Disadvantages of data models

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_



# REFERENCES



1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, - Database System Concepts||, Sixth Edition, Tata McGraw Hill, 2011.
2. Ramez Elmasri, Shamkant B. Navathe, –Fundamentals of Database Systems, Sixth Edition, Pearson Education, 2011.
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4. Raghu Ramakrishnan, –Database Management Systems||, Fourth Edition, McGraw-Hill College Publications, 2015.

## THANK YOU