



# Data Model- Types

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## DATA MODELS



- It is a collection of conceptual tools for
  - Describing data
  - Relationships among data
  - Meaning of data
  - Constraints
  - Data model is a structure below the database

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## 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

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## The Entity Relationship Model




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


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## Entity Model (cont...)




- **Advantage :**
  - Simple
  - Easy to understand
  - Effective
  - Easy conversion
- **Disadvantage**
  - Loss information
  - Limited relationship
  - No manipulation


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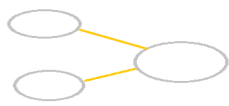

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## Component of ER Diagram

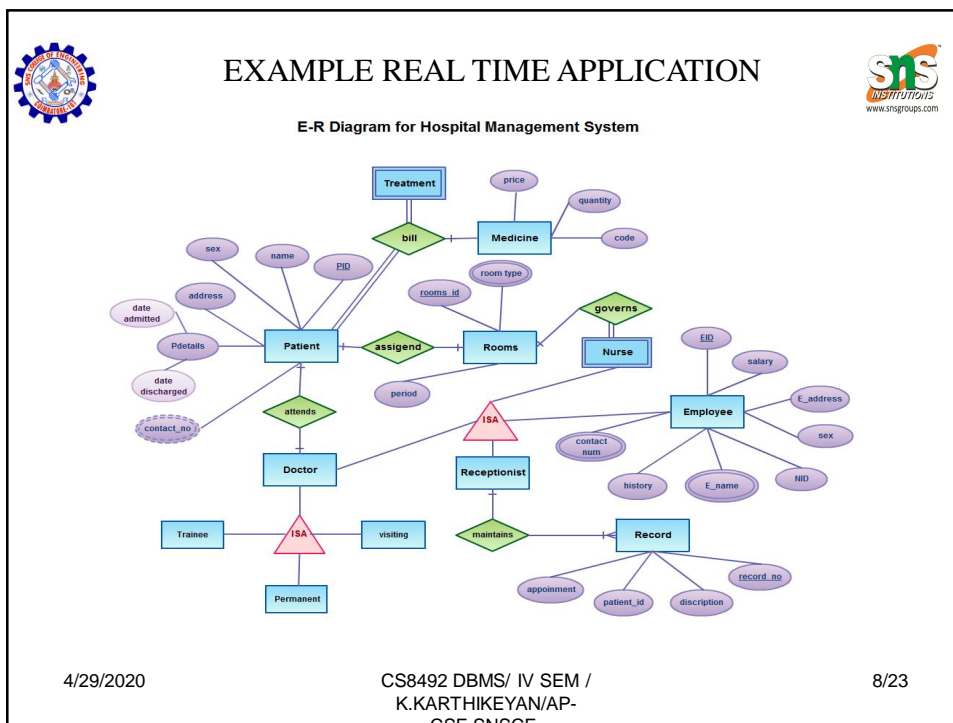
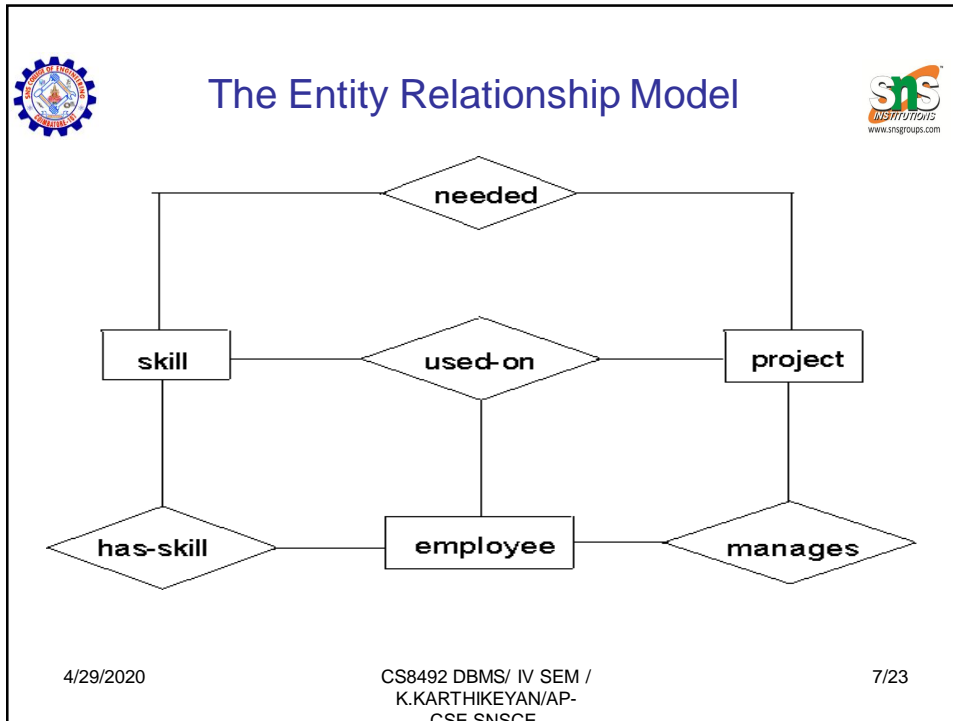


		Entity
		Relationship
		Attribute
		Weak Entity
		Weak Entity relationship
		Multivalued Attribute
		Key Attribute
		Composite Attribute

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## 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**
- The contains **one or more columns** and each column has unique name
- Each table contains records ( **fields or attributes**)

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## Relational Model (cont...)

- **Advantage :**
  - Structure independence
  - Conceptual (Theoretical) Simplicity
  - A powerful database management system
- **Disadvantage**
  - Transaction Process is not efficient
  - Processing time is low
  - Powerful hardware is needed
  - To poor implementation of DBMS

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## Relational Model

login	first	last
mark	Samuel	Clemens
lion	Lion	Kimbro
kitty	Amber	Straub



  

login	phone
mark	555.555.5555

"related table"

"key"


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## 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.

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## Object –Based Data Model (cont...)




- **Advantage :**
  - Exceptional conceptual simplicity
  - Visual representation
  - Effective communication tool
  - Integrated with the relational database model
- **Disadvantage**
  - Limited constraint representation
  - Limited relationship representation
  - No data manipulation language
  - Loss of information content

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## Object –Based Data Model



**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
1-95
2.5
6.0
6.0

**Object 2: Maintenance Activity**


Activity Code	
Activity Name	
Production Unit	
Average Daily Production Rate	

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## Semi structured data model


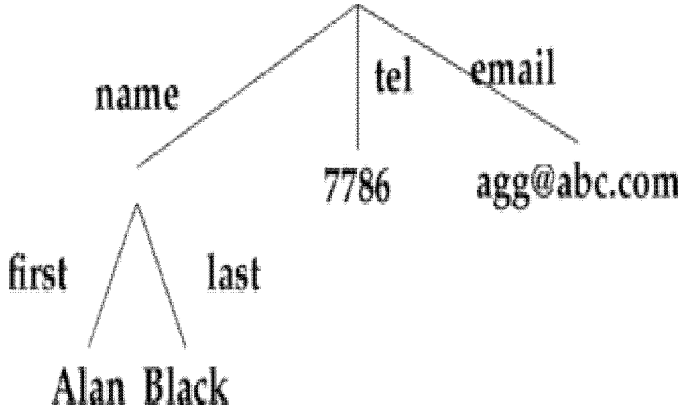


- The semi structure data model permits the specification of data where **individual data items** of the same type have different set of attributes.
- Example
  - **XML** ( Extensible Markup Language)

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## Semi structured data model

```

graph TD
    name --> first
    name --> last
    name --> tel
    name --> email
    first --> Alan
    last --> Black
    tel --> 7786
    email --> agg@abc.com
  
```

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## Network Model



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

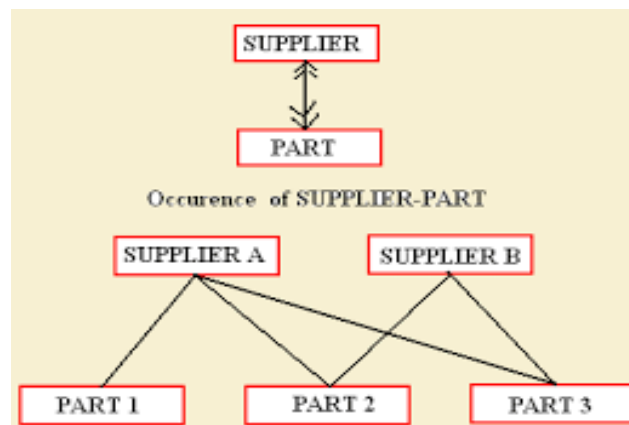
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## Network Model



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## Hierarchical Model



- It uses tree structure diagram
- Advantage
  - Simple
  - Easy to update
  - Design is simple
  - Database security
  - Efficiency
- Disadvantage
  - Implementation complexity
  - Difficult to manage

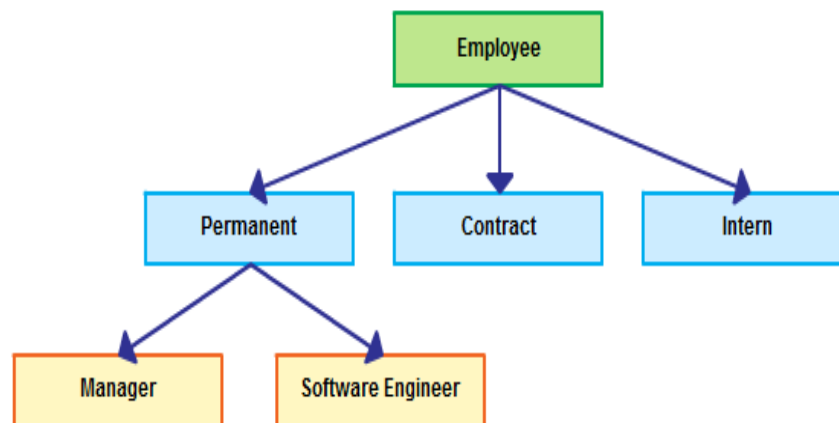
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## Hierarchical Model



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# ACTIVITY

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## LIST OUT THE TYPES OF DATA MODELS IN DBMS

- A) \_\_\_\_\_
- B) \_\_\_\_\_
- C) \_\_\_\_\_
- D) \_\_\_\_\_

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THANK YOU

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