

Database Management Systems

Database

A database is an organized collection of related data of what is the purpose of a particular subject. Database can be of any size and of varying complexity. It can be generated and maintained manually or computerized.

Example:- manual- telephone directory

Computerized- banking system, airline reservation system

Different types of database models

Database model describes how the data in a database system can be stored, organised and manipulated.

Example:-

1. Flat file system
2. hierarchical model
3. Network model
4. Relational model
5. Object relational model

1.flat file model

The flat file system consists data element as a single file. Commonly called table which consists of rows and columns. It contains 1 record per line. Text editor or a spreadsheet software can be used to create a flat file system.

Example

	Name	Department	Salary
R1	a	D1	1000
R2	b	D2	2000
R3	c	D3	3000

Advantages

cheap, less hardware and software requirement, best for small databases, easy to implement

Disadvantages

Less security, data inconsistency, redundancy, slow

2. Hierarchical model

Data is organised into a tree like structure. The structure of repeat in information using parents/ child relationships. Each parent can have many children any child has only one parent.

Advantages

Conceptually simple, easy to understand, data independence, navigation among records.

Disadvantages

Inflexible, difficult to manage, complex implementation

3. Network model

Network model stores records with link to other records. Each record can have multiple parents.

Example:- hospital database

Advantages

High speed Retrieval, data independence, data integrity, more relationship types, simple, easy to access data

Disadvantages

System complexity, structural independence, expensive to setup

4. The relational database model

This is the most widely used model today. In 1970 Edgar Codd proposed this relational database model. The main advantages of relational database model easy of access and the simple data representation. Main concept of the relational database is relation. Relational database is a collection of one or more relations. Relation is a table with rows and columns.

Advantages

Ease of use, security, data independence, flexibility

5. Object relational model

Using object relational model, developers can use their own data types and method with the databases. This allows to integrate object oriented features into relational databases.

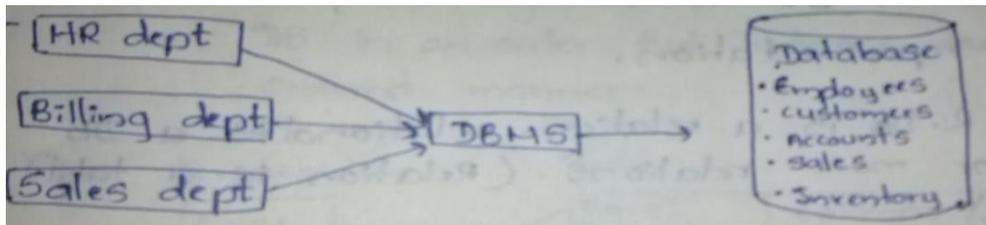
Example :-

Object type:Person	
Attributes	Methods
Idno	Get-idno
fname	Display-details
lname	

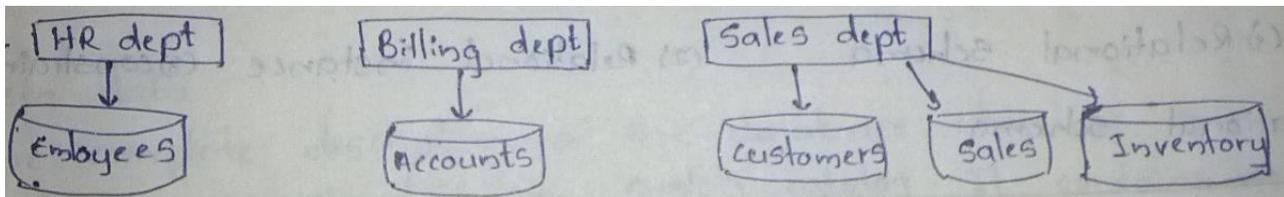
Object
Idno:65
Fname:aaa
Lname:bbb

Database system vs file system

Database system



File system



Database system	File system
Efficient data access	Difficult in accessing
Data independence	Data program dependence
Data access through table	Data access through files
Insert, delete, update, view transactions are possible	Transactions impossible
Minimum data redundancy	Data redundancy
Provide high security	Difficulties in security
Efficient concurrent access	Concurrent access impossible
Consistency of data	Data inconsistency

Exercise:-

Write one example for each difference in the above table.