
CHAPTER 14

STRUCTURING DATABASE FOR ACCOUNTING

Data base:-

A database is a collection of related information stored so that it is available to many users for different purposes. A database is a collection of information that is organized so that it can easily be accessed, managed and updated. A database is an integrated and logical collection of data.

Database Management System:

Database management System is a software system that manages the creation and the use of database. It is a general purpose software system which helps the users in the process of defining, creating, updating, reading, maintaining and protecting the database.

Eg: Oracle, Sybase, Ms Access, Libre Office Base

Advantage of DBMS:-

1. The amount of redundancy (duplicating data) in the stored data can be reduced
2. Database provides data integrity
3. Database provides data security
4. Database provides sharing of data

Components of DBMS

- 1) File Manager
- 2) Database Manager
- 3) Query Processor
- 4) Data dictionary
- 5) DML pre-compiler
- 6) DDL compiler

Data Processing Cycle (Steps)

Data processing involves the activities of collecting, storing, relating, interpreting data so as to get meaningful information for decision making. The cycle involves the following steps

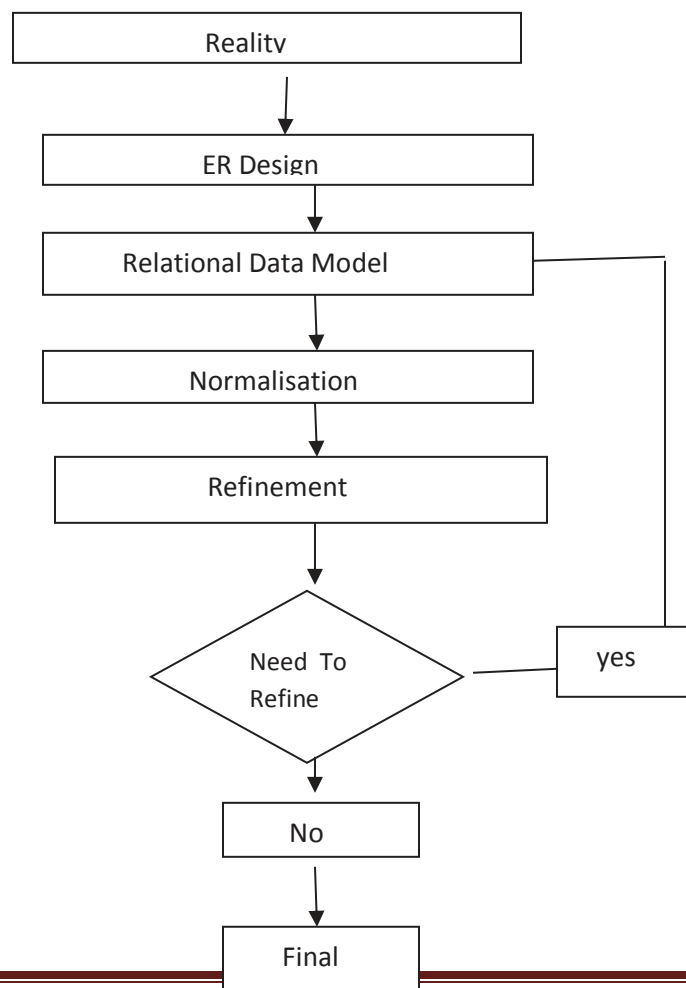
- (1) Source documents (2) Input of data (3) Data Storage (4) Manipulation of data (5) output of data

Flowchart

A flow chart is a pictorial representation of sequences or actions required to solve a problem

Process of Designing Data Base for Accounting

- a) **Reality** :- It refers to some aspect of real world situation for which data base is to be designed
- b) **E.R. Design** :-It is a blue print or graphical representation of accounting entity through ER Model concepts.
- c) **Relational Data Model**: Relational data model is representational data model through which ER design is transformed into interrelated data tables
- d) **Normalization**:- This is the process of refining a database to eliminate the data redundancy. It is the process of efficiently organizing data in a database. It helps to improve database design.
- e) **Refinement**:- This is the outcome of process of normalization. The final database design is arrived at after the process of normalization is completed



Entity Relationship Model (ER Model)

It is a popular conceptual data model mostly used in database oriented application. The major elements of ER model are entities, attributes, identifiers and relationship that are used to express reality for which a database is to be designed.

Element of ER Model

I. Entity

Anything in the real world with independent existence is called an entity. Every entity has a unique name and is graphically represented by a rectangular box containing entity name

Eg : STUDENT , EMPLOYEE, SCHOOL, ACCOUNT



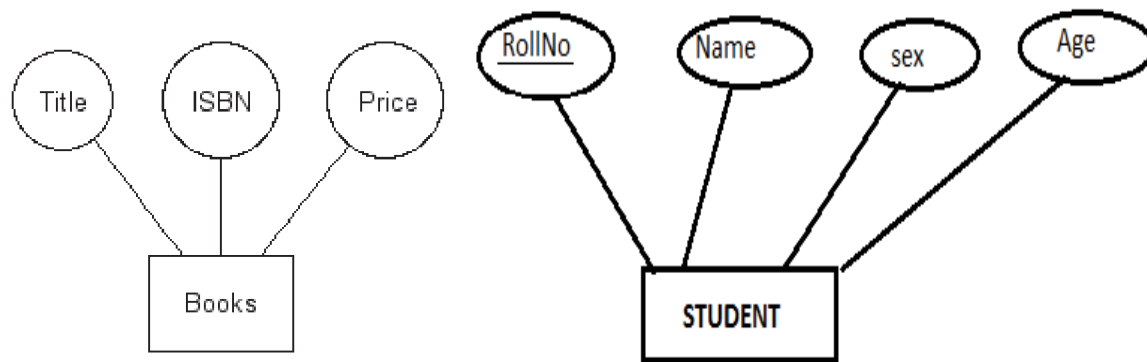
II. Attributes

Attributes are some properties of interest that further describe the entity. Every entity has some attributes eg: height, weight, and date of birth in the case of a person and code and name, narration, account prepared by etc. in case of an account.

Attribute symbol.. ...

Example of entity and attributes

ENTITY	ATTRIBUTES
Employee	Empid, Fname, Midname, Lname, Sex, age, job., dept, supervisedby
Vouchers	Vno, Vchdate, credit amt, narration, preby
account	Acccode, accname, acctype
customer	Customerid, firstname, lastname, dateofbirth, address, phonenumber
Student	Student_AdmnNo, Student_ClassNo, Student_Name, Stdent_Sex



Type of Attributes:-

(a) Composite Vs Simple (Atomic) Attributes:-

Composites attributes can be divided into small subparts

Eg: Name attributes divided into subparts like first name, Middle name, last name

Attributes cannot be divided into subpart are called simple or atomic attributes

Eg. Height, weight

(b) Single valued Vs Multi Valued attributes

Single valued attribute can be only have one value while the multi valued attributes usually can store multiple data in them

Eg; In the entity student, Stu_ address Stu_Qualifications are multi value attribute and height and weight are single valued.

() used for showing composite attributes and { } are used for showing the multi valued attribute.

(c) stored Vs Derived attributes:

Derived attributes are the ones where one attributes is calculated from another stored attribute.


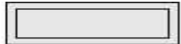







Eg: In entity student, Stu_ age would be considered a derived a derived attribute since it could be calculated using students date of birth with the current date to find their age.

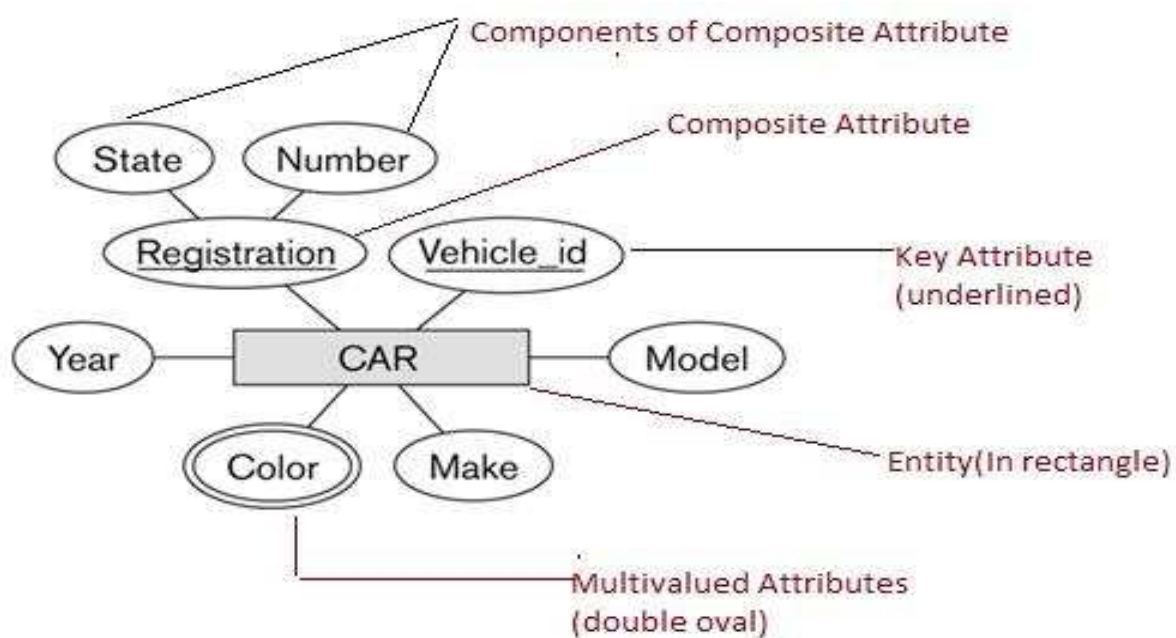
(d) Null Value:- Absence of a data item is represented by a special value called null value

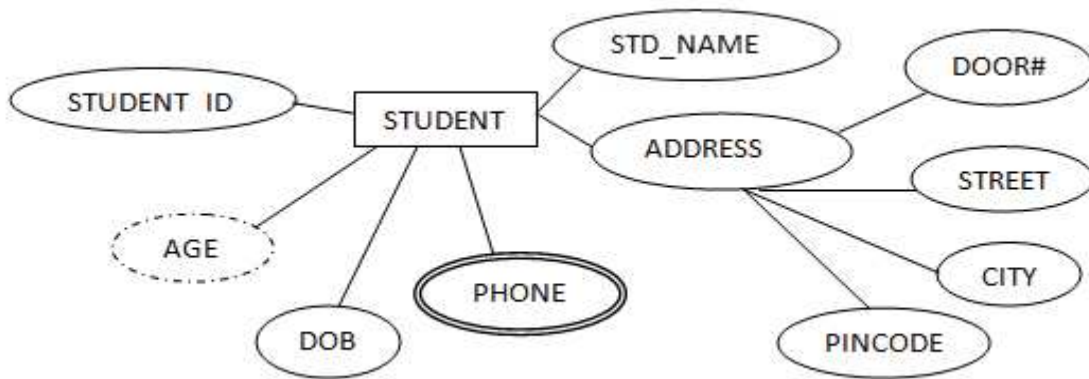
Three Situations which requires null value:-

- (i) When a particular attribute does not apply to an entity
- (ii) Value of attribute is unknown, although it exists
- (iii) Unknown because it does not exist.

(e) Complex attributes: A complex attributes that is both composite and multi valued

Symbol	Meaning
	Entity
	Weak Entity
	Relationship
	Identifying Relationship
	Attribute
	Key Attribute
	Multivalued Attribute
	Composite Attribute
	Derived Attribute



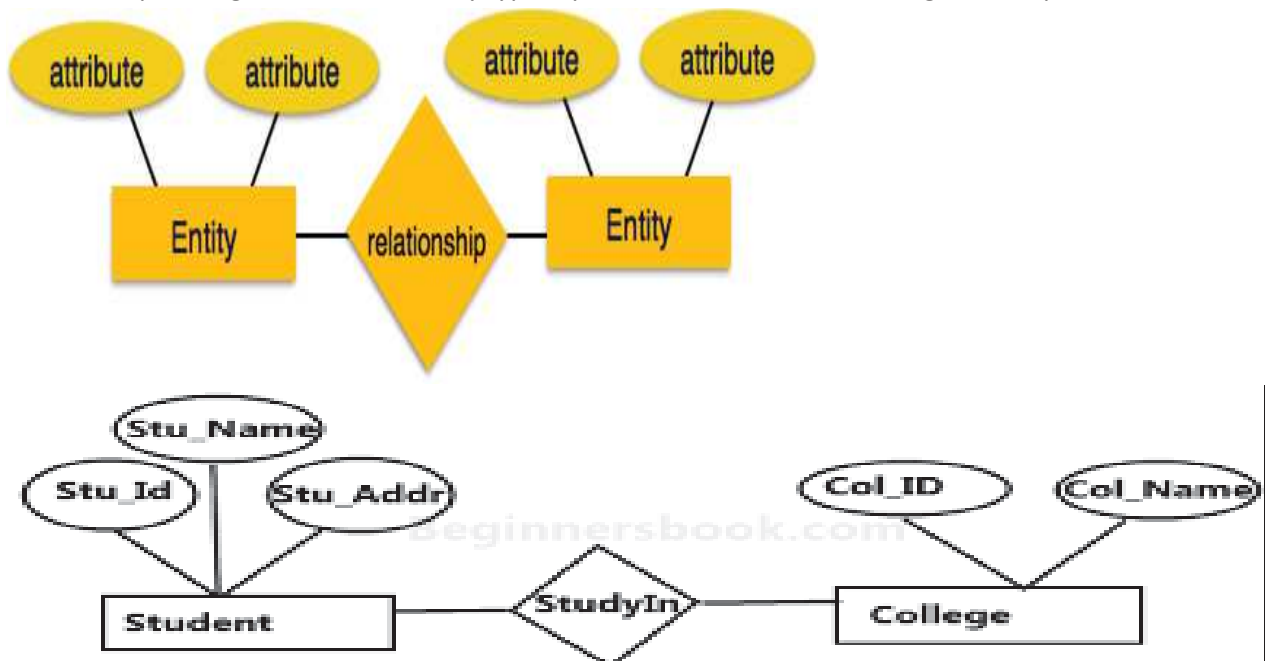


III) Identifier (Key attributes of an entity type)

Identifier attribute or key is an attribute that uniquely identifies individual instances of an entity type such as student_ID

IV) Relationship

Relationship among two or more entity type represents an interaction among their respective entities.

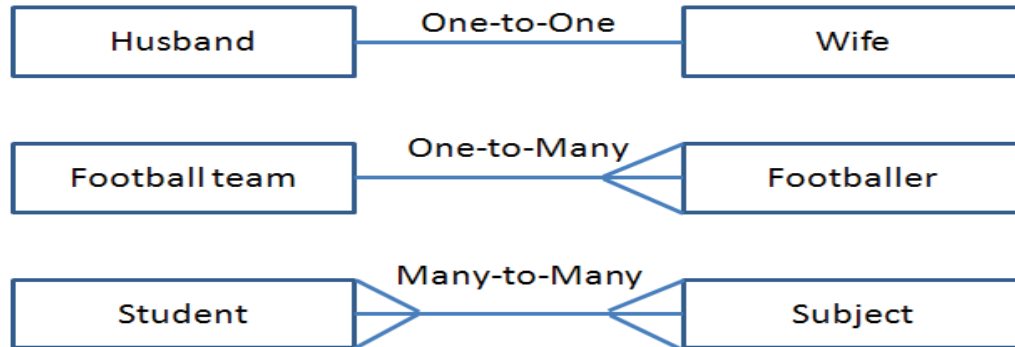


Sample E-R Diagram

Relation set

1. One to One Relationship
2. One To many
3. Many to Many

Eg:



Value set of attributes: Set of all values that an attributes can take is called value set of attributes

Entity: A real world object <employee>

Entity Type:- . Collection of entities

< Employees, Accounts, Vouchers >

Entity Instance:-

Entity Instance means the value of attributes of an entity belonging to entity type.

<i>empID</i>	<i>empName</i>	<i>EmpAge</i>	<i>empjob</i>	<i>empdept</i>	<i>supbyname</i>
C101	krishnan	28	accountant	sales	Raju

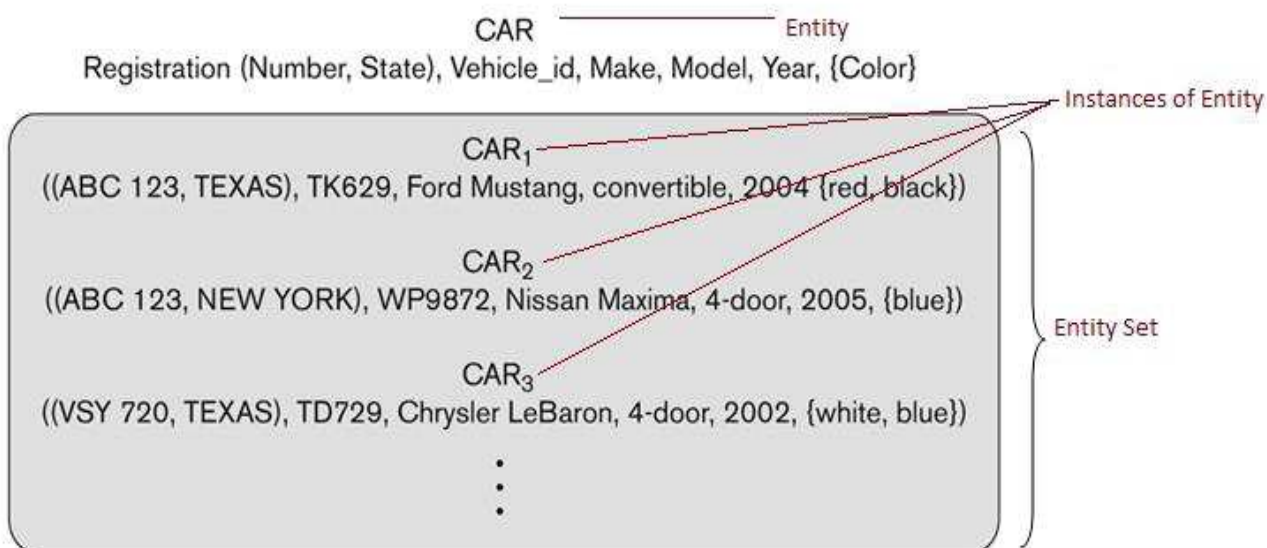
Entity set: Collection of all entity instances

<i>empID</i>	<i>empName</i>	<i>EmpAge</i>	<i>empjob</i>	<i>empdept</i>	<i>supbyname</i>
C101	krishnan	28	accountant	sales	Raju
C102	malu	24	clerk	sales	Abu
C103	Aryan	30	cashier	finance	Madhavan
C104	vidhya	34	auditor	finance	Madhavan

****empid, empName, empAge, empjob, empdept, supbyname* are attributes

*** **Set of Entities having same attributes is entity type** and **collection of individual entity type is entity set**

Eg:



Weak Entity Type:- An entity set that does not have a primary key(identifier) is referred as a weak entity set. We can depict weak entity by double rectangles.

Data model:- Collection of concepts used to describe the structure of a database

Data Base State:- Data in a database at a particular is called database state

Database Design Concepts:- 1) Reality (2) Data (3) Data base (4) information (5) DBMS

Database Schemas : The description of a database is called its schema. The structure of a database is called schema. I.e. The tables, constraints and relations are collectively called schema

Major categories of data model

- a. Relational data model 2. Hierarchical model 3. Network model

RDBMS: A DBMS based on relational model is called Relational Database Management System. RDBMS maintain the various data manipulation operations in the data base like adding records, querying, modifying records, deleting records etc. The system provides all these facilities is called a Relational data base management system.(RDBMS). Eg MS ACCESS, oracle, Sybase, Libreoffice Base

TERMINOLOGIES IN RDBMS

Relation: Relation is a mathematical term for a table. A relation represented in a table as rows and columns. Each row in a relation (table) represents a relationship among a set of values. A table is a collection of such relationship

Attributes:- The columns of a relation are called attributes. It represents properties of an entity.

Domain:- Domain refers to a set of allowable values which a data element may contain (text value, numeric value, Date value ,value range etc.). the possible values of an attributes are taken from domain(.Column values)

Tuple: - The row of a relation is known as tuple. Tuple consists of complete set of values used to represent an entity

Degree: The total number of attributes of a relation is called degree

Cardinality :- The total number tuples in a relation is called cardinality

Primary key: The key which identify a table uniquely and cannot be repeated is called primary key

Eg: reg. no in “student” relation

Steps to set primary key

- a) Select the field to be set as the primary key (b) Click the primary button on the ribbon/ Toolbox (c) A key symbol will appear next to selected field

Secondary key: secondary keys are those keys that can identify more than one tuple.

Candidate Key: Keys that can act as a primary key is called candidate key. They are the candidate for primary key. It is used to identify, a tuple uniquely.

Eg. St no, Admission no etc. in student relation.

Super key: A combination of primary with any other attribute or group of attribute is called super key.

Eg. reg no + name in student relation

Foreign key: : when a primary key of one relation is also available as an attribute in another relation ,that attribute is called foreign key of the relation. Foreign key helps to attain data integrity.

Alternative Key: All candidate keys except primary key are called alternative key



Structured Query Language (SQL) : Structured Query Language is a language that enables to create and operate an relational model of database . SQL is used to update, insert and delete a stored database. The original version of SQL was called SEQUEL

Various data Types in SQL

The various Data Types available in SQL are Number, Character, Integer, Float, Date and Logical.

Data Definition Language(DDL) : DDL describes the portion of SQL that allows to create, alter and destroy database objects___ Eg. Create, Drop, Alter

Data Control Language: DCL is used for controlling data and access to the database

Eg. Select, Insert, Delete, update

Basic Queries in SQL

Select:- select command is the prime command which allows data to be retrieved from the data base. Select command used for selection and projection

From : specify the source of data for answering the query

Where – means to specify the condition

Type of update operations in RDBMS

Insert : is used for inserting values into the table

Delete:- delete a record from the table

Update: To modify the contents of a column

SQL aggregate functions:

Sum()- To find sum of a column

Max() – To find maximum value of a column

Min() –To find minimum values of a column

******* SQL comparison operators:- Like, BETWEEN... AND**

Constraints of RDBMS

1. Domain constraints
2. Key constraints
3. Entity integrity constraints
4. Referential Integrity constraints

Basic components of a database

Bit or binary digit: it could be either 0 or 1

Byte: 8 bit

Field or data items: A field is the smallest unit of stored data

Record: A record is a collection of related fields

File: A file is a collection of records