NCERT Solutions for Class 11

Accountancy

Chapter 14 – Structuring Database for Accounting

1. State main categories of data models.

Ans: Any information system's primary function is to manage enormous amounts of structured and unstructured data. Data models explain how data should be stored in data management systems such as relational databases, including the structure and integration features.

The most frequent types of data models are: hierarchical database model, relational database model, network model.

i. Relational Data Model- This data model is based on the relationship between the values of the collected data. Data is organized into rows and columns in this data model. A tuple is a row, a column header is an attribute, and the entire set of rows and columns, i.e. a table, is referred to as a relation. Because it expresses the relationship between the rows and columns, the table is referred to as a relation. This model describes the data structure and provides storage and retrieval functions.

ii. Hierarchical data model- Records and parent-child connections are the key components of the hierarchical data model. A record, on the other hand, is a collection of values that gives information on an entity or a relationship, whereas a parent-child relationship illustrates the relationship between the parent and children record types. Instead of an arbitrary graph, the records in this data model are organized in a tree structure.

iii. Network data model- The initial network model was published in CODASYL DataBase Task Group's 1971, which is why this form of the data model is also referred to as the DBTG model (DBTG). This data model is made up primarily of records and sets. While data is kept in records, which are collections of linked data values, sets represent the relationship between two types of records.

2. How are computers useful in processing the accounting data?

Ans : For most firms, the manual system of accounting has traditionally been the most prevalent way of keeping records of financial transactions/accounts. An accountant used to keep the books of accounts in the old days on a daily basis, such as cash books, accounting diaries, and ledgers on a regular basis, and it's utilized to put together a transaction summary and a final report on a manual basis. The complexity of transactions increased exponentially as speed, storage, and processing capacity increased. It became critical to keep accounting data up to date in real-time (or on the spur of the moment). As a result, computerized accounting systems have become more convenient and quick.

The features listed below are provided by a computerized accounting system:

• Accounting data is entered and stored online; purchase receipts and sales invoices are printed; and each account and transaction entry is unique.

• Account grouping can be done right from the start.

• Instant management reports at the touch of a button

In the end, computers have proven indispensable in today's accounting departments.

3. What do you understand by accounting data? Discuss the stages through which it is finally transformed for being presented as information in financial statements.

Ans: Accounting comprises recognising, measuring, recording, and conveying an organization's economic events data and information. Accounting is a set of interconnected tasks that begins with transaction identification and ends with the publication of financial statements. Data is generated at every level of the accounting process.

Accounting data is the term for the data that is generated. The end goal is not to generate data and information. It's a way to make information sharing easier.

The accounting process combines three distinct types of transactions, which are subsequently combined to produce financial statements. These include:

Confirming that the reversal of entries from the prior period has occurred.

The steps involved in recording individual business transactions in accounting records.

Period-end processing is required to close the books and prepare financial statements.

The following are the main steps in creating financial statements:

Creating trial balances and making adjustments to them

Adjusted trial balance preparation

The adjusted trial balance is used to prepare financial statements.

Transferring the amounts to the accounts for retained earnings

4. What do you understand by database? How does it differ from DBMS?

Ans: A database is a collection of data that has been arranged in such a way that it can be accessed, controlled, and updated as needed. A database is a collection of related pieces of data that may be used to execute a variety of tasks. Any item of information or known facts that can be recorded and interpreted as data. Name, roll number, and age of a student, for example.

The database management system (DBMS) is a collection of programs that allow users to construct and maintain databases. A database management system (DBMS) is a general-purpose software system that allows you to define, create, manipulate, and share databases for various reasons.

5. What is meant by entity type? How it is different from entity set? Illustrate by giving a suitable example from accounting reality.

Ans: The term "entity type" refers to a group of entities that share a common definition. Each entity type has its name and set of attributes, but an entity set is a collection of entities that are all of the same types and have the same properties. For example, '350967' 'Sunita' and 'Company' '7' is an account whose owner is Sunita. 350967 is the code. Sunita is given name. The company is number seven.

Accounts are the entity in this case.

An entity set, on the other hand, is a collection of one or more entities of the customer entity type.

6. What do understand by relationship type? How is it different from relationship instance and relationship set?

Ans: A relationship is what exists between two relational database tables when one table contains a foreign key that references the primary key of the other table (as defined in databases).

Relationships allow relational databases to separate and store data in multiple tables while also allowing dissimilar data items to be linked.

The entire number of entity sets that participate in a particular relationship set is referred to as the degree of a relationship set.

The term "database instance" refers to a memory structure that aids in the management of database files. It's essentially a collection of physical files on a computer disc that was formed using CREATE DATABASE instructions.

7. What do you understand by multi-valued attributes? How is it different from complex and composite attributes? Illustrate by giving suitable examples.

Ans: Multi-Valued Attributes are those attributes that have numerous values for a single entity. For example, the bus's colors can be classified into different categories, such as roof, side panels, and seats.

Reason for differentiation of multivalued attributes from complex attribute and composite attribute.

i. Complex attributes: Because a complex attribute is the mixture of both composite and multivalued attributes.

ii. Composite attribute: This attribute can be subdivided into several sub-attributes. Employee names at an entity corporation, for example, can be separated into several sub-divisions such as first name, middle name, and last name.

8. What do you understand by the concept of weak entity used in data modeling? Explain the relevance of owner entity type, partial key, and identifying relationship in the context of such modeling.

Ans: The term "weak entities" refers to entities that lack their own unique key qualities or identities. Weak entities are identified by their relationship with specific entities from another entity type, as well as certain of their attribute values. Other entity categories are classified as identifying or owning entities. The identifying or owner entity type is the entity type whose entities are in a relationship with the weak entities. In other terms, weak entities or child entity types (or subordinate entity type) are entities that are identified due to their relationship with their parent entity or dominant entity, whereas the parent entity is referred to as identifying entity type. As a result, the identifying connection of a weak entity refers to the relationship between the weak entity type and its owner entity. A combination of properties known as partial keys is utilised for unique identification of the weak entity that is tied to the same owner entity. The discriminator is another name for the partial key. This is due to the fact that it is used to distinguish between weak entities that are tied to the same parent entity. If we assume that no two children of the same employee have the same first name, the attribute Name of Children can be used to identify the children (weak entities) who are linked to the same employee (owner entity).

9. What is a participation role? State the circumstances under which the use of role names becomes necessary in the description of relationship types.

Ans: Being a part of a relationship in which each entity participates in a relationship and has a certain role to play is characterized as a participation role. When the same entity type appears more than once in a relationship type in different sorts of roles, it is critical to use the role name when describing the relationship type. Differentiating the relevance of different sorts of engagement requires the usage of role labels.

The circumstances where the use of role name become necessary in description of the relationship types are as follow:

i. Role name reflects the role that a particular entity is involved in the relationship.

ii. It reflects the duty of document creators and created both.

10. Define foreign keys. How is this concept useful in a relational data model? Illustrate with suitable examples.

Ans: A foreign key is a column or collection of columns in a relational database table that provides a link between data in two tables. A foreign key can be used to cross-reference two tables. It makes a referenceable link between the two tables by referencing the primary key of another table. Data in a domain across multiple tables must be summed up and a relationship between all of them must be maintained if there are any complex databases. The foreign key hypothesis gave rise to the concept of referential integrity. For example, let's take a look at the STUDENT table and the BOOKS ISSUED table, for instance. The STUDENT record contains all student information, whereas the BOOKS ISSUED table contains all books borrowed from the school library by pupils. The main goal is that all of the books distributed correspond to the students mentioned in the STUDENT table. To do this, we must create a foreign key in the BOOKS ISSUED database and link it to the STUDENT table's primary key. Student ID (i.e. S Id) is the primary key in the STUDENT table, whereas S Id is a foreign key in the BOOKS ISSUED table, which will be used to link the data in the STUDENT table to the books issued by them in the BOOKS ISSUED table.

Student Table

Student ID	Name
142	Noor
135	Jagat
153	Mohini

Books Issued Table

Name of Books	Student ID
Economics	135
Mathematics	135
English	142

Student ID	Name	Name of Books
135	Jagat	Economics
135	Jagat	Mathematics
142	Noor	English

11. What is meant by NULL value? What are the reasons that lead to their occurrence in database relations?

Ans: In a perfect world, every column in the table would have some value, but there may be times when it does not, in which case it is referred to as NULL VALUES.

A null is not the same as a blank or a zero. When a column has no data in it, the value blank is utilized. Zero is a fixed number.

The following are the factors that contribute to its appearance in database relationships.

(i) When an entity does not have a specific attribute.

(ii) When an attribute's current value is unknown.

(iii) When the value is unknown due to the fact that it does not exist.

12. Why are duplicate tuples not allowed in a relation?

Ans: There are several tuples in a relation, for example, R = t1,t2,t3,.....in, and they all follow integrity requirements and have a primary key pk. If any of the two tuples share an attribute, such as t1=t2, then their pk will be the same. As a result of breaching the key constraint, duplicity is not permitted in tuples.

13. What do you understand union compatibility of relations? For which operations such as compatibility is required and why?

Ans: Two tables are called union compatible , when the following conditions must be met by the participating relations in order for them to be union compatible.

The two relations must have the same degree, i.e. they must have the same number (set) of attributes.

Dom(A) = Dom(B)

That is to say, the domain (data type) for the relevant characteristics must be the same.

As a result, we may state that any two relations, such as A and B, are union compatible if (and only if) both relations have the same number of attributes and their corresponding attribute domains are the same (column by column).

The operations applied to the relations attribute, such as DIFFERENCE, INTERSECTION, and UNION, should be union compatible. In most cases, union compatibility requires the same domain and attribute.

14. What is the need for database normalization?

Ans: The term "database normalization" refers to the process of efficiently organizing and keeping data in a database. The fundamental rationales for normalizing the database are to prevent data redundancy, which is,

- avoiding/eliminating the storage of the same data in many locations.
- to assure data dependability, i.e. storing linked data in the database

Database normalization is critical because it frees the database from storing useless data and eliminates duplicate data items. As a result, normalization ensures that more free space in the database is accessible.

15. Discuss the basic concepts of the Entity-Relationship Model. Illustrate how an ER model is diagrammed.

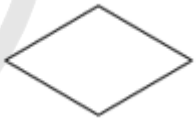
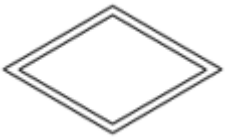
Ans: The Entity-Relationship (ER) Model is a popular conceptual data format since it is commonly utilized in database-oriented applications. Entities, characteristics,

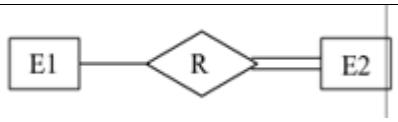
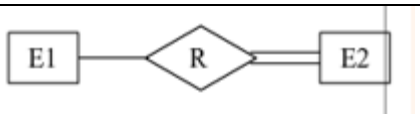
identifiers, and relationships are the main components of the ER Model, which are used to elicit a reality for which a database should be constructed.

The model is best represented with ER symbols and a list. The following are examples of ER symbols:

Symbols for the Elements Weak Entity Rectangle Entity Rectangle Relationship in a double-lined rectangle Diamond form Establishing a connection

Diamond form with two lines Attribute Attached to straight lines are ovals. The most important feature Ovals are encased with names, and ovals are joined to straight lines. Entities, identifiers, characteristics, relationships, and weak entities are the five major parts of the ER database model. Each member represents a distinct function.

Major Elements of ER Model	**Represented as (Symbols)**
Entity Type is represented by a rectangular box	
Weak Entity Type is represented by a double-lined rectangular box	
Relationship Type is represented by a diamond-shaped box	
Identifying Relationship Type is represented by a doublelined diamond-shaped box	
Attribute Name is enclosed in ovals and are attached to their entity type with the help of straight lines	
Key Attribute Name enclosed in ovals and attached to their entity type by straight lines.	

Multi-valued Attributes are represented by double ovals.	
Derived Attributes are represented by dashed line Ovals	
Total Participation of E2 in R is represented as	
Cardinality Ratio 1: N for E 1: E 2 in *R* is represented as	

16. What integrity constraints are specified on the database schema? Why is each considered important?

Ans: The structure and design of a database are referred to as a database schema. The word "database schema" refers to a collection of database properties such as tables, constraints, and relationships. A set of relational database schemas and a set of integrity requirements make up a relational database schema.

A relational database is subjected to four different types of integrity restrictions. These are as follows:

i. Domain Constraints- These database schema constraints specify the conditions that each relational instance must meet. Each relation's attribute value must be an indivisible value derived from the domain associated with that attribute.

ii. Null Values and Key Constraints- These constraints require the existence of candidate keys. The tuples in every instance of a relational database schema can be uniquely recognized by their values for particular attributes, according to the Key Constraints. This means that each data record in a database that corresponds to a tuple of the relation must be unique. That is, no two tuples in a relationship can have the same set of values for all of their attributes. Every relation contains at least one key, known as the Super-Key, which is the sum of all its qualities. The uniqueness limitations are specified by the Super-key.

iii. Entity Integrity Constraints- To identify individual tuples in a relation, a primary key is utilized. The value of the Primary key cannot be null, according to the Entity Integrity Constraints. If the primary key is null, we won't be able to distinguish between the tuples because they're the same. Tuples are duplicated, and uniqueness restrictions are broken as a result.

iv. Referential Integrity Constraints- A referential integrity constraint is defined between two or more relations to ensure that the tuples of those relations are consistent. These are the limits that the presence of foreign keys imposes.

17. Discuss the different types of update operations about integrity.

Ans: In terms of integrity, there are three main sorts of update operations:

i. Insert: This suggests that a new tuple will be added to the existing relation. Any of the four integrity constraints can be broken by this procedure.

ii. Delete: This procedure is used to remove a relation's existing tuple. If the removed tuple is referenced by a foreign key from other tuples in the database, this operation may break Referential Integrity Constraints.

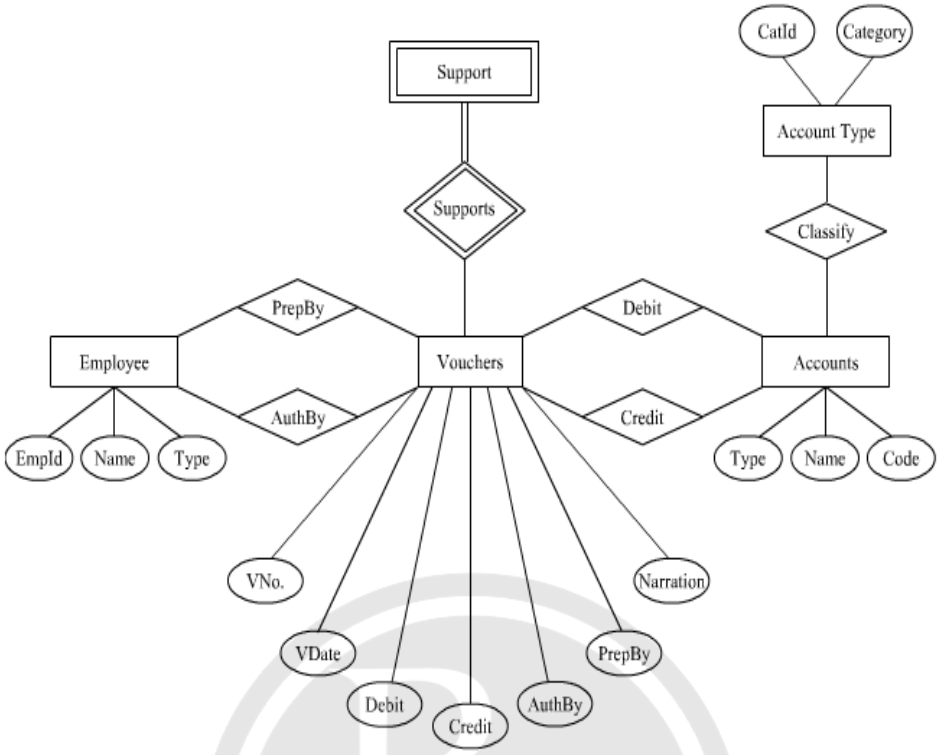
iii. Modify: This action is used to alter the values of records in a data table that already exist. If the alteration is not performed on the Primary or Foreign keys, this action usually does not result in any violations.

18. Discuss the steps you would take to transform an ER Model into various relations f Relational Data Model. Give suitable examples.

Ans: Several procedures and processes may be used to convert ER Diagrams into other relational data models, some of which are manual and some of which are automated. Let's look at how to convert ER mapping to relational fundamentals. Entity and Relationship are the two parts of an ER diagram.

The Mapping Entity is a real-world object having properties.

The mapping procedure begins with the creation of a table for each entity. As a result, the entity's characteristics become table fields with the specified data type and the primary key is declared. For example,



Entities are represented by rectangular boxes in the diagram above. The diamond-shaped boxes represent the type of relationship that exists between the two entities. The weak entities are represented by the double-lined rectangle boxes. The identifying relationship type is described by the double-lined diamond-shaped box. The straight lines encompass and attach attribute names to their respective entity types in ovals.