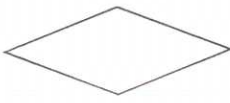


## Scoring Indicators

Course Name : Database Management Systems  
Course Code : 3133

QID : 2110220125

Q. No.	Scoring Indicators	Split score	Sub Total	Total score
	<b>PART A</b>			<b>9</b>
I.1	A DBMS is software package for creating and managing databases.	1	1	
I.2	False	1	1	
I.3	Set , where	1	1	
I.4	Drop table	1	1	
I.5	Attribute	1	1	
I.6		1	1	
I.7	True	1	1	
I.8	$A \rightarrow B$	1	1	
I.9	Transaction			

II.1 The attribute reg\_no can be selected as primary key.

reg\_no can uniquely identify a student.

1  
Reason-1 3

II.2 Select acct\_no, cust\_name from ACCOUNT order by acct\_no;

3 3

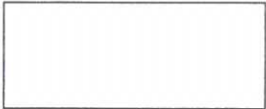
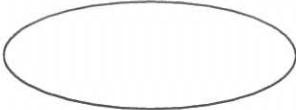
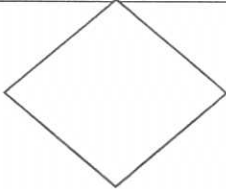
II.3 ER Diagram

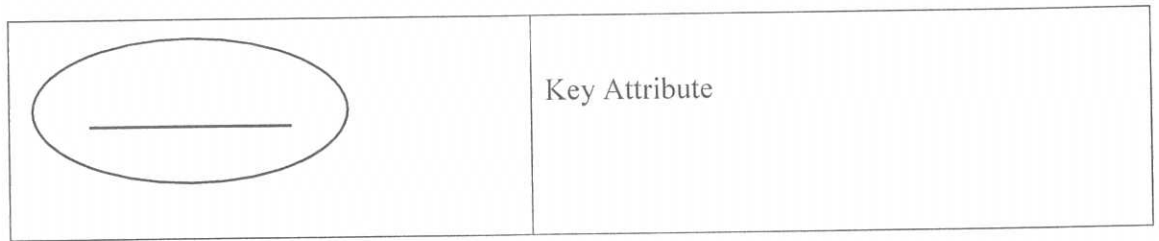
Entity-1  
Attributes- 3  
1×2

II.4 ER Diagram

Two  
Entity-2  
Any one 3  
attribute  
for each  
entity-1

II.5

Symbol	Description
	Entity Type
	Attribute Any three 3 ×1
	Relationship



II.6 Entity is a distinguishable object that has an independent existence in the real world.

A relationship is an association between two or more entities

1×3

3

Attributes are the properties of an entity that characterize and describe it.

II.7 ★ Transaction is an atomic unit of work used in a database.

★ The operations that make up a transaction typically consist of requests to access existing data, update existing data, add new data, or any combination of these requests.

Exp-3

3

II.8 ★ Functional dependency describes the relationship between attributes in a table.

★ For eg, if X and Y are attributes of a table (relation R). If each value of X is associated with exactly one value of Y, it can be said X functionally dependent of Y

3

3

II.9 • Mobile data-driven applications enable us to access any data from anywhere, anytime.

• The database systems are synchronized using mobile databases and multiple users can access the data.

• Mobile databases require very little support and maintenance.

• The mobile database can be synchronized with multiple devices such as mobiles, computer devices, laptops etc.

Any two

×2

3

II.10 Concurrency Control in DBMS is a procedure of managing simultaneous transactions ensuring their atomicity, isolation, consistency and serializability.

3

## III.1 1. CONTROLLING REDUNDANCY

2. RESTRICTING UNAUTHORIZED ACCESS

3. PROVIDING BACKUP AND RECOVERY

4. PROVIDING MULTIPLE USER INTERFACE

Listing-1

5. REPRESENTING COMPLEX RELATIONSHIPS AMONG  
DATA

Exp - Any 7

four ×1.5

6. FLEXIBILITY TO CHANGE DATABASE STRUCTURES

7. AVAILABILITY OF UP-TO-DATE INFORMATION

8. ENFORCING INTEGRITY CONSTRAINTS

## III.2 The Three-Schema Architecture which can be used to separate the Exp- 3

(a) user applications and the physical database.

Figure-2

Physical (Internal) Level:

This is a lowest level, which describes how the data is actually stores.

2.Logical (Conceptual) Level:

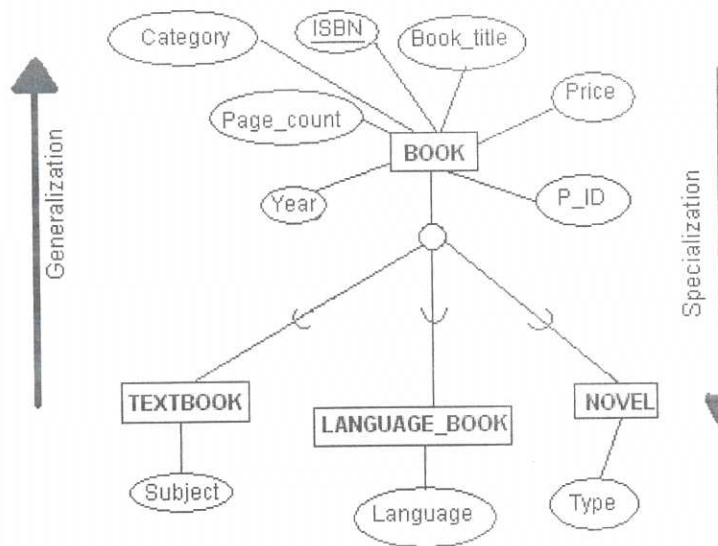
This is next higher level that describes what data and what relationships in the database.

7

3.External (view) Level: This is a lowest level, which deals with the user's view of the database.

Compariso

n - 2



### III.10 Mapping ER Model to Relational Model

There are several processes and algorithms available to convert ER Diagrams into Relational Schema.

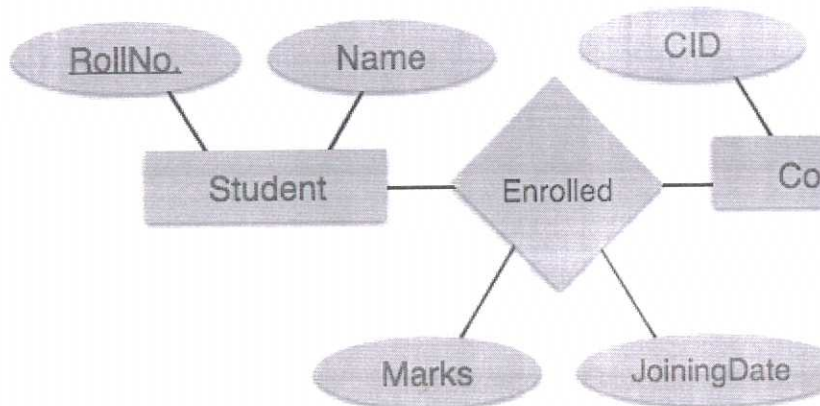
#### Mapping Process (Algorithm)

- Create table for each entity.
- Entity's attributes should become fields of tables with their respective data types.
- Declare primary key.

#### Mapping Relationship

A relationship is an association among entities.

Exp - 7     7

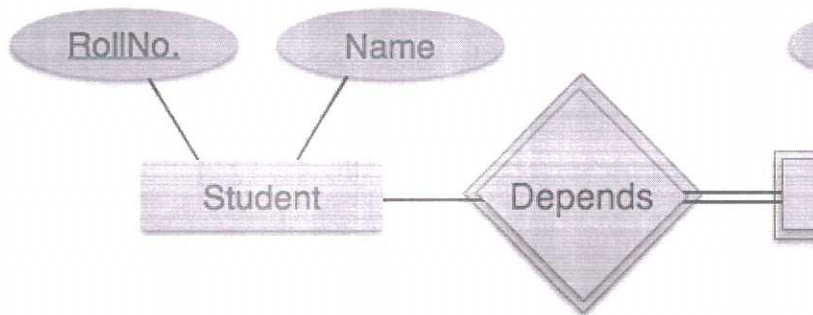


### Mapping Process

- Create table for a relationship.
- Add the primary keys of all participating Entities as fields of table with their respective data types.
- If relationship has any attribute, add each attribute as field of table.
- Declare a primary key composing all the primary keys of participating entities.
- Declare all foreign key constraints.

### Mapping Weak Entity Sets

A weak entity set is one which does not have any primary key associated with it.



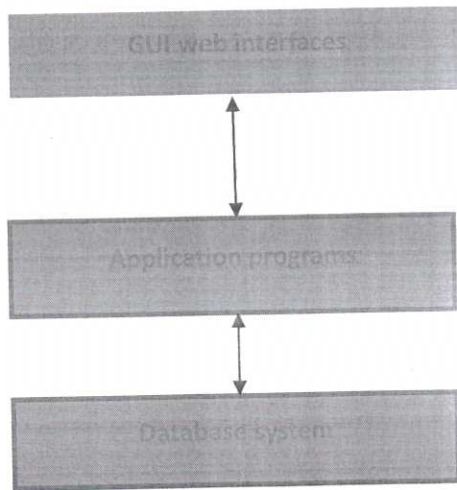
### Mapping Process

- Create table for weak entity set.
- Add all its attributes to table as field.
- Add the primary key of identifying entity set.
- Declare all foreign key constraints.

III.11 A table is considered to be in 1NF if all the fields contain only scalar values.

For a table to be in 2NF, there are two requirements

- The database is in first normal form
- All nonkey attributes in the table must be functionally dependent on the entire primary key



III.5 (i) create table command with attributes and constraints 3

(ii) select book\_title from BOOK where category="novel";

2 7

(iii)select book\_title from BOOK where price = (select max(price)  
from BOOK;

2

III.6 (i) create table command with attributes and constraints 3

(ii) update PROJECT set Plocation="Comombo" where Pno=3;

2 7

(iii) alter table PROJECT change column Plocation to ploc  
varchar(10);

2

- III.7 (
1. PRIMARY KEY
  2. UNIQUE
  3. FOREIGN KEY
  4. NOT NULL
  5. CHECK
  6. DEFAULT

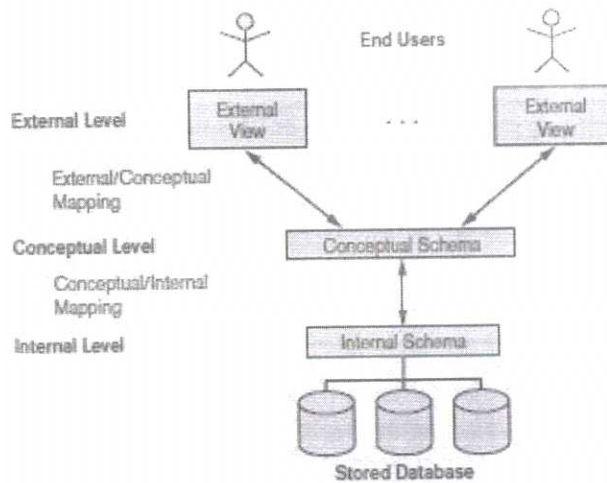
Listing

- 1

Exp - Any 7

three × 2

- III.8      ★ Query defined in the WHERE clause of another query is known as nested query or subquery
- Def-2  
Example-1.5
- ★ A query that combines the tuples from two or more relations is known as join query.
- ★ In such type of queries, more than one table is listed in the FROM clause.
- 7
- ★ The process of combining data from multiple relations or tables is called joining.
- Def-2  
Example-1.5
- III.9      ➤ An entity type may include sub-groupings of its entities in such a way that entities of one subgroup are distinct in some way from the entities of other subgroups
- The process of refining the higher-level entity types (super class) into lower-level entity types (subclass) by adding some additional features to each of them is a top-down design approach and is known as specialization
- For eg, the entity type Book can be classified further into three types, namely textBook, Language\_Book and Novel. These entity types are described by the set of attributes of  $2 \times 3.5$  Book and some additional set of attributes (local attributes) that differentiate them from each other.
- 7
- The entity textBook may have additional attributes subjects like maths, science, computer etc.
- Language Book may have language such as French, German , Japanese etc. and Novel may have the attribute type(Fiction ,mystery, fantasy etc).
- This process of defining the subgroups are called specialization.



Physical data independence: Is the ability to modify the internal schema without affecting conceptual or external schema)

Logical data independence: Is the ability to modify the conceptual schema without affecting external schema.

- III.3 • The relational model represents both data and the relationships among those data using relation (table) Exp-1.5 × 3
- In relation model, a row is called a tuple, a column header is called an attribute, and the table is called a relation. 7  
Ex: 2.5

III.4 There are two approaches to implement client/server architecture.

1. Two-tier
2. Three-tier

Listing approaches

1. Two-tier architecture

- 1

☞ The user interface and application programs placed at the client machine and database system at server machine.

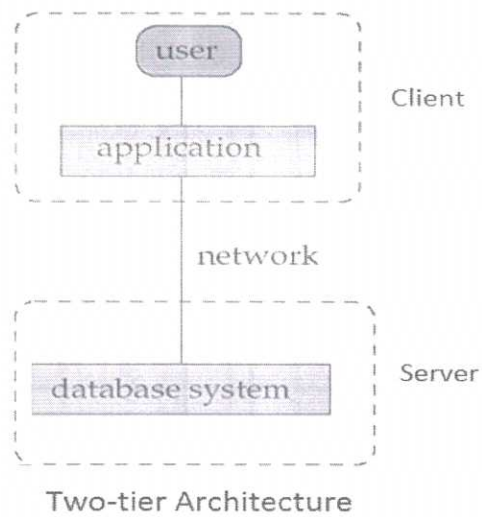
Two tier-3 <sup>7</sup>

☞ Application invokes database system functionality at the server machine through query language statements.

Three tier-3

☞ Application program interface standards like ODBC and JDBC are used for interaction between

the client and the server.



Advantage:

- ✧ Simplicity.
- ✧ Compatible with existing systems.

Three-tier architecture

- Primarily used for web based applications.
- An intermediate server (application server or web server) present between client and database server.
- The client machine acts as merely a front end and does not contain any direct database calls.
- Intermediate server accepts requests from client, processes the request and sends database command to the database server.
- The database server sends the results back to application server which is converted into GUI format and presented to client.

- III.12
- ★ Atomicity
  - ★ Consistency
  - ★ Isolation
  - ★ Durability

Listing -1

Exp - 4    7

×1.5

