DBMS Questions

Latest DBMS MCQ Objective Questions

Question 1:

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Boyce Codd Normal Form is slightly stronger version of which of the form of database normalisation?

1. 4NF
2. 3NF
3. 2NF
4. More than one of the above
5. None of the above

Answer (Detailed Solution Below)

Option 2 : 3NF

DBMS Question 1 Detailed Solution

Concept:-

BCNF (Boyce Codd Normal Form) is the advanced version of 3NF. A table is in BCNF if every functional dependency X→Y, X is the super key of the table. If R is found to be in BCNF, it can be safely deduced that the relation is also in 3NF, 2NF, and 1NF as the hierarchy shows.

Important Points

- BCNF is the normal form that actually removes all transitive dependencies.
- It is a more restricted form of normalization so that the database does not end in anomalies.
- The stage at which a table is organized is known as its normal form (or a stage of normalization).

Additional Information

Normalization:- It is the process of organizing data in a database. There are two main objectives of the normalization process: eliminate redundant data and ensure data dependencies make sense.

1NF:- First normal form (1NF) is a relation in which the intersection of each row and column contains one and only one value.

2NF:- Second Normal Form (2NF) is based on the concept of fully functional dependency.

3NF:- A relation is in the third normal form (3NF) if it is in the second normal form and no transitive dependencies exist.

4NF:- A group of tables that satisfies the first, second, and third normal forms are sufficiently well-designed.

Question 2:

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_____ is a technique of breaking up database into logical units, which may be assigned for storage at the various sites in distributed database system.

1. Data fragmentation
2. Data mining
3. Data normalization
4. More than one of the above
5. None of the above

Answer (Detailed Solution Below)

Option 1 : Data fragmentation

DBMS Question 2 Detailed Solution

Fragmentation is a technique of breaking up a database into logical units, which may be assigned for storage at the various sites in a distributed database system.

- The process of dividing a database into fragments is called fragmentation, and is typically done to improve the performance and availability of the database.
- By storing fragments at different sites, it is possible to distribute the load and improve the access time for users at different locations.
- Fragmentation can also improve the availability of the database by allowing it to continue functioning even if one or more sites become unavailable.

Question 3:

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Which of the following is **not** a characteristic of a relational database model?

1. tables
2. treelike structure
3. complex logical relationships
4. More than one of the above
5. None of the above

Answer (Detailed Solution Below)

Option 2 : treelike structure

DBMS Question 3 Detailed Solution

The correct answer is **treelike structure**.

Key Points

- A **relational database model** is based on the concept of **tables** (relations) where **data is stored in rows and columns**.
- Each **table** in a relational database represents an **entity** and each row in the table represents a unique instance of that entity.
- **Records** (or rows) in the table are used to store the actual data entries.
- **Complex logical relationships** can be established between tables using **foreign keys** and **primary keys**.

- A **treelike structure** is not a characteristic of a relational database model. It is more commonly associated with **hierarchical databases** where data is organized in a tree-like structure.

Question 4:

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In SQL, which command is used to change data in a table?

1. Update
2. Insert
3. Browse
4. More than one of the above
5. None of the above

Answer (Detailed Solution Below)

Option 1 : Update

DBMS Question 4 Detailed Solution

The correct answer is **Update**.

Key Points

- The **UPDATE** command in SQL is used to **modify existing records** in a table.
- It allows you to **change one or more columns** for a specified row or rows.
- The syntax for the **UPDATE** statement is:

```
UPDATE table_name SET column1 = value1, column2 = value2, ... WHERE condition;
```

- Without a **WHERE** clause, all rows in the table will be updated.

Additional Information

- **INSERT**: This command is used to add new rows to a table. It cannot be used to modify existing data. Syntax:

```
INSERT INTO table_name (column1, column2, ...) VALUES (value1, value2, ...);
```

- **BROWSE**: This is not a standard SQL command. It might be used in some database management systems for navigating through the data, but it is not used to modify data.
- **APPEND**: This is also not a standard SQL command. In some contexts, it might mean adding new data to the end of a table, but the standard SQL command for this operation is **INSERT**.

Question 5:

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Which of the following techniques allow extracting valuable information from large volumes of data and predicting outcomes of future situations?

1. Data warehousing
2. Data mining
3. Data analysis
4. Database management
5. Data managing

Answer (Detailed Solution Below)

Option 2 : Data mining

DBMS Question 5 Detailed Solution

Data mining techniques allow extracting valuable information from large volumes of data and predicting outcomes of future situations

Key-Points

Data Mining: Bringing out the most **important data from a huge data set** is known as data mining. With the help of **Artificial Intelligence AI**, a CRM tries to answer the most important data queries of a business. *In a CRM, data mining helps to find relations among data, classifies the customers according to business value, and helps to find answers to the following questions –*

- Which customers the business should target?
- What is the cost of customer acquisition?
- Which customers are buying or not buying the products?
- Who are high/medium/low margin customers?
- What profile customers are defaulting payment repeatedly?
- How can a business segment it's market?
- Can the business offer a common price for all customer segments?

For example, an analyst at **Flipkart** found that *customers who buy a smartphone are also looking for tempered glass and cover for it. He used this information to create a bundle in which there is a smartphone, a tempered glass suited to the screen size of the smartphone, and a cover. This helped in accelerating the sale of the tempered glass and the phone back cover.*

Top DBMS MCQ Objective Questions

Question 6 View this Question Online >

Fifth-Generation languages are the ____.

1. Assembly languages
2. Machine languages
3. constraint based languages
4. High level language
5. None of the above

Answer (Detailed Solution Below)

Option 3 : constraint based languages

DBMS Question 6 Detailed Solution

The correct answer is **constraint-based languages**.

Key Points

Programming languages are classified in variety of ways and **generation** is one of them.

- Generation are further classified as: First-generation, second-generation, third-generation, fourth-generation, **fifth-generation**.
- Fifth generation language is applied to logic and **constraint-based languages** like Prolog.

Additional Information

- Assembly languages → Second-generation
- Machine languages → First-generation
- High Level language → Third-generation

Question 7

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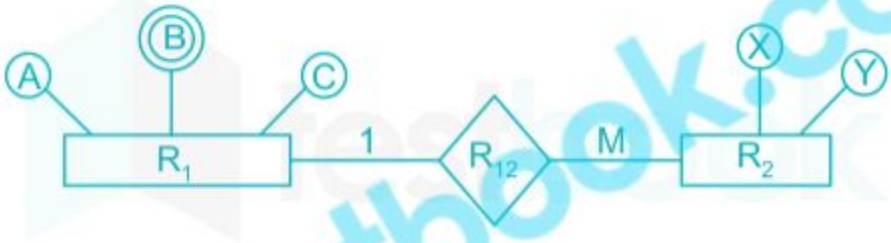
Find minimum number of tables required for converting the following entity relationship diagram into relational database?



1. 2
2. 4
3. 3
4. 5

Answer (Detailed Solution Below)

Option 3 : 3

DBMS Question 7 Detailed Solution

Rules for finding a minimum number of tables required for an ER diagram:

1) A strong entity with single or composite attributes requires one table.

2) A strong entity with multivalued attributes requires two tables.

3) In the case of many to many relations between two entities, 3 tables are required.

Explanation:

There is one to many relationships between R_1 and R_2. So, two tables are required for two entities.

But, entity R_1 contains multivalued attribute B, due to which one table for this is also needed.

Here we have 1 to Many relation so we requires two tables.

Attribute B being multi-valued, we need to remove the multi-valued attribute B to convert the given entity-relationship diagram into a relational database.

As relational database do not allow multi-valued attributes. We have to introduce a new table.

So, the number of tables is as below:
R1
R12R2
A table for B (Multi-valued attribute)
So, a total of 3 tables are required for the given entity relational diagram.

So, option 3 is the correct answer.

Question 8 View this Question Online >

Consider the relation X(P, Q, R, S, T, U) with the following set of functional dependencies

$$F = \{ \{P, R\} \rightarrow \{S, T\}, \{P, S, U\} \rightarrow \{Q, R\} \}$$

Which of the following is the trivial functional dependency in F^+, where F^+ is closure of F?

1. $\{P, R\} \rightarrow \{S, T\}$
2. $\{P, R\} \rightarrow \{R, T\}$

3. {P, S} → {S}

4. {P, S, U} → {Q}

Answer (Detailed Solution Below)

Option 3 : {P, S} → {S}

DBMS Question 8 Detailed Solution

Concept:

The closure of F, denoted as F^+, is the set of all regular FD, that can be derived from.

For trivial functional dependency,

Let A and be two sets consists of attributes of a relation

A → B

$A \supseteq B$

Explanation:

Option 1:

{P, R} → {S, T}

$\{P, R\} \not\supseteq \{S, T\}$

Not a trivial functional dependency

Option 2:

{P, R} → {R, T}

$\{P, R\} \not\supseteq \{R, T\}$

Not a trivial functional dependency

Option 3:

{P, S} → {S}

$\{P, S\} \supseteq \{S\}$

It is a trivial functional dependency

Option 4:

{P, S, U} → {Q}

$\{P, S, U\} \not\supseteq \{Q\}$

Not a trivial functional dependency

NOTE:

NOTE:

$\supseteq$ → superset

$\not\supseteq$ → not superset

Question 9

View this Question Online >

Which symbol denote derived attributes in ER Model?

1. Double ellipse
2. Dashed ellipse
3. Squared ellipse
4. Ellipse with attribute name underlined

Answer (Detailed Solution Below)

Option 2 : Dashed ellipse

DBMS Question 9 Detailed Solution

Concept:

An attribute that can be derived from other attributes of the entity type is known as a derived attribute, derived attribute is represented by a dashed eclipse.

Explanation:

In the ER model,

Option 1: Double ellipse

Multivalued attribute

Option 2: Dashed ellipse

Derived attribute

Option 4: Ellipse with attribute name underlined

Key attribute

Question 10 View this Question Online >

An ER model of a database consists of entity types A and B. These are connected by a relationship R which does not have its own attribute. Under which one of the following conditions, can the relational table for R be merged with that of A?

1. Relationship R is one-to-many and the participation of A in R is total.
2. Relationship is one-to-many and the participation of A in R is partial.
3. Relationship R is many-to-one and the participation of A in R is total.

4. Relationship R is many-to-one and the participation of A in R is partial.

Answer (Detailed Solution Below)

Option 3 : Relationship R is many-to-one and the participation of A in R is total.

DBMS Question 10 Detailed Solution

Concept:

Total participation: It specifies that each entity in the entity set must compulsorily participate in at least one relationship instance in that relationship set.

Partial participation: It specifies that each entity in the entity set may or may not participate in the relationship instance in that relationship set.

Explanation:

In one to many or many to one relation, the relation between two entities is merged on the many side with total participation. As, it is given that relationship R doesn't have its own attributes. So, it must be combined with entity A. So, the relation must be many to one and there should be total participation of A in R.

Question 11 View this Question Online >

Consider the following statements S1 and S2 about the relational data model:

S1: A relation scheme can have at most one foreign key.

S2: A foreign key in a relation scheme R cannot be used to refer to tuples of R.

Which one of the following choices is correct?

1. S1 is true and S2 is false.
2. Both S1 and S2 are true.
3. Both S1 and S2 are false.
4. S1 is false and S2 is true.

Answer (Detailed Solution Below)

Option 3 : Both S1 and S2 are false.

DBMS Question 11 Detailed Solution

Answer: Option 3

Concept:

Foreign Key :is the set of attributes in a particular relation whose values are belongs to primary key of same relation or other relation.

Explanation:

Statement 1: A relation scheme can have at most one foreign key.

There is **no such restriction** on how many number of Foreign keys a particular relation can have. A relation can have **as many number of Foreign keys as Required**.

So this statement is **false**.

Statement 2: foreign key in a relation scheme R cannot be used to refer to tuples of R.

There is no such constraint. Foreign key **can be used** to refer to primary key of the same relation. **Self-referencing relations** are examples of such foreign key. So this statement is also **false.**

So **option 3** is the correct answer.

Question 12

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Consider the relation scheme R = (E, F, G, H, I, J, K, L, M, N) and the set of functional dependencies {(E, F} → {G}, {F} → {I, J}, {E, H} → {K, L}, {K} → {M}, {L} → {N}} on R. What is the key for R ?

1. {E, F}
2. {E, F, H}
3. {E, F, H, K, L}
4. {E}

Answer (Detailed Solution Below)

Option 2 : {E, F, H}

DBMS Question 12 Detailed Solution

Function Dependencies:

{(E, F} → {G}, {F} → {I, J}, {E, H} → {K, L}, {K} → {M}, {L} → {N}}

Option 1: {E, F}

$\{E, F\}^+$ = {E, F, G, I, J}

Since K, L, M and N is missing in RHS ∴ it is not a key

Also, {E} cannot be a key because {E} is subset of {E, F}

Option 2: {E, F, H}

$\{E, F, H\}^+$ = {E, F, H, G, I, J, K, L, M, N}

∴ it is a key

Key for R is {E, F, H}.

Important Points:

In relation algebra, key is primary key or candidate key.

{E, F, H, K, L} is super key.

Question 13

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Consider the following Entity Relationship Diagram (ERD)

Which of the following possible relations will not hold if the above ERD is mapped into a relation model ?

1. Person (NID, Name)
2. Qualification (NID, ExamID, QualifiedDate)
3. Exam (ExamID, NID, ExamName)
4. Exam (ExamID, ExamName)

Answer (Detailed Solution Below)

Option 3 : Exam (ExamID, NID, ExamName)

DBMS Question 13 Detailed Solution

The correct answer is **"option 3"**.

EXPLANATION:

On converting the given ER diagram into the relational table, we will get three tables -

Entity	Table name	Primary key
Person	Person(Name, NID)	NID
Exam	Exam(ExamID, ExamName)	ExamID
Qualification	Qualification(NID, ExamID, QualifiedDate)	Includes primary key of Person & Exam i.e. NID, ExamID

Hence, Exam (ExamID, NID, ExamName) is not a possible relation.

Question 14 View this Question Online >

What is the full form of SQL?

1. Simple Query Language
2. Structured Queuing Language
3. Structured Query Language
4. Structured Queuing Lexicon

Answer (Detailed Solution Below)

Option 3 : Structured Query Language

DBMS Question 14 Detailed Solution

Key Points

SQL (Structured Query Language) is a standardized programming language that's used to manage relational databases and perform various operations on the data in them. ... SQL became the de facto standard programming language for relational databases after they emerged in the late 1970s and early 1980s.

- SQL is regularly used not only by database administrators, but also by developers writing data integration scripts and data analysts looking to set up and run analytical queries.
- The uses of SQL include modifying database table and index structures; adding, updating and deleting rows of data; and retrieving subsets of information from within a database for transaction processing and analytics applications.

Hence the correct answer is *Structured Query Language.*

Question 15 View this Question Online >

For a multi-processor architecture, In which protocol a write transaction is forwarded to only those processors that are known to possess a copy of newly altered cache line?

1. Snoopy bus protocol
2. Cache coherency protocol
3. Directory based protocol

4. None of the above

Answer (Detailed Solution Below)

Option 3 : Directory based protocol

DBMS Question 15 Detailed Solution

- Directory-based cache coherence is a type of cache coherence mechanism, where directories are used to manage caches in place of snoopy methods due to their scalability.
- For a multi-processor architecture, in the directory-based protocol, a write transaction is forwarded to only those processors that are known to possess a copy of newly altered cache line
- It can be used to target both the performance and scalability of directory systems.

Additional Information

- Bus snooping methods scale poorly due to the use of broadcasting.