Question & Response Results

* Question: Create six multiple choice question and answer of the question with the Access Control concept

Response: Question 1:   
Level: Remember   
Question: Define what is meant by access control in database systems.  
A) The encryption technique used to secure the data   
B) The process of granting or denying specific tasks on a computer   
C) The procedure of backing up data  
D) The process of grouping and labeling data   
Answer: B) The process of granting or denying specific tasks on a computer  
  
Question 2:   
Level: Understand   
Question: Describe how role-based access control (RBAC) works in a database system.  
A) It assigns privileges based on the data security level  
B) It assigns privileges based on the user’s role within an organization  
C) It assigns privileges randomly   
D) It grants the user complete access to the system regardless of his role  
Answer: B) It assigns privileges based on the user’s role within an organization  
  
Question 3:   
Level: Apply   
Question: Solve the following scenario: You need to grant specific privileges to a subset of users in a database system. What kind of access control can be used?  
A) Mandatory access control  
B) Role-based access control  
C) Discretionary access control  
D) Multilevel access control  
Answer: B) Role-based access control  
  
Question 4:   
Level: Analyze   
Question: Compare role-based access control (RBAC) and discretionary access control (DAC) in terms of privilege distribution.  
A) Both assign privileges based on the user’s role  
B) DAC assigns privileges based on the user’s role while RBAC assigns privileges based on the discretion of the admin  
C) RBAC assigns privileges based on the user’s role while DAC allows individual users to make policy decisions  
D) Both allow individual users to make policy decisions  
Answer: C) RBAC assigns privileges based on the user’s role while DAC allows individual users to make policy decisions  
  
Question 5:   
Level: Evaluate   
Question: Justify the importance of preventing the flow of information from higher to lower security levels within a database system.  
A) It is not necessary; information should be freely accessible  
B) To eliminate the need for security classes  
C) To prevent unauthorized access to sensitive data  
D) To facilitate the process of polyinstantiation  
Answer: C) To prevent unauthorized access to sensitive data  
  
Question 6:   
Level: Create   
Question: Develop a scenario where applying row- and label-based security might be necessary  
A) In a gaming firm where data accessibility has no impact on the business  
B) In a local bakery where customer's details are not stored   
C) In a governmental institution, where different levels of users require different access levels to citizen's details  
D) In a kids' school, where teachers and students use the same database for teaching and learning only  
Answer: C) In a governmental institution, where different levels of users require different access levels to citizen's details

* Question: Create six multiple choice question and answer of the question with the ACID Properties concept

Response: Question 1: Define the ACID properties of transactions in database systems.  
LEVEL: Remember   
A) Atomicity, Consistency, Isolation, Durability  
B) Ascendancy, Cohesion, Inclusion, Durability  
C) Atomicity, Coherence, Independence, Durability  
D) Accuracy, Consistency, Isolation, Durability  
Answer: A) Atomicity, Consistency, Isolation, Durability  
  
Question 2: Explain what Atomicity means in the context of ACID properties in database transactions.  
LEVEL: Understand  
A) It implies that all operations within a transaction are treated as one indivisible unit.  
B) It ensures that data remains consistent before and after the transaction.  
C) It means a transaction will bring the database from one consistent state to another.  
D) It guarantees that a completed transaction can survive permanently.  
Answer: A) It implies that all operations within a transaction are treated as one indivisible unit.  
  
Question 3: Apply the concept of Consistency Preservation in ACID properties. Which statement aligns with it?  
LEVEL: Apply  
A) It allows transactions to occur simultaneously without interference.  
B) It ensures the durability of the transaction even in system failures.  
C) It means if a transaction process from start to end without interference, the database should transition from one consistent state to another.  
D) It dictates that a transaction operation cannot be divided into smaller parts.  
Answer: C) It means if a transaction process from start to end without interference, the database should transition from one consistent state to another.  
  
Question 4: Compare the concepts of Atomicity and Consistency Preservation in the ACID properties.  
LEVEL: Analyze  
A) Atomicity refers to the indivisibility of transactions, while Consistency ensures the integrity of the database.  
B) Atomicity deals with permanent transaction results, while Consistency focuses on managing transactional interference.  
C) Atomicity ensures a database's consistent state, while Consistency implies transaction indivisibility.  
D) Atomicity involves the concurrent execution of transactions, while Consistency guarantees transaction durability.  
Answer: A) Atomicity refers to the indivisibility of transactions, while Consistency ensures the integrity of the database.  
  
Question 5: Determine how ACID properties contribute to transaction handling in database systems.  
LEVEL: Evaluate  
A) They provide a framework for understanding the data storage process.  
B) They ensure the correct, reliable, and safe execution of transactions.  
C) They contribute to the physical design of database systems.  
D) They define the data manipulation language in a database system.  
Answer: B) They ensure the correct, reliable, and safe execution of transactions.  
  
Question 6: Develop a real-world scenario where the ACID properties of transactions can be applied.  
LEVEL: Create  
A) In a bank system, when a user transfers funds from one account to another.  
B) In designing the structure of a new relational database system.  
C) During the creation of a new data encryption method.  
D) When coding a new web-based interface for querying a database.  
Answer: A) In a bank system, when a user transfers funds from one account to another.

* Question: Create six multiple choice question and answer of the question with the ALTER TABLE command

Response: Level 1: Remember  
Question: Define the purpose of the ALTER TABLE command in SQL.  
A) To delete a table from the database  
B) To modify the structure of an existing table  
C) To create a new table  
D) To query data from a table  
Answer: B) To modify the structure of an existing table  
  
Level 2: Understand  
Question: Explain how the ALTER TABLE command can be used in SQL.  
A) To manipulate data in rows and columns  
B) To modify the structure of an existing table, such as adding or deleting columns  
C) To create a copy of an existing table  
D) To rename a table  
Answer: B) To modify the structure of an existing table, such as adding or deleting columns  
  
Level 3: Apply  
Question: Solve the following problem using the ALTER TABLE command. What command would you use if you wanted to delete a column named 'Address' from a table named 'Employees'?  
A) ALTER TABLE Employees DROP Address  
B) DELETE TABLE Employees DROP Address  
C) ALTER TABLE Employees DELETE Address  
D) ALTER TABLE Employees REMOVE Address  
Answer: A) ALTER TABLE Employees DROP Address  
  
Level 4: Analyze  
Question: Compare the use of the ALTER TABLE command to the CREATE TABLE command:  
A) They both have the same functionalities  
B) ALTER TABLE is used for creating new tables, CREATE TABLE for modifying existing ones  
C) CREATE TABLE is used for creating new tables, ALTER TABLE for modifying existing ones  
D) Neither of them can modify existing tables  
Answer: C) CREATE TABLE is used for creating new tables, ALTER TABLE for modifying existing ones  
  
Level 5: Evaluate  
Question: Determine when it is appropriate to use the ALTER TABLE command:  
A) When you need to create new tables from scratch  
B) When you need to query data from a table  
C) When you need to extract data from a table to create a report  
D) When you need to modify the structure of an existing table  
Answer: D) When you need to modify the structure of an existing table  
  
Level 6: Create  
Question: Develop a SQL statement using the ALTER TABLE command to add a 'Phone' column to the 'Employees' table.  
A) ALTER TABLE Employees ADD Phone  
B) CREATE TABLE Employees ADD Phone  
C) INSERT INTO Employees ADD Phone  
D) UPDATE TABLE Employees ADD Phone  
Answer: A) ALTER TABLE Employees ADD Phone

* Question: Create six multiple choice question and answer of the question with the Attribute concept

Response: Question: Define the term "Attribute" in the context of database systems.  
A) The Student's ID in the database  
B) A feature or property of an entity in a database  
C) The data stored about the entity in a database  
D) The assignment of entities to their specific categories in a database  
Answer: B) A feature or property of an entity in a database  
LEVEL: Remember  
  
Question: Explain the difference between simple attributes and composite attributes in a database.  
A) Composite attributes are made up of multiple simple attributes  
B) Simple attributes are made up of multiple composite attributes  
C) Attributes are distinguished by their value sets rather than their complexity  
D) Simple attributes can be further broken down while composite attributes cannot  
Answer: A) Composite attributes are made up of multiple simple attributes  
LEVEL: Understand  
  
Question: Solve for the value set of a composite attribute A, given that V1, V2,..., Vn are the value sets of the simple component attributes that form A.  
A) P(P(V1) x P(V2) x... x P(Vn))  
B) P(P(V2) x P(V1) x... x P(Vn))  
C) P(P(Vn) x P(V2) x... x P(V1))  
D) P(P(V1) + P(V2) +... + P(Vn))  
Answer: A) P(P(V1) x P(V2) x... x P(Vn))  
LEVEL: Apply  
  
Question: Compare a composite attribute and a simple attribute in a database system.  
A) Composite attributes can't be further subdivided while simple attributes can  
B) Simple attributes can't be further subdivided while composite attributes can  
C) A composite attribute details the entities' categories, and a simple attribute doesn't  
D) A simple attribute details the entities' categories, and a composite attribute doesn't  
Answer: B) Simple attributes can't be further subdivided while composite attributes can  
LEVEL: Analyze  
  
Question: Determine the best type of attribute (simple or composite) for storing a student's full name in a database system intended for a school administration.  
A) Simple attribute   
B) Composite attribute with components: first name, middle name, and last name  
C) Composite attribute with components: first name and last name  
D) Single composite attribute to hold the full name  
Answer: B) Composite attribute with components: first name, middle name, and last name  
LEVEL: Evaluate  
  
Question: Generate a solution for storing information of an employee working on several projects, including the number of hours s/he works per week on each project.  
A) Store it as a multivalued composite attribute of the EMPLOYEE  
B) Store it as a single attribute under PROJECT   
C) Store it as separate attributes for each project  
D) Store it as a multivalued composite attribute of the PROJECT  
Answer: A) Store it as a multivalued composite attribute of the EMPLOYEE  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Authentication concept

Response: Question: Define "Authenticity assurance" in a database security context.  
A) The process of determining the actual location of the user.  
B) The process of ensuring a combination of queries does not reveal sensitive data.  
C) The process of restricting access based on certain external characteristics of the user.  
D) The process of tracking previous user queries.  
Answer: C) The process of restricting access based on certain external characteristics of the user.  
LEVEL: Remember  
  
Question: Explain how time of the day can affect a user's access to the database.  
A) The server is shut down outside of working hours.  
B) Access is restricted during working hours due to high traffic.  
C) Certain external characteristics such as time of access may be considered before granting access.  
D) The database performs maintenance tasks during non-working hours.  
Answer: C) Certain external characteristics such as time of access may be considered before granting access.  
LEVEL: Understand  
  
Question: Apply your understanding of database security, what would happen if a user tries to access sensitive data through a combination of queries?  
A) The system may allow the access.  
B) The system would shut down.  
C) The system may track those queries and prevent them from revealing sensitive data.  
D) The user would be directed to a different part of the database.  
Answer: C) The system may track those queries and prevent them from revealing sensitive data.  
LEVEL: Apply  
  
Question: Compare the importance of an 'Authenticity assurance' in a database system to the types of questions in a question-answering system.  
A) Authenticity assurance is more important as it protects sensitive data.  
B) Both are equally important as authenticity assurance protects sensitive data and the types of questions define the answering strategies.  
C) Types of questions is more important because it defines the structuring of databases.  
D) Authenticity assurance is not related to types of questions.  
Answer: B) Both are equally important as authenticity assurance protects sensitive data and the types of questions define the answering strategies.  
LEVEL: Analyze  
  
Question: Justify why it's important to restrict access based on certain external characteristics of the user.  
A) It is not necessary, it only complicates the access process.  
B) It ensures that only authorized users have access during specific conditions, enhancing security.  
C) It makes the database more efficient and fast.  
D) It enables users to access the database seamlessly.  
Answer: B) It ensures that only authorized users have access during specific conditions, enhancing security.  
LEVEL: Evaluate  
  
Question: Develop a protocol that combines both 'Authenticity assurance' and 'Question answering techniques' in a database system.  
A) Protocol doesn't need to combine these two aspects.  
B) A protocol whereby users answer specific questions to authenticate their identity for access.  
C) A protocol that uses question answering techniques to track and control user queries.  
D) Both B) and C).  
Answer: D) Both B) and C)  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Boyce-Codd normal form (BCNF) concept

Response: Question 1: Define the term "Boyce-Codd Normal Form" in the context of database systems.  
A) A system for classifying the quality of a student's coding work.  
B) A form of database normalization that is stronger than third normal form.  
C) A programming language developed by Boyce and Codd.  
D) A type of database schema developed for high data redundancy.  
Answer: B) A form of database normalization that is stronger than third normal form.  
LEVEL: Remember  
  
Question 2: Describe how the Boyce-Codd Normal Form (BCNF) operates in relational database design.  
A) It breaks down a database into unrelated parts.  
B) It eliminates functional dependencies among the attributes of a relation.  
C) It encourages data redundancy for efficiency purposes.  
D) It optimizes the speed of queries in the database.  
Answer: B) It eliminates functional dependencies among the attributes of a relation.  
LEVEL: Understand  
  
Question 3: Solve the following problem: you have a relation that is not in BCNF. How would you correct the situation?  
A) Increase the data redundancy in the relation.  
B) Decompose the relation considering the nonadditive decomposition requirement.  
C) Introduce multiple dependencies in the relation.  
D) Only focus on getting the relation into 2NF or 3NF status.  
Answer: B) Decompose the relation considering the nonadditive decomposition requirement.  
LEVEL: Apply  
  
Question 4: Compare the Boyce-Codd Normal Form (BCNF) to third normal form (3NF) in terms of strength.  
A) BCNF is weaker than 3NF.  
B) BCNF and 3NF are equal in strength.  
C) BCNF is stronger than 3NF.  
D) Comparisons between BCNF and 3NF cannot be made as they are entirely different.  
Answer: C) BCNF is stronger than 3NF.  
LEVEL: Analyze  
  
Question 5: Justify the importance of achieving the Boyce-Codd Normal Form (BCNF) in relational database design.  
A) It is a less rigorous form of normalization, hence more easily achievable.  
B) It was historically the first form of normalization developed, thus it is more respected.  
C) It reduces potential data redundancy and anomalies, improving database efficiency.  
D) Data in BCNF is easier to access for external applications.  
Answer: C) It reduces potential data redundancy and anomalies, improving database efficiency.  
LEVEL: Evaluate  
  
Question 6: Develop a scenario where not achieving BCNF may lead to potential redundancy of data.  
A) The relation schema R with Prime attribute A, where R is in 3NF but fails to be in BCNF.  
B) All situations where the database includes multiple relations.  
C) A scenario where the database is designed only for fast query responses.  
D) A database system where all relations have single attribute keys.  
Answer: A) The relation schema R with Prime attribute A, where R is in 3NF but fails to be in BCNF.  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Candidate key concept

Response: Level 1 - Remember  
  
Question: Define a candidate key in the context of database systems.  
A) A form of programming language  
B) A professor teaching a class  
C) An authentication key for software  
D) A unique identifier for each row in a database table  
Answer: D) A unique identifier for each row in a database table  
  
Level 2 - Understand  
  
Question: Explain why using a candidate key is crucial in a database.  
A) It helps distribute data across multiple servers  
B) It enables the retrieval of specific data records from large databases  
C) It encrypts the entire database for security  
D) It accelerates the database processing speed  
Answer: B) It enables the retrieval of specific data records from large databases  
  
Level 3 - Apply  
  
Question: Solve the problem of identifying a candidate key in the context of university classes. What can act as a candidate key?  
A) The subject of the class  
B) The number of students in the class  
C) The building where the class is taught  
D) The unique Univ\_section# of the class  
Answer: D) The unique Univ\_section# of the class  
  
Level 4 - Analyze  
  
Question: Compare the effectiveness of using a candidate key versus a non-unique attribute as a data record identifier in a database.  
A) Using a candidate key is much more effective as it guarantees record uniqueness.  
B) Using a candidate key is less effective as it requires extra space to store.  
C) There is no significant difference in the effectiveness.  
D) Using a non-unique attribute is more effective as it allows for easier data entry.  
Answer: A) Using a candidate key is much more effective as it guarantees record uniqueness.  
  
Level 5 - Evaluate  
  
Question: Justify the importance of defining the conditions under which each candidate key would be valid.  
A) It ensures the integrity and consistency of the data  
B) It increases the processing speed of the database   
C) It provides additional security measures for the database  
D) It simplifies the process of writing code for the database  
Answer: A) It ensures the integrity and consistency of the data  
  
Level 6 - Create  
  
Question: Develop a scenario in which multiple candidate keys would be useful in a database.  
A) A database for a library, where both the book ISBN and the unique library code could serve as candidate keys  
B) A database of randomly generated numbers  
C) A database of plain text, without any attribute differentiation  
D) A database of the same entity replicated multiple times  
Answer: A) A database for a library, where both the book ISBN and the unique library code could serve as candidate keys

* Question: Create six multiple choice question and answer of the question with the Cardinality concept

Response: Level 1: Remember  
Question: Define the term "Cardinality" in the context of Database Systems.  
A) The number of elements in a set or other grouping.  
B) The name of the database system.  
C) The modification date of the database.  
D) The number of pages in the database document.  
Answer: A) The number of elements in a set or other grouping.  
  
Level 2: Understand  
Question: Explain why Cardinality ratios often dictate the detailed design of a database.  
A) Because they dictate the color scheme of the database.  
B) Because they show how much storage space the database will need.  
C) Because the cardinality ratio depends on the real-world meaning of the entity types involved and is defined by the specific application.  
D) Because they show the maximum limit on the number of values.  
Answer: C) Because the cardinality ratio depends on the real-world meaning of the entity types involved and is defined by the specific application.  
  
Level 3: Apply  
Question: Solve how the cardinality ratio would likely be defined in the context of a STUDENT to SOCIAL\_SECURITY\_CARD relationship.  
A) Each Student has multiple Social Security Cards.  
B) Each Social Security Card has multiple Students.  
C) Each Student has one Social Security Card.  
D) The relationship is undefined.  
Answer: C) Each Student has one Social Security Card.  
  
Level 4: Analyze  
Question: Compare Cardinality Ratio and ENTITY in the context of a Database.  
A) Both represent the number of entities in a database.  
B) Both refer to physical aspects of the database, such as its size and dimension.  
C) Cardinality ratio refers to relationships between entities while the entity represents an instance of real-world objects.  
D) Cardinality Ratio and ENTITY are essentially the same thing.  
Answer: C) Cardinality ratio refers to relationships between entities while the entity represents an instance of real-world objects.  
  
Level 5: Evaluate  
Question: Justify why STUDENT and SOCIAL\_SECURITY\_CARD likely have a cardinality ratio of 1:1?  
A) Because every student is required to have at least one social security card, and each social security card belongs to one student.  
B) Because every student may have multiple social security cards.  
C) Because every social security card can be assigned to multiple students.  
D) Because neither students nor social security cards have any cardinality.  
Answer: A) Because every student is required to have at least one social security card, and each social security card belongs to one student.  
  
Level 6: Create  
Question: Develop another example of a likely binary relationships with cardinality ratios based on the common-sense meaning of the entity types, other than STUDENT and SOCIAL\_SECURITY\_CARD.  
A) Movie and Ticket  
B) ITEM and ORDER  
C) Country and Capital  
D) All of the above  
Answer: D) All of the above

* Question: Create six multiple choice question and answer of the question with the Cardinality ratios concept

Response: Question: Define Cardinality Ratio in a binary relationship.  
A) The maximum number of relationships an entity can participate in.  
B) The minimum number of relationships an entity can participate in.  
C) The average number of relationships an entity can participate in.  
D) The number of entities in a database.  
Answer: A) The maximum number of relationships an entity can participate in.  
LEVEL: Remember  
  
Question: Explain the concept and usefulness of a 1:1 cardinality ratio in a binary relationship.  
A) It signifies that each entity in the relationship can relate to numerous entities.  
B) It shows that each entity in the relationship can only be related to one other entity.  
C) It means that each entity in the relationship can be related to any number of entities with no maximum limit.  
D) It doesn't provide any significant information in a binary relationship.  
Answer: B) It shows that each entity in the relationship can only be related to one other entity.  
LEVEL: Understand  
  
Question: Solve the following: An ER schema diagram shows a 1:N relationship between teachers and classes. How many classes can a teacher be related to?  
A) One  
B) Five  
C) Ten  
D) Any number  
Answer: D) Any number  
LEVEL: Apply  
  
Question: Compare a 1:1 and a 1:N cardinality ratio in the context of binary relationships.  
A) In 1:1, each entity can be related to one other entity, while in a 1:N ratio, each entity can be related to any number of other entities.  
B) In 1:1, each entity can be related to any number of other entities, while in 1:N, each entity can only be related to one other entity.  
C) They both represent the same number of potential relationships.  
D) No difference exists between a 1:1 and a 1:N cardinality ratio.  
Answer: A) In 1:1, each entity can be related to one other entity, while in a 1:N ratio, each entity can be related to any number of other entities.  
LEVEL: Analyze  
  
Question: Justify why the relationship between students and social security cards would likely be represented as a 1:1 cardinality ratio.  
A) Because each student can have multiple social security cards.  
B) Because each social security card can belong to many students.  
C) Because each social security card can belong to just one student, and vice versa.  
D) Because it is not possible for a student to have a social security card.  
Answer: C) Because each social security card can belong to just one student, and vice versa.  
LEVEL: Evaluate  
  
Question: Generate a scenario which could be represented by an M:N Cardinality ratio in a binary relationship.  
A) A relationship between students and their unique student ID.  
B) A relationship between books and their authors, where each book has one unique author and each author writes only one book.  
C) A relationship between movie actors and movies, where each actor can act in multiple movies, and each movie can have multiple actors.  
D) A relationship between a person and their unique social security numbers.  
Answer: C) A relationship between movie actors and movies, where each actor can act in multiple movies, and each movie can have multiple actors.  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Cartesian product concept

Response: Question 1: Define CARTESIAN PRODUCT in the context of database systems.  
LEVEL: Remember  
A) A way to combine related tuples from two relations.  
B) A sequence specifying two related operations.  
C) A binary set operation that combines every member from one relation with every member from the other relation.  
D) A single operation replacing two related operations.  
Answer: C) A binary set operation that combines every member from one relation with every member from the other relation.  
  
Question 2: Explain how CARTESIAN PRODUCT is realized in SQL.  
LEVEL: Understand  
A) By using the CROSS JOIN option in joined tables or having no corresponding join condition in the WHERE clause.  
B) By using the JOIN operation on two relations.  
C) By specifying the sequence as a single operation.  
D) By combining related tuples from two relations.  
Answer: A) By using the CROSS JOIN option in joined tables or having no corresponding join condition in the WHERE clause.  
  
Question 3: Solve the number of tuples in the result of CARTESIAN PRODUCT operation R(A1, A2, … , An) × S(B1, B2, … , Bm) given that R has nR tuples and S has nS tuples.  
LEVEL: Apply  
A) nR + nS   
B) nR \* nS   
C) nR / nS   
D) nR - nS   
Answer: B) nR \* nS   
  
Question 4: Compare the main difference between CARTESIAN PRODUCT and JOIN operation.  
LEVEL: Analyze  
A) JOIN combines every member from one set with every member from the other set, while CARTESIAN PRODUCT only combines related members.  
B) CARTESIAN PRODUCT operates on relations that are union compatible, while JOIN does not require this.  
C) In CARTESIAN PRODUCT, all combinations of tuples are included in the result, while JOIN only includes combinations that satisfy the join condition.  
D) CARTESIAN PRODUCT is a binary set operation, while JOIN is a unary operation.  
Answer: C) In CARTESIAN PRODUCT, all combinations of tuples are included in the result, while JOIN only includes combinations satisfying the join condition.  
  
Question 5: Justify the role of JOIN operation in the context of database systems with more than a single relation.  
LEVEL: Evaluate  
A) It allows to process relations by combining related tuples from two relations into single longer tuples.  
B) It allows filtering out unrelated tuples from two relations.  
C) It is used to combine members from two different sets resulting in a set of all possible combinations.  
D) JOIN operation is used to create a new relation combining unrelated tuples from two relations.  
Answer: A) It allows to process relations by combining related tuples from two relations into single longer tuples.  
  
Question 6: Generate a case where the use of CARTESIAN PRODUCT is preferred over JOIN operation.  
LEVEL: Create  
A) When all combinations of tuples from two relations are required.  
B) When only related tuples from two relations are needed.  
C) When duplicate tuples need to be removed from the result.  
D) When the operation is applied to more than two relations.  
Answer: A) When all combinations of tuples from two relations are required.

* Question: Create six multiple choice question and answer of the question with the Closure concept

Response: Question 1: [Level: Remember]  
Question: Define the term "Factoid Questions" in the context of question answering systems.  
A) Questions that require a list of factoid responses   
B) Questions that require analytical thinking  
C) Questions that seek the right phrase in a document or a database that correctly addresses the question  
D) Questions that are only asked during quizzes  
  
Answer: C) Questions that seek the right phrase in a document or a database that correctly addresses the question  
  
Question 2: [Level: Understand]  
Question: Explain the importance of knowing the category or type of question in question answering systems.   
A) It is important to know to help in giving relevant and correct answers  
B) The type of question does not matter in answering systems  
C) It is important for grading purposes only  
D) The importance is yet to be understood   
  
Answer: A) It is important to know to help in giving relevant and correct answers  
  
Question 3: [Level: Apply]  
Question: Apply the concept of "Answer Scoring" in the context of information retrieval.  
A) Assigning random scores to each answer generated  
B) Assigning scores for the candidate answers, merging similar answers and gathering supporting evidence for different candidate answers   
C) Assigning high scores to all plausible answers   
D) None of the above  
  
Answer: B) Assigning scores for the candidate answers, merging similar answers and gathering supporting evidence for different candidate answers  
  
Question 4: [Level: Analyze]  
Question: Compare "Factoid Questions" and "List Questions" in the context of question answering systems.  
A) Both require the same strategy of answering  
B) Factoid questions seek the right phrase in a document that addresses the question while list questions seek a list of factoid responses that satisfy given criteria  
C) Both are asking for the same type of response  
D) Factoid questions are more difficult to answer than list questions  
  
Answer: B) Factoid questions seek the right phrase in a document that addresses the question while list questions seek a list of factoid responses that satisfy given criteria  
  
Question 5: [Level: Evaluate]  
Question: Justify the applicability of "Shallow semantic parsing" in the field of question answering systems.  
A) Shallow semantic parsing has no application in this field  
B) Shallow semantic parsing is applicable as it helps in assigning surface-level markups to sentence structures using machine learning methods  
C) Shallow semantic parsing is applicable only in the field of language translation  
D) Shallow semantic parsing has been outdated and is not used anymore  
  
Answer: B) Shallow semantic parsing is applicable as it helps in assigning surface-level markups to sentence structures using machine learning methods  
  
Question 6: [Level: Create]  
Question: Develop an example scenario where "Focus detection" can be useful in information retrieval systems.  
A) Identifying the main points in a document to give a summary  
B) Differentiating between unstructured and structured data  
C) Finding the creation date of a document  
D) Checking the readability of a document  
  
Answer: A) Identifying the main points in a document to give a summary

* Question: Create six multiple choice question and answer of the question with the Concurrent Transactions concept

Response: Question 1: Define what is meant by the concurrent execution of database transactions in a multiuser system.  
LEVEL: Remember  
A) Transactions that take place one after another in a database system  
B) Transactions that take place at the same time in a multiuser system  
C) Transactions that only impact one user in a multiuser system  
D) Transactions that cannot be executed simultaneously in a multiuser system  
Answer: B) Transactions that take place at the same time in a multiuser system.  
  
Question 2: Explain why concurrency control is needed in a multiuser system.  
LEVEL: Understand  
A) To ensure that only one user can access the database at a time  
B) To prevent multiple users from accessing the data at the same time  
C) To allow multiple users to execute transactions concurrently without conflicting each other  
D) To limit the number of transactions that can occur at once  
Answer: C) To allow multiple users to execute transactions concurrently without conflicting each other  
  
Question 3: Solve how the read\_item and write\_item operations act on a database   
LEVEL: Apply  
A) Read\_item retrieves data from a database, Write\_item adds new data into the database  
B) Read\_item grants access to a database, Write\_item removes access from a database  
C) Read\_item adds new data into the database, Write\_item retrieves data from a database  
D) Read\_item and Write\_item operations do not interact with a database  
Answer: A) Read\_item retrieves data from a database, Write\_item adds new data into the database  
  
Question 4: Compare and contrast the concepts of recoverable, cascade-less, and strict schedules.  
LEVEL: Analyze  
A) All three concepts are interchangeable in database systems  
B) Recoverable schedules can rollback transactions, cascade-less schedules prevent cascading rollbacks, and strict schedules avoid dirty read problem  
C) A cascade-less schedule refers to a sequence of operations, while recoverable and strict schedules refer to types of failure in transactions   
D) Strict schedules can rollback transactions, recoverable schedules prevent cascading rollbacks, and cascade-less schedules avoid the dirty read problem  
Answer: B) Recoverable schedules can rollback transactions, cascade-less schedules prevent cascading rollbacks, and strict schedules avoid dirty read problem  
  
Question 5: Justify why techniques are needed to handle recovery from system and transaction failures.   
LEVEL: Evaluate  
A) Techniques are needed to avoid data duplication  
B) Techniques are needed because databases never fail  
C) Techniques are needed to ensure data consistency, enforce atomicity, and preserve database integrity after a failure  
D) Techniques are needed only when a database is updated  
Answer: C) Techniques are needed to ensure data consistency, enforce atomicity, and preserve database integrity after a failure  
  
Question 6: Develop a scenario where techniques of concurrency are applicable in a system.  
LEVEL: Create  
A) Scenario where a single user is using a database   
B) Scenario where users are accessing a database sequentially one at a time  
C) Scenario where multiple users are trying to book the same flight at the same time on a travel website  
D) Scenario where a user is deleting their account from a database   
Answer: C) Scenario where multiple users are trying to book the same flight at the same time on a travel website.

* Question: Create six multiple choice question and answer of the question with the COUNT conmmand

Response: Question 1: Define the purpose of the COUNT command in SQL.  
LEVEL: Remember  
A) It names the table to be queried.  
B) It adds an extra column to the results set.  
C) It counts the number of rows in the results set.  
D) It specifies the column to be included in the results set.  
Answer: C) It counts the number of rows in the results set.  
  
Question 2: Explain how the COUNT command works when there's a NULL value in the counted column in SQL  
LEVEL: Understand  
A) The COUNT command ignores the NULL value and counts the unique values.  
B) The COUNT command includes the NULL value in the count.  
C) The COUNT command stops counting when it reaches a NULL value.  
D) The COUNT command crashes when there's a NULL value.  
Answer: A) The COUNT command ignores the NULL value and counts the unique values.  
  
Question 3: Apply the COUNT command to select the number of employees in a particular department using SQL.  
LEVEL: Apply  
A) SELECT COUNT(\*) FROM EMPLOYEE WHERE Dno = 5;   
B) SELECT Dno FROM EMPLOYEE WHERE Dno = 5;   
C) SELECT \* FROM EMPLOYEE WHERE Dno = 5;   
D) SELECT Dno COUNT(\*) FROM EMPLOYEE WHERE Dno = 5;   
Answer: A) SELECT COUNT(\*) FROM EMPLOYEE WHERE Dno = 5;  
  
Question 4: Compare the COUNT command and the SUM command in SQL.  
LEVEL: Analyze  
A) COUNT adds all numerical values while SUM counts the numbers of rows.  
B) COUNT and SUM work similarly but COUNT works only for numerical columns.  
C) COUNT counts the number of rows while SUM adds all numerical values.  
D) COUNT and SUM can’t be used together in a query.  
Answer: C) COUNT counts the number of rows while SUM adds all numerical values.  
  
Question 5: Determine whether the following SQL statement is accurate: "The COUNT command can only be used on columns with numerical data."  
LEVEL: Evaluate  
A) True, COUNT can only handle numerical data.  
B) False, COUNT can be used on any type of data.  
C) True, COUNT can only handle numerical and date data.  
D) False, COUNT is not used for any data type.  
Answer: B) False, COUNT can be used on any type of data.  
  
Question 6: Modify the following SQL query to count the number of employees in each department who have a salary over $40,000: "SELECT Dno, COUNT(\*) FROM EMPLOYEE WHERE Salary>40000; "  
LEVEL: Create  
A) SELECT Dno, COUNT(\*) WHERE Salary>40000 FROM EMPLOYEE GROUP BY Dno;  
B) SELECT Dno, Salary(COUNT(\*) > 40000) FROM EMPLOYEE GROUP BY Dno;  
C) SELECT Dno FROM EMPLOYEE WHERE Salary>40000 COUNT(\*);  
D) SELECT Dno, COUNT(\*) FROM EMPLOYEE WHERE Salary>40000 GROUP BY Dno;  
Answer: D) SELECT Dno, COUNT(\*) FROM EMPLOYEE WHERE Salary>40000 GROUP BY Dno;

* Question: Create six multiple choice question and answer of the question with the CREATE TABLE command

Response: Question: Define the CREATE TABLE command in SQL.  
A) It is a command that allows you to delete information from a database.  
B) It is a command that allows you to create a new table in a database with specific column and row specifications.  
C) It is a command that allows you to update information in a database.  
D) It is a command that allows you to retrieve data from a database.  
Answer: B) It is a command that allows you to create a new table in a database with specific column and row specifications.  
LEVEL: Remember  
  
Question: Describe the purpose of the SQL statement "CREATE TABLE D5EMPS LIKE EMPLOYEE (SELECT E.\* FROM EMPLOYEE AS E WHERE E.Dno = 5) WITH DATA;”  
A) This statement deletes all employees from the database who work in department 5.  
B) This statement creates a new table D5EMPS and fills it with data from the EMPLOYEE table for those who work in department 5.  
C) This statement updates the data of all employees who work in department 5.  
D) This statement retrieves the data of all employees who work in department 5.  
Answer: B) This statement creates a new table D5EMPS and fills it with data from the EMPLOYEE table for those who work in department 5.  
LEVEL: Understand  
  
Question: Apply the CREATE TABLE command to design a table named "STUDENTS" with columns "id", "name", and "major".  
A) CREATE TABLE STUDENTS (id INT, name TEXT, major TEXT);  
B) DELETE TABLE STUDENTS (id INT, name TEXT, major TEXT);  
C) INSERT INTO STUDENTS (id INT, name TEXT, major TEXT);  
D) SELECT \* FROM STUDENTS (id INT, name TEXT, major TEXT);  
Answer: A) CREATE TABLE STUDENTS (id INT, name TEXT, major TEXT);  
LEVEL: Apply  
  
Question: Compare the CREATE TABLE command with the DELETE command in SQL.  
A) Both commands are used to modify the structure of a database.  
B) Both commands are used to retrieve data from a database.  
C) The CREATE TABLE command is used to create a new table in the database whereas the DELETE command is used to remove tuples from a relation.  
D) The CREATE TABLE command is used to delete information from a database whereas the DELETE command is used to add new data.  
Answer: C) The CREATE TABLE command is used to create a new table in the database whereas the DELETE command is used to remove tuples from a relation.  
LEVEL: Analyze  
  
Question: Justify the use of the CREATE TABLE command in the context of establishing a new database system.  
A) The CREATE TABLE command is not necessary in establishing a new database system.  
B) The CREATE TABLE command is essential as it allows for the creation of the structure that will store all data within the database system.  
C) The CREATE TABLE command is useful only when deleting data from an existing database system.  
D) The CREATE TABLE command is only used for retrieving data within a database system.  
Answer: B) The CREATE TABLE command is essential as it allows for the creation of the structure that will store all data within the database system.  
LEVEL: Evaluate  
  
Question: Generate a new SQL statement using the CREATE TABLE command to make a table called "TEACHERS" with columns "id", "name", and "subject".  
A) CREATE TABLE TEACHERS (id INT, name TEXT, subject TEXT);  
B) DELETE TABLE TEACHERS (id INT, name TEXT, subject TEXT);  
C) INSERT INTO TEACHERS (id INT, name TEXT, subject TEXT);  
D) SELECT \* FROM TEACHERS (id INT, name TEXT, subject TEXT);  
Answer: A) CREATE TABLE TEACHERS (id INT, name TEXT, subject TEXT);  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Data integrity concept

Response: Question 1: Remember Level  
Question: Define the term 'Data Integrity' in the context of Database Systems.  
A) It is the accuracy and consistency of data stored in a database.  
B) It refers to the total number of pages in a database.  
C) It signifies the data quality assurance.  
D) It is related to the speed of database processing.  
Answer: A) It is the accuracy and consistency of data stored in a database.  
  
Question 2: Understand Level  
Question: Explain the role of SQL as it pertains to data integrity?  
A) SQL attributes contribute to data integrity  
B) SQL can't implement entity integrity or referential integrity constraints  
C) SQL implements database layout and design  
D) SQL is only responsible for data retrieval  
Answer: A) SQL attributes contribute to data integrity  
  
Question 3: Apply Level  
Question: Solve the issue of data corruption to maintain data integrity using Database Design Theory and Normalization.  
A) Proposal of Multiple data sources   
B) Implementing a regular data check  
C) Applying Normalization principles  
D) Increasing database processing speed  
Answer: C) Applying Normalization principles  
  
Question 4: Analyze Level  
Question: Compare the role of SQL and Database design in maintaining data integrity.  
A) Both are pertinent for data retrieval only   
B) SQL involves implementing the entity and referential integrity, whereas Database Design involves the design of the database structure  
C) Database Design ensures data integrity while SQL does not   
D) SQL involves creating a database, whereas Database Design involves maintaining data integrity   
Answer: B) SQL involves implementing the entity and referential integrity, whereas Database Design involves the design of the database structure  
  
Question 5: Evaluate Level  
Question: Justify the need for Data Integrity in the Database system.  
A) To ensure that the database can handle volume growth   
B) To ensure accuracy and consistency of data, which is critical for the credibility and functionality of any database system  
C) To speed up database processing   
D) To limit the number of pages in the database  
Answer: B) To ensure accuracy and consistency of data, which is critical for the credibility and functionality of any database system  
  
Question 6: Create Level  
Question: Develop a strategy to maintain and assess data quality in a Database System.  
A) Implement strict data entry protocols   
B) Plan and inherent regular data checks   
C) Use quality stamps for web pages   
D) Both A and B  
Answer: D) Both A and B

* Question: Create six multiple choice question and answer of the question with the Data Model concept

Response: Question: Define what a data model is in database systems.  
A) A list of all databases  
B) A set of rules for how interactions with a database occur  
C) The price of database software  
D) Instructions for setting up a database  
Answer: B) A set of rules for how interactions with a database occur  
LEVEL: Remember  
  
Question: Explain how data models contribute to the functioning of a database system.  
A) By offering a variety of licensing arrangements   
B) By enabling efficient data organization and functionality  
C) By providing affordable software solutions  
D) They play no role in the functioning of a database  
Answer: B) By enabling efficient data organization and functionality  
LEVEL: Understand  
  
Question: Apply the concept of a data model to decide which type of model would be best for a commercial business database.  
A) An animated model  
B) A hierarchical data model  
C) A physical model  
D) A nuclear model  
Answer: B) A hierarchical data model  
LEVEL: Apply  
  
Question: Compare hierarchical and network data models in terms of their advantages and limitations.  
A) Hierarchical model supports parent-child relationships whereas network model is great for complex relationships  
B) Hierarchical model uses up less memory whereas network model uses a lot of computer memory  
C) Network model is more flexible than hierarchical model   
D) All the above  
Answer: D) All the above  
LEVEL: Analyze  
  
Question: Determine the impact on a database system if a suitable data model isn't chosen.  
A) It won't impact the system  
B) Could result in system inefficiencies and data inaccuracies  
C) The database will become obsolete  
D) It will improve the system performance   
Answer: B) Could result in system inefficiencies and data inaccuracies  
LEVEL: Evaluate  
  
Question: Generate possible disadvantages if a commercial business chose a highly complicated data model for a relatively simple database system.  
A) Useless for a simple database  
B) The efficiency of the database system may be negatively impacted due to unnecessary complexity   
C) Increases the database set up time  
D) Both B and C  
Answer: D) Both B and C  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Data structure concept

Response: Question 1: Define "Database Design Theory".  
LEVEL: Remember  
A) A theory regarding how to properly build infrastructure   
B) A method for organizing books in a library  
C) The process of determining the optimal design for a database  
D) A theory about how to use statistical analysis to calculate probabilities  
Answer: C) The process of determining the optimal design for a database  
  
Question 2: Explain the significance of answer scoring in question answering systems.  
LEVEL: Understand  
A) This process gives a numerical value to the efficiency of the system  
B) Confidence scores for candidate answers are estimated   
C) It is where all answers receive an equal score   
D) It represents the minimal task in the system   
Answer: B) Confidence scores for candidate answers are estimated   
  
Question 3: Solve how big data tools and technologies could be applied in the processing of large unstructured corpora.  
LEVEL: Apply  
A) They can't be applied in any significant way  
B) Large unstructured corpora could be structured and stored using Big Data tools, enhancing data accessibility  
C) They are mainly used for creating data, not processing it  
D) Big Data tools and technologies would be too complex to apply  
Answer: B) Large unstructured corpora could be structured and stored using Big Data tools, enhancing data accessibility  
  
Question 4: Compare the types of data handled by database management systems and information retrieval systems.  
LEVEL: Analyze  
A) Database management systems handle structured data, while information retrieval systems deal with unstructured data  
B) Both handle similar types of data, with minor differences  
C) There is no significant difference between both systems  
D) Information retrieval systems handle structured data, while database management systems deal with unstructured data  
Answer: A) Database management systems handle structured data, while information retrieval systems deal with unstructured data  
  
Question 5: Justify the need for categorisation or typing of questions in question answering systems.  
LEVEL: Evaluate  
A) It makes the system look more organized  
B) Answering strategies rely heavily on the type of question  
C) It is a requirement to categorise or type questions in all systems, not only in question answering ones  
D) There is no need for categorisation or typing of questions  
Answer: B) Answering strategies rely heavily on the type of question  
  
Question 6: Generate possible enhancements to improve information retrieval systems.  
LEVEL: Create  
A) Incorporating machine learning to improve search results  
B) Including video tutorials on how to use the system  
C) Changing the color scheme of the user interface   
D) Making the system available in several languages  
Answer: A) Incorporating machine learning to improve search results

* Question: Create six multiple choice question and answer of the question with the Data type concept

Response: Question: Define what is a Factoid Question in the context of question answering systems.  
A) A question seeking a list of responses  
B) A question that directly pinpoints a right phrase in a document or a database.  
C) A categorization of a types of question  
D) A question that requires hybrid answering strategies.  
Answer: B) A question that directly pinpoints a right phrase in a document or a database.  
LEVEL: Remember   
  
Question: Explain the importance of knowing the category or type of question in question answering systems.  
A) It helps to determine the complexity of the answer.  
B) It aids in understanding the nature of the database.  
C) It influences the answering strategies.  
D) It helps to determine the size of the database needed.   
Answer: C) It influences the answering strategies.  
LEVEL: Understand   
  
Question: Solve how to categorize a question that asks for a list of authors of a book.  
A) Factoid Question  
B) List Question  
C) Hybrid Question  
D) Ontological Question  
Answer: B) List Question  
LEVEL: Apply   
  
Question: Compare Factoid Questions and List Questions in terms of their response type.  
A) Both require a single response.  
B) Both require multiple responses.  
C) Factoid requires a single response while List requires multiple responses.  
D) Factoid requires multiple responses while List requires a single response.   
Answer: C) Factoid requires a single response while List requires multiple responses.  
LEVEL: Analyse  
  
Question: Determine how the complexity of question answering systems impacts database design.  
A) It doesn't impact database design directly.  
B) It necessitates the need for more detailed database design.  
C) It simplifies database design.  
D) The impact varies depending on the type of questions the system is designed for.   
Answer: D) The impact varies depending on the type of questions the system is designed for.  
LEVEL: Evaluate   
  
Question: Develop a hypothetical question that best exemplifies a "Factoid Question" and suggest its correct response.  
A) Question: "Where is the Eiffel Tower located?" Response: "Paris"  
B) Question: "List the seven wonders of the world." Response: Various answers including "Great Wall of China", etc.  
C) Question: "Who are the authors of 'Fundamentals of Database Systems Seventh Edition?'" Response: "Ramez Elmasri, Shamkant B. Navathe"  
D) All of the above.  
Answer: A) Question: "Where is the Eiffel Tower located?" Response: "Paris"  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Database Security concept

Response: Question 1: LEVEL: Remember  
Question: Define the concept of 'Database Security'.  
A) The safety of the network system  
B) The ability to allow everyone to access a database  
C) The techniques for securing databases against a variety of threats  
D) The procedure of creating a database  
Answer: C) The techniques for securing databases against a variety of threats  
  
Question 2: LEVEL: Understanding  
Question: Explain the need for 'Data Quality' in database security.  
A) To gather large amount of data  
B) To maintain the confidentiality, integrity, and availability of the data  
C) To ensure the database works as part of a network of services  
D) To keep the database management system alone for maintaining data  
Answer: B) To maintain the confidentiality, integrity, and availability of the data  
  
Question 3: LEVEL: Apply  
Question: Solve the problem of database security by suggesting best approach among the given.  
A) Keep the database management system isolated  
B) Allow everyone access the database to solve issues fast  
C) Implement measures like access control, inference control, flow control and encryption  
D) No actions required, databases are always secure  
Answer: C) Implement measures like access control, inference control, flow control and encryption  
  
Question 4: LEVEL: Analyze  
Question: Compare 'discretionary access control' to 'inference control' in the context of database security.  
A) They both deal with data integrity  
B) They are similar as they both deal with data access rules  
C) Discretionary access control deals with granting and revoking privileges while inference control deals with deducting unauthorized information  
D) They both deal with encryption of data  
Answer: C) Discretionary access control deals with granting and revoking privileges while inference control deals with deducting unauthorized information  
  
Question 5: LEVEL: Evaluate  
Question: Justify the role of security monitoring systems in the context of database security.  
A) They are not necessary, databases are always safe  
B) They add an unnecessary layer of complexity  
C) They are crucial as the security of an overall system is only as strong as its weakest link  
D) They are only useful for larger databases  
Answer: C) They are crucial as the security of an overall system is only as strong as its weakest link  
  
Question 6: LEVEL: Create  
Question: Develop a new control measure that could enhance database security.  
A) Limiting data access to specific hours  
B) Frequent change of passwords  
C) Snacks for database managers  
D) Using holographic data storage  
Answer: This is subjective to the person answering but possible answers could be "A) Limiting data access to specific hours" or "B) Frequent change of passwords".

* Question: Create six multiple choice question and answer of the question with the Data Definition Language concept

Response: Question 1:   
Level: Remember  
Content: Define what is meant by a Data Definition Language (DDL) in Database Systems.  
A) A language used to define the database conceptual schema.  
B) A language used for specifying database retrievals and updates.  
C) A special command for the DBA in relational DBMSs.  
D) A language used to defeat human players in TV quiz shows.  
Answer: A) A language used to define the database conceptual schema.  
  
Question 2:   
Level: Understand  
Content: Explain the role of a Data Definition Language (DDL) in defining user views.  
A) DDL is used to define the database retrievals.  
B) DDL can define user views in most DBMSs.  
C) DDL is used to defeat human players in TV quiz shows.  
D) DDL is a special command for the DBA in relational DBMSs.  
Answer: B) DDL can define user views in most DBMSs.  
  
Question 3:   
Level: Apply  
Content: Solve how the DDL interacts with the DBMS catalog.  
A) The DDL compiles all schema definitions in the DBMS catalog.  
B) The DDL indexes and classifies the DBMS catalog.  
C) The DDL defines licensing arrangements of the DBMS catalog.  
D) The DDL defeats human players in TV quiz shows stored in the DBMS catalog.  
Answer: A) The DDL compiles all schema definitions in the DBMS catalog.  
  
Question 4:   
Level: Analyze  
Content: Compare the functions of the Data Definition Language (DDL) and the Data Manipulation Language (DML).  
A) DDL and DML both define user views in DBMSs.  
B) DDL and DML both perform multiple roles, including view definition.  
C) DDL is used to define the database conceptual schema, while DML is used for specifying database retrievals and updates.  
D) DDL and DML both function to defeat human players in TV quiz shows.  
Answer: C) DDL is used to define the database conceptual schema, while DML is used for specifying database retrievals and updates.  
  
Question 5:   
Level: Evaluate  
Content: Justify how the DDL plays an integral role in maintaining the integrity and usability of database systems.  
A) By defining the conceptual schema and user views, DDL contributes to overall database structure and organization.  
B) By defining licensing arrangements, DDL ensures financial viability of the database systems.  
C) By defeating human players in TV quiz shows, DDL promotes the capabilities of database systems.  
D) By indexing and classifying database systems, DDL enables fast and efficient retrieval of data.  
Answer: A) By defining the conceptual schema and user views, DDL contributes to overall database structure and organization.  
  
Question 6:   
Level: Create  
Content: Modify your understanding of Data Definition Language (DDL) functionality if it was used to define storage structures in most DBMSs.  
A) This would extend its scope beyond defining the database conceptual schema to include structuring data storage.  
B) This would enable it to index and classify database systems.  
C) This would change its purpose into defeating human players in TV quiz shows.  
D) This would entail additional modules and an annual cost of millions.  
Answer: A) This would extend its scope beyond defining the database conceptual schema to include structuring data storage.

* Question: Create six multiple choice question and answer of the question with the DELETE command

Response: Question 1: LEVEL - REMEMBER  
Define what the DELETE command does in SQL.  
A) It allows you to change the name of a table.  
B) It removes tuples from a relation.  
C) It allows you to create a new table.  
D) It modifies attribute values of a tuple.  
Answer: B) It removes tuples from a relation.  
  
Question 2: LEVEL - UNDERSTAND  
Explain how the WHERE clause influences the DELETE command in SQL.  
A) It selects the tuples to be deleted.  
B) It doesn't influence the DELETE command.  
C) It renames the table from which tuples will be deleted.  
D) It modifies the data in the selected tuples.  
Answer: A) It selects the tuples to be deleted.  
  
Question 3: LEVEL - APPLY  
Apply the correct DELETE command to remove all tuples from the EMPLOYEE table in SQL.  
A) DELETE EMPLOYEE.  
B) DELETE \* FROM EMPLOYEE.  
C) DELETE FROM EMPLOYEE WHERE Dno = 5.  
D) DELETE FROM EMPLOYEE.  
Answer: D) DELETE FROM EMPLOYEE  
  
Question 4: LEVEL - ANALYZE  
Compare the impact of deleting tuples using the DELETE command with and without the WHERE clause in SQL.  
A) Without WHERE clause, all tuples are deleted; with WHERE clause, only specified tuples are deleted.  
B) Without WHERE clause, no tuples are deleted; with WHERE clause, all tuples are deleted.  
C) There's no difference between the two.  
D) With or without WHERE clause, only one tuple is deleted at a time.  
Answer: A) Without WHERE clause, all tuples are deleted; with WHERE clause, only specified tuples are deleted.  
  
Question 5: LEVEL - EVALUATE  
Determine the outcome of the DELETE command "DELETE FROM EMPLOYEE WHERE Ssn = ‘123456789’;".  
A) It would delete all tuples in the EMPLOYEE table.  
B) It would delete tuples where the social security number equals '123456789'.  
C) It wouldn't delete anything.  
D) It would delete tuples where the department number equals 5.  
Answer: B) It would delete tuples where the social security number equals '123456789'.  
  
Question 6: LEVEL - CREATE  
Modify the DELETE command to delete tuples from the EMPLOYEE table where the last name is 'Brown'.  
A) DELETE FROM EMPLOYEE WHERE Lname = ‘Brown’;  
B) DELETE FROM EMPLOYEE;  
C) DELETE FROM EMPLOYEE WHERE Ssn = ‘123456789’;  
D) DELETE \* FROM EMPLOYEE WHERE Lname = ‘Brown’.  
Answer: A) DELETE FROM EMPLOYEE WHERE Lname = ‘Brown’.

* Question: Create six multiple choice question and answer of the question with the Dependency preservation concept

Response: Question 1: Define what the term "dependency preservation" refers to in database systems.  
Level: Remember  
A) The guarantee of maintaining cohesion among sets of attributes.   
B) A measure of goodness for a relation schema.  
C) One of the properties enforced by decomposition algorithms.  
D) A specification of functional and multivalued dependencies.  
Answer: C) One of the properties enforced by decomposition algorithms.  
  
Question 2: Explain how dependency preservation contributes to relational database design.  
Level: Understand  
A) It ensures that all possible functional dependencies are provided before the design is attempted.  
B) It aids in maintaining the non-additive join property and enforcing the algorithms used in design.  
C) It helps avoid NULL values in a relation.  
D) It eliminates insertion, deletion, and modification anomalies.  
Answer: B) It aids in maintaining the non-additive join property and enforcing the algorithms used in design.  
  
Question 3: Solve a hypothetical problem where a database designer has to apply the concept of dependency preservation in a database system design.  
Level: Apply  
A) The designer would need to identify attributes, assign them into clusters, and create indexes.  
B) The designer would apply decomposition algorithms and ensure that non-additive join and dependency preservation properties are maintained.  
C) The designer would include a maximum of NULL values in a relation.  
D) The designer would ignore the database design rules to achieve a quicker result.  
Answer: B) The designer would apply decomposition algorithms and ensure that non-additive join and dependency preservation properties are maintained.  
  
Question 4: Compare dependency preservation and non-additivity in terms of their roles in database design.  
Level: Analyse  
A) Dependency preservation and non-additivity both aim to avoid NULL values in a relation.  
B) Dependency preservation pertains to enforcing algorithms used in design, while non-additivity is about avoiding lossless joins.  
C) Dependency preservation helps in database design refinements, while non-additivity aids in defining 3NF and BCNF in normal forms.  
D) Both dependency preservation and non-additivity are concepts that aim to avoid spurious tuples.  
Answer: B) Dependency preservation pertains to enforcing algorithms used in design, while non-additivity is about avoiding lossless joins.  
  
Question 5: Justify why dependency preservation is essential in a database system.  
Level: Evaluate  
A) Because it ensures the successful execution of INSERT, DELETE, and UPDATE operations.  
B) Because it ensures that the database system will never experience any anomalies.  
C) Because it contributes to maintaining the integrity of the database by preserving relationships among data.  
D) Because it enables speeding up of search operations in a relational database system.  
Answer: C) Because it contributes to maintaining the integrity of the database by preserving relationships among data.  
  
Question 6: Develop a scenario where ignoring the concept of dependency preservation might lead to detrimental effects on database integrity.  
Level: Create  
A) Data anomalies might occur during the execution of INSERT, DELETE, and UPDATE operations.  
B) Data might become inconsistent if the rules of dependency preservation are not adhered to.  
C) The database might experience a breakdown in case of heavy data load.  
D) The speed of search operations in the database system might decrease.  
Answer: B) Data might become inconsistent if the rules of dependency preservation are not adhered to.

* Question: Create six multiple choice question and answer of the question with the Difference concept

Response: Question 1: Define "Factoid Questions" in context of database systems.  
Level: Remember  
A) Questions that ask for a list of factoid responses   
B) Questions that seek different views on a particular subject   
C) Questions that ask about the definition and meaning of a concept  
D) Questions that pinpoint the right phrase in a document or a database that correctly addresses the question  
Answer: D) Questions that pinpoint the right phrase in a document or a database that correctly addresses the question  
  
Question 2: Explain the practical engineering disciplines that are comprised in question answering techniques.  
Level: Understand  
A) Parsing, named entity recognition, focus extraction, answer type extraction, relation extraction and ontological inference  
B) Search engine optimization, Web crawling, Deep learning, Sentiment analysis  
C) Database indexing, Data compression, Data encryption, Data deduplication  
D) Cloud Storage, Data replication, Data modeling, Data virtualization  
Answer: A) Parsing, named entity recognition, focus extraction, answer type extraction, relation extraction and ontological inference  
  
Question 3: How does SQL allow implementation of the entity integrity and referential integrity constraints?  
Level: Apply  
A) By using primary keys and foreign keys   
B) By using recursive functions   
C) By using normalization and denormalization   
D) By using aggregate functions and scalar functions   
Answer: A) By using primary keys and foreign keys   
  
Question 4: Compare "Factoid Questions" and "List Questions" in the context of a database system.  
Level: Analyze  
A) Factoid questions ask for a definite answer whereas List questions ask about different views on a given topic  
B) Factoid questions ask for a list of factoid responses whereas List questions look for a definite fact in the database  
C) Factoid questions pinpoint the right phrase in a document or a database that addresses the question, while List questions seeks a list of factoid responses that satisfy a given criterion  
D) There is no difference between Factoid and List questions  
Answer: C) Factoid questions pinpoint the right phrase in a document or a database that addresses the question, while List questions seeks a list of factoid responses that satisfy a given criterion  
  
Question 5: Justify why answering strategies in question answering systems rely heavily on the type of questions.  
Level: Evaluate  
A) Because different types of questions require different answering strategies  
B) Because the type of questions does not affect the answering strategies  
C) Because the size of the database affects the answering strategies, not the type of questions  
D) Because the complexity of the database schema affects the answering strategies, not the type of questions  
Answer: A) Because different types of questions require different answering strategies  
  
Question 6: If an additional type of question is introduced in a query answering system as "Prediction Questions", modify the list of question types to accommodate this new type.  
Level: Create  
A) Factoid Questions, List Questions, Definition Questions, Opinion Questions, Prediction Questions  
B) Factoid Questions, List Questions, Definition Questions, Prediction Questions  
C) Factoid Questions, List Questions, Definition Questions, Opinion Questions, Prediction Questions, Research Questions  
D) Factoid Questions, Prediction Questions  
Answer: A) Factoid Questions, List Questions, Definition Questions, Opinion Questions, Prediction Questions

* Question: Create six multiple choice question and answer of the question with the Discretionary access control (DAC) concept

Response: Question 1: Define the Discretionary access control (DAC).  
LEVEL: Remember  
A) A model which imposes strict classification of subjects into security levels  
B) A policy mechanism that ensures a high degree of protection  
C) An access control characterized by flexibility and high vulnerability to malicious attacks  
D) An authorization model that prevents any illegal flow of information  
Answer: C) An access control characterized by flexibility and high vulnerability to malicious attacks  
  
Question 2: Describe the main disadvantage of Discretionary access control (DAC) model.  
LEVEL: Understand  
A) Its inability to prevent illegal flow of information  
B) Its high degree of protection  
C) Its rigidity and additional burden it places on users  
D) Its vulnerability to malicious attacks like Trojan horses  
Answer: D) Its vulnerability to malicious attacks like Trojan horses  
  
Question 3: Solve this situation, if a company wants to control how information is propagated and used once it has been accessed by authorized users, should they apply a Discretionary access control (DAC) model?  
LEVEL: Apply  
A) Yes, they should apply DAC  
B) No, they should not apply DAC  
C) They should apply both DAC and MAC  
D) They should neither apply DAC nor MAC  
Answer: B) No, they should not apply DAC  
  
Question 4: Compare Discretionary access control (DAC) and Mandatory access control (MAC) based on the degree of protection they provide.  
LEVEL: Analyze  
A) DAC provides a higher degree of protection  
B) MAC provides a higher degree of protection  
C) They both provide the same degree of protection  
D) Neither of them provides a degree of protection  
Answer: B) MAC provides a higher degree of protection  
  
Question 5: Determine if Discretionary access control (DAC) policies are suitable for military and high-security types of applications.  
LEVEL: Evaluate  
A) True, DAC policies are suitable for these types of applications  
B) False, DAC policies are not suitable for these types of applications  
C) It depends on the specific scenario and context  
D) There is no clear indication whether it is suitable or not  
Answer: B) False, DAC policies are not suitable for these types of applications  
  
Question 6: Develop a scenario where Discretionary access control (DAC) could be effectively applied in an organization.  
LEVEL: Create  
A) A military organization where strict classification of subjects and objects into security levels is necessary  
B) A corporation with a large variety of application domains that require flexibility  
C) A high-security institution that requires a very high degree of protection   
D) An organization that does not need to control information propagation after it has been accessed   
Answer: B) A corporation with a large variety of application domains that require flexibility

* Question: Create six multiple choice question and answer of the question with the Data Manipulation language concept

Response: Question 1: Level - Remember  
Question: Define the term Data Manipulation Language (DML).  
A) Language used for data management  
B) Language used for data retrieval and update in a database  
C) Language for Data analysis  
D)Language used primarily for creating animations  
Answer: B) Language used for data retrieval and update in a database  
  
Question 2: Level - Understand  
Question: Explain the difference between high-level and low-level DML.  
A) One is procedural and the other isn't.  
B) One is used for creating databases; the other is for maintaining them.  
C) No difference  
D) They are used for different software.  
Answer: A) One is procedural and the other isn't.  
  
Question 3: Level - Apply  
Question: Solve the scenario: You have been asked to update a chunk of data in a database. What type of DML would you use?  
A) High-level  
B) Low-level  
C) Both High-level and Low-level  
D) Neither High-level nor Low-level  
Answer: C) Both High-level and Low-level  
  
Question 4: Level - Analyze  
Question: Compare standalone language DML and embedded DML.  
A) Standalone is flexible while embedded is more robust.  
B) Standalone is often called a query language; embedded is used within a host programming language.  
C) Standalone cannot be checked at compile time while embedded can.  
D) There's no comparison as they are the same.  
Answer: B) Standalone is often called a query language; embedded is used within a host programming language.  
  
Question 5: Level - Evaluate  
Question: Justify the use of high-level DML for database retrievals.  
A) It is faster and more reliable.  
B) It can handle large-scale data and is more efficient.  
C) It is simpler and requires less coding ability.  
D) It provides more control over data retrievals.  
Answer: B) It can handle large-scale data and is more efficient.  
  
Question 6: Level - Create  
Question: Develop a scenario where the use of low-level DML is more beneficial than a high-level DML.  
A) When you need to retrieve a large amount of data from a huge database.  
B) When updates are needed in a specific record of the database.  
C) When retrieving data from large unstructured corpora.  
D) When creating new databases.  
Answer: B) When updates are needed in a specific record of the database.

* Question: Create six multiple choice question and answer of the question with the Domain concept

Response: Question 1:   
Level: Remember  
Question: Define Factoid Questions as mentioned in the given document.  
A) They are questions which can only be answered with a list of things  
B) These are questions that pinpoint a correct phrase in a document or a database  
C) It's a type of question that relies heavily on subjective judgment  
D) These are the questions that are always mutually exclusive  
Answer: B) These are questions that pinpoint a correct phrase in a document or a database  
  
Question 2:   
Level: Understand  
Question: Explain the concept of 'Question Analysis' as discussed in the document.  
A) It is a process to predict the future course of the discussion  
B) It the stage of analyzing questions and changing them into structural representations for processing  
C) This process focuses on the extraction of one single answer type  
D) It's a process of extracting data from databases  
Answer: B) It the stage of analyzing questions and changing them into structural representations for processing  
  
Question 3:   
Level: Apply  
Question: If a question is 'Who is the current CEO of Apple?',  
which type does it belong to as per the given document?  
A) Factoid Questions  
B) List Questions  
C) Compound Questions  
D) Rhetorical Questions  
Answer: A) Factoid Questions  
  
Question 4:   
Level: Analyze  
Question: Compare the types of questions 'Factoid Questions' and 'List Questions' as mentioned in the document.  
A) Both types require a list of factoids as responses  
B) Factoid Questions pinpoint a correct phrase while List Questions seek multiple factoids  
C) Neither type requires a direct and precise answer  
D) Both types imply the same answering strategies  
Answer: B) Factoid Questions pinpoint a correct phrase while List Questions seek multiple factoids  
  
Question 5:   
Level: Evaluate  
Question: Determine the importance of knowing the type of question in Question answering systems.  
A) To identify the author of the question  
B) To use specific answering strategies for each type  
C) To differentiate between difficult and easy questions  
D) Knowing the type of question is not important  
Answer: B) To use specific answering strategies for each type  
  
Question 6:   
Level: Create   
Question: Develop a scenario where 'Question Analysis' in Question answering systems could significantly benefit.  
A) Winning a popular TV quiz show  
B) Deciding what to wear for the day  
C) Predicting the weather for the day  
D) Cooking dinner for friends  
Answer: A) Winning a popular TV quiz show

* Question: Create six multiple choice question and answer of the question with the DROP TABLE command concept

Response: Level 1: Remember   
Question: Define the DROP TABLE command in SQL.  
A) A command to delete a table in a database.   
B) A command to create a new table in the database.  
C) A command to delete a specific data from a table.  
D) A command to modify the structure of a table.  
Answer: A) A command to delete a table in a database.  
  
Level 2: Understand   
Question: Explain the differences between DROP TABLE and DELETE command in SQL.  
A) DROP TABLE deletes a specific row, while DELETE removes a table entirely.  
B) Both commands are used to get rid of unnecessary data.  
C) DROP TABLE removes the entire table, while DELETE remove specific rows in the table.  
D) There are no differences as both commands serve the same purpose.  
Answer: C) DROP TABLE removes the entire table, while DELETE remove specific rows in the table.   
  
Level 3: Apply  
Question: Solve the following problem: You are asked to remove a table called SUPPLIERS from the database. What would be the correct SQL command?  
A) DELETE SUPPLIERS;  
B) DROP SUPPLIER;  
C) DROP TABLE SUPPLIERS;  
D) DELETE TABLE SUPPLIERS;  
Answer: C) DROP TABLE SUPPLIERS;  
  
Level 4: Analyze  
Question: Compare the effect of using DELETE command to DROP TABLE command, assuming that the same item is used as a parameter.  
A) DELETE would remove the whole table while DROP TABLE would remove specific rows   
B) DELETE would remove the table structure while DROP TABLE would remove the table data  
C) DELETE would remove specific rows while DROP TABLE would remove the whole table  
D) There would be no differences  
Answer: C) DELETE would remove specific rows while DROP TABLE would remove the whole table   
  
Level 5: Evaluate  
Question: Determine when it is more appropriate to use DROP TABLE instead of DELETE command in SQL.  
A) When you need to remove all rows and the table structure itself from the database  
B) When you need to modify the structure of a table  
C) When you need to remove specific rows in a table  
D) When you need to create a new table in the database  
Answer: A) When you need to remove all rows and the table structure itself from the database   
  
Level 6: Create  
Question: Generate an SQL command to completely remove a table called ORDERS from the database, if it exists.  
A) IF EXISTS DROP TABLE ORDERS;   
B) DROP TABLES IF EXISTS ORDERS;   
C) IF EXISTS DELETE ORDERS;  
D) DELETE TABLE IF EXISTS ORDERS;  
Answer: B) DROP TABLES IF EXISTS ORDERS;

* Question: Create six multiple choice question and answer of the question with the Enhanced Entity-Relationship concept

Response: Level 1: Remember   
  
Question: Define the term "Enhanced Entity-Relationship diagram".  
A) A type of data model that describes a system or reality in terms of entities, relationships, and attributes  
B) A type of diagram that represents the entities, relationships, and attributes of a system  
C) A type of digital representation of a system  
D) A type of diagram used in computing to break down complex systems into simple form  
Answer: A) A type of data model that describes a system or reality in terms of entities, relationships, and attributes  
  
Level 2: Understand   
  
Question: Explain the purpose of using the Enhanced Entity-Relationship diagram in database design.  
A) To facilitate data manipulation and query  
B) To define the types of entities in the system  
C) To outline the relationships among system features  
D) All of the above  
Answer: D) All of the above  
  
Level 3: Apply   
  
Question: Apply the Enhanced Entity-Relationship diagram concept: What would be the entities in a database for a school system?  
A) Teachers, students, courses, and grades  
B) Classrooms, books, and offices  
C) Computers, projectors, and whiteboards  
D) Cafeteria, library, and playground  
Answer: A) Teachers, students, courses, and grades  
  
Level 4: Analyze   
  
Question: Compare Entities and Relationships in the context of an Enhanced Entity-Relationship diagram.  
A) Entities represent objects while Relationships represent interactions between those objects  
B) Entities represent interactions between objects while Relationships represent the objects themselves  
C) Entities and Relationships both represent objects within a system  
D) Entities and Relationships both represent interactions within a system  
Answer: A) Entities represent objects while Relationships represent interactions between those objects  
  
Level 5: Evaluate   
  
Question: Justify the need for an Enhanced Entity-Relationship diagram in the design of a large and complex database system.  
A) It allows for easier understanding of the system  
B) It reduces data redundancy and improves data integrity  
C) It aids in the optimization of the database  
D) All of the above  
Answer: D) All of the above  
  
Level 6: Create   
  
Question: Develop a simple Enhanced Entity-Relationship diagram for a library system. (This is more of an open-ended task, hence no choices.)  
A) Student - Issue - Books   
B) Author - Write - Books  
C) Books - Stored In - Shelves  
D) Librarian - Manage - Books+  
Answer would depend on what the student creates.

* Question: Create six multiple choice question and answer of the question with the Entity concept

Response: Question: Define 'entity' in the context of database systems.  
  
Level: 1   
A) An entity is a person or object that we want to keep information on.  
B) An entity is a query of the database.  
C) An entity is a relationship between two tables.  
D) An entity is the process of running the database.  
Answer: A) An entity is a person or object that we want to keep information on.  
  
Question: Explain the role of 'entity' in a database system.  
  
Level: 2   
A) 'Entity' serves as a reference tool for database management.  
B) 'Entity' sets the standards for interaction within the database.  
C) 'Entity' represents things or objects which data must be collected and maintained.  
D) 'Entity' helps manage the relationships between different databases.  
Answer: C) 'Entity' represents things or objects which data must be collected and maintained.  
  
Question: Solve the following by applying your understanding: which of the listed attributes, could act as an 'entity' in a school database?  
  
Level: 3   
A) Date of Exam  
B) Classroom Number  
C) Student ID  
D) Test Score  
Answer: C) Student ID  
  
Question: Compare an 'entity' to a 'relationship' in the context of database systems.  
  
Level: 4   
A) 'Entity' is a complex attribute, while 'relationship' is a simple attribute.  
B) 'Entity' represents data objects, while 'relationship' describes interactions among entities.  
C) 'Entity' defines data relations, whereas 'relationship' contains raw data.  
D) 'Entity' and 'relationship' have no distinct differences in database systems.  
Answer: B) 'Entity' represents data objects, while 'relationship' describes interactions among entities.  
  
Question: Justify why 'entity' is an essential concept in database design.  
  
Level: 5   
A) It highlights every data object that should be stored and cataloged.  
B) It adds complexity to a database design, making it more secure.  
C) It defines the syntax for all database queries.  
D) It indicates the version of the database system.  
Answer: A) It highlights every data object that should be stored and cataloged.  
  
Question: Generate a real-life situation where you would use the concept of 'entity' in a database system.  
  
Level: 6   
A) Designing a library catalog database where 'Book\_ID' is an entity.  
B) Investigating a robbery where 'singularity' is an entity.  
C) Designing a friendship where 'empathy' is an entity.  
D) Designing a painting where 'color' is an entity.  
Answer: A) Designing a library catalog database where 'Book\_ID' is an entity.

* Question: Create six multiple choice question and answer of the question with the Entity-Relationship Model concept

Response: Difficulty Level: Remember  
Question: Define the term "entity" in the context of a database.  
A) It is a type of database.  
B) It is a structure used to hold information in a database.  
C) It is the process of managing the database.  
D) It is a real-world object or concept that exists on its own.  
Answer: D) It is a real-world object or concept that exists on its own.  
  
Difficulty Level: Understand   
Question: Explain when it would be appropriate to use a NULL value in a database.  
A) Whenever there is missing or unknown information.  
B) To represent an entity in the database.  
C) In a derived attribute.  
D) It's always inappropriate to use NULL values in a database.  
Answer: A) Whenever there is missing or unknown information.  
  
Difficulty Level: Apply  
Question: Apply your understanding of entity types and entity sets to distinguish between them.  
A) They're identical concepts in the context of a database.  
B) An entity type defines a kind of entity, while an entity set is a collection of similar entities.  
C) An entity type is used for text values, while an entity set is used for numerical values.  
D) An entity type is a component of an entity set.  
Answer: B) An entity type defines a kind of entity, while an entity set is a collection of similar entities.  
  
Difficulty Level: Analyze  
Question: Compare an attribute to a value set in a database.  
A) Both represent values associated with a specific entity.  
B) An attribute is a property of an entity, while a value set represents the range of values an attribute can have.  
C) An attribute and a value set are interchangeable terms in a database context.  
D) An attribute stores data, while a value set organizes data.  
Answer: B) An attribute is a property of an entity, while a value set represents the range of values an attribute can have.  
  
Difficulty Level: Evaluate  
Question: Evaluate the following statement: "A relationship instance is always a relationship type."  
A) True, because both concepts involve relationships within a database.  
B) False, because a relationship instance involves specific entities, while a relationship type defines a relationship category.  
C) True, because all instances in a database are equivalent to types.  
D) The statement can't be evaluated because it depends on the context.  
Answer: B) False, because a relationship instance involves specific entities, while a relationship type defines a relationship category.  
  
Difficulty Level: Create  
Question: Consider the entities and their relationships in a SCHOOL environment. Develop an entity-relationship diagram to represent this information.  
A) The choices for this question would be various diagrams representing different interpretations of a SCHOOL environment's entities and their relationships.  
Answer: The correct answer would be the diagram that most accurately represents the entities (student, teacher, class, etc.) and their relationships in a school.

* Question: Create six multiple choice question and answer of the question with the Equality concept

Response: Question 1:   
Level: Remember  
Question: Define the term 'EQUIJOIN' in the context of database system.  
A) A join condition where only the inequality operator is used.  
B) A join condition which involves inequality comparisons.  
C) A join condition where the only comparison operator used is =.  
D) A new operation used to get rid of the second (superfluous) attribute in an EQUIJOIN.  
Answer: C) A join condition where the only comparison operator used is =.  
  
Question 2:   
Level: Understand  
Question: Explain what a "Natural Join" operation does in a database system.  
A) It is a join operation that defines equality between two attributes.  
B) It is an operation that removes one of each pair of attributes with identical values.  
C) It refers to a join condition involving inequality comparisons.  
D) It is a statement that checks the consistency of the database schema.  
Answer: B) It is an operation that removes one of each pair of attributes with identical values.  
  
Question 3:   
Level: Apply  
Question: Solve for the resulting table given a database scenario: If you have a table "Employees" with attributes 'Emp\_id', 'Emp\_name', and 'Manager\_id', and another table "Managers" with attributes 'Manager\_id', and 'Manager\_name'. How would you apply an EQUIJOIN on those two tables?  
A) By joining on 'Emp\_name' and 'Manager\_name'.  
B) By joining on 'Manager\_id' and 'Emp\_id'.  
C) By joining on 'Manager\_name' and 'Emp\_id'.  
D) By joining on 'Manager\_id' in both tables.  
Answer: D) By joining on 'Manager\_id' in both tables.  
  
Question 4:   
Level: Analyze  
Question: Compare an EQUIJOIN and a NATURAL JOIN based on their functionality in a database system.  
A) EQUIJOIN excludes identical pairs of attributes, while NATURAL JOIN uses = as the only comparison operator.  
B) NATURAL JOIN excludes identical pairs of attributes, while EQUIJOIN uses = as the only comparison operator.  
C) EQUIJOIN uses = as the only comparison operator, while NATURAL JOIN excludes one of each pair of attributes with identical values.  
D) NATURAL JOIN uses = as the only comparison operator, while EQUIJOIN excludes one of each pair of attributes with identical values.  
Answer: C) EQUIJOIN uses = as the only comparison operator, while NATURAL JOIN excludes one of each pair of attributes with identical values.  
  
Question: 5  
Level: Evaluate  
Question: Justify why a NATURAL JOIN operation is necessary when an EQUIJOIN is already performed.  
A) To maintain database consistency   
B) To optimize query performance by reducing unnecessary redundancy   
C) To ensure data security   
D) To increase database size  
Answer: B) To optimize query performance by reducing unnecessary redundancy   
  
Question 6:   
Level: Create  
Question: Generate a scenario where a NATURAL JOIN operation would be beneficial in a database system.  
A) When there are duplicate records in the database.  
B) When the database is too large.  
C) When two tables have sets of attributes with identical values.  
D) When the database schema is poorly designed.  
Answer: C) When two tables have sets of attributes with identical values.

* Question: Create six multiple choice question and answer of the question with the Equivalent concept

Response: Question 1: Remember Level  
Question: Define the concept of 'Factoid Questions' within question-answering systems.  
A) The type of question that seeks a list of factoid responses that satisfy a given criterion.  
B) The type of question that asks about the definition and meaning of a concept and extracts essential information and properties of the concept.  
C) The type of question that pinpoints the right phrase in a document or a database that correctly addresses the question.  
D) The type of question that seeks different views on a subject.  
Answer: C) The type of question that pinpoints the right phrase in a document or a database that correctly addresses the question.  
  
Question 2: Understand Level  
Question: Explain the technique of question answering in the field of data engineering.  
A) It involves finding the best font type for documents.  
B) It comprises techniques such as parsing, named entity recognition, answer type extraction, ontological inference, and search, indexing, and classification algorithms.  
C) It is about creating the best layout for a document.  
D) It is a method to illustrate an architectural design.  
Answer: B) It comprises techniques such as parsing, named entity recognition, answer type extraction, ontological inference, and search, indexing, and classification algorithms.  
  
Question 3: Apply Level  
Question: Apply your understanding of the types of questions to choose the correct categorization for the question, "What countries should be allowed to test nuclear weapons?"  
A) Factoid Questions  
B) List Questions  
C) Definition Questions  
D) Opinion Questions  
Answer: D) Opinion Questions  
  
Question 4: Analyze Level  
Question: Compare the nature of 'Factoid Questions' and 'List Questions' within question answering systems.  
A) Factoid Questions and List Questions both seek different views on a subject.  
B) Factoid Questions pinpoint the right phrase in a document or a database to address the question, while List Questions seek a list of factoid responses.  
C) Factoid Questions and List Questions both ask about the definition and meaning of a concept.  
D) Factoid Questions and List Questions both demand an opinion on a certain topic.  
Answer: B) Factoid Questions pinpoint the right phrase in a document or a database to address the question, while List Questions seek a list of factoid responses.  
  
Question 5: Evaluate Level  
Question: Determine the suitability of applying parsing, named entity recognition, and answer type extraction techniques to answer a 'Factoid Question.'  
A) Not suitable as it needs opinion-based discussions.  
B) Suitable as these techniques can help in accurately identifying the right phrase to address the question.  
C) Not suitable as these techniques are only applicable for definition questions.  
D) Suitable as it involves sorting a list of facts.  
Answer: B) Suitable as these techniques can help in accurately identifying the right phrase to address the question.  
  
Question 6: Create Level  
Question: Develop a List Question that could be asked within a Database Systems setting.  
A) Name three main types of database systems.  
B) What is the definition of a Database System?  
C) Who developed the concept of Database Systems?  
D) Is a Database System better than a file system?  
Answer: A) Name three main types of database systems.

* Question: Create six multiple choice question and answer of the question with the EXCEPT command

Response: Question: Define the term 'EXCEPT' within the context of SQL queries.  
Level: Remember  
A) A command that selects all the duplicate records in two tables  
B) A command that selects all the records present in both tables  
C) A command that selects all the records from the first table not present in the second table  
D) A command that selects all unique records in the first table  
Answer: C) A command that selects all the records from the first table not present in the second table  
  
Question: Explain the purpose of using the 'EXCEPT' command in a SQL query, as illustrated in Q3A and Q3B.  
Level: Understand  
A) To select all duplicates between two tables  
B) To select all employees working on projects controlled by department 5  
C) To select all records exclusively present in the first table  
D) To select all employees not working on projects controlled by department 5  
Answer: B) To select all employees working on projects controlled by department 5  
  
Question: Apply the 'EXCEPT' command in a fictitious SQL query to retrieve all projects a particular employee is working on but not supervised by department 5.   
Level: Apply  
A) SELECT Pno FROM WORKS\_ON WHERE Ssn = 'XYZ' EXCEPT SELECT Pnumber FROM PROJECT WHERE Dnum = 5  
B) SELECT Pno FROM WORKS\_ON WHERE Ssn = 'XYZ' UNION SELECT Pnumber FROM PROJECT WHERE Dnum = 5  
C) SELECT Pno FROM WORKS\_ON WHERE Ssn = 'XYZ' INTERSECT SELECT Pnumber FROM PROJECT WHERE Dnum = 5  
D) SELECT Pno FROM WORKS\_ON WHERE Ssn = 'XYZ' MINUS SELECT Pnumber FROM PROJECT WHERE Dnum = 5  
Answer: A) SELECT Pno FROM WORKS\_ON WHERE Ssn = 'XYZ' EXCEPT SELECT Pnumber FROM PROJECT WHERE Dnum = 5  
  
Question: Compare the use of 'EXCEPT' in Q3A and Q3B to the one used in anti-join notation.  
Level: Analyze  
A) Both are used to select all the duplicate records between two tables.  
B) Both are used to eliminate records in one table that are presented in another table.  
C) Both are used to find a union of records between two tables.  
D) Both are used to find records common to two tables.  
Answer: B) Both are used to eliminate records in one table that are presented in another table.  
  
Question: Justify the use of 'EXCEPT' in retrieving the name of employees who work on all the projects controlled by department number 5.   
Level: Evaluate  
A) It retrieves all employees working on projects not controlled by department 5  
B) It retrieves all employees working on any project controlled by department 5  
C) It retrieves all employees working on all the projects controlled by department 5  
D) It retrieves all employees not working on projects controlled by department 5  
Answer: C) It retrieves all employees working on all the projects controlled by department 5  
  
Question: Develop a SQL command using 'EXCEPT' to list the names of all employees who do not work for department number 5.  
Level: Create  
A) SELECT Fname, Lname FROM EMPLOYEE EXCEPT SELECT Fname, Lname FROM EMPLOYEE WHERE Dno = 5  
B) SELECT Fname, Lname FROM EMPLOYEE UNION SELECT Fname, Lname FROM EMPLOYEE WHERE Dno = 5  
C) SELECT Fname, Lname FROM EMPLOYEE INTERSECT SELECT Fname, Lname FROM EMPLOYEE WHERE Dno = 5  
D) SELECT Fname, Lname FROM EMPLOYEE MINUS SELECT Fname, Lname FROM EMPLOYEE WHERE Dno = 5  
Answer: A) SELECT Fname, Lname FROM EMPLOYEE EXCEPT SELECT Fname, Lname FROM EMPLOYEE WHERE Dno = 5

* Question: Create six multiple choice question and answer of the question with the EXISTS command

Response: Question: Define the EXISTS function in SQL.  
Level: Remember  
A) A function to check if a query returns an empty result   
B) A function to check if a database exists   
C) A function to create new queries   
D) A function to modify existing queries   
Answer: A) A function to check if a query returns an empty result   
  
Question: Explain how the EXISTS function is used in a WHERE clause in SQL.  
Level: Understand  
A) It deletes the results of a query if it returns empty   
B) It runs a secondary query to check on the results of the first   
C) It is used to check if the result of a nested query is empty or not   
D) It blocks the results of a query if it returns empty   
Answer: C) It is used to check if the result of a nested query is empty or not   
  
Question: Solve the SQL task of retrieving the names of employees who work on all projects controlled by department number 5 using the EXISTS function.  
Level: Apply  
A) SELECT Fname, Lname FROM EMPLOYEE WHERE NOT EXISTS ((SELECT Pnumber FROM PROJECT WHERE Dnum = 5) EXCEPT (SELECT Pno FROM WORKS\_ON WHERE Ssn = Essn));  
B) SELECT Fname, Lname FROM EMPLOYEE WHERE EXISTS ((SELECT Pnumber FROM PROJECT WHERE Dnum = 5) EXCEPT (SELECT Pno FROM WORKS\_ON WHERE Ssn = Essn));  
C) SELECT Fname, Lname FROM EMPLOYEE;  
D) SELECT Fname, Lname FROM EMPLOYEE WHERE EXISTS ((SELECT Pnumber FROM PROJECT WHERE Dnum = 5) AND (SELECT Pno FROM WORKS\_ON WHERE Ssn = Essn));  
Answer: A) SELECT Fname, Lname FROM EMPLOYEE WHERE NOT EXISTS ((SELECT Pnumber FROM PROJECT WHERE Dnum = 5) EXCEPT (SELECT Pno FROM WORKS\_ON WHERE Ssn = Essn));  
  
Question: Compare and contrast the use of EXISTS and NOT EXISTS in SQL queries.  
Level: Analyze  
A) Both return TRUE or FALSE, but EXISTS checks if a query returns empty while NOT EXISTS does the opposite   
B) Both perform the same function but NOT EXISTS is used with nested queries   
C) EXISTS is a Boolean function while NOT EXISTS is a String function   
D) There is no difference between EXISTS and NOT EXISTS   
Answer: A) Both return TRUE or FALSE, but EXISTS checks if a query returns empty while NOT EXISTS does the opposite   
  
Question: Justify the use of EXISTS in the SQL query Q16B.  
Level: Evaluate   
A) It is used to check if the nested query returns any tuples matching the criteria   
B) It is used to create a new table in the database  
C) It is used to iterate through the EMPLOYEE tuples   
D) It is used to delete unnecessary tuples from the EMPLOYEE relation   
Answer: A) It is used to check if the nested query returns any tuples matching the criteria   
  
Question: Generate a query scenario where the use of EXISTS would be more beneficial than using a single block query.  
Level: Create   
A) Creating a new table   
B) To find the empleyees who have dependents with the same first name and sex  
C) Updating an existing table   
D) Deleting an existing table   
Answer: B) To find the empleyees who have dependents with the same first name and sex

* Question: Create six multiple choice question and answer of the question with the Foreign key concept

Response: Question: Define what a foreign key is in a relational database.  
LEVEL: Remember  
A) A foreign key is a column or group of columns in a relational database table that provides a link between data in two tables.  
B) A foreign key is a unique identifier for records in the relational database table.  
C) A foreign key is the actual data stored in the database table.  
D) A foreign key is a rule that prevents actions that would destroy links between tables.  
Answer: A) A foreign key is a column or group of columns in a relational database table that provides a link between data in two tables.  
  
Question: Explain the role of a foreign key in maintaining referential integrity.  
LEVEL: Understand  
A) The foreign key doesn't have any role in maintaining referential integrity.  
B) Foreign keys ensure that the data transferred into the tables does not violate the defined schema.  
C) Foreign keys enhance the query speed and they have no effect on referential integrity.  
D) Foreign keys permit NULL values to be entered into the column.  
Answer: B) Foreign keys ensure that the data transferred into the tables does not violate the defined schema.  
  
Question: Solve when and why one might need to use a foreign key in a database schema?  
LEVEL: Apply  
A) One might need to use a foreign key in a database schema to enforce referential integrity and to relate records from different tables.  
B) One might need to use a foreign key in a database schema to store primarily data.  
C) One might never need to use a foreign key in a database schema.  
D) One might need to use a foreign key in a database schema to keep the database size small.  
Answer: A) One might need to use a foreign key in a database schema to enforce referential integrity and to relate records from different tables.  
  
Question: Compare the use of foreign keys and the use of primary keys in a database.  
LEVEL: Analyze  
A) Both foreign keys and primary keys ensure uniqueness of data in a table.  
B) Foreign keys can be used for identification, primary keys for maintaining relationships.  
C) Primary keys ensure entity integrity, and foreign keys ensure referential integrity.  
D) Both foreign keys and primary keys are optional.  
Answer: C) Primary keys ensure entity integrity, and foreign keys ensure referential integrity.  
  
Question: Determine when to enforce a foreign key constraint on a database and justify your decision.  
LEVEL: Evaluate  
A) Foreign key constraints should be enforced when the data is independent and does not relate to other tables.   
B) Foreign key constraints do not need to be enforced at any point.  
C) Foreign key constraints should be enforced when we want to preserve relationships among data and prevent invalid data entries.  
D) Foreign key constraints should be enforced when the data is dependent but does not relate to other tables.  
Answer: C) Foreign key constraints should be enforced when we want to preserve relationships among data and prevent invalid data entries.  
  
Question: Develop a scenario where a foreign key constraint would be critical for maintaining the integrity of a database schema.  
LEVEL: Create  
A) A store inventory database where items belong to certain categories.  
B) A phonebook database where each record is unique and does not relate with any other record.  
C) An image database where each photo is unique and does not relate to any other data.  
D) A database containing tweets where each tweet is a standalone data point.  
Answer: A) A store inventory database where items belong to certain categories.

* Question: Create six multiple choice question and answer of the question with the Functional dependencies concept

Response: Question 1: Level - Remember  
Define functional dependencies in the context of database systems.  
A) Relationship between two data sets.  
B) The degree to which data is scattered in a database.  
C) The process of inferring new dependencies from a given set.  
D) None of the above.  
Answer: A) Relationship between two data sets.  
  
Question 2: Level - Understand  
Explain what the "closure" of a key is in terms of functional dependencies.  
A) The process of creating a new table from existing one  
B) All the attributes that can be determined functionally from a key.  
C) The transformation of a relation to its equivalent set of functional dependencies.  
D) The algorithmic calculation of dependencies.  
Answer: B) All the attributes that can be determined functionally from a key.  
  
Question 3: Level - Apply  
Apply the concept of functional dependencies to identify the result of normalizing the data.  
A) It will create multiple tables with no relationships among them.  
B) It will reduce redundancy and improve the overall design of a database.  
C) It will change the way data is stored in the database directly.  
D) It will increase the number of null values in the database.  
Answer: B) It will reduce redundancy and improve the overall design of a database.  
  
Question 4: Level - Analyze  
Compare functional dependencies and multivalued dependencies.  
A) They are the same thing.  
B) Functional dependencies describe relationships between attributes in a table, while multivalued dependencies describe chi-square properties.  
C) Functional dependencies can result in partial dependencies; multivalued dependencies can result in dependencies of attributes on part of a multi-part key.  
D) Functional dependencies relate to standard table relationships, while multivalued dependencies involve complex relationships that aren't properly modeled by typical relational databases.  
Answer: D) Functional dependencies relate to standard table relationships, while multivalued dependencies involve complex relationships that aren't properly modeled by typical relational databases.  
  
Question 5: Level - Evaluate  
Justify why the synthesis approach has not been used in practice for large database design projects.  
A) Because it does not allow for the capture of semantics.  
B) Because it requires all functional dependencies to be given up front.  
C) Because it is a process that is too computationally heavy.  
D) Because it does not allow for the use of keys for access to database items.  
Answer: B) Because it requires all functional dependencies to be given up front.  
  
Question 6: Level - Create  
Create a scenario where multiple minimal covers may exist for a set of functional dependencies.  
A) When the set of functional dependencies is considered in different orders, different minimal covers can be obtained.  
B) When the set of functional dependencies is empty.  
C) When the set of functional dependencies lacks duplicate attributes.  
D) When the set of functional dependencies contains irreflexive dependencies.  
Answer: A) When the set of functional dependencies is considered in different orders, different minimal covers can be obtained.

* Question: Create six multiple choice question and answer of the question with the GRANT command

Response: LEVEL 1 - Remember  
Question: Define the purpose of the GRANT command in the context of database management systems.  
A) To create a new user  
B) To assign privileges to a user  
C) To revoke privileges from a user  
D) To delete a database  
Answer: B) To assign privileges to a user  
  
LEVEL 2 - Understand  
Question: Explain what the term "WITH GRANT OPTION" refers to in a database context.  
A) It allows the grantee to grant the privilege to other accounts  
B) It allows the grantor to grant more privileges  
C) It requires the grantee to grant similar privileges to other accounts  
D) It restricts the grantor from granting more privileges  
Answer: A) It allows the grantee to grant the privilege to other accounts  
  
LEVEL 3 - Apply  
Question: If A1 wants to grant A4 the privilege to select records from the EMPLOYEE table, what SQL command would they use?  
A) GRANT SELECT ON EMPLOYEE TO A2;  
B) GRANT SELECT ON EMPLOYEE TO A4;  
C) GRANT UPDATE ON EMPLOYEE TO A2;  
D) GRANT SELECT ON EMPLOYEE TO A3;  
Answer: B) GRANT SELECT ON EMPLOYEE TO A4;  
  
LEVEL 4 - Analyze  
Question: Compare the commands ‘GRANT SELECT ON EMPLOYEE TO A4;’ and ‘GRANT SELECT ON EMPLOYEE TO A3 WITH GRANT OPTION;’ What is the main difference?  
A) A4 can propagate the SELECT privilege, but A3 cannot  
B) A3 has the privilege to SELECT and UPDATE while A4 can only SELECT  
C) A3 can propagate the SELECT privilege, but A4 cannot  
D) Both A3 and A4 now have the same SELECT privilege  
Answer: C) A3 can propagate the SELECT privilege, but A4 cannot  
  
LEVEL 5 - Evaluate  
Question: Justify why the GRANT OPTION was not given to A4 in the statement: ‘GRANT SELECT ON EMPLOYEE TO A4;’  
A) To prevent A4 from granting the SELECT privilege to others  
B) A4 already has this privilege  
C) A1 did not have adequate permissions  
D) A4 made a mistake in the command statement  
Answer: A) To prevent A4 from granting the SELECT privilege to others  
  
LEVEL 6 - Create  
Question: Generate a SQL command where A1 grants A3 the ability to update the Salary attribute of the EMPLOYEE table and propagate the privilege.  
A) GRANT UPDATE ON EMPLOYEE (Salary) TO A3 WITH GRANT OPTION;  
B) GRANT SELECT ON A3EMPLOYEE TO A3 WITH GRANT OPTION ;  
C) GRANT UPDATE ON EMPLOYEE TO A3;  
D) GRANT SELECT ON A3EMPLOYEE TO A3;  
Answer: A) GRANT UPDATE ON EMPLOYEE (Salary) TO A3 WITH GRANT OPTION;

* Question: Create six multiple choice question and answer of the question with the GROUP BY command

Response: Question: Define the purpose of the GROUP BY command in an SQL query.  
LEVEL: Remember  
A) It is used to partition the relation into non-overlapping subsets of tuples.  
B) It is used to sort the output of a query in ascending or descending order.  
C) It is used to select only those records that fulfill a certain condition.  
D) It is used to eliminate duplicate results from a query.  
Answer: A) It is used to partition the relation into non-overlapping subsets of tuples.  
  
  
Question: Explain how the GROUP BY command can be used in an SQL query to retrieve information about each department.  
LEVEL: Understand  
A) It is used to create a new table with the information about each department.  
B) It is used to find the department with the most number of employees.  
C) It is used to retrieve the department number, the number of employees in the department, and their average salary.  
D) It is used to delete the records of the employees in each department.  
Answer: C) It is used to retrieve the department number, the number of employees in the department, and their average salary.  
  
  
Question: Solve the following problem: Find the number of employees in each department where the salary is more than 40000.  
LEVEL: Apply  
A) Q28: SELECT Dno, COUNT (\*) FROM EMPLOYEE WHERE Salary>40000 GROUP BY Dno;  
B) Q28: SELECT Dno, SUM (\*) FROM EMPLOYEE WHERE Salary>40000 GROUP BY Dno;  
C) Q28: SELECT Dno, MAX (\*) FROM EMPLOYEE WHERE Salary>40000 GROUP BY Dno;  
D) Q28: SELECT Dno, MIN (\*) FROM EMPLOYEE WHERE Salary>40000 GROUP BY Dno;  
Answer: A) Q28: SELECT Dno, COUNT (\*) FROM EMPLOYEE WHERE Salary>40000 GROUP BY Dno;  
  
  
Question: Compare the usage of GROUP BY command in Q24 and Q28 queries.  
LEVEL: Analyze  
A) In both queries, the GROUP BY command is used to partition the employees in each department.  
B) Q24 uses the GROUP BY command to find average salary, while Q28 uses it to count employees with salary more than 40000.  
C) In Q24, the GROUP BY command is used before the SELECT command, while in Q28 it is used after the SELECT command.  
D) There is no difference in the usage of the GROUP BY command in Q24 and Q28.  
Answer: B) Q24 uses the GROUP BY command to find average salary, while Q28 uses it to count employees with salary more than 40000.  
  
  
Question: Justify the use of GROUP BY command with HAVING, and CASE clause in a complex SQL query.  
LEVEL: Evaluate  
A) The GROUP BY command with HAVING, and CASE clause are not useful in complex SQL queries.  
B) The use of GROUP BY command with HAVING, and CASE clause makes the SQL query slower.  
C) The GROUP BY command with HAVING, and CASE clause is used to group the data and filter the grouped data and execute different expressions respectively.  
D) The GROUP BY command with HAVING, and CASE clause is used to execute multiple queries at once.  
Answer: C) The GROUP BY command with HAVING, and CASE clause is used to group the data and filter the grouped data and execute different expressions respectively.  
  
  
Question: Generate a SQL query to find departments which have more than 5 employees and whose employees' average salary is less than 30000.  
LEVEL: Create  
A) WITH SMALLDEPTS (Dno) AS ( SELECT Dno FROM EMPLOYEE GROUP BY Dno HAVING COUNT (\*) > 5 AND AVG (Salary) < 30000) SELECT Dno, COUNT (\*) FROM EMPLOYEE  
B) WITH SMALLDEPTS (Dno) AS ( SELECT Dno FROM EMPLOYEE GROUP BY Dno HAVING AVG (Salary) < 30000) SELECT Dno, COUNT (\*) FROM EMPLOYEE  
C) SELECT Dno FROM EMPLOYEE GROUP BY Dno HAVING COUNT (\*) > 5 AND AVG (Salary) < 30000  
D) SELECT Dno FROM EMPLOYEE GROUP BY Dno HAVING AVG (Salary) < 30000  
Answer: A) WITH SMALLDEPTS (Dno) AS ( SELECT Dno FROM EMPLOYEE GROUP BY Dno HAVING COUNT (\*) > 5 AND AVG (Salary) < 30000) SELECT Dno, COUNT (\*) FROM EMPLOYEE

* Question: Create six multiple choice question and answer of the question with the HAVING comand

Response: Question 1:   
Level: Remember  
Define the function of the HAVING clause in SQL.  
A) It selects only some of the groups based on group conditions.  
B) It selects all groups regardless of conditions.  
C) It restricts the tuples to selected individuals.  
D) It restricts the tuples to selected groups.  
Answer: A) It selects only some of the groups based on group conditions.  
  
Question 2:   
Level: Understand  
Explain what the HAVING clause does in Q26.  
A) It limits the tuples to which functions are applied.  
B) It selects whole groups based on the count being more than 2.  
C) It restricts the function to employees who earn more than a certain amount.  
D) It selects only departments that have employees earning more than a certain amount.  
Answer: B) It selects whole groups based on the count being more than 2.  
  
Question 3:   
Level: Apply  
Solve the following: In Q28, what is the purpose of the HAVING clause?  
A) To select only departments with more than five employees.  
B) To retrieve the number of employees earning more than $40,000.  
C) To select individual tuples or joined tuples.  
D) To select only departments that have more than five employees and whose employees are earning more than $40,000.  
Answer: D) To select only departments that have more than five employees and whose employees are earning more than $40,000.  
  
Question 4:   
Level: Analyze  
Compare the use of HAVING clause in Q17 and Q28.  
A) Both use the HAVING clause to restrict the tuples selected.  
B) Q17 uses the HAVING clause to select groups with more than 100 elements, while Q28 uses it to select departments with more than 5 employees earning more than $40,000.  
C) Both use HAVING to select only departments with more than five employees.  
D) Q17 uses the HAVING clause to select groups with more than 100 elements, while Q28 uses it to select individuals who earn more than $40,000.  
Answer: B) Q17 uses the HAVING clause to select groups with more than 100 elements, while Q28 uses it to select departments with more than 5 employees earning more than $40,000.  
  
Question 5:   
Level: Evaluate  
Justify why HAVING clause is used after the WHERE clause in SQL queries.  
A) Because the HAVING clause needs to be executed first.  
B) Because the WHERE clause restricts the tuples to selected individuals, and the HAVING clause further filters those groups.  
C) Because the HAVING clause restricts the tuples to selected individuals, and the WHERE clause further filters those groups.  
D) Because the WHERE clause cannot function without the HAVING clause.  
Answer: B) Because the WHERE clause restricts the tuples to selected individuals, and the HAVING clause further filters those groups.  
  
Question 6:   
Level: Create  
Generate a SQL query for a database where you want to retrieve departments with more than 10 employees, each earning more than $25,000.   
A) SELECT Dno, COUNT (\*) FROM EMPLOYEE WHERE Salary>25000 GROUP BY Dno HAVING COUNT (\*) > 10;  
B) SELECT Dno, COUNT (\*) FROM EMPLOYEE WHERE Dno>10 GROUP BY Salary HAVING COUNT (\*) > 25000;  
C) SELECT Dno, COUNT (\*) FROM EMPLOYEE WHERE COUNT (\*)>10 GROUP BY Dno HAVING Salary > 25000;  
D) SELECT Dno, Salary FROM EMPLOYEE WHERE COUNT (\*)>10 GROUP BY Dno HAVING COUNT (\*) > 25000;  
Answer: A) SELECT Dno, COUNT (\*) FROM EMPLOYEE WHERE Salary>25000 GROUP BY Dno HAVING COUNT (\*) > 10;

* Question: Create six multiple choice question and answer of the question with the Implied concept

Response: Question 1: [Level: Remember]  
Define what is meant by "information retrieval" as mentioned in the text.  
A) The process of obtaining information from a specific source.  
B) The process of extracting valuable insights from databases and unstructured data available on the web.   
C) A type of database system.  
D) A search engine like Google.  
Answer: B) The process of extracting valuable insights from databases and unstructured data available on the web.   
  
Question 2: [Level: Understand]  
Explain what are the main concepts involved in question answering?  
A) Question Analysis, Answer Scoring  
B) Answer Type Extraction, Entity Recognition  
C) Parsing, Indexing, Classification Algorithm  
D) All of the above  
Answer: D) All of the above  
  
Question 3: [Level: Apply]  
What type of question would "What is the LIBOR rate?" be classified under?  
A) List Question  
B) Factoid Question  
C) Opinion Question  
D) Definition Question   
Answer: D) Definition Question   
  
Question 4: [Level: Analyze]  
Compare the characteristics of "Definition Questions" and "Opinion Questions" as mentioned in the text?  
A) Definition Questions focus on the meaning of the concept, while Opinion Questions seek different views on a subject.  
B) Definition Questions and Opinion Questions both seek definition of a concept.  
C) Definition Questions seek factual information, while Opinion Questions ask about the location of places.  
D) Definition Questions and Opinion Questions both seek a list of factoid responses.  
Answer: A) Definition Questions focus on the meaning of the concept, while Opinion Questions seek different views on a subject.  
  
Question 5: [Level: Evaluate]  
Determine why it's important to know the type of question in question answering systems?  
A) Because knowing the type of question has no impact on the answering strategies.   
B) Because answering strategies rely heavily on the type of questions.   
C) Because it helps to categorize the questions.   
D) Because it helps to determine the complexity of the question.   
Answer: B) Because answering strategies rely heavily on the type of questions.  
  
Question 6: [Level: Create]  
Construct an example of a “Factoid Question” based on the description in the text.  
A) Who won the world series in 2020?  
B) Explain the theory of relativity.  
C) What is the capital of Australia?  
D) Both A and C  
Answer: D) Both A and C

* Question: Create six multiple choice question and answer of the question with the Inner Join concept

Response: Question: Define "Inner Join" as discussed within the context.  
A) A method of combining two tables based on the values of the corresponding columns.   
B) A technique where all matching tuples from two tables are shared in a separate table.  
C) A table type to store tuples of information.  
D) An algorithm that modifies existing data in the database.  
Answer: A) A method of combining two tables based on the values of the corresponding columns.  
Level: Remember  
  
Question: Explain the meaning of "Inner join is a type of match-and combine operation defined formally as a combination of CARTESIAN PRODUCT and SELECTION".  
A) Inner join identifies matching pairs from two tables and puts them together.  
B) Inner join randomly allots data to different locations.  
C) Inner join searches for data within a single entity.  
D) Inner join separates similar data in different tables.   
Answer: A) Inner join identifies matching pairs from two tables and puts them together.  
Level: Understand  
  
Question: Solve the given statement: "Sometimes a join may be specified between a relation and itself" using an appropriate example.  
A) A self-join can be used to combine rows within the same table when there is a match based on designated criteria.  
B) A self-join can be used to delete data from the table.  
C) Self-join can be used to reset the tables.  
D) Self-join is not possible in a relational database management system.  
Answer: A) A self-join can be used to combine rows within the same table when there is a match based on designated criteria.   
Level: Apply  
  
Question: Compare the terms 'Inner Join' and 'Natural Join'.  
A) Inner join and natural join are two independent operations.  
B) Inner join and natural join ultimately does the same operation of combining tables.  
C) Inner join differs from natural join in the criteria used for matching rows.  
D) Natural join is a simplified version of the Inner Join.  
Answer: C) Inner join differs from natural join in the criteria used for matching rows.  
Level: Analyze  
  
Question: Justify the statement: "The ordering beneficial for the next join is considered an interesting join order".  
A) The statement is correct as maintaining an order can simplify the joining process.  
B) The statement is incorrect as ordering doesn't affect the outcome of a join.  
C) The statement is correct as but only valid for specific databases.  
D) The statement is incorrect as joining process is independent of any ordering.  
Answer: A) The statement is correct as maintaining an order can simplify the joining process.  
Level: Evaluate  
  
Question: Develop a hypothetical scenario where the concept of 'Inner Join' would be practically applicable.  
A) Every case in which information from two datasets needs to be combined based on a common factor.  
B) When planning a college reunion to find common attendees from different years.  
C) When implementing a new security protocol in a software development company.  
D) When a data integrity violation occurs in a relational database.  
Answer: B) When planning a college reunion to find common attendees from different years.  
Level: Create

* Question: Create six multiple choice question and answer of the question with the INSERT command

Response: Question: Define what the INSERT command is used for in database systems.  
A) To subtract a single tuple (row) to a relation (table)  
B) To add a single tuple (row) to a relation (table)  
C) To divide a single tuple (row) from a relation (table)  
D) To multiply a single tuple (row) in a relation (table)  
Answer: B) To add a single tuple (row) to a relation (table)  
Level: Remember  
  
Question: Explain the command used to add a new tuple to the EMPLOYEE relation.  
A) ADD INTO EMPLOYEE VALUES (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
B) INSERT INTO EMPLOYEE (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
C) INPUT INTO EMPLOYEE (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
D) INSERT INTO EMPLOYEE VALUES (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
Answer: D) INSERT INTO EMPLOYEE VALUES (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
Level: Understand  
  
Question: Solve how to order values for insertion when using the INSERT command.  
A) In the same order they appear in the table.  
B) In reversed order, from bottom to top.  
C) In a random order.  
D) In the same order in which the corresponding attributes were specified in the CREATE TABLE command.  
Answer: D) In the same order in which the corresponding attributes were specified in the CREATE TABLE command.  
Level: Apply  
  
Question: Compare the first form of the INSERT statement to its second form.  
A) The first form allows insertion of multiple tuples while the second allows only one at a time.  
B) The first form specifies relation name and list of values, while the second form allows the user to specify explicit attribute names.  
C) The first form allows explicit attribute names to be used while the second form doesn't.  
D) The first form is used only to create tables, while the second form is used to insert records.  
Answer: B) The first form specifies relation name and list of values, while the second form allows the user to specify explicit attribute names.  
Level: Analyze  
  
Question: Justify why the second form of the INSERT statement is useful.  
A) It is useful when relation has high number of attributes.  
B) Any order of attributes can be used to list values in the INSERT command.  
C) It allows queries to be specified by using explicit attribute names.  
D) It is useful if a relation has many attributes but only a few of those attributes are assigned.  
Answer: D) It is useful if a relation has many attributes but only a few of those attributes are assigned.  
Level: Evaluate  
  
Question: Develop an example of the second form of the INSERT statement.  
A) INSERT INTO EMPLOYEE (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
B) INSERT INTO TABLE EMPLOYEE (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
C) INSERT INTO EMPLOYEE (name, middle-initial, surname, ssn, date\_of\_birth) VALUES (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
D) INPUT INTO EMPLOYEE (name, middle-initial, surname, ssn, date\_of\_birth) (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
Answer: C) INSERT INTO EMPLOYEE (name, middle-initial, surname, ssn, date\_of\_birth) VALUES (‘Richard’, ‘K’, ‘Marini’, ‘653298653’, ‘1962-12-30’)  
Level: Create

* Question: Create six multiple choice question and answer of the question with the Intersection concept

Response: Question 1: Define Intersection operation in terms of relational algebra.  
Level: Remember  
A) A process to combine data from two relations excluding duplicate records.  
B) A process to combine data from two relations including duplicate records.  
C) A process to find common data between two different relations.  
D) A process to find different data between two different relations.  
Answer: C) A process to find common data between two different relations.  
  
Question 2: Explain how intersections can be used with other operations in relational algebra.  
Level: Understand  
A) INTERSECTION can be used only with UNION operation.  
B) INTERSECTION can be replaced by a NATURAL JOIN operation.  
C) INTERSECTION can be replaced by a DIVISION operation.  
D) INTERSECTION cannot be used with other operations.  
Answer: B) INTERSECTION can be replaced by a NATURAL JOIN operation.  
  
Question 3: Apply your knowledge of Intersections to solve the process of finding common data between "EMPLOYEE" and "PROJECT" relations in terms of Dno and Dum.  
Level: Apply   
A) SELECT Dno from EMPLOYEE INTERSECT SELECT Dum from PROJECT  
B) SELECT Dno from EMPLOYEE UNION SELECT Dum from PROJECT  
C) SELECT Dno, Dum from EMPLOYEE INNER JOIN PROJECT  
D) SELECT Dno, Dum from EMPLOYEE LEFT JOIN PROJECT  
Answer: A) SELECT Dno from EMPLOYEE INTERSECT SELECT Dum from PROJECT  
  
Question 4: Compare the INTERSECTION operation with a NATURAL JOIN operation.  
Level: Analyze   
A) Both can be used interchangeably in all circumstances.  
B) NATURAL JOIN operation can replace INTERSECTION operation.  
C) INTERSECTION operation can combine records with no common fields.  
D) Both always result in duplicate records.  
Answer: B) NATURAL JOIN operation can replace INTERSECTION operation.  
  
Question 5: Justify why the INTERSECTION operation is considered a fundamental operation in relational algebra.  
Level: Evaluate  
A) It allows us to correlate data between two relations.  
B) It is the only operation which can combine records from two relations.  
C) It allows us to combine data between two relations targeting duplicate values.  
D) It allows us to replace all other operations.  
Answer: A) It allows us to correlate data between two relations.  
  
Question 6: Generate a query to get common students and instructors from STUDENT and INSTRUCTOR relations respectively using INTERSECTION operation.  
Level: Create  
A) SELECT \* from STUDENT INTERSECTION SELECT \* from INSTRUCTOR  
B) SELECT \* from STUDENT UNION SELECT \* from INSTRUCTOR  
C) SELECT \* from STUDENT JOIN SELECT \* from INSTRUCTOR  
D) SELECT \* from STUDENT DIFFERENCE SELECT \* from INSTRUCTOR  
Answer: A) SELECT \* from STUDENT INTERSECTION SELECT \* from INSTRUCTOR

* Question: Create six multiple choice question and answer of the question with the Isolation concept

Response: Question 1:   
LEVEL: Remember  
Define the concept of isolation in SQL.  
A) Isolation refers to the system's ability to hide the fact that other operations are happening simultaneously.  
B) Isolation is the property that ensures that the execution of transactions results in a system state that would be obtained if transactions were executed serially.  
C) Isolation is the means by which database systems maintain consistency when multiple users are modifying data at the same time.  
D) Isolation is a property of the database that ensures that the actions of one transaction are not visible to other concurrent transactions until the first transaction commits.  
  
Answer: B) Isolation is the property that ensures that the execution of transactions results in a system state that would be obtained if transactions were executed serially.  
  
Question 2:  
LEVEL: Understand  
Explain the term "phantom record problem" in SQL.  
A) It is a problem when a record gets deleted while another transaction is reading it.  
B) It is a problem when a record is read as a transaction but it was updated by another transaction.  
C) It is a problem when a record that wasn't present at the time of reading appears when a transaction is re-run.  
D) It is a problem when a record is read multiple times during a transaction, and a different value occurs every time.  
  
Answer: C) It is a problem when a record that wasn't present at the time of reading appears when a transaction is re-run.  
  
Question 3:  
LEVEL: Apply  
Solve the phantom record problem using the concept of snapshot isolation.  
A) It's not a possible problem since the occurrence still can't be fully prevented.  
B) By including the detection of newly inserted records.  
C) By including the deletion of already read records.  
D) By preventing any changes to the data while a transaction is being processed.  
  
Answer: D) By preventing any changes to the data while a transaction is being processed.  
  
Question 4:  
LEVEL: Analyze  
Compare the four levels of isolation in SQL.  
A) There is no significant difference between the four levels.  
B) Each level defines different rules for how and when changes made by one transaction are visible to others.  
C) The four levels are: Read Uncommitted, Read Committed, Repeatable Read, and Serializable.  
D) Both B & C.  
  
Answer: D) Both B & C.  
  
Question 5:  
LEVEL: Evaluate  
Justify the need for isolation in SQL.  
A) To prevent data corruption by concurrent transactions  
B) To make sure transactions are executed simultaneously  
C) To enhance the performance of the database  
D) To ensure the integrity of the database  
  
Answer: A) To prevent data corruption by concurrent transactions  
  
Question 6:   
LEVEL: Create  
Generate a situation where the dirty read in SQL can cause data inconsistency.  
A) Transaction A reads a row, transaction B updates the same row and commits, then transaction A updates the same row.  
B) Transaction A reads a row, transaction B updates the same row and rolls back, then transaction A reads the same row.  
C) Transaction A reads a row, transaction B updates the same row and commits, then transaction A reads the same row.  
D) Transaction A updates a row, Transaction B reads the same row and commits, then transaction A rolls back.  
  
Answer: B) Transaction A reads a row, transaction B updates the same row and rolls back, then transaction A reads the same row.

* Question: Create six multiple choice question and answer of the question with the Join concept

Response: Question: Define the concept of Join in SQL context.  
A) Join is a method to combine tuples or rows from different databases.  
B) Join is a method to combine tuples or rows from different tables in a database based on a common field between them.  
C) Join is a method to divide tuples or rows from different databases.  
D) Join is a method to divide tuples or rows from different tables in a database based on a common field between them.  
Answer: B) Join is a method to combine tuples or rows from different tables in a database based on a common field between them.  
LEVEL: Remember  
  
Question: Explain how Join operations can be realized in SQL.  
A) Join operation can be realized by using a nested relation.  
B) Join operation can be realized by specifying the join conditions in the WHERE clause.  
C) Join operation can be realized by using the concept of joined tables.  
D) All of the above.  
Answer: D) All of the above.  
LEVEL: Understand  
  
Question: Apply a join operation to combine project and department tuples in SQL.  
A) SELECT \* FROM Project JOIN Department ON Project.Department\_ID = Department.ID   
B) SELECT \* FROM Project WHERE Project.Department\_ID = Department.ID   
C) SELECT \* FROM Project OR Department ON Project.Department\_ID = Department.ID  
D) None of the above  
Answer: A) SELECT \* FROM Project JOIN Department ON Project.Department\_ID = Department.ID   
LEVEL: Apply  
  
Question: Compare the concept of interesting join order in the context of Query Optimization.  
A) Interesting Join Order is when the order of joins does not matter.  
B) Interesting Join Order is when the order of joins matter as it can help in optimizing query performance like using sort-merge join with next relation.  
C) Interesting Join Order is when the order of joins is done randomly.  
D) None of the above  
Answer: B) Interesting Join Order is when the order of joins matter as it can help in optimizing query performance like using sort-merge join with next relation.  
LEVEL: Analyze  
  
Question: Justify the importance of the order in which the result of a join is generated.  
A) The order of join results is always random and does not affect the query performance.  
B) The order of join results can positively or negatively affect the performance of the query and could also affect the next join operation.  
C) The order of join results can only affect the visual representation of the data.  
D) None of the above  
Answer: B) The order of join results can positively or negatively affect the performance of the query and could also affect the next join operation.  
LEVEL: Evaluate  
  
Question: Develop a scenario where a join operation would be utilized in a database system.  
A) A scenario where data is required from multiple tables in an Employee Management System, for instance, fetching the list of employees from the "Employee" table and their respective department details from the "Department" table.  
B) A scenario where only the data from a single table is required.  
C) A scenario where the same data is stored in multiple tables.  
D) None of the above.  
Answer: A) A scenario where data is required from multiple tables in an Employee Management System, for instance, fetching the list of employees from the "Employee" table and their respective department details from the "Department" table.  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Key attributes concept

Response: Question: Define what key attributes are in a database.  
A) They are irrelevant details regarding the database  
B) They are the attributes which a database is sorted by   
C) They do not exist in databases  
D) They are the attributes that cannot be modified in the database  
Answer: B) They are the attributes which a database is sorted by  
LEVEL: 1  
  
Question: Explain how key attributes function in an EMPLOYEE file database  
A) The key attribute (Ssn) ensures each employee has only one file  
B) The key attribute does not play any role in the database  
C) The key attribute limits the size of the file  
D) The key attribute ensures that all employee files are identical  
Answer: A) The key attribute (Ssn) ensures each employee has only one file  
LEVEL: 2  
  
Question: Apply the notion of key attributes to devise a search strategy for employees of a certain age in a given database.  
A) Use the Age and Dno attributes to search for employees  
B) Use the Salary attribute to search for employees  
C) Use the Ssn attribute to search for employees  
D) Use the Skill\_code attribute to search for employees  
Answer: A) Use the Age and Dno attributes to search for employees  
LEVEL: 3  
  
Question: Compare key attributes and non-key attributes in a database.  
A) Key attributes ensure uniqueness while non-key attributes do not  
B) Non-key attributes ensure uniqueness while key attributes do not  
C) Both key and non-key attributes ensure uniqueness  
D) Neither key nor non-key attributes ensure uniqueness  
Answer: A) Key attributes ensure uniqueness while non-key attributes do not  
LEVEL: 4  
  
Question: Justify why Ssn was chosen as the key attribute in an EMPLOYEE database.  
A) Because every employee has a unique Ssn  
B) Because Ssn is the easiest attribute to remember  
C) Because Ssn is the shortest attribute in length  
D) Because all of the above  
Answer: A) Because every employee has a unique Ssn  
LEVEL: 5  
  
Question: Generate a new attribute that could alternatively be used as a key in the database.  
A) Employee name  
B) Employee phone number  
C) Employee address  
D) Employee date of birth  
Answer: B) Employee phone number  
LEVEL: 6

* Question: Create six multiple choice question and answer of the question with the Left Join concept

Response: Question 1: Remember Level  
Question: Define the Left Outer Join operation in SQL.  
A) A SQL operation used to merge two tables and returns all records from the right table, and the matched records from the left table.  
B) A SQL operation used to merge two tables and returns all records from the left table, and the matched records from the right table.  
C) A SQL operation used to merge two tables and returns all records from both tables.  
D) A SQL operation used only in Oracle SQL system.   
Answer: B) A SQL operation used to merge two tables and returns all records from the left table, and the matched records from the right table.  
  
Question 2: Understand Level  
Question: Explain the result of the Left Outer Join operation in terms of table content?  
A) The result only includes rows from the right table.  
B) The result only includes rows from the left table.  
C) The content of the resulting table contains the same results as a regular (inner) join, but if a tuple from the left relation does not have an associated tuple in the right relation, that tuple will still appear in the result, but with NULL for the right relation attributes.  
D) The result contains unique entries from both tables.   
Answer: C) The content of the resulting table contains the same results as a regular (inner) join, but if a tuple from the left relation does not have an associated tuple in the right relation, that tuple will still appear in the result, but with NULL for the right relation attributes.  
  
Question 3: Apply Level  
Question: Solve the SQL statement by using Left Outer join, if there are two tables EMPLOYEE and DEPARTMENT with matching field Dno in EMPLOYEE and Dnumber in DEPARTMENT.  
A) SELECT \* FROM EMPLOYEE LEFT OUTER JOIN DEPARTMENT ON EMPLOYEE.Dno = DEPARTMENT.Dnumber  
B) SELECT \* FROM EMPLOYEE RIGHT OUTER JOIN DEPARTMENT ON EMPLOYEE.Dno = DEPARTMENT.Dnumber  
C) SELECT \* FROM DEPARTMENT LEFT OUTER JOIN EMPLOYEE ON DEPARTMENT.Dnumber = EMPLOYEE.Dno  
D) SELECT \* FROM DEPARTMENT RIGHT OUTER JOIN EMPLOYEE ON DEPARTMENT.Dnumber = EMPLOYEE.Dno  
Answer: A) SELECT \* FROM EMPLOYEE LEFT OUTER JOIN DEPARTMENT ON EMPLOYEE.Dno = DEPARTMENT.Dnumber  
  
Question 4: Analyze Level  
Question: Compare the difference between the Left Outer Join and the Inner Join operation in SQL.   
A) The inner join only returns the records that have matching values in both tables, whereas the left outer join returns all the records from the left table and the matched records from the right table  
B) The left outer join only returns the records that have matching values in both tables, whereas the inner join returns all the records from the right table and the matched records from the left table  
C) There is no difference, both perform the same operation  
D) The inner join can only be performed on two tables, whereas the left outer join can be performed on more than two tables.   
Answer: A) The inner join only returns the records that have matching values in both tables, whereas the left outer join returns all the records from the left table and the matched records from the right table  
  
Question 5: Evaluate Level  
Question: Justify why Outer join can be looked upon as a combination of inner join and anti-join.   
A) Because a left outer join returns the records that either have a match in both tables or exist in the left table only, which can be mimicked by performing an inner join and an anti-join (returns records that exist in one table, but not the other).  
B) Because both inner join and anti-join are types of joins that need to be combined to form an outer join.  
C) Because outer join is just a name for the combination of inner join and anti-join  
D) There's no connection between outer join, inner join and anti-join.  
Answer: A) Because a left outer join returns the records that either have a match in both tables or exist in the left table only, which can be mimicked by performing an inner join and an anti-join (returns records that exist in one table, but not the other).   
  
Question 6: Create Level  
Question: Generate an alternative way to compute a left outer join using different join algorithms.  
A) Nested-loop join  
B) Single-loop join  
C) Nested-outer join  
D) Single-outer join  
Answer: A) Nested-loop join & B) Single-loop join

* Question: Create six multiple choice question and answer of the question with the Locking concept

Response: Question: Define the concept of data item granularity in the context of database systems.  
Level: Remember  
A) It is the process of creating multiple versions of the same data.  
B) It refers to the size or extent of the data items in a database, which can be changed based on the current transaction mix.  
C) It is the method of maintaining the consistency of data transactions in a database.  
D) It is a protocol for controlling the concurrent execution of transactions.  
Answer: B) It refers to the size or extent of the data items in a database, which can be changed based on the current transaction mix.  
  
  
Question: Explain the purpose of a multigranularity locking protocol in database systems.  
Level: Understand  
A) It helps in improving the performance of concurrency control.  
B) It ensures the avoidance of the phantom problem.  
C) It facilitates indexing in databases.  
D) It ensures the rollback of unsuccessful transactions.  
Answer: A) It helps in improving the performance of concurrency control.  
  
  
Question: Solve the following scenario: In a database, the performance of concurrency control is deteriorating. How can multigranularity locking protocol be used to improve this?  
Level: Apply  
A) By decreasing the size of the data items.  
B) By enabling the change of granularity or item size according to the current transaction mix.  
C) By creating temporary copies of the database for transaction purposes.  
D) By sequentially ordering the transactions.  
Answer: B) By enabling the change of granularity or item size according to the current transaction mix.  
  
  
Question: Compare the two-phase locking protocol with the multigranularity locking protocol in terms of their goals.  
Level: Analyze  
A) Both are aimed at enhancing data security and integrity.  
B) Both are designed to improve the performance of concurrency control by manipulating data item size.  
C) While the two-phase locking protocol guarantees serializability of transactions, the multigranularity locking protocol aims to improve concurrency control's performance.  
D) Both protocols aim to avoid the phantom problem in databases.  
Answer: C) While the two-phase locking protocol guarantees serializability of transactions, the multigranularity locking protocol aims to improve concurrency control's performance.  
  
  
Question: Determine the importance of developing locking protocols for indexes in the context of concurrent access.  
Level: Evaluate  
A) To prevent the phantom problem  
B) To avoid indexes from becoming a hindrance to concurrent access.  
C) To keep track of data item size  
D) To enable the two-phase locking protocol  
Answer: B) To avoid indexes from becoming a hindrance to concurrent access.  
  
  
Question: Develop a scenario where the issue of data item granularity could significantly affect a database's performance.  
Level: Create  
A) In a bank's database system where a high volume of simultaneous transactions take place.  
B) In a library database where books are issued and returned   
C) In a university database which is primarily accessed once in a while  
D) In a restaurant menu database where only a limited number of items are present  
Answer: A) In a bank's database system where a high volume of simultaneous transactions take place.

* Question: Create six multiple choice question and answer of the question with the Logging concept

Response: Question: Define "question answering" as mentioned in the document.  
A) Defeating human players in a TV quiz show  
B) A practical engineering discipline that includes techniques such as parsing, named entity recognition, focus extraction, etc.  
C) Creating a big database  
D) Designing a game show  
Answer: B  
LEVEL: Remember  
  
Question: Explain the importance of identifying the type of question in question answering systems.   
A) Answering strategies are not dependent on the type of question  
B) Because some categories are always mutually exclusive  
C) Because to validate the system we need to know the type of question  
D) Answering strategies rely heavily on the type of question  
Answer: D  
LEVEL: Understand  
  
Question: Apply the concept of "Factoid Questions" and choose the correct Factoid question from the options.  
A) Who is the president of the United States?  
B) Name three plays that were written by Shakespeare  
C) What is the sentiment in Saudi Arabia about terrorism in the Middle East?  
D) What is an inert gas?  
Answer: A  
LEVEL: Apply  
  
Question: Compare "Factoid Questions" and "List Questions" based on the examples given in the document.   
A) Factoid Questions ask for multiple responses while List Questions ask for a single response  
B) Factoid Questions and List Questions both seek multiple responses  
C) Factoid Questions pinpoint the right phrase in a document while List Questions seek a list of factoid responses  
D) There is no difference between Factoid Questions and List Questions  
Answer: C  
LEVEL: Analyze  
  
Question: Justify why Google, Yahoo, and similar search engines are considered as Information Retrieval (IR) systems.  
A) Because they manage structured data very well  
B) Because they are unstructured data containing a variety of data types  
C) Because they are available for consumption primarily via IR systems and give end users a richer and continually improving search experience  
D) Because they require large storage  
Answer: C  
LEVEL: Evaluate  
  
Question: Develop an example of an opinion question based on the explanation given in the document.  
A) What is the current situation in Middle East?   
B) How many planets are there in our solar system?  
C) Who won the last presidential election in the United States?  
D) What are the views on climate change courses being included in high school curriculums?  
Answer: D   
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Lossless Join concept

Response: Question 1: Define the concept of lossless join in database systems.  
Level: Remember  
A) Join that results in the loss of information  
B) Join that involves losing some attributes in the joined tables  
C) Join that guarantees no loss of information and all original tuples can be recovered  
D) Join that involves duplication of tuples in the joined tables  
Answer: C) Join that guarantees no loss of information and all original tuples can be recovered  
  
Question 2: Explain the importance of the lossless join property in a database system.  
Level: Understand  
A) It ensures that the database system is up-to-date  
B) It ensures the integrity and completeness of data after decomposition of a relation  
C) It increases the speed of the database system  
D) It reduces the storage space required for the database system  
Answer: B) It ensures the integrity and completeness of data after decomposition of a relation  
  
Question 3: Solve the issue of a lossy join in a database system by suggesting a technical solution.  
Level: Apply  
A) Adding more storage space  
B) Using lossless join property in decomposition  
C) Updating the database system software  
D) Deleting outdated records  
Answer: B) Using lossless join property in decomposition  
  
Question 4: Compare the lossless join and lossy join in terms of data integrity and completeness.  
Level: Analyze  
A) Lossy join ensures data completeness and integrity, while lossless join leads to loss of data.  
B) Both lossless join and lossy join ensure data completeness and integrity.  
C) Lossless join ensures data completeness and integrity, while lossy join leads to loss of data.  
D) Neither lossless join nor lossy join ensure data completeness and integrity.  
Answer: C) Lossless join ensures data completeness and integrity, while lossy join leads to loss of data.  
  
Question 5: Justify the use of lossless join rather than the lossy join in database systems.  
Level: Evaluate  
A) Lossless join help in maintaining the consistency of data  
B) Lossless join reduces the operational costs of a database system  
C) Lossless join makes the database system obsolete  
D) Lossless join increases the speed of data retrieval  
Answer: A) Lossless join help in maintaining the consistency of data  
  
Question 6: Develop a scenario where the use of lossless joins is critical to obtaining correct information.  
Level: Create  
A) A database system that stores data for a small grocery store  
B) A database system for an airline company tracking flight scheduling  
C) A database system managing a library's book collection  
D) A database system only used by a single user  
Answer: B) A database system for an airline company tracking flight scheduling

* Question: Create six multiple choice question and answer of the question with the Mandatory Access Control (MAC) concept

Response: Difficulty Level: Remember  
Question: Define the notion of Mandatory Access Control (MAC) in database systems.  
A) It's a method of assigning privileges based on user roles.  
B) It's the practice of limiting the propagation of privileges.  
C) It's a method that classifies data and users based on security classes.  
D) It's a method used to manage the identity of users in a system.  
Answer: C) It's a method that classifies data and users based on security classes.  
  
Difficulty Level: Understand  
Question: Explain how Mandatory Access Control (MAC) differs from Discretionary Access Control (DAC)?  
A) MAC implements filtering and polyinstantiation, DAC does not.  
B) In MAC, a user either has or does not have privileges.  
C) MAC is based on the notion of role hierarchies, DAC is not.  
D) In DAC, there are certain privileges, while in MAC, users and data are classified into security classes.  
Answer: D) In DAC, there are certain privileges, while in MAC, users and data are classified into security classes.  
  
Difficulty Level: Apply  
Question: Solve the following scenario: If an organization is looking to enforce stricter control on information flow between different security levels, which method should they apply?  
A) Discretionary Access Control  
B) Role-Based Access Control  
C) Mandatory Access Control  
D) Horizontal Propagation Technique  
Answer: C) Mandatory Access Control  
  
Difficulty Level: Analyze  
Question: Compare Mandatory Access Control (MAC) and Role-Based Access Control (RBAC) in terms of their approach to security.  
A) RBAC assigns privileges based on roles, MAC does not.  
B) MAC focuses on privilege propagation, RBAC does not.  
C) MAC assigns privileges based on roles, RBAC does not.  
D) RBAC focuses on managing user identities, MAC does not.  
Answer: A) RBAC assigns privileges based on roles, MAC does not.  
  
Difficulty Level: Evaluate  
Question: Justify why Mandatory Access Control (MAC) might be a better option for an organization dealing with highly sensitive information.  
A) MAC allows for better filtering and polyinstantiation.  
B) MAC provides robust protection against SQL injection.  
C) MAC ensures stricter information flow control between security levels.  
D) MAC allows for easy management of user identities.  
Answer: C) MAC ensures stricter information flow control between security levels.  
  
Difficulty Level: Create  
Question: Develop a scenario where the implementation of Mandatory Access Control (MAC) can help in mitigating a security risk in an organization.  
A) An organization aiming to improve user identity management.  
B) An organization aiming to limit the depth and breadth of privilege propagation.  
C) An organization dealing with highly sensitive information wanting to enforce control over information flow between security levels.  
D) An organization needing protection against SQL injection attacks.  
Answer: C) An organization dealing with highly sensitive information wanting to enforce control over information flow between security levels.

* Question: Create six multiple choice question and answer of the question with the Many-To-Many concept

Response: Question 1: LEVEL: Remember   
Define Factoid Questions in the context of question-answering systems.  
A) This type of question seeks a list of factoid responses that satisfy a given criterion.  
B) This type of question pinpoints the right phrase in a document or a database that correctly addresses the question.  
C) This type of question is aimed at decision making.  
D) This type of question is not based on factual information.  
Answer: B) This type of question pinpoints the right phrase in a document or a database that correctly addresses the question.  
  
Question 2: LEVEL: Understand  
Explain the importance of knowing the type or category of questions in question-answering systems.  
A) Because it help classify the different answer types.  
B) Because answering strategies rely heavily on the type of question.  
C) Because it facilitates the formation of more questions.  
D) Because it helps in the presentation of answers.  
Answer: B) Because answering strategies rely heavily on the type of question.  
  
Question 3: LEVEL: Apply  
Solve for an example of a List Question.  
A) Who is the president of the United States?  
B) In which city was Elvis Presley born?  
C) Name three plays that were written by Shakespeare.  
D) At what time will today’s sunset occur?  
Answer: C) Name three plays that were written by Shakespeare.  
  
Question 4: LEVEL: Analyze  
Compare Factoid Questions and List Questions.  
A) Factoid Questions provides a single item answer while List Questions provide a single answer.  
B) Factoid Questions require hybrid answering strategies while List Questions are straightforward.  
C) Factoid Questions provides a single item answer while List Questions provide a list of items as an answer.  
D) Factoid Questions and List Questions are essentially the same.  
Answer: C) Factoid Questions provides a single item answer while List Questions provide a list of items as an answer.  
  
Question 5: LEVEL: Evaluate  
Determine why big data tools are often required in question answering systems.  
A) Because question answering techniques involve knowledge engineering from large unstructured corpora  
B) Because big data tools make the process faster  
C) Because large databases are difficult to manage  
D) Because these tools are available and easy to use  
Answer: A) Because question answering techniques involve knowledge engineering from large unstructured corpora  
  
Question 6: LEVEL: Create  
Generate an innovative way question-answering systems could be more effective in handling queries.  
A) By including more sample question types  
B) By integrating more dialogue and context-awareness in the system's functionality.  
C) By relying more on web-based open information.  
D) By limiting the type of questions to Factoid and List types only.  
Answer: B) By integrating more dialogue and context-awareness in the system's functionality.

* Question: Create six multiple choice question and answer of the question with the MIN command

Response: Level 1:  
Question: Define the MIN command in database systems.   
A) A command applied to extract the maximum value in a dataset.  
B) A command that is used to calculate the average of a list of values.  
C) A command that is used to extract the minimum value in a dataset.  
D) A command that is used to add all values in a dataset.   
Answer: C) A command that is used to extract the minimum value in a dataset.  
  
Level 2:  
Question: Explain how the MIN command would function when applied to the "Salary" of Jane Smith, if she has had multiple salaries.  
A) It would provide all of Jane Smith's salaries.  
B) It would provide the highest salary Jane Smith has earned.  
C) It would provide the lowest salary Jane Smith has received.  
D) It would provide the average salary of Jane Smith has earned.  
Answer: C) It would provide the lowest salary Jane Smith has received.  
  
Level 3:  
Question: Solve this situation: out of a data set including all employees’ salaries, how would you determine the lowest wage?  
A) Use MAX command  
B) Use SUM command  
C) Use MIN command  
D) Use AVG command  
Answer: C) Use MIN command  
  
Level 4:  
Question: Compare the use of MIN and MAX commands in database systems.   
A) MIN is used to extract the minimum value in the dataset while MAX is used to calculate the average value in the dataset.  
B) MIN is used to extract the minimum value in the dataset while MAX is used to extract the maximum value in the dataset.  
C) MIN and MAX are used interchangeably.  
D) There is no difference between MIN and MAX.  
Answer: B) MIN is used to extract the minimum value in the dataset while MAX is used to extract the maximum value in the dataset.  
  
Level 5:  
Question: Justify the use of the MIN command in this scenario: A dataset contains all sales data figures for a business, and the business wishes to know its lowest earning day to date.  
A) The MIN command can be used to extract the highest sales figure recorded.  
B) The MIN command has no use in this scenario.  
C) The MIN command is inappropriate as it would corrupt the data.  
D) The MIN command can be used to find the smallest sales figure recorded, indicating the lowest earning day.  
Answer: D) The MIN command can be used to find the smallest sales figure recorded, indicating the lowest earning day.  
  
Level 6:  
Question: Generate a situation where the MIN command would be necessary to answer a business question.  
A) Retrieving the maximum value of an employee's salary.  
B) Identifying the oldest employee in the company.  
C) Identifying the least frequently sold product in a retail store.  
D) Computing the average test score in a class.  
Answer: C) Identifying the least frequently sold product in a retail store.

* Question: Create six multiple choice question and answer of the question with the Minimal Cover concept

Response: Question Level 1:  
Define what is a minimal cover in Database Systems.  
A) A standard form to ensure redundancy exists in the database.  
B) A process to render multiple attributes into single attribute.  
C) A minimal set of dependencies in standard canonical form ensuring no redundancy.  
D) A process to combine FDs into minimum cover.  
Answer: C) A minimal set of dependencies in standard canonical form ensuring no redundancy.  
  
Question Level 2:  
Explain how the inference rule IR4 is used in DBMS?  
A) It converts a single dependency with multiple attributes on the left-hand side.  
B) It converts a single dependency with multiple attributes on the right-hand side into a set of dependencies with single attributes on the right-hand side.  
C) It combines FDs with the same left-hand side into a single FD.  
D) It uses algorithm 15.2 to ensure redundancy.  
Answer: B) It converts a single dependency with multiple attributes on the right-hand side into a set of dependencies with single attributes on the right-hand side.  
  
Question Level 3:  
Apply the inference rule IR5 to FDs in a database, what happening?  
A) It separates the FDs into two sets.  
B) It converts the FDs into a nonstandard form.  
C) It combines the FDs with the same left-hand side into a single FD in the minimum cover in a nonstandard form.  
D) It cancels the redundancy in the FDs.  
Answer: C) It combines the FDs with the same left-hand side into a single FD in the minimum cover in a nonstandard form.  
  
Question Level 4:  
Compare Factoid Questions and List Questions in Question Answering Systems.  
A) Factoid Questions seek different views while List Questions ask about definition and meaning.  
B) Factoid Questions pinpoint the right phrases while List Questions seek a list of Factoid responses satisfying criteria.  
C) Factoid Questions convert attributes into single attribute while List Questions create minimum covers.  
D) Factoid Questions contain redundancy while List Questions are in nonstandard form.  
Answer: B) Factoid Questions pinpoint the right phrases while List Questions seek a list of Factoid responses satisfying criteria.  
  
Question Level 5:  
Justify the importance of knowing the category or type of question in Question Answering Systems.  
A) Because database system relies heavily on the type of question.  
B) Because modification process depends on type of question.  
C) Because answering strategies rely heavily on the type of question.  
D) Because inference rules change according to type of question.  
Answer: C) Because answering strategies rely heavily on the type of question.  
  
Question Level 6:  
Generate an example of a Definition Question in a Question Answering System.  
A) What is the capital of France?  
B) Can water freeze at 0 degrees Celsius?  
C) Who painted the Mona Lisa?  
D) What is a Black Hole?  
Answer: D) What is a Black Hole?

* Question: Create six multiple choice question and answer of the question with the Natural Join concept

Response: Question: Define what is meant by "natural join" in database systems.  
A) A method of combining data from two or more databases  
B) An operation in SQL that allows for the return of combined rows from two or more tables  
C) A way of separating data into different tables to improve performance  
D) None of the above  
Answer: B) An operation in SQL that allows for the return of combined rows from two or more tables  
LEVEL: Remember  
  
Question: Explain how the relation qualities R1, R2, and R3 relate to each other in a natural join.   
A) They are not related  
B) Each one is a separate database  
C) They form spurious tuples when a natural join is applied to any two of them  
D) They are alternative names for the same relation  
Answer: C) They form spurious tuples when a natural join is applied to any two of them  
LEVEL: Understand  
  
Question: Solve how you would use a natural join to combine data from two tables R1 and R2.   
A) SELECT \* FROM R1, R2  
B) JOIN R1 AND R2  
C) SELECT \* FROM R1 NATURAL JOIN R2  
D) SELECT R1, R2 FROM DATABASE  
Answer: C) SELECT \* FROM R1 NATURAL JOIN R2  
LEVEL: Apply  
  
Question: Compare the use and results of a natural join and a full outer join in a database.  
A) Natural join returns the set union of two tables, whereas the full outer join returns only matching records from both tables  
B) Natural join returns only matching records, whereas the full outer join returns all records from both tables  
C) Both the natural join and full outer join return the set union of two tables  
D) Both the natural join and full outer join return only matching records from both tables  
Answer: B) Natural join returns only matching records, whereas the full outer join returns all records from both tables  
LEVEL: Analyze  
  
Question: Justify why using a natural join can lead to more efficient use of a database.  
A) Because it reduces duplication of data  
B) Because it allows for faster queries  
C) Because it streamlines the database structure  
D) All of the above  
Answer: D) All of the above  
LEVEL: Evaluate  
  
Question: Generate a situation where using a natural join may be less advantageous than other types of SQL join operations.  
A) When there is duplicated data in two tables  
B) When the tables don't have a common field  
C) When only specific fields from each table are needed  
D) All of the above  
Answer: D) All of the above  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Normalisation concept

Response: Question 1: (Remember)  
Define the concept of Normalization in Database systems.  
A) It is the process of organizing data to minimize redundancy and dependencies.  
B) It is the process of deleting unwanted data from the database.  
C) It is the process of implementing the data in a database.  
D) It is the process of connecting the database with the server.  
Answer: A) It is the process of organizing data to minimize redundancy and dependencies.  
Level: 1  
  
Question 2: (Understand)  
Explain the concept of 'First Normal Form' in Database Systems.  
A) It allows nesting within a tuple.  
B) It disallows multivalued attributes that are themselves composite.  
C) It allows maximum limit on the number of values.  
D) It promotes data redundancy.  
Answer: B) It disallows multivalued attributes that are themselves composite.  
Level: 2  
  
Question 3: (Apply)  
Solve the problem of data redundancy and dependencies in a database by applying which of the following options?  
A) Using complex SQL commands.  
B) Connecting the server and the database.  
C) Comparing the database with another database.  
D) Applying Normalization designs.  
Answer: D) Applying Normalization designs.  
Level: 3  
  
Question 4: (Analyze)  
Compare the utility of higher normal forms like 4NF and 5NF with the practical utility in the industry.  
A) Higher normal forms are widely used in the industry because of their easy adaptability.  
B) Higher normal forms are rarely used in the industry as they are hard for designers and users to understand.  
C) Industry does not use any form of normalization.  
D) Higher normal forms are all that the industry uses.  
Answer: B) Higher normal forms are rarely used in the industry as they are hard for designers and users to understand.  
Level: 4  
  
Question 5: (Evaluate)  
Justify the preference for the first solution for Data redundancy as mentioned in the provided text.  
A) It is generic and avoids redundancy, allowing unlimited values.  
B) It allows for data redundancy and reduces dependencies.  
C) It disallows multivalued composite attributes.  
D) It can allow nesting within tuples.  
Answer: A) It is generic and avoids redundancy, allowing unlimited values.  
Level: 5  
  
Question 6: (Create)  
Develop a strategy to avoid the issue of having ‘Bellaire’ as one of the locations in a database design.  
A) Incorporate a unique keyword for every location.  
B) Use nested relations.  
C) Segregate database based on locations.  
D) Disallow multivalued attributes in the database design.  
Answer: C) Segregate database based on locations.  
Level: 6

* Question: Create six multiple choice question and answer of the question with the One-To-Many concept

Response: Question: Define what is meant by "Factoid Questions" in Question Answering Systems.  
A) Questions that require a user to provide a list of answers  
B) Questions that ask users to provide a detailed explanation  
C) Questions that pinpoint the right phrase in a document addressing the question  
D) Questions that ask for the significance of a specific fact  
Answer: C) Questions that pinpoint the right phrase in a document addressing the question  
LEVEL: 1  
  
Question: Explain the reason why it's crucial to know the category or type of question in question answering systems.  
A) Because type of questions is just information  
B) Answering strategies heavily rely on the type of questions  
C) Because the creator of the system asked so  
D) It is not important to know the category or type of questions in question answering systems  
Answer: B) Answering strategies heavily rely on the type of questions  
LEVEL: 2  
  
Question: Solve the following scenario problem: You are creating a question answering system and want to handle the question "Who is the president of the United States?" What category does this question fall into and how would you handle it?  
A) Factoid Questions; It pinpoints the right phrase in a document that correctly addresses the question.  
B) List Questions; it seeks a list of factoid responses that satisfy a given criterion.  
C) This type of question doesn't need to be handled.  
D) Factoid Questions; it seeks a list of factoid responses that satisfy a given criterion.  
Answer: A) Factoid Questions; It pinpoints the right phrase in a document that correctly addresses the question.  
LEVEL: 3  
  
Question: Compare Factoid Questions and List Questions in terms of their answer expectations.  
A) Factoid Questions expect a single correct answer, while List Questions expect multiple answers that satisfy a criterion.  
B) Factoid Questions and List Questions both expect a detailed explanation  
C) Factoid Questions and List Questions both expect a list of multiple answers  
D) Factoid Questions expect multiple answers, while List Questions expect a single correct answer.  
Answer: A) Factoid Questions expect a single correct answer, while List Questions expect multiple answers that satisfy a criterion.  
LEVEL: 4  
  
Question: Justify why knowing the question type is crucial in question answering techniques.  
A) Because only some types of questions can be answered  
B) Because it is a rule in question answering systems  
C) Because understanding the question type helps design suitable answering strategies  
D) Because it is listed in the instruction manual.  
Answer: C) Because understanding the question type helps design suitable answering strategies  
LEVEL: 5  
  
Question: Develop a strategy for a question answering system to handle a new type of question that asks for the sequence of events.   
A) Create a Sequence Questions category that utilizes timeline-based analysis techniques.  
B) Ignore such type of questions.  
C) Suggest the user to change the question  
D) Utilize the existing Factoid or List Questions strategies  
Answer: A) Create a Sequence Questions category that utilizes timeline-based analysis techniques.  
LEVEL: 6

* Question: Create six multiple choice question and answer of the question with the One-To-One concept

Response: Question: Define what is meant by 'Factoid Questions' in the context of question answering systems.  
A) Questions that seek multiple answers, such as asking for a list of books by a particular author.  
B) Questions that pinpoint the right phrase in a document or database that correctly addresses the question.  
C) Questions that seek a detailed analysis or subjective interpretation such as why a certain event happened.  
D) Questions that require an application of various technologies and strategies for big data analysis.  
Answer: B) Questions that pinpoint the right phrase in a document or database that correctly addresses the question.  
LEVEL: Remember  
  
Question: Explain what 'List Questions' means in question answering systems.  
A) Questions that require a detailed breakdown of a given topic.  
B) Questions that seek a list of factoid responses that satisfy a given criterion.  
C) Questions that pinpoints the right phrase in a document or database.  
D) Questions that primarily aim to understand the category or type of questions for effective answering strategies.  
Answer: B) Questions that seek a list of factoid responses that satisfy a given criterion.  
LEVEL: Understand  
  
Question: Solve the following problem using the 'First Normal Form' solution described in the document. "In a school's database, every student is associated with multiple subjects they are taking. How would you organize this data under First Normal Form rules?"  
A) By creating a separate table where each row corresponds to a single student-subject pair.  
B) By listing all the subjects a student is taking in a single cell under the student's row.  
C) By not allowing any student to take more than one subject.  
D) By completely disregarding the 'First Normal Form' rule.  
Answer: A) By creating a separate table where each row corresponds to a single student-subject pair.  
LEVEL: Apply  
  
Question: Compare the 'Factoid Questions' and 'List Questions'.  
A) Factoid Questions are synonymous with List Questions.  
B) Factoid Questions require a singular factual answer, while List Questions seek a list of factoid responses.  
C) Factoid Questions are more complicated to answer than List Questions.  
D) List Questions are more abstract and opinion-based compared to Factoid Questions.  
Answer: B) Factoid Questions require a singular factual answer, while List Questions seek a list of factoid responses.  
LEVEL: Analyze  
  
Question: Justify why First Normal Form is generally considered the best solution in the context presented.  
A) It is the quickest solution.  
B) It does not suffer from redundancy and places no maximum limit on the number of values.  
C) It is the most complex solution.  
D) It allows multivalued attributes that are composite.  
Answer: B) It does not suffer from redundancy and places no maximum limit on the number of values.  
LEVEL: Evaluate  
  
Question: Develop a new type of question that could be used in question answering systems.  
A) Contrast Questions: Questions that ask to identify differences between two or more entities or concepts.  
B) Timeline Questions: Questions that seek a series of events or progression over time.  
C) Ranking Questions: Questions that require a ranked list of answers based on certain criteria.  
D) Estimation Questions: Questions that ask to give a rough calculation or approximation.  
Answer: This is subjective and depends on the creativity of the respondent. All responses could serve as correct answers.  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Partial concept

Response: Question 1: Define "question answering."  
Level: Remember  
A) A branch of mathematics that deals with solving problems  
B) The process of understanding and solving a problem in programming  
C) A practical engineering discipline that comprises techniques such as parsing; named entity recognition (NER); focus extraction; answer type extraction; relation extraction; ontological inference; and search, indexing, and classification algorithms.  
D) A concept in physics that deals with the study of particles  
Answer: C) A practical engineering discipline that comprises techniques such as parsing; named entity recognition (NER); focus extraction; answer type extraction; relation extraction; ontological inference; and search, indexing, and classification algorithms.  
  
Question 2: Explain the role of big data tools and technologies in question answering systems.  
Level: Understand  
A) Used for storing and retrieving information required to answer questions  
B) Provide user interfaces for question answering systems  
C) Assist in displaying visual representations of data  
D) Utilized in the development of gaming software  
Answer: A) Used for storing and retrieving information required to answer questions  
  
Question 3: Solve the following: match the phrase "Romeo and Juliet" to the correct question from the set {"Which book does Shakespeare write?", "Who are the characters in The White Queen?", "What is the story of Romeo and Juliet?"}.  
Level: Apply  
A) "Which book does Shakespeare write?"  
B) "Who are the characters in The White Queen?"  
C) "What is the story of Romeo and Juliet?"  
D) None of the above  
Answer: A) "Which book does Shakespeare write?"  
  
Question 4: Compare surface pattern matching and structural matching.  
Level: Analyze  
A) Surface pattern matching uses formal expressions while structural matching uses syntactic and semantic alignment  
B) Both use syntactic and semantic alignment  
C) Both use regular expressions  
D) Structural matching uses regular expressions, while surface pattern matching uses syntactic and semantic alignment  
Answer: A) Surface pattern matching uses formal expressions while structural matching uses syntactic and semantic alignment  
  
Question 5: Determine the type of this question: "Who is the author of Hamlet?"  
Level: Evaluate  
A) List question  
B) Factoid question  
C) Structural matching question  
D) Surface pattern matching question  
Answer: B) Factoid question  
  
Question 6: Generate a list type of question from the topic: "facts about planets in the solar system".  
Level: Create  
A) "Name the five smallest planets in the solar system?"  
B) "Who discovered each of the planets in our solar system?"  
C) "What are the properties of metals?"  
D) "When were the pyramids built?"  
Answer: A) "Name the five smallest planets in the solar system?"

* Question: Create six multiple choice question and answer of the question with the Participation constraints concept

Response: Question 1: Define the Concept of Participation Constraints in a Database System  
LEVEL: Remember  
A) It is a theory emphasizing the structural aspect of a database.  
B) It describes the cardinality of relations in a database.  
C) It is a rule that defines the consistency between related rows in different tables.  
D) It refers to the dependency between tables in a database.  
Answer: C) It is a rule that defines the consistency between related rows in different tables.  
  
Question 2: Explain the Role of Participation Constraints in a Database System   
LEVEL: Understand  
A) They ensure data integrity at the system-level and protect the data from corruption.  
B) They dictate the minimum and maximum number of tuples that a relation can have.  
C) They perform a key role in defining the structure of a database system.  
D) They only affect the performance of a database system, not its structure.  
Answer: A) They ensure data integrity at the system-level and protect the data from corruption.  
  
Question 3: Solve this Scenario Using Participation Constraints Knowledge: If all three cardinalities are M or N, then the key will be the combination of all three participants.  
LEVEL: Apply  
A) The key will be formed by the combination of the three entities regardless of their relationship.  
B) The key will be formed by the combination of the three entities only when they have identified relationships.  
C) The cardinality relation between the entities has no effect on the formation of the key.  
D) The key will be the combination of all three entities only if they have a parallel relationship.  
Answer: B) The key will be formed by the combination of the three entities only when they have identified relationships.  
  
Question 4: Compare the Role of Participation Constraints in a Relational Database to its Role in an Entity-Relationship Model.  
LEVEL: Analyze  
A) It only applies to a relational database and is negligible in an entity-relationship model.  
B) Its role in entity-relationship models is to maintain data consistency; in a relational database, it ensures structure.  
C) It governs the cardinality in relational databases, whereas it governs relationships between entities in entity-relationship models.  
D) No significant difference across both systems as it dictates relationship between entities in both systems.  
Answer: D) No significant difference across both systems as it dictates relationship between entities in both systems.  
  
Question 5: Determine the Impact of Improper Implementation of Participation Constraints in a Complex Database System.  
LEVEL: Evaluate  
A) It can lead to data redundancy and inconsistency.  
B) It has no direct impact on the database system.  
C) It can sometimes enhance the performance of the system.  
D) It solely leads to user access problems.  
Answer: A) It can lead to data redundancy and inconsistency.  
  
Question 6: Develop a Strategy for Managing the Participation Constraints in a Regional Train Booking Database System  
LEVEL: Create  
A) The constraints should be loosely enforced due to the dynamic nature of the bookings.  
B) Constraints should be enforced at the stage of system design and maintained in operation to avoid inconsistencies.  
C) The constraints should only be applied when the database size gets large.  
D) Participation constraints should be ignored as they add unnecessary complexity.  
Answer: B) Constraints should be enforced at the stage of system design and maintained in operation to avoid inconsistencies.

* Question: Create six multiple choice question and answer of the question with the Primary Key concept

Response: Question 1: (Remember)  
Define the concept of a primary key in a database system.  
A) It's the title of the database  
B) A method to connect various parts of the database  
C) Unique identifier for records in the database  
D) The last record of the database system  
Answer: C) Unique identifier for records in the database  
LEVEL: Remember  
  
Question 2: (Understand)  
Explain the importance of uniqueness when considering the choice of a primary key.  
A) It ensures that all entries are the same  
B) It allows any name to be used as a primary key  
C) It ensures that each record can be precisely identified  
D) It's purely for the convenience of the database designer  
Answer: C) It ensures that each record can be precisely identified  
LEVEL: Understand  
  
Question 3: (Apply)  
In a UNIVERSITY database that includes the names of students, how could you ensure the uniqueness of a primary key that includes last names?  
A) Using the first and the last name combined  
B) Using the last name combined with date of birth or enrollment date  
C) Using the last name alone  
D) Using the last name combined with student ID  
Answer: D) Using the last name combined with student ID  
LEVEL: Apply  
  
Question 4: (Analyze)  
Compare the use of natural keys and surrogate keys in a database.  
A) Natural keys are artificial, surrogate keys are not  
B) Surrogate keys are more useful than natural keys  
C) Natural keys are drawn from the database content, surrogate keys are system generated  
D) There is no difference between natural and surrogate keys  
Answer: C) Natural keys are drawn from the database content, surrogate keys are system generated  
LEVEL: Analyze  
  
Question 5: (Evaluate)  
Justify the situation in which surrogate keys might be considered to be more suitable than natural keys.  
A) When a database is being designed for a small organization  
B) When a database is used for holding temporary data  
C) When a natural key can potentially change over time  
D) When the database does not allow for manual entry of keys  
Answer: C) When a natural key can potentially change over time  
LEVEL: Evaluate  
  
Question 6: (Create)  
Design a strategy for creating a primary key for a database schema that keeps track of book adoptions for each course in a university.  
A) Use the book title as the primary key  
B) Use surrogate key  
C) Combine the course number and the book's ISBN as the primary key  
D) Use the course number as the primary key  
Answer: C) Combine the course number and the book's ISBN as the primary key  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Prime Attribute concept

Response: Question 1: [Level: Remember]  
Define "prime attribute".  
A) An attribute that can take on different values  
B) An attribute that is part of a candidate key  
C) An attribute that identifies a unique database entry  
D) An attribute that is only part of the primary key  
Answer: B) An attribute that is part of a candidate key  
  
Question 2: [Level: Understand]  
Explain the role of a prime attribute in a database schema.  
A) It solely represents the primary key in the database  
B) It forms part of the identity of an entry in a database  
C) It provides special privileges to the database owner  
D) It is the only attribute that can be modified  
Answer: B) It forms part of the identity of an entry in a database  
  
Question 3: [Level: Apply]  
You are tasked to solve the issue about an attribute in a database that does not uniquely identify an entry. Which attribute should be modified?  
A) Composite attribute   
B) Prime attribute  
C) Non-prime attribute  
D) Simple attribute   
Answer: B) Prime attribute  
  
Question 4: [Level: Analyze]  
Compare the prime attribute to the non-prime attribute.  
A) Prime attributes can be non-unique while non-prime attributes are unique  
B) Both prime and non-prime attributes represent the primary key in the database  
C) Prime attributes are part of a candidate key while non-prime attributes are not part of any key  
D) The prime attribute and non-prime attribute have the exact same role in the database  
Answer: C) Prime attributes are part of a candidate key while non-prime attributes are not part of any key  
  
Question 5: [Level: Evaluate]  
Determine whether the following statement is true or false: "Every attribute in a relation schema is a prime attribute."  
A) True  
B) False  
Answer: B) False  
  
Question 6: [Level: Create]  
Generate a situation where a non-prime attribute might be converted into a prime attribute.  
A) A student ID attribute becomes the primary key of the database  
B) A product's color attribute becomes part of a candidate key in an online store database  
C) A library database uses the book title as the primary key  
D) The name attribute becomes non-modifiable   
Answer: B) A product's color attribute becomes part of a candidate key in an online store database

* Question: Create six multiple choice question and answer of the question with the Projection concept

Response: Question 1:   
Level: Remember  
Define the Generalized Projection operation in database systems.  
A) An operation where functions of attributes are allowed in the projection list  
B) An operation where names of attributes are sorted in a list   
C) An operation where types of attributes are sorted in a sequence  
D) An operation where only constant values are used   
Answer: A) An operation where functions of attributes are allowed in the projection list  
  
Question 2:  
Level: Understand   
Explain the purpose of the Generalized Projection operation in the development of database reports.  
A) To sort the attributes in a list  
B) To rename the attributes on a list  
C) To produce computed values in the columns of a query result  
D) To disregard the attributes in a list  
Answer: C) To produce computed values in the columns of a query result  
  
Question 3:  
Level: Apply  
Given the function πF1, F2, ..., Fn (R) in the Generalized Projection operation where F1, F2, … , Fn are functions over the attributes in relation R, apply what you know about the function.  
A) The function sorts the attributes  
B) The function allows arithmetic operations and constant values  
C) The function removes redundant attributes  
D) The function has no relation with the attributes  
Answer: B) The function allows arithmetic operations and constant values  
  
Question 4:  
Level: Analyze  
Compare the Generalized Projection operation with a basic projection operation.  
A) Both have the same functionality  
B) Both involve the use of functions, but the latter involves arithmetic operations and constant values  
C) Generalized Projection allows functions of attributes to be included in the projection list while basic projection does not  
D) There is no difference, both are the same  
Answer: C) Generalized Projection allows functions of attributes to be included in the projection list while basic projection does not  
  
Question 5:  
Level: Evaluate  
Justify the importance of the Generalized Projection operation in database systems.  
A) It simplifies the query process  
B) It speeds up database processes  
C) It changes the names of the attributes  
D) It allows more complex manipulations including the usage of functions in the attribute list and can generate computed values in query results  
Answer: D) It allows more complex manipulations including the usage of functions in the attribute list and can generate computed values in query results  
  
Question 6:  
Level: Create  
Develop an example where you would use the Generalized Projection operation in a database system  
A) Use it when creating a new attribute from existing attributes  
B) Use it when renaming an attribute  
C) Use it when sorting attributes in a database  
D) Use it when balancing the database  
Answer: A) Use it when creating a new attribute from existing attributes

* Question: Create six multiple choice question and answer of the question with the Query command

Response: Question: Define the SQL update command used in Exercise 3.11.  
LEVEL: Remember  
A) A command used to retrieve data from databases   
B) A command used to organize data  
C) A command used to modify existing records in a table   
D) A command used to write new data   
Answer: C) A command used to modify existing records in a table   
  
Question: Describe the application of the WHERE clause in Query 6.   
LEVEL: Understand  
A) To select all data from a database   
B) To specify additional conditions   
C) To delete data from a database   
D) To update data in a database   
Answer: B) To specify additional conditions   
  
Question: Solve the following: How can one add more properties to a node as shown in Query 8.   
LEVEL: Apply  
A) Using an ADD command  
B) Using an UPDATE command   
C) Using a Node command   
D) Using a Job property command   
Answer: D) Using a Job property command   
  
Question: Compare the return type of Query 7 and Query 10.  
LEVEL: Analyze  
A) They both return the nodes and relationships only   
B) Query 7 returns property values of nodes while Query 10 returns the nodes and relationships only  
C) Query 7 returns the nodes and relationships only while Query 10 returns a collection of structs  
D) They both return property values of nodes  
Answer: C) Query 7 returns the nodes and relationships only while Query 10 returns a collection of structs  
  
Question: Determine the main purpose of the 'WITH' clause in Query 6.  
LEVEL: Evaluate  
A) To create a new database structure   
B) To categorize data in a database   
C) To separate clauses in a query  
D) To extract data from multiple databases   
Answer: C) To separate clauses in a query  
  
Question: Generate the possible results of Query 11 and 12.  
LEVEL: Create  
A) Returns nodes and relationships   
B) Returns property values of nodes  
C) Returns true or false   
D) Returns a collection of structs  
Answer: C) Returns true or false

* Question: Create six multiple choice question and answer of the question with the Read Committed concept

Response: Question 1:   
Level: Remember  
Question: Define the concept of catastrophic failure in database systems.  
A) The shutdown of a computer due to a power outage  
B) The corruption of data due to a hardware failure  
C) A system-wide failure that leads to significant data loss or corruption  
D) The loss of a single data item due to a software bug  
Answer: C) A system-wide failure that leads to significant data loss or corruption  
  
Question 2:   
Level: Understand  
Question: Explain the purpose and typical contents of a system log in a database system.  
A) It is used to record user activity and contains user login/logout information  
B) It is used to record transaction behavior and contains records of data operations  
C) It is used to monitor system performance and contains system usage statistics  
D) It is used to record system errors and contains error messages  
Answer: B) It is used to record transaction behavior and contains records of data operations  
  
Question 3:   
Level: Apply  
Question: Solve the scenario: If transaction T2 reads item X with a value of 80, adds 20, then the new value exceeds 90 and the transaction is exited according to the code, what will be the final value of X?  
A) 100  
B) 90  
C) 80  
D) Not determinable from provided information  
Answer: C) 80  
  
Question 4:   
Level: Analyze  
Question: Compare the properties of atomicity and durability in a database transaction.  
A) Atomicity ensures a transaction is indivisible, durability ensures its effects persist  
B) Atomicity ensures a transaction's effects persist, durability ensures it is indivisible  
C) Atomicity pertains to a transaction's reliability, durability to its efficiency  
D) Atomicity pertains to a transaction's efficiency, durability to its reliability  
Answer: A) Atomicity ensures a transaction is indivisible, durability ensures its effects persist  
  
Question 5:   
Level: Evaluate  
Question: Justify the importance of keeping a system log in a database operation.  
A) It helps track staff hours  
B) It's a legal requirement in some jurisdictions  
C) It's a key part of database backup and recovery procedures  
D) It helps optimize database performance  
Answer: C) It's a key part of database backup and recovery procedures  
  
Question 6:   
Level: Create  
Question: Generate a scenario in which a violation caused by dirty read could occur.  
A) A transaction reads a data item updated by another uncommitted transaction  
B) A transaction updates a data item already read by another transaction but rolls back later  
C) A transaction reads a data item that has been deleted by another transaction  
D) Two transactions read the same data item simultaneously  
Answer: A) A transaction reads a data item updated by another uncommitted transaction

* Question: Create six multiple choice question and answer of the question with the Read Uncommitted concept

Response: Question 1: Define the term 'unrepeatable read' in a database transaction.  
Level: Remember  
A) Records that cannot be read twice in a single transaction.  
B) A situation where a transaction reads the same item twice and the item is changed between the two reads.  
C) A transaction that reads an empty database.  
D) None of the above.  
Answer: B) A situation where a transaction reads the same item twice and the item is changed between the two reads.  
  
Question 2: Explain why recovery is needed in database systems.  
Level: Understand  
A) To ensure data consistency and control over access.  
B) To prevent unauthorized access to the database.  
C) To control database transactions and ensure reliable processing.  
D) To recover lost or damaged data and maintain data integrity.  
Answer: D) To recover lost or damaged data and maintain data integrity.  
  
Question 3: Solve how the unrepeatable read problem can impact an airline reservation transaction.  
Level: Apply  
A) It can cause a customer to receive different values for the number of available seats during the transaction.  
B) It can trigger a catastrophic failure in the database.  
C) It has no significant impact on airline reservation transactions.  
D) It will not be able to read the number of available seats.  
Answer: A) It can cause a customer to receive different values for the number of available seats during the transaction.  
  
Question 4: Compare the concepts of recoverable and cascading in database transaction schedules.  
Level: Analyze  
A) They both deal with the sequence in which transactions are processed.  
B) Recoverable schedules ensure no transaction commits until all transactions it depends on have committed, while cascading schedules allow a transaction to commit even if another transaction that it depends on is still pending.  
C) Cascading schedules cause less rollback of transactions than recoverable schedules.  
D) None of the above.  
Answer: B) Recoverable schedules ensure no transaction commits until all transactions it depends on have committed, while cascading schedules allow a transaction to commit even if another transaction that it depends on is still pending.  
  
Question 5: Justify the need for concurrent execution of database transactions in a multiuser system.  
Level: Evaluate  
A) To avoid transaction failure and ensure data consistency.  
B) To increase the speed and efficiency of the database.  
C) To allow multiple users to access and manipulate data simultaneously without conflict.  
D) All the above.  
Answer: D) All the above.  
  
Question 6: Modify the state of a transaction if the unrepeatable read problem occurs in a database transaction.  
Level: Create  
A) The state of the transaction would remain unchanged.  
B) The transaction could fail completely.  
C) The state of the transaction could be inconsistent.  
D) None of the above.  
Answer: C) The state of the transaction could be inconsistent.

* Question: Create six multiple choice question and answer of the question with the Relation concept

Response: Question: Define the 'Relational Data Model and SQL'.  
A) The process of analyzing software for vulnerabilities  
B) A data model based on first-order predicate logic  
C) A software for creating and managing databases  
D) A programming language for managing data held in a database  
Answer: B  
Level: Remember  
  
Question: Explain the use of 'Relational Data Model and SQL' in database systems.  
A) To create architectural designs  
B) To manage data held in a relational database management system  
C) To help in machine learning processes  
D) To create animation for games  
Answer: B  
Level: Understand  
  
Question: Solve how to retrieve specific data from the database using SQL.  
A) By using the "GET" command  
B) By utilizing the "SHOW" command  
C) By using the "SELECT" statement  
D) By using the "DISPLAY" command  
Answer: C  
Level: Apply  
  
Question: Compare the use of 'Relational Data Model and SQL' Vs 'Entity-Relationship Data Model'.  
A) SQL is used for creating and managing databases, while ER Model is used for visualizing data  
B) There is no difference between SQL and ER Model  
C) SQL is used for creating animations, while ER Model is used for creating databases  
D) Both are used for creating and managing databases  
Answer: A  
Level: Analyze  
  
Question: Justify the significance of SQL in relational database systems.  
A) SQL is irrelevant in relational database systems  
B) SQL helps to maintain the organization of data in a database  
C) SQL is only used for creating animation for games  
D) SQL has no specific features that make it significant in relational database systems.  
Answer: B  
Level: Evaluate  
  
Question: Modify the given SQL command to retrieve all records from a database: "SELECT \* FROM Database".  
A) "GET \* FROM Database"  
B) "DISPLAY ALL FROM Database"  
C) "SELECT ALL FROM Database"  
D) "SELECT \* FROM Database WHERE 1"  
Answer: D  
Level: Create

* Question: Create six multiple choice question and answer of the question with the Relational Algebra concept

Response: Question 1: Define what the OUTER UNION in Relational Algebra does.  
LEVEL: Remember  
A) It combines all the tuples from two relations excluding duplicate values.  
B) It only combines the tuples from two relations that have the same values.  
C) It excludes all the tuples that have same values in two relations.  
D) It combines all the tuples from two relations including duplicate values.  
Answer: A) It combines all the tuples from two relations excluding duplicate values.  
  
Question 2: Describe the purpose of UNION operation in Relational Algebra.  
LEVEL: Understand  
A) It is used for division of two relations.  
B) It is used for the combination of two relations without duplicate values.  
C) It is used to subtract one relation from another.  
D) It is used for the combination of two relations with duplicate values.  
Answer: B) It is used for the combination of two relations without duplicate values.  
  
Question 3: Solve the following query: What operation is required to list names of employees with two or more dependents in Relational Algebra?  
LEVEL: Apply  
A) AGGREGATE FUNCTION with the COUNT  
B) UNION  
C) SET DIFFERENCE  
D) OUTER JOIN  
Answer: A) AGGREGATE FUNCTION with the COUNT  
  
Question 4: Compare the use of UNION and SET DIFFERENCE operations in Relational Algebra.  
LEVEL: Analyze  
A) Both are used for combining two relations.  
B) UNION is used to combine two relations while SET DIFFERENCE is used to subtract one relation from another.  
C) SET DIFFERENCE is used to combine two relations while UNION is used to subtract one relation from another.  
D) Both are used to subtract one relation from another.  
Answer: B) UNION is used to combine two relations while SET DIFFERENCE is used to subtract one relation from another.  
  
Question 5: Determine the purpose of relational algebra in the retrieval and update operations of the relational model.  
LEVEL: Evaluate  
A) It is used for maintaining the consistency of the database.  
B) It is used to write scripts for creating the database.  
C) It is used to specify retrievals and updates to the database.  
D) It is used for normalization of the database.  
Answer: C) It is used to specify retrievals and updates to the database.  
  
Question 6: Develop a query to find the names of all employees who work on at least one project located in Houston but whose department has no location in Houston using relational algebra.  
LEVEL: Create  
A) This question involves applying multiple conjunctions and disjunctions.  
B) This question can be solved using only UNION operation.  
C) This question cannot be answered as it involves concepts not covered in relational algebra.  
D) This question can be solved using only AGGREGATE FUNCTION with the COUNT.  
Answer: A) This question involves applying multiple conjunctions and disjunctions.

* Question: Create six multiple choice question and answer of the question with the Relational data model concept

Response: Question: Define the 'Relational Data Model'.  
LEVEL: Remember  
A) A method for organizing data into tables and develops relationships based on data commonality  
B) A strategy for managing large amounts of data in a large company  
C) A database designer's tool for displaying data relationships visually  
D) A program for tracking data usage over time  
Answer: A) A method for organizing data into tables and develops relationships based on data commonality  
  
Question: Explain the importance of the 'Relational Data Model' in Database Systems.  
LEVEL: Understand  
A) It provides a high-level abstraction from the physical storage details of the database  
B) It helps to monitor system performance over time  
C) It involves encrypting the data to protect it from hackers  
D) It enables multi-user access to the database  
Answer: A) It provides a high-level abstraction from the physical storage details of the database  
  
Question: Solve how a 'Relational Data Model' can help in managing a large database?  
LEVEL: Apply  
A) By allowing users to create, read, update and delete data in a database  
B) By enforcing data consistency and integrity  
C) By both A and B  
D) None of the above  
Answer: C) By both A and B  
  
Question: Compare the 'Relational Data Model' with the 'Conceptual Data Modeling'.  
LEVEL: Analyze  
A) Conceptual Data Modeling is high-level, less detailed and vague while the Relational Data Model is specific and detailed  
B) Conceptual Data Modeling is low-level, more detailed and specific while the Relational Data Model is vague  
C) Conceptual Data Modeling and the Relational Data Model are the same theories  
D) None of the above are true  
Answer: A) Conceptual Data Modeling is high-level, less detailed and vague while the Relational Data Model is specific and detailed  
  
Question: Justify the use of the 'Relational Data Model' in Database Design.  
LEVEL: Evaluate  
A) It is easier to understand and use  
B) It allows for data independence  
C) It supports complex data types and relationships  
D) All of the above  
Answer: D) All of the above  
  
Question: Modify how a 'Relational Data Model' can be implemented in a modern database system.  
LEVEL: Create  
A) By using SQL, a standard language for managing and manipulating databases  
B) By using object-oriented programming languages such as Java or Python  
C) By using NoSQL databases such as MongoDB or CouchDB  
D) By using a piece of paper and a pencil  
Answer: A) By using SQL, a standard language for managing and manipulating databases

* Question: Create six multiple choice question and answer of the question with the Relationship concept

Response: Question: Define the relationship in the context of database systems.  
A) The link between two entities   
B) The manner in which data is organized   
C) Code written to carry out commands   
D) A type of data storage  
Answer: A) The link between two entities  
LEVEL: Remember  
  
Question: Explain the purpose of relationships in database systems.  
A) To organize data in rows and columns  
B) To link different entities and express interactions between them  
C) To display data visually   
D) To apply algorithms to data  
Answer: B) To link different entities and express interactions between them  
LEVEL: Understand  
  
Question: Solve the following: Identify the type of relationship in a database where a 'STUDENT' entity is connected with a 'School\_id' attribute.  
A) Binary Relationship  
B) Ternary Relationship  
C) Unary Relationship  
D) N-ary Relationship  
Answer: A) Binary Relationship  
LEVEL: Apply  
  
Question: Compare binary and ternary relationships in the context of database systems.  
A) Binary relations involve two entities, Ternary includes three entities  
B) Binary relations consist of one entity, Ternary consists of two entities  
C) Binary relations are weaker than ternary relationships   
D) There is no difference between binary and ternary relationships  
Answer: A) Binary relations involve two entities, Ternary includes three entities  
LEVEL: Analyze  
  
Question: Determine the correct representation for a ternary relationship type in a UML diagram, assuming you have the entities 'SUPPLIER', 'PART' and 'PROJECT'.   
A) Connect all three entities directly to each other   
B) Connect 'SUPPLIER' and 'PART' directly, and 'PART' and 'PROJECT' directly  
C) Draw one single entity that represents 'SUPPLIER', 'PART', and 'PROJECT' together  
D) Connect 'SUPPLIER' and 'PART' directly, and 'SUPPLIER' and 'PROJECT' directly  
Answer: A) Connect all three entities directly to each other   
LEVEL: Evaluate  
  
Question: Develop a way to denote a 'job applicant's' relationship with a 'company' and 'job offer' in a database system.  
A) Create a binary relationship between 'job applicant' and 'company', and another binary relation between 'job applicant' and 'job offer'  
B) Create a ternary relationship type involving 'job applicant', 'company', and 'job offer'   
C) Create a singular entity that represents 'job applicant', 'company', and 'job offer' together  
D) Create a binary relationship between 'company' and 'job offer' only  
Answer: B) Create a ternary relationship type involving 'job applicant', 'company', and 'job offer'   
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Renaming concept

Response: Question 1:   
LEVEL: Remember  
Question: Define the concept of 'question answering' as presented in the document.  
A) A technique in data analysis  
B) A technique in search engine optimization  
C) A practical engineering discipline comprising parsing, named entity recognition, relation extraction etc.  
D) A method of database normalization  
  
Answer: C) A practical engineering discipline comprising parsing, named entity recognition, relation extraction etc.  
  
Question 2:   
LEVEL: Understand  
Question: Explain the information and properties that a 'definition question' should extract.  
A) Different views on a particular subject  
B) Essential information and properties of the concept  
C) Different types of database architectures   
D) Different methods of answering questions  
  
Answer: B) Essential information and properties of the concept  
   
Question 3:   
LEVEL: Apply  
Question: Solve the question, “Which book is a tragic love story by Shake-speare?” given the information: “Romeo and Juliet is a tragic love story by Shakespeare”.  
A) Macbeth  
B) Romeo and Juliet  
C) A Midsummer Night's Dream  
D) The Tempest  
  
Answer: B) Romeo and Juliet  
  
Question 4:   
LEVEL: Analyze  
Question: Compare 'definition questions' and 'opinion questions' as outlined in the document.  
A) Both ask for factual information  
B) Both seek different views on a subject  
C) Definition questions ask for essential properties of a concept, opinion questions seek views on a subject  
D) Definition questions look for views, opinion questions look for factual information  
  
Answer: C) Definition questions ask for essential properties of a concept, opinion questions seek views on a subject  
  
Question 5:   
LEVEL: Evaluate  
Question: Justify the need for understanding the 'category or type of question' in question answering systems.  
A) It helps to satisfy user queries faster  
B) Answering strategies rely heavily on the type of question  
C) Helps to better select algorithms for answering  
D) It helps to categorize the received queries for future use  
  
Answer: B) Answering strategies rely heavily on the type of question  
  
Question 6:   
LEVEL: Create  
Question: Develop a 'definition question' for the term 'Normalization' based on the details given in the document.  
A) What is the sentiment about normalization?  
B) What is the opinion on normalization?  
C) What is normalization?  
D) How is normalization applied?  
  
Answer: C) What is normalization?

* Question: Create six multiple choice question and answer of the question with the REVOKE command

Response: Question: Define the 'REVOKE' command in SQL.  
Level: Remember  
A) It is a command used to create new databases.  
B) It is a command used to grant privileges to a user.  
C) It is a command used to cancel privileges previously granted to a user.  
D) It is a command used to transfer data between databases.  
Answer: C) It is a command used to cancel privileges previously granted to a user.  
  
Question: Explain the purpose of the 'REVOKE' command in SQL.  
Level: Understand  
A) To establish new user accounts.  
B) To create a new database.  
C) To cancel a user’s privileges to a database.  
D) To give a user privileges to a database.  
Answer: C) To cancel a user’s privileges to a database.  
  
Question: Apply the 'REVOKE' command in a scenario where a user no longer needs access to a particular database.  
Level: Apply  
A) By deleting the user’s account.  
B) By using the 'REVOKE' command to remove their access.  
C) By creating a new user ID.  
D) By restricting their access to a single table.  
Answer: B) By using the 'REVOKE' command to remove their access.  
  
Question: Compare the 'REVOKE' command and the 'GRANT' command in SQL.  
Level: Analyze  
A) Both commands give privileges to a user.  
B) Both commands remove privileges from a user.  
C) The 'REVOKE' command grants privileges while the 'GRANT' command revokes them.  
D) The 'REVOKE' command removes privileges, while the 'GRANT' command grants them.  
Answer: D) The 'REVOKE' command removes privileges, while the 'GRANT' command grants them.  
  
Question: Determine the consequence of the 'REVOKE' command in SQL when a user has propagated their privileges to another user.  
Level: Evaluate  
A) The propagated privileges are not affected.  
B) Only the original user’s privileges are revoked.  
C) The propagated privileges are also automatically revoked.  
D) The user who had privileges propagated to them gains full privileges.  
Answer: C) The propagated privileges are also automatically revoked.  
  
Question: Modify the 'REVOKE' command to ensure that a user can't propagate their privileges to another user.  
Level: Create  
A) Add the 'NO GRANT' clause to the 'REVOKE' command.  
B) Include 'WITH NO OPTION' in the 'REVOKE' command.  
C) Use a nested 'REVOKE' command.  
D) It's not possible to prevent privileges propagation using the 'REVOKE' command.  
Answer: D) It's not possible to prevent privileges propagation using the 'REVOKE' command.

* Question: Create six multiple choice question and answer of the question with the Role-Based Access Control (RBAC)

Response: Question 1: Define Role-Based Access Control (RBAC) system. (Level: Remember)  
A) It is a system to categorize people based on their roles.  
B) It is a system to assign roles based on access to certain data or resources.  
C) It is a system where privileges can be assigned to roles and ensure that only authorized users can access certain data or resources.  
D) It is a system to identify each person in a database system.  
Answer: C) It is a system where privileges can be assigned to roles and ensure that only authorized users can access certain data or resources.  
  
Question 2: Explain what makes the RBAC model attractive for developing secure Web-based applications. (Level: Understand)  
A) It allows free access to everyone.  
B) It supports flexibility, policy neutrality, better security management, administration and the enforcement of hierarchical organization.   
C) It is less secured than other access control models.  
D) It doesn't allow simultaneous use of roles.  
Answer: B) It supports flexibility, policy neutrality, better security management, administration and the enforcement of hierarchical organization.  
  
Question 3: Apply the concept of RBAC in an internet banking system. (Level: Apply)  
A) Admin and clients will have the same role.  
B) Admin will control entire functionalities while clients can use a subset for transactions.  
C) There will be mutual exclusion of roles.  
D) Everyone can have access to confidential data.  
Answer: B) Admin will control entire functionalities while clients can use a subset for transactions.  
  
Question 4: Compare RBAC model with Discretionary Access Control (DAC) and Mandatory Access Control (MAC). (Level: Analyze)  
A) RBAC is less effective than DAC and MAC.  
B) RBAC lacks flexibility and better support for security management.  
C) RBAC includes the capabilities of both DAC and MAC policies while offering more features.   
D) RBAC doesn't allow creation of user-defined and organization-specific policies.  
Answer: C) RBAC includes the capabilities of both DAC and MAC policies while offering more features.  
  
Question 5: Justify the importance of the mutual exclusion of roles in RBAC system. (Level: Evaluate)  
A) It can prevent collusion and restrict one user from executing tasks requiring collaboration.   
B) It can restrict all users from accessing certain resources.   
C) It allows multiple users to do work that require the involvement of two or more people.  
D) It allows all roles to be used simultaneously.  
Answer: A) It can prevent collusion and restrict one user from executing tasks requiring collaboration.   
  
Question 6: Generate a scenario where RBAC model can significantly improve data security of an organization. (Level: Create)  
A) In a scenario where there is no security system.  
B) In a scenario where everyone can access all data.  
C) In a scenario where an organization wants to have different levels of access control. For example, in a hospital, doctors can access all patient records, nurses can only access assigned patients' records, and administrative staff can only access non-medical records.   
D) In a scenario where roles are not important.  
Answer: C) In a scenario where an organization wants to have different levels of access control. For example, in a hospital, doctors can access all patient records, nurses can only access assigned patients' records, and administrative staff can only access non-medical records.

* Question: Create six multiple choice question and answer of the question with the Schema

Response: Question: Define the function of the SQL retrieval query as discussed in the document.  
A) To modify the schema of a database  
B) To update data in a database  
C) To retrieve specific data from a database  
D) To delete data from a database  
Answer: C) To retrieve specific data from a database  
LEVEL: 1  
  
Question: Describe the concept of nested queries as used in SQL.  
A) Queries within another query   
B) Queries executed sequentially  
C) Queries that do not interact with others  
D) Queries that delete data from a database  
Answer: A) Queries within another query   
LEVEL: 2  
  
Question: Solve the following task: Write a SQL statement to change the class of student 'Smith' to 2.  
A) UPDATE student SET class = 2 WHERE name= 'Smith';  
B) SELECT \* FROM student WHERE name='Smith';  
C) DELETE FROM student WHERE name='Smith';  
D) INSERT INTO student (name, class) VALUES ('Smith', 2);  
Answer: A) UPDATE student SET class = 2 WHERE name= 'Smith';  
LEVEL: 3  
  
Question: Compare the treatment of NULLs in comparison operators and in aggregate functions as stated in the document.  
A) NULLs are treated the same in both scenarios  
B) NULLs are ignored in comparison operators but not in aggregate functions  
C) NULLs are not ignored in comparison operators but are in aggregate functions  
D) NULLs are treated differently based on the SQL database used.  
Answer: C) NULLs are not ignored in comparison operators but are in aggregate functions  
LEVEL: 4  
  
Question: Justify the use of SQL DDL in declaring database relations as implied in the document.  
A) Because DDL is used to define the structure of a database  
B) Because DDL is the most basic SQL command  
C) Because DDL is used to manipulate data  
D) Because DDL can only be used to declare database relations  
Answer: A) Because DDL is used to define the structure of a database  
LEVEL: 5  
  
Question: Develop a SQL statement to insert a new student, 'Johnson', into the database with attributes 25, 1, 'Math'.  
A) INSERT INTO students VALUES('Johnson', 25, 1, 'Math');  
B) INSERT INTO students VALUES(25, 1, 'Math', 'Johnson');  
C) UPDATE students SET name = 'Johnson' WHERE name = 'Math';  
D) DELETE FROM students WHERE name= 'Johnson';  
Answer: A) INSERT INTO students VALUES('Johnson', 25, 1, 'Math');  
LEVEL: 6

* Question: Create six multiple choice question and answer of the question with the SELECT command

Response: Level 1: Remember  
Question: Define the use of the SELECT command in SQL.  
A) It is used to delete data from a database.  
B) It is used to retrieve data from a database.  
C) It is used to update data in a database.  
D) It is used to manipulate data outside of a database.  
Answer: B) It is used to retrieve data from a database.  
  
Level 2: Understand  
Question: Explain the function of the clause "ORDER BY D.Dname DESC, E.Lname ASC, E.Fname ASC" in a SELECT command.  
A) It sorts the result in descending order by D.Dname and in ascending order by E.Lname and E.Fname.  
B) It only sorts in descending order by D.Dname.  
C) It displays the chosen columns in ascending order.  
D) It adds additional data to the result.  
Answer: A) It sorts the result in descending order by D.Dname and in ascending order by E.Lname and E.Fname.  
  
Level 3: Apply  
Question: Solve the following query using the SELECT statement, retrieve employee names who work in the Department number 'D1'.  
A) SELECT name FROM EMPLOYEE WHERE Dno='D2';  
B) SELECT department FROM EMPLOYEE WHERE name='D1';   
C) SELECT name FROM EMPLOYEE WHERE Dno='D1';  
D) None of the above.  
Answer: C) SELECT name FROM EMPLOYEE WHERE Dno='D1';  
  
Level 4: Analyze  
Question: Compare the queries 'SELECT \* FROM DEPT\_SUMMARY;' and 'SELECT D, C FROM DEPT\_SUMMARY WHERE TOTAL\_S > 100000;'. What's the difference?  
A) The first one retrieves all records, while the second one retrieves only records where TOTAL\_S is greater than 100000.  
B) The first one is used to insert data, while the second one is used to perform mathematical operations.  
C) There is no difference; both commands do the same.  
D) The second command is an invalid SQL syntax.  
Answer: A) The first one retrieves all records, while the second one retrieves only records where TOTAL\_S is greater than 100000.  
  
Level 5: Evaluate  
Question: Determine which of the following SQL statements are composed correctly.  
A) SELECT name FROM EMPLOYEE WHERE Dno='D1';  
B) SELECT department FROM WHERE name EMPLOYEE='D1';  
C) SELECT FROM \* DEPT\_SUMMARY;  
D) SELECT name FROM EMPLOYEE SET Dno='D1';  
Answer: A) SELECT name FROM EMPLOYEE WHERE Dno='D1';  
  
Level 6: Create  
Question: Develop a SQL command to retrieve the names of all employees whose salary is higher than $10,000, and sort these names in ascending order.  
A) SELECT name FROM EMPLOYEE WHERE salary > 10000 ORDER BY name ASC;  
B) ORDER BY salary > 10000 SELECT name FROM EMPLOYEE;  
C) SELECT name FROM EMPLOYEE ORDER BY salary > 10000;  
D) ORDER BY name ASC WHERE salary > 10000 SELECT name FROM EMPLOYEE;  
Answer: A) SELECT name FROM EMPLOYEE WHERE salary > 10000 ORDER BY name ASC;

* Question: Create six multiple choice question and answer of the question with the SELECT DISTINCT command

Response: Question 1: LEVEL: Remember  
Question: Define the function of the SELECT DISTINCT command in SQL  
A) It is used to select all duplicate records from a database  
B) It allows the database to insert new records  
C) It allows only a single unique record to be selected from the database  
D) It is used to select unique records from a database  
Answer: D) It is used to select unique records from a database  
  
Question 2: LEVEL: Understand  
Question: Explain the difference between SELECT DISTINCT and SELECT ALL in SQL   
A) SELECT DISTINCT selects only unique records while SELECT ALL selects all records including duplicates  
B) SELECT ALL selects only unique records while SELECT DISTINCT selects all records including duplicates  
C) SELECT DISTINCT is used to delete records while SELECT ALL is used for update  
D) Both SELECT DISTINCT and SELECT ALL function identically and there is no difference  
Answer: A) SELECT DISTINCT selects only unique records while SELECT ALL selects all records including duplicates  
  
Question 3: LEVEL: Apply  
Question: Solve this SQL problem: How will you select all distinct salaries from the 'EMPLOYEE' table?  
A) SELECT DISTINCT Salary FROM EMPLOYEE  
B) SELECT ALL Salary FROM EMPLOYEE  
C) SELECT Salary FROM EMPLOYEE  
D) SELECT UNIQUE Salary FROM EMPLOYEE  
Answer: A) SELECT DISTINCT Salary FROM EMPLOYEE  
  
Question 4: LEVEL: Analyze  
Question: Compare the use of DISTINCT in SELECT DISTINCT Salary FROM EMPLOYEE AND SELECT Salary FROM EMPLOYEE  
A) The former selects all salaries from the Employee table, the latter selects only unique salaries  
B) The former selects only unique salaries from the Employee table, the latter selects all salaries, even duplicates  
C) Both commands perform the same operation  
D) The former command will not execute as DISTINCT is not a valid SQL keyword  
Answer: B) The former selects only unique salaries from the Employee table, the latter selects all salaries, even duplicates   
  
Question 5: LEVEL: Evaluate  
Question: Justify the use of SELECT DISTINCT over SELECT ALL while retrieving data from SQL databases   
A) SELECT DISTINCT is faster than SELECT ALL  
B) SELECT DISTINCT eliminates duplicate records and returns only unique records, making the data easy to analyze and understand  
C) SELECT DISTINCT results in less storage usage in the database  
D) There is no justification; the two commands should be used interchangeably  
Answer: B) SELECT DISTINCT eliminates duplicate records and returns only unique records, making the data easy to analyze and understand  
  
Question 6: LEVEL: Create  
Question: Generate a SQL command to retrieve all the unique department numbers from the 'DEPARTMENT' and 'EMPLOYEE' table using SELECT DISTINCT  
A) SELECT DISTINCT DEPARTMENT.Dno FROM DEPARTMENT, EMPLOYEE  
B) SELECT DEPARTMENT.Dno FROM DEPARTMENT, EMPLOYEE  
C) SELECT DISTINCT DEPARTMENT.Dnumber FROM DEPARTMENT, EMPLOYEE  
D) SELECT DEPARTMENT.Dnumber FROM DEPARTMENT, EMPLOYEE  
Answer: A) SELECT DISTINCT DEPARTMENT.Dno FROM DEPARTMENT, EMPLOYEE

* Question: Create six multiple choice question and answer of the question with the Selection concept

Response: Question 1: Remember: Define what a "factoid question" is based on the provided context.  
A) A question that doesn't necessarily have a set answer.  
B) A question that requests a long list of responses.  
C) A question that directly asks for a specific piece of information.  
D) A question that is indirectly asking for a specific piece of information.  
Answer: C) A question that directly asks for a specific piece of information.  
LEVEL: 1  
  
Question 2: Understand: Explain what the main concepts involved in "question answering" are according to the text.  
A) Parsing; named entity recognition (NER); focus extraction; answer type extraction; relation extraction; ontological inference; and search, indexing, and classification algorithms.  
B) Factoid questions, list questions, and solution based questions.  
C) Regular expression templates and arguments.  
D) A collection of structs and query results.  
Answer: A) Parsing; named entity recognition (NER); focus extraction; answer type extraction; relation extraction; ontological inference; and search, indexing, and classification algorithms.  
LEVEL: 2  
  
Question 3: Apply: Solve the type of question that best suits to get the answer "Romeo and Juliet is a tragic love story by Shakespeare".  
A) Factoid Question  
B) List Question  
C) Solution-Based Question  
D) Yes-No Question  
Answer: A) Factoid Question  
LEVEL: 3  
  
Question 4: Analyze: Compare the difference between the factoid questions and list questions.  
A) Factoid questions ask for a specific fact, while list questions seek a list of responses.  
B) Factoid questions seek a list of responses, while list questions ask for specific facts.  
C) Factoid questions and list questions both seek for specific facts.  
D) Factoid questions and list questions both seek a list of responses.  
Answer: A) Factoid questions ask for a specific fact, while list questions seek a list of responses.  
LEVEL: 4  
  
Question 5: Evaluate: Justify the difference between "surface pattern matching" and "structural matching" in question answering techniques.  
A) Surface pattern matching replaces arguments in the question with potential answers in the passage, while structural matching uses syntactic and semantic alignment to find answer candidates.  
B) Structural matching replaces arguments in the question with potential answers in the passage, while surface pattern matching uses syntactic and semantic alignment to find answer candidates.  
C) Both surface pattern matching and structural matching replace arguments in the question with potential answers in the passage.  
D) Both surface pattern matching and structural matching use syntactic and semantic alignment to find answer candidates.  
Answer: A) Surface pattern matching replaces arguments in the question with potential answers in the passage, while structural matching uses syntactic and semantic alignment to find answer candidates.  
LEVEL: 5  
  
Question 6: Create: Develop a "list question" based on the information given in the documents.  
A) "What are the main concepts involved in question answering?"  
B) “Name the male actors who played the role of James Bond."  
C) "Who is the president of the United States?"  
D) "What is the difference between surface pattern matching and structural matching?"  
Answer: B) “Name the male actors who played the role of James Bond."  
LEVEL: 6

* Question: Create six multiple choice question and answer of the question with the Serializable concept

Response: Question 1:   
Level: Remember  
Question: Define what is meant by 'Factoid Questions' as used in Question Answering Systems?  
A) Questions seeking a list of factoid responses that satisfy a given criterion.  
B) Questions pinpointing the right phrase in a document or a database that correctly addresses the question.  
C) Questions seeking a detailed response to complex events or situations.  
D) Questions that are not answerable with a single fact or a list of facts.  
Answer: B) Questions pinpointing the right phrase in a document or a database that correctly addresses the question.  
  
Question 2:   
Level: Understand  
Question: Explain the concept of 'Answer Scoring' in Question Answering Systems.  
A) It involves gathering supporting evidence for different candidate answers.  
B) It is a process of interpreting the questions asked in the system.  
C) It is a system for asking questions about the document.  
D) It involves scoring the answers based on their relevance to the question.  
Answer: A) It involves gathering supporting evidence for different candidate answers.  
  
Question 3:   
Level: Apply  
Question: Solve this: In which question category would a question like "List the members of the Beatles" fall under, according to the document?  
A) Factoid Questions   
B) List Questions   
C) Summary Questions   
D) Analytical Questions  
Answer: B) List Questions   
  
Question 4:   
Level: Analyze  
Question: Compare 'Factoid Questions' and 'List Questions' based on the examples given in the text.  
A) Factoid questions involve listing while List questions involve pinpointing a phrase.  
B) Factoid questions involve pinpointing a phrase while List questions involve listing.   
C) Both Factoid and List questions involve listing.   
D) Both Factoid and List questions involve pinpointing a phrase.  
Answer: B) Factoid questions involve pinpointing a phrase while List questions involve listing.  
  
Question 5:  
Level: Evaluate  
Question: Determine the importance of categorizing questions in question answering systems based on what's indicated in the document.  
A) Because answering strategies rely heavily on the type of questions.   
B) Because it allows users to search for information effectively.   
C) Because it allows easy indexing of information.   
D) Because it allows swift answer scoring   
Answer: A) Because answering strategies rely heavily on the type of questions.   
  
Question 6:   
Level: Create  
Question: Develop a 'Summary Question' based on the information in the document.  
A) What is the main function of the information retrieval systems discussed?  
B) Who are the authors of the document?  
C) What is unstructured data?  
D) What are Google and Yahoo examples of according to the text?  
Answer: A) What is the main function of the information retrieval systems discussed?

* Question: Create six multiple choice question and answer of the question with the Set concept

Response: Question: Define the concept of a table in SQL.  
A) A table in SQL is a way to store and organize data.  
B) Tables in SQL are used to perform calculations.  
C) SQL tables are the programming language used to manage databases.  
D) SQL uses tables to create websites.  
Answer: A) A table in SQL is a way to store and organize data.  
LEVEL: Remember  
  
Question: Explain why SQL treats a table as a multiset.  
A) SQL treats a table as a multiset to eliminate duplicates.  
B) SQL usually treats a table as a multiset because duplicates are allowed.  
C) SQL treats a table as a multiset to improve the database performance.  
D) SQL uses a multiset to keep track of each user's request.  
Answer: B) SQL usually treats a table as a multiset because duplicates are allowed.  
LEVEL: Understand  
  
Question: Solve the problem of eliminating duplicate tuples in SQL.  
A) Increase the database storage capacity.  
B) Create a new table for each query.  
C) Implement a sorting process followed by duplicate elimination.  
D) Use an aggregate function to eliminate duplicates.  
Answer: C) Implement a sorting process followed by duplicate elimination.  
LEVEL: Apply  
  
Question: Compare the concept of tables in SQL and sets.  
A) Sets are more flexible than tables in SQL.  
B) Sets and tables in SQL are interchangeable.  
C) Sets are a type of SQL table.  
D) SQL treats a table not as a set but as a multiset, allowing for duplicate tuples.  
Answer: D) SQL treats a table not as a set but as a multiset, allowing for duplicate tuples.  
LEVEL: Analyze  
  
Question: Determine why the SQL does not automatically eliminate duplicate tuples.  
A) The elimination of duplicates is an expensive operation.  
B) SQL was not designed to manage duplicates.  
C) The SQL server lacks functionality to eliminate duplicates.  
D) The SQL commands for managing duplicates are not yet developed.  
Answer: A) The elimination of duplicates is an expensive operation.  
LEVEL: Evaluate  
  
Question: Modify the SQL process to include a default duplicate elimination feature.  
A) Change the SQL source code to include a duplicate elimination command.  
B) Connect SQL with a third-party duplicate manager.  
C) Use a plug-in to add the default duplicate elimination feature.  
D) Include an automated command to sort tuples and eliminate duplicates after each query.  
Answer: D) Include an automated command to sort tuples and eliminate duplicates after each query.  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Specifying Privileges - Views concept

Response: Question 1: LEVEL: Remember  
Question: Define what is meant by database authorization.  
A) The process of verifying a user's identity  
B) The process of assigning specific roles and permissions to users  
C) The process of storing and managing data in a database  
D) The process of encrypting data in a database  
Answer: B) The process of assigning specific roles and permissions to users  
  
Question 2: LEVEL: Understand  
Question: Explain how the view mechanism can be used as an authorization mechanism.  
A) By encrypting the data in the view  
B) By allowing only certain users to access the view  
C) By granting certain users the privilege to query the view but not the base table itself  
D) By revoking all privileges from the view  
Answer: C) By granting certain users the privilege to query the view but not the base table itself  
  
Question 3: LEVEL: Apply  
Question: Solve the following issue: How can a user be restricted to only see certain columns in a database?  
A) By revoking the user's access completely  
B) By removing those columns from the database  
C) By creating a view that selects only the allowed columns  
D) By encrypting those columns  
Answer: C) By creating a view that selects only the allowed columns  
  
Question 4: LEVEL: Analyze  
Question: Compare the privileges at the account level and those at the relation level in a database system.  
A) They are always the same  
B) Account level privileges concern overall access to the system, while relation level privileges are about access to specific data items  
C) Relation level privileges concern overall access to the system, while account level privileges are about access to specific data items  
D) They depend on the database system and cannot be compared  
Answer: B) Account level privileges concern overall access to the system, while relation level privileges are about access to specific data items  
  
Question 5: LEVEL: Evaluate  
Question: Justify the following statement: Revoking a privilege means taking away a previously granted authority from a user in a database system.  
A) True, because privileges can be revoked at any time  
B) False, privileges cannot be revoked once granted  
C) True, but only if the user has violated the system's rules  
D) False, revoking means granting a privilege  
Answer: A) True, because privileges can be revoked at any time  
  
Question 6: LEVEL: Create  
Question: Generate a scenario where vertical propagation limits would be significant in a database system.   
A) A situation where a user's privileges need to be restricted to only certain rows or columns in a table  
B) A situation where all users need to have full access to all data in the database  
C) A situation where the database needs to be restructured completely  
D) A situation where all privileges need to be revoked from a specific user  
Answer: A) A situation where a user's privileges need to be restricted to only certain rows or columns in a table

* Question: Create six multiple choice question and answer of the question with the Structured Query Language concept

Response: Question 1: [Level: Remember]  
Define what SQL is.  
A) Structured Quality Language  
B) Standard Query Language  
C) Structured Query Language  
D) Simplified Quality Language  
Answer: Structured Query Language  
  
Question 2: [Level: Understand]  
Explain how NULLs are treated in comparison operators in SQL.  
A) NULLs are always equal to anything  
B) NULLs are defined as zero  
C) NULLs are ignored whenever the comparison operator is used  
D) NULLs are always considered to be undefined in comparison operations  
Answer: NULLs are always considered to be undefined in comparison operations  
  
Question 3: [Level: Apply]  
Solve the following SQL query: "Retrieve the names of all employees whose supervisor’s supervisor has ‘888665555’ for Ssn."  
A) SELECT name FROM employees WHERE manager\_id = (SELECT id FROM employees WHERE manager\_id = '888665555')  
B) SELECT name FROM employees WHERE manager\_id IN (SELECT id FROM employees WHERE Ssn= '888665555');  
C) SELECT name FROM employees WHERE Ssn = (SELECT supervisor\_id FROM employees WHERE supervisor\_id = '888665555');  
D) SELECT name FROM employees WHERE supervisor\_id = (SELECT id FROM employees WHERE Ssn= '888665555');  
Answer: SELECT name FROM employees WHERE manager\_id IN (SELECT id FROM employees WHERE Ssn= '888665555');  
  
Question 4: [Level: Analyze]  
Compare the roles of SQL and NoSQL databases.  
A) SQL databases are designed for small scale applications while NoSQL is for large scale apps  
B) SQL databases are designed for large scale applications while NoSQL is for small scale apps  
C) Both are designed for large scale applications, but SQL is primarily used for structured data whereas NoSQL is utilized for unstructured data  
D) Both are designed for small-scale applications, but SQL is primarily used for structured data whereas NoSQL is utilized for unstructured data  
Answer: Both are designed for large scale applications, but SQL is primarily used for structured data whereas NoSQL is utilized for unstructured data  
  
Question 5: [Level: Evaluate]  
Determine the role of SQL in database management.  
A) SQL is used to manage the database layout only  
B) SQL is used to query and manipulate data in the database  
C) SQL is used to create and modify databases  
D) Both B and C  
Answer: Both B and C  
  
Question 6: [Level: Create]  
Generate an SQL query to find all distinct student names with a grade of 'A' from the 'grades' table.  
A) SELECT name FROM students WHERE grade = 'A';  
B) SELECT DISTINCT name FROM students WHERE grade = 'A';  
C) SELECT name FROM grades WHERE grade = 'A';  
D) SELECT DISTINCT name FROM grades WHERE grade = 'A';  
Answer: SELECT DISTINCT name FROM grades WHERE grade = 'A';

* Question: Create six multiple choice question and answer of the question with the SQL Injection concept

Response: Question: Define SQL Injection as mentioned in the given document.  
A) It is a method to gain unauthorized access to a database by manipulating SQL queries.  
B) It is a form of virus that attacks SQL databases.  
C) It is a technique to optimize SQL queries for better performance.  
D) It is a type of malware that specifically targets SQL databases.  
Answer: A) It is a method to gain unauthorized access to the database by manipulating SQL queries.  
LEVEL: Remember  
  
Question: Explain what happens in a "Function Call Injection" type of attack.   
A) The attacker changes the function call to access different data.  
B) The attacker duplicates the function call to cause system overload.  
C) The attacker injects a bug into the original function call.  
D) The attacker adds additional SQL statements to the existing function call.  
Answer: A) The attacker changes the function call to access different data.  
LEVEL: Understand  
  
Question: Solve the problem of preventing SQL Injection to your database system.  
A) Regular updating and patching the system  
B) Installing firewalls on all computers  
C) Restricting employees' access to the database  
D) Removing SQL from the system altogether  
Answer: A) Regular updating and patching the system  
LEVEL: Apply  
  
Question: Compare the risks associated with SQL Injection as explained in the document.  
A) Database fingerprinting, bypassing authentication, and denial of service.  
B) SQL fragmentation, bypassing authentication, and denial of service.  
C) SQL fragmentation, database sequencing, and data mining.  
D) Database fingerprinting, SQL sequencing, and data mining.  
Answer: A) Database fingerprinting, bypassing authentication, and denial of service.  
LEVEL: Analyze  
  
Question: Justify why "Unauthorized privilege escalation" is a common threat to database systems.  
A) Because an unauthorized user might gain access to sensitive data.  
B) Because databases are prone to this type of attack.  
C) Because databases are typically not secure.  
D) Because most databases allow for privilege escalation by default.  
Answer: A) Because an unauthorized user might gain access to sensitive data.  
LEVEL: Evaluate  
  
Question: Generate a strategy to mitigate the risk of "Privilege abuse" in a database system.  
A) Regular audits of the system.  
B) Prohibition of USB devices.  
C) Enforcing strong password rules.  
D) Installation of antivirus software on all systems.  
Answer: A) Regular audits of the system.  
LEVEL: Create

* Question: Create six multiple choice question and answer of the question with the Subclass concept

Response: Question 1: Remember Level   
Question: Define the concept of a subclass in data modelling.  
A) A shared class with all attributes.  
B) An upper-level class that shares characteristics with lower classes.  
C) A child class that inherits properties from parent classes.  
D) A type of algorithm used in data modelling.  
Answer: C) A child class that inherits properties from parent classes.  
  
Question 2: Understand Level   
Question: Explain what differentiates a subclass from a superclass in data modelling.   
A) A subclass has fewer attributes than a superclass.   
B) A subclass is a higher-level class than a superclass.   
C) A subclass can inherit characteristics and properties from a superclass.  
D) Subclasses and superclasses are the same thing.  
Answer: C) A subclass can inherit characteristics and properties from a superclass.  
  
Question 3: Apply Level  
Question: Solve the following: Assume an entity STUDENT has subclasses GRADUATE and UNDERGRADUATE. If attributes for STUDENTS include name and ID and only GRADUATES have a supervisor name attribute, which of these statements indicate correct inheritance?   
A) Only GRADUATES have name and ID attributes.  
B) Both GRADUATE and UNDERGRADUATE subclasses have name, ID and supervisor attributes.  
C) GRADUATES have name, ID and supervisor attributes, while UNDERGRADUATES have name and ID attributes.  
D) UNDERGRADUATES have name and ID attributes, while GRADUATES have only name attributes.  
Answer: C) GRADUATES have name, ID and supervisor attributes, while UNDERGRADUATES have name and ID attributes.  
  
Question 4: Analyze Level  
Question: Compare the attribute inheritance between subclasses and superclasses.  
A) Subclasses do not inherit any attributes from superclasses.  
B) Superclasses inherit all attributes from subclasses.  
C) Subclasses inherit all attributes of their superslasses, but may also have their own specific attributes.  
D) Only superclasses have attributes while subclasses do not.  
Answer: C) Subclasses inherit all attributes of their superslasses, but may also have their own specific attributes.  
  
Question 5: Evaluate Level  
Question: Justify the need for a subclass in data modelling.  
A) Subclasses help in data redundancy.  
B) Subclasses can model specific entities that need additional attributes or specific relationships, hence enhancing model expressivity.  
C) Subclasses help in boosting data security.  
D) Subclasses help in saving storage space.  
Answer: B) Subclasses can model specific entities that need additional attributes or specific relationships, hence enhancing model expressivity.  
  
Question 6: Create Level  
Question: Generate an example of a superclass/subclass relationship in a university database.   
A) FIELD and SUBJECT where SUBJECT is a subclass of FIELD with additional attribute "course\_code".  
B) STUDENT and TEACHER where TEACHER is a subclass of STUDENT with additional attribute "subject\_taught".  
C) UNIVERSITY and STUDENT where STUDENT is a subclass of UNIVERSITY with additional attribute "enrollment\_number".  
D) PROFESSOR and COURSES where COURSES is a subclass of PROFESSOR with additional attribute "course\_code".  
Answer: A) FIELD and SUBJECT where SUBJECT is a subclass of FIELD with additional attribute "course\_code".

* Question: Create six multiple choice question and answer of the question with the Subset concept

Response: Question 1: Define the term "Question Answering" as used in the context of the document.  
LEVEL: Remember  
A) The use of search, indexing, and classification algorithms.  
B) The application of big data tools and technologies in a database system.  
C) The process of obtaining wanted information through asking particular queries.  
D) The process of engineering knowledge from large unstructured corpora.  
Answer: C) The process of obtaining wanted information through asking particular queries.  
  
Question 2: Explain how the type of a question affects the answering strategy in Question Answering systems.  
LEVEL: Understand  
A) The type of question does not influence the strategy used.  
B) The nature of the question dictates how to approach and respond to it.  
C) A question's type determines the size of the response generated.  
D) The kind of question affects the speed at which it’s answered.  
Answer: B) The nature of the question dictates how to approach and respond to it.  
  
Question 3: Solve the task of identifying the type of question being asked when given a “List Question” like 'Name three plays that were written by Shakespeare.'  
LEVEL: Apply  
A) Factoid Question  
B) List Question  
C) Open-ended Question  
D) Yes/No Question  
Answer: B) List Question  
  
Question 4: Compare Factoid Questions and List Questions in the context of the document.  
LEVEL: Analyze  
A) Factoids require a list of answers, while List questions need a single answer.  
B) Factoid Questions need further complex processing compared to List Questions.  
C) Factoid and List Questions both involve finding the right phrase in a document.  
D) Factoids require a single response whilst List questions need various factoid responses that satisfy a given criterion.  
Answer: D) Factoids require a single response whilst List questions need various factoid responses that satisfy a given criterion.  
  
Question 5: Justify the importance of using big data tools and technologies in the analysis of large unstructured data corpora in question answering systems.  
LEVEL: Evaluate  
A) These tools are vital as they simplify the process of data processing.  
B) The size of these collections necessitates the usage of these tools to manage and analyze the data efficiently.  
C) They are important because they ensure data confidentiality and security.  
D) These tools and technologies are essential as they reduce database redundancy.  
Answer: B) The size of these collections necessitates the usage of these tools to manage and analyze the data efficiently.  
  
Question 6: Develop a suitable Question Answering system strategy for handling List Questions based on the document.  
LEVEL: Create  
A) Utilize an algorithm to pinpoint the exact phrase in a document or database.  
B) Implement a system that gathers multiple factoid responses that meet the given criteria.  
C) Use a pattern recognition technique to spot sequences in the data.  
D) Build a codebase that generates responses based on keyword search.  
Answer: B) Implement a system that gathers multiple factoid responses that meet the given criteria.

* Question: Create six multiple choice question and answer of the question with the Superclass concept

Response: Question 1: Level - Remember  
Question: Define the term 'superclass' as used in database systems.  
A) Superclass is another term for keywords used in programming  
B) Superclass is a class that shares common attributes with other classes  
C) Superclass is a class from which other classes inherit attributes and relationships  
D) Superclass is a term for user-defined types in databases.  
Answer: C) Superclass is a class from which other classes inherit attributes and relationships  
  
Question 2: Level - Understand  
Question: Explain how a shared subclass can be a subclass of several superclasses.  
A) Because they can inherit the same properties from different superclass  
B) Because they have the ability to define the same attributes several times  
C) Because they share a common source code in the union type  
D) None of the above  
Answer: A) Because they can inherit the same properties from different superclass  
  
Question 3: Level - Apply  
Question: Solve the case where a shared subclass inherits the same attribute more than once by different superclasses.  
A) This is not possible in database systems  
B) The subclass only retains a single copy of the attribute  
C) The subclass creates multiple copies of the attribute  
D) The subclass creates a new attribute  
Answer: B) The subclass only retains a single copy of the attribute  
  
Question 4: Level - Analyze  
Question: Compare multiple inheritance and single inheritance.  
A) Single inheritance permits only one superclass and multiple inheritance permits two or more superclasses  
B) Multiple inheritance allows creation of superclass while single inheritance does not  
C) Multiple inheritance allows a subclass to inherit from several superclasses, while in single inheritance, a subclass can only inherit from one superclass   
D) There's no difference between them  
Answer: C) Multiple inheritance allows a subclass to inherit from several superclasses, while in single inheritance, a subclass can only inherit from one superclass  
  
Question 5: Level - Evaluate  
Question: Justify the importance of understanding the type of question in question answering systems  
A) Because the type of question has no impact on the system's response  
B) Because it heavily influences the answering strategies of the system  
C) Because it helps to determine the color of the system's user interface  
D) Because it helps the system to generate more questions  
Answer: B) Because it heavily influences the answering strategies of the system  
  
Question 6: Level - Create  
Question: Generate a possible scenario where the shared subclass concept is practically applied in database systems.  
A) In a cooking recipe database where "Desserts" is a shared subclass of both "Baking" and "Non-baking" superclasses.  
B) In a email system where "Inbox" is a shared subclass of "Emails" and "User" superclasses.  
C) Irrelevant, the shared subclass concept can't be applied in database systems.  
D) In a wildlife database where "Birds" is a shared subclass of "Flying Creatures" and "Non-flying Creatures" superclasses.  
Answer: A) In a cooking recipe database where "Desserts" is a shared subclass of both "Baking" and "Non-baking" superclasses.

* Question: Create six multiple choice question and answer of the question with the Superkey concept

Response: Question 1 (Remember):  
Question: Define the term Superkey in the context of databases.  
A) An element which helps to recognize XML tags.  
B) It refers to a specific category of questions in answering systems.  
C) A unique identification code used in web design.  
D) A set of one or multiple attributes (columns), which can uniquely identify a tuple (row) in a relation (table).  
Answer: D) A set of one or multiple attributes (columns), which can uniquely identify a tuple (row) in a relation (table).  
LEVEL: 1  
  
Question 2 (Understand):  
Question: Explain the importance of Superkey in a database.  
A) They have no importance.  
B) They are used to create interface of the database.  
C) They ensure data integrity and serve as a means to establish relationships between tables in a database.  
D) They help in the development of the software.  
Answer: C) They ensure data integrity and serve as a means to establish relationships between tables in a database.  
LEVEL: 2  
  
Question 3 (Apply):  
Question: Apply the Superkey concept in identifying useful information in a database.  
A) No application.  
B) Superkey helps in identifying the unique properties of each season.  
C) Superkey is used to identify the author of novels in a library database.  
D) Superkey is used in database design decisions and can provide significant insights by identifying relationships between tables.  
Answer: D) Superkey is used in database design decisions and can provide significant insights by identifying relationships between tables.  
LEVEL: 3  
  
Question 4 (Analyze):  
Question: Compare the use of Superkey to a primary key in maintaining data integrity in a database system.  
A) Superkey plays no role whereas a primary key plays a significant role.  
B) Superkey and primary key function similarly but Superkey may be composed of multiple attributes while a primary key consists of a single attribute.  
C) A primary key is a kind of Superkey, but Superkey may consist of additional attributes not necessary for unique identification.  
D) There is no difference between Superkey and primary key.  
Answer: C) A primary key is a kind of Superkey, but Superkey may consist of additional attributes not necessary for unique identification.  
LEVEL: 4   
  
Question 5 (Evaluate):  
Question: Justify the need for having Superkeys in a database system.  
A) It is necessary for the utilization of the hardware.  
B) It is required for the interface design.  
C) It ensures the speed of the search engines.  
D) It is necessary to ensure the integrity of the data and to establish relationships among different databases.  
Answer: D) It is necessary to ensure the integrity of the data and to establish relationships among different databases.  
LEVEL: 5  
  
Question 6 (Create):  
Question: Develop a scenario where the Superkey concept can be applied to improve the efficiency of a newly created database system.  
A) In developing a software.  
B) In the design of a university database system, where the student registration number, full name can serve as the Superkey ensuring unique identification of each student record.  
C) In a novel readership survey.  
D) While conducting a treasure hunt.  
Answer: B) In the design of a university database system, where the student registration number, full name can serve as the Superkey ensuring unique identification of each student record.  
LEVEL: 6

* Question: Create six multiple choice question and answer of the question with the The Dirty Read Problem concept

Response: Difficulty Level: Remember  
  
Question: Define the Temporary Update or Dirty Read Problem in database transactions.   
A) A problem where one transaction updates a database item, which is then accessed by another transaction before it is changed back to its original value.  
B) A problem where a database item is deleted unintentionally by a transaction.  
C) A problem where a database item is changed to an incorrect value due to a failed transaction.  
D) A problem where a database item is accessed by a transaction after the transaction has been completed.  
Answer: A) A problem where one transaction updates a database item, which is then accessed by another transaction before it is changed back to its original value.  
  
Difficulty Level: Understand  
  
Question: Explain how the Temporary Update or Dirty Read Problem occurs in database transactions.  
A) It happens when one transaction updates a database item, the item is accessed by another transaction before it can be changed back to its original value.  
B) It happens when a database item is accidentally deleted during a transaction.  
C) It occurs when a database item is incorrectly updated during a transaction.  
D) It happens when a database item is accessed after the completion of a transaction.  
Answer: A) It happens when one transaction updates a database item, the item is accessed by another transaction before it can be changed back to its original value.  
  
Difficulty Level: Apply  
  
Question: Solve a scenario where the Dirty Read Problem may occur in a flight reservation system.  
A) Transaction T1 reserves a seat, followed by transaction T2 trying to reserve the same seat before T1's update has been fully applied.  
B) Transaction T1 reserves a seat, and at the same time transaction T2 cancels a reservation for that seat.  
C) Transaction T1 books a seat while transaction T2 books a different seat.  
D) Transaction T1 tries to reserve a seat which does not exist while transaction T2 tries to book the same non-existing seat.  
Answer: A) Transaction T1 reserves a seat, followed by transaction T2 trying to reserve the same seat before T1's update has been fully applied.  
  
Difficulty Level: Analyze  
  
Question: Compare Dirty Read Problem with other potential transaction problems in databases.  
A) Dirty Read Problem is a kind of problem where database items are prematurely updated by transactions.  
B) Dirty Read Problem is not distinctly different from other transaction problems.  
C) Dirty Read Problem is a kind of problem where transaction fail halfway.  
D) Dirty Read Problem is a kind of problem where transaction conflict with each other.  
Answer: A) Dirty Read Problem is a kind of problem where database items are prematurely updated by transactions.  
  
Difficulty Level: Evaluate  
  
Question: Determine how impactful the Dirty Read Problem could be in a critical database system such as a banking transaction system.  
A) The dirty read problem is generally not a serious issue in banking transaction systems.  
B) This problem can lead to serious inconsistencies in the database, leading to significant issues such as incorrect account balances.  
C) This problem is only valuable when making large transactions.  
D) This problem is contained within individual transactions and does not impact the overall system.  
Answer: B) This problem can lead to serious inconsistencies in the database, leading to significant issues such as incorrect account balances.  
  
Difficulty Level: Create   
  
Question: Develop a mechanism to prevent the Dirty Read problem in a database transaction system.  
A) Implement proper transaction isolation levels and locking mechanisms to ensure a transaction completes fully before another can access the updated data.  
B) Reduce the number of transactions in a system.  
C) Use of redundant database items.  
D) Implement a system that prevents the interaction of multiple transactions at the same time.  
Answer: A) Implement proper transaction isolation levels and locking mechanisms to ensure a transaction completes fully before another can access the updated data.

* Question: Create six multiple choice question and answer of the question with the The Lost Update Problem concept

Response: Difficulty Level: Remember  
  
Question: Define "The Lost Update Problem" in the context of transaction processing.  
A) It refers to the problem where two transactions accessing the same items have their operations alternated in a way that changes the final value of some database items.  
B) It refers to the problem where two transactions cannot access the same database item simultaneously.  
C) It refers to a situation where a transaction loses all of its updates.  
D) It refers to a problem where updates to the database cannot be saved.  
  
Answer: A) It refers to the problem where two transactions accessing the same items have their operations alternated in a way that changes the final value of some database items.  
  
Difficulty Level: Understand  
  
Question: Describe how the Lost Update Problem might occur.  
A) Due to an error in the transaction script.  
B) If a database item's value changes before it is cleared by another transaction.  
C) When two transactions that access the same database items have their operations interleaved in a way that makes the value of some database items incorrect.  
D) When a transaction is unable to access the database items.  
  
Answer: C) When two transactions that access the same database items have their operations interleaved in a way that makes the value of some database items incorrect.  
  
Difficulty Level: Apply  
  
Question: Consider a scenario where two transactions, T1 and T2, operate on a shared data item X. If T1 reads the value of X and before it could write back the new value to X, T2 reads the old value of X. Which of the following will solve the Lost Update Problem in this case?  
A) T1 writes its new value immediately.  
B) T1 and T2 should read the value of X simultaneously.  
C) By implementing a locking mechanism such as an exclusive lock on X when a transaction is reading or writing to it.  
D) T2 should not read the value of X.  
  
Answer: C) By implementing a locking mechanism such as an exclusive lock on X when a transaction is reading or writing to it.  
  
Difficulty Level: Analyze  
  
Question: Compare the Lost Update Problem to other transaction processing problems.  
A) The Lost Update Problem is similar to other problems as it involves the reading and writing to the same data item.  
B) The Lost Update Problem is different from other problems because it specifically arises from operations on the same data item being interleaved incorrectly.  
C) The Lost Update Problem is unique as it doesn't involve any issues with transaction processing.  
D) There is no way to compare the Lost Update Problem with other transaction problems.  
  
Answer: B) The Lost Update Problem is different from other problems because it specifically arises from operations on the same data item being interleaved incorrectly.  
  
Difficulty Level: Evaluate  
  
Question: Justify the use of a locking mechanism in preventing the Lost Update Problem.  
A) A locking mechanism prevents simultaneous operation of two transactions on the same data item, thus preventing the Lost Update Problem.  
B) A locking mechanism improves the overall performance of the database system.  
C) A locking mechanism complicates the transaction processing system.  
D) Not all systems successfully implement a locking mechanism.  
  
Answer: A) A locking mechanism prevents simultaneous operation of two transactions on the same data item, thus preventing the Lost Update Problem.  
  
Difficulty Level: Create  
  
Question: Develop a simple schema to explain how the Lost Update Problem can occur in database transactions.  
A) It involves two or more transactions where one transaction reads a value, the value changes, then the first transaction reads the new value.  
B) It involves one transaction and an update is lost due to an error.  
C) It involves three transactions where all transactions read and write to the same database item.  
D) It involves two transactions where one transaction reads a value, the value changes, then the other transaction reads the original value, both transactions then write to the database, causing an incorrect final value.  
  
Answer: D) It involves two transactions where one transaction reads a value, the value changes, then the other transaction reads the original value, both transactions then write to the database, causing an incorrect final value.

* Question: Create six multiple choice question and answer of the question with the The Unrepeatable Read Problem concept

Response: Question 1: Remember Level  
Question: Define the Unrepeatable Read Problem.  
A) It is a problem where a transaction reads the same item twice and the item is changed by another transaction in between the two reads.  
B) It is a problem where a transaction cannot read the same item twice.  
C) It is a problem where a transaction reads the same item twice and the item is not changed in between the two reads.  
D) It is a problem where a transaction cannot read any items.  
Answer: A) It is a problem where a transaction reads the same item twice and the item is changed by another transaction in between the two reads.  
  
Question 2: Understand Level  
Question: Explain how the Unrepeatable Read Problem can occur in an airline reservation transaction.  
A) It can occur when a customer checks seat availability on different flights at the same time.  
B) It can occur if the reservation system crashes during a transaction.  
C) It can occur if the customer inquires about seat availability, then reads the number of available seats on a chosen flight a second time before completing the reservation, by which time the number of available seats may have altered.  
D) It can occur when a customer cancels a booking.  
Answer: C) It can occur if the customer inquires about seat availability, then reads the number of available seats on a chosen flight a second time before completing the reservation, by which time the number of available seats may have altered.  
  
Question 3: Apply Level  
Question: Solve a scenario where the Unrepeatable Read Problem could seriously affect a transaction.  
A) During a bank transfer, where the same account balance is read twice and a withdrawal happens in between the two reads.  
B) During an online quiz, where the same question is read twice and the answers change in between the two reads.  
C) During an online shopping, where the same product is viewed twice and the price remains the same.  
D) During a car reservation, where the same car model is selected twice and no other reservations happen in between.  
Answer: A) During a bank transfer, where the same account balance is read twice and a withdrawal happens in between the two reads.  
  
Question 4: Analyze Level  
Question: Compare the Unrepeatable Read Problem to other transaction problems in a database system.  
A) All other problems are more severe than the Unrepeatable Read Problem.  
B) The Unrepeatable Read Problem is the most severe problem in a database system.  
C) The Unrepeatable Read Problem is similar to other problems like data corruption.  
D) The Unrepeatable Read Problem is unique as it involves a transaction reading the same item twice and the item changing in between these reads, which is not a factor in most other transaction issues.  
Answer: D) The Unrepeatable Read Problem is unique as it involves a transaction reading the same item twice and the item changing in between these reads, which is not a factor in most other transaction issues.  
  
Question 5: Evaluate Level  
Question: Justify why dealing with the Unrepeatable Read Problem is important in ensuring smooth transaction processing.  
A) Because it can lead to incorrect data being used or incorrect results being produced.  
B) Because it can crash the system.  
C) Because it can slow down the system.  
D) Because it could cause data loss.  
Answer: A) Because it can lead to incorrect data being used or incorrect results being produced.  
  
Question 6: Create Level  
Question: Develop a mechanism to prevent the Unrepeatable Read Problem in an airline reservation system.  
A) Implement a system that doesn't allow seat inquiries.  
B) Implement a system that freezes data once it's read for the first time.  
C) Implement a locking mechanism that locks the specific data item (seat availability on a flight) when it’s read for the first time till the transaction is completed.  
D) Prevent the system from reading the same item twice.  
Answer: C) Implement a locking mechanism that locks the specific data item (seat availability on a flight) when it’s read for the first time till the transaction is completed.

* Question: Create six multiple choice question and answer of the question with the Third normal form (3NF) concept

Response: Question 1: Define the concept of Third Normal Form (3NF) in database systems.  
A) The process of ensuring that all data inputs are unique and non-repetitive.  
B) A relation should not have a non-key attribute functionally determined by another non-key attribute. There should be no transitive dependency of a nonkey attribute on the primary key.  
C) The process of creating new relations for each multivalued attribute or nested relation.  
D) For relations where primary key contains multiple attributes, no nonkey attribute should be functionally dependent on a part of the primary key.  
Answer: B) A relation should not have a non-key attribute functionally determined by another non-key attribute. There should be no transitive dependency of a nonkey attribute on the primary key.  
Level: Remember  
  
Question 2: Explain why the Third Normal Form (3NF) is important in the context of practical database design.  
A) Because it ensures that only relevant data is stored in the database.  
B) Because it ensures that the database only contains data that can be derived from the primary key.  
C) Because it removes the possibility of insertion, update, and deletion anomalies that could lead to loss of data integrity.  
D) Because it ensures that all data is stored in a single table.  
Answer: C) Because it removes the possibility of insertion, update, and deletion anomalies that could lead to loss of data integrity.  
Level: Understand  
  
Question 3: Given the relation Student (Student\_number, Name, Class, Date\_of\_birth, Address), apply the Third Normal Form (3NF) on this relation.  
A) Student (Student\_number, Name, Class), StudentDetail (Student\_number, Date\_of\_birth, Address)  
B) Student (Student\_number, Name), Details (Date\_of\_birth, Address, Class)  
C) Student (Student\_number, Name), Class (Class, Date\_of\_birth), Address (Address, Date\_of\_birth)  
D) Student (Student\_number, Name, Class, Date\_of\_birth, Address)  
Answer: A) Student (Student\_number, Name, Class), StudentDetail (Student\_number, Date\_of\_birth, Address)  
Level: Apply  
  
Question4: Compare the Second Normal Form (2NF) and Third Normal Form (3NF).  
A) 2NF focuses on removing partial dependencies, while 3NF focuses on removing transitive dependencies.  
B) 2NF and 3NF both focus on removing partial dependencies.  
C) 2NF focuses on removing transitive dependencies, while 3NF focuses on removing partial dependencies.  
D) 2NF and 3NF both focus on removing transitive dependencies.  
Answer: A) 2NF focuses on removing partial dependencies, while 3NF focuses on removing transitive dependencies.  
Level: Analyze  
  
Question5: Justify why a database design would aim for normalization up to Third Normal Form (3NF) and not aim for higher normal forms.  
A) Because higher normal forms might lead to data anomalies in the database.  
B) Because 3NF is the most current and widely accepted form of normalization.  
C) Because there is a balance between eliminating data redundancy and maintaining query performance at 3NF.  
D) Because achieving higher normal forms would require complex computations.  
Answer: C) Because there is a balance between eliminating data redundancy and maintaining query performance at 3NF.  
Level: Evaluate  
  
Question6: Develop a scenario requiring database normalization up to the Third Normal Form (3NF).  
A) A university tracking student grades.  
B) A car manufacturer tracking car parts.  
C) A bookstore tracking book sales.  
D) A hospital tracking patient medical records.  
Answer: D) A hospital tracking patient medical records.  
Level: Create

* Question: Create six multiple choice question and answer of the question with the Total concept

Response: Question 1: Define the phrase "question answering" as it is used in the Fundamentals of Database Systems Seventh Edition.   
Level: Remember  
A) A game played on the popular TV quiz show  
B) The act of responding to inquiries in a game show  
C) An engineering discipline that includes techniques like parsing, NER, extraction and algorithms   
D) A structured database that incorporates knowledge from various domains  
Answer: C) An engineering discipline that includes techniques like parsing, NER, extraction and algorithms   
  
Question 2: Understand: Describe the role of question type in question-answering systems.   
Level: Understand  
A) They determine the color scheme of the question-answering system  
B) They have no significant role in question-answering system  
C) They significantly influence the answering strategies  
D) They decide the size of the database  
Answer: C) They significantly influence the answering strategies.  
  
Question 3: Apply: In a question answering system based on the discussed techniques, solve the following type of question: "Where is Hartsfield Jackson International Airport located?"  
Level: Apply  
A) Atlanta, Georgia  
B) Birmingham, Alabama  
C) Chicago, Illinois  
D) Miami, Florida  
Answer: A) Atlanta, Georgia  
  
Question 4: Analyze: Compare and contrast Factoid Questions and List Questions in the context of question-answering systems.  
Level: Analyze  
A) Factoid Questions request a list while List Questions request a specific fact  
B) Factoid Questions seek a specific phrase, List Questions seek a list of responses  
C) Factoid Questions require hybrid answering strategies, List Questions do not  
D) Factoid Questions and List Questions are the same  
Answer: B) Factoid Questions seek a specific phrase, List Questions seek a list of responses  
  
Question 5: Evaluate: Determine the importance of big data tools and technologies in processing large unstructured corpora.  
Level: Evaluate  
A) Not important, traditional database tools are sufficient  
B) Very important, due to the sheer volume and complexity of unstructured data  
C) Only important when dealing with image or video data  
D) Completely irrelevant  
Answer: B) Very important, due to the sheer volume and complexity of unstructured data  
  
Question 6: Create: Generate a new type of question category that could fit into a question answering system, in the context of a digital library.  
Level: Create  
A) "Related-content Questions"  
B) "Quiz Questions"  
C) "Mathematical Questions"  
D) "Multiple Choice Questions"  
Answer: A) "Related-content Questions".

* Question: Create six multiple choice question and answer of the question with the Transactions concept

Response: Question 1: Define what is meant by the concurrent execution of database transactions in a multiuser system?  
LEVEL: Remember  
A) The term "concurrent execution" refers to simultaneous data access by multiple users in a multiuser system  
B) "Concurrent execution" refers to a situation where multiple transactions are waiting to be processed  
C) The term "concurrent execution" refers to the sequential processing of database transactions in a system.  
D) "Concurrent execution" refers to a situation in which a single transaction is processed multiple times simultaneously  
Answer: A) The term "concurrent execution" refers to simultaneous data access by multiple users in a multiuser system  
  
Question 2: Explain why concurrency control is needed in a multiuser database system?  
LEVEL: Understand  
A) To prevent system crashes   
B) To ensure that database transactions are performed in a secure, consistent, and efficient manner  
C) To increase the speed of database transactions  
D) To decrease the load on the database server  
Answer: B) To ensure that database transactions are performed in a secure, consistent, and efficient manner  
  
Question 3: Apply your knowledge of database transactions, what are transaction commit points and why are they important?  
LEVEL: Apply  
A) They are the points at which data is permanently stored in a database and they are important for data consistency.  
B) They are the points at which transactions start in a database and they are important for data order.  
C) They are the points where a database connection is established and they are important for data flow.  
D) They are the points at which transactions are arranged in a queue and they are important for transaction priority.  
Answer: A) They are the points at which data is permanently stored in a database and they are important for data consistency.  
  
Question 4: Compare the concepts of recoverable, cascade-less, and strict schedules in terms of their recoverability?  
LEVEL: Analyze  
A) Recoverable schedules can be easily restored, cascade-less schedules cannot be restored, strict schedules can be partially restored  
B) Recoverable schedules can be easily restored, cascade-less schedules can also be easily restored, strict schedules can be partially restored  
C) Recoverable schedules can be partially restored, cascade-less schedules can be easily restored, strict schedules cannot be restored  
D) None of the options is correct  
Answer: B) Recoverable schedules can be easily restored, cascade-less schedules can also be easily restored, strict schedules can be partially restored.  
  
Question 5: Justify why transaction processing systems have large databases?  
LEVEL: Evaluate  
A) Because they need to store a large volume of transactions  
B) Because they need to store complex types of data  
C) Because they handle high-speed data processing  
D) None of the options is correct  
Answer: A) Because they need to store a large volume of transactions  
  
Question 6: Develop a situation where transaction variability could make sampling difficult?  
LEVEL: Create  
A) A system where transactions originate from various geographical locations   
B) A system that handles a uniform type of transaction  
C) A system that processes transactions intermittently  
D) A system that processes transactions only at peak hours  
Answer: A) A system where transactions originate from various geographical locations.

* Question: Create six multiple choice question and answer of the question with the Trivial concept

Response: Question: Define the concept of a factoid questions in the context of question answering systems.  
A) Questions that seek different views on a subject  
B) Questions that ask about the definition and meaning of the concept  
C) Questions that pinpoint the right phrase in a document or a database that correctly addresses the question  
D) Questions that seek a list of factoid responses that satisfy a given criterion  
Answer: C) Questions that pinpoint the right phrase in a document or a database that correctly addresses the question  
LEVEL: 1  
  
Question: Explain the difference between factoid and list questions.  
A) There is no difference between the two  
B) Factoid questions seek a list of responses while list questions seek a single particular fact  
C) Factoid questions seek a single particular fact while list questions seek a list of responses  
D) Both are the same type of questions but has different names   
Answer: C) Factoid questions seek a single particular fact while list questions seek a list of responses  
LEVEL: 2  
  
Question: Solve the following: If a person wants to know about the different countries where certain fruits are grown, what type of question would this be classified as in a question answering system?  
A) Factoid Question  
B) Opinion Question  
C) Definition Question  
D) List Question  
Answer: D) List Question  
LEVEL: 3  
  
Question: Compare a factoid question to a definition question.  
A) A factoid question seeks a single specific fact, while a definition question requests comprehensive information about a given concept.  
B) Factoid and definition questions both seek a single specific fact.  
C) A factoid question asks for a list of things, while a definition question seeks different views on a subject.  
D) Factoid and definition questions both ask for a definition of a concept.  
Answer: A) A factoid question seeks a single specific fact, while a definition question requests comprehensive information about a given concept.  
LEVEL: 4  
  
Question: Justify why factoid questions are essential within question answering systems.  
A) They are not essential in question answering systems.  
B) Because they can be answered using a single specific fact, making them ideal for database query handling.  
C) Because they allow for multiple viewpoints on a subject.  
D) Because they provide information about a certain concept.  
Answer: B) Because they can be answered using a single specific fact, making them ideal for database query handling.  
LEVEL: 5  
  
Question: Develop a scenario where an opinion question would be necessary within a question answering system.  
A) A scenario where the user wants to know "Who is the current president of the United States?"  
B) A scenario where the user wants to know "In which city was Elvis Presley born?"  
C) A scenario where the user wants to know "What is the sentiment toward climate change?"  
D) A scenario where the user wants to know "Where is the Eiffel Tower located?"  
Answer: C) A scenario where the user wants to know "What is the sentiment toward climate change?"  
LEVEL: 6

* Question: Create six multiple choice question and answer of the question with the Trojan Horse attacks concept

Response: This prompt does not provide information on "Trojan Horse attacks" concept therefore, it is impossible to create questions and answers based on that. However, I can generate questions which could be based on information described in the texts.  
  
Level 1: Remember  
Question: Define Factoid Questions according to the document.  
A) Questions that ask for opinions  
B) Questions that need the definition and meaning of a concept  
C) Questions that call for a single correct answer from a document or database  
D) Questions that require a list of correct responses  
Answer: C) Questions that call for a single correct answer from a document or database  
  
Level 2: Understand  
Question: Explain the purpose of List Questions in the context of the document.  
A) To pinpoint the right phrase in a document  
B) To ask for views on a subject  
C) To gather multiple facts that satisfy a given criterion  
D) To understand the definition of the concept  
Answer: C) To gather multiple facts that satisfy a given criterion  
  
Level 3: Apply  
Question: Apply your understanding of Types of Questions to identify what type the following question is: “What is the sentiment in Saudi Arabia about terrorism in the Middle East?”  
A) Factoid Question  
B) Opinion Question  
C) List Question  
D) Definition Question  
Answer: B) Opinion Question  
  
Level 4: Analyze  
Question: Compare the techniques used in surface pattern matching and structural matching in question answering.  
A) Extract answers from lexical chunks of retrieved passages vs Parsing and aligning together questions and retrieved passages   
B) Parsing and aligning together questions vs Extracting answers from lexical chunks of retrieved passages  
C) Using regular expressions to match data vs Parsing and aligning together questions and retrieved passages  
D) Extracting answers from lexical chunks of retrieved passages vs using regular expressions to match data  
Answer: A) Extract answers from lexical chunks of retrieved passages vs Parsing and aligning together questions and retrieved passages   
  
Level 5: Evaluate  
Question: Determine the significance of understanding the type of question in question answering systems.  
A) It allows to formulate an accurate response  
B) It helps to identify the mood of the questioner  
C) It is used to analyze the age of the questioner  
D) It is crucial to identify the gender of the questioner  
Answer: A) It allows to formulate an accurate response  
  
Level 6: Create  
Question: Generate a Definition Question according to the criteria mentioned in the documents.  
A) What is Database System?  
B) Who won the latest Nobel prize in literature?  
C) List the planets in our solar system.  
D) What is the private opinion in your country about global warming?  
Answer: A) What is Database System?

* Question: Create six multiple choice question and answer of the question with the Tuple concept

Response: Question 1: Define "Tuple" in the context of the database.  
Level: Remember  
A) A function that performs calculations on the database.  
B) The number of entries in a database.  
C) A row in a database that represents a single, implicitly structured data item in a table.  
D) The command used to query a database.  
Answer: C) A row in a database that represents a single, implicitly structured data item in a table.  
  
Question 2: Explain the role of "Tuple relational calculus" in database queries.  
Level: Understand  
A) It's a type of database programming language.  
B) It's a non-procedural query language which specifies what data to retrieve rather than how to retrieve it.  
C) It is used to create and modify databases.  
D) It refers to the physical location of the data in the database.  
Answer: B) It's a non procedural query language which specifies what data to retrieve rather than how to retrieve it.  
  
Question 3: How would you apply tuple relational calculus to optimize queries in a database?  
Level: Apply  
A) By inserting more data into the database.  
B) Through creating new relations for the database.  
C) By choosing a sequence of operations that corresponds to an efficient execution strategy.  
D) By renaming the tuples in the database.  
Answer: C) By choosing a sequence of operations that corresponds to an efficient execution strategy.  
  
Question 4: Compare the usage of a tuple in both domain relational calculus and tuple relational calculus.  
Level: Analyze  
A) In domain relational calculus, tuples are used as data structures, while in tuple relational calculus, they serve as units of storage.  
B) In domain relational calculus, tuples are units of storage, while in tuple relational calculus, tuples represent explicit queries.  
C) Tuples serve the same purpose in both domain relational calculus and tuple relational calculus.  
D) In domain relational calculus, tuples represent explicit queries, while in tuple relational calculus, tuples are regarded as units of storage.  
Answer: D) In domain relational calculus, tuples represent explicit queries, while in tuple relational calculus, tuples are regarded as units of storage.  
  
Question 5: Justify the need for tuple rules in ensuring safety of expression in database queries.  
Level: Evaluate  
A) It provides a structured approach to retrieving data.  
B) It ensures that queries are free from logical errors.  
C) It makes database queries easier to read.  
D) All of the above  
Answer: D) All of the above  
  
Question 6: Generate a sample query utilizing the concept of tuple relational calculus.  
Level: Create  
A) SELECT \* FROM DATABASE  
B) { T | ∃S ∈ Students ( S.StudentID = T.StudentID and S.Marks = 'A' ) }  
C) DELETE FROM DATABASE WHERE ID = 001  
D) UPDATE DATABASE SET ID = '001'  
Answer: B) { T | ∃S ∈ Students ( S.StudentID = T.StudentID and S.Marks = 'A' ) }

* Question: Create six multiple choice question and answer of the question with the Two-Phase Locking (2PL) Protocol concept

Response: Question 1: Define the term "Two-Phase Locking Protocol" within the context of database systems.   
LEVEL: Remember  
A) A technique for handling concurrent data access   
B) An approach to avoid creation of duplicate entries  
C) A process for data encryption and decryption  
D) A method for maintaining database integrity  
Answer: A) A technique for handling concurrent data access   
  
Question 2: Describe the importance of the strict and rigorous variations of the Two-Phase Locking Protocol.  
LEVEL: Understand  
A) They are easier to implement  
B) They are more commonly used due to their certain advantages   
C) They are less complex   
D) They have less impact on system resources  
Answer: B) They are more commonly used due to their certain advantages  
  
Question 3: Solve the issues of deadlock and starvation in a database system using Two-Phase Locking Protocol.   
LEVEL: Apply  
A) By implementing a rigorous two-phase locking protocol  
B) By implementing a basic two-phase locking protocol  
C) By unlocking the affected database items  
D) By implementing a conservative two-phase locking protocol  
Answer: A) By implementing a rigorous two-phase locking protocol  
  
Question 4: Compare the concept of latches and locks within the context of database systems.   
LEVEL: Analyze  
A) Latches are used for file handling while locks are used for memory management  
B) Latches and locks have the same use in database systems  
C) Latches control access to shared resources, differentiating from locks  
D) Locks are a modernized form of latches  
Answer: C) Latches control access to shared resources, differentiating from locks  
  
Question 5: Justify why strict or rigorous two-phase locking is often preferred.  
LEVEL: Evaluate  
A) Because they are cost-effective solutions  
B) Because they offer better performance for concurrent access  
C) Because they simplify the process of handling transactions  
D) Because they ensure data consistency and integrity in concurrent transactions   
Answer: D) Because they ensure data consistency and integrity in concurrent transactions   
  
Question 6: Modify the data structures for multiple-mode locks and the algorithms for the Two-Phase Locking Protocol.   
LEVEL: Create   
A) By allowing the locks to be upgradable and degradable easily  
B) By replacing the Two-Phase Locking protocol with a simpler locking mechanism  
C) By implementing an additional level of authentication before granting locks  
D) By setting a timeout period for each lock  
Answer: A) By allowing the locks to be upgradable and degradable easily

* Question: Create six multiple choice question and answer of the question with the Union concept

Response: LEVEL 1 - Remember  
Question: Define the UNION operation in SQL.  
A) A SQL query operation that combines the results of two or more SELECT statements without returning any duplicate rows.  
B) A SQL query operation that extracts rows from two different tables.  
C) A SQL operation used to update records in a database table.  
D) A SQL command used to delete records from a database table.  
Answer: A) A SQL query operation that combines the results of two or more SELECT statements without returning any duplicate rows.  
  
LEVEL 2 - Understand  
Question: Explain how UNION operation differs from UNION ALL in SQL.  
A) UNION operation retrives duplicate values while UNION ALL does not.  
B) UNION operation performs a unique result while UNION ALL includes duplicates.  
C) UNION operation can't operate on multisets, while UNION operates on multisets.  
D) UNION ALL operation can work on more than two tables while UNION operation can't.  
Answer: B) UNION operation performs a unique result while UNION ALL includes duplicates.  
  
LEVEL 3 - Apply  
Question: Solve the following problem using UNION operation: select all distinct Dnumber from both EMPLOYEE and PROJECT.  
A) SELECT DISTINCT Dnumber FROM EMPLOYEE UNION SELECT DISTINCT Dnumber FROM PROJECT  
B) SELECT DISTINCT Dnumber FROM EMPLOYEE INTERSECT SELECT DISTINCT Dnumber FROM PROJECT  
C) SELECT DISTINCT Dnumber FROM EMPLOYEE MINUS SELECT DISTINCT Dnumber FROM PROJECT  
D) SELECT DISTINCT Dnumber FROM EMPLOYEE JOIN SELECT DISTINCT Dnumber FROM PROJECT  
Answer: A) SELECT DISTINCT Dnumber FROM EMPLOYEE UNION SELECT DISTINCT Dnumber FROM PROJECT  
  
LEVEL 4 - Analyze  
Question: Compare the usage of UNION and JOIN operations in SQL.  
A) UNION is used to combine rows from two tables, while JOIN is used to combine columns.  
B) UNION is used to combine columns from two tables, while JOIN is used to combine rows.  
C) UNION deletes duplicate rows, while JOIN doesn't delete duplicates.  
D) JOIN can combine rows from more than two tables, while UNION can't.  
Answer: A) UNION is used to combine rows from two tables, while JOIN is used to combine columns.  
  
LEVEL 5 - Evaluate  
Question: Justify the use of UNION over JOIN operations in SQL in terms of performance.  
A) UNION is faster than JOIN when dealing with larger datasets.  
B) UNION operation is slower than JOIN, but it provides a cleaner result by eliminating duplicates.  
C) JOIN is always advantageous than UNION as it deals with the relational aspect of the database directly.  
D) UNION operation is performant but doesn't work on multisets.  
Answer: B) UNION operation is slower than JOIN, but it provides a cleaner result by eliminating duplicates.  
  
LEVEL 6 - Create  
Question: Develop an SQL script for extracting all unique department numbers from both Department and Employee tables, considering UNION operation only.  
A) SELECT Distinct Dno from Department UNION SELECT Distinct Dnumber from Employee  
B) SELECT Dno from Department UNION ALL SELECT Dnumber from Employee  
C) SELECT \* from Department UNION SELECT \* from Employee  
D) SELECT Dno, Dnumber from Department UNION SELECT Dno, Dnumber from Employee  
Answer: A) SELECT Distinct Dno from Department UNION SELECT Distinct Dnumber from Employee

* Question: Create six multiple choice question and answer of the question with the Weak entity concept

Response: Question 1:   
Level: Remember  
Question: Define what a weak entity type is.  
A) A entity type with no attributes  
B) A regular entity type with a key attribute  
C) An entity type that does not have a key attribute of its own and is identified by being related to specific entities from another entity type  
D) An entity type who has a total participation constraint with respect to its identifying relationship  
Answer: C) An entity type that does not have a key attribute of its own and is identified by being related to specific entities from another entity type  
  
Question 2:   
Level: Understand  
Question: Explain the purpose of the identifying relationship of a weak entity type.  
A) To clarify the relationship between two strong entities  
B) To differentiate between regular and weak entities  
C) To identify a weak entity since a weak entity cannot be identified without an owner entity.  
D) To establish the whole database schema  
Answer: C) To identify a weak entity since a weak entity cannot be identified without an owner entity.  
  
Question 3:   
Level: Apply  
Question: Determine the weak entity type in this scenario: A STUDENT entity type has attributes Student\_Number and Name. The BOOK entity type has attributes Book\_Id, Title, and is related to the STUDENT entity type.  
A) STUDENT  
B) BOOK  
C) Both  
D) None  
Answer: D) None  
  
Question 4:  
Level: Analyze  
Question: Compare between weak entity types and strong entity types.  
A) They are the same  
B) Weak entities depend on strong entities for their identification while strong entities have their own key attributes  
C) Weak entities have their own key attributes while strong entities rely on weak entities for identification  
D) There is no comparison, they serve different purposes  
Answer: B) Weak entities depend on strong entities for their identification while strong entities have their own key attributes  
  
Question 5:   
Level: Evaluate  
Question: Justify the need for weak entities in a database.  
A) To represent all the entities that have key attributes  
B) To simplify the database schema  
C) To represent entities that are dependent on other entities for their identification  
D) For the practice of database creation only  
Answer: C) To represent entities that are dependent on other entities for their identification  
  
Question 6:   
Level: Create  
Question: Develop a scenario where it would be beneficial to use a weak entity as opposed to a strong entity.  
A) In representing a bank and its clients  
B) In representing the relationship between a car and its insurance  
C) In storaging the information of a contract between two companies  
D) All the above  
Answer: B) In representing the relationship between a car and its insurance