Practice Quiz

Q1: What is Data?

A) Data is a collection of raw, unorganized facts and details like text, observations, figures, symbols, and descriptions of things etc. In other words, data does not carry any specific purpose and has no significance by itself.

B) Data can be recorded and doesn't have any meaning unless processed.

C) Data is a collection of numbers.

D) Data is a type of information.

Answer: A

Explanation: Data is a collection of raw, unorganized facts and details that do not have any specific purpose or significance by themselves.

Q2: What is Information?

A) Info. Is processed, organized, and structured data.

B) It provides context of the data and enables decision making.

C) Processed data that make sense to us.

D) Information is extracted from the data, by analyzing and interpreting pieces of data.

Answer: A

Explanation: Information is processed, organized, and structured data that provides context and enables decision-making based on the data.

Q3: What is a Database?

A) Database is an electronic place/system where data is stored in a way that it can be easily accessed, managed, and updated.

B) Database is a collection of random data.

C) Database is a type of information.

D) Database is a storage unit for software programs.

Answer: A

Explanation: A database is an electronic place/system where data is stored in a way that it can be easily accessed, managed, and updated.

Q4: What is DBMS?

A) A database-management system (DBMS) is a collection of interrelated data and a set of programs to access those data.

B) DBMS is a database itself, along with all the software and functionality.

C) DBMS is a type of information.

D) DBMS is used for creating websites.

Answer: A

Explanation: A DBMS is a collection of interrelated data and a set of programs to access those data, providing a way to store and retrieve database information efficiently.

Q5: What is Specialisation in ER modeling?

A) Specialisation is splitting up the entity set into further sub entity sets on the basis of their functionalities, specialities, and features.

B) Specialisation is combining multiple entity sets into one.

C) Specialisation is used to delete entities from the database.

D) Specialisation is not a part of ER modeling.

Answer: A

Explanation: Specialisation in ER modeling involves splitting up the entity set into further sub entity sets based on their functionalities, specialities, and features.

Q1: What is the relationship between superclass and subclass in Specialisation?

A) "Has-a" relationship

B) "Is-a" relationship

C) "Belongs-to" relationship

D) "Contains" relationship

Answer: B) "Is-a" relationship

Explanation: In Specialisation, there is an "is-a" relationship between superclass and subclass, indicating that the subclass is a specialized version of the superclass.

Q2: How is Generalisation different from Specialisation?

A) Generalisation has a "has-a" relationship while Specialisation has an "is-a" relationship.

B) Generalisation has a reverse relationship compared to Specialisation.

C) Generalisation is a top-down approach while Specialisation is a bottom-up approach.

D) Generalisation does not involve grouping entities while Specialisation does.

Answer: B) Generalisation has a reverse relationship compared to Specialisation.

Explanation: Generalisation is the reverse process of Specialisation, where properties of two entities are overlapping and a new generalised entity set is created as a super class.

Q3: Which constraint ensures that values in a column are unique in a table?

A) Primary Key constraint

B) Foreign Key constraint

C) Unique Key constraint

D) Not Null constraint

Answer: C) Unique Key constraint

Explanation: The Unique Key constraint ensures that all values in a column are different from each other, maintaining uniqueness in the table.

Q4: What type of language is SQL?

A) Data Manipulation Language

B) Programming Language

C) Query Language

D) Markup Language

Answer: C) Query Language

Explanation: SQL (Structured Query Language) is specifically designed for querying and manipulating data in a database system.

Q1: What does the SQL query "SELECT * FROM customer WHERE age > 18;" do?

A) It selects all customers with an age greater than 18

B) It selects all customers with an age less than 18

C) It selects all customers with an age equal to 18

D) It selects all customers regardless of age

Answer: A

Explanation: The query selects all customers from the "customer" table where the age is greater than 18.

Q2: What does the SQL query "SELECT * FROM customer WHERE name LIKE '%p_';" do?

A) It selects all customers whose name ends with 'p'

B) It selects all customers whose name starts with 'p'

C) It selects all customers whose name has 'p' as the second last character

D) It selects all customers whose name has 'p' followed by any character

Answer: D

Explanation: The query selects all customers from the "customer" table whose name has 'p' followed by any character.

Q3: What is the purpose of the GROUP BY clause in SQL?

A) To sort the data retrieved using WHERE clause

B) To group data based on one or more columns

C) To filter rows from the table based on specified condition

D) To perform various actions using aggregation functions

Answer: B

Explanation: The GROUP BY clause is used to collect data from multiple records and group the result by one or more columns.

Q4: What is the main difference between WHERE and HAVING clauses in SQL?

A) WHERE is used before GROUP BY while HAVING is used after GROUP BY

B) WHERE is used for filtering rows while HAVING is used for filtering groups

C) WHERE is used with SELECT, UPDATE & DELETE keywords while HAVING is used with SELECT

D) WHERE clause is used to filter rows based on specified condition while HAVING is used for filtering rows from groups

Answer: B

Explanation: WHERE clause is used to filter the rows from the table based on specified condition, while HAVING clause is used to filter the rows from the groups based on the specified condition.

Q1: What is the main purpose of normalisation in a database?

A) To maximise data redundancy

B) To minimise data redundancy

C) To complicate data organisation

D) To slow down database operations

Answer: B

Explanation: Normalisation helps to minimise data redundancy and improve overall database organisation.

Q2: Which normal form states that every relation cell must have atomic value?

A) 1NF

B) 2NF

C) 3NF

D) BCNF

Answer: A

Explanation: 1NF requires that every relation cell must have atomic value.

Q3: What is the key property of 2NF?

A) Relation must be in 1NF

B) No transitivity dependency exists

C) Non-prime attribute should not find a non-prime attribute

D) FD: A -> B, A must be a super key

Answer: B

Explanation: 2NF states that there should not be any partial dependency and no transitivity dependency should exist.

Q4: What does the ACID property "Atomicity" ensure in a transaction?

A) All operations of the transaction are reflected properly in the DB

B) Integrity constraints must be maintained before and after the transaction

C) Each transaction is unaware of other transactions executing concurrently

D) Either all operations of the transaction are completed or none are

Answer: D

Explanation: Atomicity ensures that either all operations of the transaction are completed successfully and reflected in the database, or none are.

Q5: What is the main advantage of using indexing in a database?

A) Faster access and retrieval of data

B) Increased data redundancy

C) Slower query processing

D) Greater data inconsistency

Answer: A

Explanation: Indexing helps to optimise the performance of a database by minimising the number of disk accesses required, resulting in faster access and retrieval of data.

Q1: What is a common misconception about NoSQL databases?

A) NoSQL databases do not support ACID transactions

B) NoSQL databases cannot store relationship data well

C) NoSQL databases cannot handle huge amounts of data

D) NoSQL databases do not provide flexible schemas

Answer: B) NoSQL databases cannot store relationship data well

Explanation: NoSQL databases can actually store relationship data, but in a different way than relational databases do, making it easier to model related data.

Q2: Which type of NoSQL database is optimised for capturing and searching the connections between data elements?

A) Key-Value Stores

B) Column-Oriented Stores

C) Document Based Stores

D) Graph Based Stores

Answer: D) Graph Based Stores

Explanation: Graph databases focus on the relationship between data elements, storing them as nodes and relationships, making it easier to search and analyse connections.

Q3: What is the primary purpose of Document-based NoSQL databases?

A) General Purpose

B) Large amounts of data with simple lookup queries

C) Storing data in a tabular format

D) Analyzing and traversing relationships between connected data

Answer: A) General Purpose

Explanation: Document-based NoSQL databases are designed for general purpose use, storing data in documents similar to JSON objects.

Q4: Which type of database model uses a tree-like hierarchy for organising data?

A) Object Oriented Databases

B) NoSQL Databases

C) Hierarchical Databases

D) Network Databases

Answer: C) Hierarchical Databases

Explanation: Hierarchical databases use a tree-like structure to organise data, making it easy to traverse but less flexible for complex relationships.

Q5: What is the primary advantage of clustering in databases?

A) Data Redundancy

B) Load Balancing

C) Schema Flexibility

D) Vertical Scaling

Answer: B) Load Balancing

Explanation: Clustering in databases helps with load balancing, allocating workload among different servers to support more users and handle spikes in traffic.

Q1: What is the purpose of load balancing in a database system?

A) To slow down traffic

B) To overload a particular machine

C) To distribute traffic evenly among multiple machines

D) To decrease availability of the database

Answer: C

Explanation: Load balancing is used to distribute traffic evenly among multiple machines to prevent overloading of a particular machine and ensure high availability of the database.

Q2: What is high availability in the context of a database system?

A) The amount of time a database is considered unavailable

B) The number of transactions running on a database

C) The ability to access a database

D) The availability of analytics tools for data analysis

Answer: C

Explanation: High availability refers to the ability to access a database, meaning that the database is available for use.

Q3: How does clustering work in a database system?

A) By vertically slicing data

B) By horizontally partitioning data

C) By distributing requests among multiple computers

D) By increasing system failures

Answer: C

Explanation: Clustering works by distributing requests among multiple computers to ensure load balancing and high availability in a database system.

Q4: When is partitioning applied in a database system?

A) When managing small datasets

B) When handling data efficiently becomes difficult

C) When system response time is low

D) When the number of requests is small

Answer: B

Explanation: Partitioning is applied when handling data efficiently becomes difficult due to the size of the dataset, leading to challenges in managing large database tables.

Q1: What is the CAP theorem?

A) Consistency, Availability, Partition Tolerance

B) Consistency, Partition Tolerance, Scalability

C) Availability, Partition Tolerance, Scalability

D) Consistency, Availability, Scalability

Answer: A

Explanation: The CAP theorem states that a distributed system can only provide two of three properties simultaneously: consistency, availability, and partition tolerance.

Q2: Which database type enables consistency and partition tolerance, but not availability?

A) CA Databases

B) CP Databases

C) AP Databases

D) NoSQL Databases

Answer: B

Explanation: CP databases enable consistency and partition tolerance, but not availability. When a partition occurs, the system has to turn off inconsistent nodes until the partition can be fixed.

Q3: What is the purpose of Command Query Responsibility Segregation (CQRS)?

A) To separate read/write operations physically

B) To distribute write requests to replicas

C) To separate data by functionality

D) To scale business across continents

Answer: A

Explanation: CQRS separates read/write operations physically, with read queries going to replicas and write queries going to the primary machine.

Q4: Which database scaling pattern involves allocating 50 machines, each holding a part of the data?

A) Vertical Scaling

B) Horizontal Scaling

C) Data Centre Wise Partition

D) Partitioning of Data by Functionality

Answer: B

Explanation: Horizontal Scaling (Scale-out) involves sharding the data across multiple machines, with each machine holding a part of the data.