RDBMS and SQL Server – FAQs

Q1	**What is data?**
Ans	Data (plural of the word datum) is a factual information used as a basis for reasoning, discussion, or calculation • Data may be numerical data which may be integers or floating point numbers, and non-numerical data such as characters, date etc. • Data by itself normally doesn't have a meaning associated with it. • e.g.:- Krishnan ,01-jan-71,15-jun-05,50000
Q2	**What is information?**
Ans	Related data is called as information. • Information will always have a meaning and context attached to the data element. • When we add meaning and context to the data it becomes information. • Employee name: Krishnan • Date of birth: 01-jan-71 • Data of joining: 15-jun-05 • Salary: 50000 • Department number: 10
Q3	**What is database?**
Ans	A set of inter-related data is known as *database*
Q4	**What is Database Management System (DBMS)?**
Ans	DBMS can be described as "a computer-based record keeping system which consists of software for processing a collection of interrelated data".
Q5	**What is schema?**
Ans	A set of structures and relationships that meet a specific need is called as a *schema*.
Q6	**What are the characteristics of DBMS?**
Ans	• Control of Data Redundancy • Sharing of Data • Maintenance of Integrity • Support for Transaction Control and Recovery • Data Independence • Availability of Productivity Tools • Security • Hardware Independence • Centralized Business Logic Implementation
Q7	**what is a data model?**
Ans	A data model is an instrument that is useful in the following ways: 1) A model helps the users or stakeholders clearly understand the database system that is being implemented. It helps them understand the system with reference to the information requirements of an organization. 2) It enables the database practitioners to implement the database system exactly conforming to the information requirements.
Q8	**What is data modelling?**
Ans	• Data modelling is a technique for exploring the data structures needed to support an organization's information need.

	• It would be a conceptual representation or a replica of the data structure required in the database system. • A data model focuses on which data is required and how the data should be organized. • At the conceptual level, the data model is independent of any hardware or software constraints.
Q9	**Name the different data models?**
Ans	• Flat Model • Hierarchical • Network • Relational
Q10	**What is Flat model?**
Ans	Data is stored in an array of two dimensions
Q11	**What is Hierarchical model?**
Ans	Data and the relationships among them are represented in the form of a tree structure.
Q12	**What is Network model?**
Ans	Data and the relationships among them are represented in the form of records and links.
Q13	**What is Relational model?**
Ans	Data is stored in tables and the relationship among them is represented in common column called foreign key. Relational Model – developed by Dr. E. F. Codd at IBM in the late 1960s • He was looking for ways to solve the problems with the existing models • Relational Model - core concept is of a table (also called a relation) in which all data is stored • Each table is made up of • records (horizontal rows also known as tuples) and fields (vertical columns also known as attributes)
Q14	**What are the properties to be considered to call a table as a relational table?**
Ans	• Entries of attributes are single valued • Entries of attribute are of the same kind. • No two rows are identical • The order of attributes is unimportant • The order of rows is unimportant • Every column can be uniquely identified.
Q15	**What is data integrity?**
Ans	Data integrity is the assurance that data is consistent, correct, and accessible • Two important steps in planning tables are to identify valid values for a column and to decide how to enforce the integrity of the data in the column

	• Data integrity falls into these categories
	  ◦ Entity Integrity
	  ◦ Domain Integrity
	  ◦ Referential Integrity
	  ◦ User Defined Integrity

Q16	**What is SQL?**
Ans	• SQL is a special-purpose language used to define, access, and • manipulate data • SQL is nonprocedural language, it only describes the necessary components like tables and desired results without specifying • exactly how those results should be computed
Q18	**What is T-SQL?**
ANS	It is a flavour of SQL used by Microsoft SQL Server.
Q20	Which are the sub languages of T-SQL?
Ans	• The Data Definition Language (DDL) • Data Manipulation Language (DML) • Data Control Language (DCL) • Transactional Control Language (TCL)
Q21	**Give brief introduction to SQL Server 2012.**
Ans	SQL Server 2012 is a Relational Database Management System (RDBMS) that follows the relational model of data management system that provides: • Maintaining Relationship among Data stored in the Database • Ensuring Data is stored correctly and rules defining relationship are not violated. • Recovering all data to a point of consistency, in the event of failure.
Q22	**List the system databases of SQL Server 2012.**
Ans	• Master database • Model database • Msdb database • Tempdb database
Q23	**What are system tables? List system tables available in SQL server 2012.**

Ans	System Tables Store Information (Metadata) about the System and Database Objects
	• Database Catalog Stores Metadata about a specific database
	• System Catalog Stores Metadata about the entire system and all other databases
	  ◦ SYS.DATABASES
	  ◦ SYS.OBJECTS
	  ◦ SYS.TABLES
	  ◦ SYS.PROCEDURES
	  ◦ SYS.INDEXES

Q24	**List the System-Supplied Data Types available in SQL server 2012?**
Ans	• Integers (whole number) • numeric (Fixed precision) • Approximate numeric Monetary (with accuracy to a ten-thousandth of a monetary

	• unit) • Date and Time • Character (s) • Binary • Large Objects • Unicode Data type storage is two times the byte size • Large value data types • XML
Q25	**What are alias types? Write a syntax of creating alias type.**
Ans	An alias data type is a user defined custom data type based on system-supplied data type. Syntax: CREATE TYPE EmailAddress FROM varchar(30) NOT NULL;
Q26	**What is a Database Schema?**
Ans	• A Database Schema is a way to logically group SQL Server objects such as tables, views, stored procedures etc • A schema is a distinct namespace, a container of SQL Server objects, distinct from users those who have created those objects
Q28	**How to create and use database schema in SQL server 2012?**
Ans	Creating Schema: Use AdventureWorks GO CREATE SCHEMA Sales GO Use Schema: ALTER USER Anders WITH DEFAULT_SCHEMA = Sales
Q29	**What is sequence?**
Ans	• Sequence is an object in each database and is similar to IDENTITY in its functionality. • It can have start value, incrementing value and an end value defined in it. • It can be added to a column whenever required rather than defining an identity column individually for tables.
Q30	**What is data integrity?**
Ans	• The term Data Integrity refers to correctness and completeness of the data in a database • To preserve the consistency and accuracy of data, every RDBMS imposes one or more data integrity constraints in a database • These constraints restricts the wrong or invalid data values that can be inserted or updated in a database
Q31	**List out the different types of constraints.**
Ans	• DEFAULT Constraints • CHECK Constraints • PRIMARY KEY Constraints • UNIQUE Constraints • FOREIGN KEY Constraints • Cascading Referential Integrity

Q32	**What is truncate?**
Ans	Removes all rows from a table • TRUNCATE TABLE is similar to the DELETE statement with no WHERE clause TRUNCATE TABLE Employees
Q33	**What is the use of drop table command?**
Ans	At times you need to delete a table, for example when you want to implement a new design or free up space in the database • You can use DROP TABLE Transact-SQL statement to drop the table from Database Syntax: DROP TABLE Employee
Q34	**What is the advantage of Merge statement?**
Ans	➢ In a typical database application, quite often you need to perform INSERT, UPDATE and DELETE operations on a TARGET table by matching the records from the SOURCE table ➢ To accomplish this, In previous versions of SQL Server, we had to write separate statements to INSERT, UPDATE, or DELETE data based on certain conditions ➢ Though it seems to be straight forward at first glance, but it becomes cumbersome when you have do it very often or on multiple tables ➢ Even the performance degrades significantly with this approach ➢ Now you can use MERGE SQL command to perform these operations in a single statement ➢ Using MERGE statement we can include the logic of such data modifications in one statement that even checks when the data is matched then just update it and when unmatched then insert it
Q35	**Write the syntax of querying the data using select statement.**
Ans	SELECT [DISTINCT][TOP n] <columns > [FROM] <table names> [WHERE] <criteria that must be true for a row to be chosen> [GROUP BY] <columns for grouping aggregate functions> [HAVING] <criteria that must be met for aggregate functions> [ORDER BY] <optional specification of how the results should be sorted>
Q35	**What is the use of distinct keyword?**
Ans	➢ DISTINCT is used to eliminate duplicate rows ➢ Precedes the list of columns to be selected from the table(s) ➢ The DISTINCT considers the values of all the columns as a single unit and evaluates on a row-by-row basis to eliminate any redundant rows ➢ Example SELECT DISTINCT Region FROM Northwind.dbo.Employees
Q36	**Write the T-SQL select query to fetch title and price from titles where the title starts with 'The'.**
Ans	SELECT title, price FROM pubs.dbo.titles WHERE title LIKE 'The%'

Q37	What are joins? Explain
Ans	By using joins, you can retrieve data from two or more tables based on logical relationships between the tables. Joins indicate how SQL Server should use data from one table to select the rows in another table. • A join condition defines the way two tables are related in a query by: • A join operation compares two or more tables (or views) by specifying a column from each, comparing the values in those columns row by row, and linking the rows that have matching values. It then displays the results in a new table. The tables specified in the join can be in the same database or in different databases.
Q38	**List the types of joins.**
Ans	➢ INNER join • Equijoin • Nonequijoin ➢ Outer join • LEFT outer • RIGHT outer • FULL outer ➢ Self join ➢ Cross join
Q39	**Explain sub query with an example.**
Ans	➢ A sub query is an SQL statement that is used within another SQL statement ➢ Subqueries are used to handle query requests that are expressed as the results of other queries ➢ Subquery can be embedded in WHERE /HAVING statement USE Northwind; GO SELECT EmployeeID,EmployeeName FROM Employees WHERE Region= (SELECT Region from Employees WHERE EmployeeID=12345)
Q40	**How exists keyword is used?**
Ans	➢ EXISTS checks for a existence of a condition ➢ The EXISTS condition is considered "to be met" if the subquery returns at least one row. SELECT SupplierID FROM suppliers WHERE EXISTS (select 'A' from orders where suppliers.supplier_id = orders.supplier_id);

Q41	**What is index?**
Ans	• An index is a separate physical data structure that enables queries to access one or more data rows fast. • Database Engine uses index to find the data just like one uses index in a book
Q42	**What is a view?**
Ans	➢ Views are Virtual tables, which provides access to a subset of columns from one or more tables ➢ Created from one or more base tables or other views ➢ Internally Views are stored queries ➢ Views are created when • To hide the complexity of the underlying database schema, or customize the data and schema for a set of users. • To control access to rows and columns of data.
Q43	**What are stored procedures?**
Ans	➢ Named Collections of pre compiled Transact-SQL Statements ➢ Stored procedures can be used by multiple users and client programs leading to reuse of code ➢ Abstraction of code and better security control ➢ Reduces network work and better performance ➢ Can accept parameters and return value or result set
Q44	**Create a stored procedure which returns list of employees from a given city from employee table.**
Ans	CREATE PROC dbo.usp_GetCitiwiseEmployee @city VARCHAR(20) AS BEGIN SELECT Employee_Name FROM Employee WHERE City = @city END
Q45	**What is the use of IN and OUT parameters in stored procedure?**
Ans	➢ INPUT • Default Type • IN or INPUT keyword is used to define variables of IN type • Used to pass a data value to the stored procedure ➢ OUTPUT • Allow the stored procedure to pass a data value or a back to the caller. • OUT keyword is used to identify output parameter
Q46	**Expalin Error Handling using RAISEERROR**
Ans	➢ RAISERROR can be used to • Return user defined or system messages back to the application • Assign a specific error number , severity and state to a message ➢ Can be associated to a Query or a Procedure ➢ Has the following syntax RAISERROR (message ID | message string ,severity, state) ➢ Message ID has to be a number greater than 50,000

	➢ Can be used along with TRY ..CATCH /other error handling Mechanisms
Q47	**What is trigger?**
Ans	A trigger is a special type of stored procedure that is fired on an eventdriven basis rather than by a direct call. You can set up a trigger to fire when a data modification statement is issued—that is, an INSERT, UPDATE, or DELETE statement. **What is trigger?** A trigger is a special type of stored procedure that is fired on an eventdriven basis rather than by a direct call. You can set up a trigger to fire when a data modification statement is issued—that is, an INSERT, UPDATE, or DELETE statement.
Q48	**What is transaction?**
Ans	A sequence of operations performed as a single logical unit of work ➢ It can be a set of DDL/DML statements ➢ Transactions are ATOMIC -either all operations are performed or none of it is performed . ➢ Data in the database is in consistent stage before and after the transaction ➢ A transaction can be implicit or explicit
Q49	**What is the outcome of a transaction?**
Ans	A transaction can have the following outcome • COMMIT : Changes made on the data are made permananent • ROLLBACK : Undo the transaction , data goes back to the original state
Q50	**Explain SQL Server profiler.**
Ans	➢ Every DBA require tools to analyze the activity in the SQL Server database. Whether it's to troubleshoot a possible application or database issue or simply to monitor the overall health of their system. ➢ SQL Server Profiler is a tool that provides an user interface to create and manage traces and analyze and replay trace results. ➢ Events are saved in a trace file that can later be analyzed or used to replay a specific series of steps when trying to diagnose a problem. ➢ It gives you the ability to monitor everything that is going on inside your SQL Server instance.