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What is an allocation unit?

An allocation unit is a collection of pages within a heap or B-tree. It is based on the page type (LOB data in row, LOB data out of row, overflow data). It can be of any size and crosses extents.

What are various SQL Server 2019 editions?

SQL Server 2019 is available in four primary editions: Express, Standard, Enterprise, and Developer.

- **The Express edition:** is free to use and provides an entry-level database for basic Web and mobile apps.
- **The Standard edition:** Provides full featured database for medium tier applications.
- **The Enterprise edition:** provides full featured database for top tier applications.
- **The Developer edition:** is free to use and includes all features of Enterprise edition, licensed for use as a development and test database in a non-production environment.

What is SQL Server Management Studio (SSMS)

SQL Server Management Studio, also known as SSMS, is an intuitive and multi-purpose database development and administration tool primarily used by SQL Professionals including SQL database developers, database administrators, and infrastructure teams to manage SQL Server environments.

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	**What are different types of SQL Server functions?** Four types of functions in SQL Server 2019 are as follows: • Rowset functions • Aggregate functions • Ranking functions • Scalar function
	**When is it useful to use multiple columns in an index?** Multiple columns on a single index are important if the columns in the index match the column order used in many queries.
	**What is the difference between a primary key and a unique key?** The primary key as well as the unique key enforces uniqueness of data in the column on which they are defined. However, the primary key does not allow NULL values in the column whereas the unique key allows one NULL value in the column. Also, by default, the primary key creates a clustered index based on the column whereas the unique key creates a nonclustered index based on the column.
	**What is lock escalation?** Lock escalation is the process of converting a lot of low level locks (such as row locks and page locks) into higher level locks (such as table locks). More the number of locks, the greater the resources required in tracking the locks. To reduce strain on resources, SQL Server escalates many fine-grain locks to fewer coarse-grain locks.

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What is the basic difference between a clustered and a nonclustered index?

A clustered index physically sorts data rows based on the column on which the index is created. A nonclustered index creates a sorted list of the nonclustered key column and associates each value in the list with a pointer that points to the actual physical location of the data row corresponding to that key value. The nonclustered index does not change the physical order of the data rows.

As the clustered index physically rearranges the data rows, there can be only one clustered index on a table. However, there can be multiple nonclustered indexes on a table as the nonclustered indexes do not change the physical order of the data.

When should we use FOREIGN keys in a table?

You should use a FOREIGN key in a table if the valid data values in the column are a sub-set of the data values in the PRIMARY KEY column or a UNIQUE column in another table. The FOREIGN KEY constraint creates logical relationships between multiple tables of the database. When inserting a record, the value supplied for the FOREIGN KEY column is compared to the values in the referenced PRIMARY KEY or UNIQUE column. If a match is found, this value is accepted and the record is inserted. If no match is found, the record will be discarded.

Can you have multiple PRIMARY KEYS on a table?

No, you cannot have multiple primary keys on a table, but you can have one PRIMARY KEY along with multiple columns with the UNIQUE and NOT NULL constraints. The combination of the UNIQUE and NOT NULL constraints will more or less function as a PRIMARY KEY; however, the clustered index on the table, by default, will be based on the designated PRIMARY KEY.

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	**What are DDL and DML events?** The CREATE, ALTER, and DROP statements constitute the Data Definition Language (DDL) events whereas INSERT, UPDATE, and DELETE statements constitute the Data Manipulation Language (DML) events.
	**What are triggers?** Triggers are stored procedures that are executed when an attempt is made to modify data in a table that is protected by the trigger.
	**What are stored procedures?** A stored procedure is a group of Transact-SQL statements that act as a single block of code that performs a specific task. This block of code is identified by an assigned name and is stored in the database in a compiled form.
	**What is SCHEMABINDING?** SCHEMABINDING is an option by which a view can be bound to the schema of the base table. This option can be used with CREATE VIEW or ALTER VIEW statements. When SCHEMABINDING option is specified, the base table or tables cannot be modified in a way that would affect the view definition. While using the SCHEMABINDING option in a view, you must specify the schema name along with the object name in the SELECT statement.
	**What are online index operations?** Index operations include creating, rebuilding, and dropping indexes. When an index operation is being carried out, other users are restricted from accessing data in the table until the operation is complete. Thus, no query execution and modification operations can be performed on tables during index operations. To overcome this, SQL Server 2019 provides an ONLINE option that allows multiple users to access the data in a table simultaneously during an index operation.

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On which columns should one create a clustered index?

In a table without a primary key column, a clustered index should ideally be defined on:

- Key columns that are searched on extensively.
- Columns used in queries that return large result sets.
- Columns having unique data.
- Columns used in table joins.

What is SQL Server AlwaysOn?

SQL server AlwaysOn provides a high-availability and disaster-recovery solution. It is generally used for applications that require high uptime and failure protection.

DDL triggers different from normal (DML) triggers?

There are a few important distinctions that must be drawn between DDL triggers and DML triggers. First of all, DML triggers are created on tables, at the database level. DDL triggers, on the other hand, can be created at either the database or the server level.

The second major distinction is that only AFTER DDL triggers are supported. SQL Server 2000 and later versions supports INSTEAD OF DML triggers that fire instead of the data modification statements. The final difference is that DDL triggers, unlike DML triggers, do not make use of the inserted and deleted virtual tables. Instead, you use the EVENTDATA function to get information about what event caused the trigger to fire.

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	**What is new with SQL Server Big Data Clusters?** SQL Server Big Data Clusters (BDC) are a highly anticipated feature of SQL Server 2019. It allows to deploy scalable clusters of SQL Server, Spark, and Hadoop Distributed File System (HDFS) containers running on Kubernetes. These components are running side by side and enable read, write, and process big data from Transact-SQL or Spark, allowing you to easily combine and analyze your high-value relational data with high-volume big data.
	**You have created a view and are concerned that your programmers might change the underlying tables' structure and cause problems in the view. How can you ensure they do not change the underlying tables without changing the view and not disrupt their workflow?** The best way to ensure this is to use the SCHEMABINDING option when creating the view. This ensures that the underlying tables' schema cannot be changed. The view must be dropped or altered to allow the changes.
	**You have a large table that you wish to partition to improve performance. The table contains many columns of data about students and you decide that basic information about each student will remain in the current table. Extended information, such as student remarks, student hobbies and so on will be moved to a new table along with the Primary Key. What type of partitioning is this?** If you are moving some columns from one table to a new table, this is vertical partitioning.
	**What does the ERROR_PROCEDURE() function return?** The ERROR_PROCEDURE() function returns the name of the trigger or stored procedure where the error occurred.

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Is Database mirroring still supported?

Avoid using Database mirroring in the development work, as this feature is deprecated from Microsoft SQL Server 2016 onwards. It is also recommended to modify existing applications that used Database mirroring feature. Microsoft advices to use AlwaysOn Availability Groups as a substitute to Database mirroring.

What are limitations of Stretch Database?

Following are some of the limitations:

- The Primary Key and Unique constraints are not enforced by default in the Azure table containing migrated data from SQL Server.
- The UPDATE and DELETE operations cannot be performed on rows that are marked for migration, in a Stretch-enabled table or in a view that contains Stretch-enabled tables.
- Index cannot be created for a view that contains Stretch-enabled tables.

How do I find out more details about SQL Server High Availability?

There are several options provided by SQL Server for High Availability. They are:

- AlwaysOn Failover Cluster Instances
- AlwaysOn Availability Groups
- Log shipping

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	**Whether to use FOR JSON PATH or FOR JSON AUTO for creating JSON text result from SQL query on a single table?** Use FOR JSON PATH clause, though there is no difference in the JSON output. AUTO mode has some additional logic that checks whether columns should be nested. PATH clause can be considered the default option.
	**What are the limitations when working with SQL Server views?** • View names must be unique and cannot be the same as the table names in the schema. • A view cannot be created on temporary tables. • A view cannot have a full-text index. • A view cannot contain the DEFAULT definition. • Views cannot reference more than 1,024 columns. • The CREATE VIEW statement cannot include the INTO keyword.
	**How does Transparent Database Encryption protect backups?** Databases on backup media are equally at risk as the databases residing on the server. Even though the backups are password protected, the person performing backup or restore operation should know the password. Often one can expect the password to be taped to the backup console. Encryptionizer can automatically encrypt a backup, as it is being created allowing an additional layer of encryption. In that case, the backup operator does not have to know the key. Additionally, if someone takes the backup media and trying to restore it on a different machine or even another instance on the same machine, it will be an unreadable backup.

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What Hadoop data sources are supported by Polybase?

Following Hadoop data sources are supported:

- Hortonworks HDP 1.3 on Windows Server
- Azure blob storage (WASB[S])
- Hortonworks HDP 1.3 on Linux
- Cloudera CDH 4.3 on Linux
- Hortonworks HDP 2.0 on Windows Server
- Azure blob storage (WASB[S])
- Hortonworks HDP 2.0 on Linux
- Cloudera 5.1, 5.2, 5.3, 5.4, and 5.5 on Linux
- Hortonworks 2.1, 2.2, and 2.3 on Linux
- Hortonworks 2.1, 2.2, and 2.3 on Windows Server

Can data migrated using Stretch Database feature be moved back to the local table?

Yes. In SSMS, for a table, select Stretch and then select Disable | Bring Data back from Azure or Disable | Leave Data in Azure. Disabling Stretch Database for a table, stops data migration and query results no longer include results from the remote table.

What is memory-optimized `tempdb` metadata?

One of the new features in SQL Server 2019 is memory-optimized `tempdb` metadata. It greatly simplifies and effectively manages the resource contention and unlocks greater flexibility to handle and scale heavy `tempdb` workloads.

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What is the important feature of Verbose Truncation Warnings?

'Verbose Truncation Warnings' is one of the greatest features launched in SQL Server 2019. This feature gives us all the details of the data truncation issue so that we can quickly solve it without going through a painful and lengthy debugging process.

List few advantages of storing XML data within SQL Server.

Native XML databases in SQL Server have a number of advantages. Some of them are listed as follows:

- **Easy Data Search and Management:** All the XML data is stored locally in one place, thus making it easier to search and manage.
- **Better Performance:** Queries from a well-implemented XML database are faster than queries over documents stored in a file system. Also, the database essentially parses each document when storing it.
- **Easy data processing:** Large documents can be processed easily.

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---End of FAQ---