* Difference between basic and custom SQL server installation.

Basic installation type installs the SQL Server database engine feature with default configurations whereas custom installation installs SQL Server installation wizard and gives the options to choose the features, configurations while doing the installation.

* What is “zeroing out a new space” mean? What does Instant File Initialization (or INI) mean?

When a transaction log is first created or file growth occurs, the portion of the drive must be stamped with a known starting value (the file system literally writes the binary value 0xC0 in every byte in that file segment). This is commonly called zeroing out because the binary value was 0x00 prior to SQL server 2016.

Instant File Initialization or INI is a SQL Server setup option that keeps SQL server from writing Binary zeros to data files when a database is created, expanded or restored. By avoiding the writing of Binary zeros, there is lower performance impact when disk space is allocated for several databases operations.

* Windows Authentication vs Mixed Mode Authentication.

Windows Authentication mode disables the SQL authentication mode and permits windows authentication mode. On the other hand, Mixed Mode authentication allows both windows and SQL server authentication mode. This is because there is no way to disable the windows authentication mode.

* What is “trusted connection = True” in connection string?

Trusted connection = True means integrated security = SSPI. If this is not present in connection string then you need to specify userid and password in connection string as server = yourservername, database = userid = youruserid, password = password.

* What are NT accounts for SQl server and SQL server agents? What are minimum permissions for those two accounts?

They are built in service accounts for sql server services. They are SQL Server main engine service and sql server agent service.

* Database engine (what is it and what is it’s role?)

A database engine or storage engine is underlying software component that a database management system uses to create, read, update and delete data from databases.

* Buffer manager (what is it and what is its role?)

The subsystem responsible for allocation of buffer space is called buffer manager. If. User request particular block and the block is available in the buffer, the buffer manager provides the block address in the main memory, If the block is not available in the buffer, the buffer manager allocates the block in the buffer.

* Query Optimizer (what is it and what is its role?)

The SQL Server query optimizer is a cost-based optimizer. It analyzes a number of candidate execution plans for given query, estimates the cost of each of these plans and select the plans with the lower cost of the choices considered.

* Query plan (what is it and what is its role?)

A query plan is a set of steps that the database management system executes in order to execute the query. The reason we have query plan is that the sql you write may declare your intentions, but it doesn’t tell sql the exact logic flow to use. The query optimizer determines that and the result of that is the query plan.