**4. Study and write the details about the following questions:**

**a. What is the difference between varchar and text data type?**

**Varchar: -**

* variable max size of M characters
* M needs to be between 1 and 65535
* takes 1 + c bytes (for M ≤ 255) or 2 + c (for 256 ≤ M ≤ 65535) bytes of disk space where c is the length of the stored string
* can be part of an index

**Text: -**

* fixed max size of 65535 characters (you cannot limit the max size)
* takes 2 + c bytes of disk space, where c is the length of the stored string.
* cannot be (fully) part of an index. One would need to specify a prefix length.

**b. What are SSIS, SSRS, SSAS tools in SQL Server?**

**SSAS: -**

* Creation of cubes with data marts/data warehouses for insightful and quicker data analysis
* Two different modes – Native mode and Share Point mode
* Two major alternatives – Multidimensional and Tabular
* SSAS Multidimensional is Corporate BI
* A blend of server and client technologies, value-added with a specialized environment for developing and managing it
* It is installed as a VM server instance or as an on-premises model
* Endorses tabular models at all compatibility levels
* Enables slicing and dicing of the huge bulk of data

**SSIS: -**

* SSIS stands for SQL Server Integration Services.
* It is a component available in the Microsoft SQL Server database software used to perform a wide range of integration tasks.
* It is a data warehousing tool used for data extraction, loading the data into another database, transformations such as cleaning, aggregating, merging data, etc.
* SSIS tool also contains the graphical tools and window wizards workflow functions such as sending email messages, ftp operations, data sources.

**SSRS: -**

SSRS stands for SQL Server Reporting Services. It is a reporting tool developed by Microsoft that comes free with the SQL Server. It produces formatted reports with tables of data, graphs, and reports. Reports are hosted on a server and can be configured to run using parameters supplied by users. When we run the reports, the current data appears from the database, XML file or other data source. It provides the security features that control who can see which reports.