Assignment5

Name: Tzu-Ching Chuang

Part1

1. What is an object in SQL?

An object is any resource which can be used to store data or reference and is defined by users.

1. What is Index? What are the advantages and disadvantages of using Indexes?

Index is defined by programmer which contains one or more columns. SQL Server can speed up searching by using index. Index can speed up SELECT queries and WHERE clauses. However, it slows down UPDATE and INSERT statements.

1. What are the types of Indexes?

There are clustered index and non-clustered index. The biggest different from those two types is that the data would be sorted when create a clustered index, not for non-clustered index.

1. Does SQL Server automatically create indexes when a table is created? If yes, under which constraints?

If we create table with primary key, then the table would automatically create a clustered index.

1. Can a table have multiple clustered index? Why?

No, the table can only have one clustered index and multiple non-clustered indexes. Clustered index would sort the data and the data can only be sorted in one way. That is the reason why there is only one clustered index.

1. Can an index be created on multiple columns? Is yes, is the order of columns matter?

Yes, it can be created on multiple columns and the order of columns matter. The queries can speed up if the queries are written in right order of columns.

1. Can indexes be created on views?

Yes, indexes can be created by view.

1. What is normalization? What are the steps (normal forms) to achieve normalization?

Normalization is the process of restructuring relational databases, in order to reduce data redundancy and improve data integrity.

Step 1 is to reduce replicated data.

Step 2 is to remove partial dependencies and place them to separated tables.

Step 3 is to eliminate transitive functional dependencies and place them to separated tables.

1. What is denormalization and under which scenarios can it be preferable?

Denormalization is to add redundant data to one or more tables. By doing this, it can reduce the costly joins in relational database.

1. How do you achieve Data Integrity in SQL Server?

Data integrity means that the data is completed, consistent, and accurated in database. First of all, the data type matters when we design tables. Second, how to set primary and foreign keys are important as well. Third, when something goes wrong on other tables which are referenced by other tables, how to update or protect data is another thing that needs to take consideration.

1. What are the different kinds of constraint do SQL Server have?

There are six kinds of constraint. NOT NULL constraint, Check constraint, Default constraint, Unique constraint, Primary constraint, and Foreign constraint.

1. What is the difference between Primary Key and Unique Key?

First of all, primary key doesn’t allow NULL value, however unique key can. Second, there is only one primary key in table, but can have one or more unique keys.

1. What is foreign key?

Foreign key is one or more columns that reference to primary keys of other tables.

1. Can a table have multiple foreign keys?

Yes, it can allow multiple foreign keys in one tables.

1. Does a foreign key have to be unique? Can it be null?

Since the foreign key is referenced by primary key of other table, it cannot be null. However, it can duplicated in the table.

1. Can we create indexes on Table Variables or Temporary Tables?

Yes, we can create indexes on table variables and temporary tables. However, it can create indexes on table variables implicitly by creating unique or primary key.

1. What is Transaction? What types of transaction levels are there in SQL Server?

The transaction is logical and atomic unit of work which can contain one or more statements. Since it is atomic, all works are done or do nothing when something go wrong. There are four transaction levels, including Read Uncommitted, Read Committed, Repeatable Read, and Serializable.