Constraints

Constraints are rules and restrictions applied on a column or a table such that unwanted data can't be inserted into tables. This ensures the accuracy and reliability of the data in the database. We can create constraints on single or multiple columns of any table. Constraints maintain the data integrity and accuracy in the table.

SQL Server contains the following 6 types of constraints:

- Not Null Constraint
- Check Constraint
- Default Constraint
- Unique Constraint
- Primary Key Constraint
- Foreign key Constraint

Not Null Constraint:
A Not null constraint restricts the insertion of null values into a column. If we are using a Not Null Constraint for a column then we cannot ignore the value of this column during an insert of data into the table.

Check Constraint:
A Check constraint checks for a specific condition before inserting data into a table. If the data passes all the Check constraints then the data will be inserted into the table otherwise the data for insertion will be discarded. The CHECK constraint ensures that all values in a column satisfy certain conditions.

Default Constraint:
Specifies a default value for when a value is not specified for this column. If in an insertion query any value is not specified for this column then the default value will be inserted into the column.

Unique Constraint:
It ensures that each row for a column must have a unique value. It is like a Primary key but it can accept only one null value. In a table, one or more columns can contain a Unique Constraint.

Primary Key Constraint
A Primary key constraint is applied for uniquely identifying rows in a table. It cannot contain Null values and the rest of the table data should be unique. While creating a table if we do not specify a name to the constraint, SQL Server automatically assigns a name to the constraint.

Below is an example to create a Primary Key Constraint. Column EmpID of table EmployeeDetails is specified as Primary Key. Hence EmpID cannot have duplicate and null values.

Foreign Key Constraint :

A Foreign Key Constraint is used to establish a relationship between two tables where one column is a Primary Key of the table and the other column from the other table is referenced to the Primary Key column. A Foreign Key column can also have reference to the Unique Key column of another table.

Below are two tables EmployeeDetails and EmpSalary. EmpID of EmployeeDetails table's Primary Key column and EmpID column of EmpSalary table is Foreign Key which references the EmpID column of EmployeeDetails table.

Primary Key:

A column that is used to identify the records uniquely is referred to as Primary Key.

1. Primary key won't allow Null values.
2. If a Primary key is created, It will automatically create the clustered index on the table. In turn, the data will be sorted based on this column.
3. Only one Primary key can be created for a table.

Composite Primary Key:

1. Multiple columns can participate in the Primary Key which is referred to as a composite primary key.