Lesson 4

Managing Database and Tables

**System Databases**

1. Master Database

2. Tempdb Database

3. Model Database

4. Msdb Database

1. **Master database**

It handles the server specific configuration, including authorized users databases, system configurations, settings and remote servers. If the master database records is unavailable, the SQL server database engine will not be started.

**2. Tempdb database**

All the temporary tables and results are generated by groupby, orderby and distinct clauses are stored in tempdb database

**3. Model database**

The model database acts as a template while user creates a database without the size the .mdf and .ldf

**4. Msdb database**

The msdb database contains a few system – defined tables that are specific to the database and it contains task scheduling , exception handling , alert management, and system operator information needed for sql executive services.

**5. resource database**

The resource database is a read-only database that contains all the system objects, such as system-defined procedures and views that are included with SQL Server 2005. The resource does not contain user data or user metadata.

**Database**

A database must consists of a primary data file and one transaction log file.

**Primary data file**

It consists of the database objects. It can be used for the system tables and objects, and the secondary file can be used to store user data and objects. The primary data file has .mdf extension.

**Secondary data file**

It also stores the database objects. Very large database may need multiple secondary data files spread across multiple disks, database need not have secondary data files, the secondary data file has a .ndf extension.

Note : If the primary database can store a large size of data

**Transaction log file**

It records all the modifications that have occurred in the database and the transactions that caused those modifications. The transaction log files hold all the transaction information and can be used to recover a database. At least one transaction log file must exist for a database. there can be more than one transaction log file . The log files have an .ldf extentions

Note : The minimum size of a transaction log file is 512K.

The size of the transaction log should be 25 -40 % of the size of the database.

**To Create a database**

Create database sha

**(Dat) : The CREATE DATABASE process is allocating 2.18 MB on disk 'aa'.**

**(Log) : The CREATE DATABASE process is allocating 560 KB on disk 'aa\_log'.**

USER DEFINED DATABASE

USE sha;

GO

CREATE DATABASE abc ON ( NAME = abc,FILENAME = 'C:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\Data\abc.mdf',SIZE = 100,MAXSIZE = 500,FILEGROWTH = 50 )LOG ON

( NAME = abc,FILENAME = 'C:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\Data\abc.ldf',SIZE = 50MB,MAXSIZE = 150MB,FILEGROWTH = 25MB );

GO

drop database abc

**To view the entire databases**

sp\_helpdb

**To view the specific database**

sp\_helpdb sha

**To rename a database**

create database aa

sp\_renamedb 'aa', 'aaa'

**To rename a table :**

sp\_rename'oldtable\_name','newtable\_name'

sp\_rename'dummy','sample'

**To drop a database**

drop database aa

**APPLYING CONSTRAINTS**

Constraints can be divided into 5 types

1. Primary Key Constraint
2. Unique Constraint
3. Foreign Key Constraint
4. Check Constraint
5. Default Constraint
6. Not null constraint

**CONSTRAINT**

**constraints define rules that must be followed to maintain consistency and correctness of data. It can be created at that time of creating the table or we can add constraint later to the table as alter table .**

**Primary Key Constraint**

A primary key constraint is defined on a column or a set of colums whose values uniquely identify all the rows in a table. These columns are referred to as the primary key columns.

Note : A Primary key cannot contain NULL Values .

create table emp (empid int constraint empid\_pk primary key,ename varchar(20));

insert emp values (001,'sha');

insert emp values (002,'siva');

select \* from emp;

insert emp values (001,'sha');

Note :

Violation of PRIMARY KEY constraint ' empid\_pk '. Cannot insert duplicate key in object 'dbo.emp'.

The statement has been terminated.

**--drop constraint**

alter table emp1 drop constraint empid\_pk

**Another Methord**

drop table emp

create table emp (empid int not null, ename varchar(20));

insert emp values (001,'sha');

insert emp values (002,'siva');

select \* from emp;

alter table emp add constraint e primary key (empid)

alter table emp drop constraint e

**Unique Constraint**

Note : The Unique key constraint is similar to the Primary key constraint except that it allows NULL values, but there can be only one row in the table with a Null value . Multiple unique constraints can be created on a table.

**Foreign Key Constraint**

we can create a foreign key constraints to remove the inconsistency in the two tables when data in one table depends on data in another table .

Foreign key constraint mainly used to give a relationship between the tables.

A single table can have one or more foreign key constraints.

drop table emp;

drop table dept;

create table emp ( emp\_id int, f\_name varchar(20),

locid int ,constraint eid\_pk primary key ( emp\_id ));

insert into emp values('001', 'sha','1001' );

insert into emp values('002', 'siva', '1002' );

insert into emp values('003', 'sam', '1001' );;

select \* from emp;

create table dept ( dept\_id int, d\_name varchar(20),

job\_id int not null ,

emp\_id int, constraint eid\_fk foreign key (emp\_id) references emp (emp\_id));

insert into dept values('501', 'IT', '10001', '001' );

insert into dept values('502', 'Mech', '10002', '002');

insert into dept values('503', 'Civ', '10003', '003' );

select \* from dept;

Note : First we have to assign a value in emp table and then dept table .

insert into dept values('504', 'Management ', '10004','004' );

select \* from dept ;

insert into emp values (4,'ram','1004');

select \* from emp ;

createtabletb\_EMPPERSONALINFO1 (eidint,Contactnobigint,Cityvarchar(30),

constraintfk1foreignkey(eid)referencestbl\_EMPLOYEE (empid)ondeletecascade)

createtabletb\_EMPPERSONALINFO1 (eidint,Contactnobigint,Cityvarchar(30),

constraintfk1foreignkey(eid)referencestbl\_EMPLOYEE (empid)ondeletesetnull)

**CHECK CONSTRAINT**

**\* in**

**\* like**

**\* between**

**IN**

drop table emp;

create table emp (empid int, ename varchar(20), empadd varchar(30)

constraint a check (empadd in ('salem','coimbatore','chennai','madurai')));

insert emp values('1','ram','chennai');

insert emp values('2','sam','salem');

insert emp values('3','balaji','coimbatore');

insert emp values('3','balaji','madurai');

select \* from emp;

insert emp values('3','balaji','mumbai');

alter table emp drop constraint a;

Another Methord

create table emp (empid int, ename varchar(20), empadd varchar(30));

insert emp values('1','ram','chennai');

insert emp values('2','sam','salem');

insert emp values('3','balaji','coimbatore');

insert emp values('3','balaji','madurai');

insert emp values('3','balaji','mumbai');

select \* from emp;

alter table emp add constraint a check (empadd in ('salem','coimbatore','chennai','madurai'));

Note : we have delete the row which has inserted as ampadd as Madurai.

delete from emp where empadd = 'madurai';

alter table emp drop constraint a;

**LIKE**

drop table emp;

create table emp (empid int constraint a check(empid like '[6-9][0-9][0-9]') , ename varchar(20), empadd varchar(30) )

insert emp values('101','ram','chennai');

insert emp values('102','sam','salem');

insert emp values('103','balaji','coimbatore');

insert emp values('104','balaji','madurai');

select \* from emp;

insert emp values('4','suresh','madurai'); //-- it will gives the error because

empidshouldbein3digits

**Another methord**

create table emp (empid int, ename varchar(20), empadd varchar(30));

insert emp values('101','ram','chennai');

insert emp values('102','sam','salem');

insert emp values('103','balaji','coimbatore');

insert emp values('104','balaji','madurai');

select \* from emp;

alter table emp add constraint a check(empid like '[0-9][0-9][0-9]');

insert emp values('4','suresh','madurai');

drop table emp;

**BETWEEN**

drop table emp;

create table emp (empid int constraint i check(empid between 101 and 110), ename varchar(20), empadd varchar(30));

insert emp values('101','ram','chennai');

insert emp values('102','sam','salem');

insert emp values('103','balaji','coimbatore');

insert emp values('104','balaji','madurai');

select \* from emp;

insert emp values('4','suresh','madurai');

**Another Methord**

create table emp (empid int , ename varchar(20), empadd varchar(30));

insert emp values('101','ram','chennai');

insert emp values('102','sam','salem');

insert emp values('103','balaji','coimbatore');

insert emp values('104','balaji','madurai');

select \* from emp;

insert emp values('4','suresh','madurai');

alter table emp add constraint i check(empid between 101 and 110);

drop table emp;

**DEFAULT CONSTRAINT**

drop table emp;

create table emp (empid int , ename varchar(20), empadd varchar(30) constraint a default 'coimbatore');

insert emp values('101','ram','chennai');

insert emp values('102','sam','salem');

insert emp values('103','balaji','coimbatore');

insert emp values('104','balaji','madurai');

select \* from emp;

insert emp values('105','balaji','');

insert emp values('104','balaji',null);

insert emp(empid,ename) values('104','balaji');

select \* from emp;

**Another Methord**

create table emp (empid int , ename varchar(20), empadd varchar(30))

insert emp values('101','ram','chennai')

insert emp values('102','sam','salem')

insert emp values('103','balaji','coimbatore')

insert emp values('104','balaji','madurai')

select \* from emp

alter table emp add constraint a default 'coimbatore' for empadd

insert emp values('105','balaji','')

insert emp values('104','balaji',null)

insert emp(empid,ename) values('104','balaji')

drop table emp

**on Selete cascade**

select\*fromproduct

select\*frompriceList

droptablepriceList

createtablepricelist (pidintforeignkeyreferencesproduct(pid)ondeletecascade,Pricemoney)

insertintopricelistvalues(3,56)

insertintopricelistvalues(2,5600)

insertintopricelistvalues(1,56)

deletefromproductwherepid=1

--Example for on delete set null

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droptablepriceList

createtablepricelist (pidintforeignkeyreferencesproduct(pid)ondeletesetnull,

Pricemoney)

insertintopricelistvalues(3,56)

insertintopricelistvalues(2,5600)

insertintopricelistvalues(1,56)

deletefromproductwherepid=2

**USER DEFINED DATA TYPE**

sp\_addtype sha,'varchar(20)'

sp\_droptype sha

create table emp (empid int , ename sha, empadd varchar(30))

insert emp values('101','ram','chennai')

insert emp values('102','sam','salem')

insert emp values('103','balaji','coimbatore')

insert emp values('104','balaji','madurai')

select \* from emp

drop table emp

sp\_droptype sha