STORED PROCEDURES

Stored Procedures

- A stored procedure is prepared SQL code that we save so we can reuse the code over and over again. So if we think about a query that we write over and over again, instead of having to write that query each time we would save it as a stored procedure and then just call the stored procedure to execute the SQL code that we saved as part of the stored procedure.

- In addition to running the same SQL code over and over again we also have the ability to pass parameters to the stored procedure.

SYNTAX

CREATE PROCEDURE <procedure_EID>

AS

BEGIN

<SQL Statement>

END

EXECUTE <procedure_EID>

EXEC <procedure_EID>

 <procedure_EID>

Stored Procedures

Example 1 : Simple Procedure to get the details of Delhi employees

CREATE PROCEDURE SHDELEMP

AS

BEGIN

    SELECT * FROM EMP WHERE CITY = 'DELHI';

END;

Stored Procedures

Example 2 : **Parameterized** Procedure to get the details of employees of the specified city

CREATE PROCEDURE SHOWEMP @X VARCHAR(20)

AS

BEGIN

    SELECT * FROM EMP WHERE CITY = @X;

END;

Example 3 : **Parameterized** Procedure to get the contents of the specified table

CREATE PROCEDURE SHOW @Y VARCHAR(20)

AS

BEGIN

       EXEC('SELECT * FROM ' + @Y);

END;

Stored Procedures

Example 4 : **Parameterized** Procedure to insert the data in the emp_sal table

```
CREATE PROCEDURE IN_EMP_SAL
@ID VARCHAR(5), @A VARCHAR(20), @B VARCHAR(20), @X INT
AS
BEGIN
        SET NOCOUNT ON ;
        INSERT INTO EMP_SAL VALUES
        ( @ID, @A, @B, @X );

        SELECT * FROM EMP_SAL
        WHERE EID=@ID;
END;
```

Stored Procedures

A stored procedure with parameters:

SYNTAX

CREATE PROCEDURE <procedure_EID>

@ var1 datatype (size), var2 datatype (size)

AS

BEGIN

[SET NOCOUNT ON/OFF]

<SQL Statement>

END

EXECUTE <procedure_EID> var1 , var2

DROP PROCEDURE <procedure_EID>

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A-1 : CREATE BELOW PROCEDURES IN THE INVENTORY DATABASE AS SPECIFIED :

ADDSUPPLIER – SHOULD ADD THE SUPPLIER IN THE SUPLIER TABLE AND DISPLAY THE DETAILS OF THE NEW SUPPLIER ADDED.

ADDPRO – SHOULD ADD THE PRODUCT IN THE PRODUCT TABLE AND DISPLAY THE DETAILS OF THE NEW PRODUCT ADDED.

ADDCUST – SHOULD ADD THE CUSTOMER IN THE CUSTOMER TABLE AND DISPLAY THE DETAILS OF THE NEW CUSTOMER ADDED.

ADDORDER – SHOULD ADD THE ORDER IN THE ORDERS TABLE AND DISPLAY THE DETAILS OF THE ORDER. ORDER DATE SHOULD BE CURRENT DATE AND SHOULD COME AUTOMATICALLY.

TRANSACTIONS

Transactions

- A transaction is a unit of work that is performed against a database. For example, if you are creating a record or updating a record or deleting a record from the table, then you are performing a transaction on the table.

Properties of Transactions

Transactions have the following four standard properties, usually referred to by the acronym ACID:

Atomicity: Ensures that all operations within the work unit are completed successfully; otherwise, the transaction is aborted at the point of failure, and previous operations are rolled back to their former state.

Consistency: Ensures that the database properly changes state upon a successfully committed transaction.

Isolation: Enables transactions to operate independently of and transparent to each other.

Durability: Ensures that the result or effect of a committed transaction persists in case of a system failure

Transactions

There are following commands used to control transactions:

- **COMMIT**: To save the changes.

- **ROLLBACK**: To roll back the changes.

- **SAVEPOINT**: Creates points within groups of transactions in which to ROLLBACK.

AUTO INCREMENT FIELD

Auto Increment

Auto Increment allows a unique number to be generated automatically when a new record is added in to the table.

- Identity (START, INCREMENT)

Example :

create table emp2
(id int identity (1,1) primary key,
EID varchar (30),
age int);

SEQUENCES

Sequences

Sequences are the objects in SQL Server that is used to generate a number sequence. These are normally used to create a unique number.

- **Syntax**

CREATE SEQUENCE sequence_EID

[AS datatype]

[START WITH value]

[INCREMENT BY value]

[MINVALUE value | NO MINVALUE]

[MAXVALUE value | NO MAXVALUE]

[CYCLE | NO CYCLE]

[CACHE value | NO CACHE];

Sequences

- **Example 1:**

    Create sequence MYSEQ
    AS INT
    START WITH 1
    INCREMENT BY 1
    MINVALUE 1
    MAXVALUE 1000
    No CYCLE
    CACHE 5;

- **Example 2:**

    Create sequence MYSEQ
    START WITH 1
    INCREMENT BY 1

Drop Sequence MYSEQ;

NOTE: Sequences are the global objects, however, auto increment works on the table level

Sequences

- Using Sequences
  SELECT NEXT VALUE FOR MYSEQ;

- Using sequence in the insert statement.
  INSERT INTO CANDIDATE VALUES (NEXT VALUE FOR MYSEQ,'AJAY');

- Procedure using sequence to generate the candidate ID and insert the data in table.

```
CREATE PROCEDURE ADDCANDIDATE (@N AS VARCHAR(50))
AS
BEGIN
    DECLARE @A AS INT;
    DECLARE @C AS CHAR(5);
    SET @A = ( NEXT VALUE FOR MYSEQ);
    IF @A <10
            SET @C = CONCAT('C00' , @A);
    ELSE IF @A<100
            SET @C = CONCAT('C0' , @A);
    ELSE IF @A<1000
            SET @C = CONCAT('C' , @A);

    INSERT INTO  CANDIDATE VALUES (@C, @N);
END;
```

Auto Generation of ID Using Sequence

Function to generate a Alpha Numeric ID

```
CREATE FUNCTION GENID (@C CHAR (1) , @I INT)
RETURNS CHAR(5)
AS
BEGIN
    DECLARE @r  CHAR(5);
    DECLARE @ID  CHAR(5);
SELECT @R = CASE
                    WHEN @I < 10 THEN CONCAT(@C,'000')
                    WHEN @I < 100 THEN CONCAT(@C,'00')
                    WHEN @I < 1000 THEN CONCAT(@C,'0')
                    WHEN @I < 10000 THEN @C
                    ELSE 'NULL'
            END;
 SET @ID= RTRIM(@R) + LTRIM(CONVERT(CHAR(4),@I));
    RETURN @ID;
END;
```

Auto Generation of ID Using Sequence

Using user defined function with a sequence in a procedure to add an student in to the table:

```
CREATE PROCEDURE ADDSTU @X CHAR(20)
AS
BEGIN
    SET NOCOUNT ON;

    INSERT INTO STU
    VALUES(DBO.GENID('S',NEXT VALUE FOR MYSEQ),@X);

    SELECT * FROM STU;


END;
```

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A-1 : CREATE A FUNCTION FOR AUTOGENERATION OF 5 CHARACTERS ALPHA NUMERIC ID. IT SHOULD ACCEPT 2 PARAMETERS A CHARACTER AND THE NUMBER AND RETURN THE ID BY CONCANATING THE CHARACTER , REQUIRED ZEROS AND THE SPECIFIED NUMBER.

RECREATE BELOW PROCEDURES IN THE INVENTORY DATABASE AS SPECIFIED (ALL THE ID s SHOULD BE AUTOMATICALLY GENERATED USING ABOVE CREATED FUNCTION AND SEQUENCES) :

<u>ADDSUPPLIER</u> – SHOULD ADD THE SUPPLIER IN THE SUPLIER TABLE AND DISPLAY THE DETAILS OF THE NEW SUPPLIER ADDED.

<u>ADDPRO</u> – SHOULD ADD THE PRODUCT IN THE PRODUCT TABLE AND DISPLAY THE DETAILS OF THE NEW PRODUCT ADDED.

<u>ADDCUST</u> – SHOULD ADD THE CUSTOMER IN THE CUSTOMER TABLE AND DISPLAY THE DETAILS OF THE NEW CUSTOMER ADDED.

<u>ADDORDER</u> – SHOULD ADD THE ORDER IN THE ORDERS TABLE AND DISPLAY THE DETAILS OF THE ORDER. ORDER DATE SHOULD BE CURRENT DATE AND SHOULD COME AUTOMATICALLY.