**INTRODUCTION TO DATABASE:**

**•** Database is an organized collection of data so that it can be easily accessed or managed.

• It is used to accessed data easily in a proficient manner from database.

EX: School Database System, Bank Database System.

**Difference Between Databases and File System Storage:**

**Database:**

• It is a software application used to insert, update and delete data.

• It provides proper data recovery process.

• Database is more secure.

• Data migration is difficult in database.

**File System Storage:**

• It is a software used to add, update and delete files.

• It doesn’t provide proper data recovery process.

• It is not more secure.

• Data migration is very easy in file system just copy and paste into the target folder.

**Install SQL Server & SSMS:**

• SQL Server is database engine.

• SSMS is user interface to interact with engine.

• SQL Server is managed by SSMS.

**Steps:**

* Google SQL Server Express Installation.
* Download Express edition.
* Click on Basic installation.
* Setup SQL Server.
* Click on install SSMS.
* Download SSMS latest version.
* Click on “Install” option.
* Close.

**Normalization:**

• Normalization is the process of minimizing redundancy and dependency by organizing fields and table of database.

• It means our data should be standardized, Normalized and would be easier to perform database operations.

• The main aim of normalization is to add, delete and modify fields.

**Types:**

* **1NF: •** Make sure to have a unique column or combination of columns for every table in database.

• It removes all duplicate columns from a database tables.

* **2NF: •** Creation of relationship between the tables by using primary key and foreign key constraints.

**Creation of Database:**

• We can create database from two different ways:

* SQL Query: • We need to write SQL query to create database.

Syntax: CREATE DATABASE DATABASE\_NAME;

* SSMS (SQL Server Management Studio): • It is click based.

**Database Objects:**

* **Table: •** It is a logical place in our database to store our data.

• It is an organized collection of data store in form of rows and columns.

* **View:** • It is an easier way to view our data that is stored in our tables.
* **Stored Procedure: •** It is a way of managing our data using complex sql queries to answer complex requests.

**Data Manipulation using SQL:**

* **Inserting data into table**: • It is used to insert data into the rows of tables.

Syntax: INSERT INTO TABLE\_NAME VALUES (VALUE1, \_ \_ \_ \_ \_ \_ \_ \_ VALUE N);

* **Selecting data from table: •** It is used to retrieve data from a database table.

Syntax: SELECT \* FROM TABLE\_NAME;

* **Updating data in a table: •** It is used to update or modify data of columns in tables.

Syntax: UPDATE TABLE\_NAME SET COULMN\_NAME= VALUE1 \_ \_ \_ WHERE CONDITION;

* **Deleting data from table: •** It is used to delete data from a database table

Syntax: DELETE FROM TABLE\_NAME WHERE CONDITION;

* **Creating Stored Procedure: •** It is used to creating stored procedure.

Syntax: CREATE PROCEDURE SP\_STUDENT

AS

BEGIN

-- SET NOCOUNT ON added to prevent extra result sets from

-- interfering with SELECT statements.

SET NOCOUNT ON;

-- Insert statements for procedure here

INSERT INTO STUDENT1 VALUES('STU/007','RISHAB',1,'2004/10/02');

--Update statements for procedure here

UPDATE STUDENT1 SET GENDER=1 WHERE FULLNAME='TANU'

--Select statements for procedure here

SELECT \* FROM STUDENT1;

END

GO

**Selecting TOP N records:**

• It will not filter or sort data of table.

• It will show only top records.

Syntax: SELECT TOP N \* FROM TABLE\_NAME;

**Sorting selected records from table:**

Syntax: SELECT TOP N \* FROM TABLE\_NAME ORDER BY ASC/DESC;

**Narrowing down result set with WHERE clause:**

• It is used to filter out or narrow out data according to specific condition.

• It is used to sort data according to specific condition for SELECT statement.

• We use WHERE clause to sort data according of specified condition.