**ADO DOTNET**

Why we need database connection?

The frontend application itself, cant store any data permanently, and we need a storage mechanism. That storage mechanism is nothing but database.

Set of classes(framework) than can be used to interact with data sources like databases and XML files.

Then that data can be consumed any .net applications.

ADO : Microsoft Activex data Objects.

The .net applications that use the ADO .net to connect to database, execute commands and retrieve data.

1. ASP.NET Web applications
2. Console Applications
3. Window Applications.
4. Websites
5. Web services
6. WCF services

ADO .net used for database connections and offers to perform database manipulation like inserting data to tables, deleting unnecessary data, retrieving the requirecad data from the tables, etc.

Can be used in any .net language (C# .net, VB.net)

Offers efficient way to easily handle with database tables, especially when you are dealing with multiple tables.

Type of databases can be connected with ado .net:

1. File databases

dBase, FoxPro, MS Access, MS Excel etc

1. Server databases

SQL Server, oracle, MS SQL, etc

What can we do using ADO .net?

1. Insert data into database
2. Update the data
3. Retrieve the data
4. Delete the data
5. Execute a stored procedure/ function i.e. already created at backend using PL/SQL

Architecture of database connection in ADO.net

Database 🡨🡪 Driver 🡨🡪Application

Driver : mediator between frontend and backend databases. Also called provider.

Connection String:

Provides details about connection

1. Server

Name of the server system, which you want to connect.

If you want to connect to server of the other system, soecify the name of the server of that system. (myserver)

If you want to connect with same system : -localhost.

Server name can also be -data source.

1. USER id

User name for logging in with database

1. Password

Password for logging in with the database.

1. Provider

Name of driver/provider, which you want to use with the connection.

Syntax :

d-provider=XXXX; user id=XXXX; password= XXXX; -data source=XXXX

**ADO.NET Library**

To perform database operations it provides predefined libraries in the name space:

1. System.Data

Classes and namespaces to manipulate the databases.

1. System.Data.SqlClient

Contains necessary classes, used to interact with the sql server database.

1. System.Data.OleDb

To interact with other databases, also can be used for the same sql server database, but we wont use for sql server, because sqlclient is especially available for that.

Classes:

1. Connection

Maintains connection with db.

1. Command

To execute a query statement(select) and non-query statement(insert/delete/update) or stored procedure/function .

1. DataReader

Acts as buffer

Holds the data, after execution of a query statement at backend.

1. DataAdapter

Executes query statement at backend.

1. Parameter:

Sends a value along with the backend stored procedure or function.

1. Dataset

Acts as a buffer

Holds multiple tables at a time.

1. DataTable

Acts as a buffer

Holds a single table (rows and cols)

1. DataRow

Acts as a buffer

Holds a single row.

1. DataColumn

Acts as a buffer

Holds a single column.

**Connecting the Database**

Steps:

1. Import the library

Using System.Data.SqlClient

1. Construct the connection class object

SqlConnection cn=new SqlConnection();

1. Assign the connection string

cn.ConnectionString = ―data source=<name of the server>;user id=<user

name>;password=<password>;initial catalog=<database name>‖;

initial catalog : name of the sql server database, in which your table exists.

1. Open the connection

cn.Open()

1. Close the connection

cn.Close()

Connected Approach : connection to be alive till we get all the records.

SqlDataReader

Disconnected Approach : connection need not be alive till we get all the records.

SqlDataAdapter