

# VS2010 C# Programming - DB intro 1



## Topics –

- Database
- Relational - linked tables
- SQL
- ADO.NET objects
- Referencing Data
- Using the Wizard
- Displaying data

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Database –

A collection of data.

Searchable – user extracts detailed information

Relational database – queried and data extracted using SQL language

Relation – individual tables linked together.

Data held in one place only

e.g, employees, customers, orders, suppliers

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## Microsoft example: Northwind database Employees table

Employees : Table								
	EmpID	Last Name	First Name	Title	Title C	Birth Date	Hire Date	Address
	+ 1	Davolio	Nancy	Sales Representative	Ms	08-Dec-1968	01-May-1992	507 - 20th Ave. E.
	+ 2	Fuller	Andrew	Vice President, Sales	Dr.	19-Feb-1952	14-Aug-1992	908 W. Capital Way
	+ 3	Leverling	Janet	Sales Representative	Ms	30-Aug-1963	01-Apr-1992	722 Moss Bay Blvd.
	+ 4	Peacock	Margaret	Sales Representative	Mrs	19-Sep-1958	03-May-1993	4110 Old Redmond Rd.
	+ 5	Buchanan	Steven	Sales Manager	Mr.	04-Mar-1955	17-Oct-1993	14 Garrett Hill
	+ 6	Suyama	Michael	Sales Representative	Mr.	03-Jul-1963	17-Oct-1993	Country House

Northwind database provided with Access  
Download from Microsoft

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Relational database is composed of linked tables.

Table made from records.

A record (or row) consists of fields (or columns) of data.

Usually one unique record – ID

Search using Structured Query Language (SQL)

Search – all employees aged about 21, over a certain wage, or called John

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### Structured Query Language (SQL)

SQL search commands:

SELECT (field)

FROM (table)

WHERE (criteria)

GROUP BY (criteria)

ORDER BY (age)

SQL edit commands:

INSERT, UPDATE, DELETE

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### **Example SQL commands:**

```
SELECT firstName, lastName FROM  
Employees
```

```
SELECT firstName, lastName FROM  
Employees WHERE firstName LIKE 'J*'
```

```
DELETE FROM Employees WHERE  
firstName = 'John' AND lastName =  
'ALLWORK'
```

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ADO.NET – Active database objects

Collection of objects to interface to databases

Establish a connection between program and database

Data held in memory – a DataSet

- a collection of DataTable objects

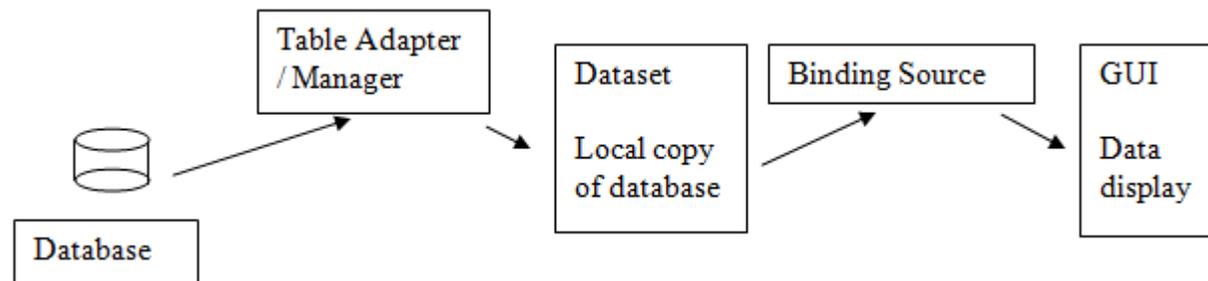
Populated using a TableAdapter / Manager

Displayed using 'Data bound' UI controls

Automatically update as user scrolls

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Connection:



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### Database wizard

- builds commands for you

- Declare connection
- Specify database type and location
- Open connection
- Create and fill the Dataset
  - - memory resident copy of the database
- Access data in DataTable
  - - one table of the Dataset

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## Main database tasks:

1. View a database
2. Create our own database with linked tables
3. Display database using controls  
(grid view, details view and navigator)
4. Accessing and displaying data from code
5. Adding data to database with code

1 now, 2-5 in next lectures

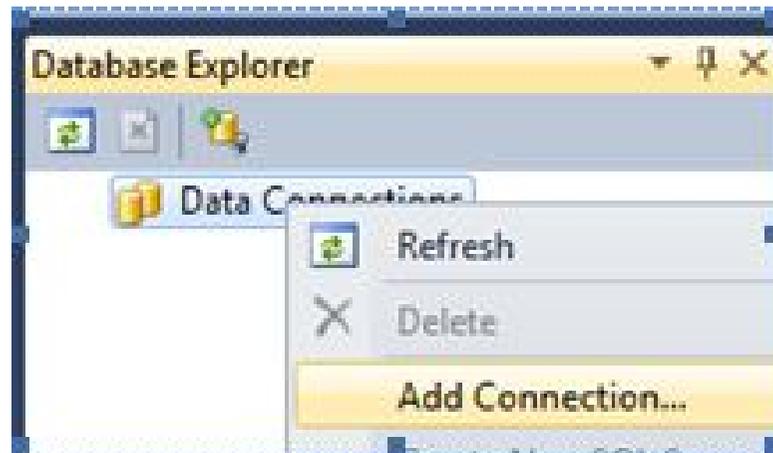
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## Viewing a database

New Project > View Server/Database Explorer

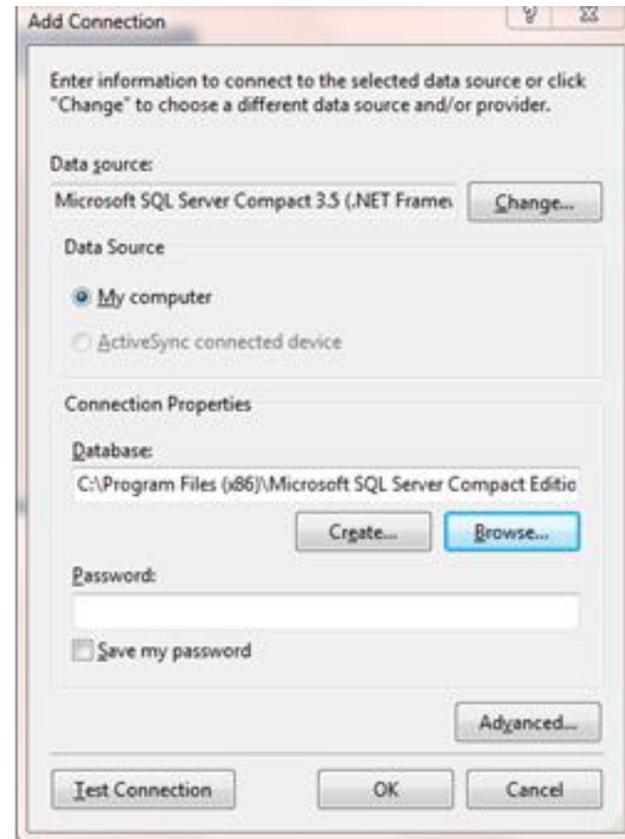
Add link to existing database (e.g. Northwind)

Right-click Data Connections. Add Connection:



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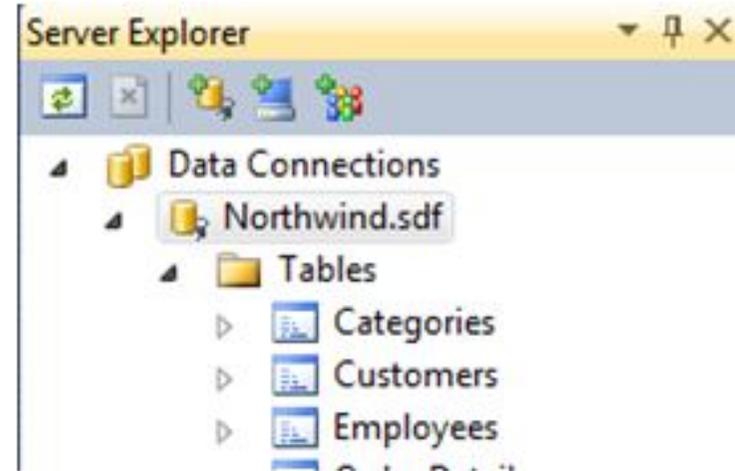
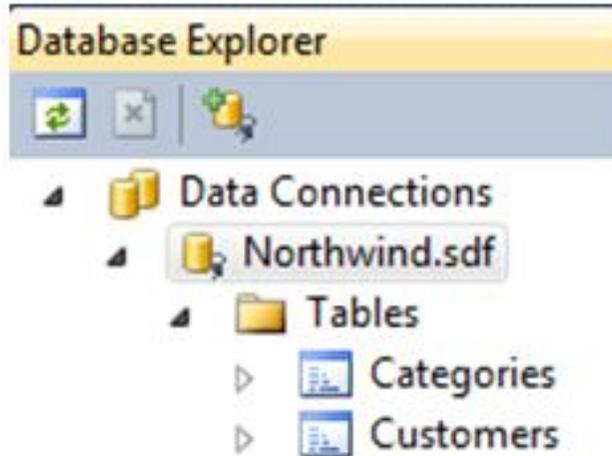
Browse for database



Test connection

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Database added to Solution/Database explorer:

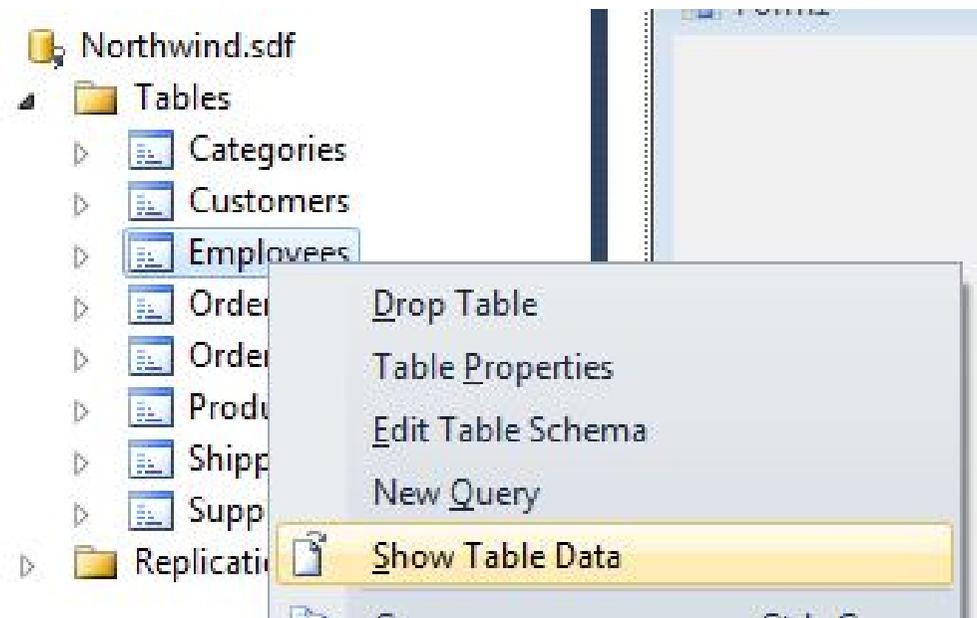


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View table data:

Display tables on the form.

Right-click table:



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Employees table:  
(same as before)

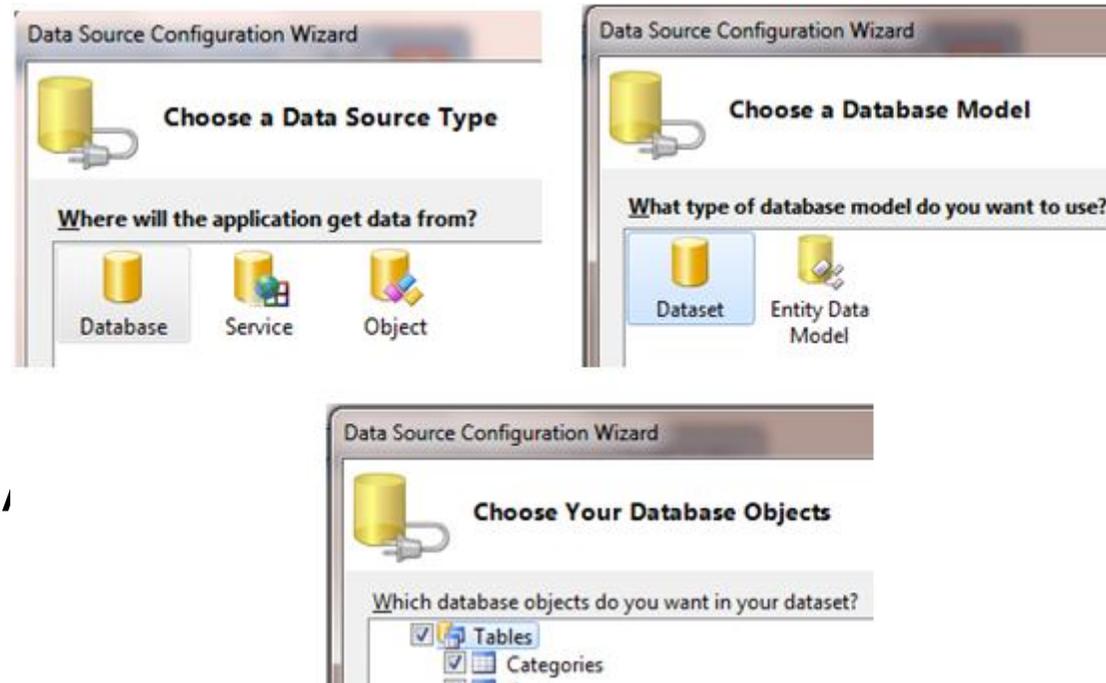
Employee ID	Last Name	First Name	Title	Birth Date	Hire Date	Address	City
1	Davolio	Nancy	Sales Represent...	08/12/1948 00:0...	29/03/1991 00:0...	507 - 20th Ave. ...	Seattle
2	Fuller	Andrew	Vice President, ...	19/02/1942 00:0...	12/07/1991 00:0...	908 W. Capital ...	Tacoma
3	Leverling	Janet	Sales Represent...	30/08/1963 00:0...	27/02/1991 00:0...	722 Moss Bay B...	Kirkland
4	Peacock	Margaret	Sales Represent...	19/09/1937 00:0...	30/03/1992 00:0...	4110 Old Redm...	Redmond
5	Buchanan	Steven	Sales Manager	04/03/1955 00:0...	13/09/1992 00:0...	14 Garrett Hill	London
6	Suyama	Michael	Sales Represent...	02/07/1963 00:0...	13/09/1992 00:0...	Coventry Hous...	London
7	King	Robert	Sales Represent...	29/05/1960 00:0...	29/11/1992 00:0...	Edgeham Hollo...	London
8	Callahan	Laura	Inside Sales Co...	09/01/1958 00:0...	30/01/1993 00:0...	4726 - 11th Ave...	Seattle

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Display from C# program – use wizard:

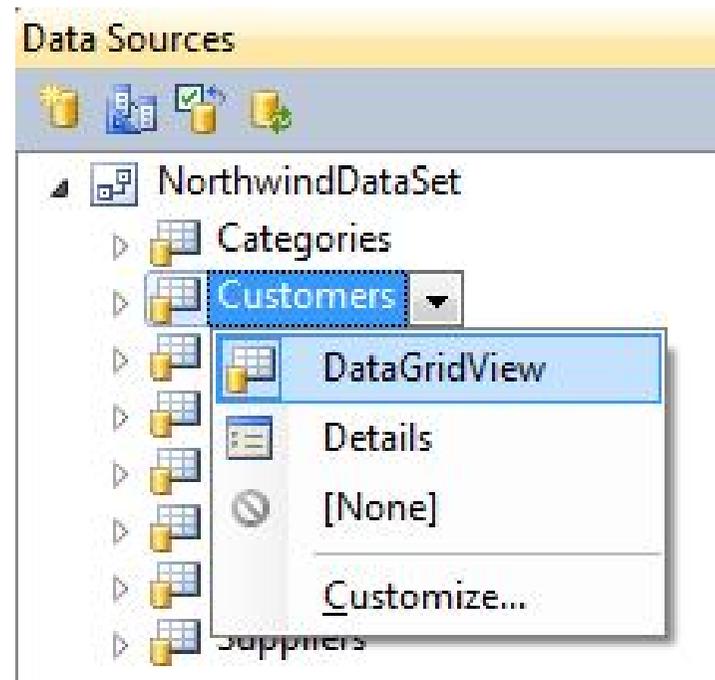
Data > Add New Data Source:

Choose database objects



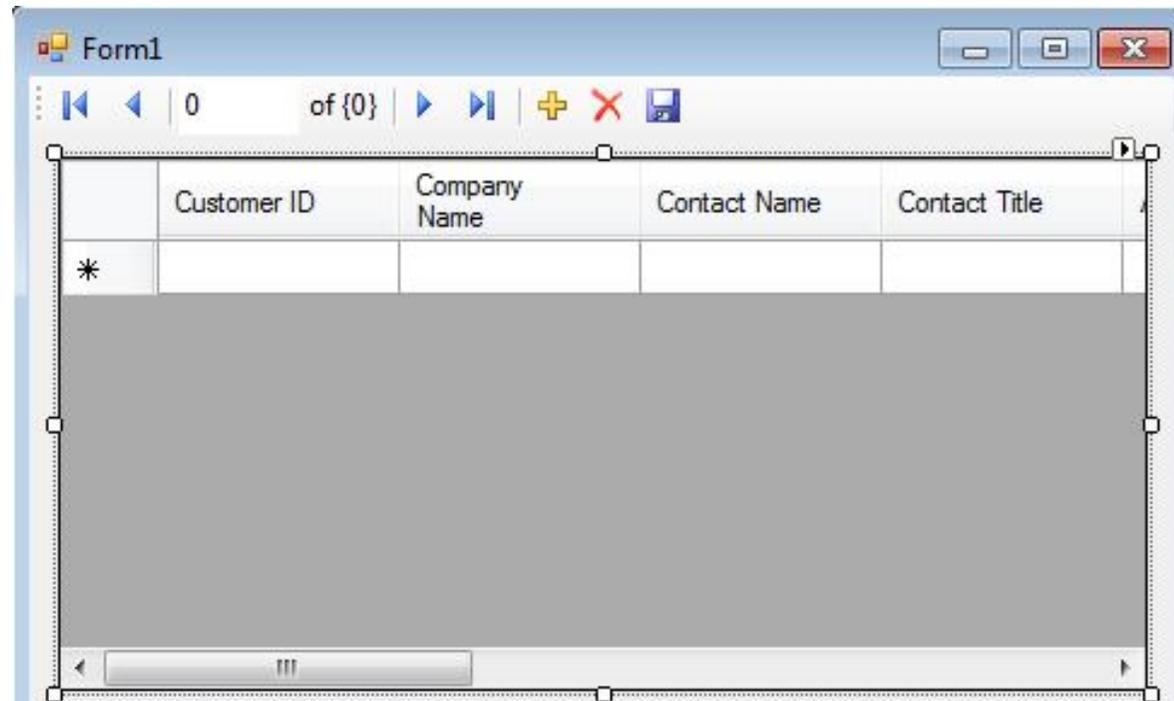
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Use DataGridView control to display table  
Click table and drag icon to form



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Table added to form:



DataSet, BindingSource, TableAdaptor/Manager controls also added

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## GridView display



EmployeeID	LastName	FirstName	Title	TitleOfCourtesy
*				

## Run program to display



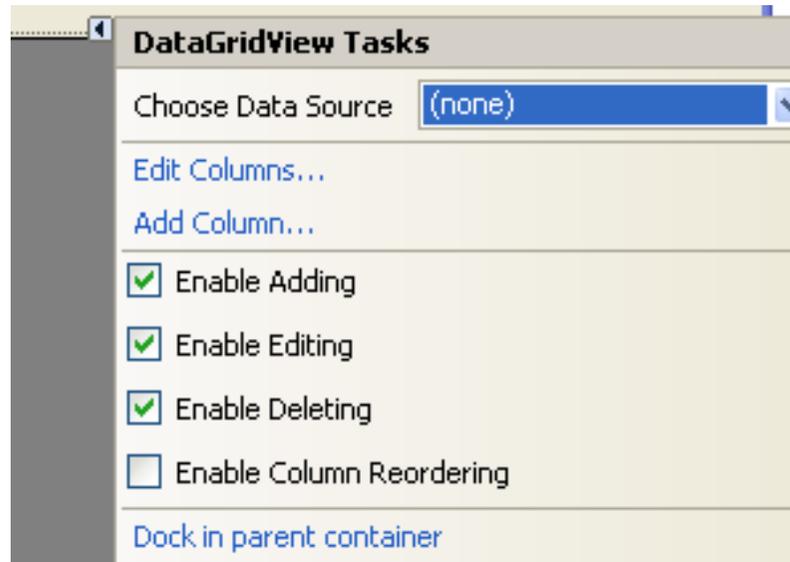
EmployeeID	LastName	FirstName	Title	TitleOfCourtesy
1	Davolio	Nancy	Sales Represent...	Ms.
2	Fuller	Andrew	Vice President, S...	Dr.
3	Leverling	Janet	Sales Represent...	Ms.
4	Peacock	Margaret	Sales Represent...	Mrs.
5	Buchanan	Steven	Sales Manager	Mr.
6	Suyama	Michael	Sales Represent...	Mr.
7	King	Robert	Sales Represent...	Mr.
8	Callahan	Laura	Inside Sales Coord	Ms.

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## DataGridView tasks:

Enable adding, editing, deleting by user

Click the arrow (top r.h. corner) to display tasks



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## Summary –

- Database - A searchable collection of data.
- Relational - individual tables linked together
- Data held in one place only
- Data extracted using SQL language
- Wizard builds commands
- Easy to view an existing database