

# C# Database Application

LEARN TO DESIGN & BUILD A WINDOWS C# DATABASE APPLICATION

STEPHEN O'CONNOR

## Database

What is a database?

A file structured for the repository of data. Organized for easy retrieval, sorting, grouping, relating to other data, used to analysis information in numerous ways.

## Databinding

Utilizing Databinding in a C# Win forms App. Data sets working with the System.Data Namespace (aka ADO.NET) Working with the Visual Studio's IDE's tools, windows, etc. Microsoft Visual Studio 2013 makes it easily to create databases for beginners and experts.

Databinding the user interface controls, retrieve and display data from a data source without requiring the programmer to worry about all the programmatic details of this process. Each user interface control has different properties that can be bound to a data source.

ADO = ActiveX Data Objects

User interface controls must be data binding "aware", ADO.NET(System.Data) classes support data binding.

- ADO.NET creates a connection to a data source (database)
- ADO.NET manages the conversation (requests and responses) between your application and the database.
- ADO.NET manages the data that is retrieved from the response to the database query.
- BindingSource manages the connection between the user interface controls and the underlying data set retrieved from the database. Provides an application interface to reduce learning curve for the end user. Restrict access to the database to maintain security. To control the presentation of the data. Maintain the integrity of the data.Practice

ADO.NET does a lot of the grunt work, it is not necessary to know all about ADO.NET.

Write application interface

- Reduce the learning curve for the end user
- Restrict access to the database to maintain security
- To control the presentation of the data – website, content management system
- To maintain the integrity of the data

SQL Server

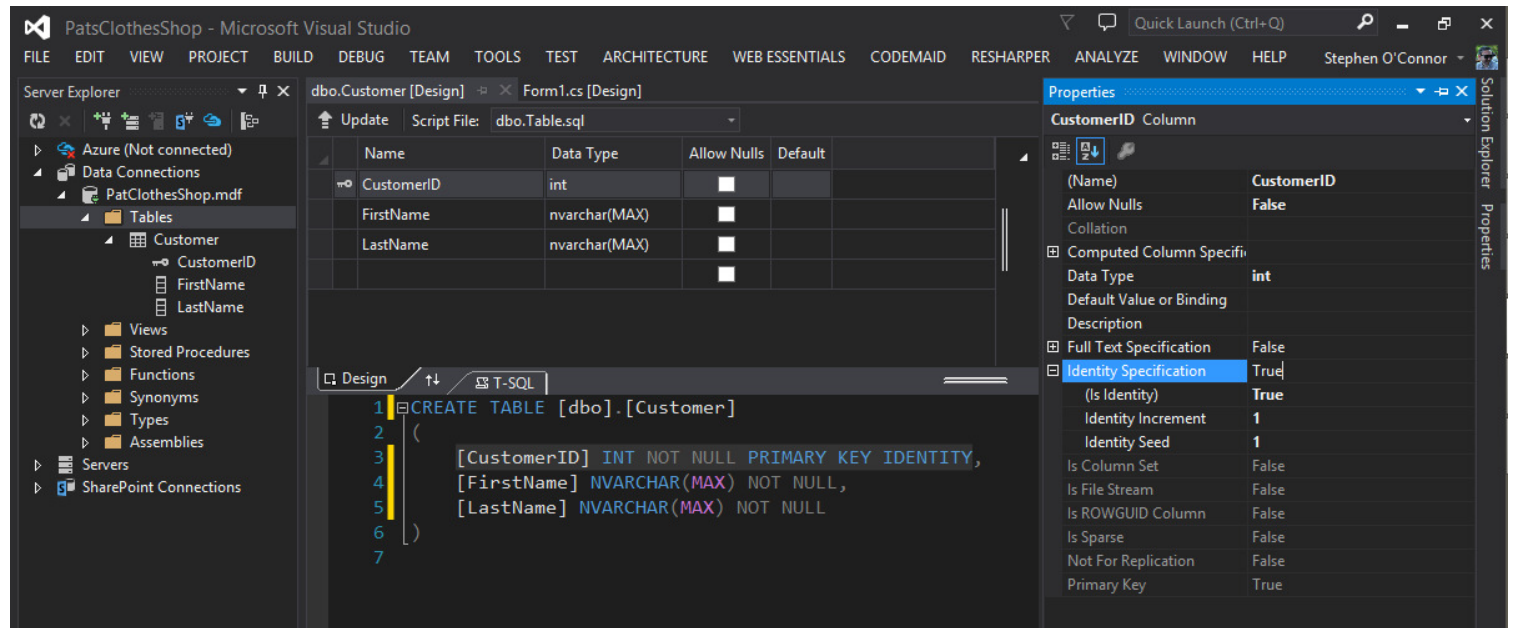
A high end relational database management system.

SQL server 2013 Express Edition, similar power, but intended for smaller projects.

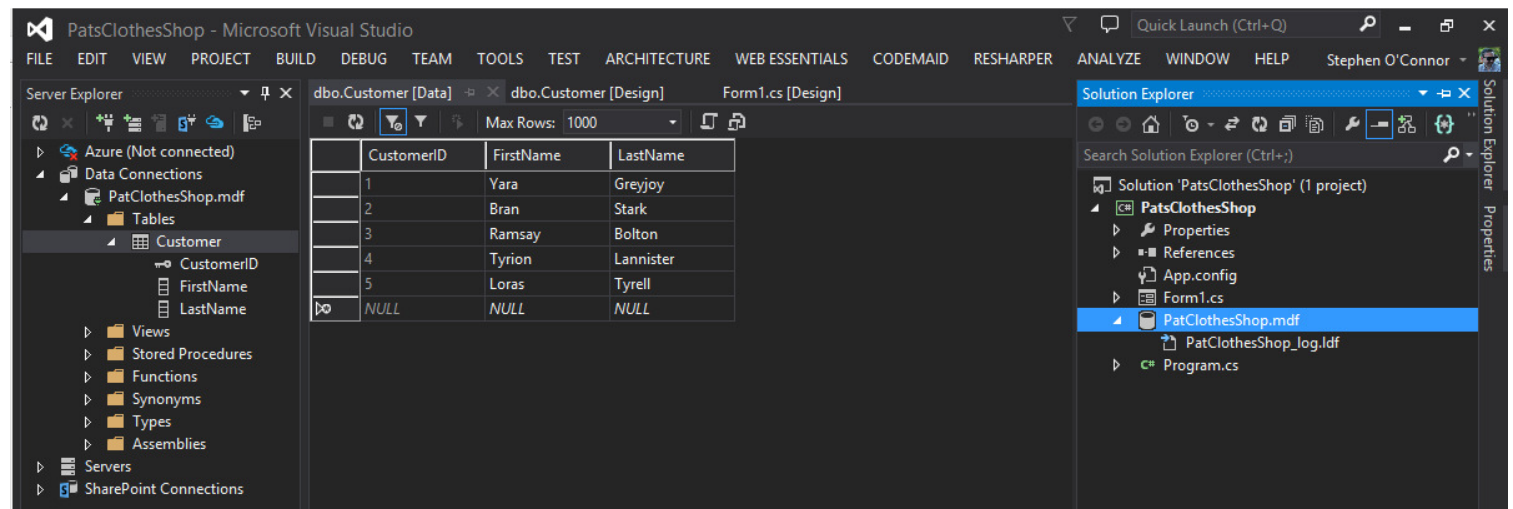
In Visual Studio 2013 download the latest SQL Server Data Tools, if already not installed.

**Learn by doing**

Create a new project and a database called PatClothesShop  
Add a table called customer with the data below.

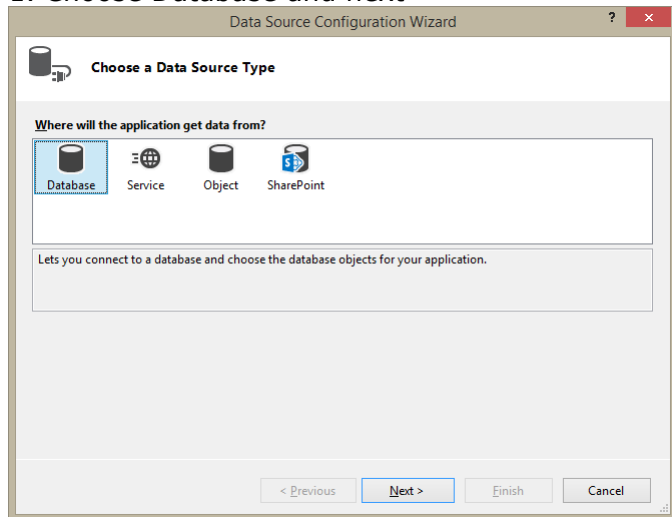


Go to show table data in the Server Explorer add five persons.

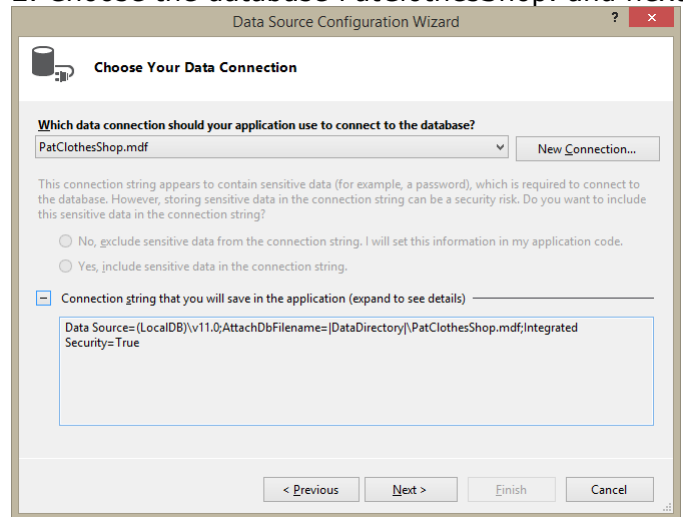


On the menu bar, choose View, Other Windows, Data Sources (or choose the Shift+Alt+D keys). Follow the steps.

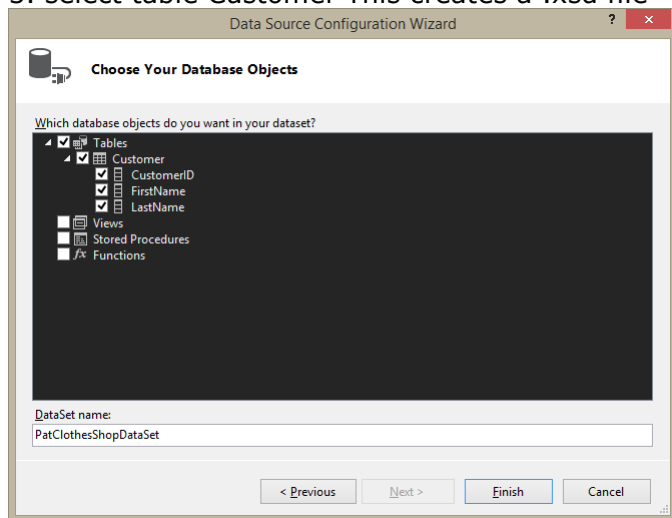
## 1. Choose Database and next



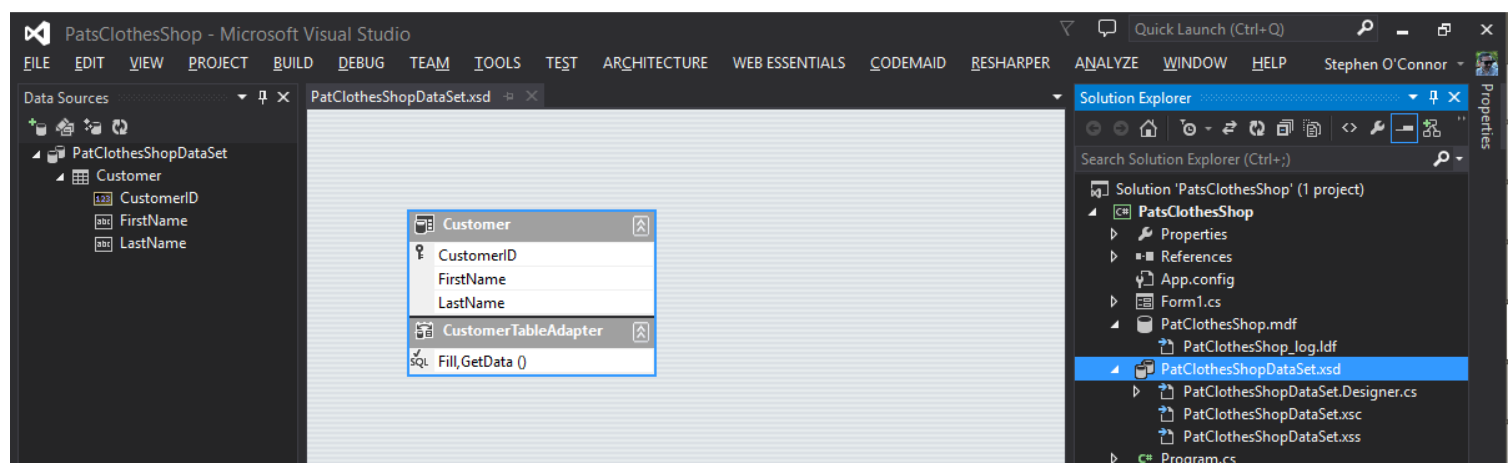
## 2. Choose the database PatClothesShop. and next



## 3. select table Customer This creates a .xsd file

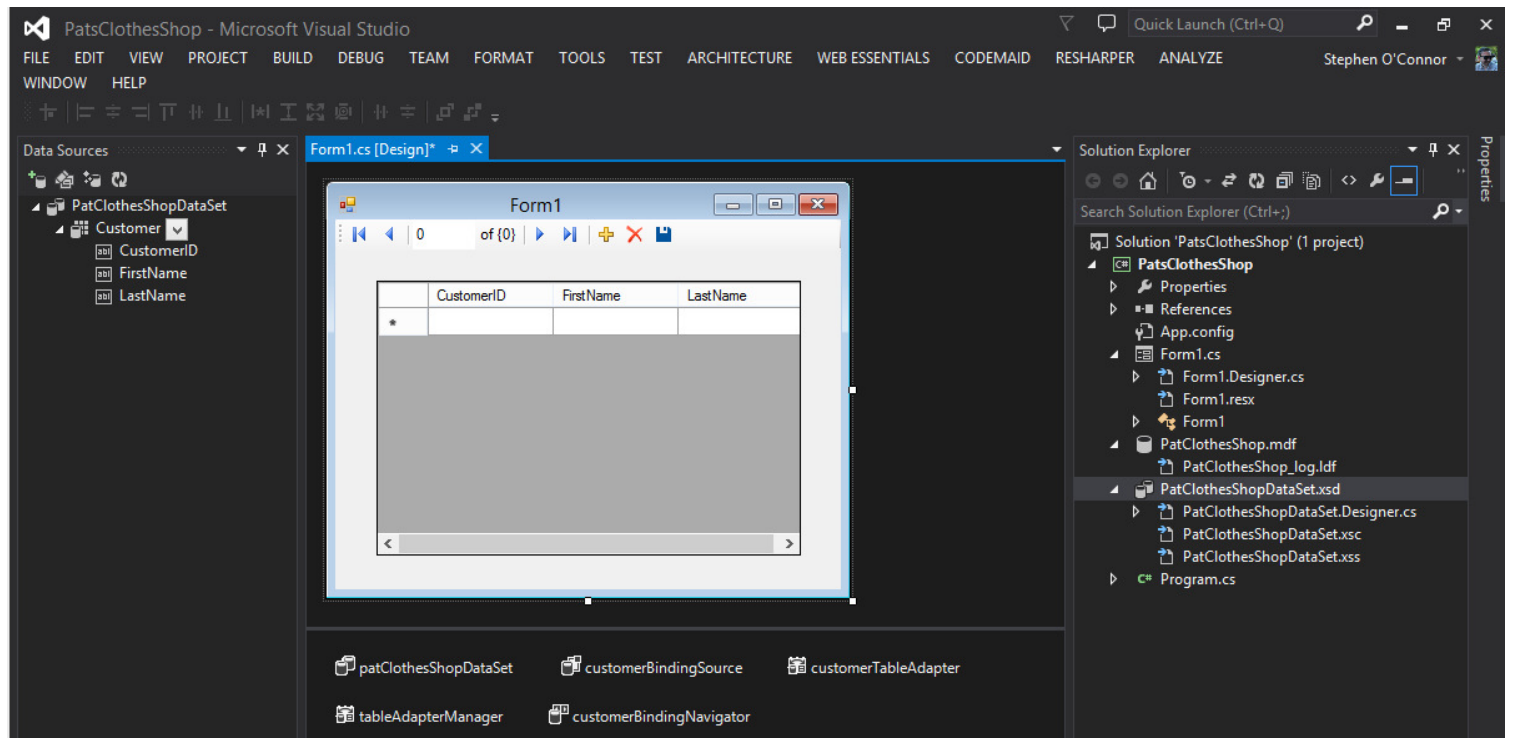


A PatClothesDataSet.xsd file right click on the xsd file and view designer mode. Xsd file is the xml schema document. The xsd file a local copy of database, this file defines the database, temporary stores the data.

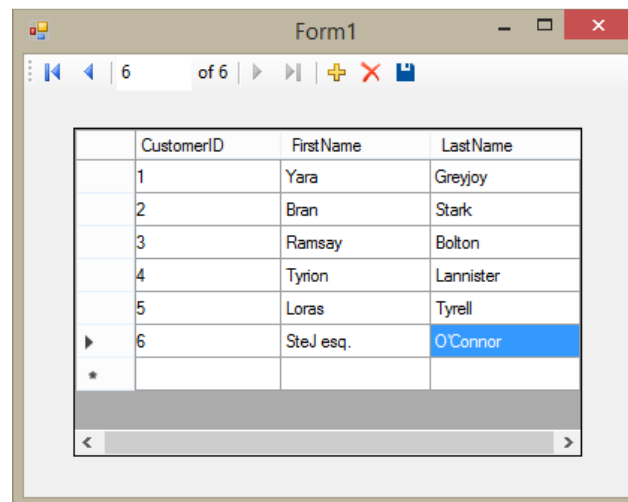


## C# Database application

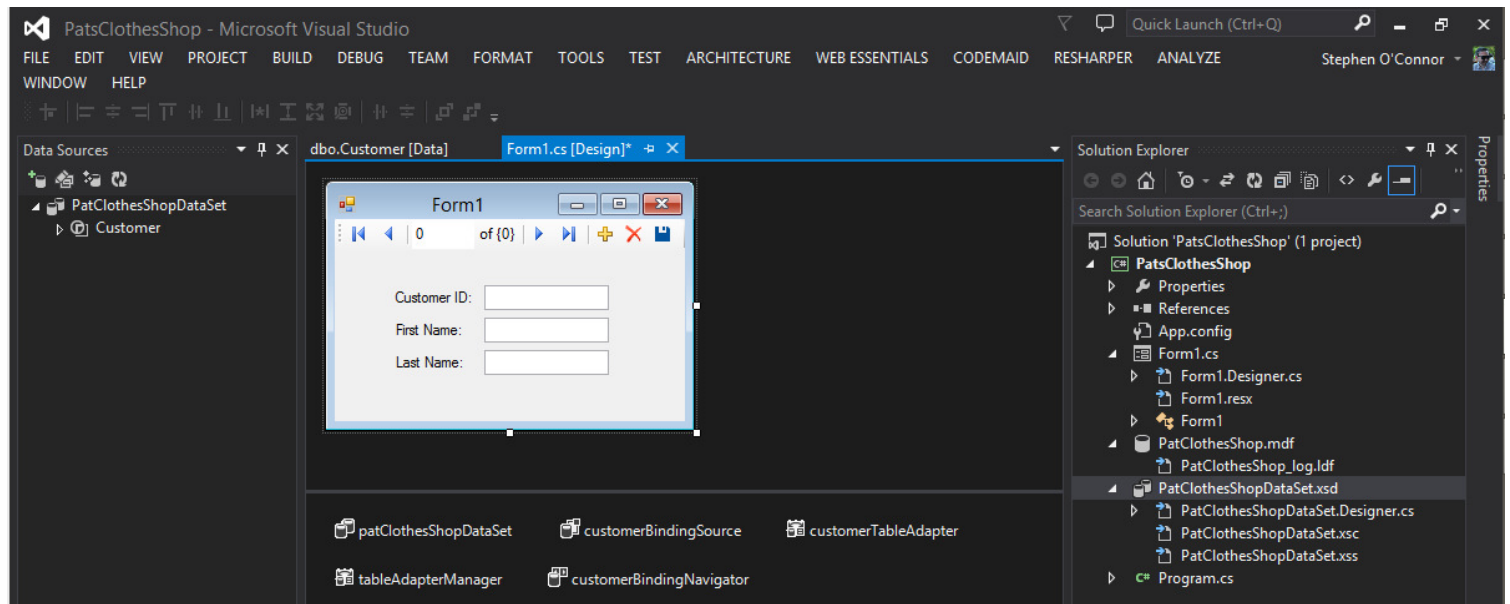
Drag and drop customer table from the Data Sources toolbar.



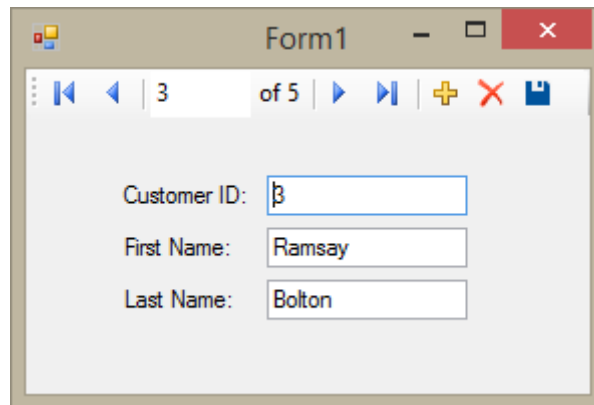
Run the project. A grid of the database navigate through the grid and add an extra row.



To create a Form view; select details from the drop down onto Form1



Run the application and navigate through the details view.



### Designer tray.

**patClothesShopDataSet**

The local temporary storage container for the data within the application. Once the form is opened the dataset gets populated from the data from the database. Uses the TableAdapter to retrieve and connect to the database.

**patClothesShopTableAdapter**

Retrives data from the database, it contains a connection to the database. Contains an object that connects to the PatClothesShop.mdf to retrieve and resolve the information back into the database. Delete, update, add.

**patClothesShopBindingSource**

Object /bridge between the information in the dataset and the current row that's being displayed on the form. Keep all of the controls on the form bound to row of data in the DataSet. Co-ordinates what row of data (from the dataset) should be currently displayed. The user indicated they wanted to go to the first row or the next row or the last row in the textbox.

**patClothesShopAdapterManager**

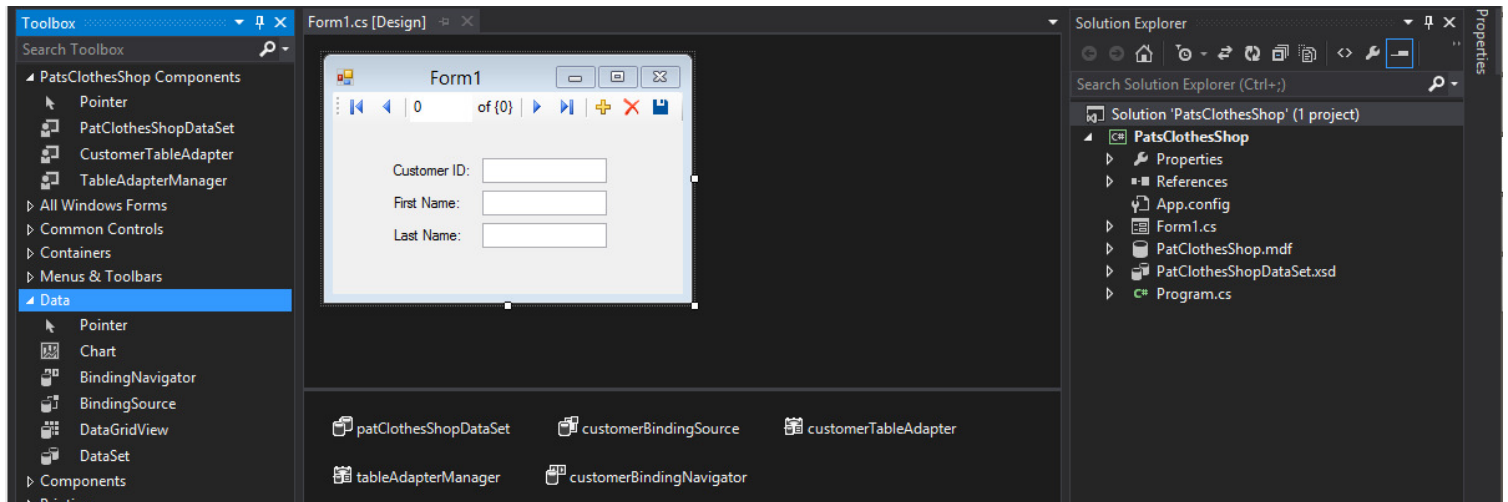
Service interface

**patClothesShopBindingNavigator**

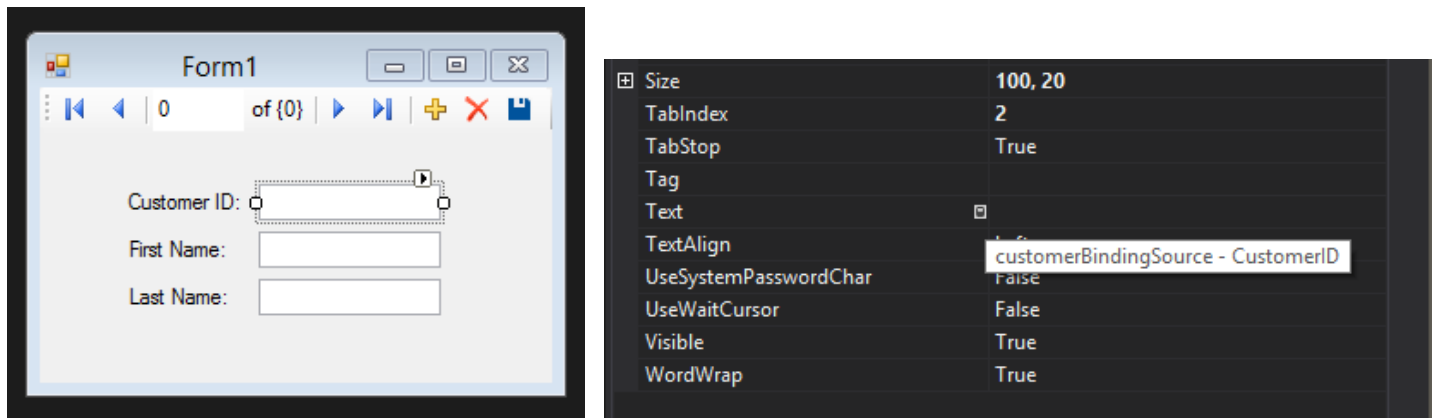
Toolbar at the top of the form.

## C# Database application

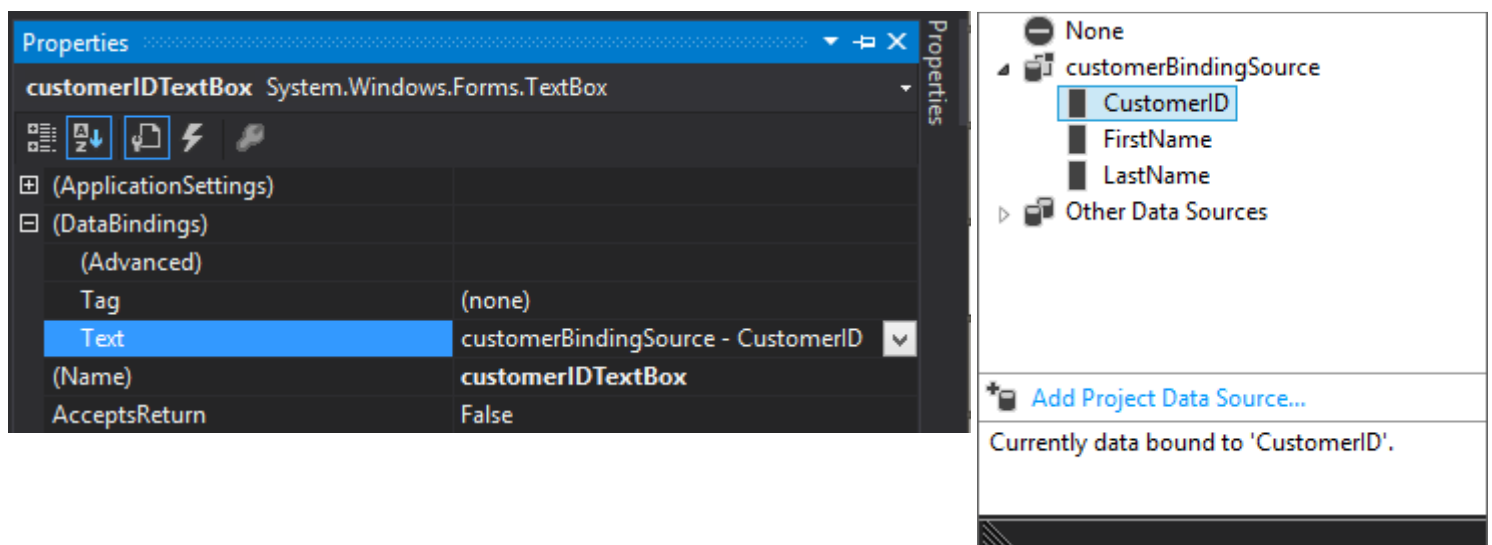
Go to toolbox and select data to show data tools that can be added manually to the form.



Properties of the first textbox. In the Text a Database icon is displayed.

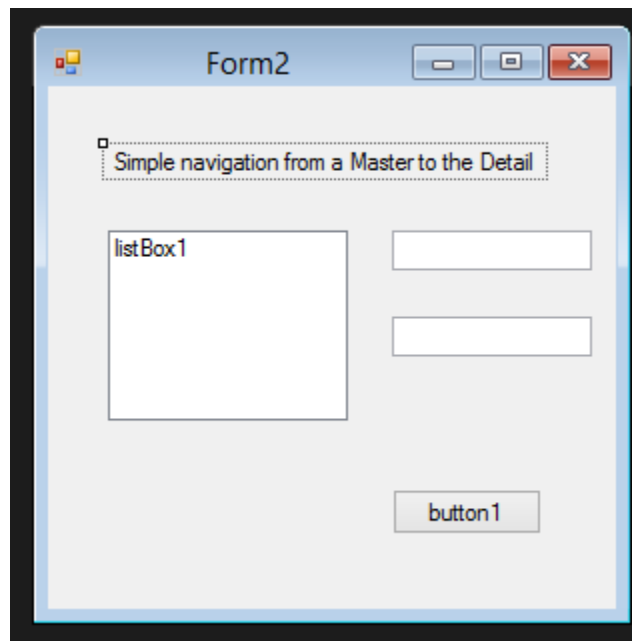


Select and right click to display the properties of the textbox. CustomerID is bound to the first textbox. Binding source schema document. By using the data sources toolbar the database can be dragged and dropped onto the form, sets the textboxes automatically.



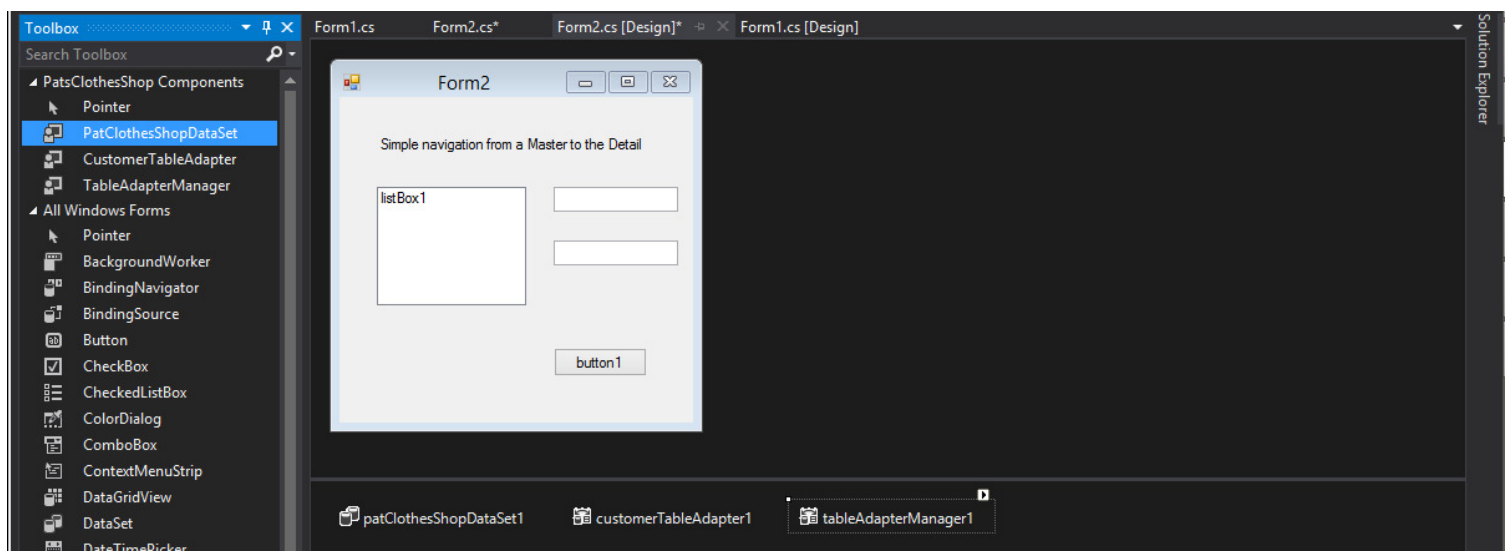
**Add the data items manually.**

Create a new form form2 add the items displayed in the below image. Label, Listbox, 2 textboxes and a button. Strongly typed components or preconfigured.



Add a button to form1 to open form2. Type the code below to create an instance of the class Form2

```
Form2 myForm = new Form2();
myForm.Show();
```

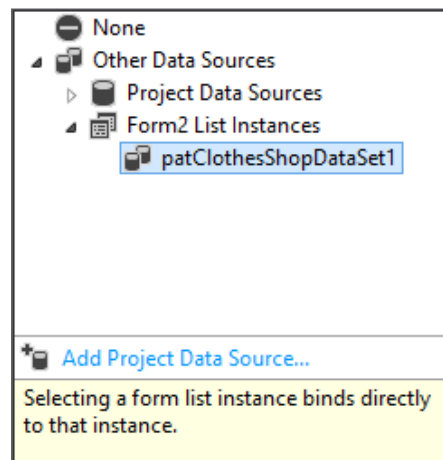
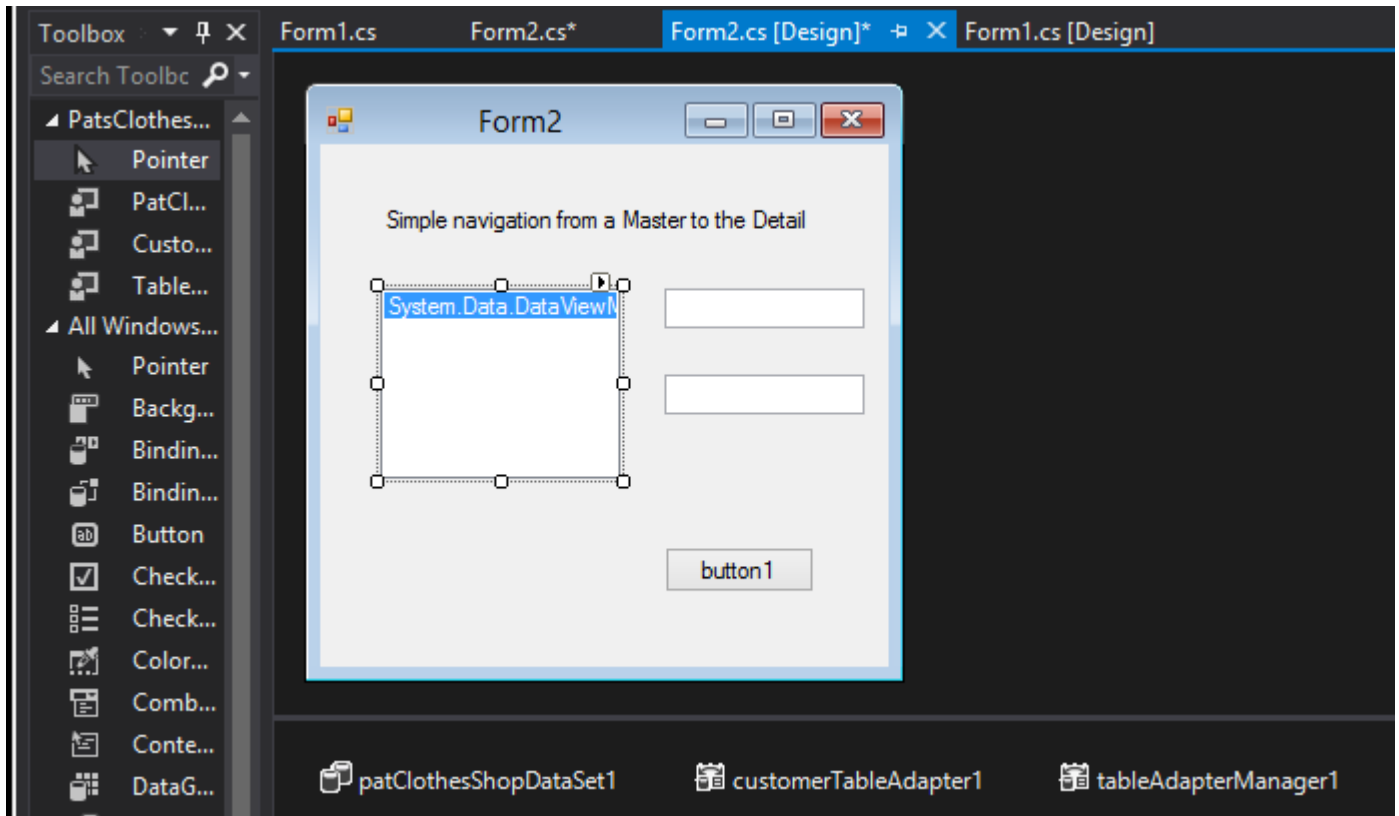


Double click form2 type the code below. Fill method passes in `patClothesShopDataSet1.Customer`. Fill method takes action to grab the data from the database and populate the customer table of the database with the data it retrieves.

```
private void Form2_Load(object sender, EventArgs e)
{
    customerTableAdapter1.Fill(patClothesShopDataSet1.Customer);
}
```

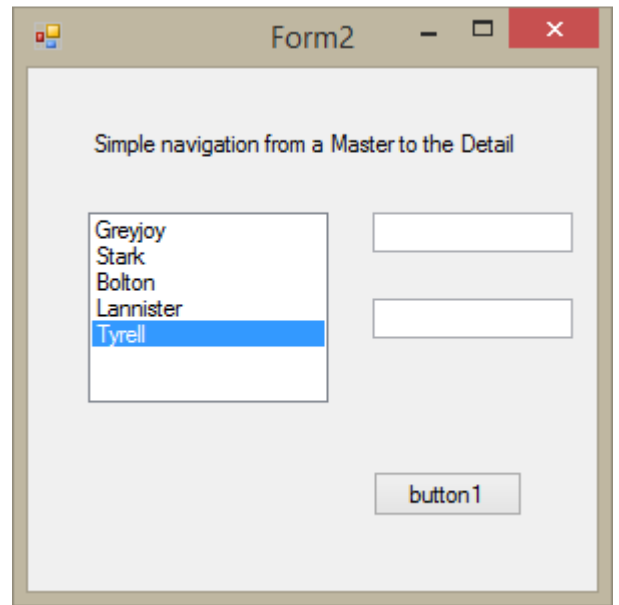
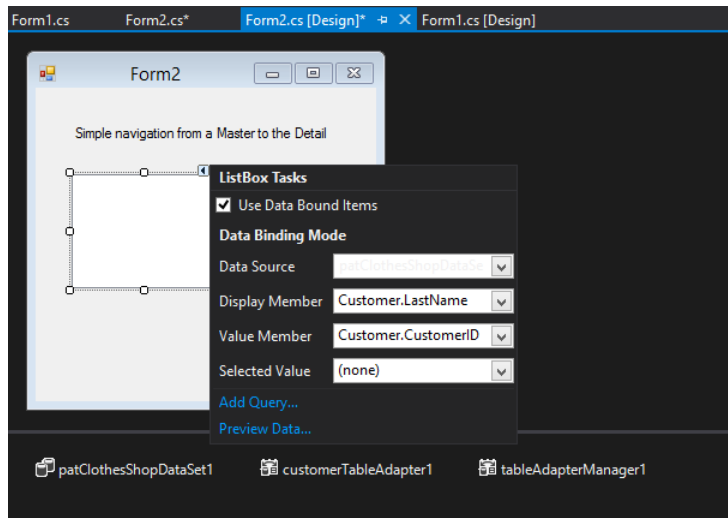


Select the listbox click the arrow and select patClothesShopDataSet1, from the pop-up box.

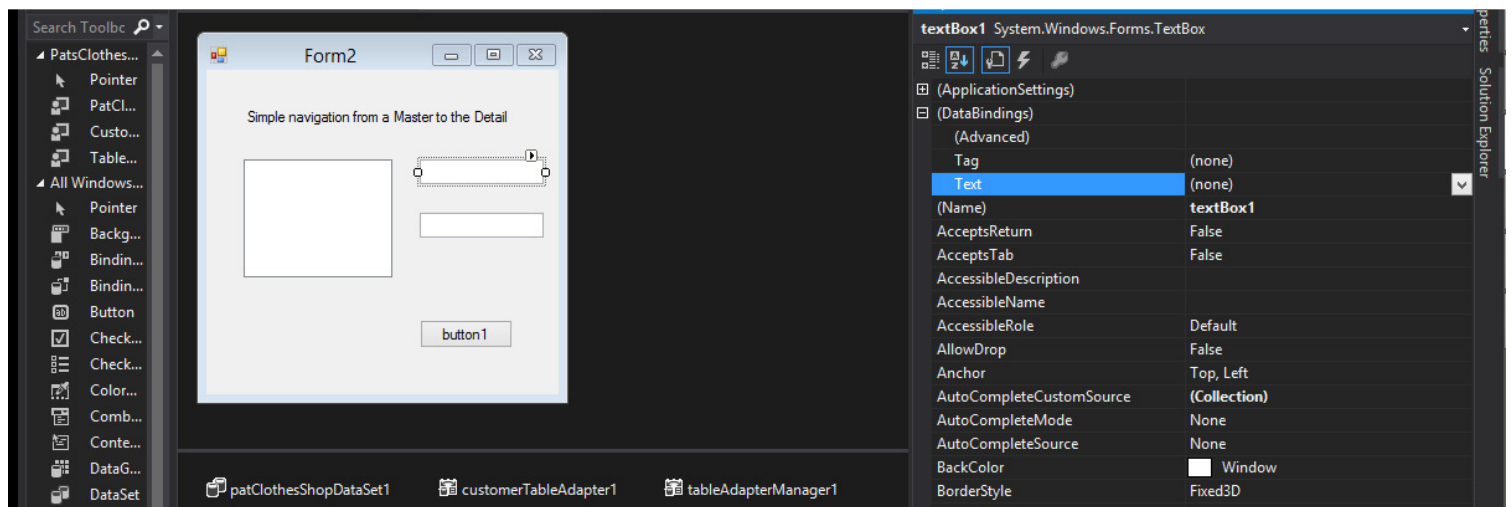


## C# Database application

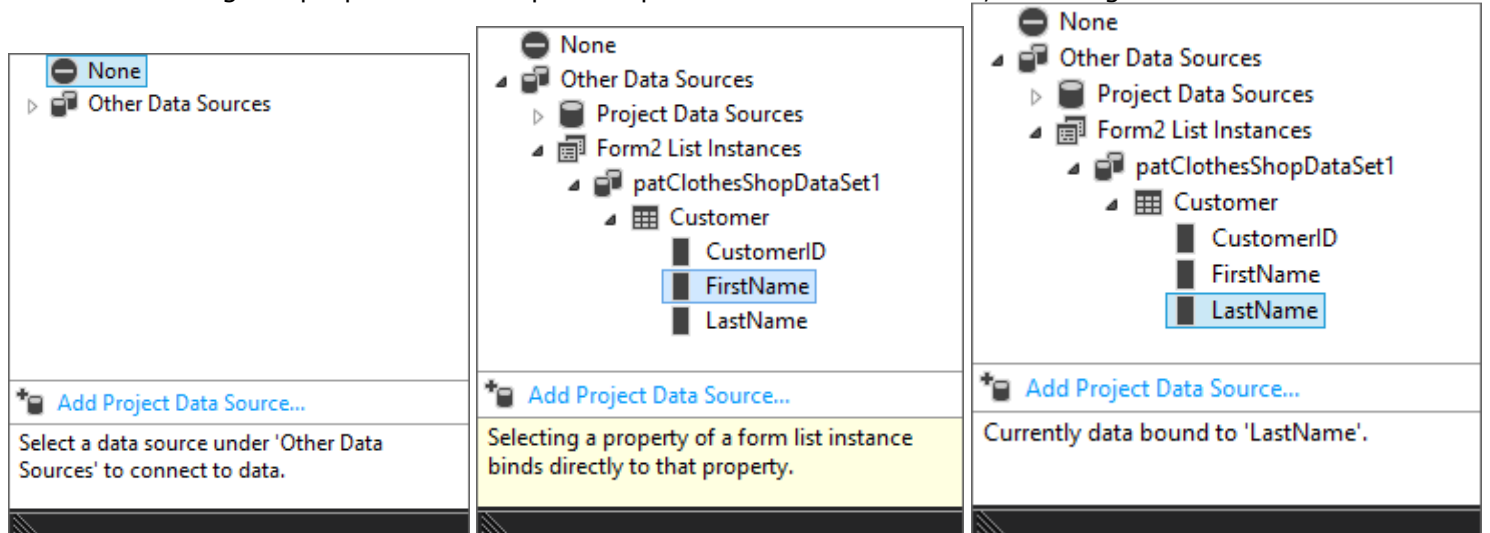
Select the list box and click the arrow button to data bound the listbox to the dataabse. Check the checkbox Use data bound items. From the pop-up select the data source patclothesshop1. In Display member select the last name and Customer last name this will displayed. In value member select the CustomerID, which is always unique.



Bind the textboxes on the right with the listbox on the left. Select the first textbox and right click properties go to databindings and select text click the drop down arrow.

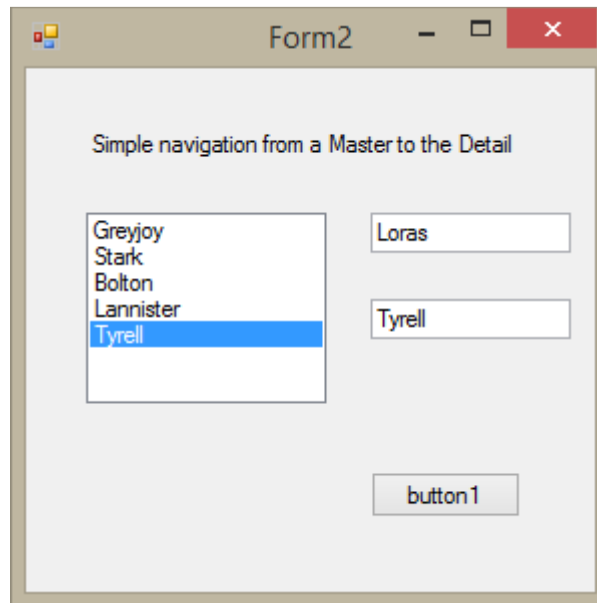


From the pop-up select first name for the first textbox. Go back to the form and select and right click the second textbox go to properties and repeat steps for the second textbox, selecting last name this time.

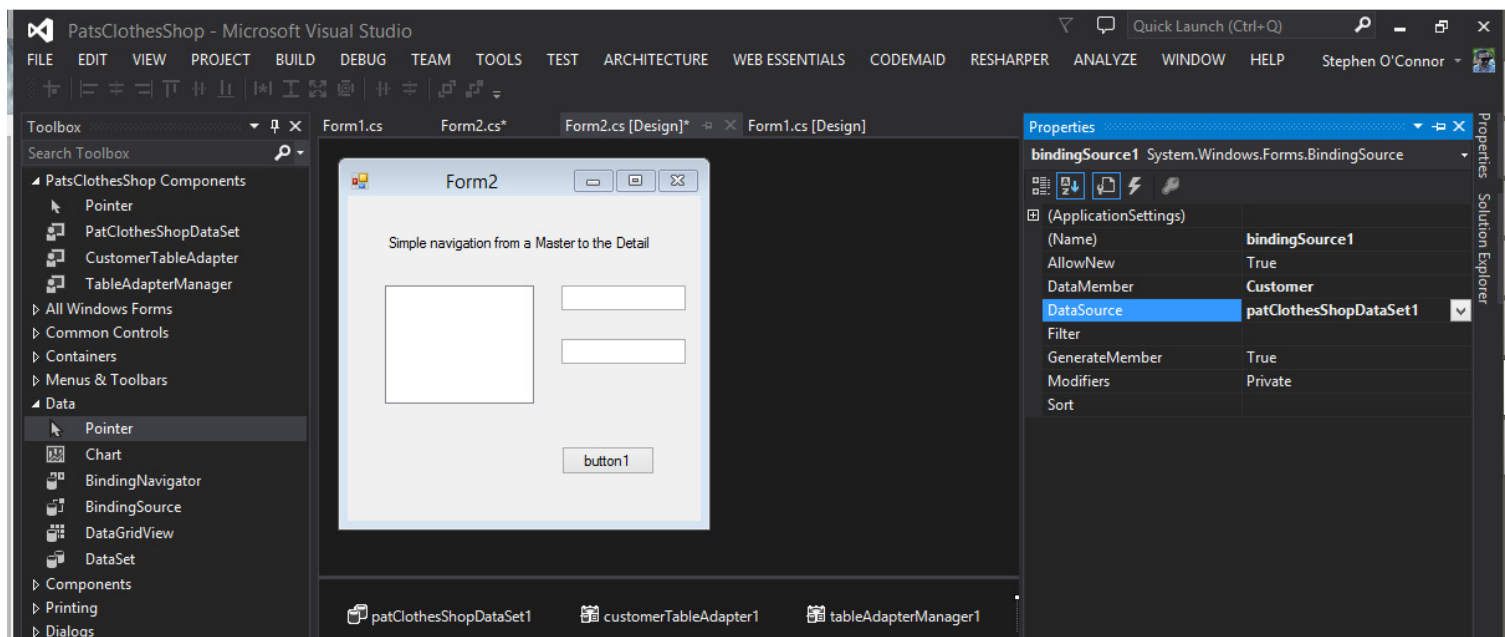


## C# Database application

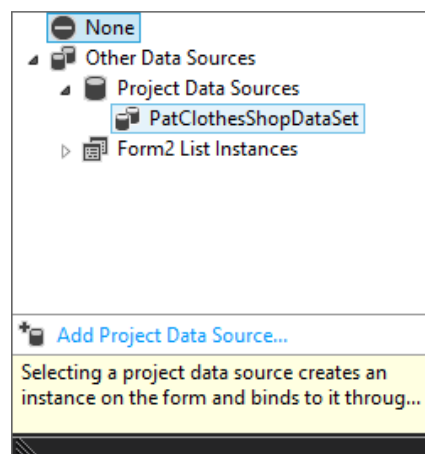
Run the application, open second form. Select from the listbox to display the first name and last name of the person in the textboxes.



Updating capabilities. Drag and drop the BindingSource onto form2. To update the data. Hover over and read the description of the BindingSource tool. The bindingSource1 has been added to the designer tray.

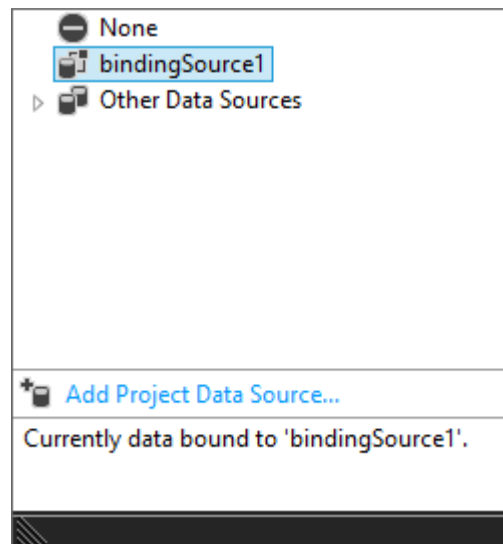
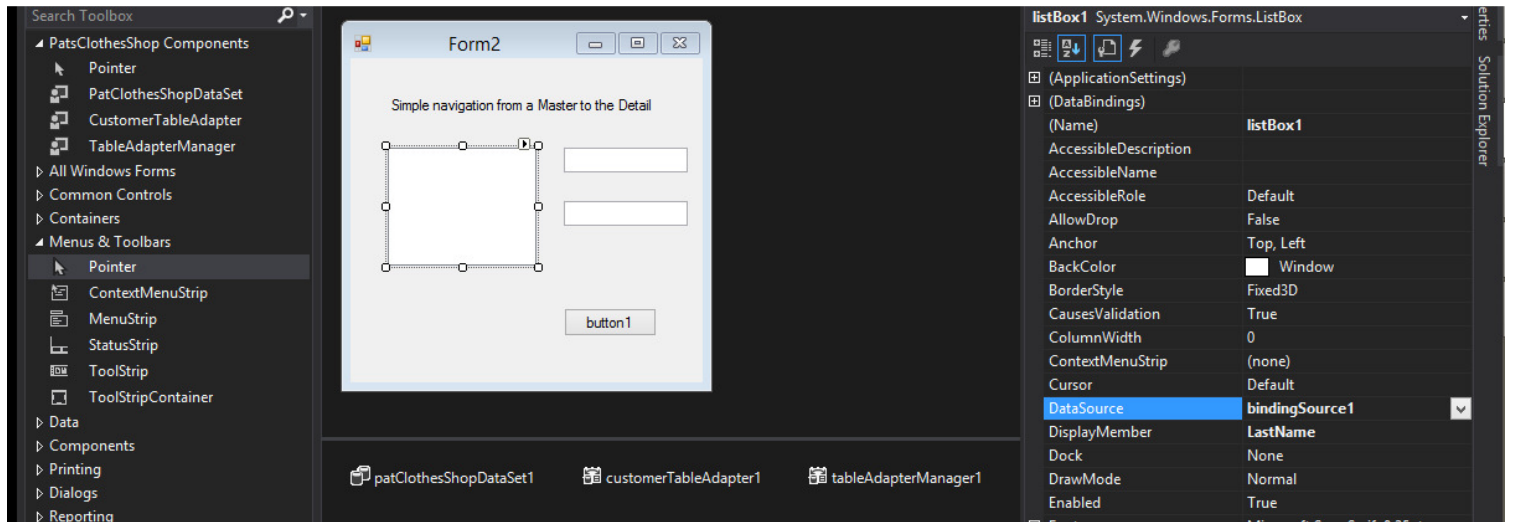


Click bindingSource1 and select PatClothesShopDataSet from the properties DataSource pop-up. Select Customer as the DataMember.

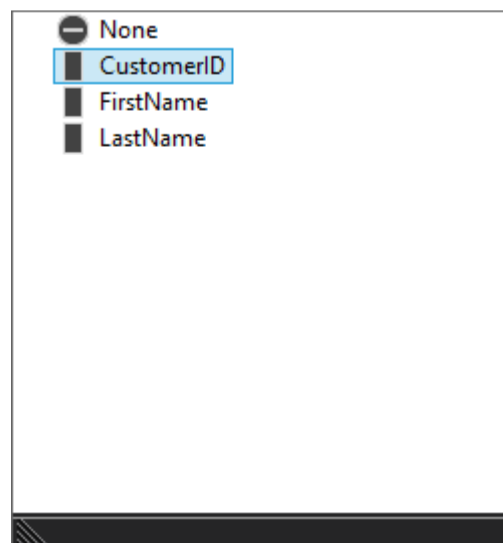


## C# Database application

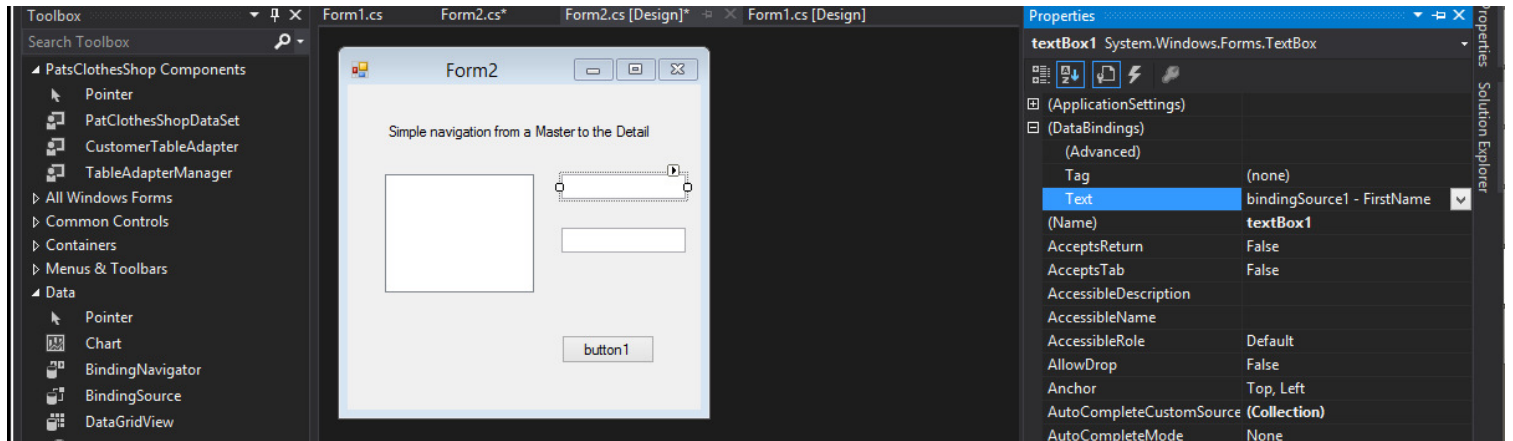
Select listbox go to data source select bindingSource1. Change the DisplayMember to LastName.



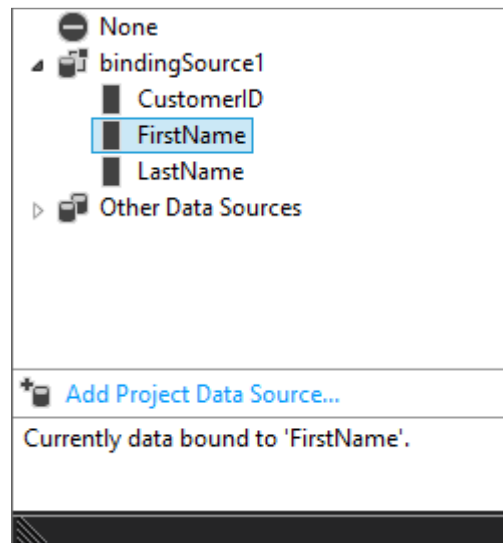
Select Value member in the listbox from properties and change to CustomerID.



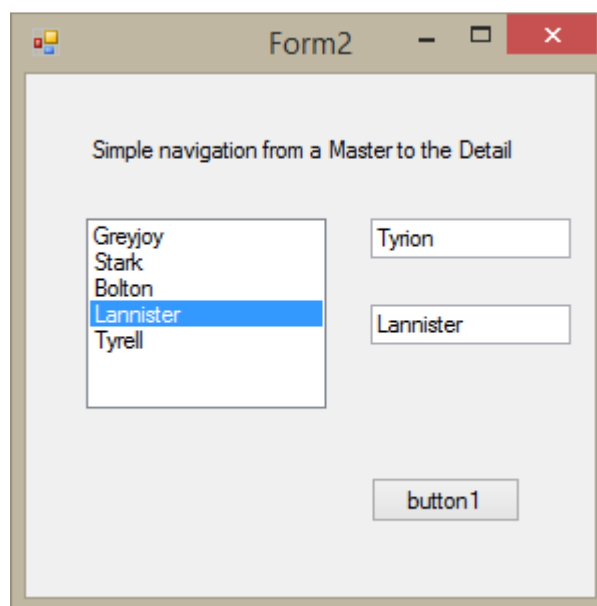
## C# Database application



Select the properties of the first and second textboxes and select first and last name respectively.



Run application to check if it still works.



## C# Database application

Double click the button on form2

```
18 }
19
20 private void button1_Click(object sender, EventArgs e)
21 {
22     bindingSource1.EndEdit();
23     customerTableAdapter1.Update()
24 }
25
26 private void Form2_Load(object sender, EventArgs e)
27 {
28     customerTableAdapter1.Fill(patClothesShopDataSet1.Customer);
29 }
30 }
```

```
private void button1_Click(object sender, EventArgs e)
{
    bindingSource1.EndEdit();
    customerTableAdapter1.Update(patClothesShopDataSet1.Customer);
}
```

```
// save changes to the dataset
bindingSource1.EndEdit();

// select TableAdapter and return number of items updated
customerTableAdapter1.Update(patClothesShopDataSet1.Customer);
```

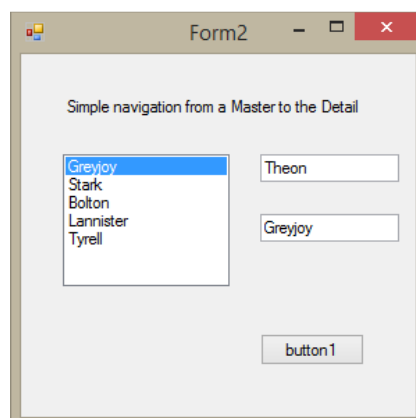
```
// save changes to the dataset
bindingSource1.EndEdit();

int result = 0;

// return number of items updated
result = customerTableAdapter1.Update(patClothesShopDataSet1.Customer);

// display the row has been updated
MessageBox.Show(result.ToString());
```

Open the .exe file in the debug /bin folder. Change Yara (first name to Theon) close and reopen .exe file and see the change made to the database.



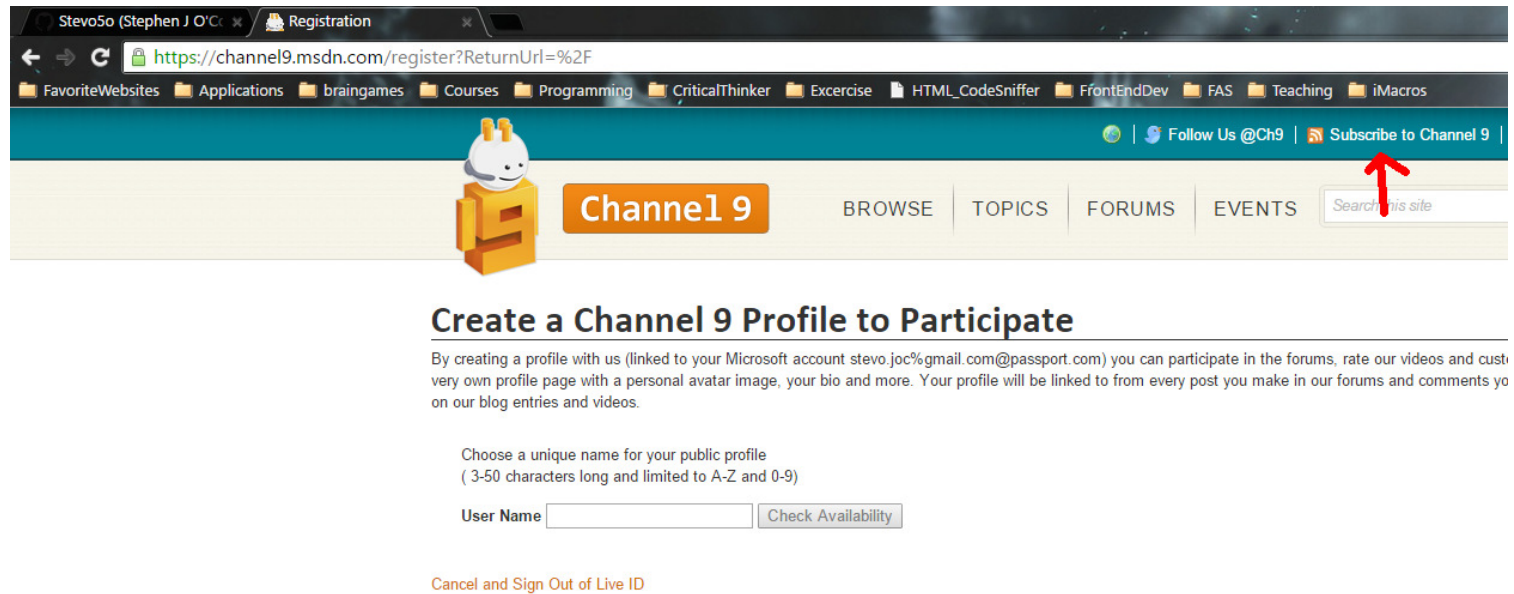
stackoverflow

Actually this is not a issue with update command. Visual Studio keeps two databases. One in project folder and one in bin/debug folder. Database in bin/debug folder always update with Database in project folder. If you view Database through Visual Studio, it always shows the Database inside the project folder not other one inside bin/debug folder.

## RSS (Really Simple Syndication) reader

An RSS link is a way of getting all your favorite information collected into one place

Rather than have you search the web every day trying to find it, use it to have everything from sports stats to breaking news to job openings all forwarded to you. We will be creating our own RSS reader



## Required channel elements ↩

### [RSS 2.0 Specification](#)

Here's a list of the required channel elements, each with a brief description, an example, and where available, a pointer to a more complete description.

Element	Description	Example
title	The name of the channel. It's how people refer to your service. If you have an HTML website that contains the same information as your RSS file, the title of your channel should be the same as the title of your website.	GoUpstate.com News Headlines
link	The URL to the HTML website corresponding to the channel.	<a href="http://www.goupstate.com/">http://www.goupstate.com/</a>
description	Phrase or sentence describing the channel.	The latest news from GoUpstate.com, a Spartanburg Herald-Journal Web site.

Bringing all of what we have learned together

Building a C# RSS reader. Purpose of this exercise concept to deployment, the steps of building an application from start to finish.

## The Process

Most formal software development processes are created for teams of developers to help them communicate better and stay organized.

## MSF – Microsoft Solutions Framework

### [Microsoft Solutions Framework \(MSF\) Overview](#)

The Microsoft Solutions Framework (MSF) is an adaptable approach for successfully delivering technology solutions faster, with fewer people and less risk, while enabling higher quality results. MSF helps teams directly address the most common causes of technology project failure — improving success rates, solution quality, and business impact.

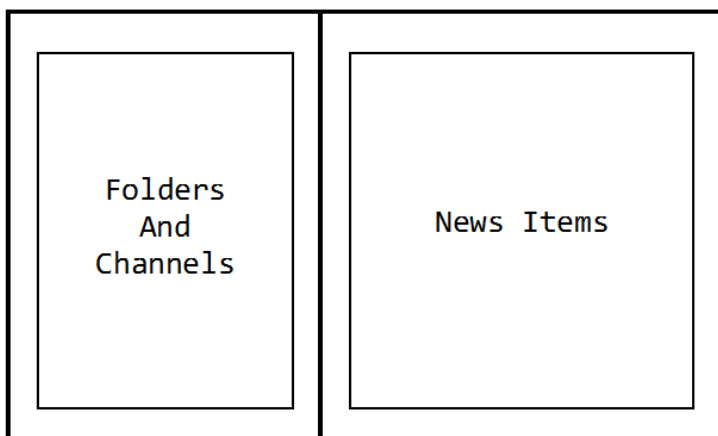
#### Basic stages of MSF

- Envision the solution
  - Allows users to read news items from RSS feeds
  - Subscribe to channels
  - Organize channels
  - View news items in a web browser
  - Refresh channels
  - Edit and delete channels and folders
  - Unobtrusive feedback /notifications
- Plan the solution
  - Logical design
  - Physical design
  - User Interface Design
    - Using a “low-tech mock up”
  - Database Design
- Develop the solution
  - Draw up the design for the UI and the database
  - The RSS specification helps us to determine most of the data structure we’ll need
    - Folder - folderID
      - Channels – title URL
        - News items – title, description, link, date channelID FK relationship
  - User Interface design
- Test the solution
- Deploy the solution

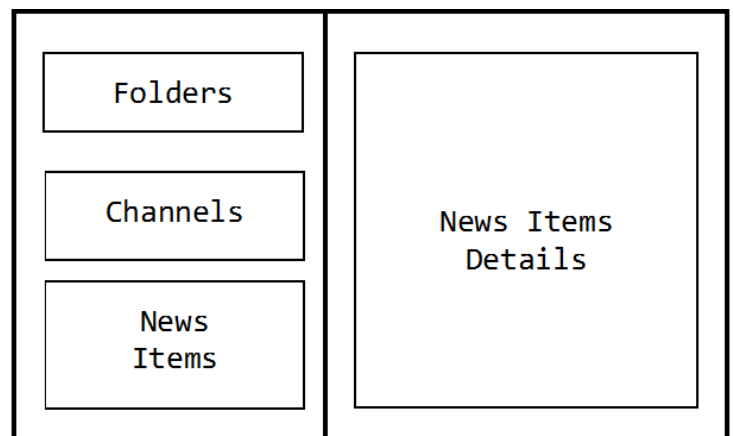
#### User Interface design

Keep it simple for now, if need be add more features later. Keep application scope small enough so that it actually gets finished. Avoiding scope creep, Scope creep is when a change – an update or addition – to the whole or even part of the project has been requested when the project is already underway. The change may come from your client, co-worker, or customer – normally whoever requested the project. They have decided they want something done differently or would basically like the outcome to be different than originally requested. This can happen once or several times within the life of a project. - See more at: [teamgantt.com/scope-creep-the-two-dirtiest-words](http://teamgantt.com/scope-creep-the-two-dirtiest-words). A quick success before adding too many features, version 1.

1. Basic mock up windows explorer type view



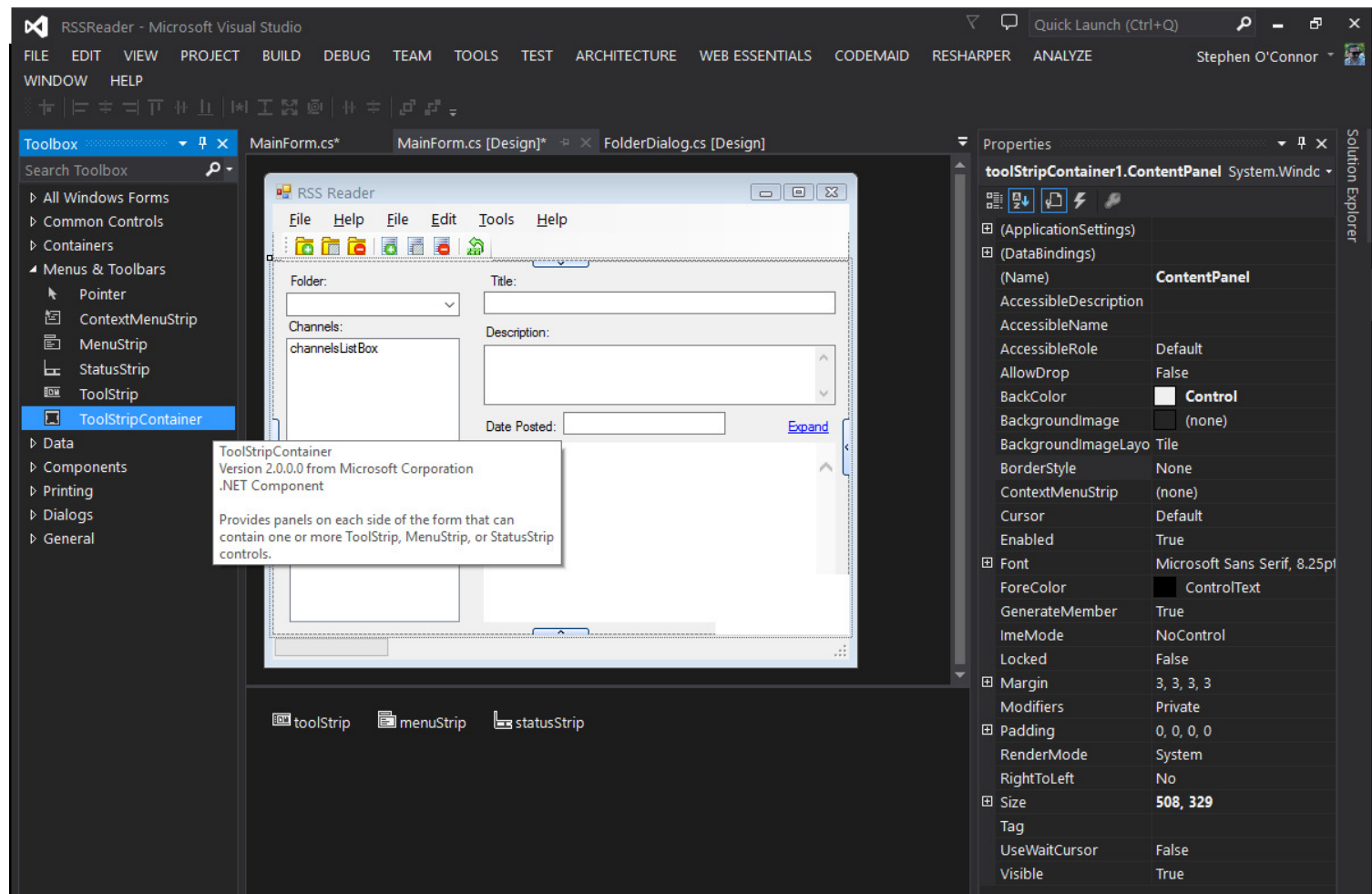
2. When a folder is select this will be the view



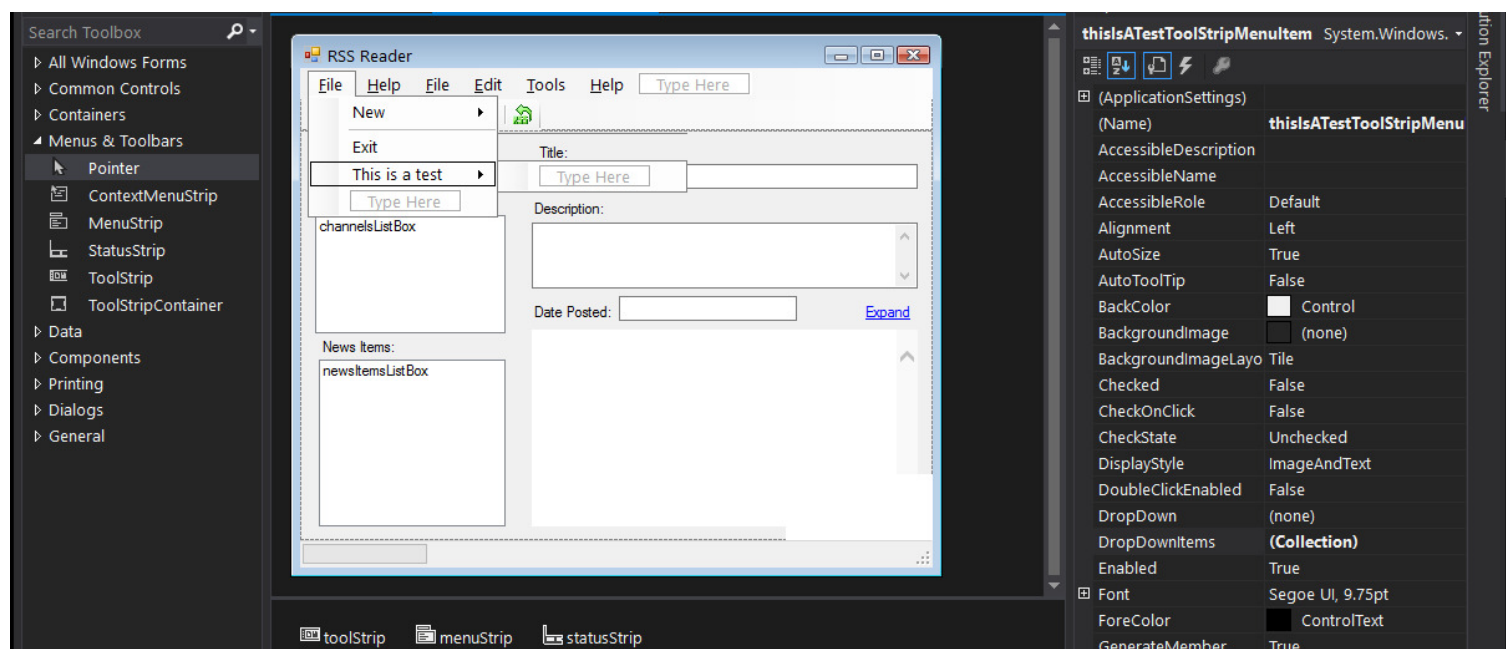


## Let's start

Drag and drop a toolStripContainer onto the RSS reader form. Run the application toolStripContainer allows you to customize the UI and more things around and docking toolbar controls.

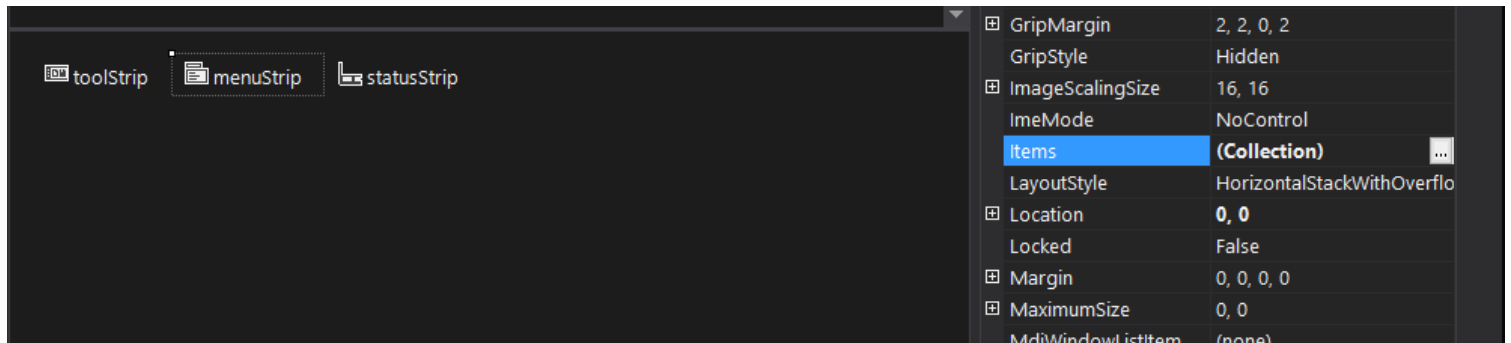


Drag and drop a menuStrip . Add a new menu item and if double clicked an event handler will be created.

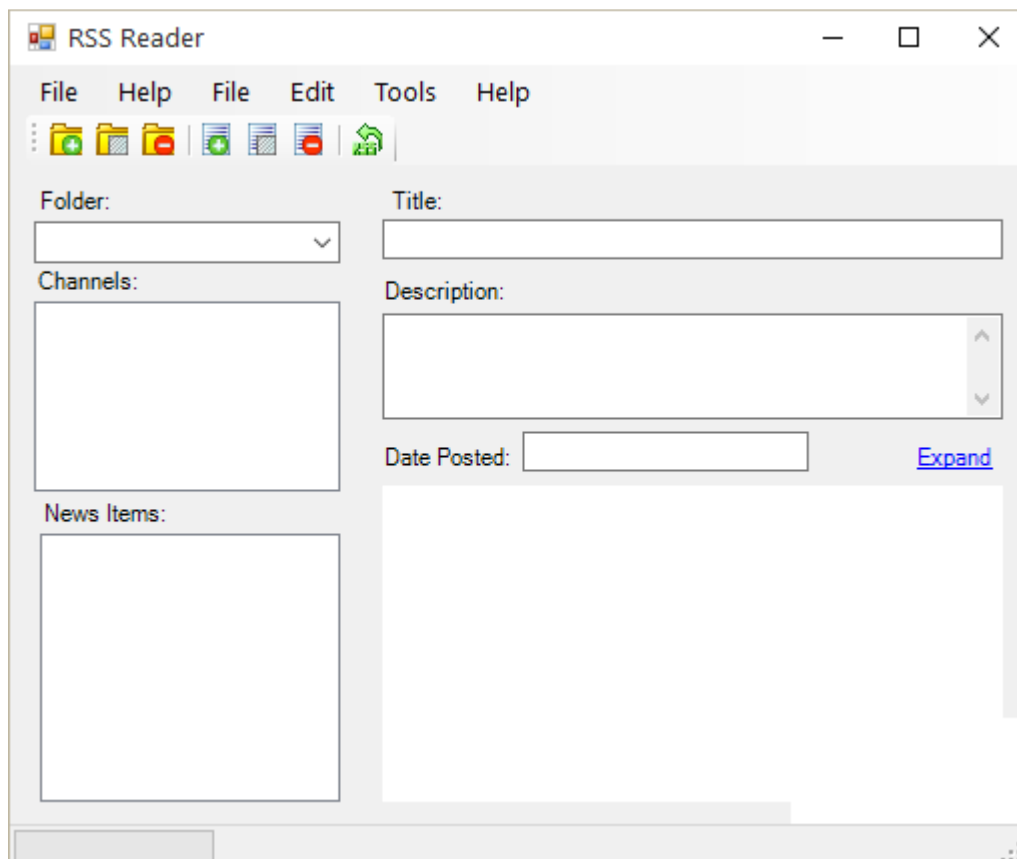
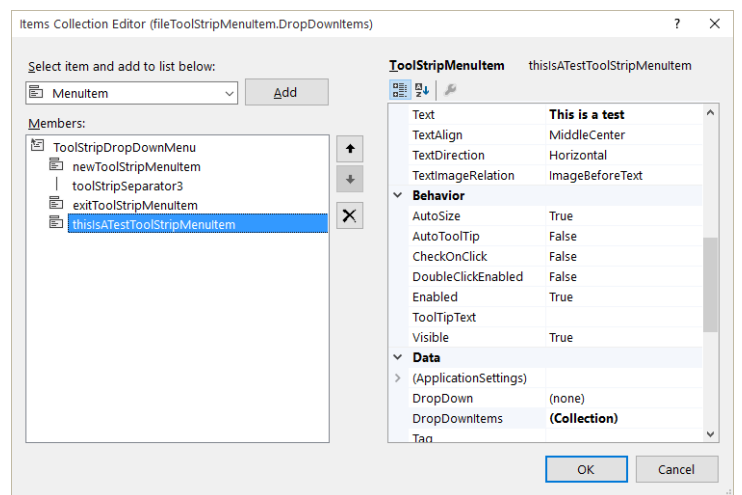
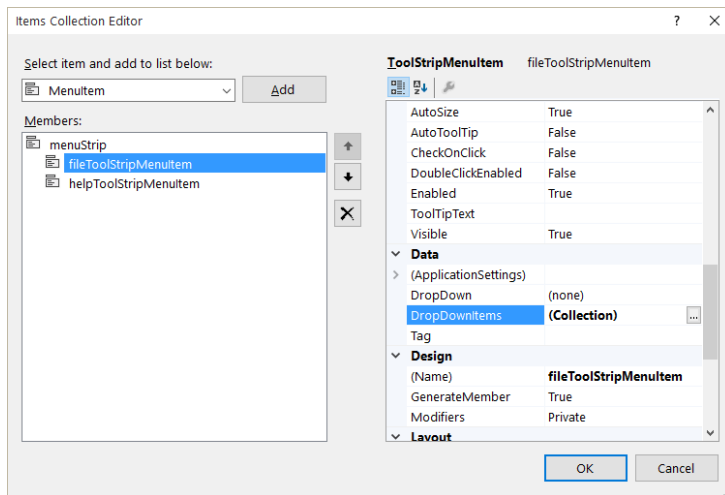


## C# Database application

Edit the menuStrips from the properties menu. Select items (Collection) button.

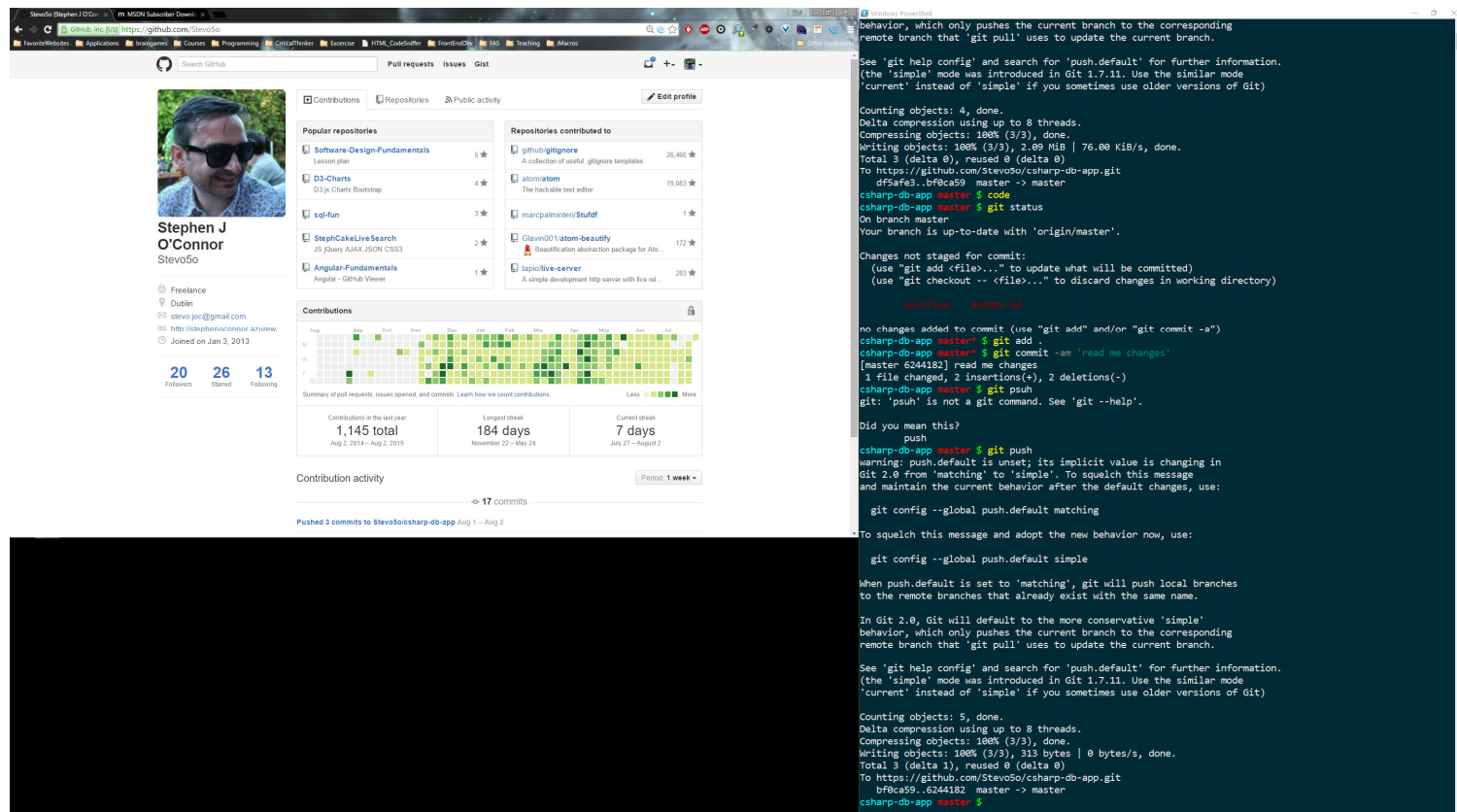


Pop up displaying the menu for editing.



Each "pass" through these steps (to implement additional functionality is called an "iteration".

## My Set-up



The image shows a GitHub profile for Stephen J O'Connor (Stevo50) and a terminal window displaying the output of git commands to change the push.default behavior.

**GitHub Profile:**

- Stephen J O'Connor** (Stevo50)
- Freelance, Dublin
- Joined on Jan 3, 2013
- 20 Followers, 26 Stars, 13 Following
- Popular repositories:**
  - Software-Design-Fundamentals (Lesson plan)
  - D3-Charts (D3.js Charts Bootstrap)
  - sql-fun
  - StephCakeLiveSearch (JS jQuery AJAX, JSON, CSS3)
  - Angular-Fundamentals (Angular - GitHub Viewer)
- Repos contributed to:**
  - github/ignore (A collection of useful .gitignore templates)
  - atom/atom (The hackable text editor)
  - marcpalmer/Scout24
  - Glenn001/atom-beautify (Beautification abstraction package for Atom)
  - lapo/live-server (A simple development http server with live reload)
- Contributions:** 1,145 total (Aug 2, 2014 - Aug 2, 2015), 184 days longest streak (November 22 - May 24), 7 days current streak (July 27 - August 2).

**Terminal Window:**

```
behavior, which only pushes the current branch to the corresponding
remote branch that 'git pull' uses to update the current branch.

See 'git help config' and search for 'push.default' for further information.
(the 'simple' mode was introduced in Git 1.7.11. Use the similar mode
'current' instead of 'simple' if you sometimes use older versions of Git)

Counting objects: 4, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 2.09 MiB | 76.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/Stevo50/csharp-db-app.git
df5afe3..bf0ca59 master -> master
csharp-db-app master $ code
csharp-db-app master $ git status
On branch master
Your branch is up-to-date with 'origin/master'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   libsql-net.cs

no changes added to commit (use "git add" and/or "git commit -a")
csharp-db-app master$ git add
csharp-db-app master$ git commit -am "read me changes"
[master 6244182] read me changes
1 file changed, 2 insertions(+), 2 deletions(-)
csharp-db-app master$ git push
git: 'psuh' is not a git command. See 'git --help'.

Did you mean this?
      push
csharp-db-app master$ git push
warning: push.default is unset; its implicit value is changing in
Git 2.0 from 'matching' to 'simple'. To squelch this message
and maintain the current behavior after the default changes, use:

    git config --global push.default matching

To squelch this message and adopt the new behavior now, use:

    git config --global push.default simple

When push.default is set to 'matching', git will push local branches
to the remote branches that already exist with the same name.

In Git 2.0, Git will default to the more conservative 'simple'
behavior, which only pushes the current branch to the corresponding
remote branch that 'git pull' uses to update the current branch.

See 'git help config' and search for 'push.default' for further information.
(the 'simple' mode was introduced in Git 1.7.11. Use the similar mode
'current' instead of 'simple' if you sometimes use older versions of Git)

Counting objects: 5, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 313 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
To https://github.com/Stevo50/csharp-db-app.git
bf0ca59..6244182 master -> master
csharp-db-app master $
```