

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

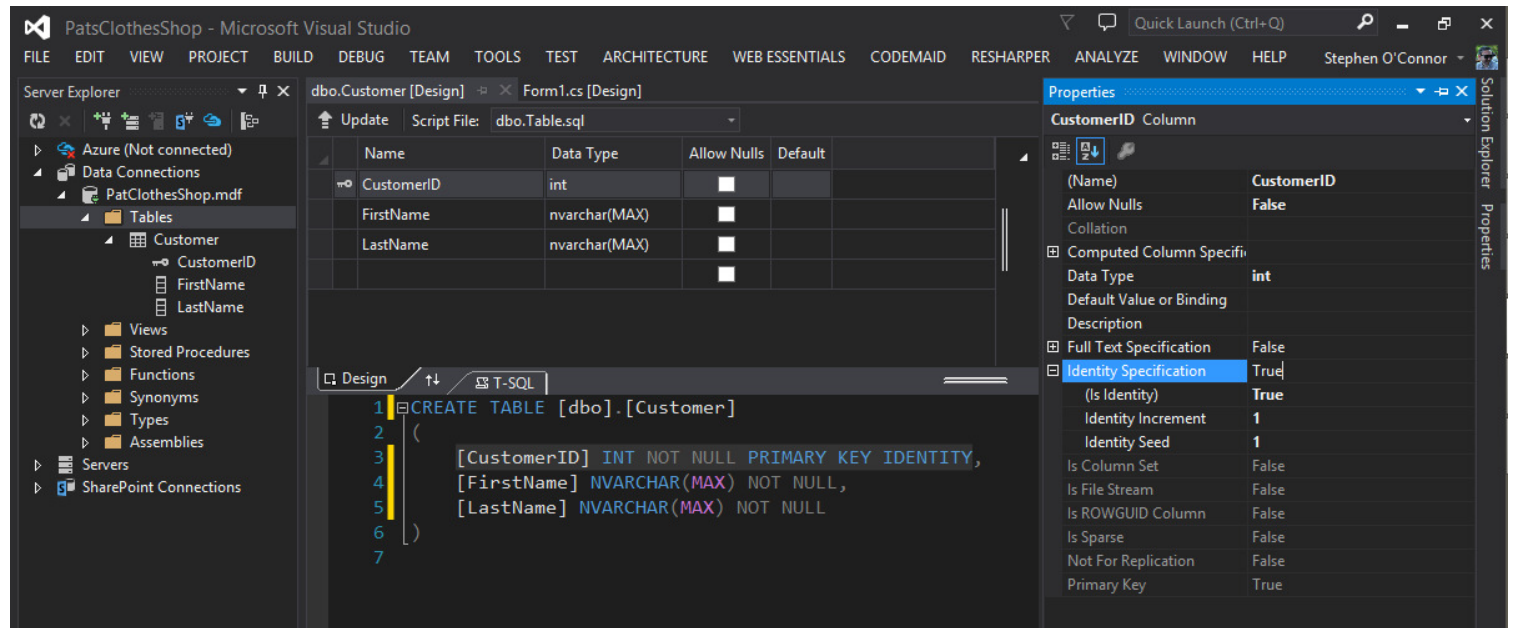
A high end relational database management system.

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

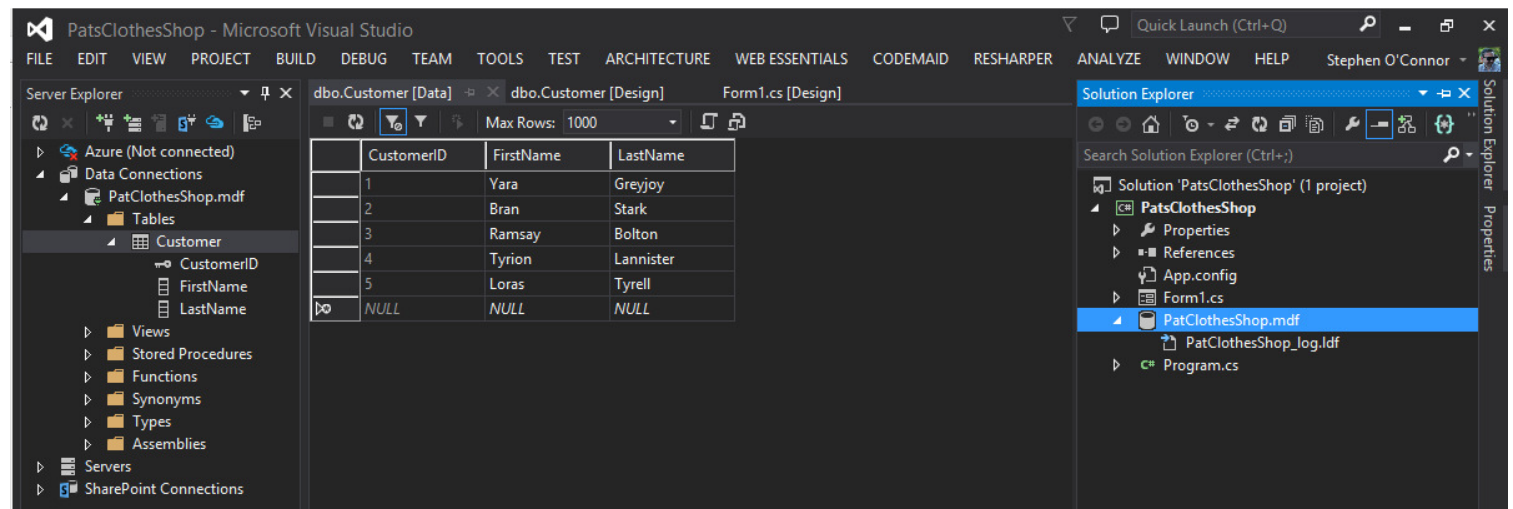
In Visual Studio 2013 download the latest SQL Server Data Tools, if already not installed.

Learn by doing

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

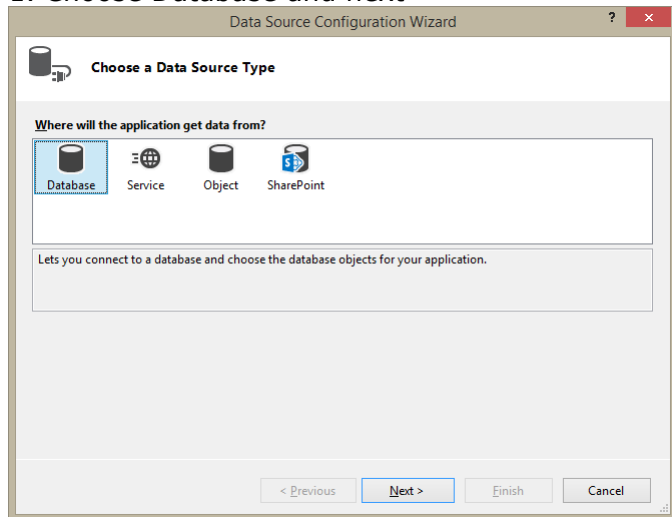


Go to show table data in the Server Explorer add five persons.

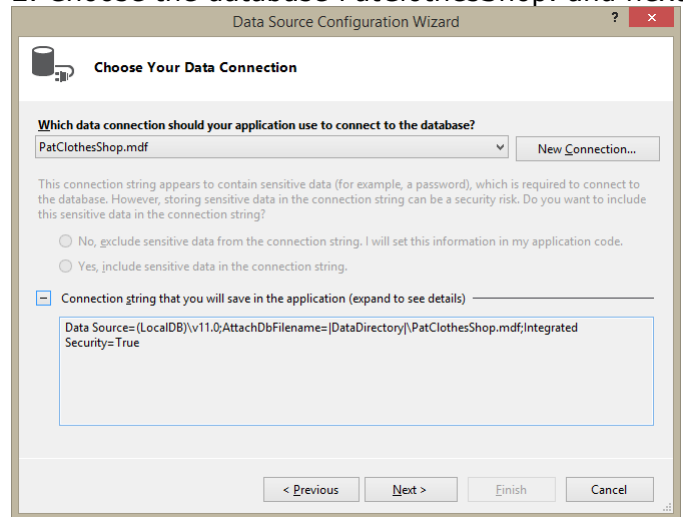


On the menu bar, choose View, Other Windows, Data Sources (or choose the Shift+Alt+D keys). Follow the steps.

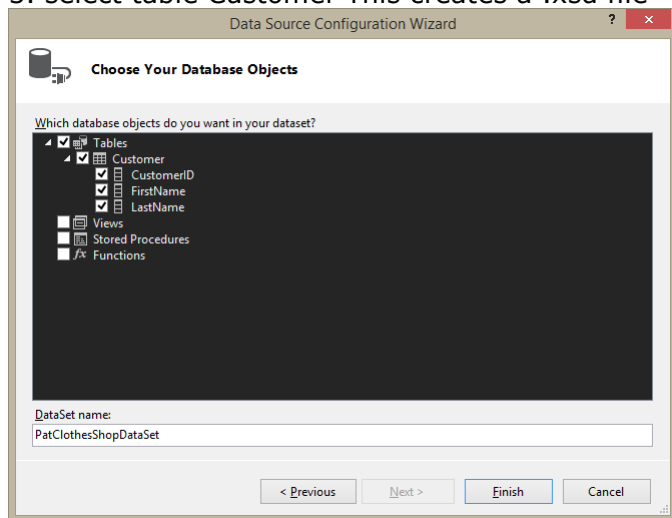
1. Choose Database and next



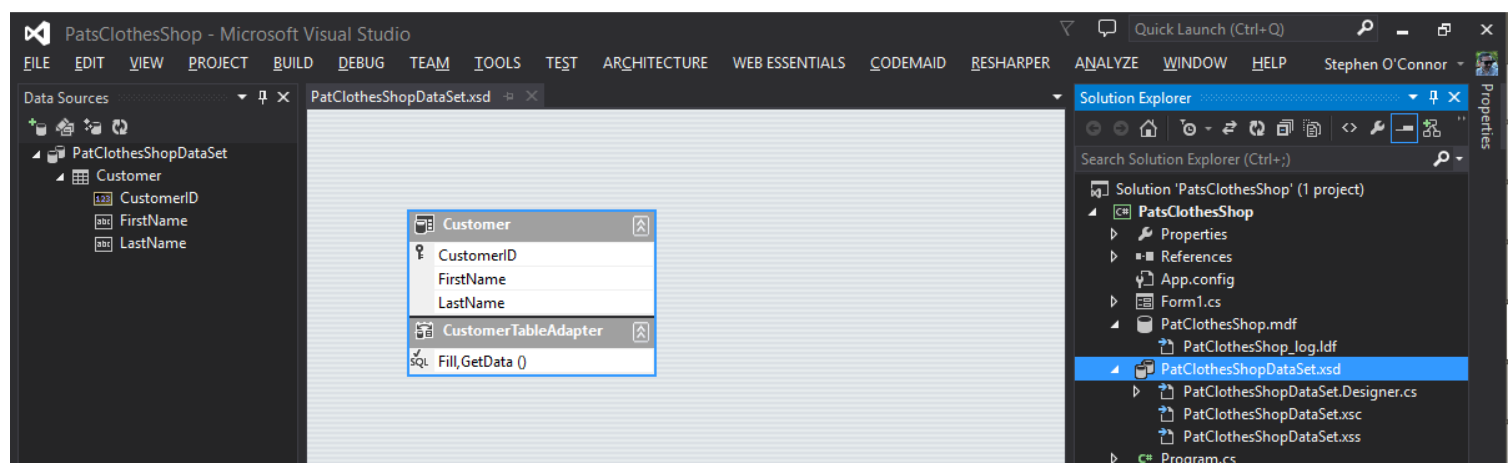
2. Choose the database PatClothesShop. and next



3. select table Customer This creates a .xsd file

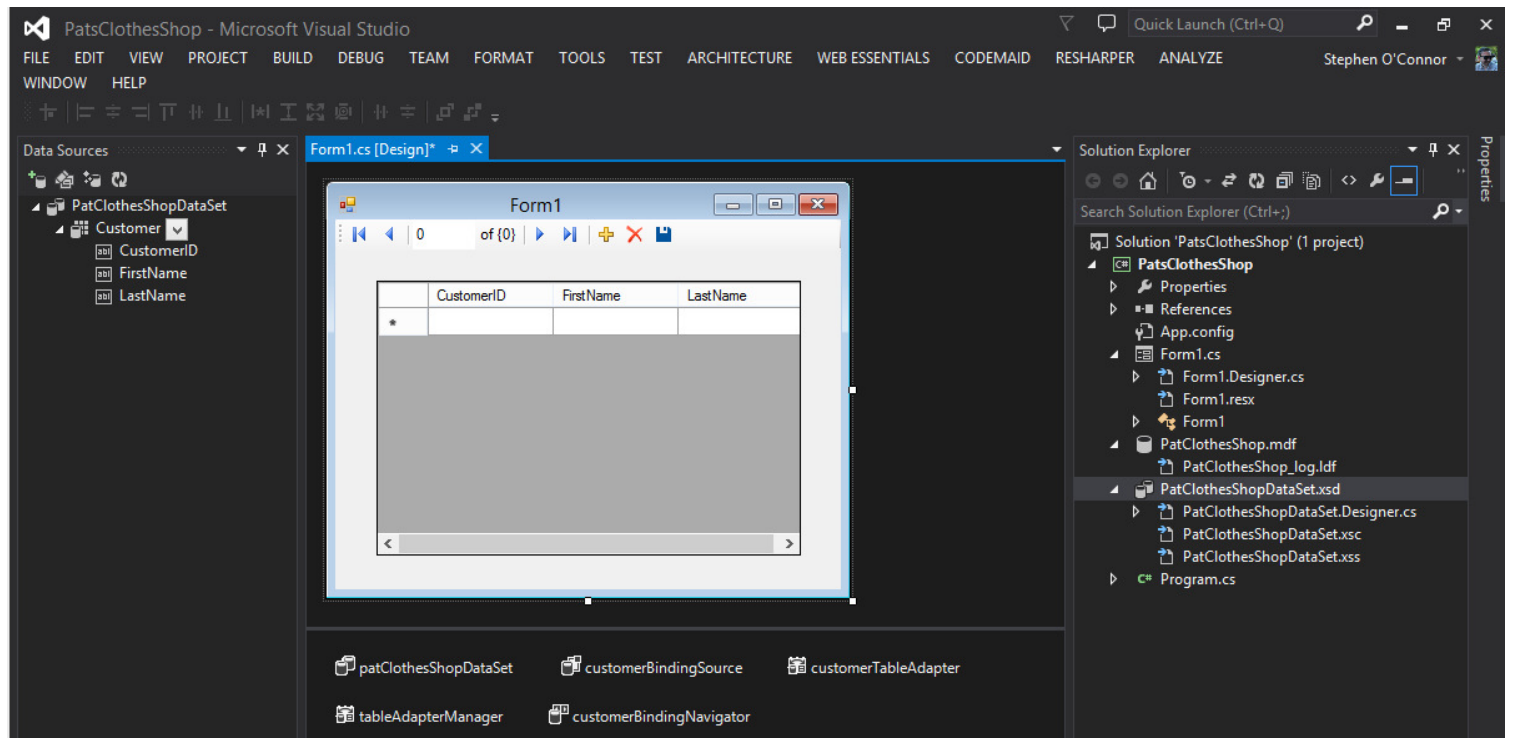


A PatClothesDataSet.xsd file right click on the xsd file and view designer mode. Xsd file is the xml schema document. The xsd file a local copy of database, this file defines the database, temporary stores the data.

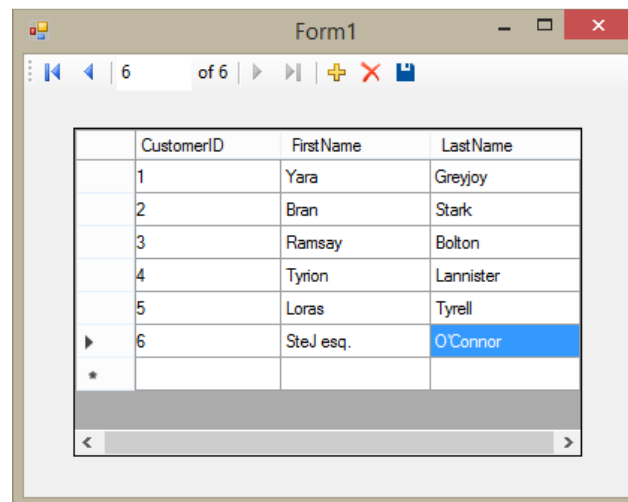


C# Database application

Drag and drop customer table from the Data Sources toolbar.

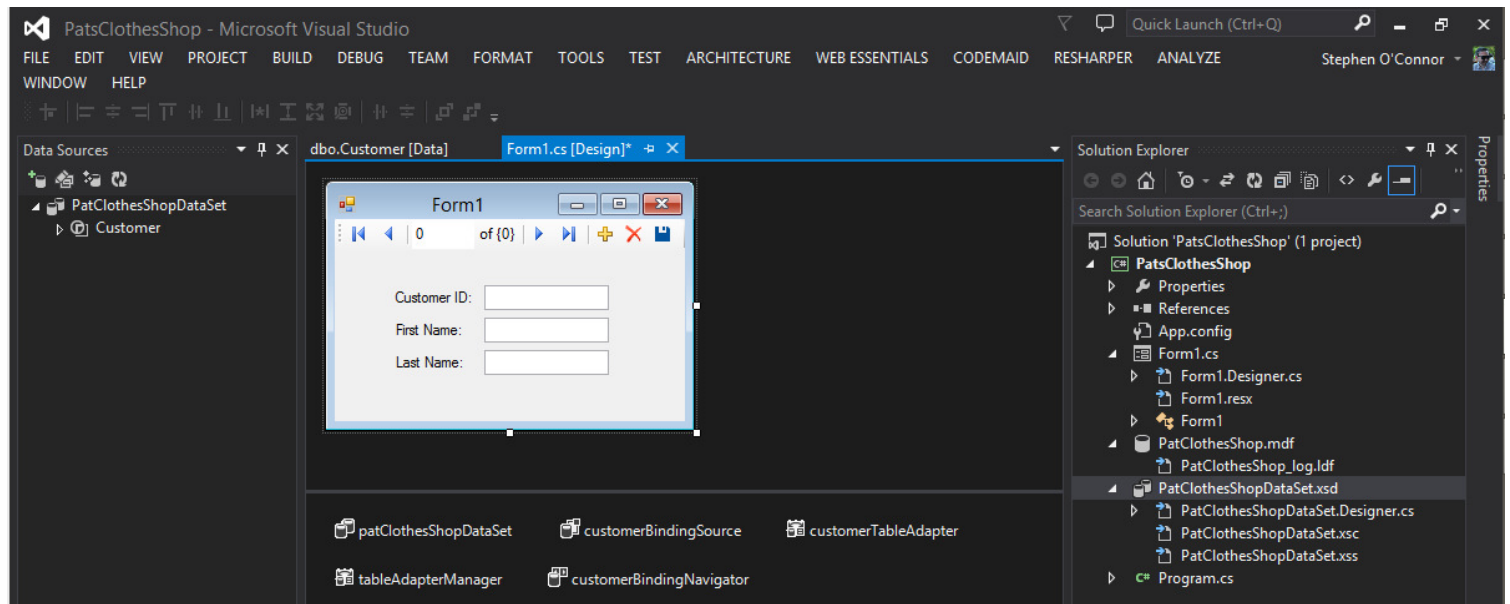


Run the project. A grid of the database navigate through the grid and add an extra row.

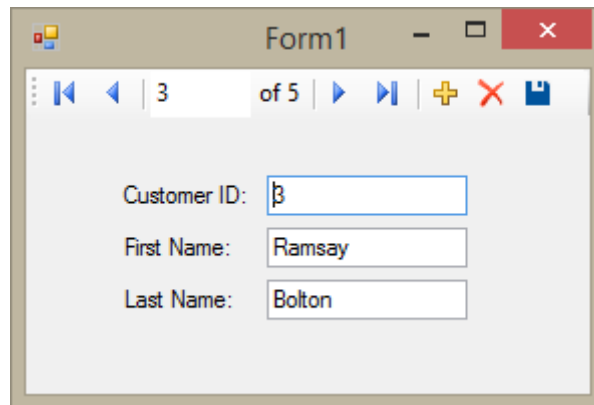


C# Database application

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

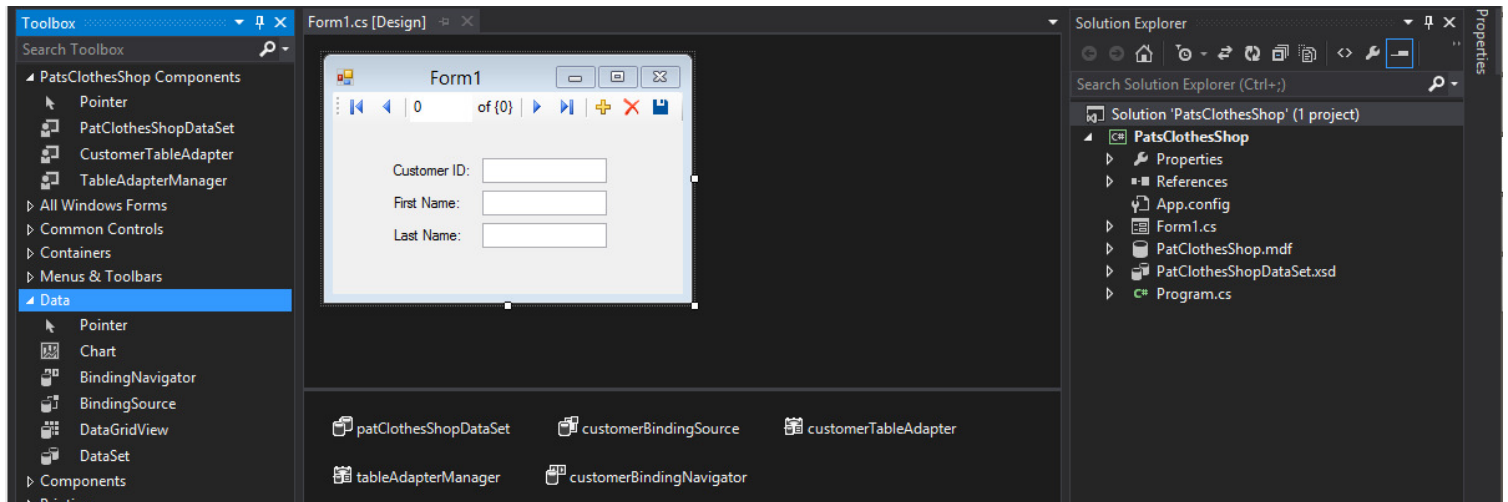
Service interface

patClothesShopBindingNavigator

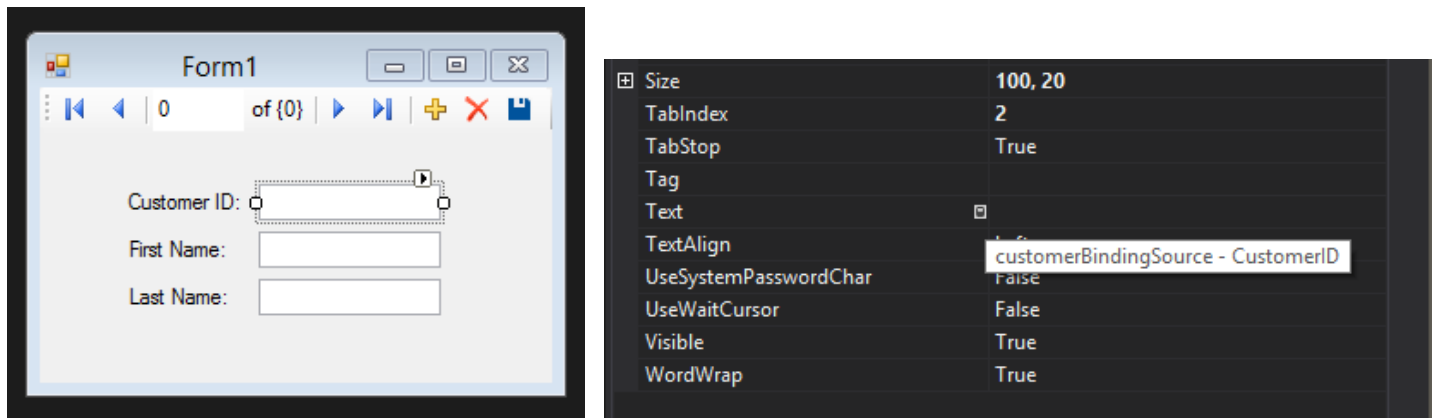
Toolbar at the top of the form.

C# Database application

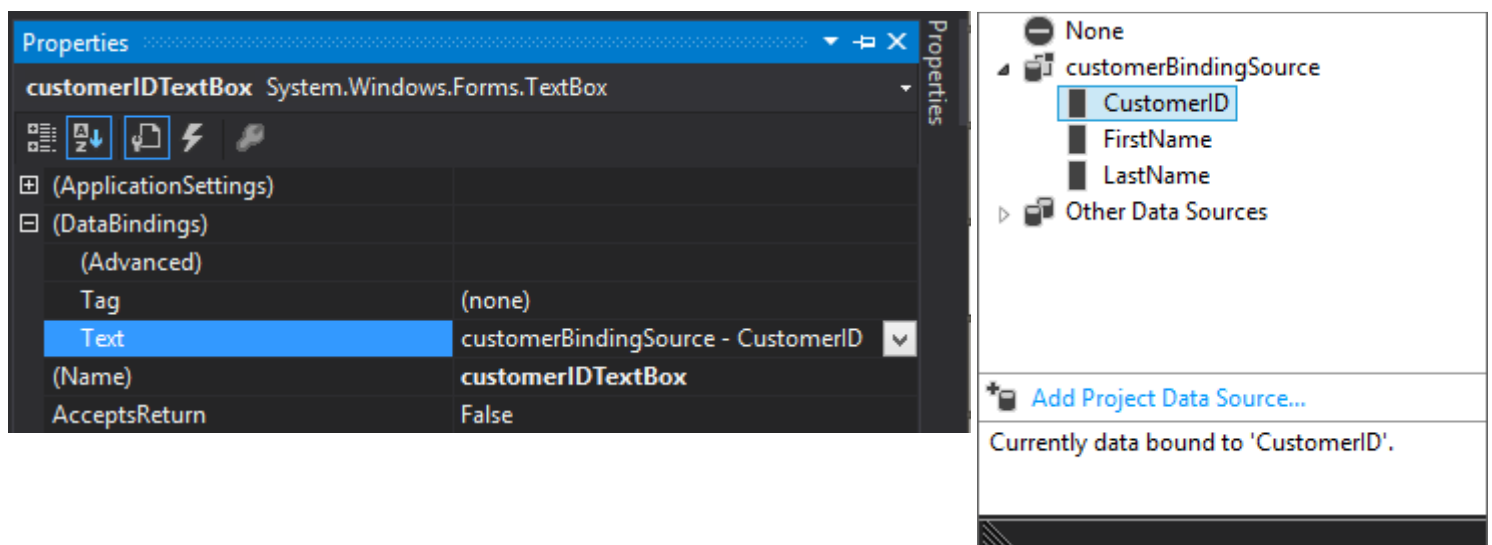
Go to toolbox and select data to show data tools that can be added manually to the form.



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

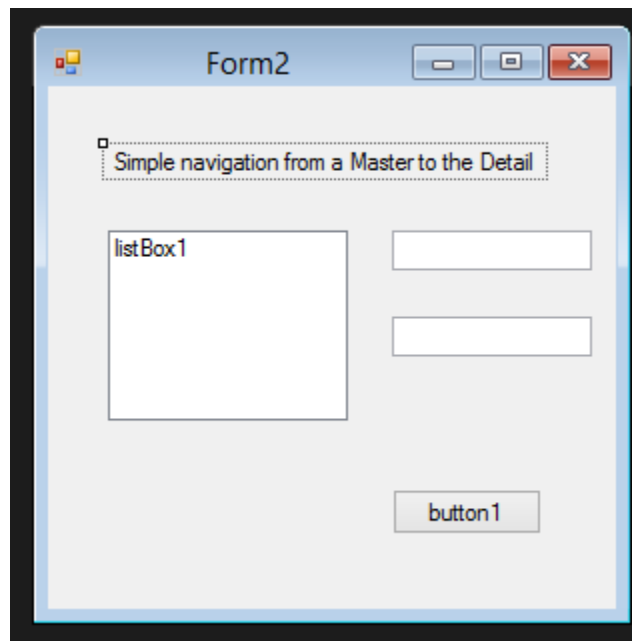


Select and right click to display the properties of the textbox. CustomerID is bound to the first textbox. Binding source schema document. By using the data sources toolbar the database can be dragged and dropped onto the form, sets the textboxes automatically.



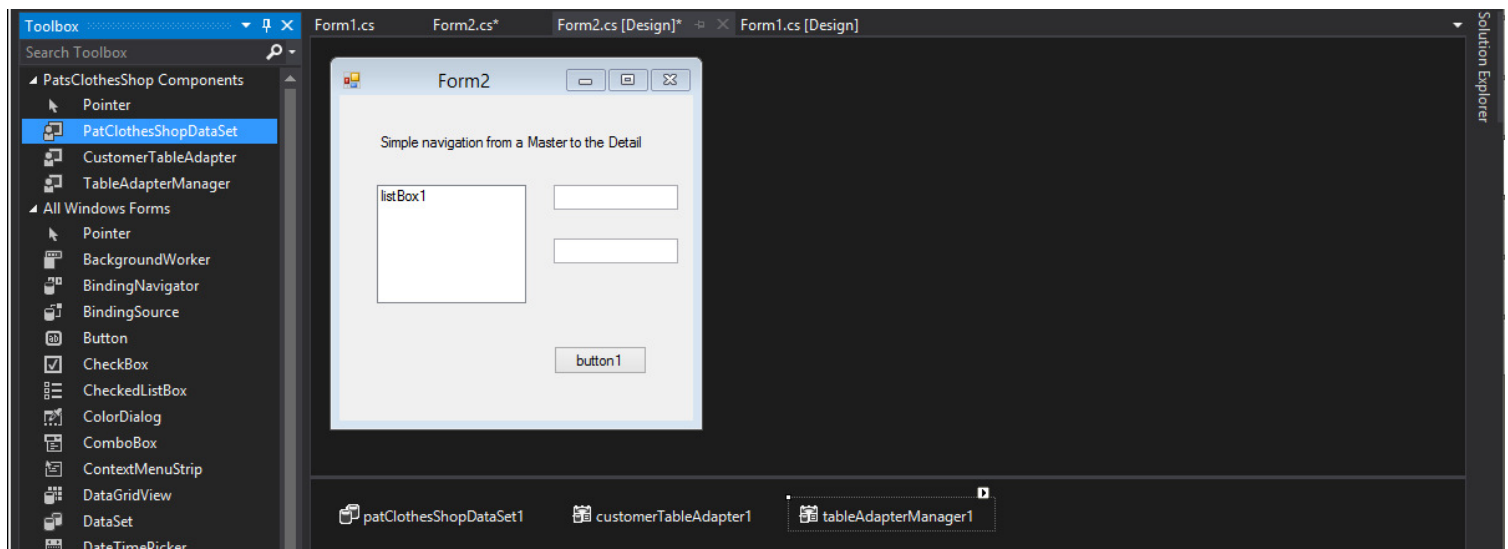
Add the data items manually.

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

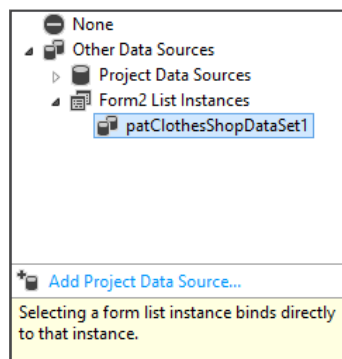
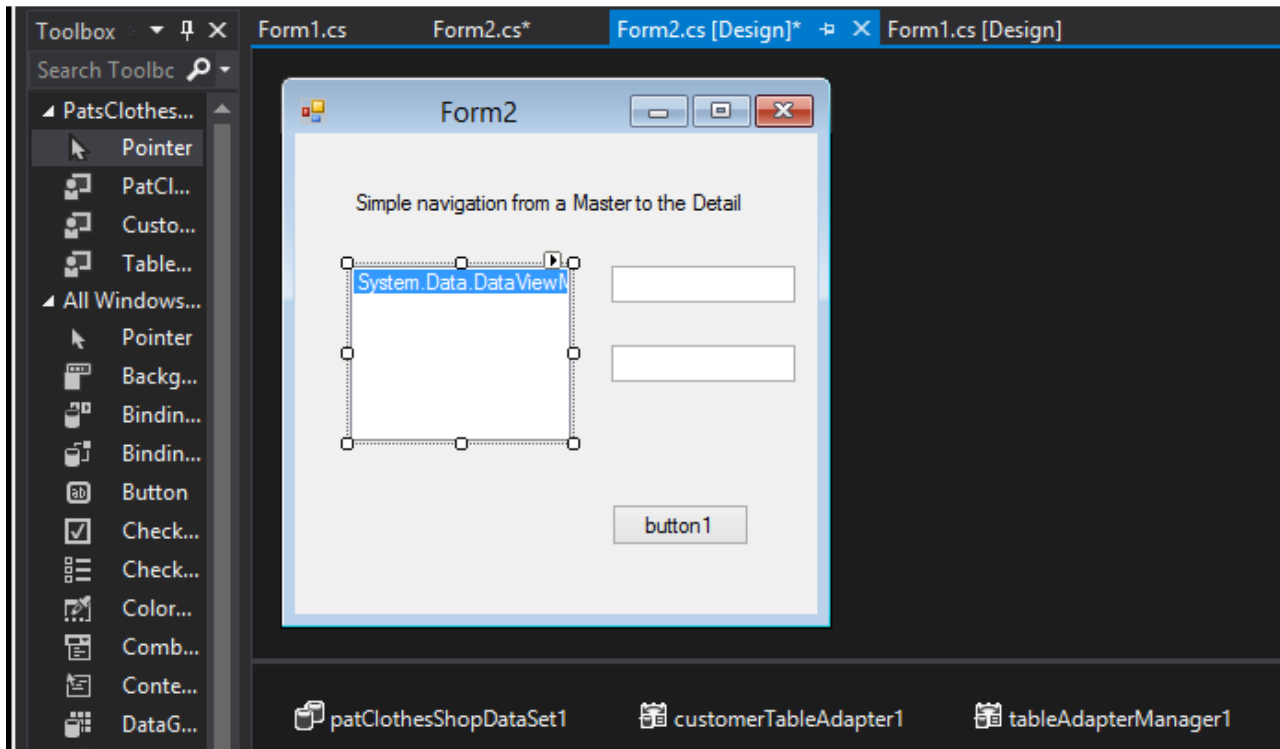
```
Form2 myForm = new Form2();
myForm.Show();
```



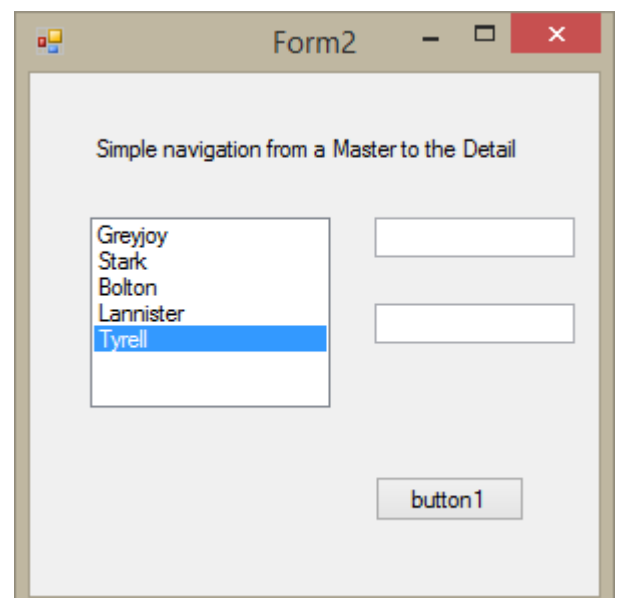
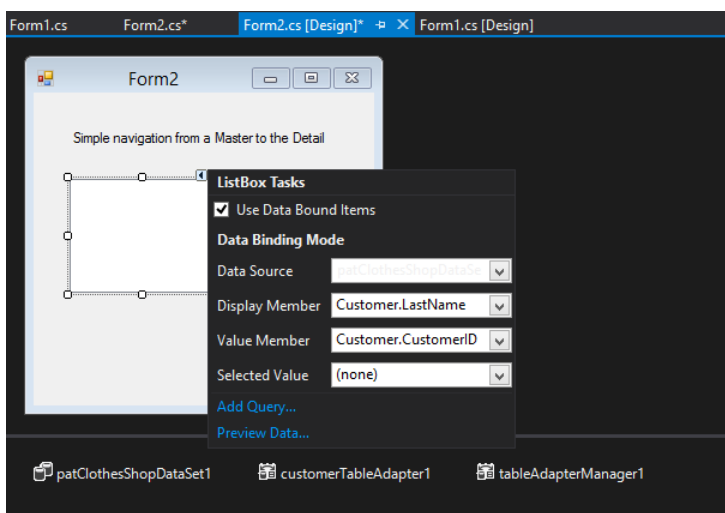
Double click form2 type the code below. Fill method passes in `patClothesShopDataSet1.Customer`. Fill method takes action to grab the data from the database and populate the customer table of the database with the data it retrieves.

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

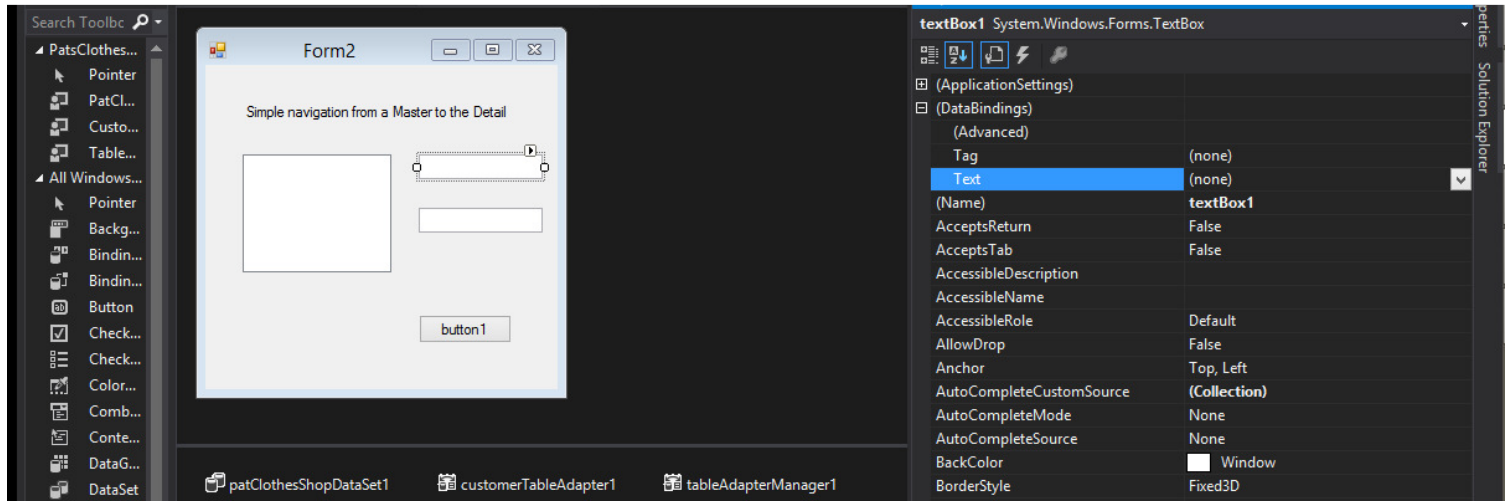

Select the listbox click the arrow and select patClothesShopDataSet1, from the pop-up box.



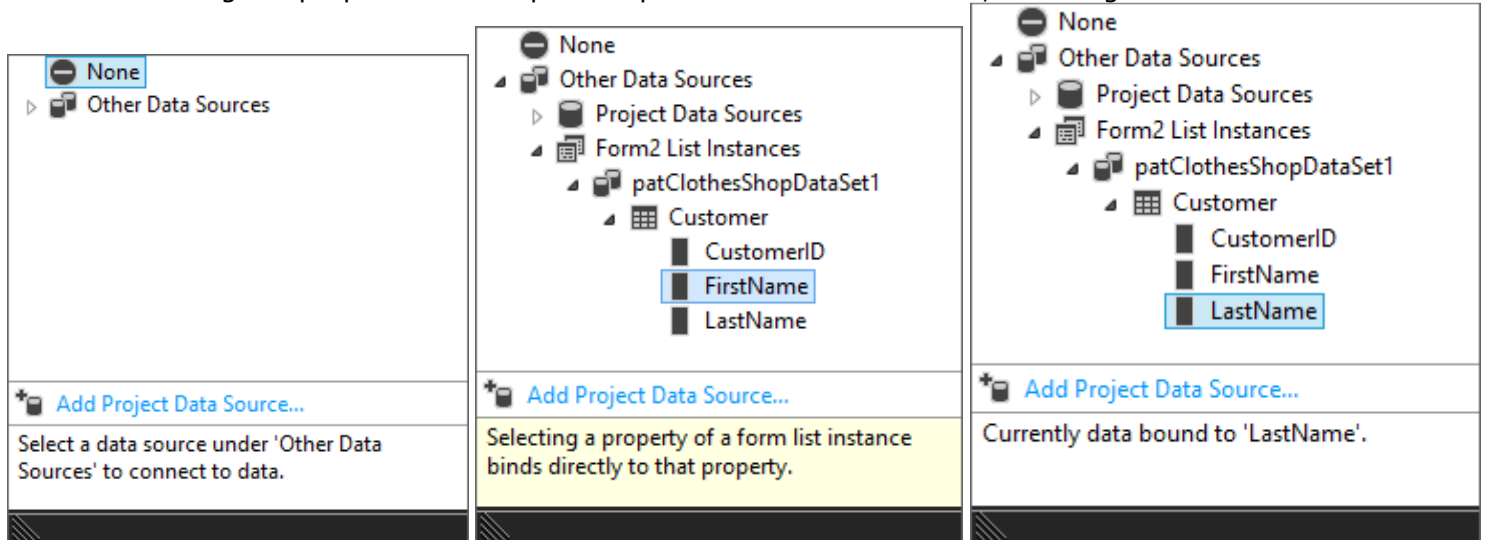
Select the list box and click the arrow button to data bound the listbox to the dataabse. Check the checkbox Use data bound items. From the pop-up select the data source patclothesshop1. In Display member select the last name and Customer last name this will displayed. In value member select the CustomerID,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



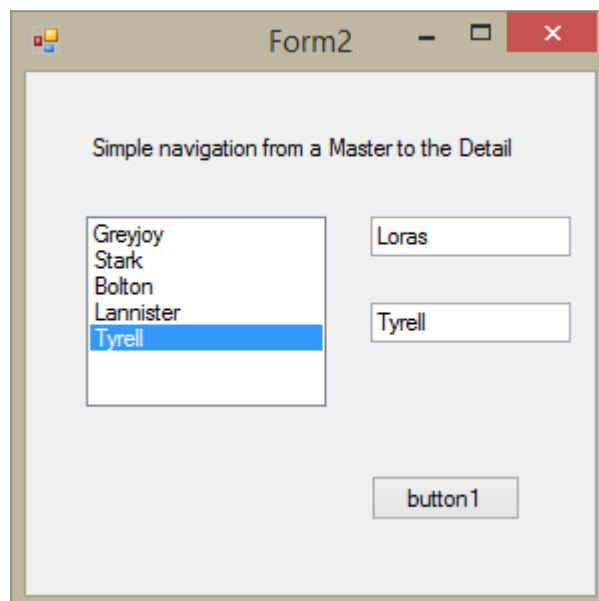
Bind the textboxes on the right with the listbox on the left. Select the first textbox and right click properties go to databindings and select text click the drop down arrow.



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.

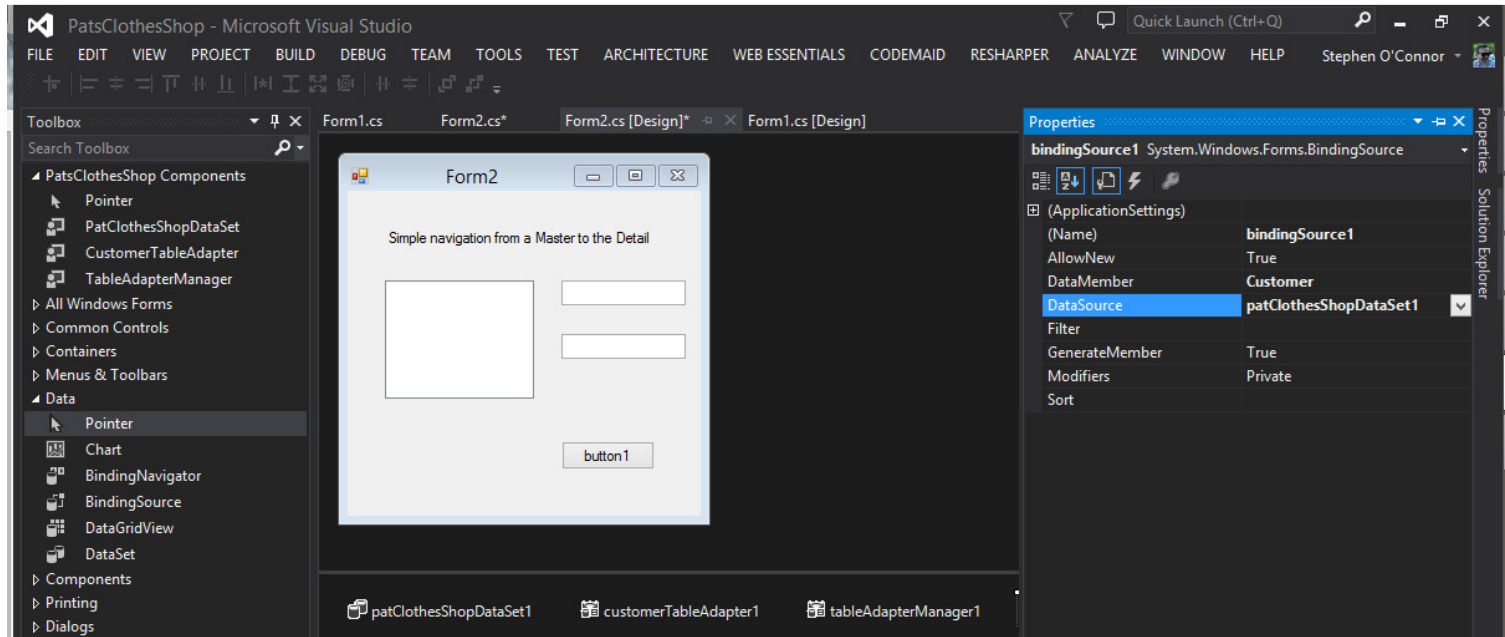


Run the application, open second form. Select from the listbox to display the first name and last name of the person in the textboxes.

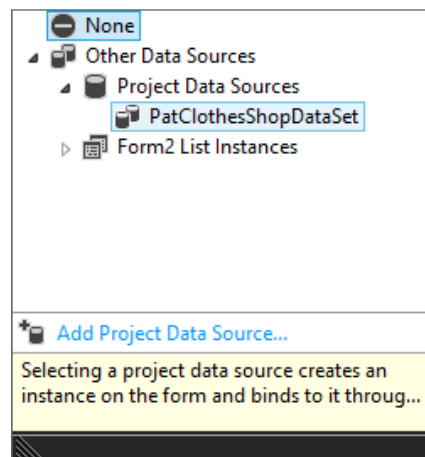


C# Database application

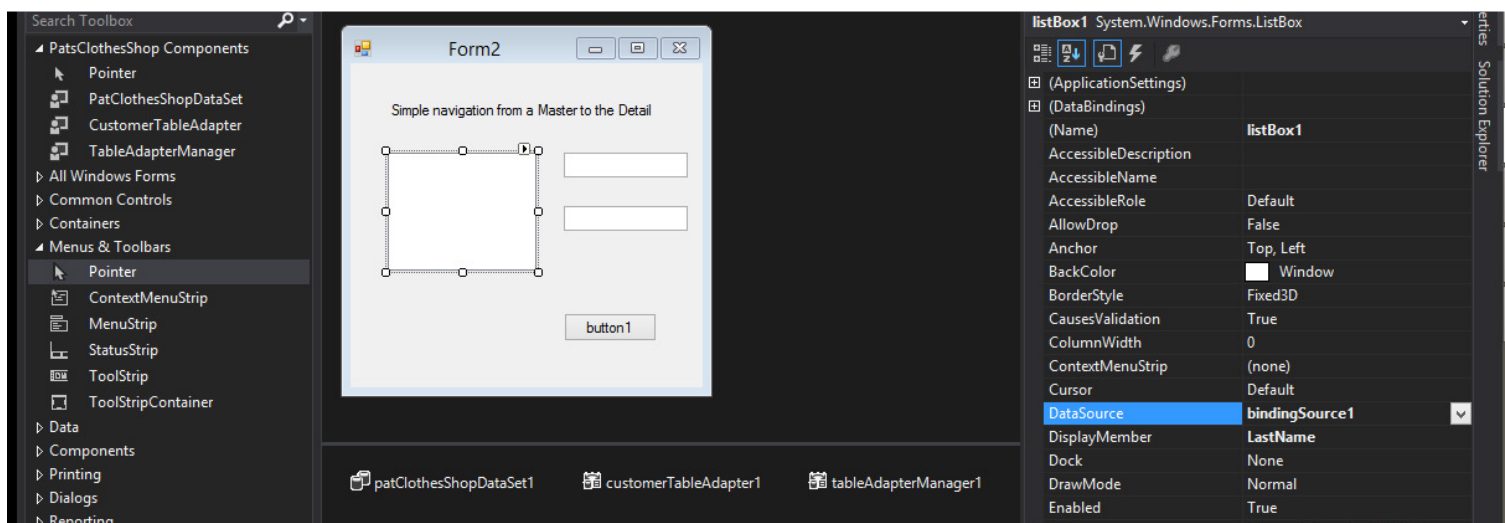
Updating capabilities. Drag and drop the BindingSource onto form2. To update the data. Hover over and read the description of the BindingSource tool. The bindingSource1 has been added to the designer tray.

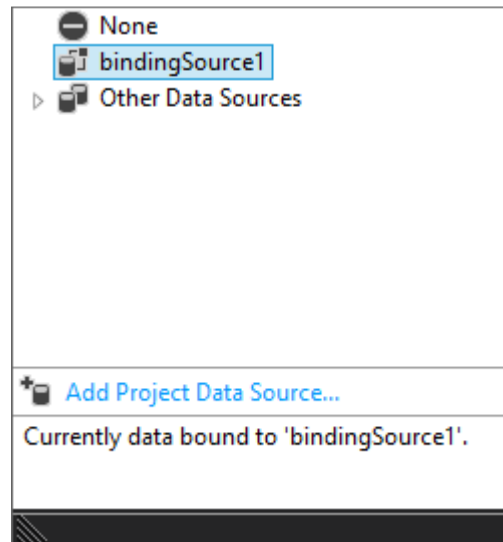


Click bindingSource1 and select PatClothesShopDataSet from the properties DataSource pop-up. Select Customer as the DataMember.

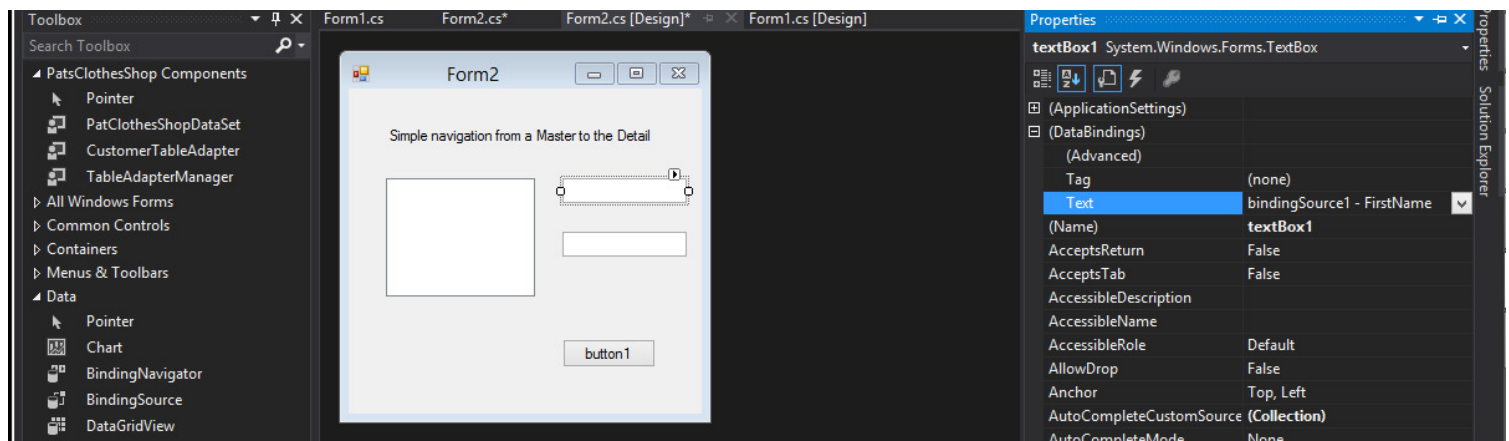
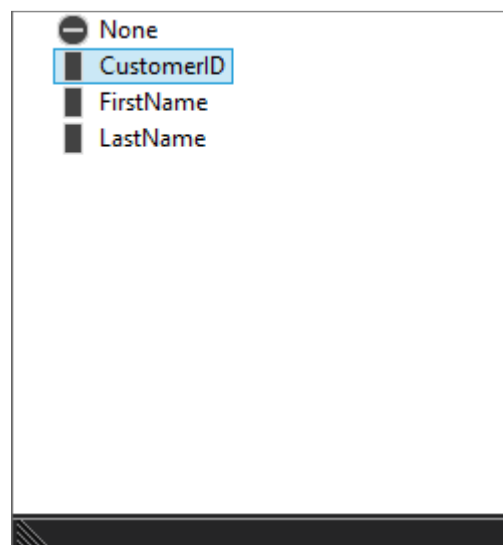


Select listbox go to data source select bindingSource1. Change the DisplayMember to LastName.

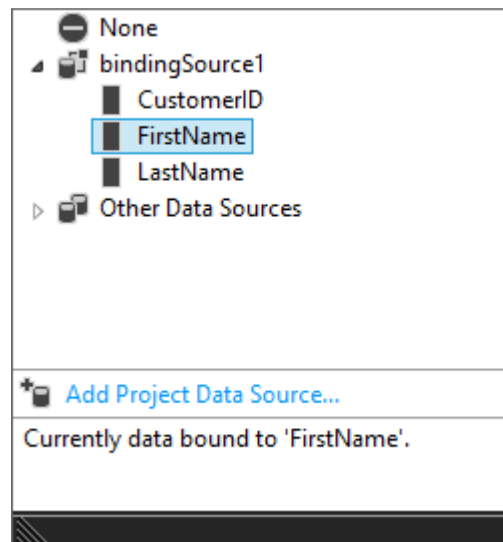




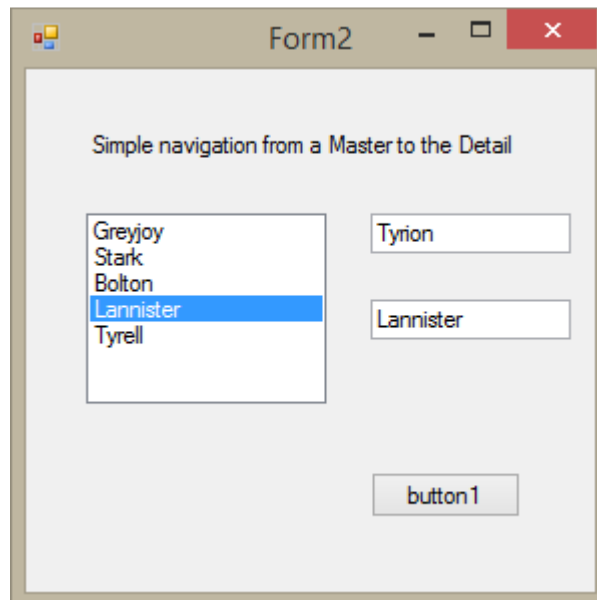
Select Value member in the listbox from properties and change to CustomerID.



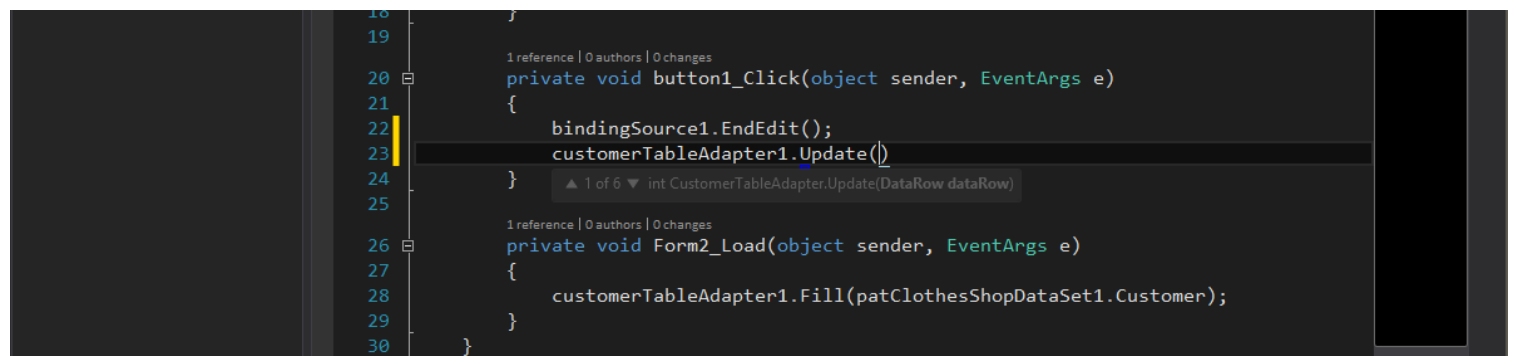
Select the properties of the first and second textboxes and select first and last name respectively.



Run application to check if it still works.



Double click the button on form2



```

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);
```

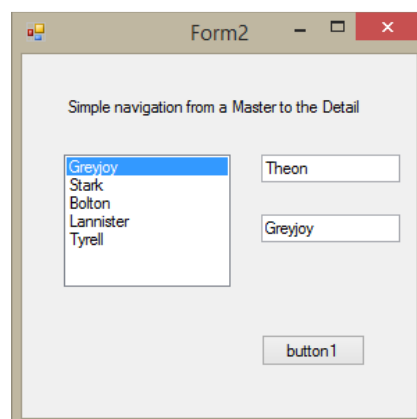
```
// save changes to the dataset
bindingSource1.EndEdit();

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.

algorithm

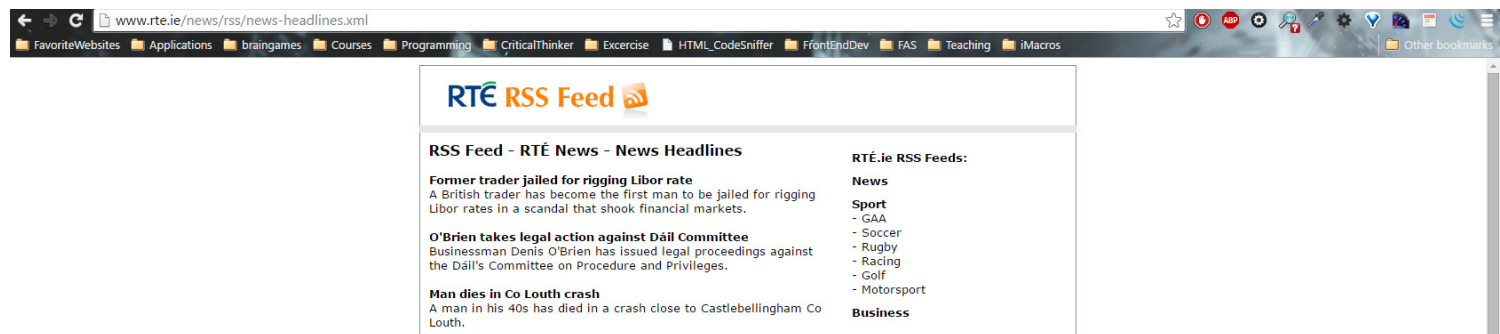
noun

Word used by programmers when they do not want to explain what they did.

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.	http://www.goupstate.com/
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.

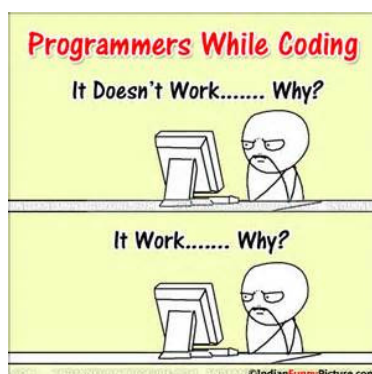
The Process

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.



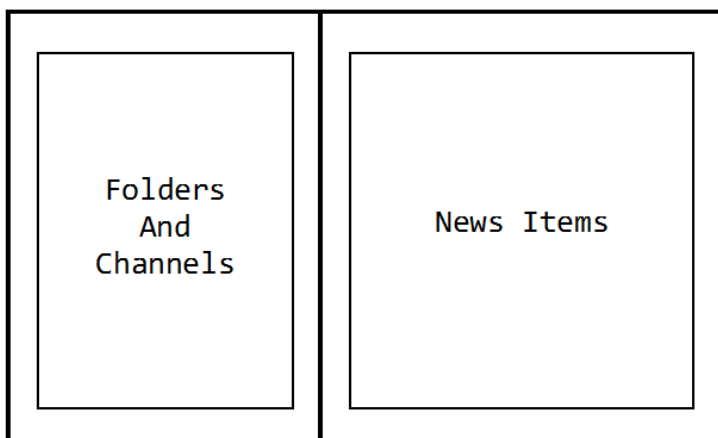
Basic stages of MSF

- 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

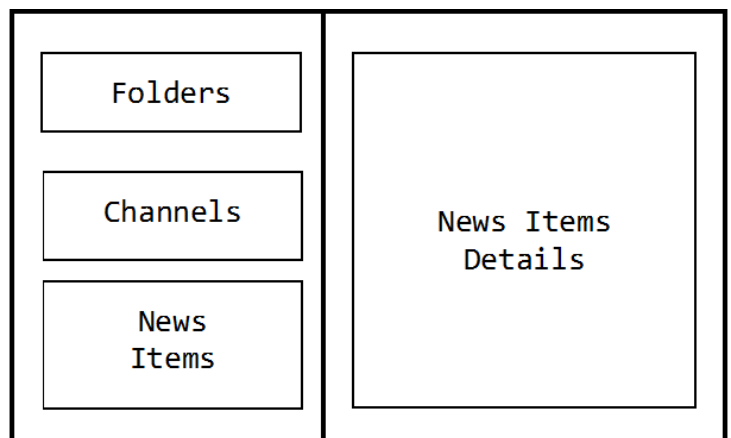
User Interface design

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. A quick success before adding too many features, version 1.

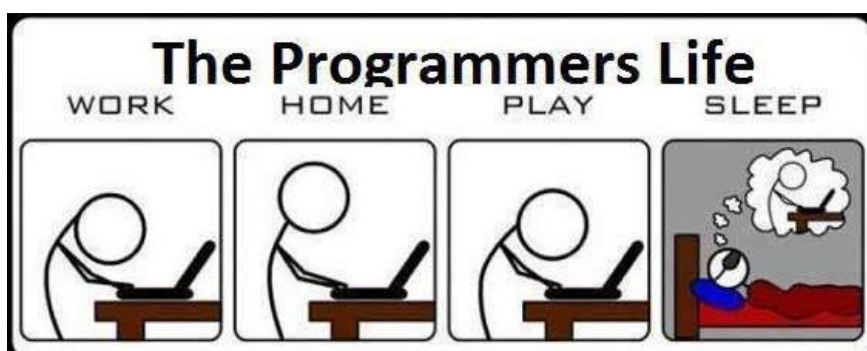
1. Basic mock up windows explorer type view



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



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



Let's start

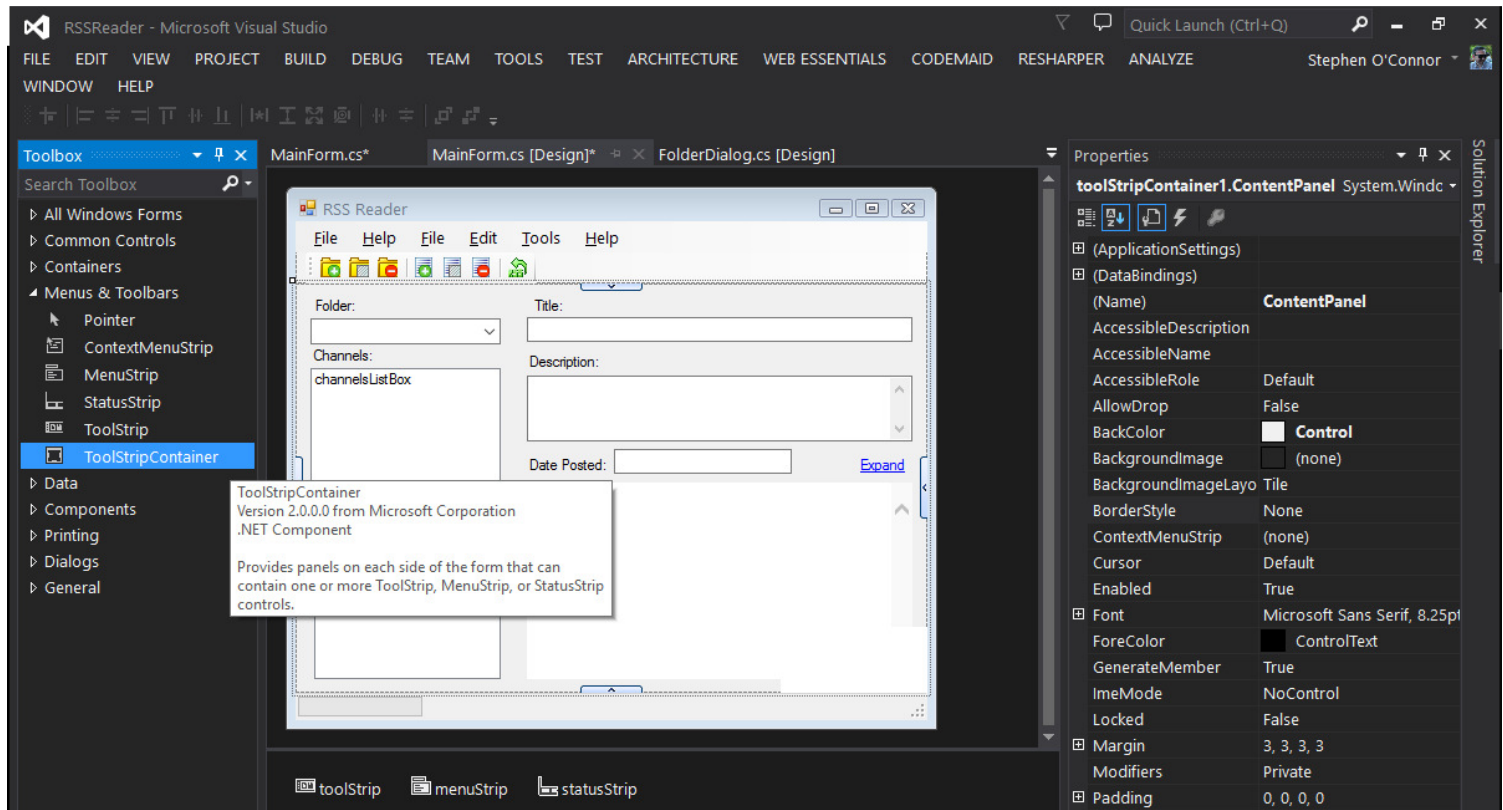
Create a new project called RSSReader.

Create three forms

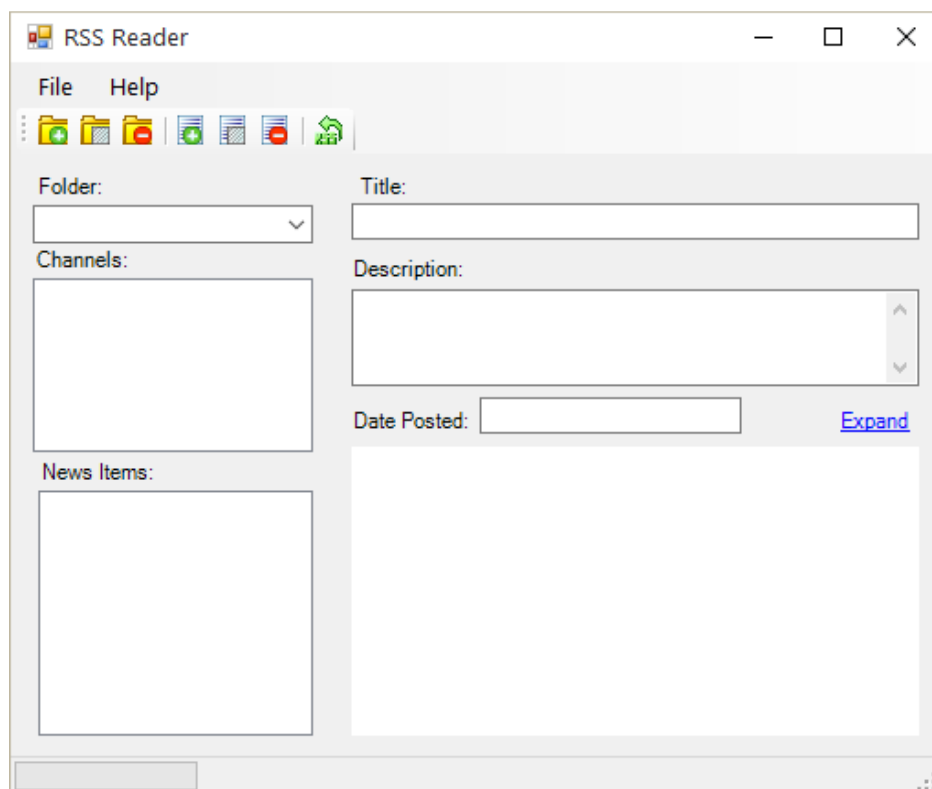
- MainForm – RSS reader
- FolderDialog
- ChannelDialog

MainForm.cs

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.

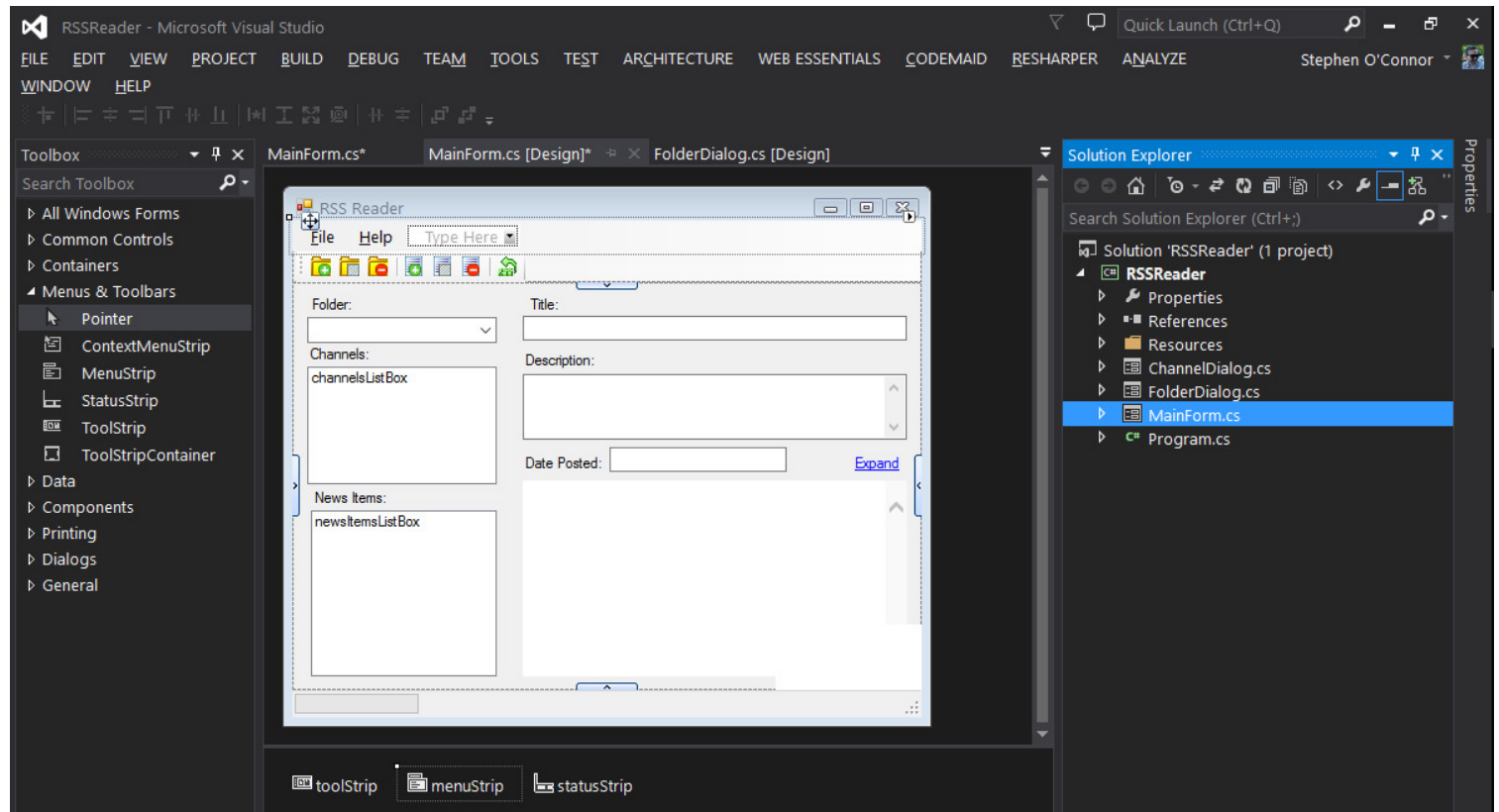


Finished form.

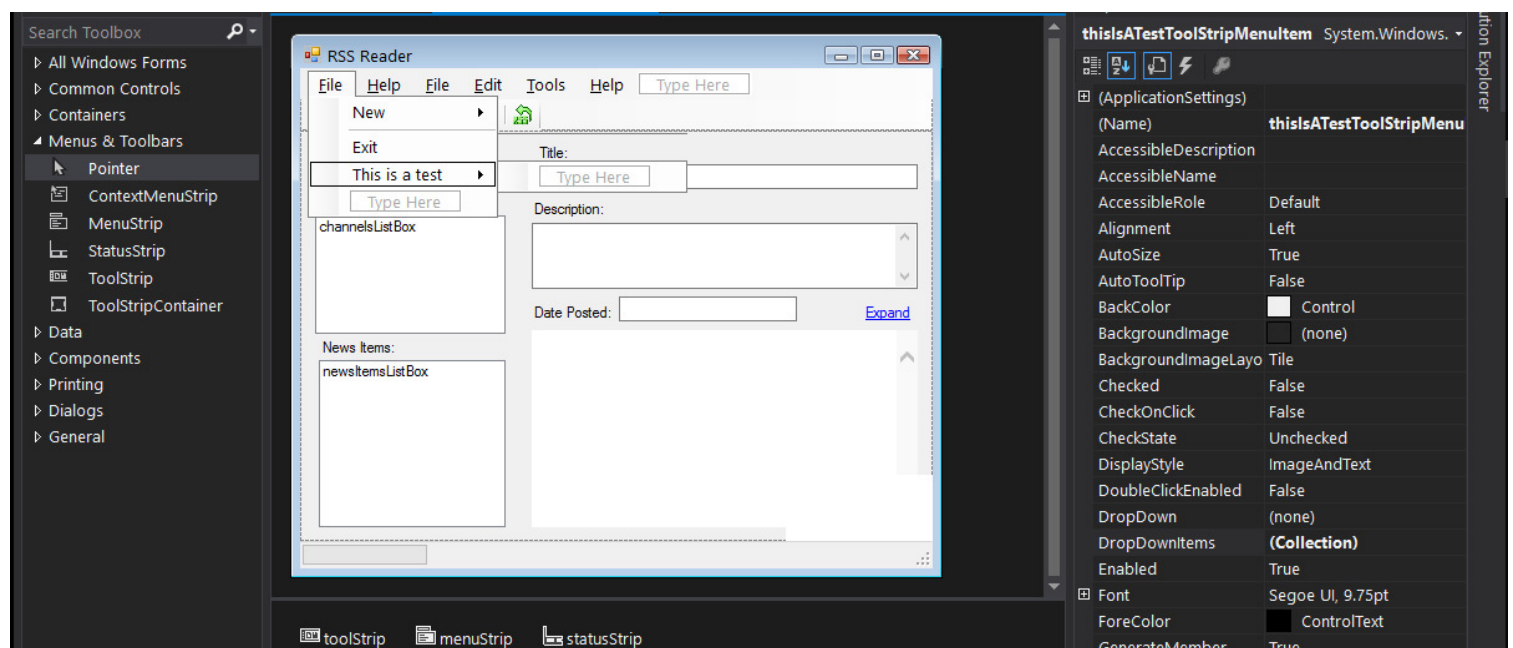


Drag and drop into the toolStripContainer

- Labels named as below
- Drop down menu – to organize channels feds, when select a folder will view all the RSS feeds in the channelsListBox
- channelsListBox – view all the channels feeds
- newsItemslistBox – when a feed is select all news items will be displayed here
- textbox on the right – view the title (details) of the new feed
- textbox on the right – view the description (details) of the new feed – Set multiline to true and set scroll bar to vertical
- textbox on the right – view the date posted (details) of the new feed
- Expand link to view in browser – label control – select underline, forecolor to blue and set both to true
- WebBrowser – browser view, to view web pages
- Create a naming convention to avoid confusion

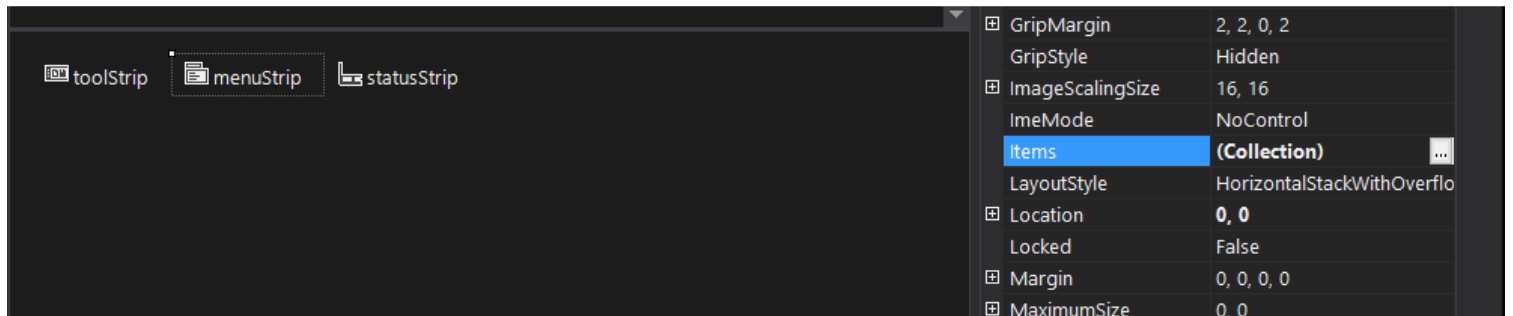


Drag and drop a menuStrip . Add a new menu item and if double clicked an event handler will be created.

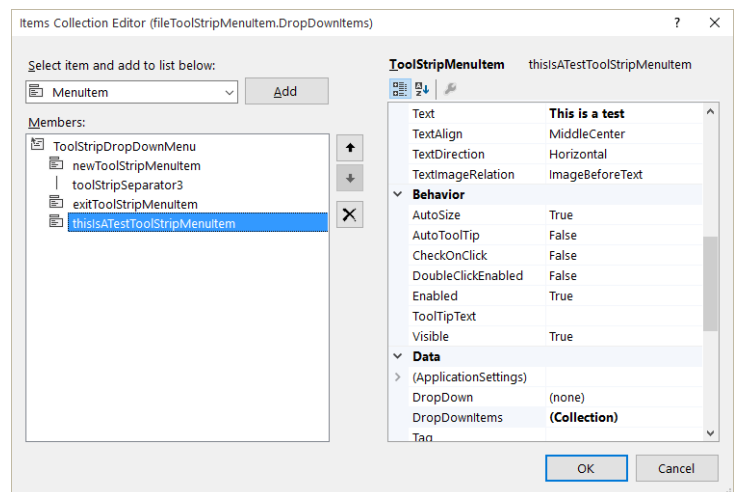
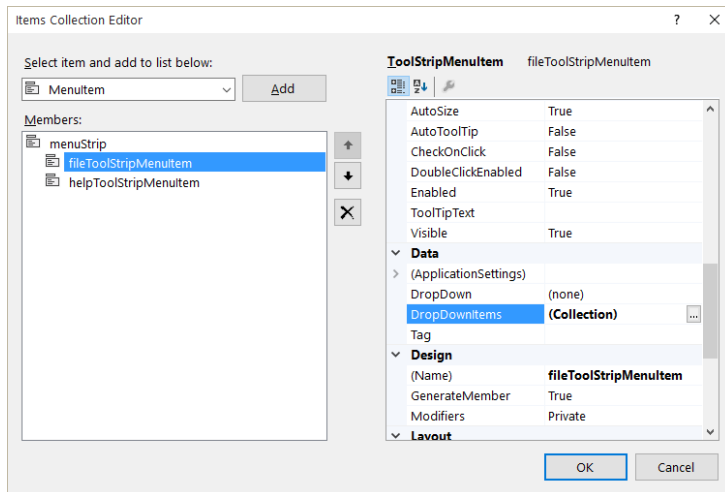


C# Database application

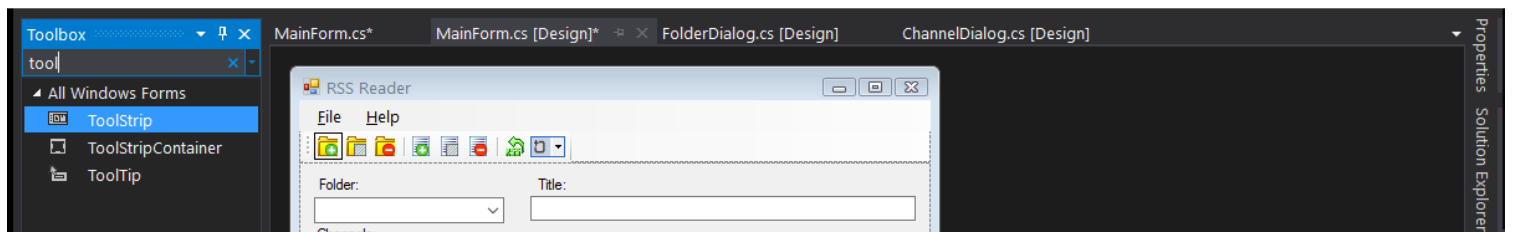
Edit the menuStrips from the properties menu. Select items (Collection) button.



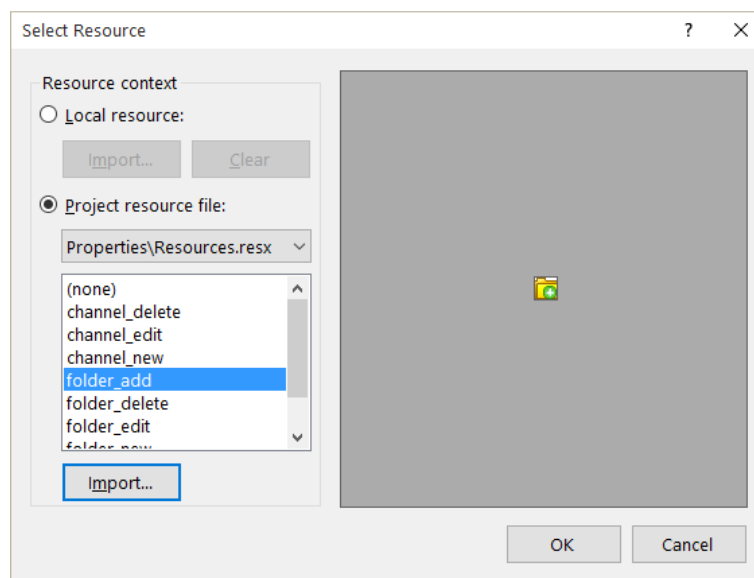
Pop up Items Collection Editor, displaying the menu for editing.



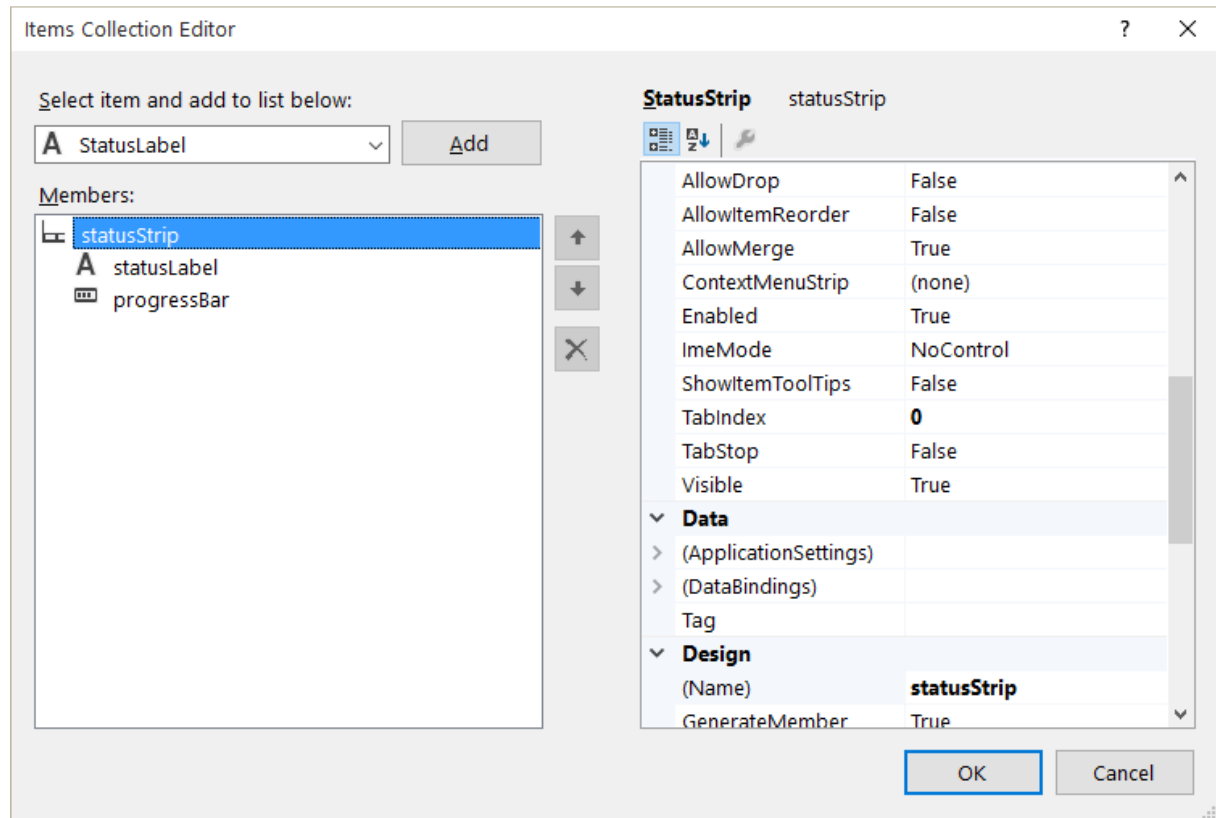
Drag and drop a toolStrip and add seven buttons, folder plus, edit and delete. Channel plus edit and delete and the seventh button RSS feed refresh.



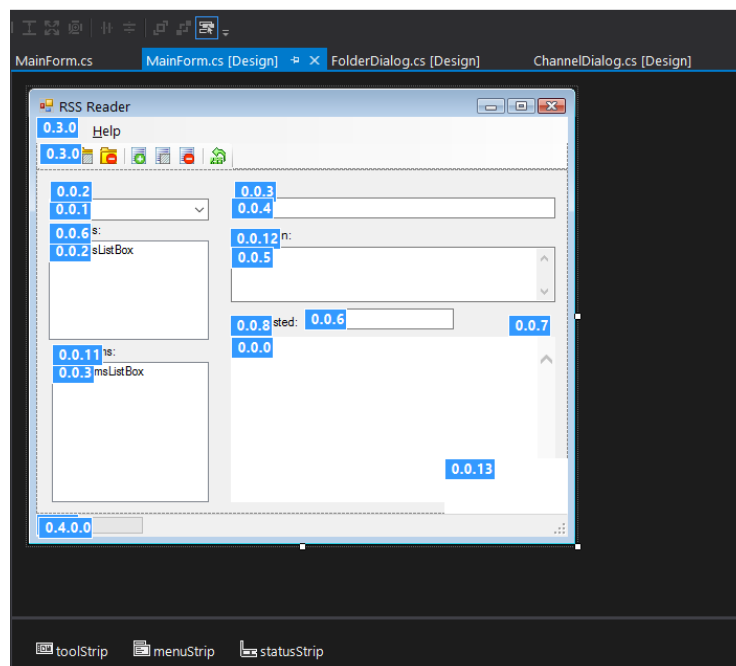
Right click buttons in the toolStrip menu and set image from the pop up select RSS icon image



At the very bottom is a status strip to give the user feedback on what is being downloaded. Add status label and progress bar the status label will be used to give the user a message on where the feed has been downloaded or not, and the progress bar will show that the feed is being downloaded.

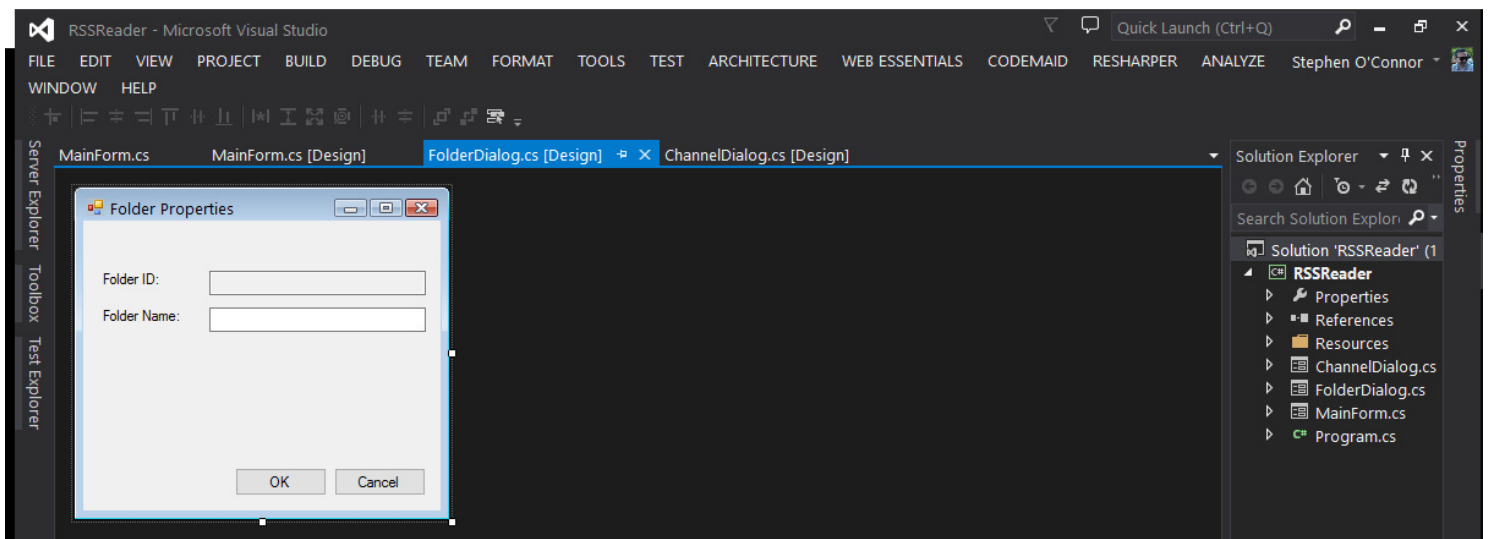
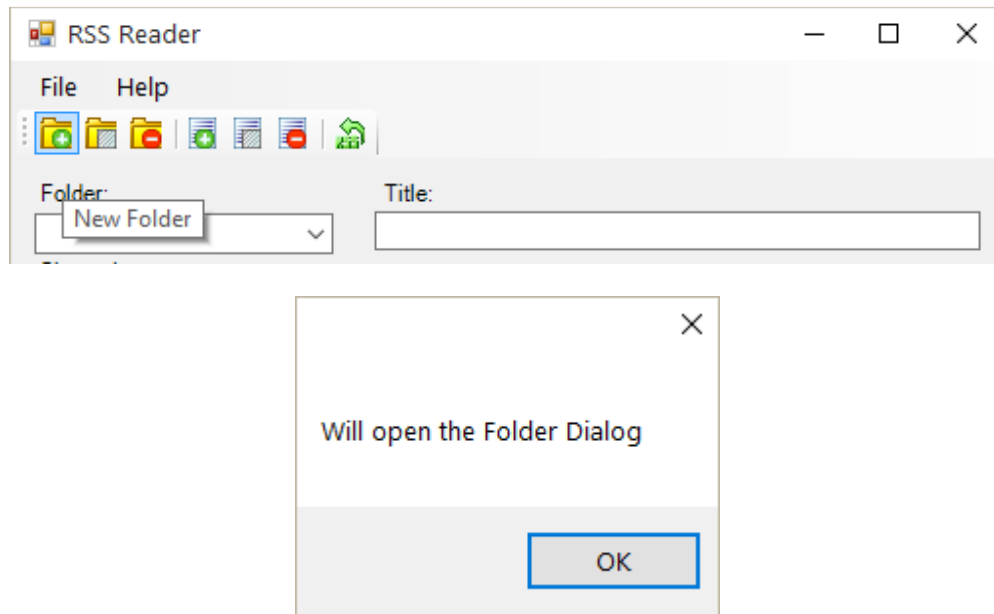


Tab order sets the order of the tabs.



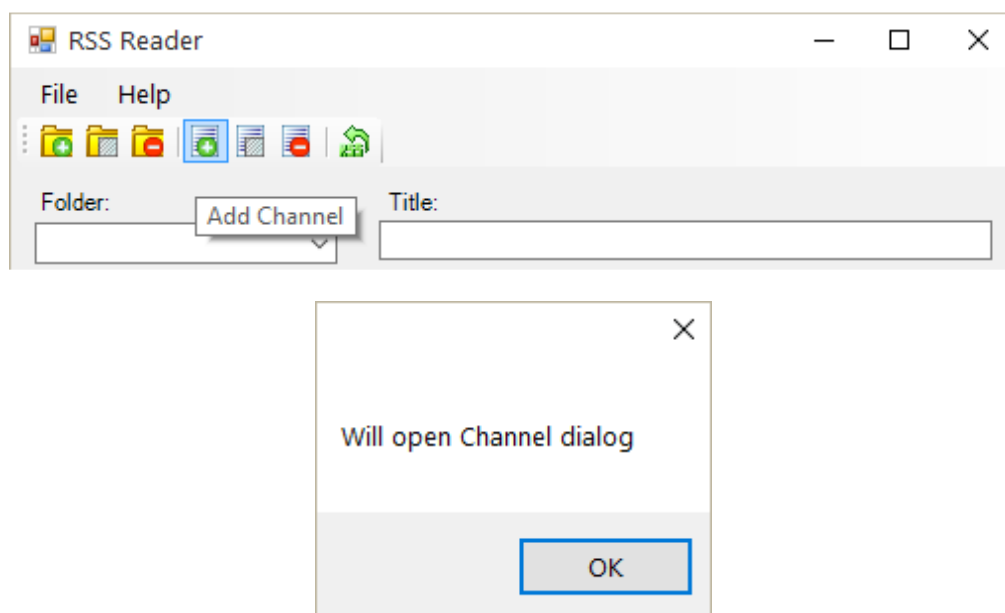
FolderDialog.cs

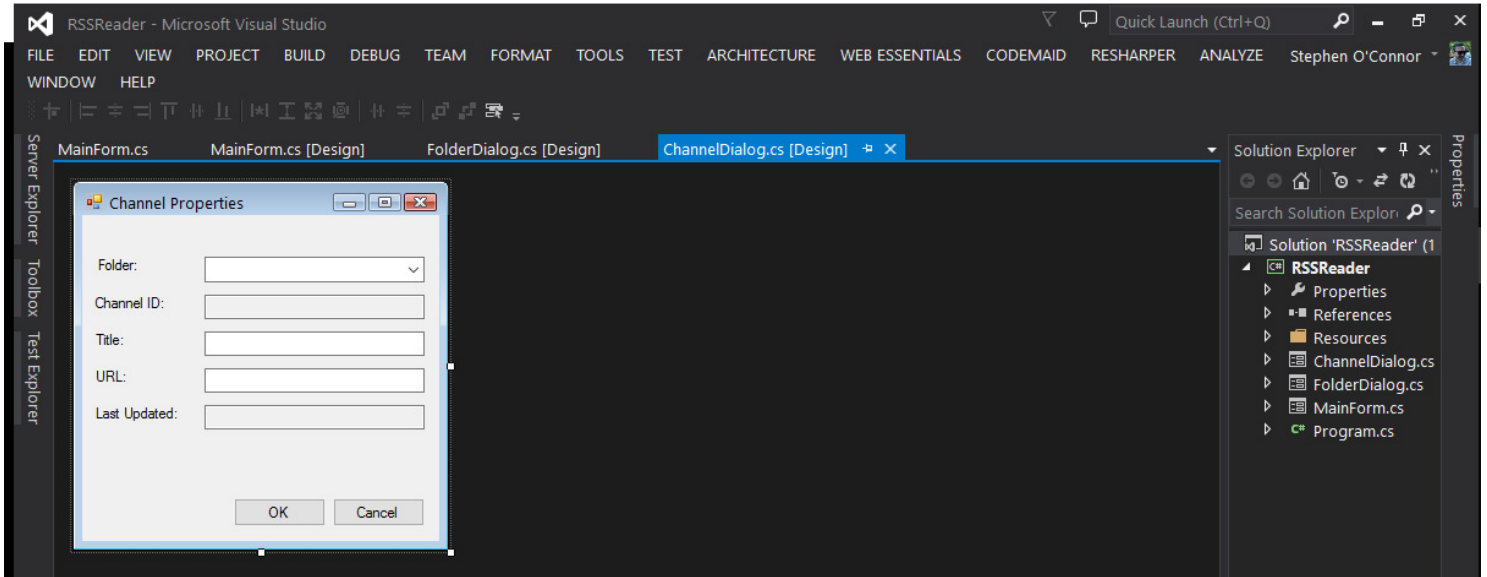
Click new folder icon will open a pop-up, however it will open FolderDialog.cs



ChannelDialog.cs

Click new folder icon will open a pop-up, however it will open ChannelDialog.cs





Add the form code to MainForm.cs
Do not copy paste, please type code.

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;

namespace RSSReader
{
    public partial class MainForm : Form
    {
        public MainForm()
        {
            InitializeComponent();
        }

        private void newFolderToolStripMenuItem_Click(object sender, EventArgs e)
        {
            // TODO: Will call the 'New Folder' helper method
            MessageBox.Show("Will create a New Folder");
        }

        private void newChannelToolStripMenuItem_Click(object sender, EventArgs e)
        {
            // TODO: Will call the 'New Channel' helper method
            MessageBox.Show("Will create a New Channel");
        }

        private void exitToolStripMenuItem_Click(object sender, EventArgs e)
        {
            this.Close();
        }

        private void contentsToolStripMenuItem_Click(object sender, EventArgs e)
        {

```

```
        // TODO: Will open the Help Contents
        MessageBox.Show("Will open the Help Contents");
    }

    private void indexToolStripMenuItem_Click(object sender, EventArgs e)
    {
        // TODO: Will open the Help Index
        MessageBox.Show("Will open the Help Index");
    }

    private void searchToolStripMenuItem_Click(object sender, EventArgs e)
    {
        // TODO: Will open the Help Search
        MessageBox.Show("Will open the Help Search");
    }

    private void aboutToolStripMenuItem_Click(object sender, EventArgs e)
    {
        // TODO: Will open the About Dialog
        MessageBox.Show("Will open the About Dialog");
    }

    private void editFolderToolStripButton_Click(object sender, EventArgs e)
    {
        // TODO: Will open the Folder Dialog
        MessageBox.Show("Will open the Folder Dialog");
    }

    private void addFolderToolStripButton_Click(object sender, EventArgs e)
    {
        // TODO: Will open the Folder Dialog
        MessageBox.Show("Will open the Folder Dialog");
    }

    private void deleteFolderToolStripButton_Click(object sender, EventArgs e)
    {
        // TODO: Will delete current folder.
        MessageBox.Show("Will Delete current Folder");
    }

    private void addChannelToolStripButton_Click(object sender, EventArgs e)
    {
        // TODO: Will open folder dialog.
        MessageBox.Show("Will open Channel dialog");
    }

    private void editChannelToolStripButton_Click(object sender, EventArgs e)
    {
        // TODO: Will open folder dialog.
        MessageBox.Show("Will open Channel dialog");
    }

    private void deleteChannelToolStripButton_Click(object sender, EventArgs e)
    {

```



```

// TODO: Delete selected Channel
MessageBox.Show("Will delete channel");
}

private void refreshRSSFeed_Click(object sender, EventArgs e)
{
    // TODO: Refresh RSS Feed
    MessageBox.Show("Will referesh RSS feed");
}
}
}

```

My Set-up

The image is a composite of three screenshots illustrating the development environment for the 'csharp-db-app' project.

Left Screenshot: GitHub Repository Page
 This screenshot shows the GitHub repository page for 'csharp-db-app' by user 'Stev050'. The repository is on the 'master' branch. The commit history shows a recent commit by 'Stev050' titled 'Lesson Plan Changes' with a commit hash of 'a7e913f'. The repository description is 'Build a C# database application, csharp-rss-reader.'.

Middle Screenshot: Windows PowerShell Terminal
 This screenshot shows a PowerShell terminal window with the following commands and output:

```

You are now entering PowerShell : Stephen
C:\Users\Stephen\Documents\VSProjects\csharp-
csharp-db-app master$ git add .
csharp-db-app master$ git commit -am 'Lesson plan
[master b1e3ac2] Lesson plan update
1 file changed, 0 insertions(+), 0 deletions(-)
csharp-db-app master$ git push
warning: push.default is unset; its implicit value is
Git 2.0 from 'matching' to 'simple'. To squelch this
and maintain the current behavior after the default
git config --global push.default matching
To squelch this message and adopt the new behavior n
git config --global push.default simple
When push.default is set to 'matching', git will pus
to the remote branches that already exist with the s
In Git 2.0, Git will default to the more conservativ
behavior, which only pushes the current branch to th
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), 259.48 KiB | 0 bytes/s, done.
Total 3 (delta 2), reused 0 (delta 0)
To https://github.com/Stev050/csharp-db-app.git
a7e913f..b1e3ac2 master -> master
csharp-db-app master$
  
```

Right Screenshot: Windows 10 Desktop
 This screenshot shows a Windows 10 desktop environment. The taskbar includes icons for 'My Taskbar', 'VIC media player', 'Windows PowerShell', 'Visual Studio 2013', 'Word 2013', and 'jTorrent'. The Start menu is open, showing various app tiles like 'Calendar', 'Mail', 'Microsoft Edge', 'Photos', 'Weather', 'Phone Connect', 'Cortana', 'File Explorer', 'Settings', 'Power', and 'All apps'. The desktop background is a dark blue gradient.