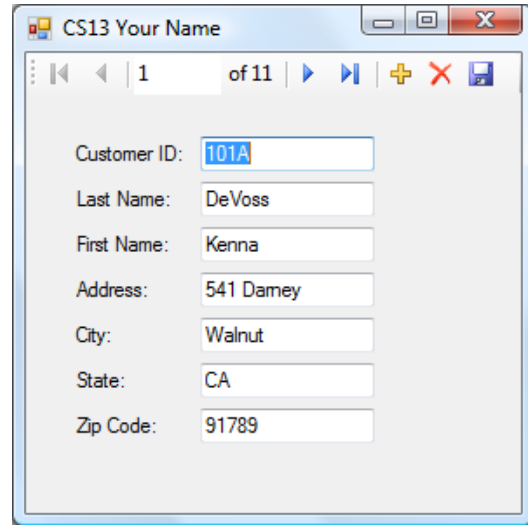
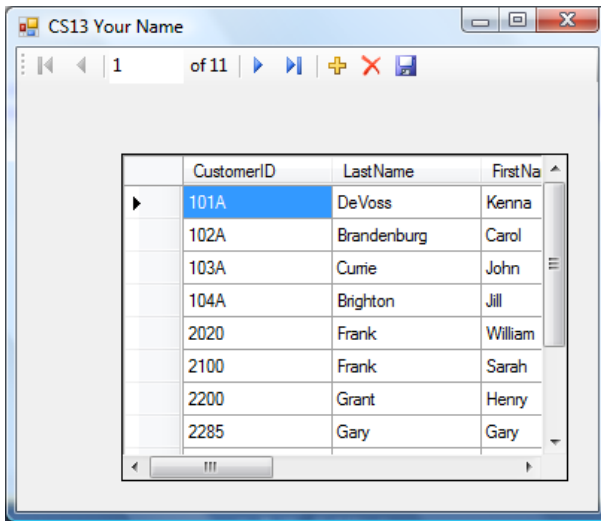


MCC - CIS 162AD – C# Level I
CS13 Databases- 25 points



Create a Windows application to navigate through a Customer table stored in an Access database (cs13_databases.accdb). The project will include two forms. One will have a DataGridView control, and the second form will have Labels and Textboxes. Both forms will include a navigation bar.

1. The following instructions will lead to the development of a Windows application with two forms similar to this (CS13FormA, CS13FormB):

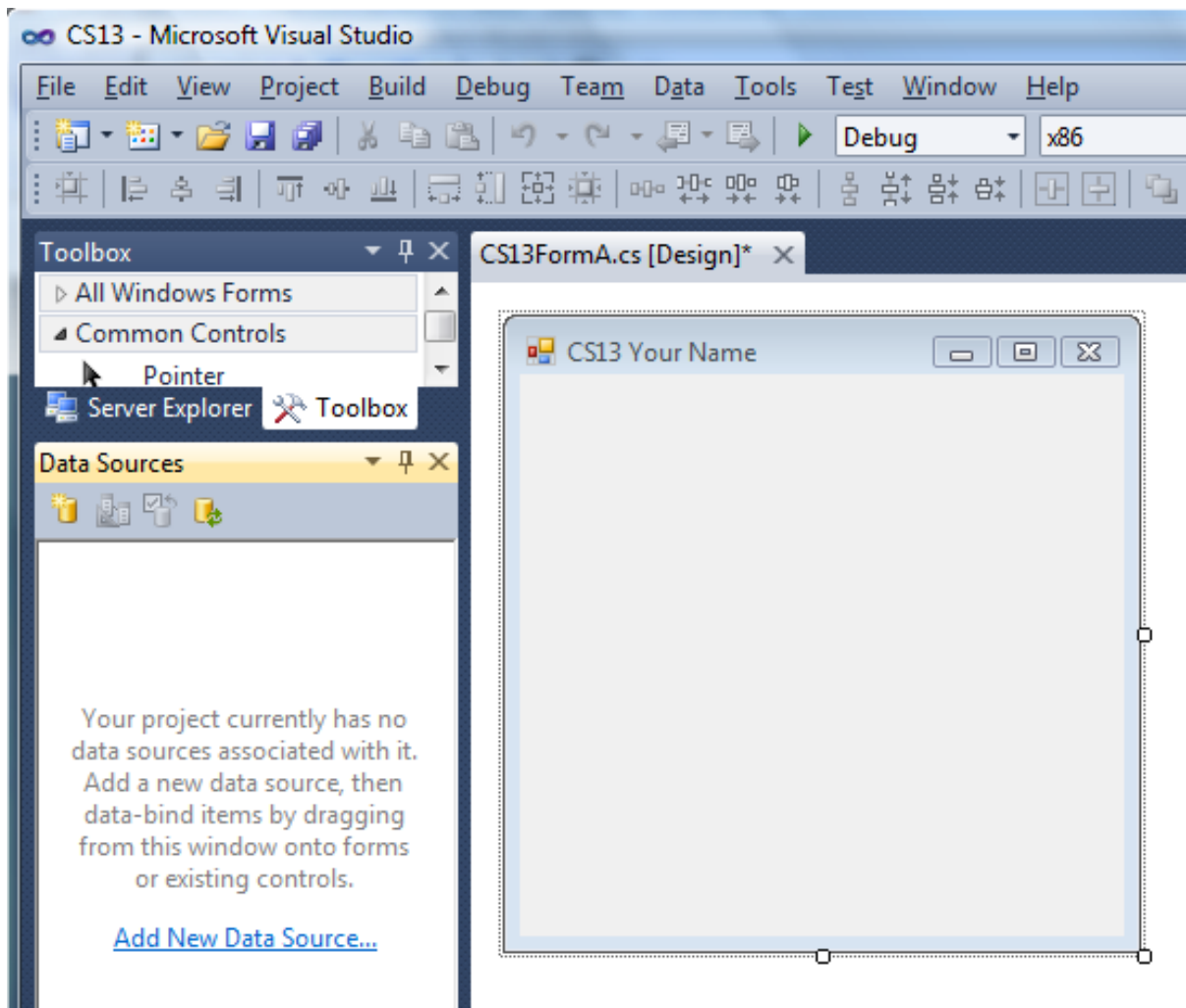


2. Create a new project (CS13) in Visual Studio.
3. Download the database file from the website and save it in the Debug folder inside of the bin folder (CS13/bin/Debug/).

Database File: [cs13_databases.accdb](#)

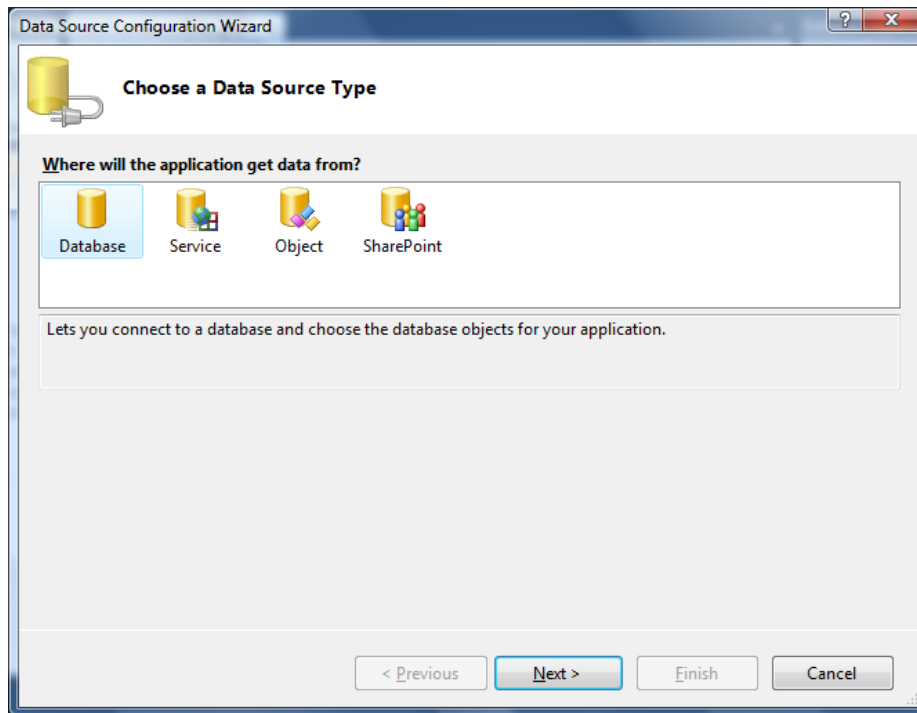
4. Set the form properties and file name.
 - a. Form name property: **frmCS13A**
 - b. Form text property: **CS13 Your Name**
 - c. Form file name: **CS13FormA.cs**

5. The Data Sources panel should display over the Toolbox.
 - a. Click on **Data** on the menu bar and select **Show Data Sources**.
 - b. The Data Sources panel should display over the Toolbox.
 - c. Click on the **push pin** to anchor it under the Toolbox.
 - d. Click on **Add New Data Source** link displayed in the panel.
Can also click on the first button on the panel, or select it from the menu under Data.

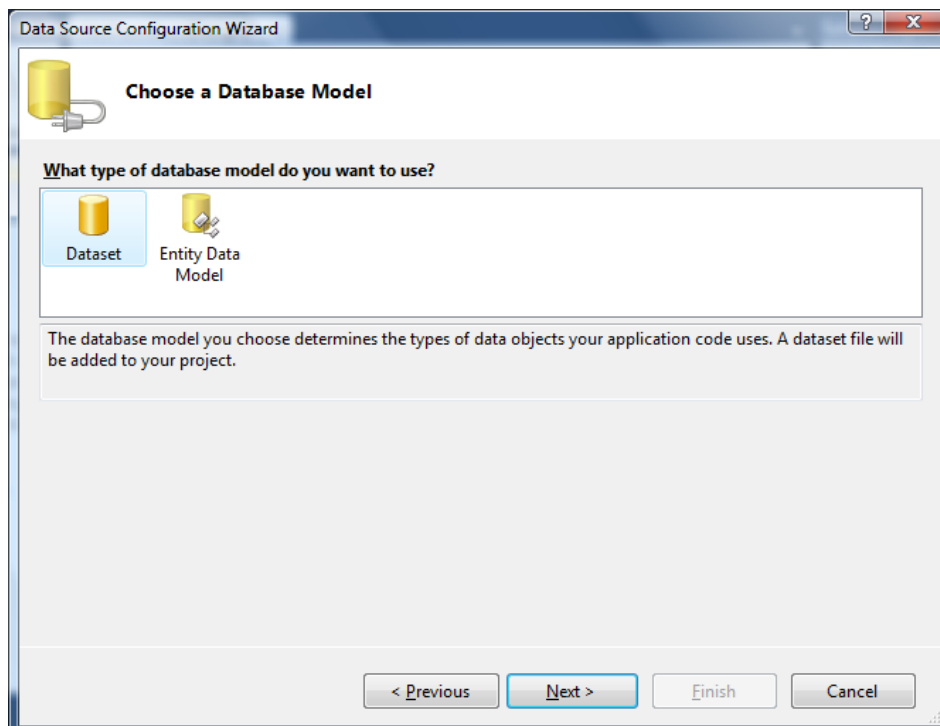


- e. The Data Source Configuration Wizard will launch.

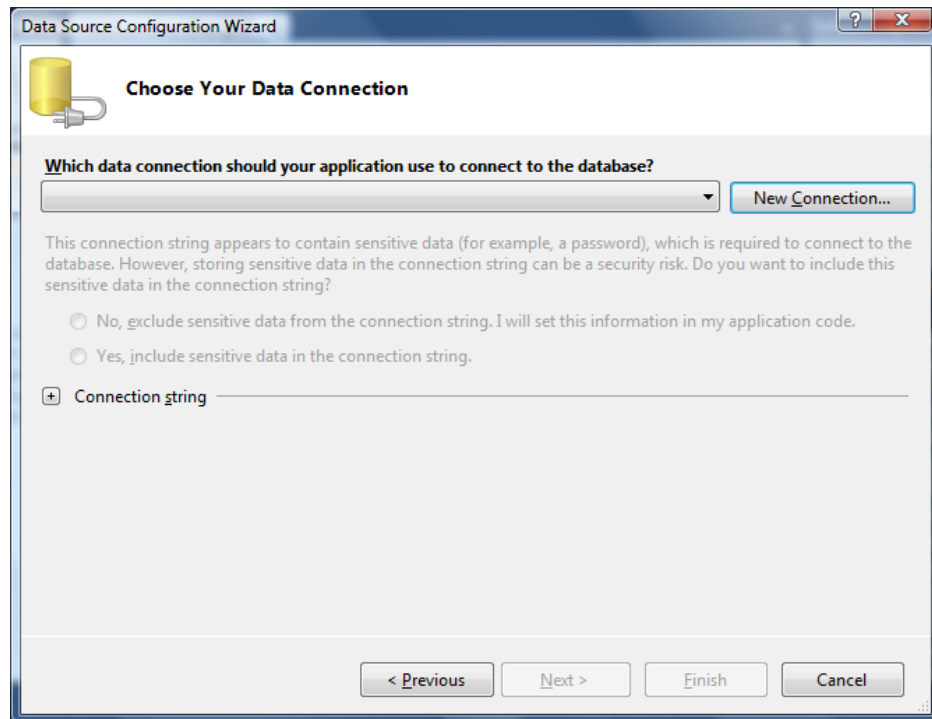
6. Data Source Configuration Wizard, Choose a Data Source Type.
 - a. Click on **Database**.
 - b. Click on **Next**.



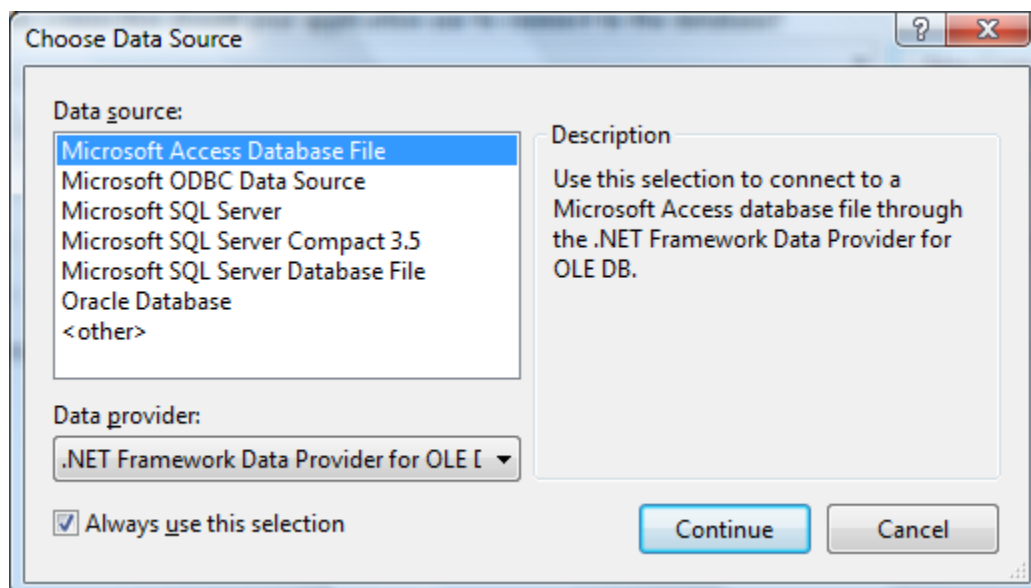
7. Choose a Database Model.
 - a. Click on **Dataset**.
 - b. Click on **Next**.



8. Choose Your Data Connection.
 - a. Click on **New Connection...**

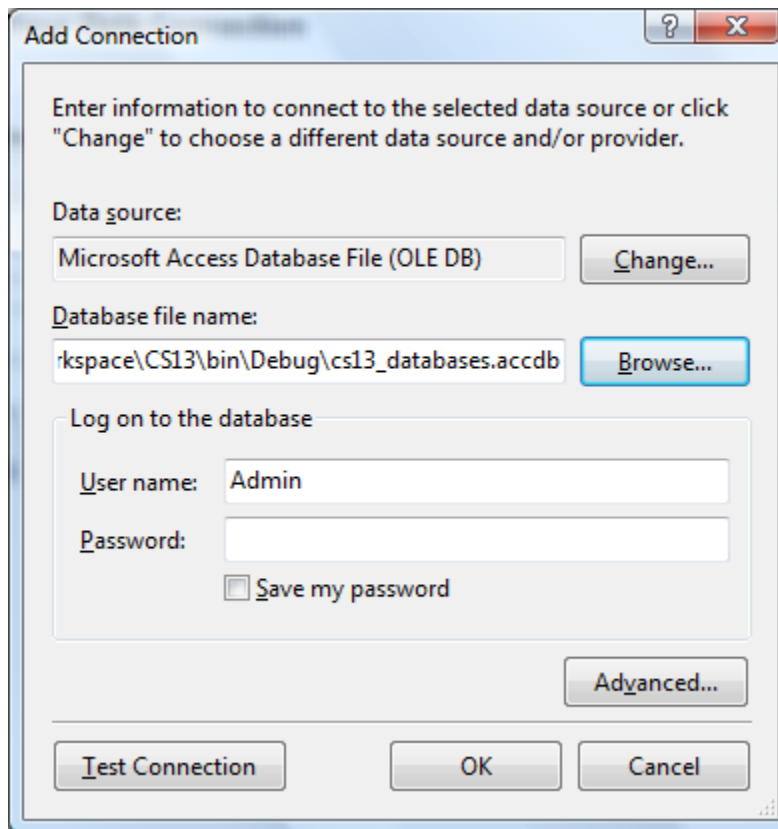


9. Choose Data Source.
 - a. **Select Microsoft Access Database File** as the source, and the data provider should automatically be set to .Net Framework Data Provider for OLE DB.
 - b. Click on **Continue**.



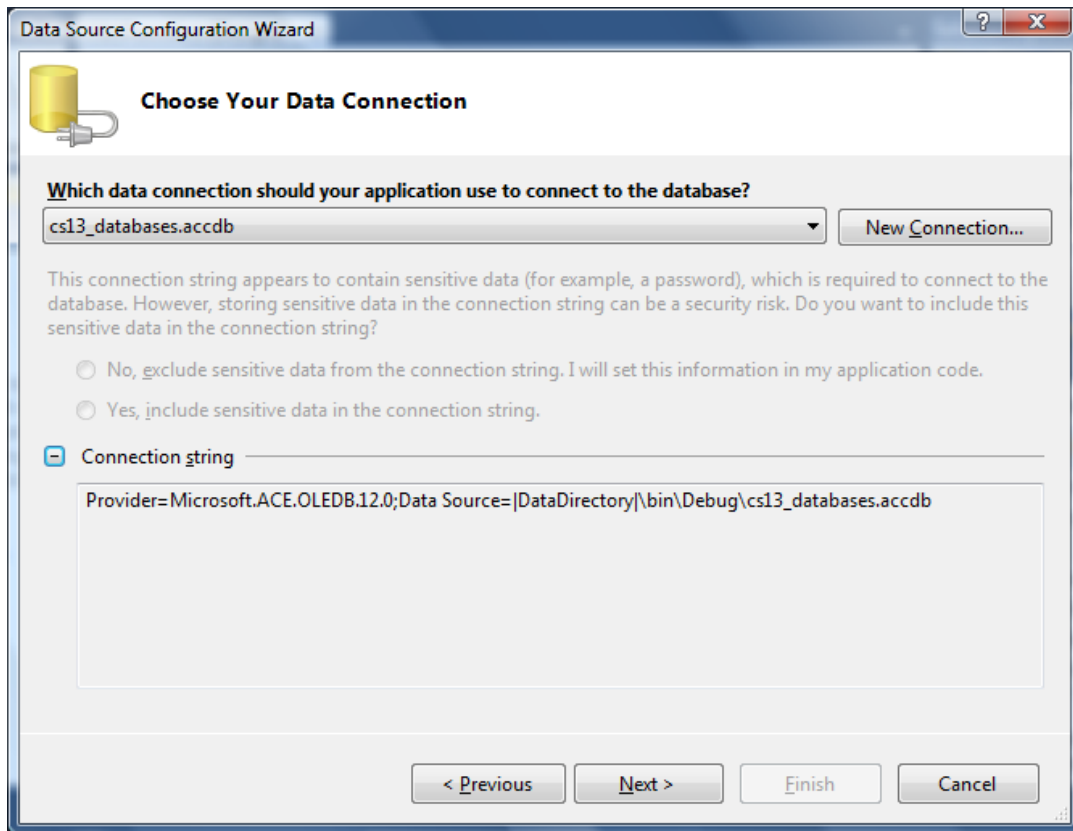
10. Add Connection dialog box.

- a. Click on **Browse...**
- b. In the Open File dialog box, navigate to CS13/bin/Debug/, select **CS13_databases.accdb**, and click on **Open**.
- c. Leave the default values for Username and Password.
- d. Click on **Test Connection**.
- e. Click on **OK**.



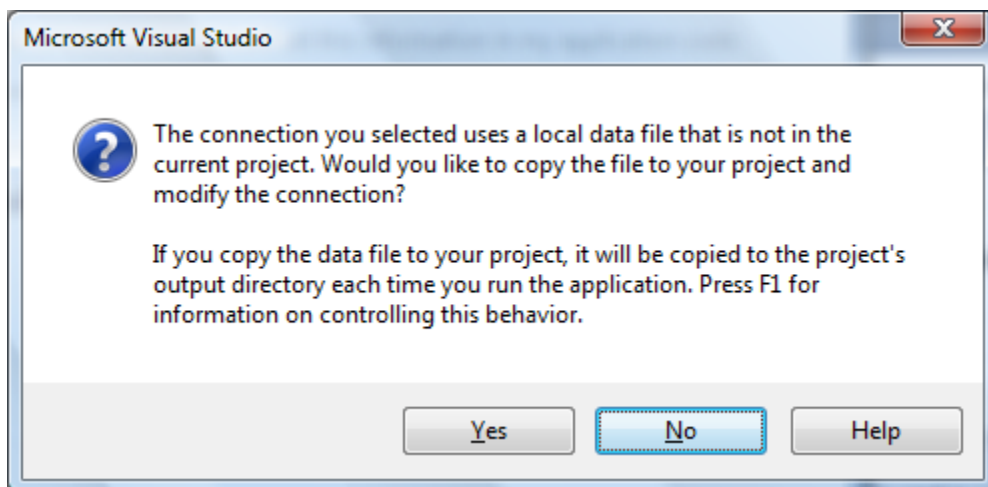
11. Data Source Configuration Wizard Continued.

- a. After setting the data source, the connection string is defined.
- b. Click on **Next** to continue with the wizard.



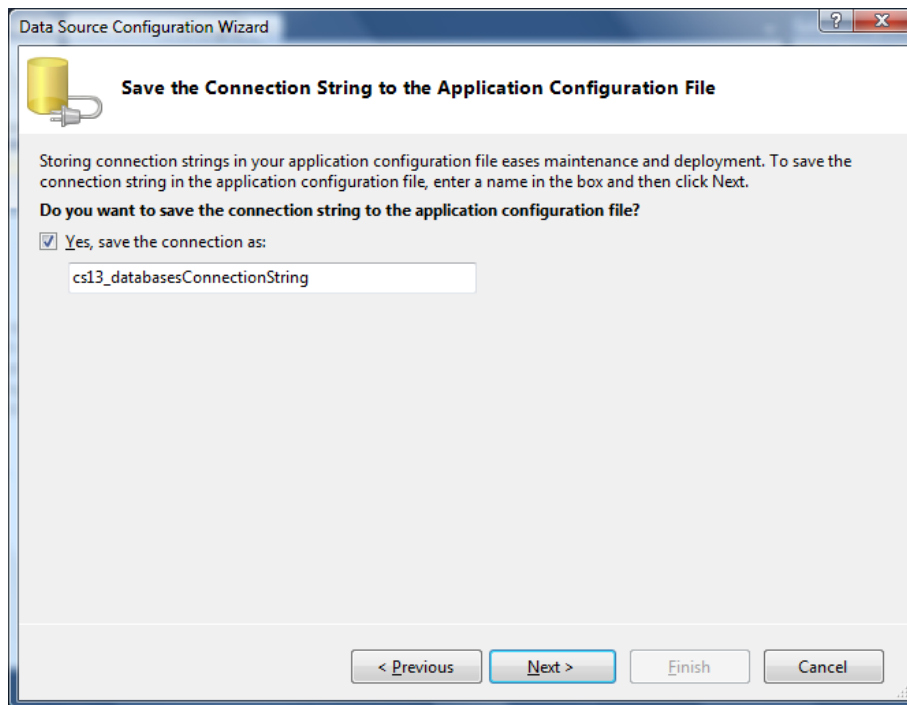
12. Copy file to project prompt.

- a. Click on **No**.



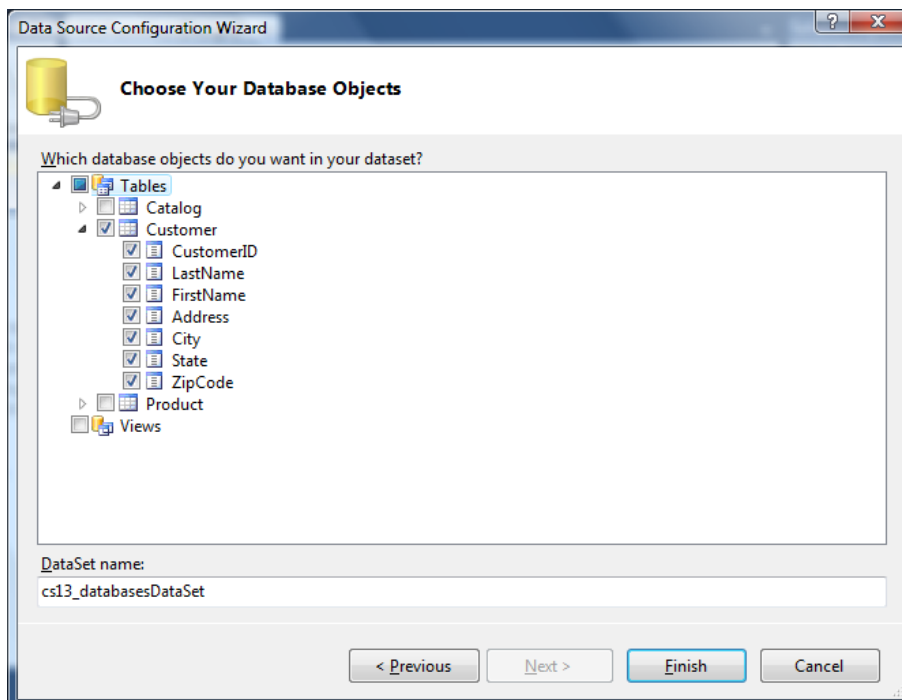
13. Save Connection String.

- a. Click on **Next**.



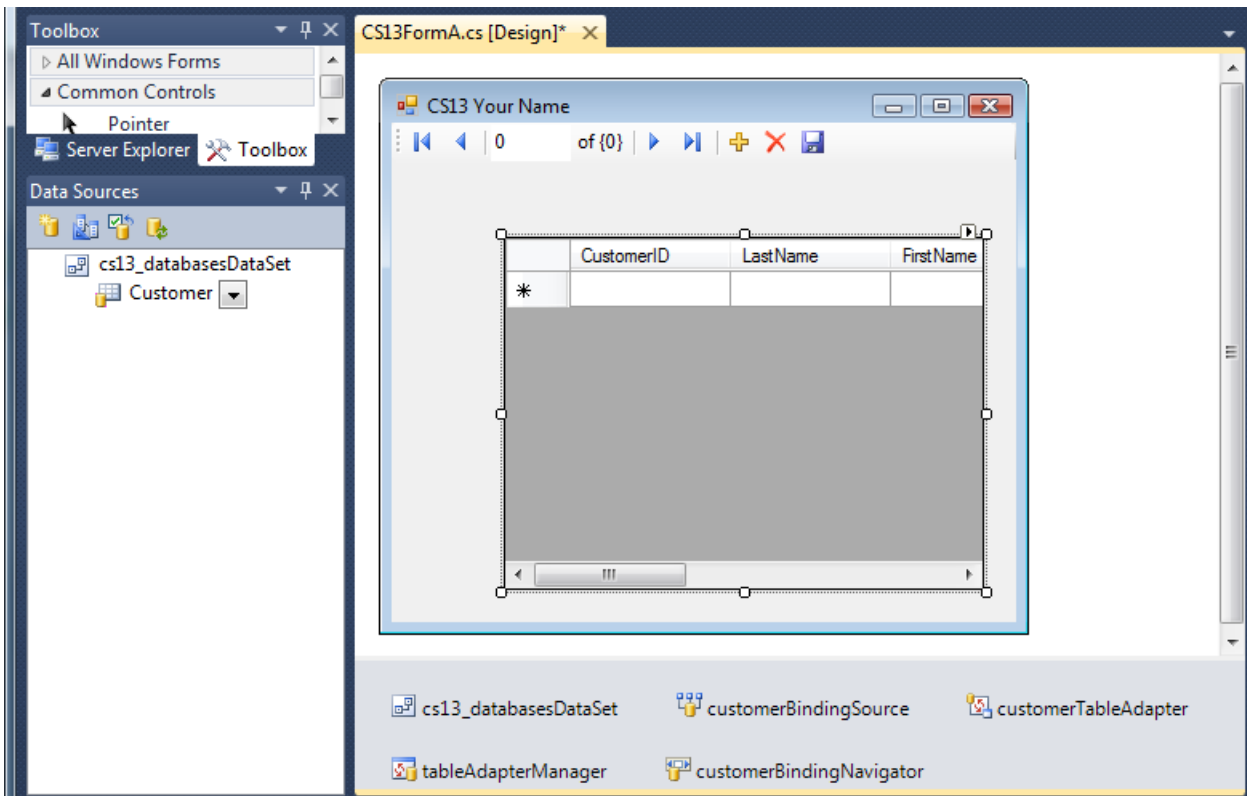
14. Choose Your Database Objects.

- a. The wizard queries the database for a list of tables.
- b. Click on the **arrow** in front of **Tables** to display the tables.
- c. Click on the **box** in front of **Customer** to select it.
Click on the arrow in front of Customer to see the fields defined in the table.
- d. Click on **Finish**.
- e. It will take a couple of seconds to generate all of the definitions.



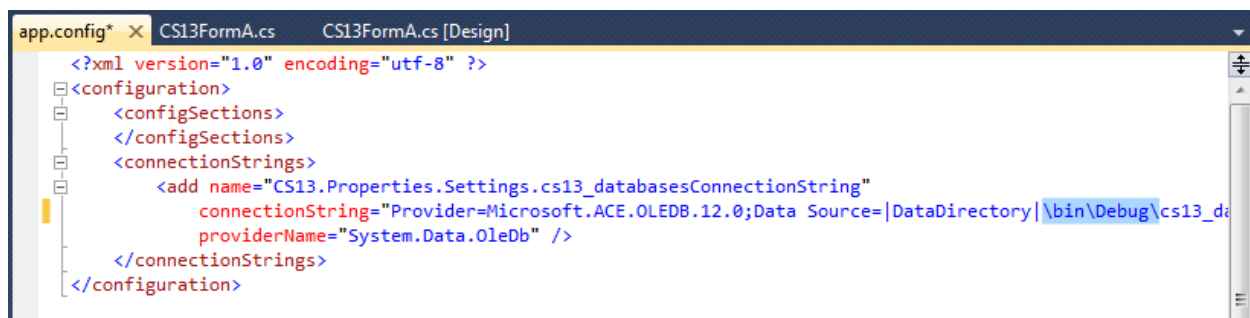
15. Add DataGridView control to the form.

a. **Drag the Customer table** from the Data Sources on to the form.



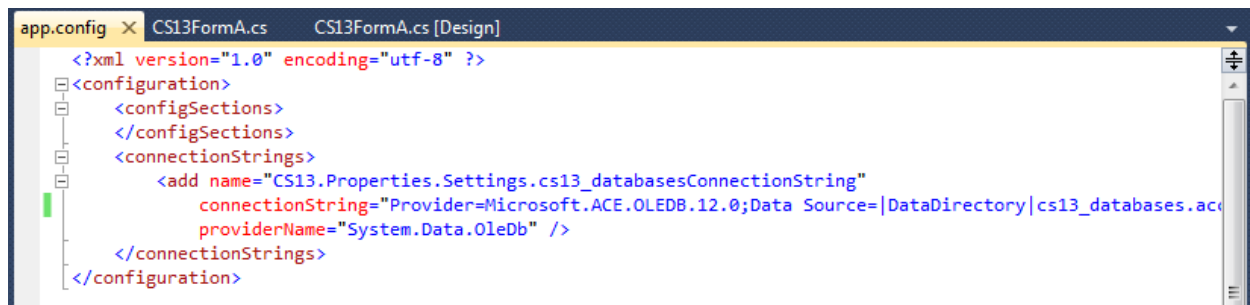
- b. When a table from the Data Sources is dragged on to the form, a DataGridView control is created by default.
- c. The navigation toolbar is also added at the top of the form.
- d. The control allows users to browse all the rows in the table as well as add, update, and delete rows.
- e. The FormLoad method is also created, which contains a call to the Fill method to automatically load the data into the DataSet from the source when the form is loaded. Switch to code view to see the method.
- f. Four additional objects are also added to the Component tray.
1. Dataset provides access to the data.
 2. Binding Source identifies the data source for the bounded controls.
 3. Table Adapter provides the commands to read and write to the table.
 4. Adapter Manager maintains referential integrity if two or more related tables are updated by the form.
 5. Binding Navigator defines the toolbar used to navigate.
- g. DataGridView is a single control that displays several columns from the table so it uses complex binding. **Complex Binding** connects more than one data element to a single control.

16. Reset the connection string in app.config.
 - a. If the application is executed, a run time exception will be thrown stating the directory path is invalid.
 - b. Part of the connection string contains (**see step 11**) :
Data Source=|DataDirectory|\bin\Debug\cs13_databases.accdb
 - c. DataDirectory is set to \bin\Debug\,so when the value is interpreted at run time, the value ends up with invalid directory path because \bin\Debug\ is included two times: CS13\bin\Debug\bin\Debug\cs13_databases.accdb
 - d. In the **Solution Explorer** panel, double click on **app.config**.
 - e. In the connection string, **delete \bin\Debug**.
Be sure to delete the slashes before bin and after Debug.
You may need to scroll to right to see the entire connection string.



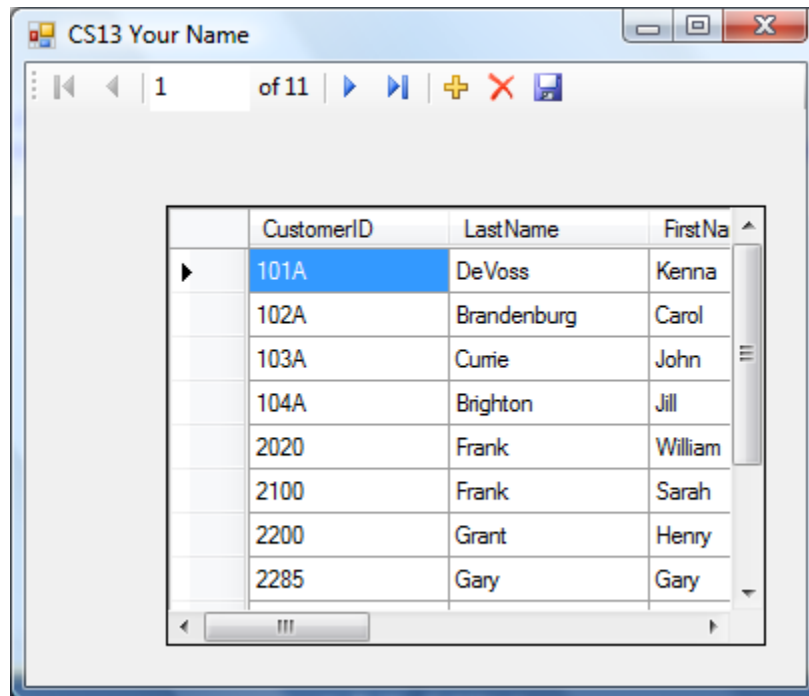
```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <configSections>
  </configSections>
  <connectionStrings>
    <add name="CS13.Properties.Settings.cs13_databasesConnectionString"
      connectionString="Provider=Microsoft.ACE.OLEDB.12.0;Data Source=|DataDirectory|\bin\Debug\cs13_databases.accdb"
      providerName="System.Data.OleDb" />
  </connectionStrings>
</configuration>
```

- f. After deleting of \bin\Debug\, the connection string will look like this.



```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <configSections>
  </configSections>
  <connectionStrings>
    <add name="CS13.Properties.Settings.cs13_databasesConnectionString"
      connectionString="Provider=Microsoft.ACE.OLEDB.12.0;Data Source=|DataDirectory|cs13_databases.accdb"
      providerName="System.Data.OleDb" />
  </connectionStrings>
</configuration>
```

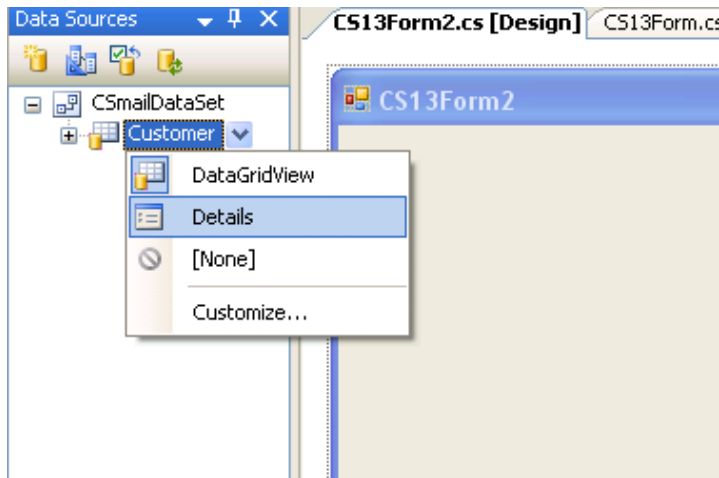
17. Execute the program.
 - a. Use the navigation controls to walk through the records.
 - b. If records are created, updated, or deleted, the changes can be saved to the database file.
 - c. The data grid displays all of the records in table format, which may not be the best way to have uses update the database. They can easily jump onto the wrong row and change the incorrect record. In the example, we see how a form which displays one row at a time may be better for updates.



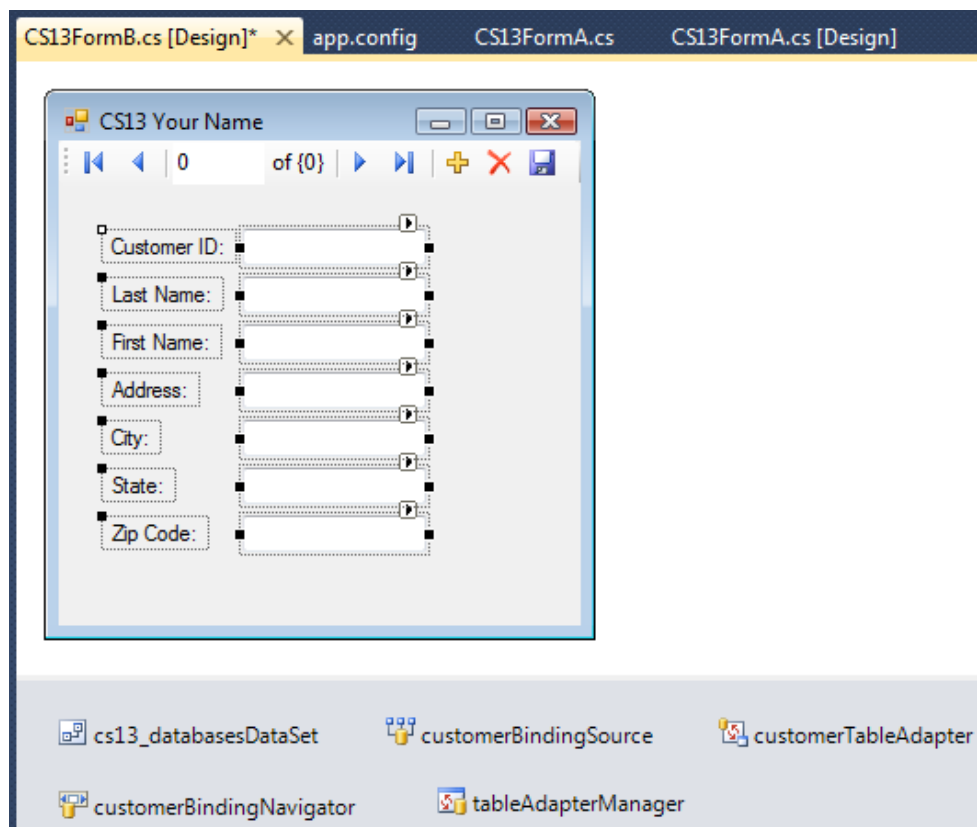
18. Add an additional form.
 - a. Click on **Project**, select **Add Windows Form**.
 - b. Name the form **CS13FormB**.
19. Set the form properties.
 - a. Form name property: **frmCS13B**
 - b. Form text property: **CS13 Your Name**

20. Add labels and textboxes to form using Details setting.

- a. In the **Data Sources** panel, **click on the Customer** table one time to select it.
- b. Click on the **drop down box** and select **Details**.



- c. **Click and drag** the Customer table on to the form, and the labels and textboxes are created.
- d. The required component tray items are also added.
- e. Textboxes use **Single Binding**, which is when a single control is connected to a specific data column in the table. Click on one of the textboxes one time to select it, and use Data Bindings property (above Name) to view which column from the database is mapped to the Text property of the particular textbox.

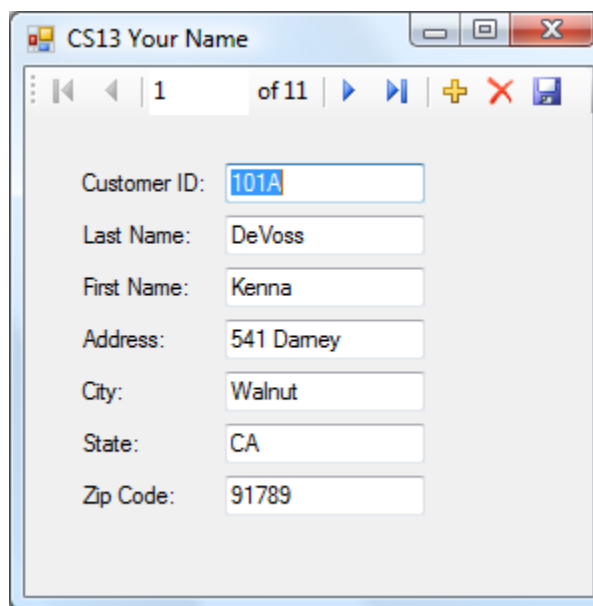


21. Change the startup form.
 - a. The **Solution Explorer**, double click on **Program.cs**.
 - b. On the Application.Run statement, change the form reference to **frmCS13B**.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Windows.Forms;

namespace CS13
{
    static class Program
    {
        /// <summary>
        /// The main entry point for the application.
        /// </summary>
        [STAThread]
        static void Main()
        {
            Application.EnableVisualStyles();
            Application.SetCompatibleTextRenderingDefault(false);
            Application.Run(new frmCS13B());
        }
    }
}
```

22. Execute the program.
 - a. Use the navigation controls to walk through the records.
 - b. If records are created, updated, or deleted, the changes can be saved to the database file.



23. **Submit online** the files **CS13FormA.cs**, **CS13FormA.Designer.cs**, **CS13FormB.cs**, and **CS13FormB.Designer.cs** when completed.