Høgskolen i Telemark

WinForm/C# Database App

using ADO.NET

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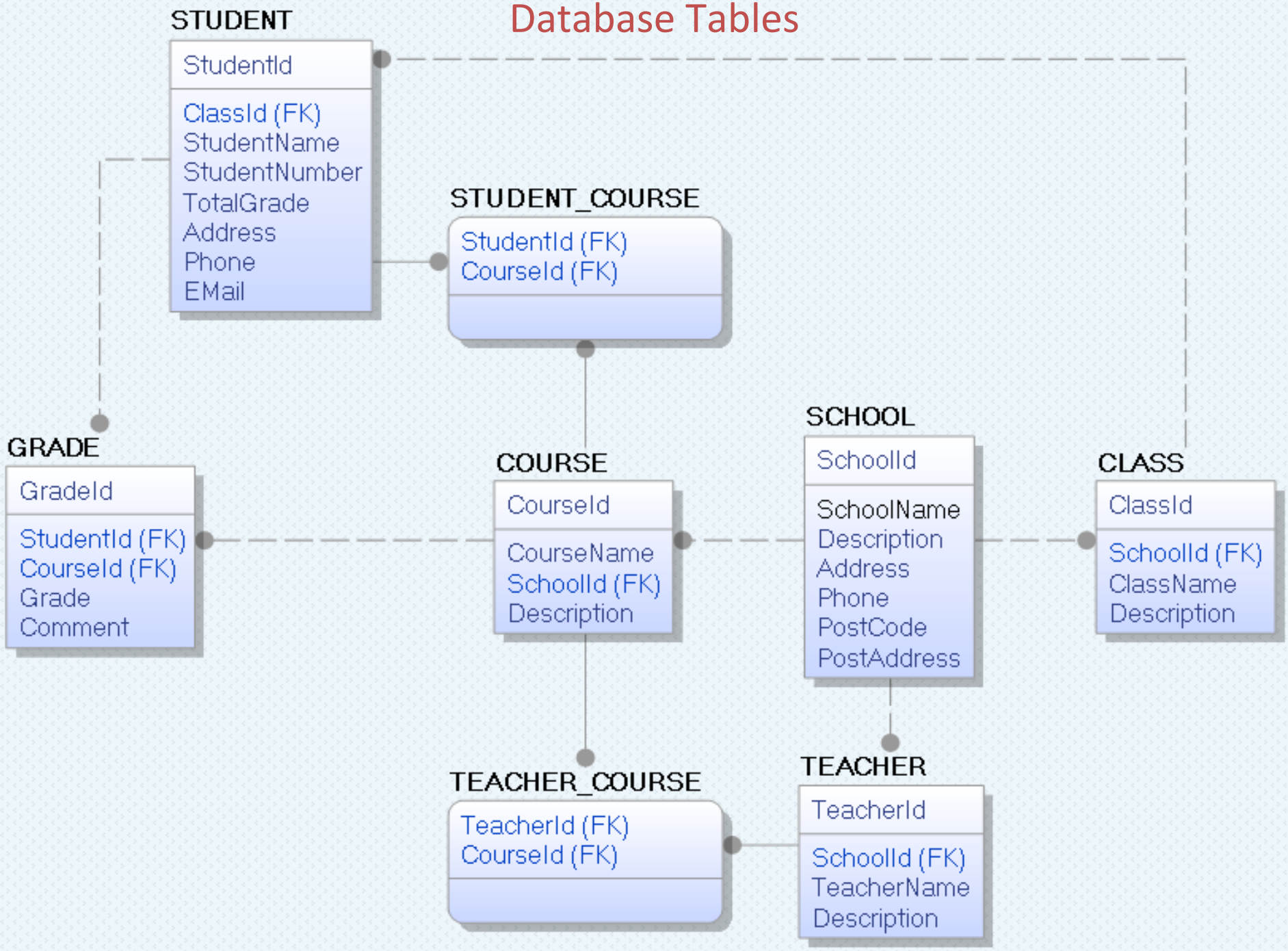
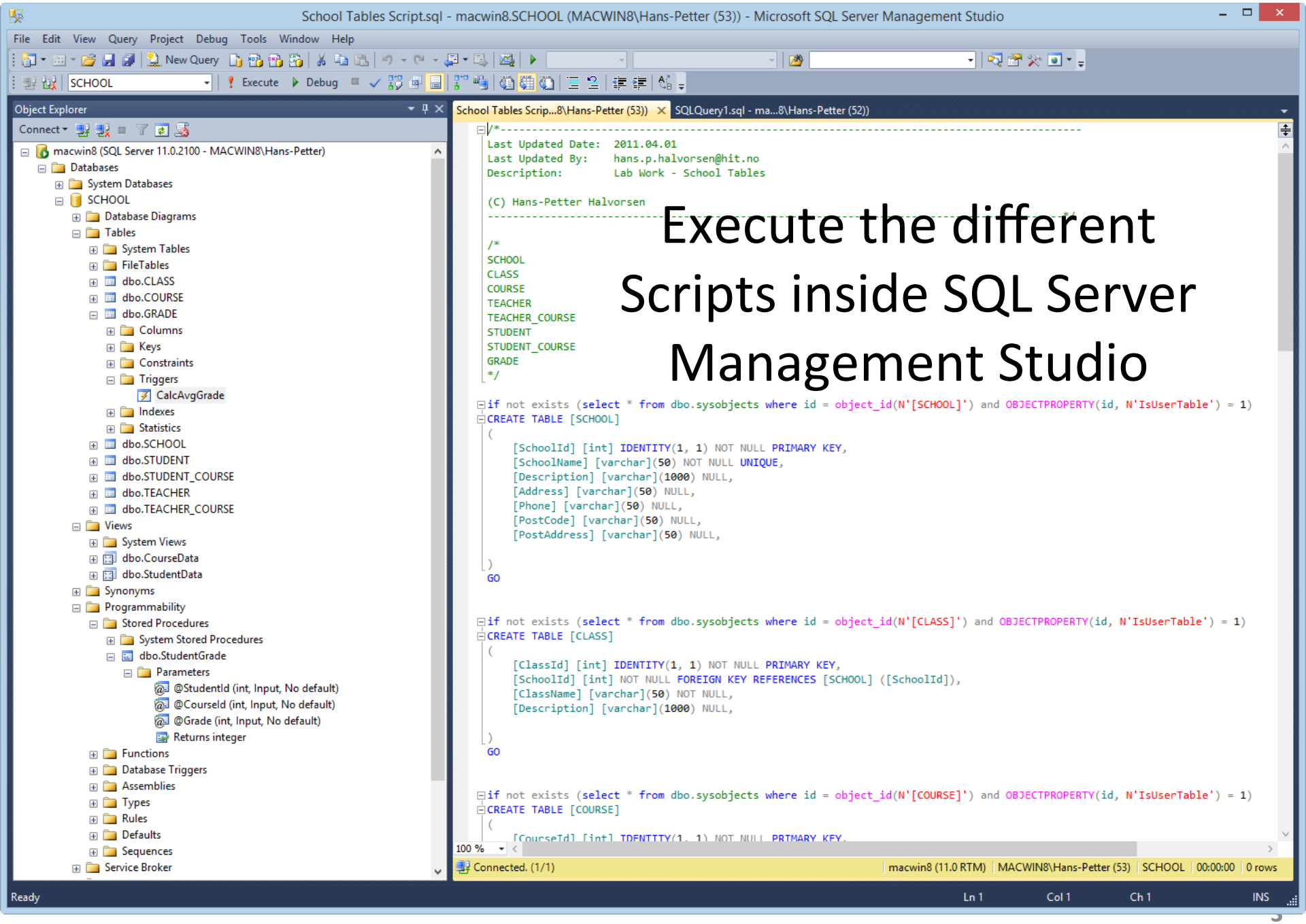
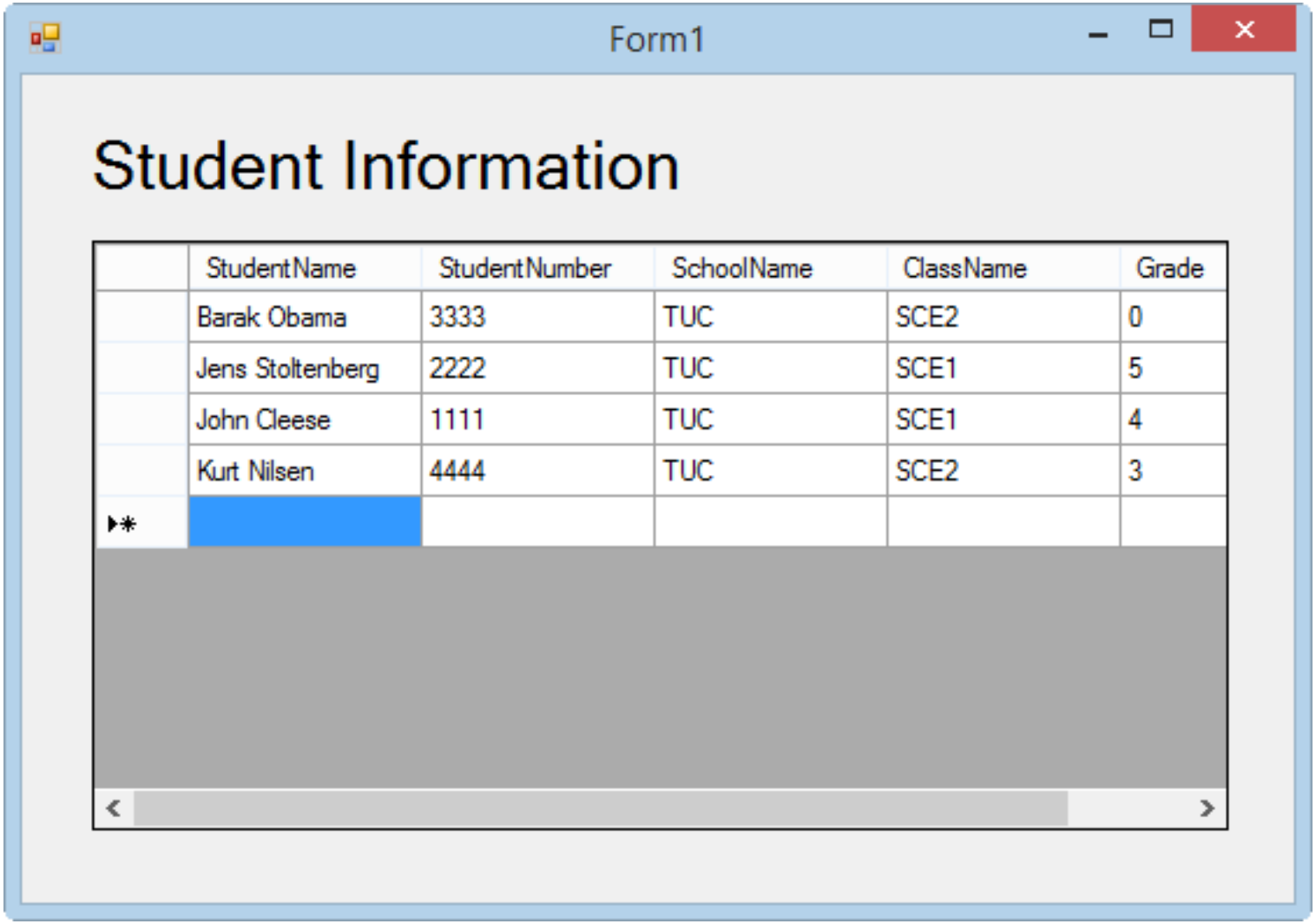

Database Tables
STUDENT
StudentId
ClassId (FK)
StudentName
StudentNumber
TotalGrade
Address
Phone
EMail
STUDENT_COURSE
StudentId (FK)
CourseId (FK)
GRADE
GradeId
StudentId (FK)
CourseId (FK)
Grade
Comment
COURSE
CourseId
CourseName
SchoolId (FK)
Description
SCHOOL
SchoolId
SchoolName
Description
Address
Phone
PostCode
PostAddress
CLASS
ClassId
SchoolId (FK)
ClassName
Description
TEACHER_COURSE
TeacherId (FK)
CourseId (FK)
TEACHER
TeacherId
SchoolId (FK)
TeacherName
Description

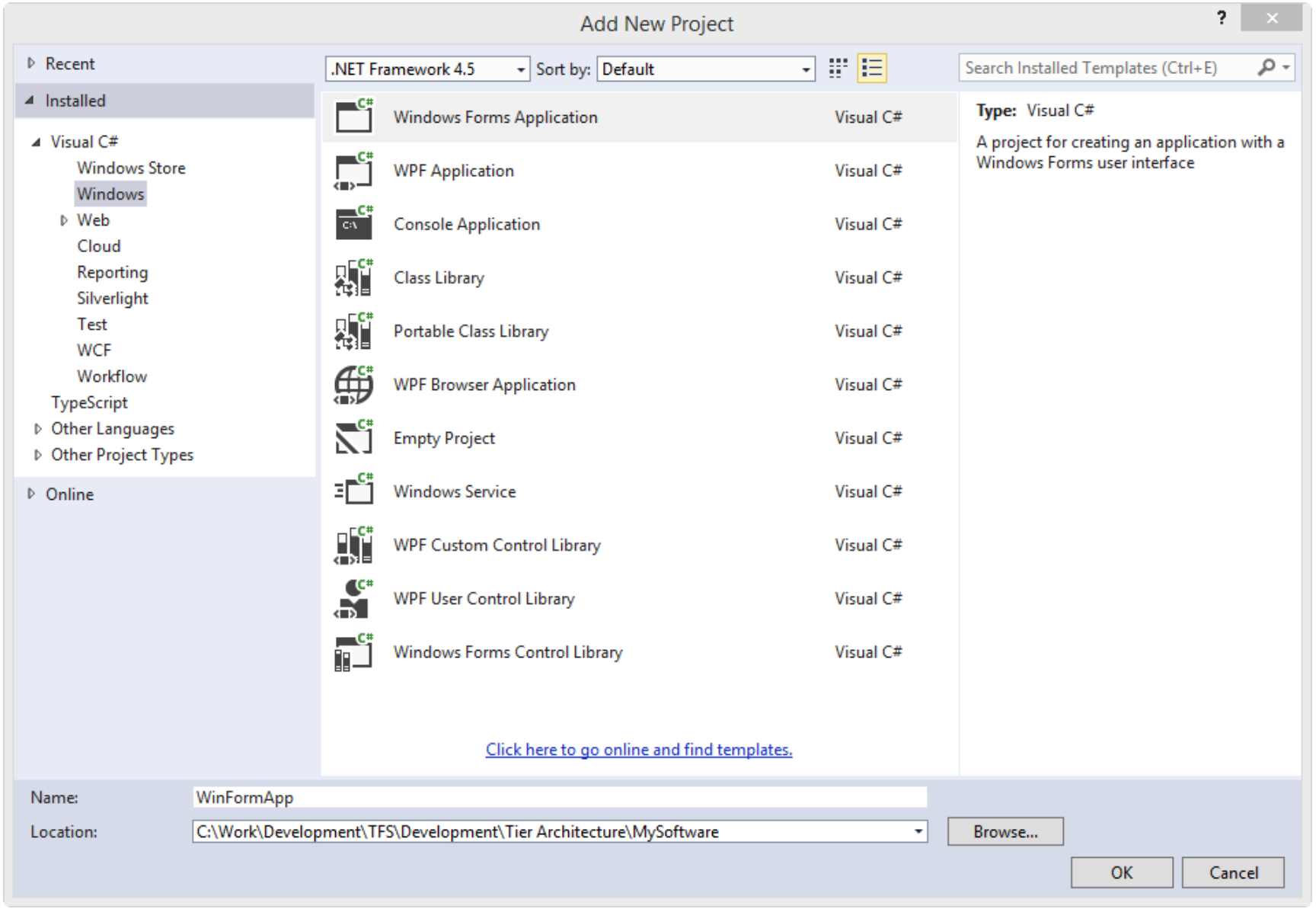


Execute the different Scripts inside SQL Server Management Studio

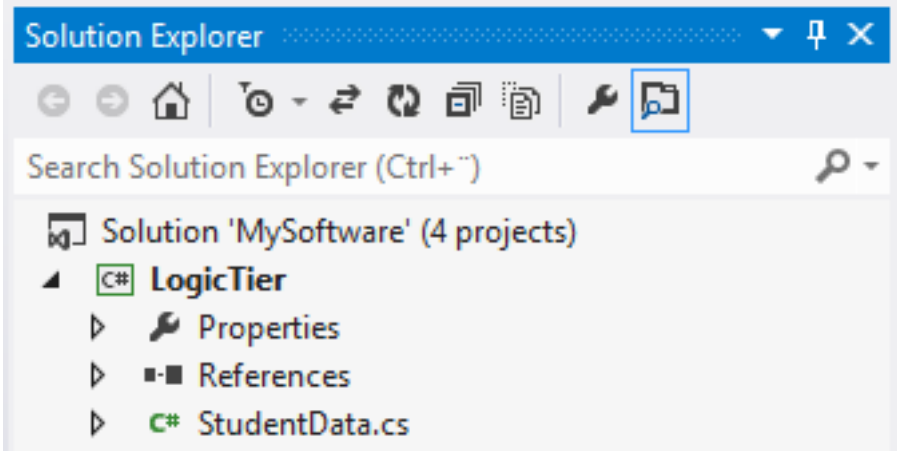
This Example shows how to create a WinForm App that gets Data from a Database into a DataGridView

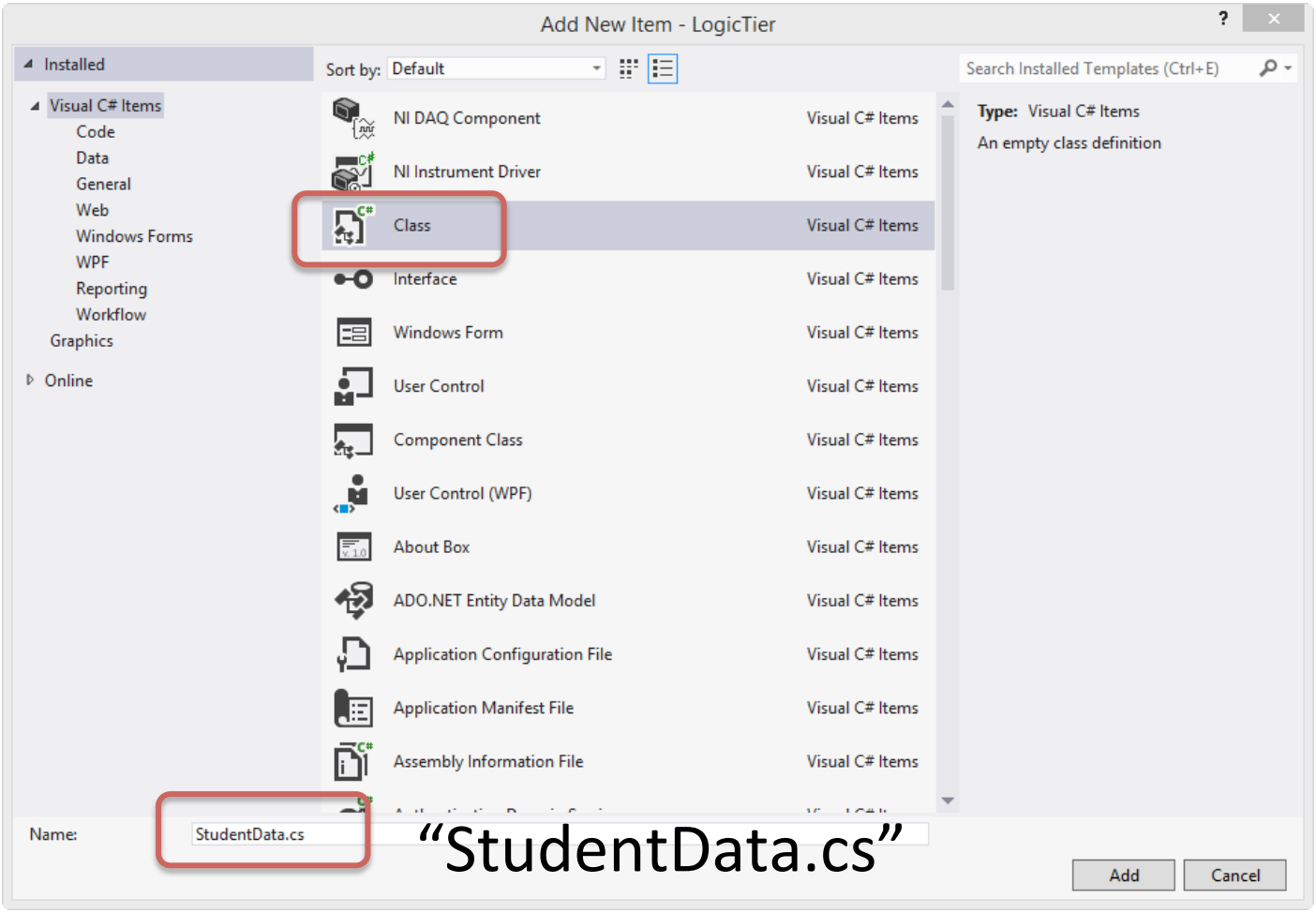


Add a **WinForm Project**



Add a New **Class** to the Project (“StudentData.cs”)





“StudentData.cs”

Create the **Code**, e.g., like this ("StudentData.cs"):

StudentData.cs

Tuc.School.LogicTier.StudentData — GetStudentDB(string connectionString)

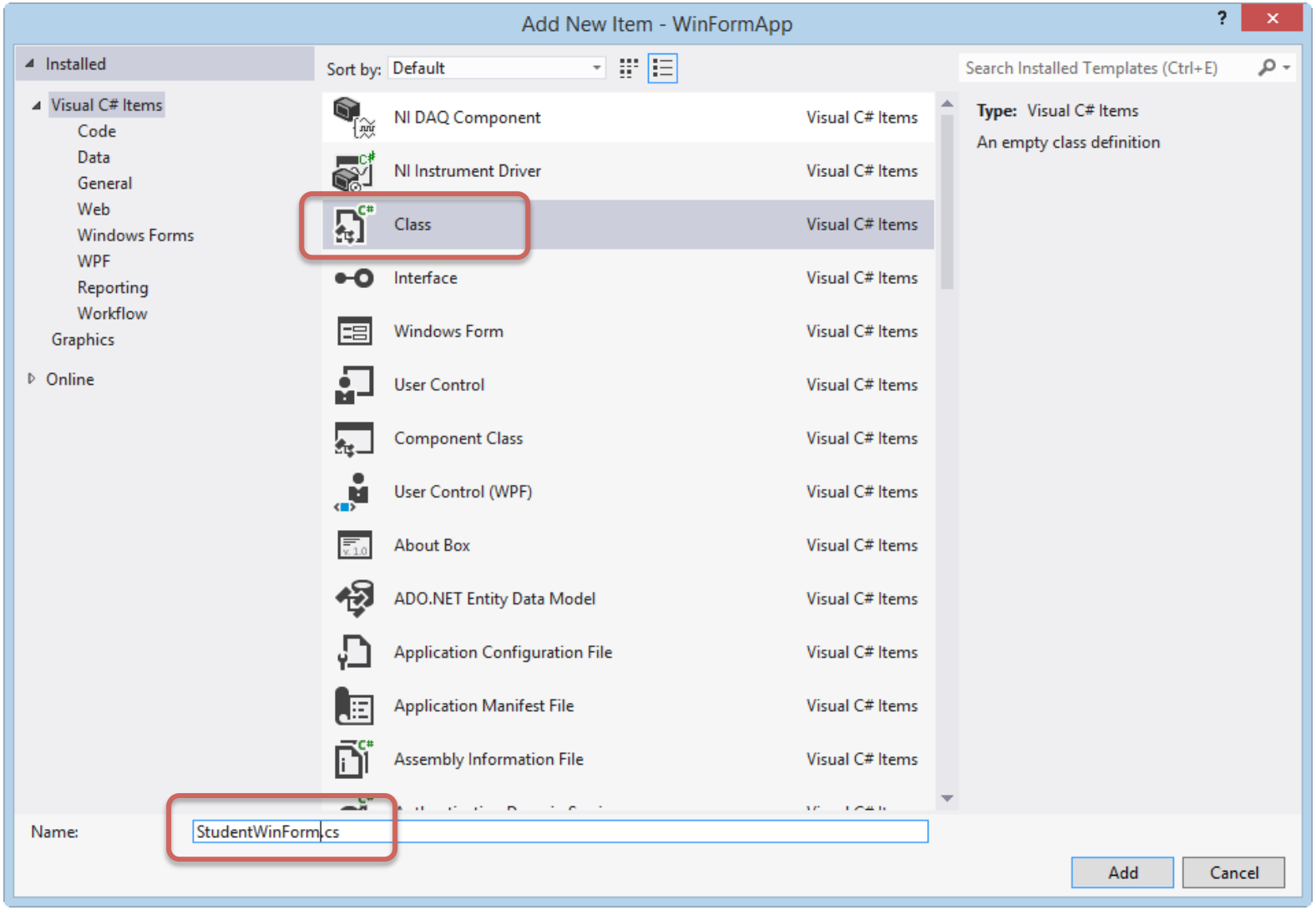
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

using System.Data.SqlClient;
using System.Data.SqlTypes;
using System.Data;

namespace Tuc.School.LogicTier
{
    public class StudentData
    {

        public DataSet GetStudentDB(string connectionString)
        {

            string selectSQL = "select StudentName, StudentNumber, SchoolName, ClassName, Grade from StudentData order by StudentName";

            // Define the ADO.NET objects.
            SqlConnection con = new SqlConnection(connectionString);

            SqlDataAdapter da = new SqlDataAdapter(selectSQL, con);

            DataSet ds = new DataSet();
            da.Fill(ds);

            return ds;

        }

    }
}
```

SQL Query

A View that collects data from several tables

Improvements: Use Try... Catch ...

Add a New **Class** (“StudentWinForm.cs”)



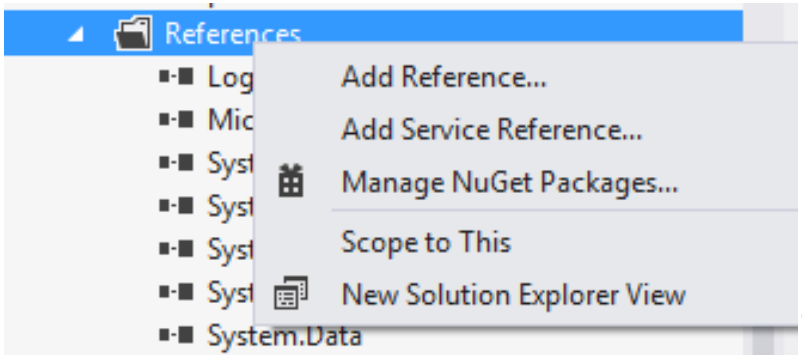
Add **Code** in Class

StudentWinForm.cs

Tuc.School.WinFormApp.StudentWinForm

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

using System.Data;

using Tuc.School.LogicTier;

namespace Tuc.School.WinFormApp
{
    class StudentWinForm
    {

        public DataSet GetStudent(string connectionString)
        {
            StudentData studentData = new StudentData();

            return studentData.GetStudentDB(connectionString);
        }

    }
}
```

Add a Reference to the Assembly in the Logic Tier

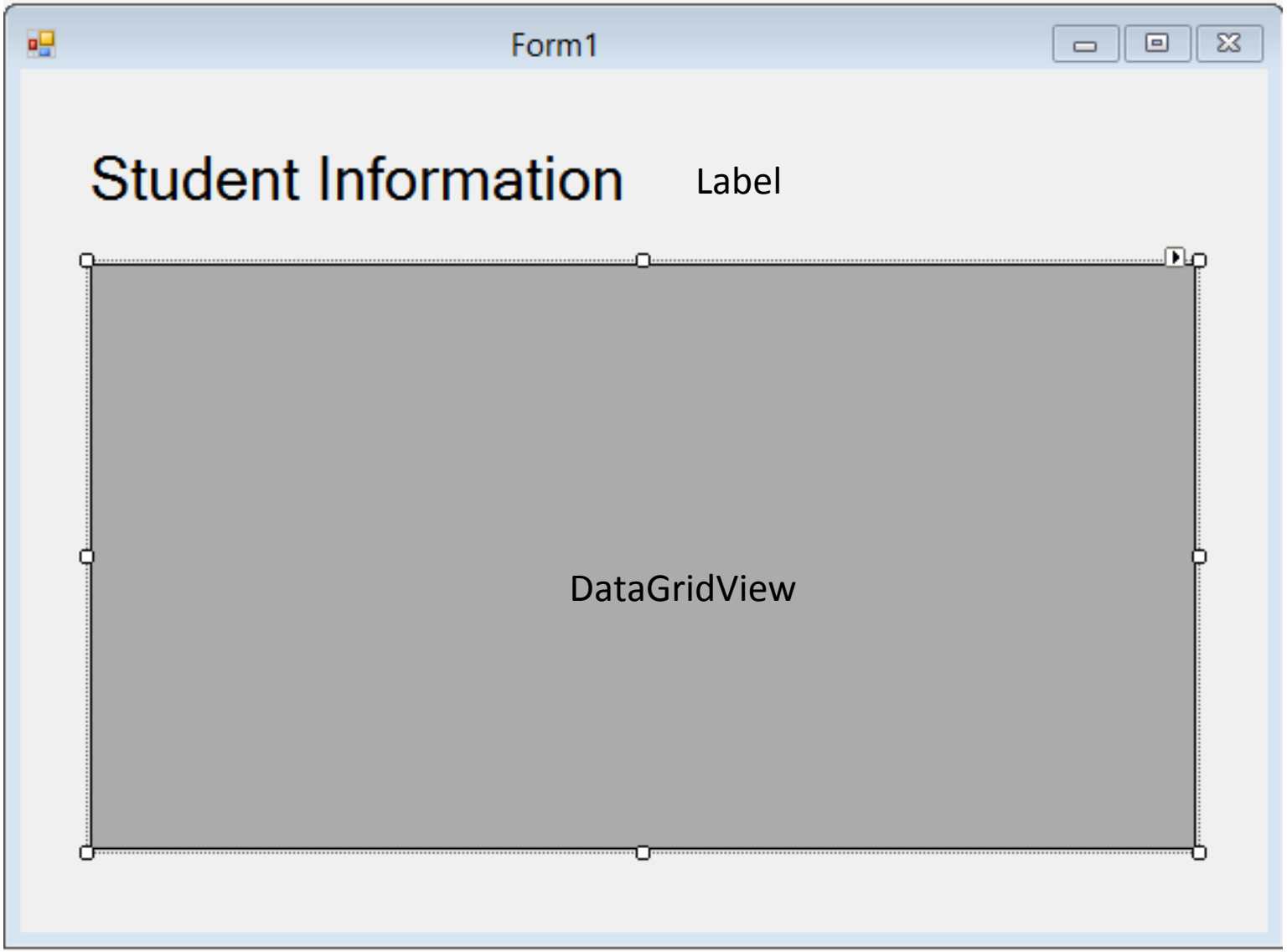


Code for Class “StudentWinForm.cs”

```
using System.Data;

using Tuc.School.LogicTier;

namespace Tuc.School.WinFormApp
{
    class StudentWinForm
    {

        public DataSet GetStudent(string connectionString)
        {
            StudentData studentData = new StudentData();

            return studentData.GetStudentDB(connectionString);
        }

    }
}
```

Since we are using the DataSet Class

Create Form



Create Form Code

Form1.cs | Form1.cs [Design]

WinFormApp.Form1 | connectionString

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

using System.Configuration;

using Tuc.School.WinFormApp;


namespace WinFormApp
{
    public partial class Form1 : Form
    {

        private string connectionString = ConfigurationManager.ConnectionStrings["SCHOOLConnectionString"].ConnectionString;

        public Form1()
        {
            InitializeComponent();
        }

        private void Form1_Load(object sender, EventArgs e)
        {
            FillStudentGrid();

        }


        private void FillStudentGrid()
        {

            DataSet ds = new DataSet();

            StudentWinForm studentList = new StudentWinForm();

            ds = studentList.GetStudent(connectionString);

            dataGridViewStudentInformation.DataSource = ds.Tables[0];

        }
    }
}
```

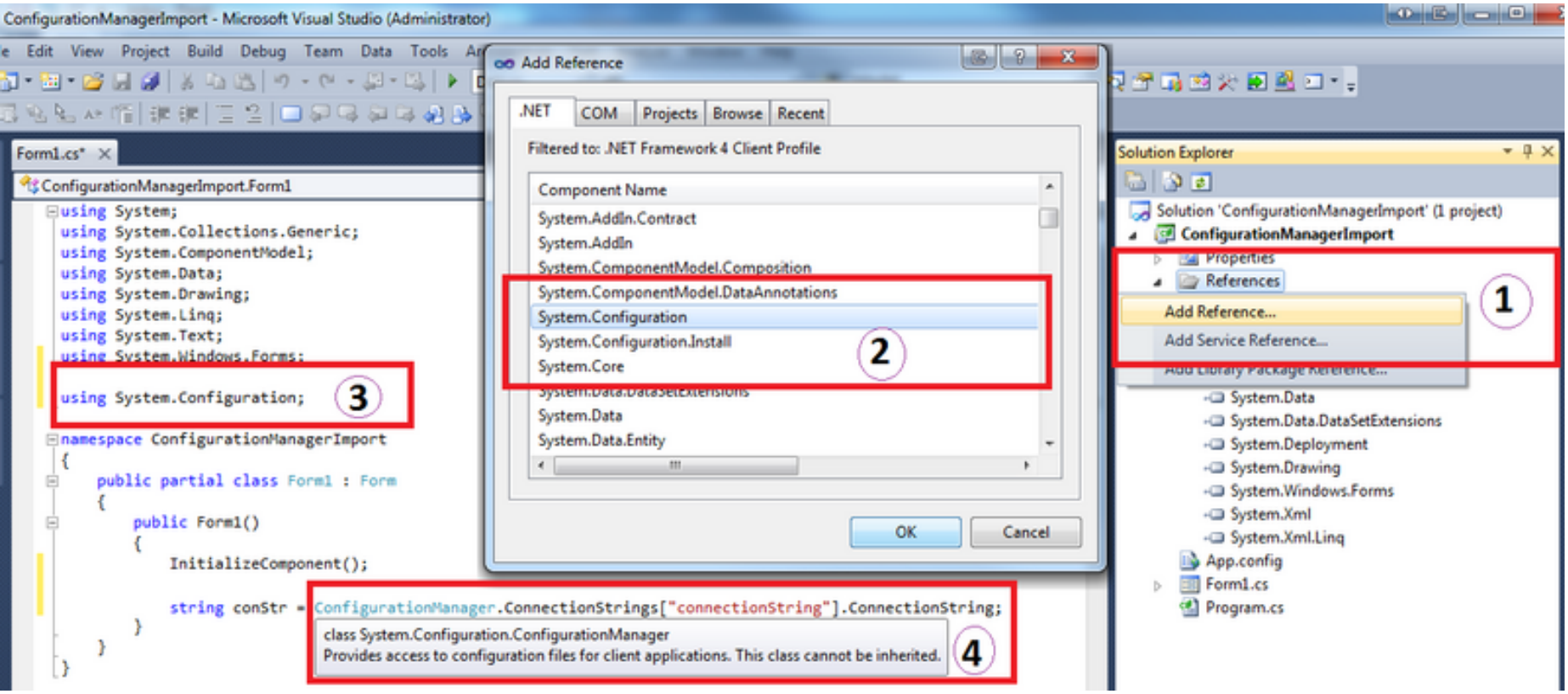
WinForm Code

```
using System.Configuration;
using Tuc.School.WinFormApp;

namespace WinFormApp
{
    public partial class Form1 : Form
    {

        private string connectionString =
            ConfigurationManager.ConnectionStrings["SCHOOLConnectionString"].ConnectionString;

        public Form1()
        {
            InitializeComponent();
        }

        private void Form1_Load(object sender, EventArgs e)
        {
            FillStudentGrid();

        }

        private void FillStudentGrid()
        {

            DataSet ds = new DataSet();

            StudentWinForm studentList = new StudentWinForm();

            ds = studentList.GetStudent(connectionString);

            dataGridViewStudentInformation.DataSource = ds.Tables[0];

        }
    }
}
```

Note!

ConnectionString is stored in App.config

Note! Add “System.Configuration” Reference



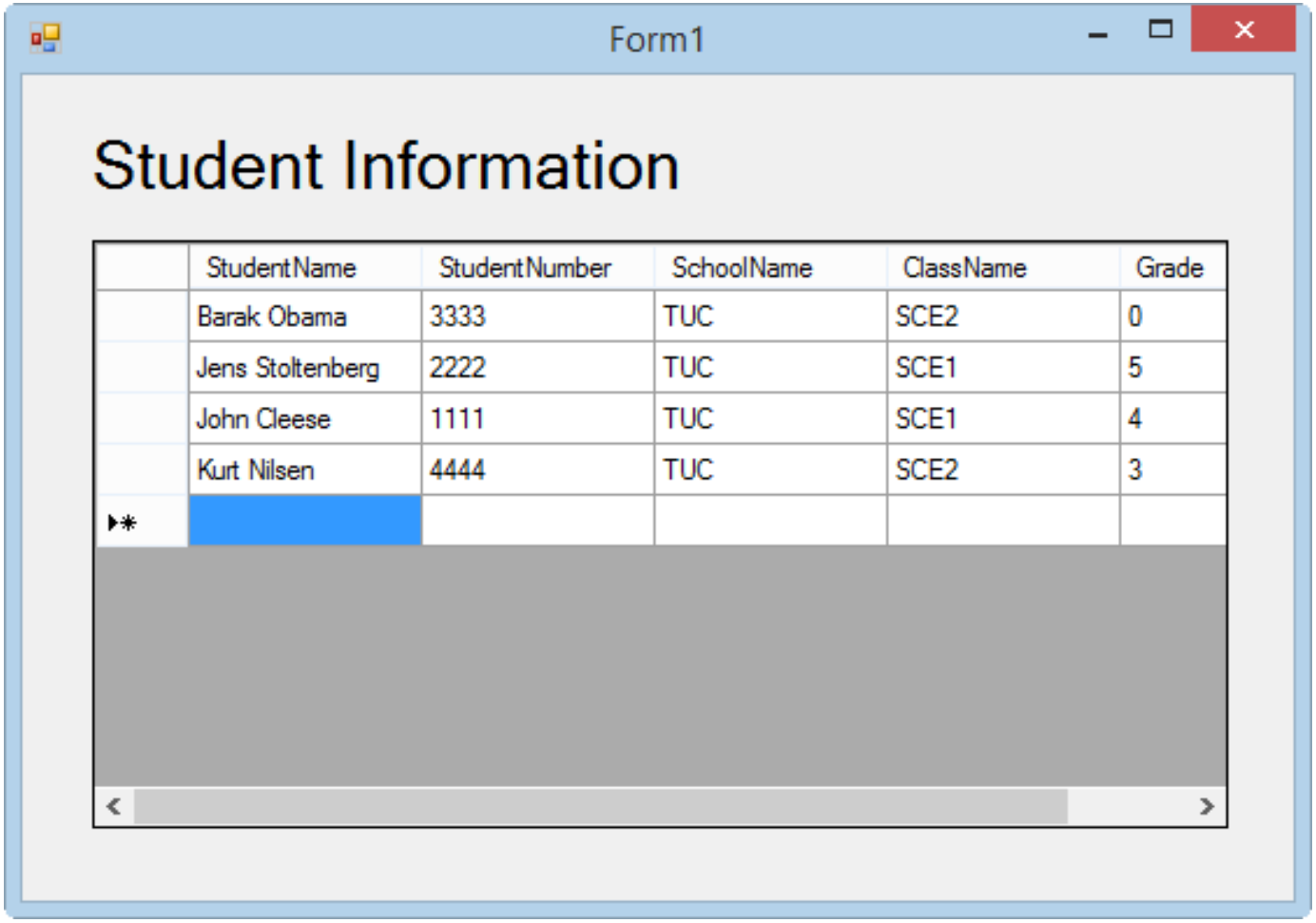
Create DB ConnectionString in **App.config**

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>

    <startup>
        <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.5" />
    </startup>


  <connectionStrings>
    <add name="SCHOOLConnectionString" connectionString="Data Source=macwin8;Initial Catalog=SCHOOL;Persist Security
Info=True;User ID=sa;Password=xxxxxx"
      providerName="System.Data.SqlClient" />
  </connectionStrings>


</configuration>
```

App.config

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>


    <startup>
        <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.5" />
    </startup>


  <connectionStrings>
    <add name="SCHOOLConnectionString" connectionString="Data Source=macwin8;Initial Catalog=SCHOOL;Persist Security Info=True;User ID=sa;Passwor
      providerName="System.Data.SqlClient" />
  </connectionStrings>



</configuration>
```

Test it



It works!!!

Recommended Litterature

- Tutorial: Introduction to Database Systems
  http://home.hit.no/~hansha/?tutorial=database
- Tutorial: Structured Query Language (SQL)
  http://home.hit.no/~hansha/?tutorial=sql
- Tutorial: Using SQL Server in C#
- Tutorial: Introduction to Visual Studio and C#
  http://home.hit.no/~hansha/?tutorial=csharp

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