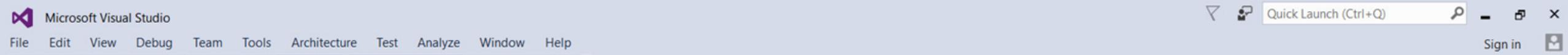
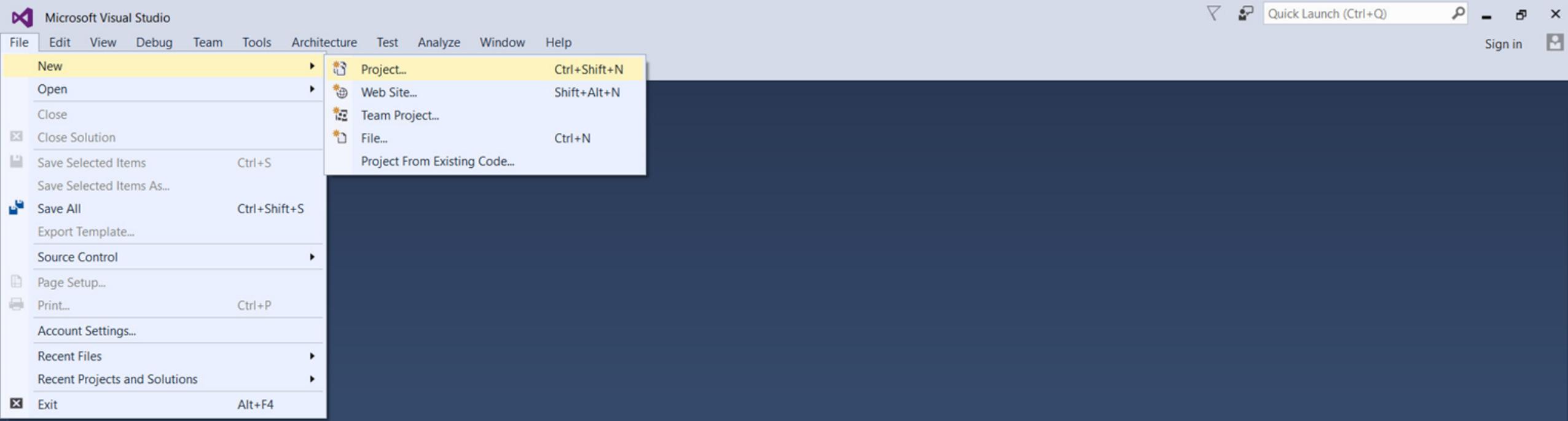


# Unit Testing MVC App using Visual Studio

by Amandeep S. Patti





▷ Recent

.NET Framework 4.5.2

Sort by: Default



◀ Installed

◀ Templates

- ▷ Visual C#
- ▷ Visual Basic
- Visual F#
- ▷ Visual C++
- SQL Server
- Python
- ▷ JavaScript
- ▷ TypeScript
- Game
- Build Accelerator

◀ Other Project Types

- Setup and Deployment
- Visual Studio Solutions

Modeling Projects

Samples

▷ Online



Blank Solution

Visual Studio Solutions

Search Installed Templates (Ctrl+E)

**Type:** Visual Studio Solutions

Create an empty solution containing no projects

[Click here to go online and find templates.](#)

Name: MVCTesting

Location: c:\demos

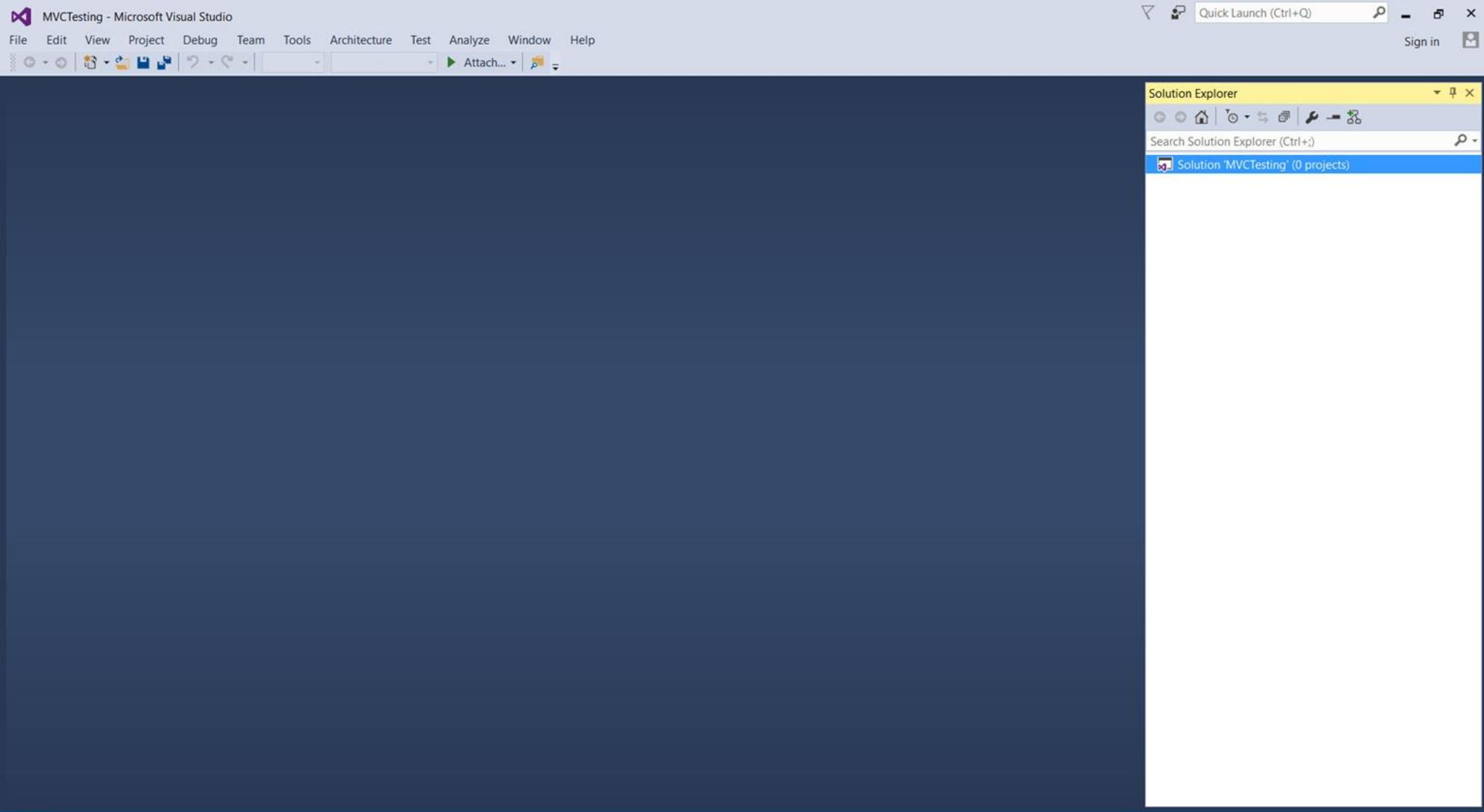
Browse...

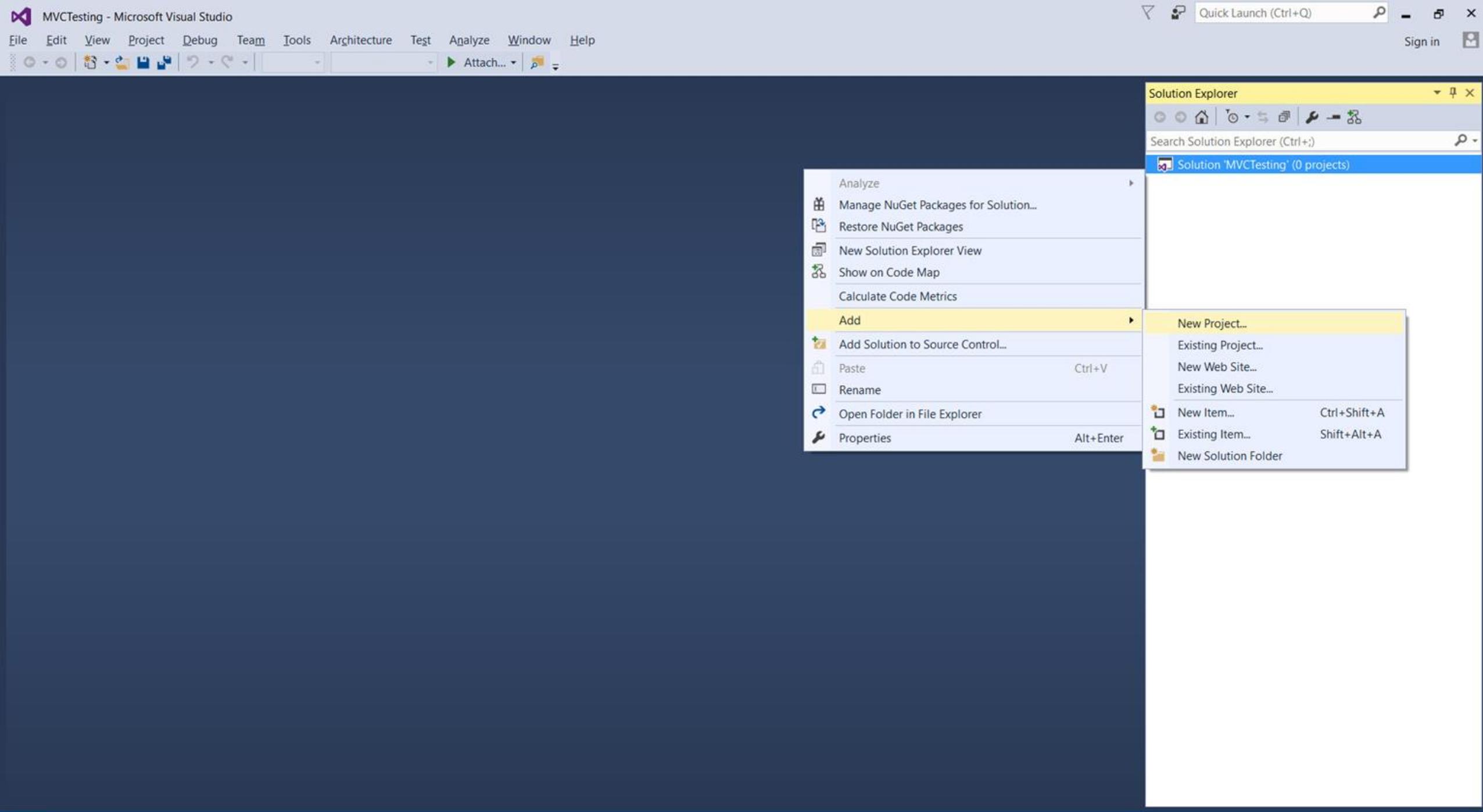
Solution name: MVCTesting

 Create directory for solution Add to source control

OK

Cancel





▷ Recent

.NET Framework 4.5.2

Sort by: Default



Search Installed Templates (Ctrl+E)



## ◀ Installed

## ◀ Visual C#

▷ Windows

Web

Android

Cloud

Extensibility

iOS

LightSwitch

Office/SharePoint

Silverlight

Test

WCF

Workflow

▷ Visual Basic

Visual F#

▷ Visual C++

SQL Server

Python

▷ JavaScript

▷ TypeScript

Game

Build Accelerator

## ▷ Online

[Click here to go online and find templates.](#)

Name:

StudentDBModel

Location:

c:\demos\MVCTesting

Browse...

OK

Cancel

	Windows Forms Application	Visual C#
	WPF Application	Visual C#
	Console Application	Visual C#
	Shared Project	Visual C#
	Class Library (Portable for iOS, Android and Windows)	Visual C#
	Class Library	Visual C#
	Class Library (Portable)	Visual C#

**Type:** Visual C#

A project for creating a C# class library (.dll)

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Class1.cs | StudentDBModel | StudentDBModel.Class1 | Debug Any CPU | Start | Solution Explorer | Properties | Task List | Error List | Output | Help

Class1.cs

```
StudentDBModel
    Using System;
    Using System.Collections.Generic;
    Using System.Linq;
    Using System.Text;
    Using System.Threading.Tasks;

    Namespace StudentDBModel
    {
        Public Class Class1
        {
        }
    }
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (1 project)

- StudentDBModel
  - Properties
  - References
- Class1.cs

Context menu for Class1.cs:

- Open
- Open With...
- View Code F7
- View Class Diagram
- Scope to This
- New Solution Explorer View
- Show on Code Map
- Exclude From Project
- Cut Ctrl+X
- Copy Ctrl+C
- Delete Del
- Rename
- Properties Alt+Enter

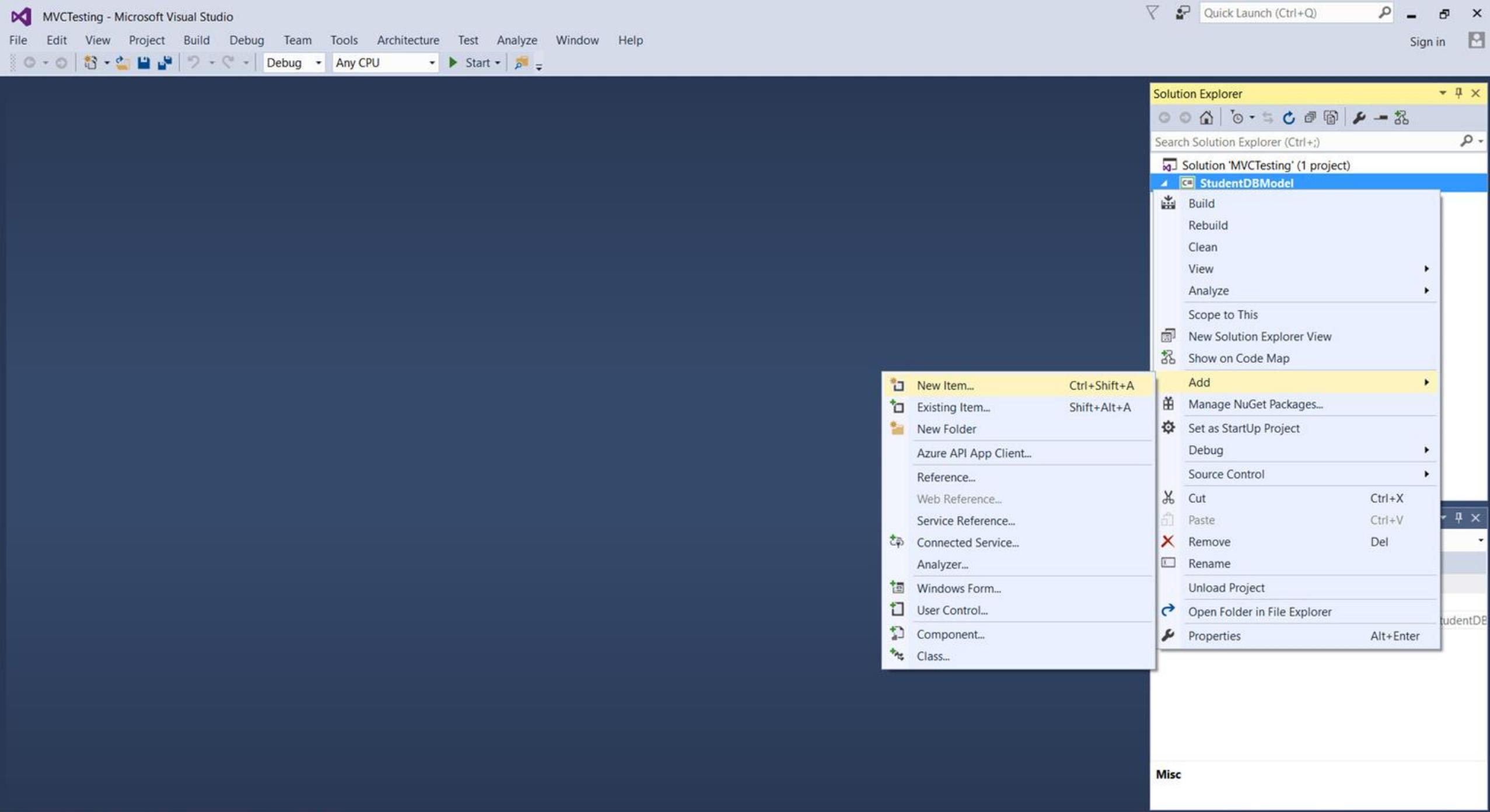
Properties window for Class1.cs:

Class1.cs	File Properties
Advanced	
Build Action	Compile
Copy to Output Directory	Do not copy
Custom Tool	
Custom Tool Namespace	
Misc	
File Name	Class1.cs
Full Path	c:\demos\MVCTesting\StudentDB\
Advanced	

90 %

Creating project 'StudentDBModel'... project creation successful.

Ln 1 Col 1 Ch 1 INS



## Installed

Sort by: Default



Search Installed Templates (Ctrl+E)

## Visual C# Items

- Code
- Data
- General
- Web
  - Windows Forms
  - WPF
  - SQL Server
  - Workflow

## Online

	Class	Visual C# Items
	Interface	Visual C# Items
	Windows Form	Visual C# Items
	User Control	Visual C# Items
	Component Class	Visual C# Items
	User Control (WPF)	Visual C# Items
	About Box	Visual C# Items
	ADO.NET Entity Data Model	Visual C# Items
	Application Configuration File	Visual C# Items
	Application Manifest File	Visual C# Items
	Assembly Information File	Visual C# Items
	Bitmap File	Visual C# Items
	Class Diagram	Visual C# Items

[Click here to go online and find templates.](#)

Name:

DBModel

Add

Cancel



## Choose Model Contents

## What should the model contain?



EF Designer  
from  
database



Empty EF  
Designer  
model



Empty Code  
First model



Code First  
from  
database

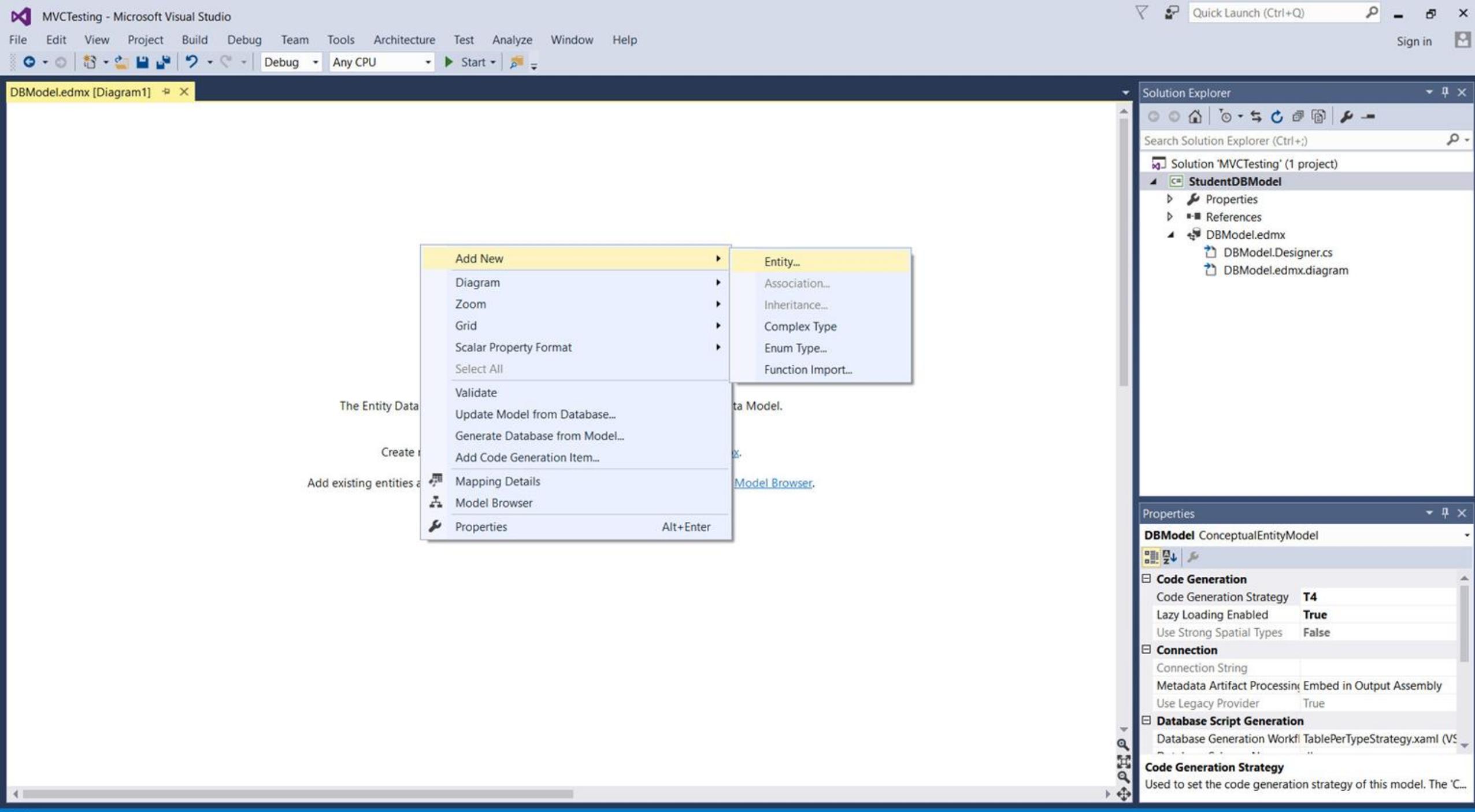
Creates an empty model in the EF Designer as a starting point for visually designing your model. Later, you can generate a database from your model. The classes your application will interact with are generated from the model.

&lt; Previous

Next &gt;

Finish

Cancel



## Add Entity

X

### Properties

Entity name:

Student

Base type:

(None)

Entity Set:

Students

### Key Property

Create key property

Property name:

Id

Property type:

Int32

OK

Cancel

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

DBModel.edmx [Diagram1]\*

Debug Any CPU Start

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (1 project)

StudentDBModel

- Properties
- References
- DBModel.edmx
  - DBModel.Designer.cs
  - DBModel.edmx.diagram

Properties

DBModel ConceptualEntityModel

Code Generation

- Code Generation Strategy **T4**
- Lazy Loading Enabled **True**
- Use Strong Spatial Types **False**

Connection

- Connection String
- Metadata Artifact Processing **Embed in Output Assembly**
- Use Legacy Provider **True**

Database Script Generation

- Database Generation Workfl TablePerTypeStrategy.xaml (VS)

Code Generation Strategy

Used to set the code generation strategy of this model. The 'C...'.

The screenshot shows the Microsoft Visual Studio interface with the title bar 'MVCTesting - Microsoft Visual Studio'. The menu bar includes File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, and Help. The toolbar has icons for file operations like Open, Save, and Print, along with Debug, Start, and Build buttons. The status bar at the bottom left says 'Ready'. The main window displays the 'DBModel.edmx [Diagram1]\*' tab. On the left, a context menu for the 'Student' entity is open, showing options like 'Properties' and 'Navigation Properties'. The 'Properties' section lists four fields: Id, FirstName, LastName, and RegistrationNumber. In the center, there is a large, mostly blank workspace. To the right, the 'Solution Explorer' window shows a single project 'StudentDBModel' with its files: Properties, References, and DBModel.edmx, which contains DBModel.Designer.cs and DBModel.edmx.diagram. Below the Solution Explorer is the 'Properties' window for the DBModel entity, which is a 'ConceptualEntityModel'. It shows settings for Code Generation (Strategy: T4, Lazy Loading Enabled: True), Connection (ConnectionString, MetadataArtifactProcessing: Embed in Output Assembly, UseLegacyProvider: True), Database Script Generation (DatabaseGenerationWorkfl: TablePerTypeStrategy.xaml (VS)), and Code Generation Strategy (description: 'Used to set the code generation strategy of this model. The 'C...').

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

DBModel.edmx [Diagram1]\*

Debug Any CPU Start

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (1 project)

StudentDBModel

- Properties
- References
- DBModel.edmx
  - DBModel.Designer.cs
  - DBModel.edmx.diagram

Properties

DBModel ConceptualEntityModel

Code Generation

- Code Generation Strategy **T4**
- Lazy Loading Enabled **True**
- Use Strong Spatial Types **False**

Connection

- Connection String
- Metadata Artifact Processing **Embed in Output Assembly**
- Use Legacy Provider **True**

Database Script Generation

- Database Generation Workfl TablePerTypeStrategy.xaml (VS)

Code Generation Strategy

Used to set the code generation strategy of this model. The 'C...'.

Add New

- Diagram
- Zoom
- Grid
- Scalar Property Format
- Select All
- Validate
- Update Model from Database...
- Generate Database from Model...**
- Add Code Generation Item...

Mapping Details

Model Browser

Properties Alt+Enter

Diagram showing the Student entity with properties: Id, FirstName, LastName, RegistrationNumber. A context menu is open over the entity, with 'Generate Database from Model...' highlighted.



### Choose Your Data Connection

**Which data connection should your application use to connect to the database?**

A dropdown menu button and a "New Connection..." button.

This connection string appears to contain sensitive data (for example, a password) that is required to connect to the database. Storing sensitive data in the connection string can be a security risk. Do you want to include this sensitive data in the connection string?

- No, exclude sensitive data from the connection string. I will set it in my application code.
- Yes, include the sensitive data in the connection string.

Connection string:

A large text input field for the connection string, with scroll bars on the right side.

Save connection settings in App.Config as:

A text input field for specifying the name of the connection in the App.Config file.

< Previous

Next >

Finish

Cancel

Connection Properties ? X

Enter information to connect to the selected data source or click "Change" to choose a different data source and/or provider.

Data source: Microsoft SQL Server (SqlClient) Change...

Server name: (LocalDB)\MSSQLLocalDB Refresh

Log on to the server

Use Windows Authentication  
 Use SQL Server Authentication

User name:

Password:

Save my password

Connect to a database

Select or enter a database name: StudentDB

Attach a database file:  Browse...

Logical name:

Advanced...



The database 'StudentDB' does not exist or you do not have permission to see it.

Would you like to attempt to create it?

Yes

No



### Choose Your Data Connection

**Which data connection should your application use to connect to the database?**

54ee75141614\localdb#4be7e79e.StudentDB.dbo

New Connection...

This connection string appears to contain sensitive data (for example, a password) that is required to connect to the database. Storing sensitive data in the connection string can be a security risk. Do you want to include this sensitive data in the connection string?

- No, exclude sensitive data from the connection string. I will set it in my application code.
- Yes, include the sensitive data in the connection string.

Connection string:

```
metadata=res://*/DBModel.csdl|res://*/DBModel.ssdl  
res://*/DBModel.msl;provider=System.Data.SqlClient;provider connection string="data  
source=(LocalDB)\MSSQLLocalDB;initial catalog=StudentDB;integrated  
security=True;MultipleActiveResultSets=True;App=EntityFramework"
```

Save connection settings in App.Config as:

DBModelContainer

< Previous

Next >

Finish

Cancel



## Choose Your Version

**Which version of Entity Framework do you want to use?**

- Entity Framework 6.x
- Entity Framework 5.0

**i** It is also possible to install and use other versions of Entity Framework.  
[Learn more about this](#)

&lt; Previous

Next &gt;

Finish

Cancel



## Summary and Settings

Save DDL As: 

DDL

```
-- Entity Designer DDL Script for SQL Server 2005, 2008, 2012 and Azure
-- Date Created: 03/08/2016 17:54:36
-- Generated from EDMX file: c:\demos\MVCTesting\StudentDBModel\DBModel.edmx
```

```
SET QUOTED_IDENTIFIER OFF;
GO
USE [StudentDB];
GO
IF SCHEMA_ID(N'dbo') IS NULL EXECUTE(N'CREATE SCHEMA [dbo]');
GO
```

```
-- Dropping existing FOREIGN KEY constraints
```

&lt; Previous

Next &gt;

Finish

Cancel

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team SQL Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

DBModel.edmx.sql DBModel.edmx [Diagram1]\*

-- Entity Designer DDL Script for SQL Server 2005, 2008, 2012 and Azure  
-- Date Created: 03/08/2016 17:54:36  
-- Generated from EDMX file: c:\demos\MVCTesting\StudentDBModel\DBModel.edmx  
--  
  
SET QUOTED\_IDENTIFIER OFF;  
GO  
USE [StudentDB];  
GO  
IF SCHEMA\_ID(N'dbo') IS NULL EXECUTE(N'CREATE SCHEMA [dbo]');  
GO  
  
-- Dropping existing FOREIGN KEY constraints  
--  
  
-- Dropping existing tables  
--  
  
-- Creating all tables  
--  
  
-- Creating table 'Students'  
CREATE TABLE [dbo].[Students] (

Insert Snippet... Ctrl+K, Ctrl+X  
Surround With... Ctrl+K, Ctrl+S  
Run Flagged Threads To Cursor  
Cut Ctrl+X  
Copy Ctrl+C  
Paste Ctrl+V  
Outlining  
Intellisense Enabled  
Connection  
Execution Settings  
Execute Ctrl+Shift+E  
Execute With Debugger Alt+F5  
Cancel Execution Alt+Break  
Display Estimated Execution Plan Ctrl+D, E  
Parse  
Results To

Solution Explorer  
Search Solution Explorer (Ctrl+;) Solution 'MVCTesting' (1 project)  
StudentDBModel Properties References App.Config DBModel.edmx  
DBModel.Context.tt DBModel.Designer.cs DBModel.edmx.diagram DBModel.tt DBModel.edmx.sql packages.config

Properties

Disconnected. 0 rows

Ready Ln 1 Col 1 Ch 1 INS



Connect to Server



# Microsoft SQL Server 2014

Server type:

Database Engine

Server name:

(LocalDB)\MSSqlLocalDB

Authentication:

Windows Authentication

User name:

54EE75141614\Administrator

Password:

[Redacted]

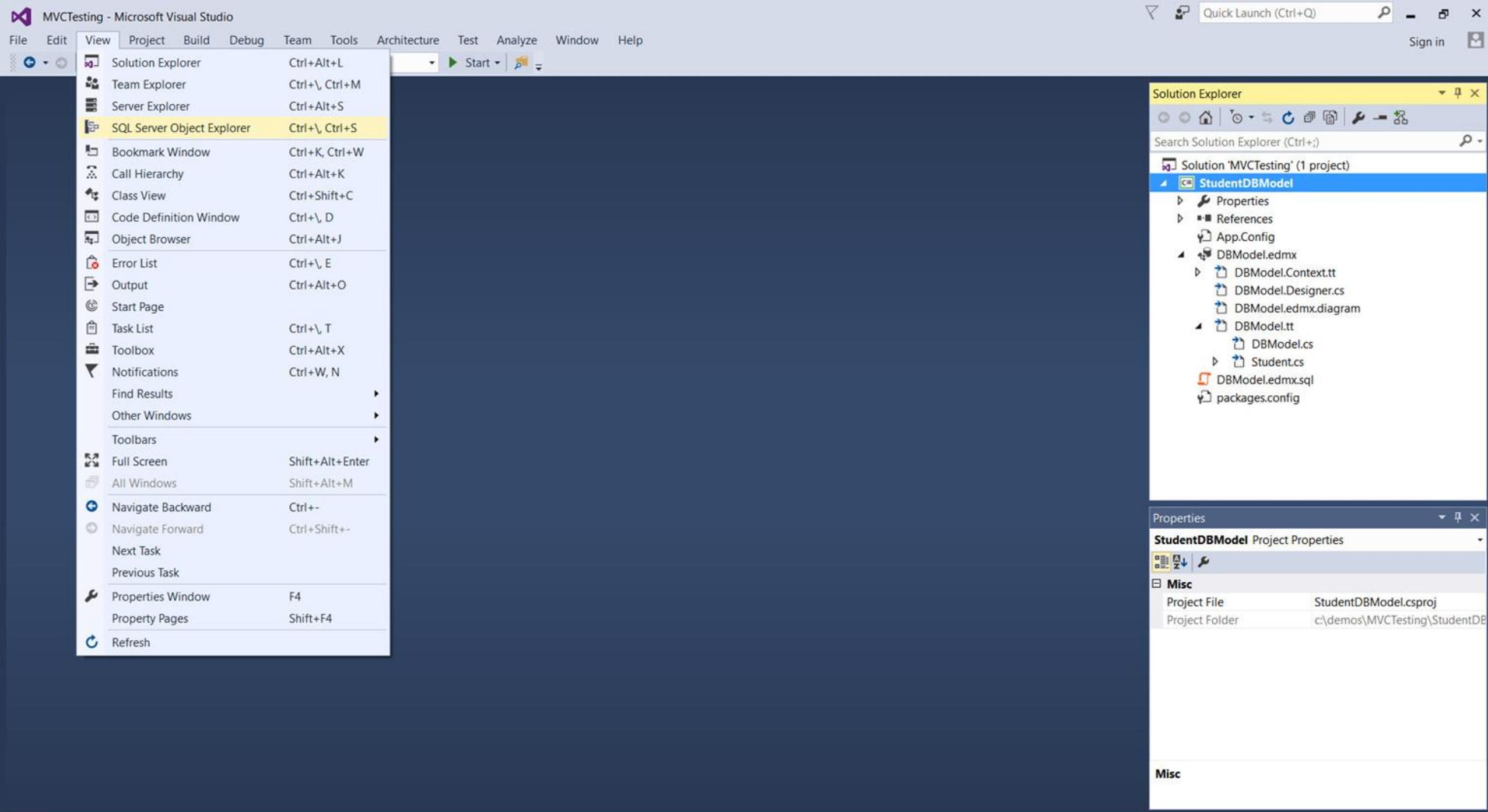
Remember password

Connect

Cancel

Help

Options >>



MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

SQL Server Object Explorer

(localdb)\MSSQLLocalDB (SQL Server 12.0.2000 - 54EE75141614\Administrator)

- Databases
  - System Databases
- StudentDB
  - Tables
    - System Tables
    - dbo.Students
- Security
- Server Objects

Projects

Debug Any CPU Start

Solution Explorer

Search Solution Explorer (Ctrl+.)

Solution 'MVCTesting' (1 project)

- StudentDBModel
  - Properties
  - References
  - App.Config
  - DBModel.edmx
    - DBModel.Context.tt
    - DBModel.Designer.cs
    - DBModel.edmx.diagram
    - DBModel.tt
      - DBModel.cs
      - Student.cs
    - DBModel.edmx.sql
  - packages.config

Properties

dbo.Students

- Change Tracking False
- Track Column Updated False
- Current Connection Parameters
  - Data File C:\Users\Administrator.54EE75141614\Administrator\StudentDB.mdf
  - Database StudentDB
  - Server (localdb)\MSSQLLocalDB
  - User 54EE75141614\Administrator
- Description
  - Created Date 3/8/2016 5:56:05 PM
  - Name Students
- Name The name of the schema object.

Ready

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team SQL Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

SQL Server Object Explorer

SQL Server (localdb)\MSSQLLocalDB (SQL Server 12.0.2000 - 54EE75141614\Administrator)

- Databases
  - System Databases
- StudentDB
  - Tables
    - System Tables
    - dbo.Students
- Views
- Synonyms
- Programmability
- Service Broker
- Storage
- Security
- Security
- Server Objects

Projects

Debug Any CPU Start

dbo.Students [Data]

Max Rows: 1000

Id	FirstName	LastName	RegistrationNumber
2	Stephen	Killen	N0001
4	Brian	Tat	N0002
5	Clay	Rockall	N0003
6	Rui	Maduro	N0004
*	NULL	NULL	NULL

Solution Explorer

Search Solution Explorer (Ctrl+;)

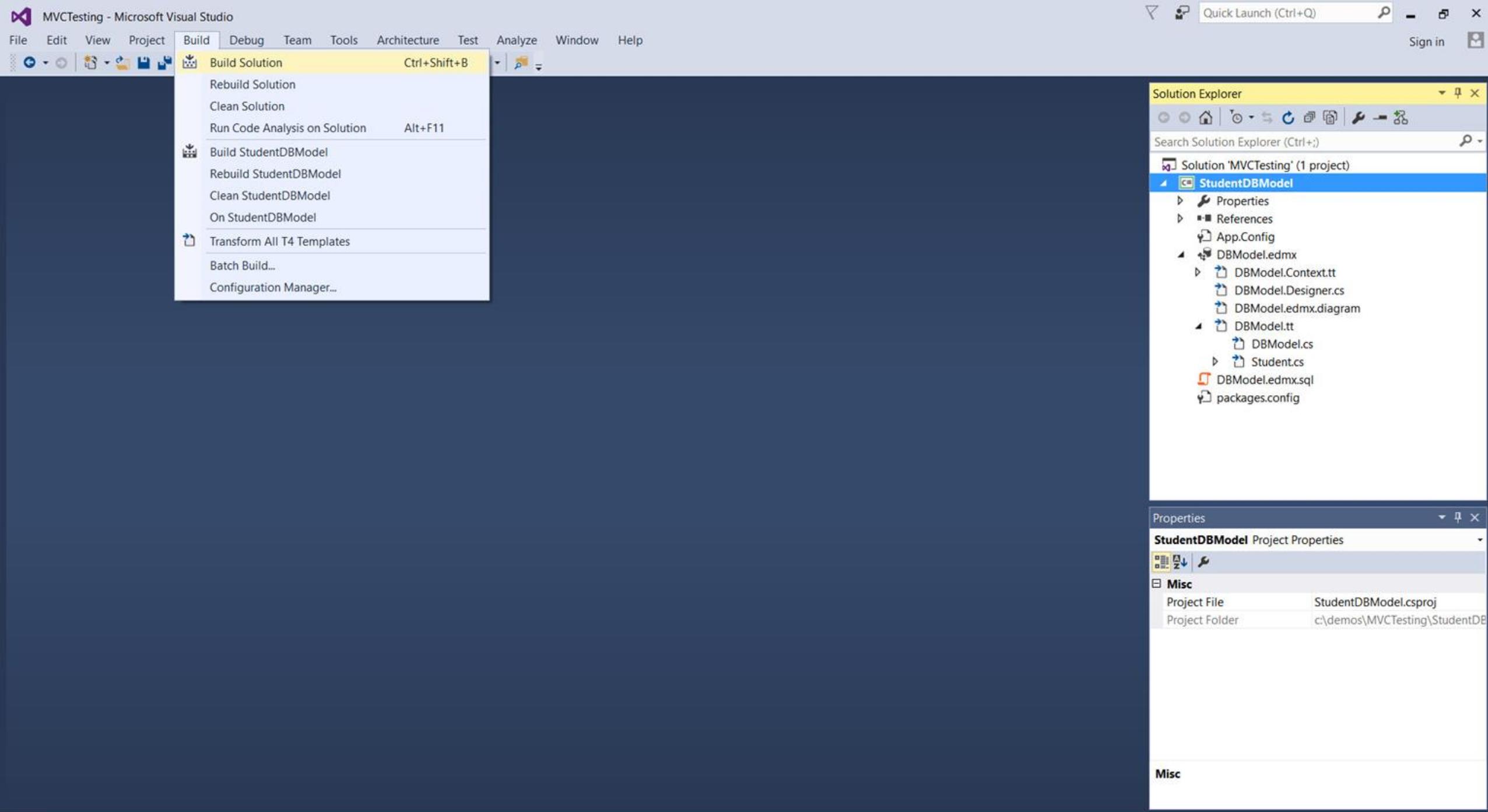
Solution 'MVCTesting' (1 project)

- StudentDBModel
  - Properties
  - References
  - App.Config
  - DBModel.edmx
    - DBModel.Context.tt
    - DBModel.Designer.cs
    - DBModel.edmx.diagram
    - DBModel.tt
      - DBModel.cs
      - Student.cs
    - DBModel.edmx.sql
  - packages.config

Properties

Connection Ready (localdb)\MSSQLLocalDB | 54EE75141614\Administr... | StudentDB

4 Rows Ln 4 Col 4



MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Debug Any CPU Start

Solution Explorer

Search Solution Explorer (Ctrl+;) Solution 'MVCTesting' (1 project) StudentDBModel

Build Solution Ctrl+Shift+B  
Rebuild Solution  
Clean Solution  
Analyze  
Batch Build...  
Configuration Manager...  
Manage NuGet Packages for Solution...  
Restore NuGet Packages  
New Solution Explorer View  
Show on Code Map  
Calculate Code Metrics  
**Add**  
Set StartUp Projects...  
Add Solution to Source Control...  
Paste Ctrl+V  
Rename  
Open Folder in File Explorer  
Properties Alt+Enter

New Project...  
Existing Project...  
New Web Site...  
Existing Web Site...  
New Item... Ctrl+Shift+A  
Existing Item... Shift+Alt+A  
New Solution Folder

**Misc**

(Name)	<b>MVCTesting</b>
Active config	<b>Debug Any CPU</b>
Description	
Path	c:\demos\MVCTesting\MVCTes
Startup project	<b>StudentDBModel</b>

Build succeeded

▷ Recent

.NET Framework 4.5.2

Sort by: Default



Search Installed Templates (Ctrl+E)



## ◀ Installed

## ◀ Visual C#

- ▷ Windows
- Web
- Android
- Cloud
- Extensibility
- iOS
- LightSwitch
- Office/SharePoint
- Silverlight
- Test
- WCF
- Workflow

## ▷ Visual Basic

Visual F#

## ▷ Visual C++

SQL Server

Python

## ▷ JavaScript

## ▷ TypeScript

Game

Build Accelerator

## ▷ Online

[Click here to go online and find templates.](#)

Name:

StudentManagement

Location:

c:\demos\MVCTesting

**Type:** Visual C#

A project template for creating ASP.NET applications. You can create ASP.NET Web Forms, MVC, or Web API applications and add many other features in ASP.NET.

## Application Insights

 Add Application Insights to project

Installs the Application Insights SDK.

Sign in to see performance and usage data about your application (recommended).

[Sign in to an Azure account.](#)

You can always connect your project to Application Insights later.

[Help me understand Application Insights](#)[Privacy statement](#)

OK

Cancel

Select a template:

**ASP.NET 4.5.2 Templates**

Empty



Web Forms



MVC



Web API



Single Page Application

Azure API App  
(Preview)

Service

**ASP.NET 5 Templates**

Get ASP.NET 5 RC

Add folders and core references for:

 Web Forms    MVC    Web API Add unit testsTest project name: 

A project template for creating ASP.NET MVC applications. ASP.NET MVC allows you to build applications using the Model-View-Controller architecture. ASP.NET MVC includes many features that enable fast, test-driven development for creating applications that use the latest standards.

[Learn more](#)[Change Authentication](#)Authentication: **Individual User Accounts**

Microsoft Azure

 Host in the cloud

Web App ▾

OK

Cancel

## Change Authentication

X

For applications that don't require any user authentication.

[Learn more](#)

- No Authentication
- Individual User Accounts
- Work And School Accounts
- Windows Authentication

OK

Cancel

Select a template:

**ASP.NET 4.5.2 Templates**

Empty



Web Forms



MVC



Web API

Single Page  
ApplicationAzure API App  
(Preview)

Service

**ASP.NET 5 Templates**

Get ASP.NET 5 RC

Add folders and core references for:

 Web Forms    MVC    Web API Add unit testsTest project name: 

A project template for creating ASP.NET MVC applications. ASP.NET MVC allows you to build applications using the Model-View-Controller architecture. ASP.NET MVC includes many features that enable fast, test-driven development for creating applications that use the latest standards.

[Learn more](#)**Change Authentication**Authentication: **No Authentication****Microsoft Azure** Host in the cloud

OK

Cancel

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Debug Any CPU Google Chrome

Your ASP.NET application URL: C:\Demos\MVCTesting\StudentManagement\Project\_Readme.html

# Your ASP.NET application

Congratulations! You've created a project

**This application consists of:**

- Sample pages showing basic nav between Home, About, and Contact
- Theming using [Bootstrap](#)
- [Authentication](#), if selected, shows how to register and sign in
- ASP.NET features managed using [NuGet](#)

**CUSTOMIZE APP**

- [Get started with ASP.NET MVC](#)
- [Change the site's theme](#)
- [Add more libraries using NuGet](#)
- [Configure authentication](#)
- [Customize information about the website users](#)
- [Get information from social providers](#)
- [Add HTTP services using ASP.NET Web API](#)
- [Secure your web API](#)
- [Add real-time web with ASP.NET SignalR](#)
- [Add components using Scaffolding](#)
- [Test your app with Browser Link](#)
- [Share your project](#)

**DEPLOY**

- [Ensure your app is ready for production](#)
- [Microsoft Azure](#)
- [Hosting providers](#)

**GET HELP**

- [Get help](#)
- [Get more templates](#)

Solution Explorer

Search Solution Explorer (Ctrl+;)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests

Properties

MVCTesting Solution Properties

	Misc	(Name)	MVCTesting
Active config		Debug Any CPU	
Description			
Path		c:\demos\MVCTesting\MVCTes	
Startup project		StudentManagement	

Ln 2 Col 1 Ch 1 INS



Debug

Any CPU

Google Chrome



Solution Explorer

Search Solution Explorer (Ctrl+;)

- ▶ StudentDBModel
- ◀ StudentManagement
  - ▶ Properties
  - ▶ References
    - ▶ A Add Reference...
    - ▶ A Add Service Reference...
    - ▶ C Add Connected Service...
    - ▶ C Add Analyzer...
    - ▶ fo Add NuGet Packages...
    - ▶ M Scope to This
    - ▶ S New Solution Explorer View
    - ▶ V
    - ▶ A favicon.ico
    - ▶ Global.asax
    - ▶ packages.config
    - ▶ Project\_Readme.html
    - ▶ Web.config
    - ▶ StudentManagement.Tests

Properties



▷ Assemblies

◀ Projects

Solution

▷ COM

▷ Browse

Search Projects (Ctrl+E)

	Name	Path
<input checked="" type="checkbox"/>	StudentDBModel	c:\demos\MVCTesting\Stu
	StudentManagement.Tests	c:\demos\MVCTesting\Stu

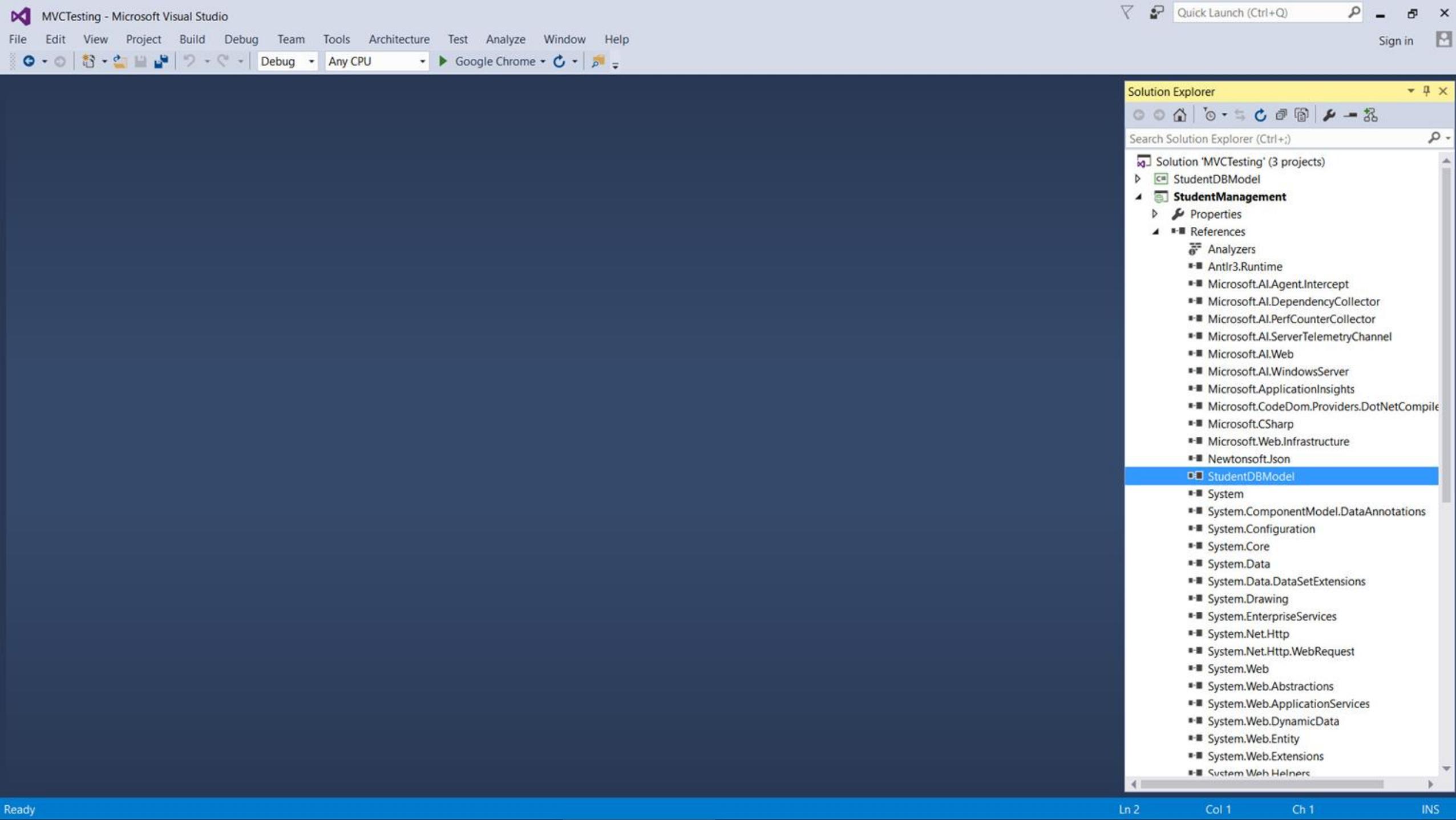
**Name:**

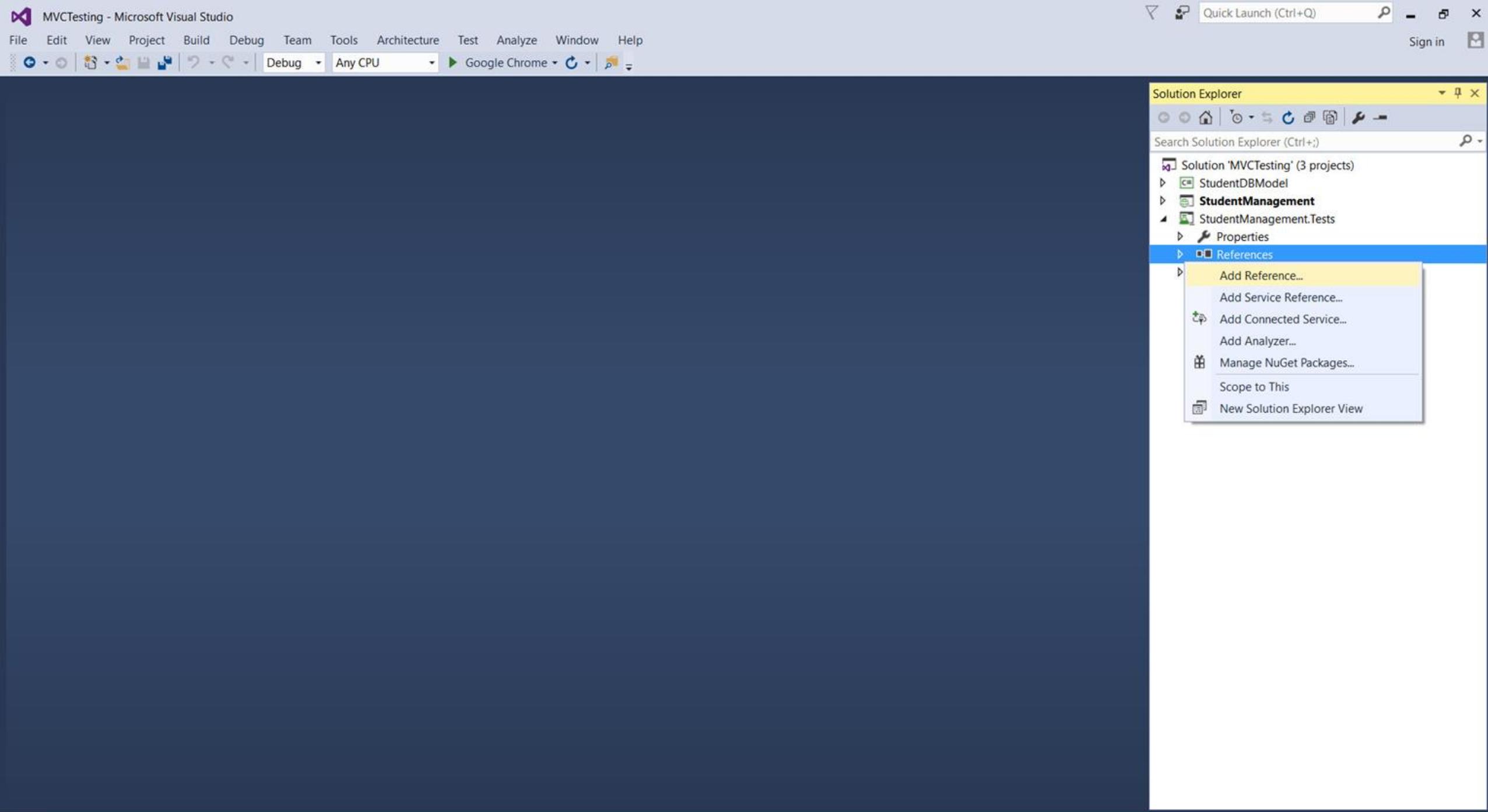
StudentDBModel

Browse...

OK

Cancel





## Assemblies

## Projects

Solution

## COM

## Browse

Search Projects (Ctrl+E) 

	Name	Path
<input checked="" type="checkbox"/>	StudentDBModel	c:\demos\MVCTesting\Stu
<input checked="" type="checkbox"/>	StudentManagement	c:\demos\MVCTesting\Stu

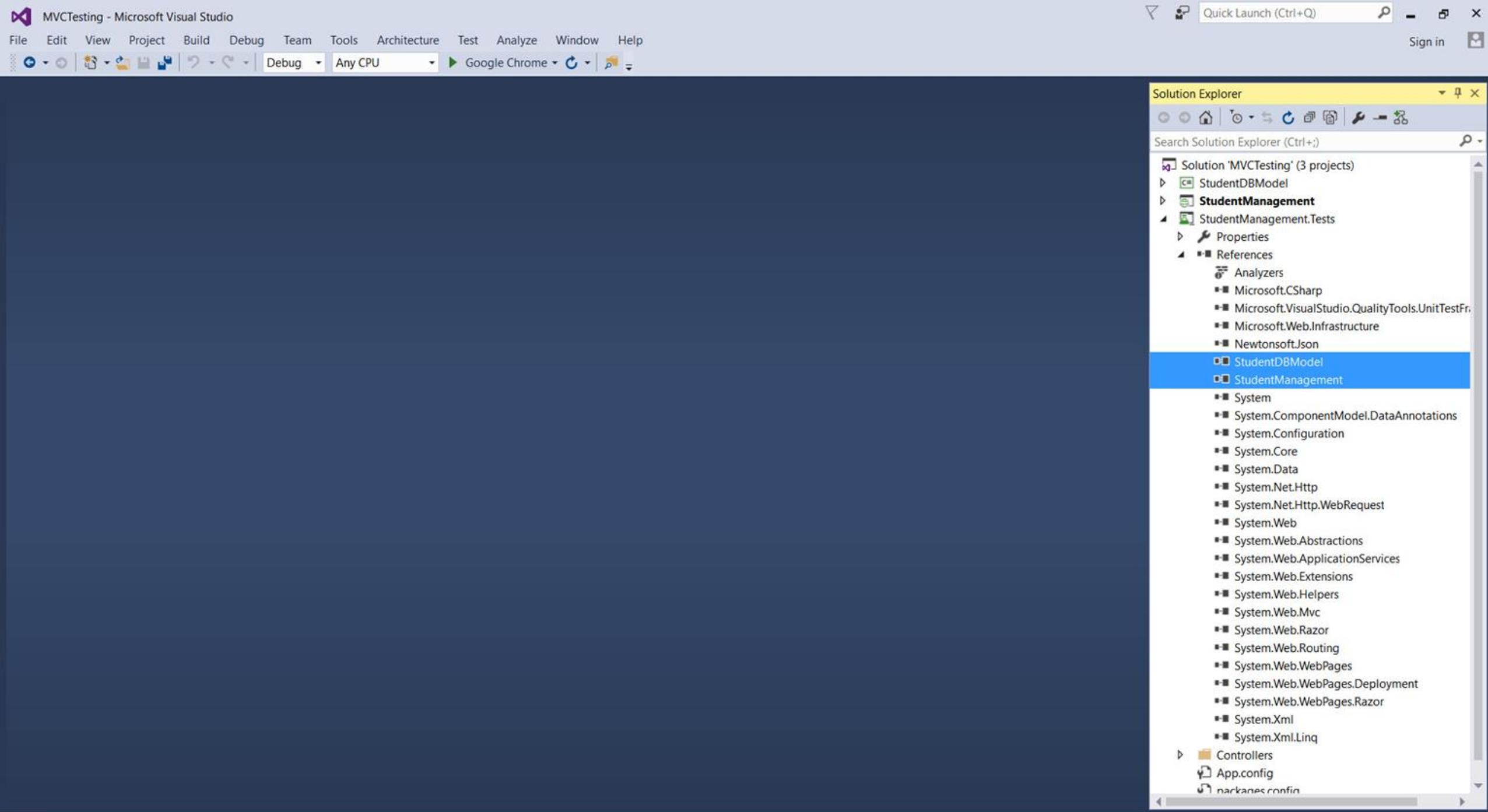
**Name:**

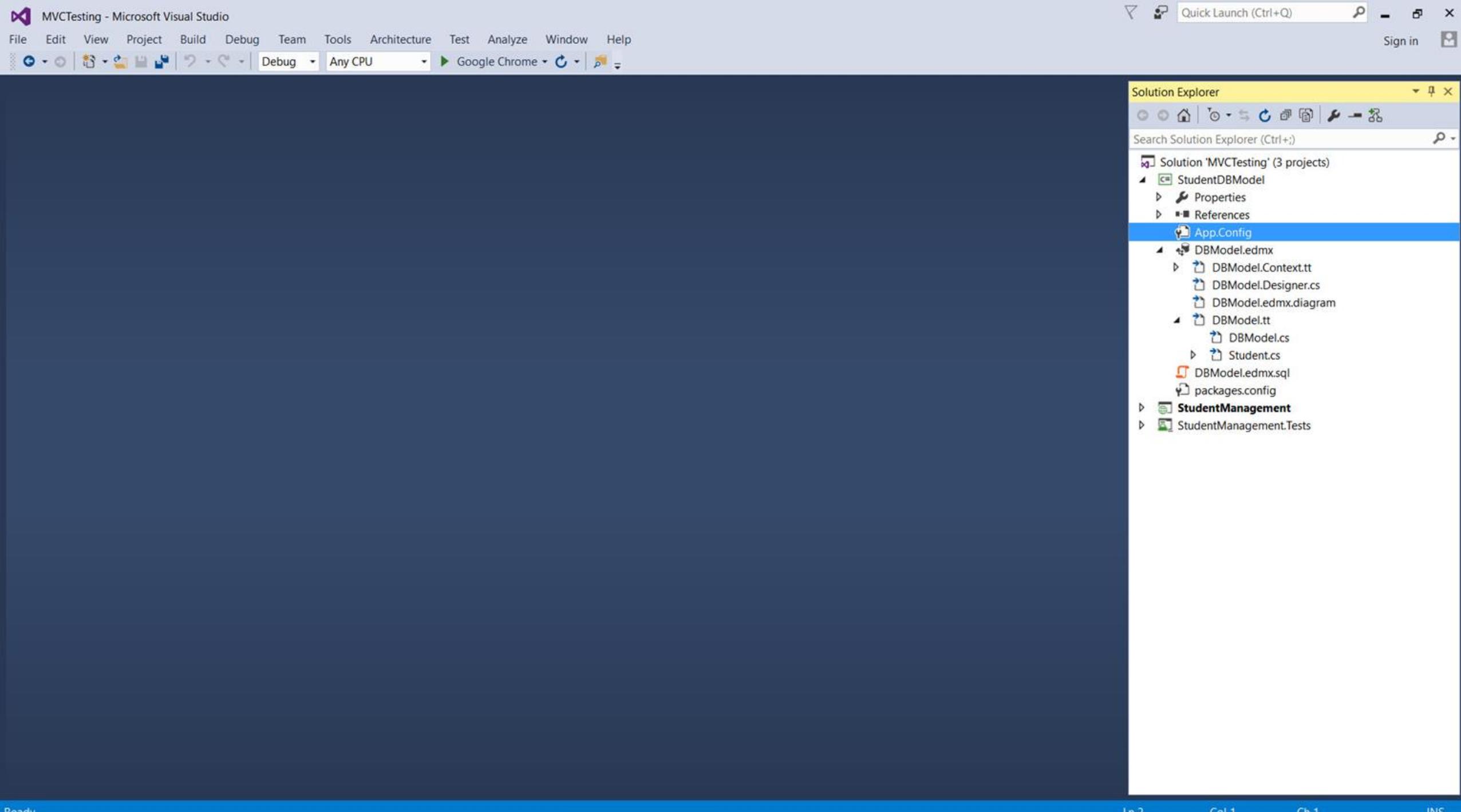
StudentDBModel

Browse...

OK

Cancel





MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team XML Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

App.Config

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <configSections>
    <!-- For more information on Entity Framework configuration, visit http://go.microsoft.com/fwlink/?LinkId=237492-->
    <section name="entityFramework" type="System.Data.Entity.Internal.ConfigFile.EntityFrameworkSection, EntityFramework, Version=6.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" />
  </configSections>
  <connectionStrings>
    <add name="DBModelContainer" connectionString="metadata=res://*/DBModel.csdl|res://*/DBModel.ssdl|res://*/DBModel.msl" providerName="System.Data.EntityClient" />
  </connectionStrings>
  <entityFramework>
    <defaultConnectionFactory type="System.Data.Entity.Infrastructure.LocalDbConnectionFactory, EntityFramework">
      <parameters>
        <parameter value="mssql1" />
      </parameters>
    </defaultConnectionFactory>
    <providers>
      <provider invariantName="System.Data.SqlClient" type="System.Data.Entity.SqlServer.SqlProviderServices, EntityFramework.SqlServer" />
    </providers>
  </entityFramework>
</configuration>
```

Copy

Solution Explorer

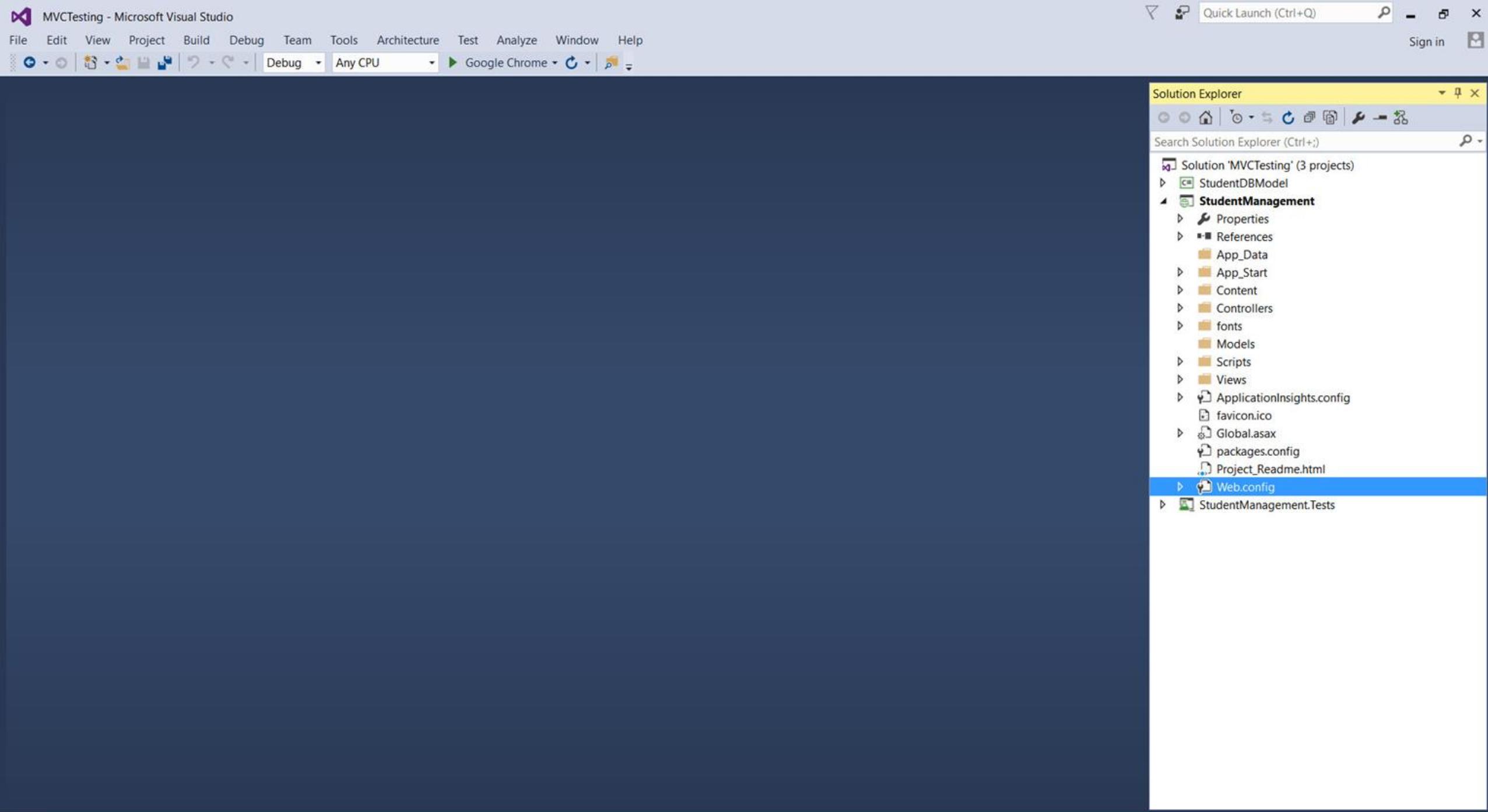
Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
  - Properties
  - References
  - App.Config
- DBModel.edmx
  - DBModel.Context.tt
  - DBModel.Designer.cs
  - DBModel.edmx.diagram
  - DBModel.tt
    - DBModel.cs
    - Student.cs
  - DBModel.edmx.sql
  - packages.config
- StudentManagement
- StudentManagement.Tests

120 %

Ready Ln 9 Col 23 Ch 23 INS



MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team XML Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Web.config\* X

```
http://go.microsoft.com/fwlink/?LinkId=301880
-->
<configuration>
  <appSettings>
    <add key="webpages:Version" value="3.0.0.0" />
    <add key="webpages:Enabled" value="false" />
    <add key="ClientValidationEnabled" value="true" />
    <add key="UnobtrusiveJavaScriptEnabled" value="true" />
  </appSettings>
  <system.web>
    <compilation debug="true" targetFramework="4.5.2" />
    <httpRuntime targetFramework="4.5.2" />
    <httpModules>
      <add name="ApplicationInsightsWebTracking" type="Microsoft.ApplicationInsights.Web
    </httpModules>
  </system.web>
```

120 % Ln 20 Col 3 Ch 3 INS

Solution Explorer

Search Solution Explorer (Ctrl+;) X

- Solution 'MVCTesting' (3 projects)
- StudentDBModel
  - Properties
  - References
  - App.Config
    - DBModel.edmx
      - DBModel.Context.tt
      - DBModel.Designer.cs
      - DBModel.edmx.diagram
    - DBModel.tt
      - DBModel.cs
      - Student.cs
    - DBModel.edmx.sql
    - packages.config
  - StudentManagement
    - Properties
    - References
    - App\_Data
    - App\_Start
    - Content
    - Controllers
    - fonts
    - Models
    - Scripts
    - Views
    - ApplicationInsights.config
    - favicon.ico
    - Global.asax
    - packages.config
    - Project\_Readme.html
    - Web.config
  - StudentManagement.Tests

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team XML Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Web.config

```
</configSections>
<appSettings>
    <add key="webpages:Version" value="3.0.0.0" />
    <add key="webpages:Enabled" value="false" />
    <add key="ClientValidationEnabled" value="true" />
    <add key="UnobtrusiveJavaScriptEnabled" value="true" />
</appSettings>
<system.web>
    <compilation debug="true" targetFramework="4.5.2" />
    <httpRuntime targetFramework="4.5.2" />
    <httpModules>
        <add name="ApplicationInsightsWebTracking" type="Microsoft.ApplicationInsights.Web
    </httpModules>
</system.web>
<connectionStrings>
    <add name="DBModelContainer" connectionString="metadata=res://*/DBModel.csdl|res://*/DBModel.ssdl|res://*/DBModel.msl" providerName="System.Data.EntityClient" />
</connectionStrings>
<runtime>
    <assemblyBinding xmlns="urn:schemas-microsoft-com:asm.v1">
        <dependentAssembly>
            <assemblyIdentity name="Newtonsoft.Json" culture="neutral" publicKeyToken="30ad4fe6b2e364e4" />
            <bindingRedirect oldVersion="0.0.0.0-6.0.0.0" newVersion="6.0.0.0" />
        </dependentAssembly>
        <dependentAssembly>
            <assemblyIdentity name="System.Web.Optimization" publicKeyToken="31bf3856ad364e3" />
            <bindingRedirect oldVersion="1.0.0.0-1.1.0.0" newVersion="1.1.0.0" />
        </dependentAssembly>
    </assemblyBinding>
</runtime>
```

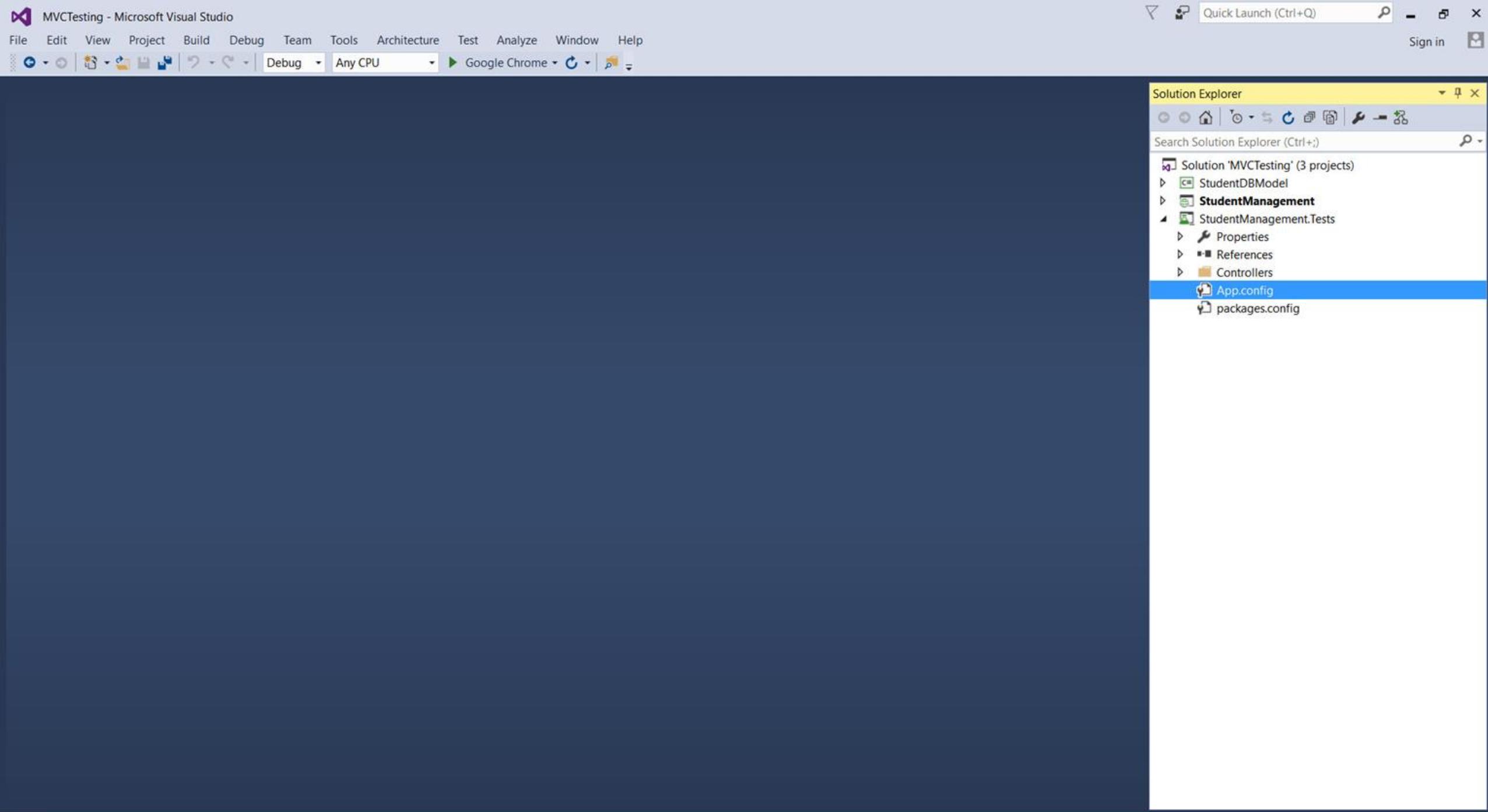
Solution Explorer

Search Solution Explorer (Ctrl+.)

- Solution 'MVCTesting' (3 projects)
  - StudentDBModel
  - StudentManagement**
    - Properties
    - References
    - App\_Data
    - App\_Start
    - Content
    - Controllers
      - HomeController.cs
      - StudentsController.cs
    - fonts
    - Models
    - Scripts
    - Views
    - ApplicationInsights.config
    - favicon.ico
    - Global.asax
    - packages.config
    - Project\_Readme.html
  - Web.config
- StudentManagementTests

120 %

Ready Ln 26 Col 23 Ch 23 INS



MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team XML Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

App.config

```
<?xml version="1.0" encoding="utf-8"?>
<!--
    Note: Add entries to the App.config file for configuration settings
    that apply only to the Test project.
-->
<configuration>
    <appSettings>
        </appSettings>

        <connectionStrings>
            </connectionStrings>
        <runtime>
            <assemblyBinding xmlns="urn:schemas-microsoft-com:asm.v1">
                <dependentAssembly>
                    <assemblyIdentity name="Newtonsoft.Json" publicKeyToken="30ad4fe6b2a6aeed" culture="neutral" />
                    <bindingRedirect oldVersion="0.0.0.0-6.0.0.0" newVersion="6.0.0.0" />
                </dependentAssembly>
            </assemblyBinding>
        </runtime>
    </configuration>
```

Solution Explorer

Search Solution Explorer (Ctrl+;) Solution 'MVCTesting' (3 projects) StudentDBModel StudentManagement StudentManagement.Tests Properties References Controllers App.config packages.config

120 % Ln 11 Col 1 Ch 1 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team XML Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

App.config\* Debug Any CPU Google Chrome

```
<?xml version="1.0" encoding="utf-8"?>
<!--
    Note: Add entries to the App.config file for configuration settings
    that apply only to the Test project.
-->
<configuration>
    <appSettings>
        </appSettings>

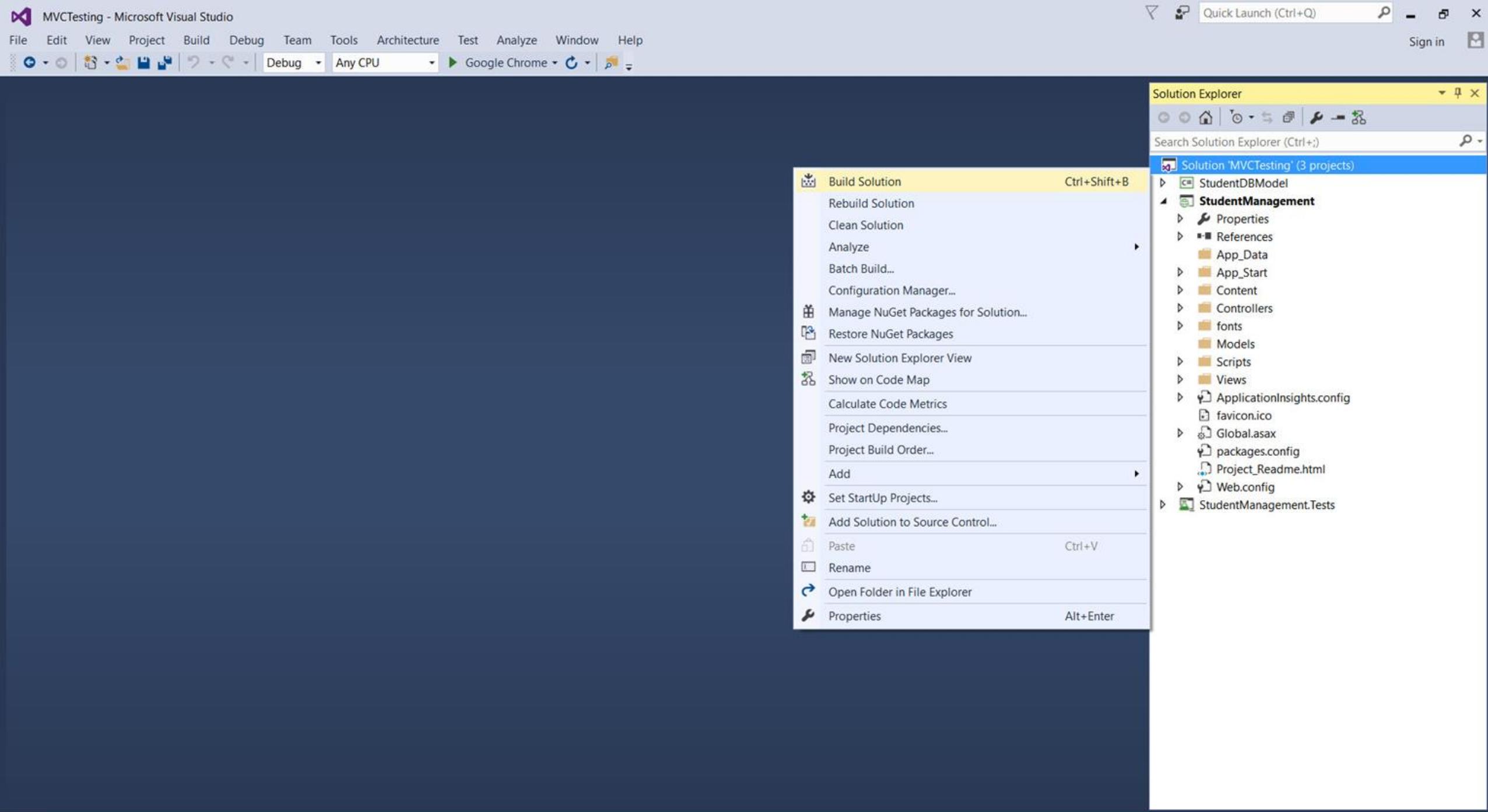
        <connectionStrings>
            <add name="DBModelContainer" connectionString="metadata=res://*/DBModel.csdl|res://*,res://*/DBModel.ssdl|res://*/DBModel.msl" providerName="System.Data.EntityClient" />
        </connectionStrings>
    <runtime>
        <assemblyBinding xmlns="urn:schemas-microsoft-com:asm.v1">
            <dependentAssembly>
                <assemblyIdentity name="WebGrease" publicKeyToken="31bf3856ad364e35" culture="neutral" />
                <bindingRedirect oldVersion="0.0.0.0-1.5.2.14234" newVersion="1.5.2.14234" />
            </dependentAssembly>
            <dependentAssembly>
                <assemblyIdentity name="Newtonsoft.Json" publicKeyToken="30ad4fe6b2a6aeed" culture="neutral" />
                <bindingRedirect oldVersion="0.0.0.0-6.0.0.0" newVersion="6.0.0.0" />
            </dependentAssembly>
        </assemblyBinding>
    </runtime>
</configuration>
```

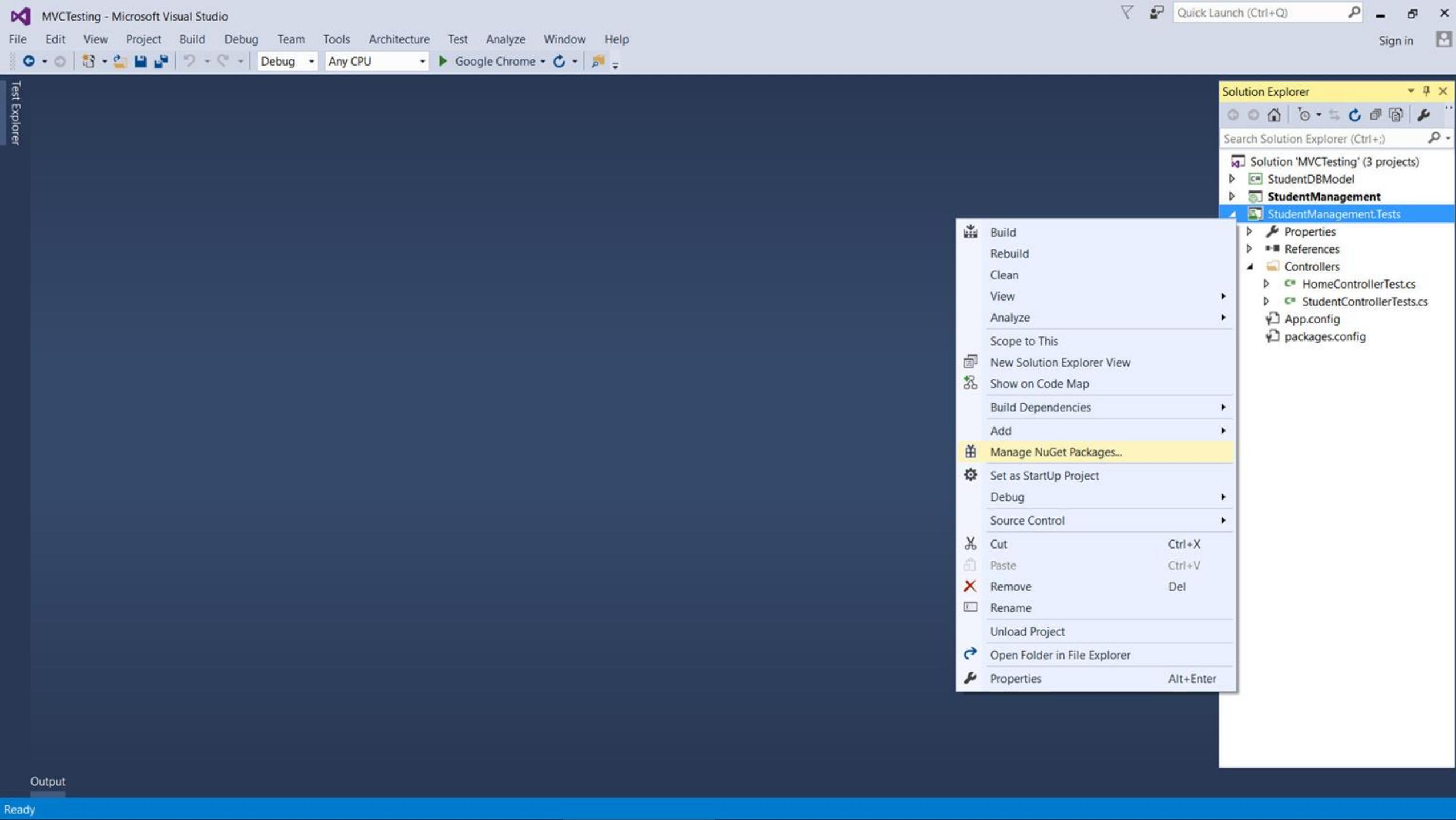
Solution Explorer

Search Solution Explorer (Ctrl+.)

- Solution 'MVCTesting' (3 projects)
  - StudentDBModel
  - StudentManagement
  - StudentManagement.Tests
    - Properties
    - References
    - Controllers
    - App.config
  - packages.config

120% Ln 11 Col 1 Ch 1 INS





MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Test Explorer

NuGet: StudentManagement.Tests

NuGet Package Manager: StudentManagement.Tests

Browse Installed Updates 1

Search (Ctrl+E)   Include prerelease

Package source: nuget.org

.NET EntityFramework by Microsoft, 16.3M downloads v6.1.3  
Entity Framework is Microsoft's recommended data access technology for new applications.

Newtonsoft.Json 25.1M downloads v6.0.4 v8.0.2  
Json.NET is a popular high-performance JSON framework for .NET

bootstrap 4.36M downloads v3.3.6  
Bootstrap framework in CSS. Includes fonts and JavaScript

jQuery 19.2M downloads v2.2.1  
jQuery is a new kind of JavaScript Library.  
jQuery is a fast and concise JavaScript Library that simplifies HTML document traversing, event handling,...

.NET Microsoft.AspNet.Mvc by Microsoft, 14.9M downloads v5.2.3  
This package contains the runtime assemblies for ASP.NET MVC.

WebGrease by webgrease@microsoft.com, 8.01M downloads v1.6.0  
Web Grease is a suite of tools for optimizing javascript, css files and images.

.NET Microsoft.Net.Http by Microsoft, 9.46M downloads v2.2.29  
This package provides a programming interface for modern HTTP/REST based applications.

Each package is licensed to you by its owner. NuGet is not responsible for, nor does it grant any licenses to, third-party packages.

Do not show this again

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (3 projects)  
StudentDBModel  
StudentManagement  
StudentManagement.Tests  
Properties  
References  
Controllers  
HomeControllerTest.cs  
StudentControllerTests.cs  
App.config  
packages.config

Output

Ready

## Review Changes

Visual Studio is about to make changes to this solution. Click OK to proceed with the changes listed below.

StudentManagement.Tests

**Installing:**

EntityFramework.6.1.3

Do not show this again

OK

Cancel

## License Acceptance

The following package(s) require that you accept their license terms before installing.

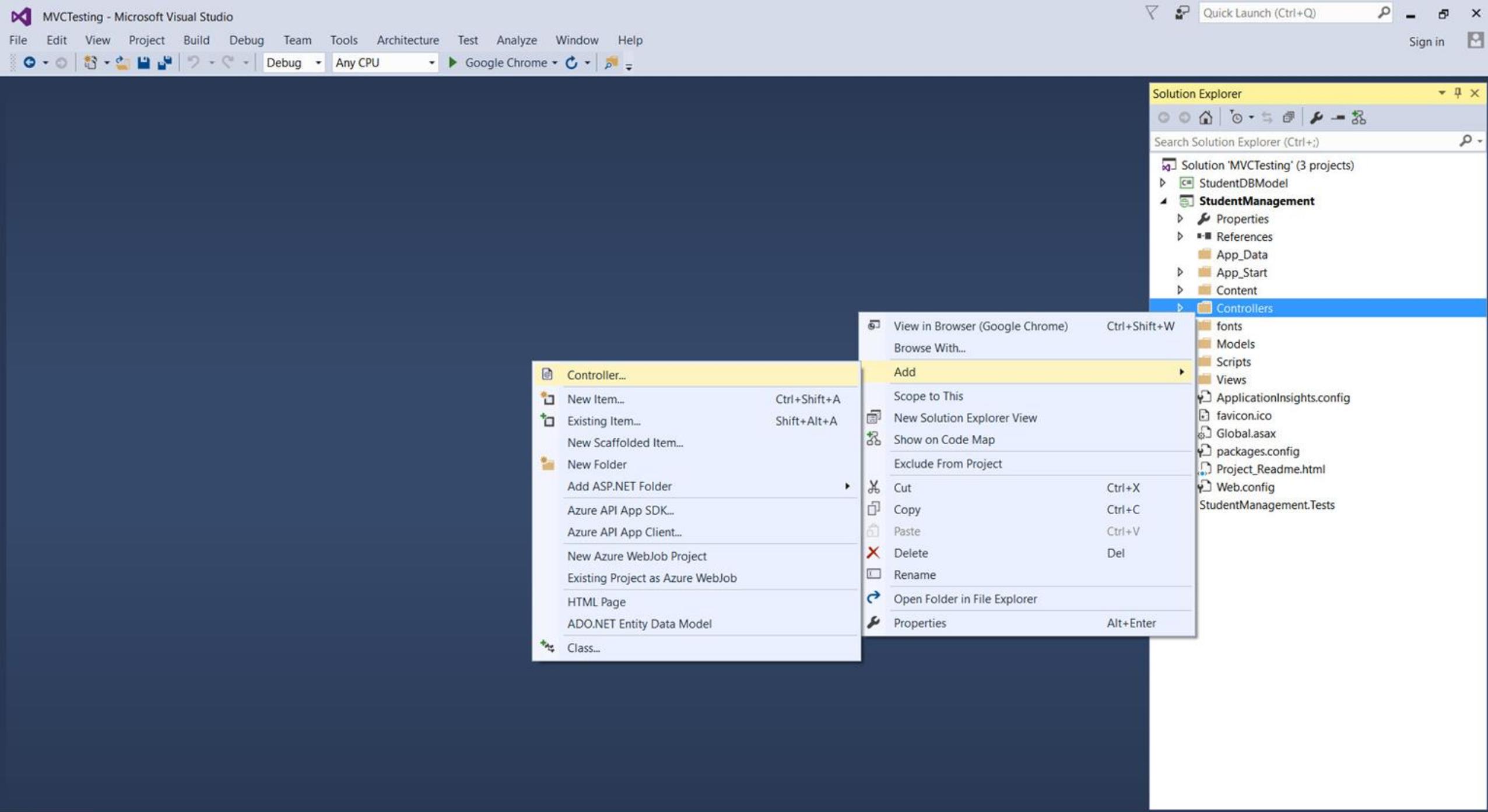
**EntityFramework** Author(s): Microsoft

[View License](#)

By clicking "I Accept," you agree to the license terms for the package(s) listed above. If you do not agree to the license terms, click "I Decline."

I Accept

I Decline



## Installed

Common  
Controller

MVC 5 Controller - Empty



MVC 5 Controller with read/write actions



MVC 5 Controller with views, using Entity Framework



Web API 2 Controller – Empty



Web API 2 Controller with actions, using Entity Framework



Web API 2 Controller with read/write actions



Web API 2 OData v3 Controller with actions, using Entity Framework



Web API 2 OData v3 Controller with read/write actions

**MVC 5 Controller with views, using Entity Framework**by Microsoft  
v5.0.0.0

An MVC controller with actions and Razor views to create, read, update, delete, and list entities from an Entity Framework data context.

Id: MvcControllerWithContextScaffolder

[Click here to go online and find more scaffolding extensions.](#)

Add

Cancel

## Add Controller



Model class:

Student (StudentDBModel)



Data context class:

DBModelContainer (StudentDBModel)



Use async controller actions

Views:

Generate views

Reference script libraries

Use a layout page:



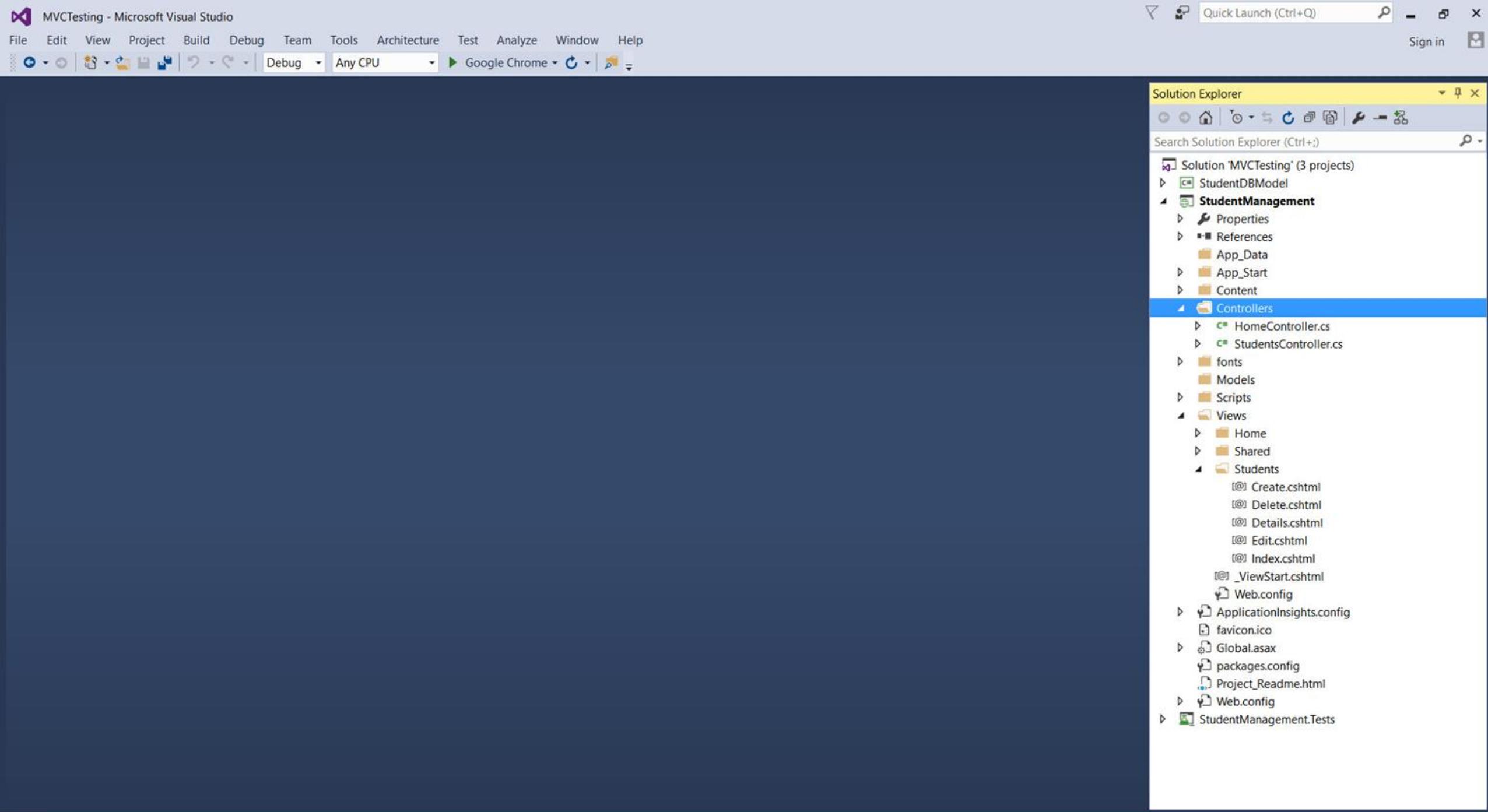
(Leave empty if it is set in a Razor \_viewstart file)

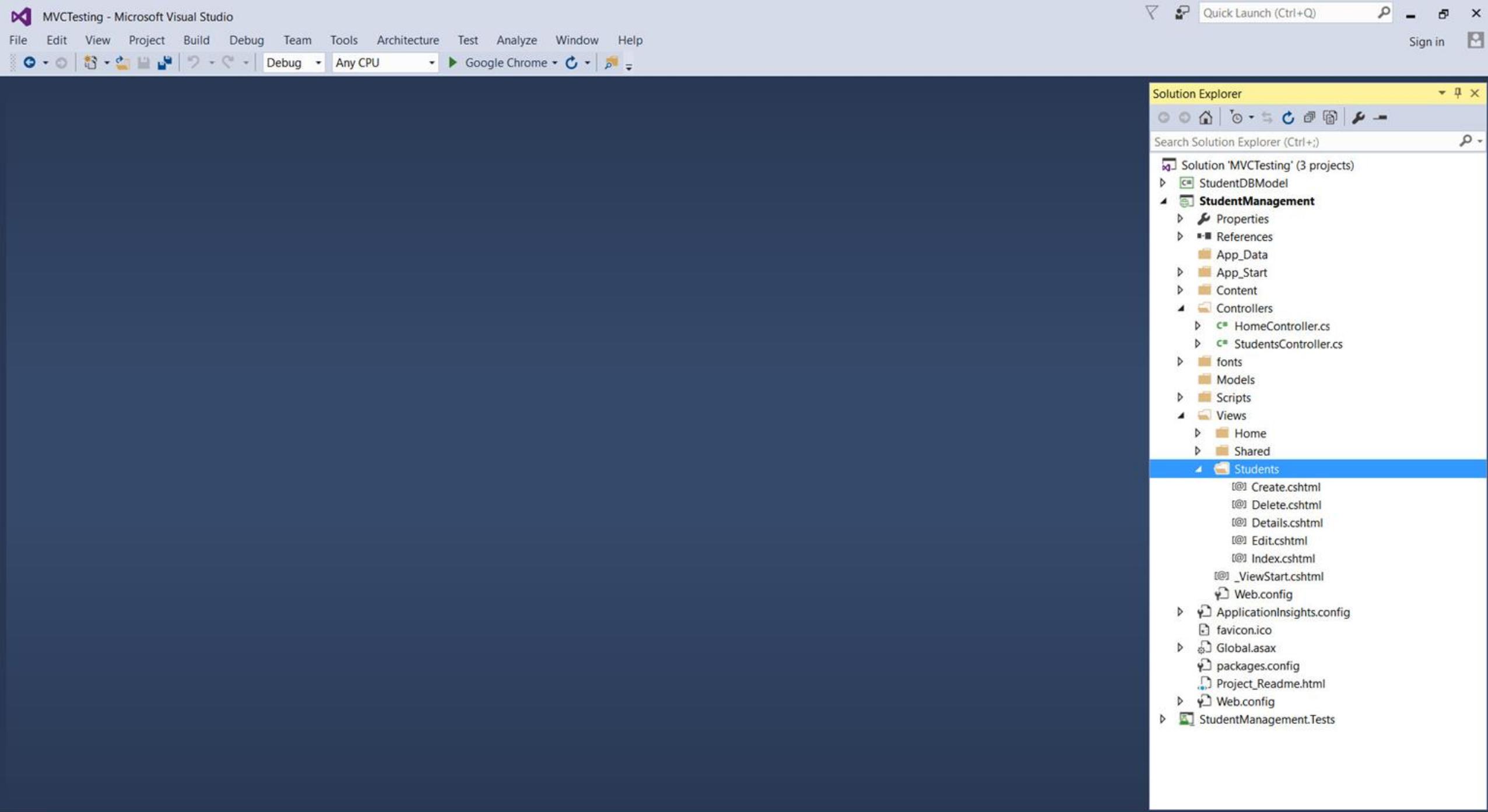
Controller name:

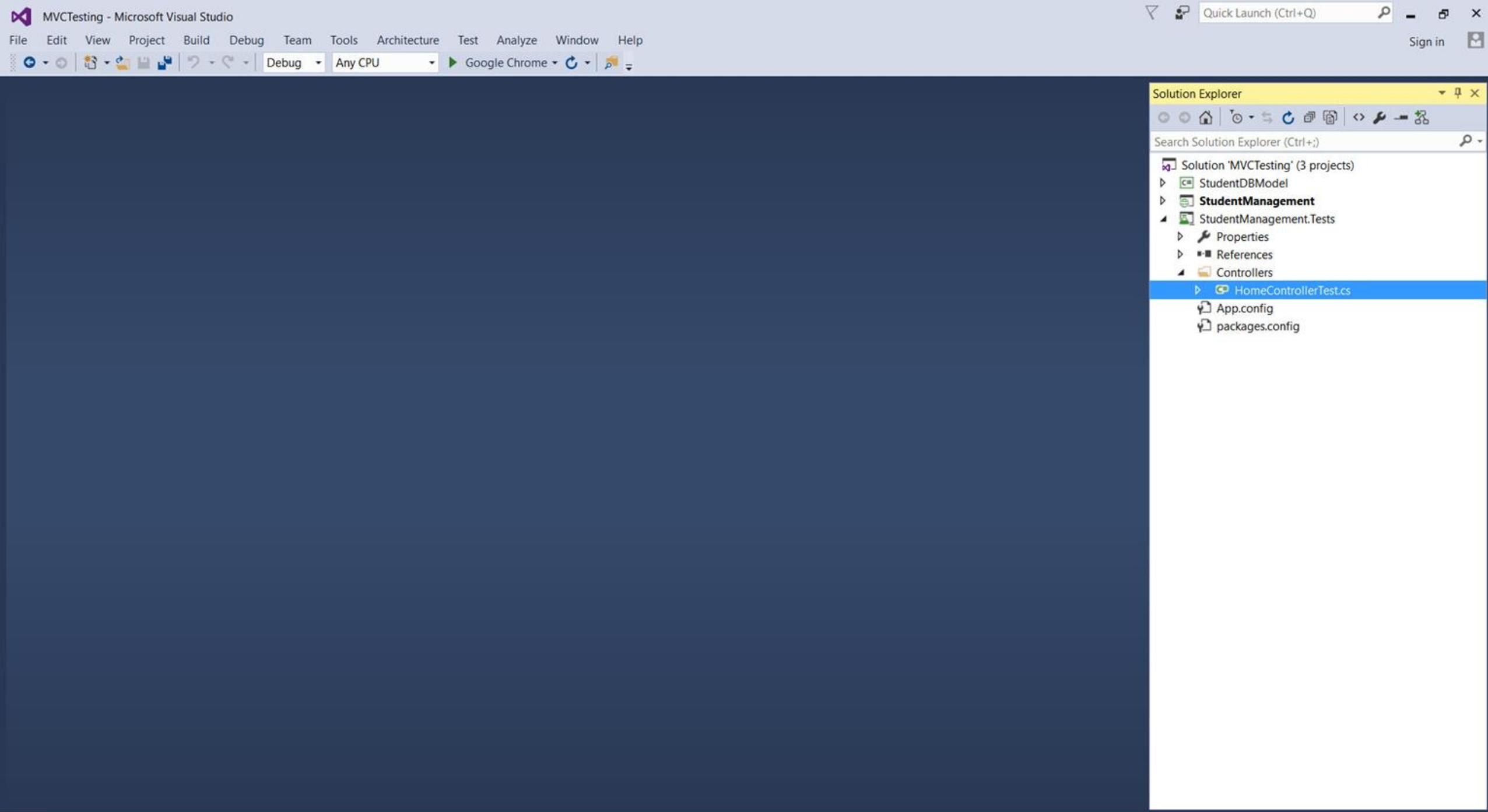
StudentsController

Add

Cancel







MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

HomeControllerTest.cs

StudentManagement.Tests

StudentManagement.Tests.Controllers.HomeControllerTest

Index()

```
namespace StudentManagement.Tests.Controllers
{
    [TestClass]
    public class HomeControllerTest
    {
        [TestMethod]
        public void Index()
        {
            // Arrange
            HomeController controller = new HomeController();

            // Act
            ViewResult result = controller.Index() as ViewResult;

            // Assert
            Assert.IsNotNull(result);
        }

        [TestMethod]
        public void About()
        {
            // Arrange
        }
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+.)

- Solution 'MVCTesting' (3 projects)
  - StudentDBModel
  - StudentManagement
  - StudentManagement.Tests
    - Properties
    - References
    - Controllers
      - HomeControllerTest.cs
    - App.config
    - packages.config

120 %

Ready Ln 26 Col 10 Ch 10 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

HomeControllerTest.cs

StudentManagement.Tests

StudentManagement.Tests.Controllers.HomeControllerTest

About()

```
// Assert
Assert.IsNotNull(result);
}

[TestMethod]
public void About()
{
    // Arrange
    HomeController controller = new HomeController();

    // Act
    ViewResult result = controller.About() as ViewResult;

    // Assert
    Assert.AreEqual("Your application description page.", result.ViewBag.Message);
}

[TestMethod]
public void Contact()
{
    // Arrange
    HomeController controller = new HomeController();
}
```

Solution Explorer

Search Solution Explorer (Ctrl+.)

- Solution 'MVCTesting' (3 projects)
  - StudentDBModel
  - StudentManagement
  - StudentManagement.Tests
    - Properties
    - References
    - Controllers
      - HomeControllerTest.cs
    - App.config
    - packages.config

120 %

Ready Ln 39 Col 10 Ch 10 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

HomeControllerTest.cs

StudentManagement.Tests

```
Assert.AreEqual("Your application description page.", result.ViewBag.Message);
```

[TestMethod]

public void Contact()

```
{ // Arrange
    HomeController controller = new HomeController();
```

// Act

```
ViewResult result = controller.Contact() as ViewResult;
```

// Assert

```
Assert.IsNotNull(result);}
```

}

Solution Explorer

Search Solution Explorer (Ctrl+.)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests
  - Properties
  - References
  - Controllers
    - HomeControllerTest.cs
  - App.config
  - packages.config

120 %

Ready Ln 52 Col 10 Ch 10 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Run Selected Tests

All Tests Ctrl+R, A

Failed Tests

Not Run Tests

Passed Tests

Repeat Last Run Ctrl+R, L

Windows

HomeControllerTest.cs

StudentManagement.Tests

```
using System.Text;
using System.Web.Mvc;
using Microsoft.VisualStudio.TestTools.UnitTesting;
using StudentManagement;
using StudentManagement.Controllers;

namespace StudentManagement.Tests.Controllers
{
    [TestClass]
    public class HomeControllerTest
    {
        [TestMethod]
        [0 references]
        public void Index()...
        
        [TestMethod]
        [0 references]
        public void About()...
        
        [TestMethod]
        [0 references]
        public void Contact()...
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests
  - Properties
  - References
  - Controllers
    - HomeControllerTest.cs
  - App.config
  - packages.config

120 %

Ready Ln 40 Col 1 Ch 1 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Test Explorer

Streaming Video: Configure continuous integration

Run All | Run... | Playlist : All Tests

Passed Tests (3)

- About
- Contact
- Index

1 sec  
3 ms  
282 ms

HomeControllerTest.cs

StudentManagement.Tests

StudentManagement.Tests.Controllers.HomeC Contact()

```
using System.Text;
using System.Web.Mvc;
using Microsoft.VisualStudio.TestTools.UnitTesting;
using StudentManagement;
using StudentManagement.Controllers;

namespace StudentManagement.Tests.Controllers
{
    [TestClass]
    public class HomeControllerTest
    {
        [TestMethod]
        public void Index()
        {
            ...
        }

        [TestMethod]
        public void Contact()
        {
            ...
        }
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests
  - Properties
  - References
  - Controllers
    - HomeControllerTest.cs

App.config

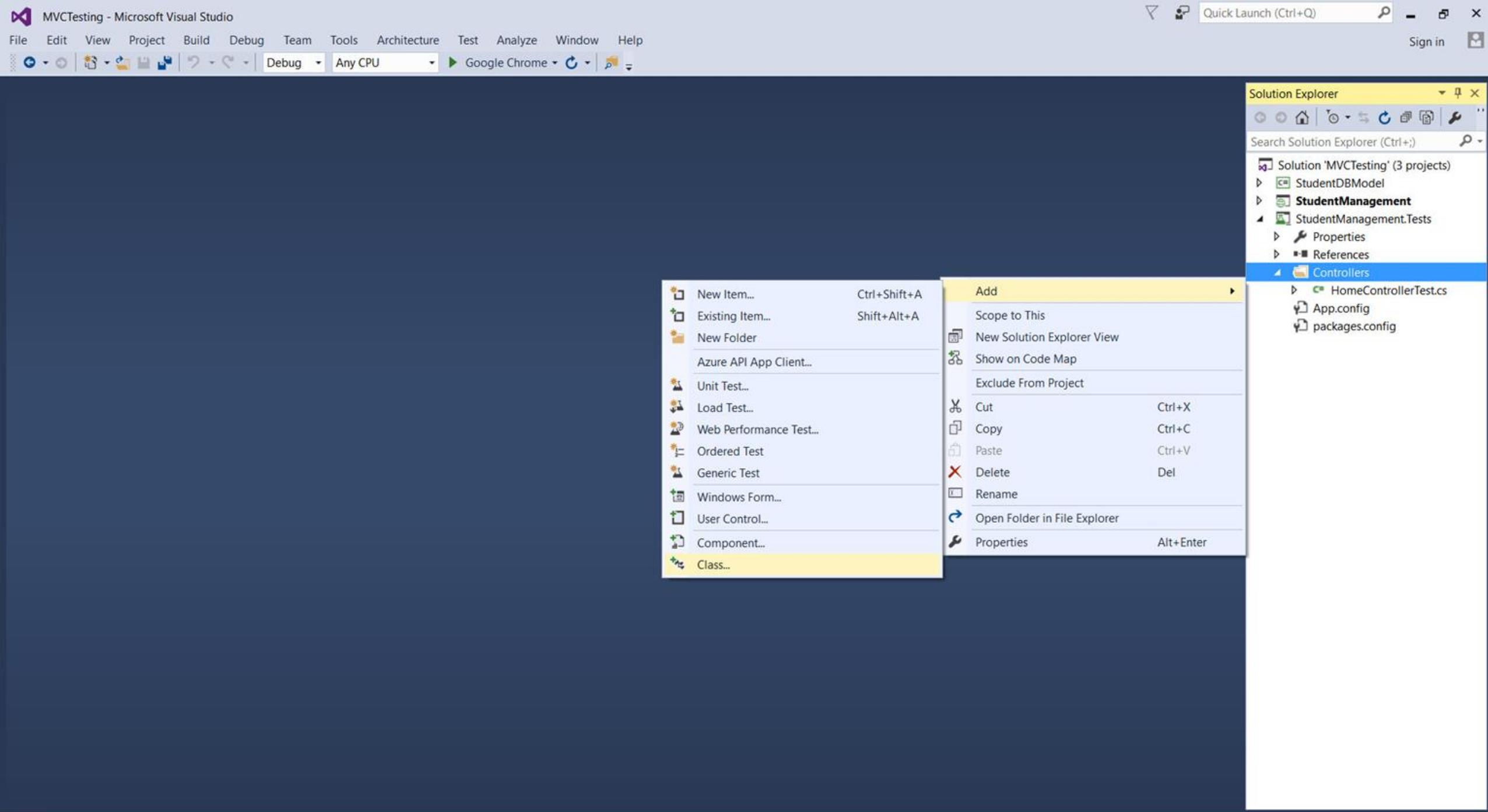
packages.config

Output

Show output from: Tests

```
----- Discover test started -----
----- Discover test finished: 3 found (0:00:02.6250402) -----
----- Run test started -----
----- Run test finished: 3 run (0:00:10.8341052) -----
```

Ready



## Installed

Sort by: Default



Search Installed Templates (Ctrl+E)



## Visual C# Items

- Code
- Data
- General
- Web
  - Windows Forms
  - WPF
  - SQL Server
  - Test
  - Workflow

## Online

	Class	Visual C# Items
	Interface	Visual C# Items
	Windows Form	Visual C# Items
	User Control	Visual C# Items
	Component Class	Visual C# Items
	User Control (WPF)	Visual C# Items
	About Box	Visual C# Items
	ADO.NET Entity Data Model	Visual C# Items
	Application Configuration File	Visual C# Items
	Application Manifest File	Visual C# Items
	Assembly Information File	Visual C# Items
	Bitmap File	Visual C# Items
	Class Diagram	Visual C# Items

[Click here to go online and find templates.](#)

Name:

StudentControllerTests.cs

Add

Cancel

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

StudentControllerTests.cs

StudentManagement.Tests

StudentManagement.Tests.Controllers.StudentControllerTests

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

namespace StudentManagement.Tests.Controllers
{
    class StudentControllerTests
    {
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+.)

- Solution 'MVCTesting' (3 projects)
  - StudentDBModel
  - StudentManagement
  - StudentManagement.Tests
    - Properties
    - References
    - Controllers
      - HomeControllerTest.cs
      - StudentControllerTests.cs
    - App.config
    - packages.config

120 %

Ready Ln 1 Col 1 Ch 1 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

StudentControllerTests.cs\* X

StudentManagement.Tests

StudentManagement.Tests.Controllers.StudentControllerTests

```
using System;
using Microsoft.VisualStudio.TestTools.UnitTesting;
using System.Web.Mvc;
using System.Net;
using StudentManagement.Controllers;
using StudentDBModel;

namespace StudentManagement.Tests.Controllers
{
    [TestClass]
    public class StudentControllerTests
    {
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+.)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests
  - Properties
  - References
  - Controllers
    - HomeControllerTest.cs
    - StudentControllerTests.cs
  - App.config
  - packages.config

120 %

Ready Ln 10 Col 1 Ch 1 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Test Explorer

StudentControllerTests.cs\* | StudentManagement.Tests | StudentManagement.Tests.Controllers.StudentControllerTests

```
using System;
using Microsoft.VisualStudio.TestTools.UnitTesting;
using System.Web.Mvc;
using System.Net;
using StudentManagement.Controllers;
using StudentDBModel;

namespace StudentManagement.Tests.Controllers
{
    [TestClass]
    public class StudentControllerTests
    {
    }
}
```

Solution Explorer

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests
  - Properties
  - References
  - Controllers
    - HomeControllerTest.cs
    - StudentControllerTests.cs
  - App.config
  - packages.config

Search Solution Explorer (Ctrl+Shift+F)

120 %

Ready Ln 14 Col 1 Ch 1 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Test Explorer

StudentControllerTests.cs\* | StudentManagement.Tests | StudentManagement.Tests.Controllers.StudentControllerTests | IndexAction\_Returns\_IndexView()

[TestClass]

public class StudentControllerTests

{

    [TestMethod]

    public void IndexAction\_Returns\_IndexView()

    {

        //Arrange

        StudentsController sc = new StudentsController();

        //Act

        ViewResult actualResult = sc.Index() as ViewResult;

        string actualViewName = actualResult.ViewName;

        //Assert

        string expectedViewName = "Index";

        Assert.AreEqual(expectedViewName, actualViewName);

    }

}

Solution Explorer

Search Solution Explorer (Ctrl+.)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests
  - Properties
  - References
  - Controllers
    - HomeControllerTest.cs
    - StudentControllerTests.cs
  - App.config
  - packages.config

120 %

Ready Ln 31 Col 10 Ch 10 INS

A screenshot of Microsoft Visual Studio showing a unit test for an MVC controller. The code editor displays a C# file named 'StudentControllerTests.cs' with a single test method: 'IndexAction\_Returns\_IndexView'. The test follows the AAA pattern: Arrange (instantiating the controller), Act (calling the controller's Index action), and Assert (comparing the expected view name with the actual view name). The 'Solution Explorer' pane on the right shows the project structure for 'MVCTesting' with three projects: 'StudentDBModel', 'StudentManagement', and 'StudentManagement.Tests'. The 'Controllers' folder under 'StudentManagement.Tests' contains 'HomeControllerTest.cs' and 'StudentControllerTests.cs'. The status bar at the bottom indicates the code is at line 31, column 10, and the keyboard shortcut for 'INS' is shown.

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Test Explorer

StudentControllerTests.cs\* | StudentManagement.Tests | StudentManagement.Tests.Controllers.StudentControllerTests | DetailAction\_Returns\_StudentModel()

```
[TestMethod]
public void IndexAction_Returns_IndexView()...
```

```
[TestMethod]
public void DetailAction_Returns_StudentModel()
{
    //Arrange
    StudentsController sc = new StudentsController();

    //Act
    ViewResult actualResult = sc.Details(2) as ViewResult;
    Type actualModelType = actualResult.Model.GetType();

    //Assert
    Type expectedModelType = typeof(StudentDBModel.Student);
    Assert.AreEqual(expectedModelType, actualModelType);
}
```

Solution Explorer

Search Solution Explorer (Ctrl+.)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests
  - Properties
  - References
  - Controllers
    - HomeControllerTest.cs
    - StudentControllerTests.cs
  - App.config
  - packages.config

120 %

Ready Ln 33 Col 1 Ch 1 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Test Explorer

StudentControllerTests.cs\* | StudentManagement.Tests | StudentManagement.Tests.Controllers.StudentControllerTests | DetailsAction\_NullID\_BADHTTP()

[TestMethod]

public void DetailAction\_Returns\_StudentModel()...

[TestMethod()]

public void DetailsAction\_NullID\_BADHTTP()

{

    //Arrange

    StudentsController sc = new StudentsController();

    //Act

    HttpStatusCodeResult actualResult = sc.Details(null) as HttpStatusCodeResult;

    int actualStatusCode = actualResult.StatusCode;

    //Assert

    int expectedStatusCode = new HttpStatusCodeResult(HttpStatusCode.BadRequest).StatusCode;

    Assert.AreEqual(expectedStatusCode, actualStatusCode);

}

}

Solution Explorer

Search Solution Explorer (Ctrl+.)

Solution 'MVCTesting' (3 projects)

StudentDBModel

StudentManagement

StudentManagement.Tests

Properties

References

Controllers

HomeControllerTest.cs

StudentControllerTests.cs

App.config

packages.config

Output

Ready Ln 61 Col 10 Ch 10 INS

```
109 %
```

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Test Explorer

StudentControllerTests.cs\*

StudentManagement.Tests

0 references

```
public void DetailAction_Returns_StudentModel()...
```

[TestMethod()]

0 references

```
public void DetailsAction_NullID_BADHTTP()...
```

[TestMethod()]

0 references

```
public void DetailsAction_InvalidID_NotFoundHTTP()
{
    //Arrange
    StudentsController sc = new StudentsController();

    //Act
    HttpStatusCodeResult actualResult = sc.Details(-1) as HttpStatusCodeResult;
    int actualStatusCode = actualResult.StatusCode;

    //Assert
    int expectedStatusCode = new HttpStatusCodeResult(HttpStatusCode.NotFound).StatusCode;
    Assert.AreEqual(expectedStatusCode, actualStatusCode);
}
```

109 %

Output

StudentManagement.Tests.Controllers.StudentControllerTests

DetailsAction\_InvalidID\_NotFoundHTTP()

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests
  - Properties
  - References
  - Controllers
    - HomeControllerTest.cs
    - StudentControllerTests.cs
  - App.config
  - packages.config

Ready Ln 76 Col 10 Ch 10 INS

MVCTesting - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Quick Launch (Ctrl+Q) Sign in

Test Explorer

StudentControllerTests.cs

StudentManagement.Tests

StudentManagement.Tests.Controllers.StudentControllerTests

IndexAction\_Returns\_IndexView()

```
namespace StudentManagement.Tests.Controllers
{
    [TestClass]
    public class StudentControllerTests
    {
        [TestMethod]
        public void IndexAction_Returns_IndexView()...
        
        [TestMethod]
        public void DetailAction_Returns_StudentModel()...
        
        [TestMethod()]
        public void DetailsAction_NullID_BADHTTP()...
        
        [TestMethod()]
        public void DetailsAction_InvalidID_NotFoundHTTP()...
    }
}
```

Solution Explorer

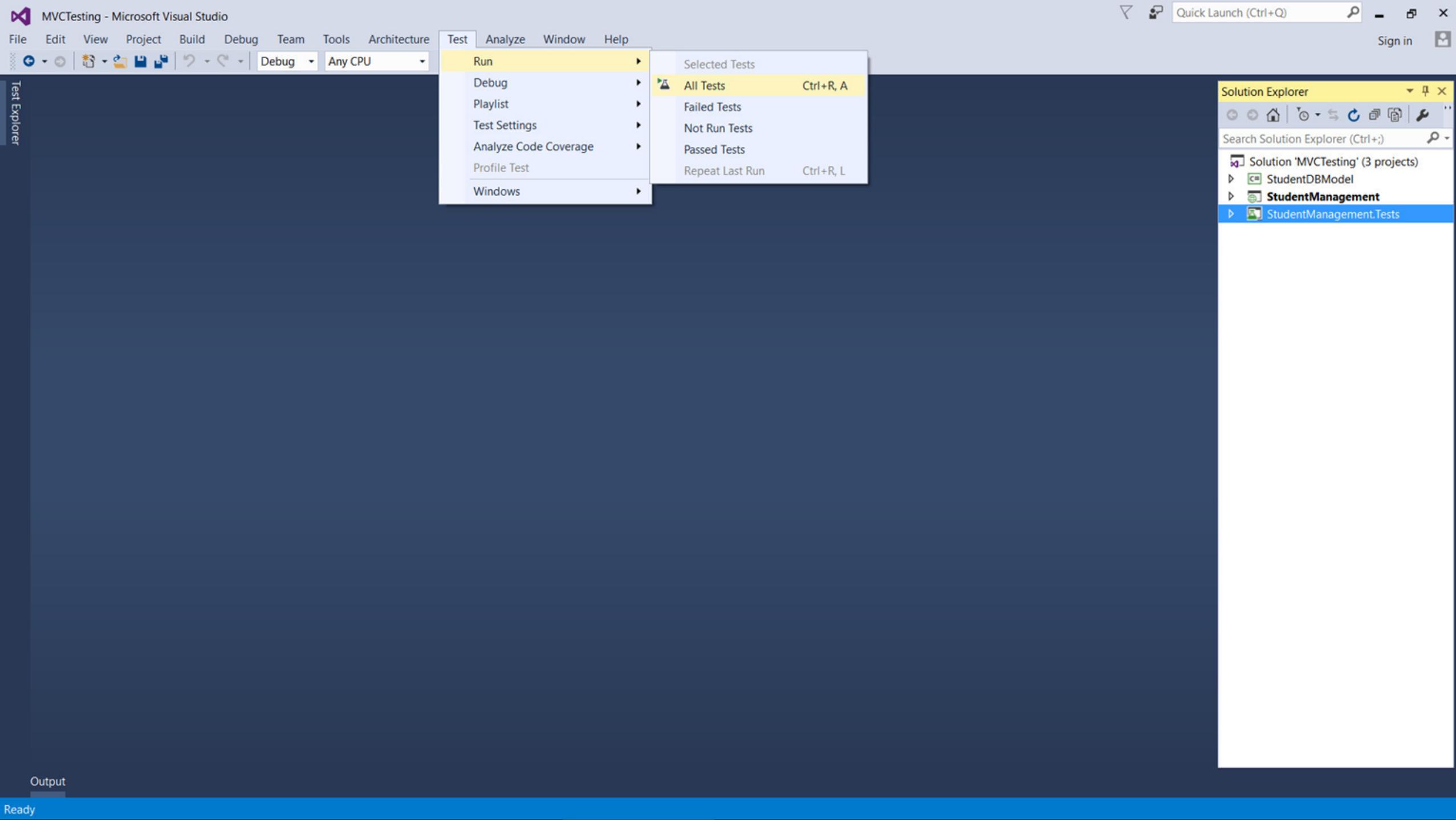
Search Solution Explorer (Ctrl+Shift+F)

- Solution 'MVCTesting' (3 projects)
  - StudentDBModel
  - StudentManagement
  - StudentManagement.Tests
    - Properties
    - References
    - Controllers
      - HomeControllerTest.cs
      - StudentControllerTests.cs
    - App.config
    - packages.config

Output

Item(s) Saved

Ln 76 Col 1 Ch 1 INS



MVCTesting - Microsoft Visual Studio

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Quick Launch (Ctrl+Q) Sign in

Test Explorer | Search

Streaming Video: Configure continuous integration

Run All | Run... | Playlist : All Tests

Failed Tests (1)

- IndexAction\_Returns\_IndexView 10 sec

Passed Tests (6)

- About 1 sec
- Contact 3 ms
- DetailAction\_Returns\_StudentModel 1 sec
- DetailsAction\_InvalidID\_NotFoundHTTP 4 ms
- DetailsAction\_NullID\_BADHTTP 3 ms
- Index 1 ms

IndexAction\_Returns\_IndexView

Source: StudentControllerTests.cs line 19

Test Failed - IndexAction\_Returns\_IndexView

**Message: Assert.AreEqual failed. Expected:<Index>. Actual:<>.**

Elapsed time: 10 sec

StackTrace:

StudentControllerTests.IndexAction\_Returns\_IndexView()

Solution Explorer

Search Solution Explorer (Ctrl+.)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement**
- StudentManagement.Tests

Output

Ready

MVCTesting - Microsoft Visual Studio

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Test Explorer

Streaming Video: Configure continuous integration

Run All | Run... | Playlist : All Tests

Failed Tests (1)

IndexAction\_Returns\_IndexView 10 sec

Passed Tests (6)

About 1 sec

Contact 3 ms

DetailAction\_Returns\_StudentModel 1 sec

DetailsAction\_InvalidID\_NotFoundHTTP 4 ms

DetailsAction\_NullID\_BADHTTP 3 ms

Index 1 ms

IndexAction\_Returns\_IndexView

Source: StudentControllerTests.cs line 19

Test Failed - IndexAction\_Returns\_IndexView

Message: Assert.AreEqual failed. Expected:<Index>. Actual:<>.

Elapsed time: 10 sec

StackTrace:

StudentControllerTests.IndexAction\_Returns\_IndexView()

StudentsController.cs

```
using System.Web;
using System.Web.Mvc;
using StudentDBModel;

namespace StudentManagement.Controllers
{
    public class StudentsController : Controller
    {
        private DBModelContainer db = new DBModelContainer();

        // GET: Students
        public ActionResult Index()
        {
            return View(db.Students.ToList());
        }

        // GET: Students/Details/5
        public ActionResult Details(int? id)
        {
            if (id == null)
            {
                return new HttpStatusCodeResult(HttpStatusCode.BadRequest);
            }
            Student student = db.Students.Find(id);
            if (student == null)
            {
                return HttpNotFound();
            }
            return View(student);
        }
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (3 projects)

StudentDBModel

StudentManagement

StudentManagement.Tests

Output

Ready Ln 13 Col 49 Ch 49 INS

MVCTesting - Microsoft Visual Studio

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Test Explorer

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Run All | Run... | Playlist : All Tests

Failed Tests (1)

- IndexAction\_Returns\_IndexView 10 sec

Passed Tests (6)

- About 1 sec
- Contact 3 ms
- DetailAction\_Returns\_StudentModel 1 sec
- DetailsAction\_InvalidID\_NotFoundHTTP 4 ms
- DetailsAction\_NullID\_BADHTTP 3 ms
- Index 1 ms

IndexAction\_Returns\_IndexView

Source: StudentControllerTests.cs line 19

Test Failed - IndexAction\_Returns\_IndexView

Message: Assert.AreEqual failed. Expected:<Index>. Actual:<>.

Elapsed time: 10 sec

StackTrace:

```
StudentControllerTests.IndexAction_Returns_IndexView()
```

StudentsController.cs

```
using System.Web;
using System.Web.Mvc;
using StudentDBModel;

namespace StudentManagement.Controllers
{
    public class StudentsController : Controller
    {
        private DBModelContainer db = new DBModelContainer();

        // GET: Students
        public ActionResult Index()
        {
            return View(db.Students.ToList());
        }

        // GET: Students/Details/5
        public ActionResult Details(int? id)
        {
            if (id == null)
            {
                return new HttpStatusCodeResult(HttpStatusCode.BadRequest);
            }
            Student student = db.Students.Find(id);
            if (student == null)
            {
                return HttpNotFound();
            }
            return View(student);
        }
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement**
- StudentManagement.Tests

Output

Ready Ln 18 Col 36 Ch 36 INS

MVCTesting - Microsoft Visual Studio

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Test Explorer

Streaming Video: Configure continuous integration

Run All | Run... | Playlist : All Tests

Failed Tests (1)

- IndexAction\_Returns\_IndexView 10 sec

Passed Tests (6)

- About 1 sec
- Contact 3 ms
- DetailAction\_Returns\_StudentModel 1 sec
- DetailsAction\_InvalidID\_NotFoundHTTP 4 ms
- DetailsAction\_NullID\_BADHTTP 3 ms
- Index 1 ms

IndexAction\_Returns\_IndexView

Source: StudentControllerTests.cs line 19

Test Failed - IndexAction\_Returns\_IndexView

Message: Assert.AreEqual failed. Expected:<Index>. Actual:<>.

Elapsed time: 10 sec

StackTrace:

```
StudentControllerTests.IndexAction_Returns_IndexView()
```

StudentsController.cs\*

StudentManagement

StudentManagement.Controllers.StudentsC Controller Index()

```
using System.Web;
using System.Web.Mvc;
using StudentDBModel;

namespace StudentManagement.Controllers
{
    public class StudentsController : Controller
    {
        private DBModelContainer db = new DBModelContainer();

        // GET: Students
        public ActionResult Index()
        {
            //return View(db.Students.ToList());
            return View("Index", db.Students.ToList());
        }

        // GET: Students/Details/5
        public ActionResult Details(int? id)
        {
            if (id == null)
            {
                return new HttpStatusCodeResult(HttpStatusCode.BadRequest);
            }
            Student student = db.Students.Find(id);
            if (student == null)
            {
                return HttpNotFound();
            }
            return View(student);
        }
    }
}
```

Solution Explorer

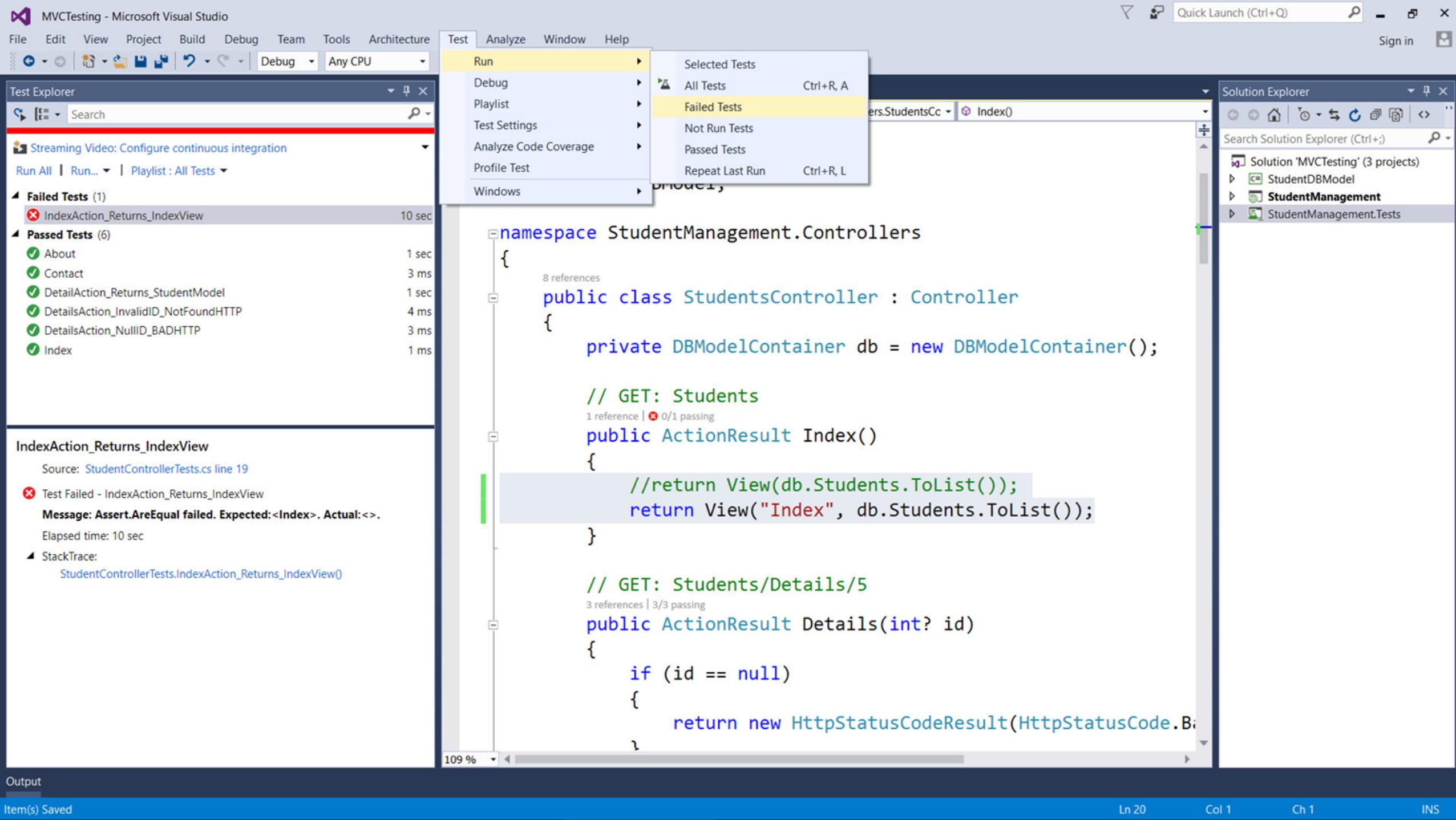
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Solution 'MVCTesting' (3 projects)

- StudentDBModel
- StudentManagement
- StudentManagement.Tests

Output

Ready Ln 20 Col 1 Ch 1 INS



MVCTesting - Microsoft Visual Studio

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Test Explorer

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Run All | Run... | Playlist : All Tests

Passed Tests (7)

- IndexAction\_Returns\_IndexView 7 sec
- About 1 sec
- Contact 3 ms
- DetailAction\_Returns\_StudentModel 1 sec
- DetailsAction\_InvalidID\_NotFoundHTTP 4 ms
- DetailsAction\_NullID\_BADHTTP 3 ms
- Index 1 ms

IndexAction\_Returns\_IndexView

Source: StudentControllerTests.cs line 19

StudentsController.cs

```
using System.Web;
using System.Web.Mvc;
using StudentDBModel;

namespace StudentManagement.Controllers
{
    public class StudentsController : Controller
    {
        private DBModelContainer db = new DBModelContainer();

        // GET: Students
        public ActionResult Index()
        {
            //return View(db.Students.ToList());
        }
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'MVCTesting' (3 projects)  
StudentDBModel  
**StudentManagement**  
StudentManagement.Tests

Output

Show output from: Tests

```
----- Discover test started -----
----- Discover test finished: 7 found (0:00:00.3623884) -----
----- Run test started -----
----- Run test finished: 1 run (0:00:10.7835122) -----
```

Output

Build succeeded