

70-483 : Programming in C#



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Objective %

- Manage program Flow **25%**
- Create and use types **24%**
- Debug applications and implement security **25%**
- Implement data access **26%**



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Introduction



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In this section...

- C# vs .NET
- CLR (Common Language Run-time)
- Architecture of .NET Applications
- Our First C# Application

C# vs .NET



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C# vs .NET

- C# is a programming language
- .NET is a framework for building applications on Windows



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.NET

- CLR (Common Language Runtime)
- Class Library



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What is CLR

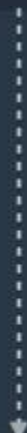


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C/C++

```
pCmdUI->Enable(m_clock.GetInterfacePtr() != NULL);
```



Native Code

00	2D	31	00	2E	29	73	00	61	6D	2E	67
61	A0	40	65	6C	2D	47	43	3A	63	00	A0

Code here



Run it here





```
cmdUI.enable(clock.getInterface() != null);
```

ByteCode

```
0  iconst_0;  
1  istore_2;  
5  aload_1;  
7  getfield 13;
```

C#

```
cmdUI.Enable(clock.GetInterface() != null);
```

IL Code
(Intermediate Language)

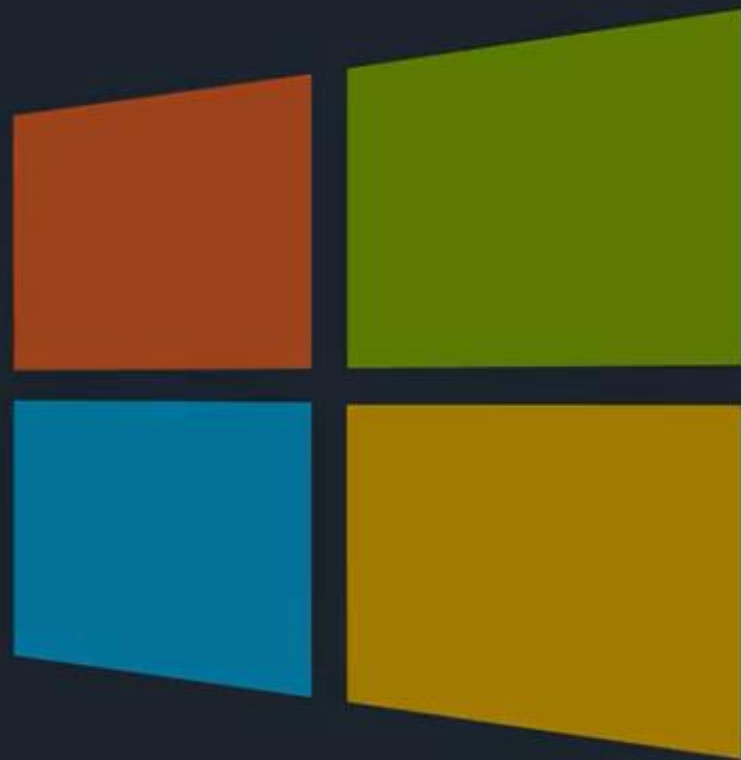
```
.entrypoint  
.maxstack 1  
L_0000: nop  
L_0001: ldc.i4.s 60
```

Just-in-time Compilation (JIT)

Native Code

00 2D 31	00 2E 29	73 00 61	6D 2E 67
61 A0 40	65 6C 2D	47 43 3A	63 00 A0

Code here



Run it here



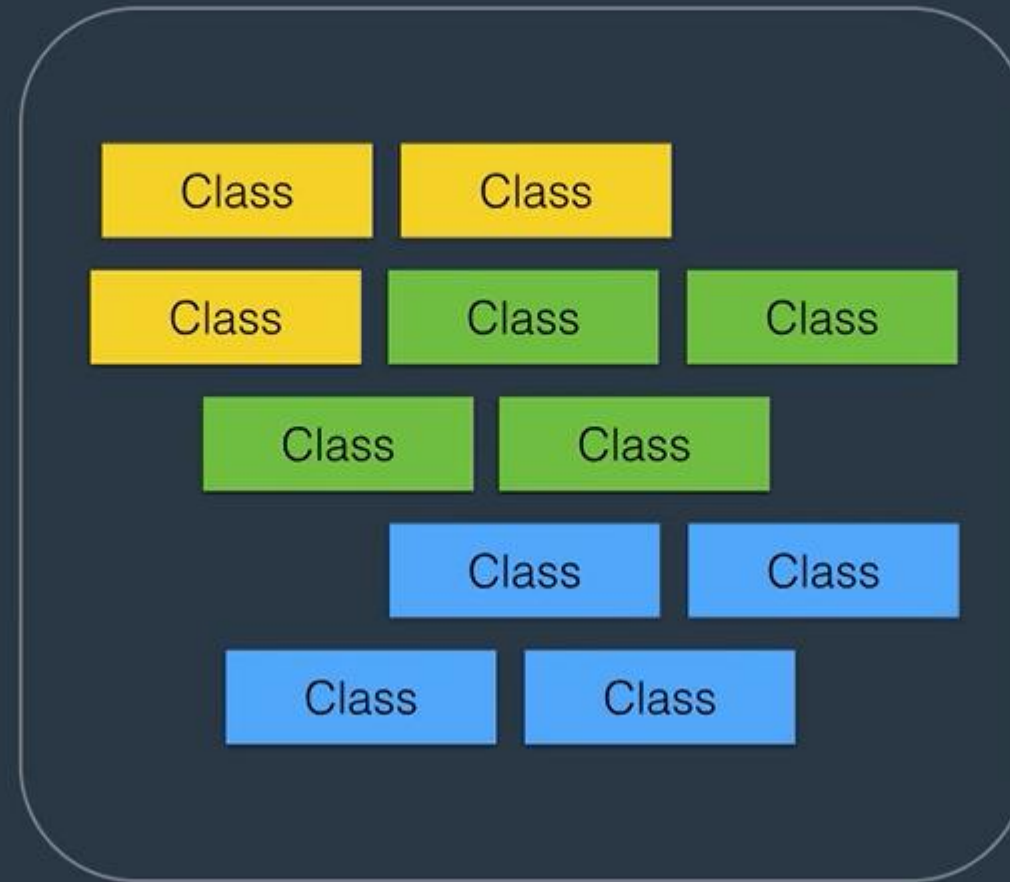
Architecture of .NET Applications



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Application



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Class
Data
Methods

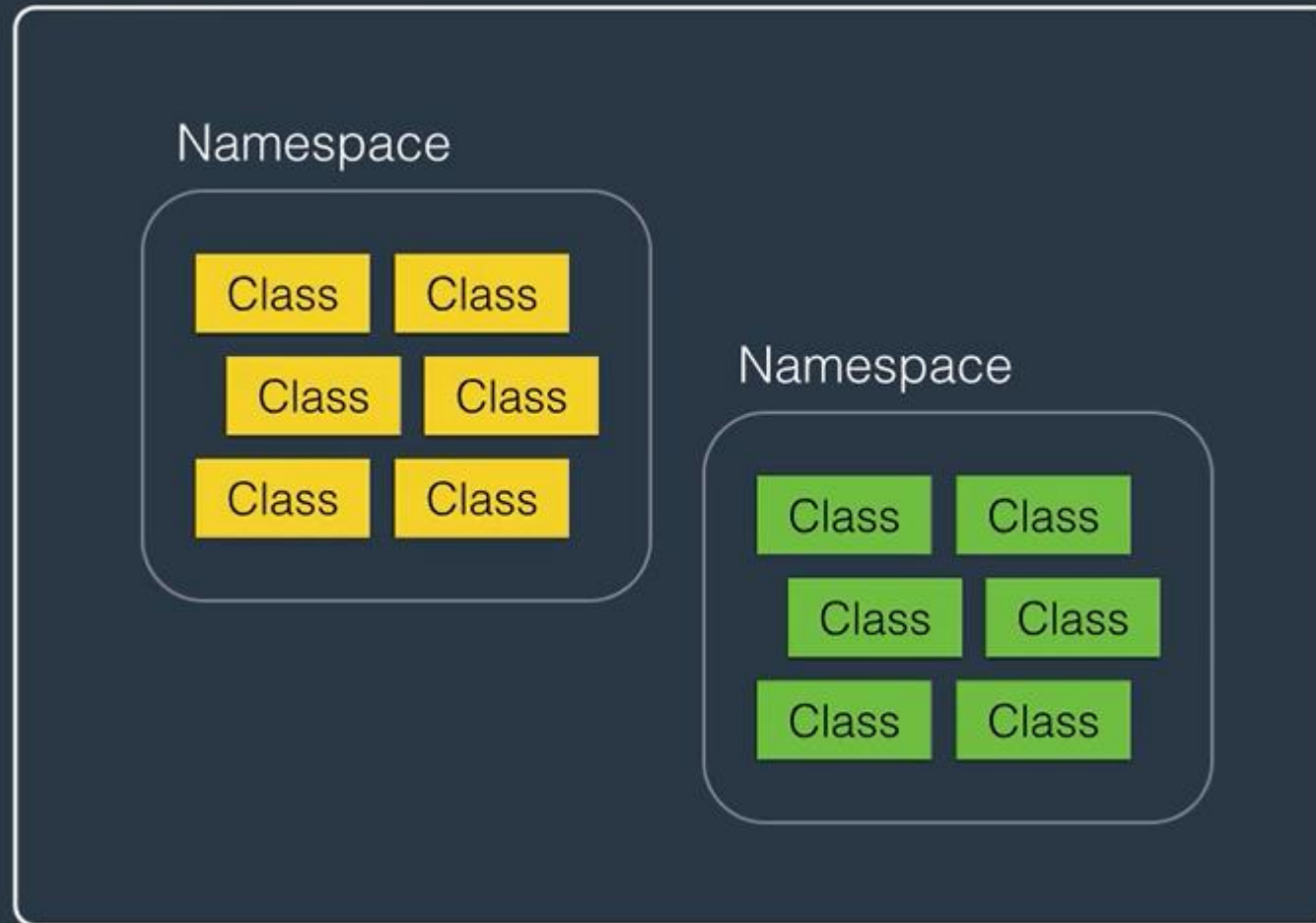
Car
Make Model Color
Start() Move()



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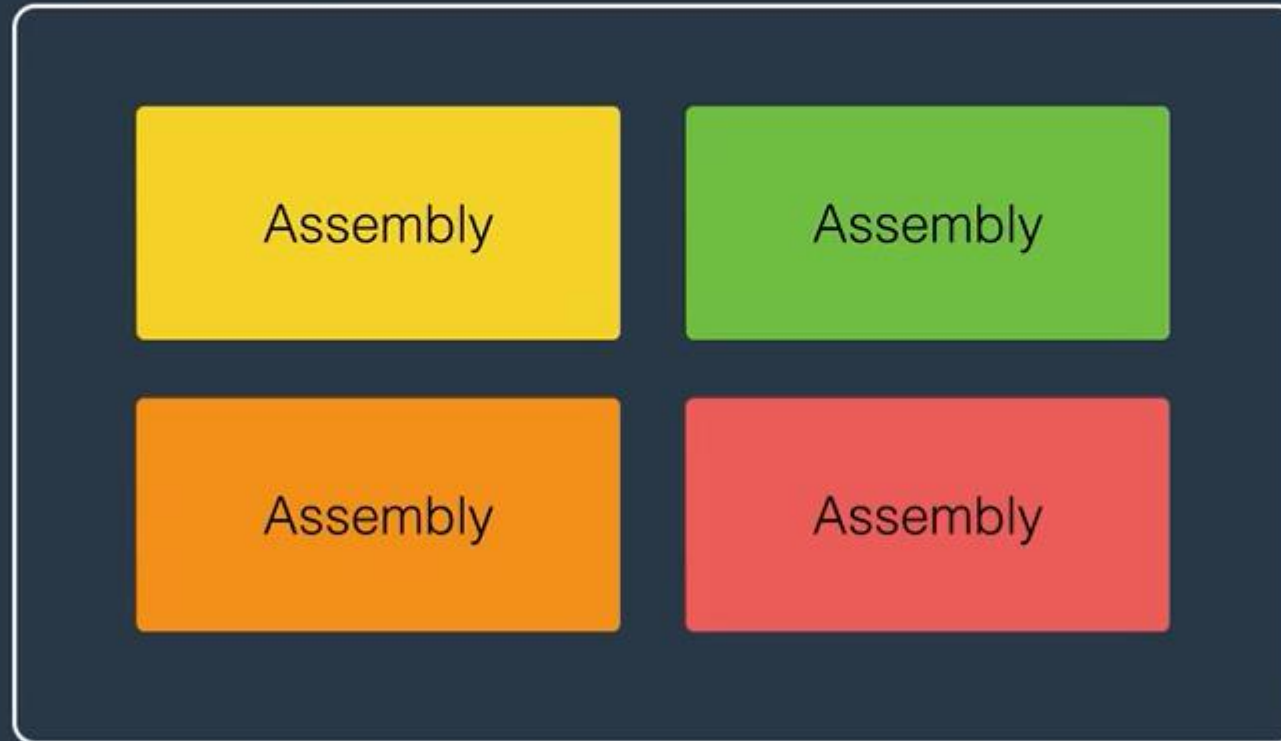
Assembly (DLL or EXE)



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Application



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Our First C# Application



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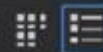
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New Project

Recent

.NET Framework 4.5

Sort by: Default



Search Installed Templates (Ctrl+E)



Installed

Templates

Visual C#

Windows

Web

Cloud

Reporting

Silverlight

Test

WCF

Workflow

SQL Connect

LightSwitch

Other Languages

Other Project Types

Modeling Projects

Samples

Online



Windows Forms Application

Visual C#



WPF Application

Visual C#



Console Application

Visual C#



Class Library

Visual C#



Portable Class Library

Visual C#



WPF Browser Application

Visual C#



Empty Project

Visual C#



Windows Service

Visual C#



WPF Custom Control Library

Visual C#



WPF User Control Library

Visual C#



Windows Forms Control Library

Visual C#

Type: Visual C#

A project for creating a command-line application

Name:

HelloWorld

Location:

C:\Projects\CSharpFundamentals\

Browse...

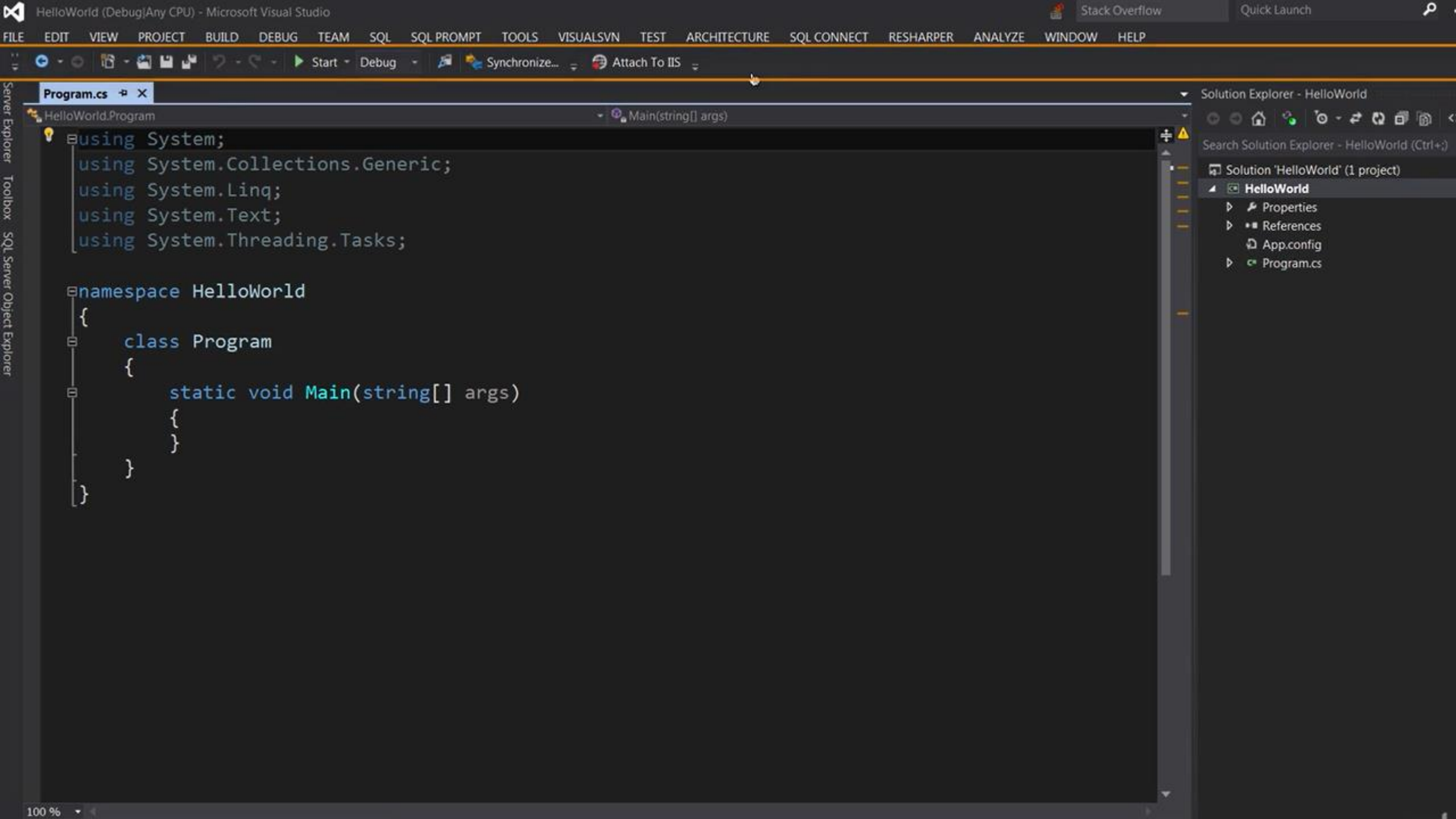
Solution name:

HelloWorld

☒ Create directory for solution☐ Add to source control

OK

Cancel




```
using System.Reflection;
using System.Runtime.CompilerServices;
using System.Runtime.InteropServices;

// General Information about an assembly is controlled through the following
// set of attributes. Change these attribute values to modify the information
// associated with an assembly.
[assembly: AssemblyTitle("HelloWorld")]
[assembly: AssemblyDescription("")]
[assembly: AssemblyConfiguration("")]
[assembly: AssemblyCompany("")]
[assembly: AssemblyProduct("HelloWorld")]
[assembly: AssemblyCopyright("Copyright © 2015")]
[assembly: AssemblyTrademark("")]
[assembly: AssemblyCulture("")]

// Setting ComVisible to false makes the types in this assembly not visible
// to COM components. If you need to access a type in this assembly from
// COM, set the ComVisible attribute to true on that type.
[assembly: ComVisible(false)]

// The following GUID is for the ID of the typelib if this project is exposed to COM
[assembly: Guid("db842f6e-b000-4a4e-9792-2f982a2ac866")]

// Version information for an assembly consists of the following four values:
//
//      Major Version
```

```
ections.Generic;
```

```
;
;
ading.Tasks;
```

```
orld
```

```
id Main(string[] args)
```

Solution Explorer - HelloWorld

Search Solution Explorer - HelloWorld (Ctrl+;)

Solution 'HelloWorld' (1 project)

HelloWorld

Properties

AssemblyInfo.cs

References

Microsoft.CSharp

System

System.Core

System.Data

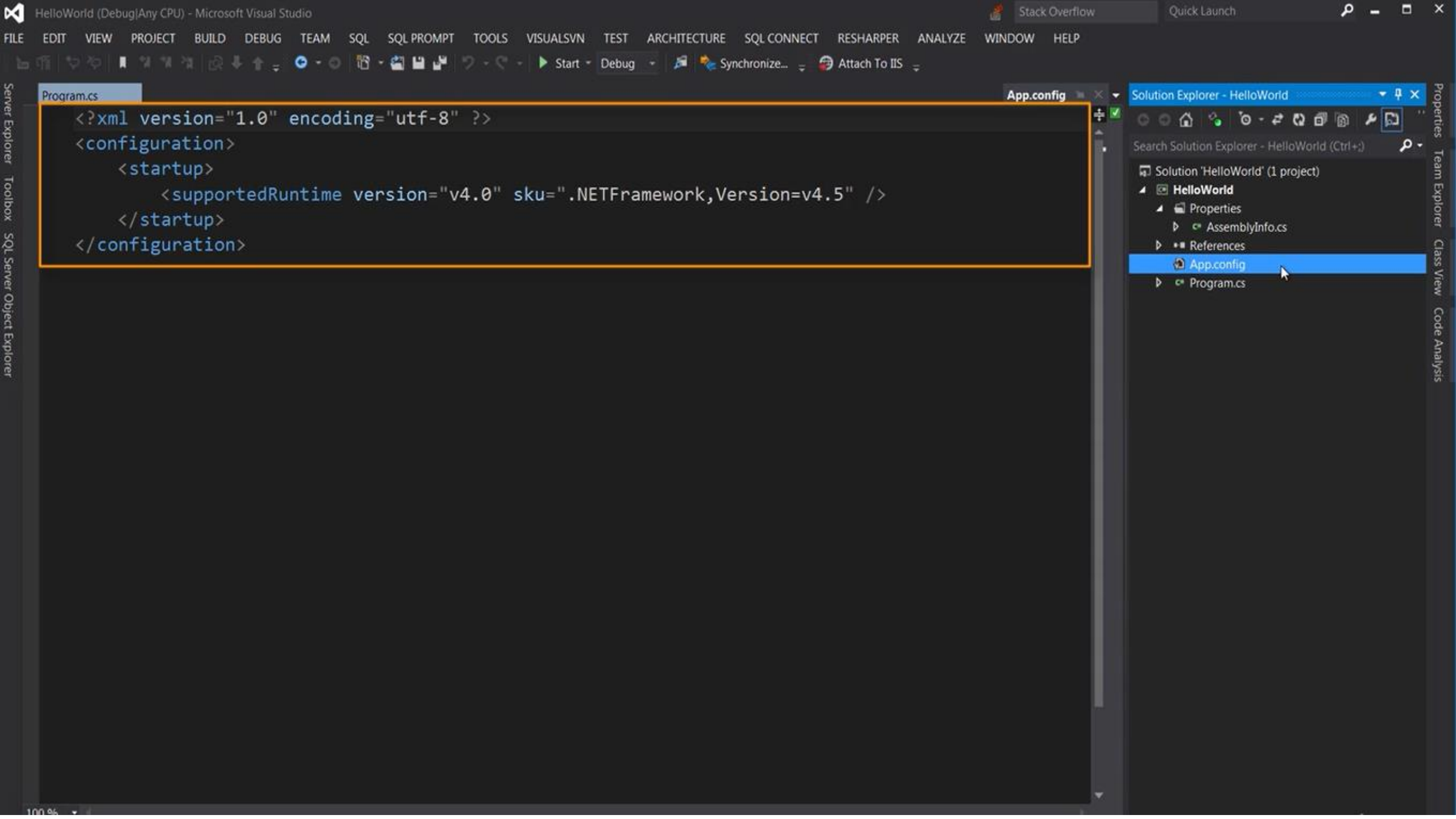
System.Data.DataSetExtensions

System.Xml

System.Xml.Linq

App.config

Program.cs



Program.cs

App.config

Solution Explorer - HelloWorld

Search Solution Explorer - HelloWorld (Ctrl+)

Solution 'HelloWorld' (1 project)

- HelloWorld
 - Properties
 - AssemblyInfo.cs
 - References
 - App.config
 - Program.cs

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

```
namespace HelloWorld  
{  
    class Program  
    {  
        static void Main(string[] args)  
        {  
        }  
    }  
}
```

```
using System;
```

```
namespace HelloWorld
```

```
{
```

```
    class Program
```

```
    {
```

```
        static void Main(string[] args)
```

```
        {
```

```
            Console.WriteLine("Hello World");
```

```
        }
```

```
    }
```

```
}
```

Run: Ctrl + F5

