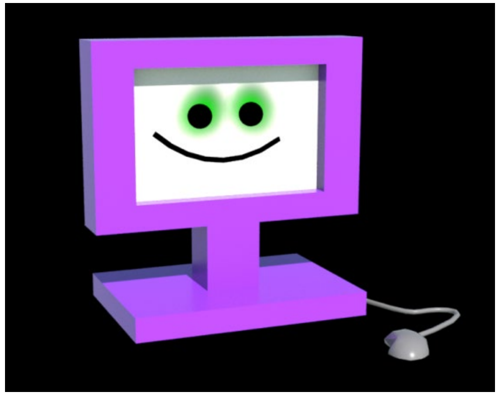
# Great way to learn is by example so fire up Visual Studios C++ 2017 or 2019



by Deborah R. Fowler

www.deborahrfowler.com

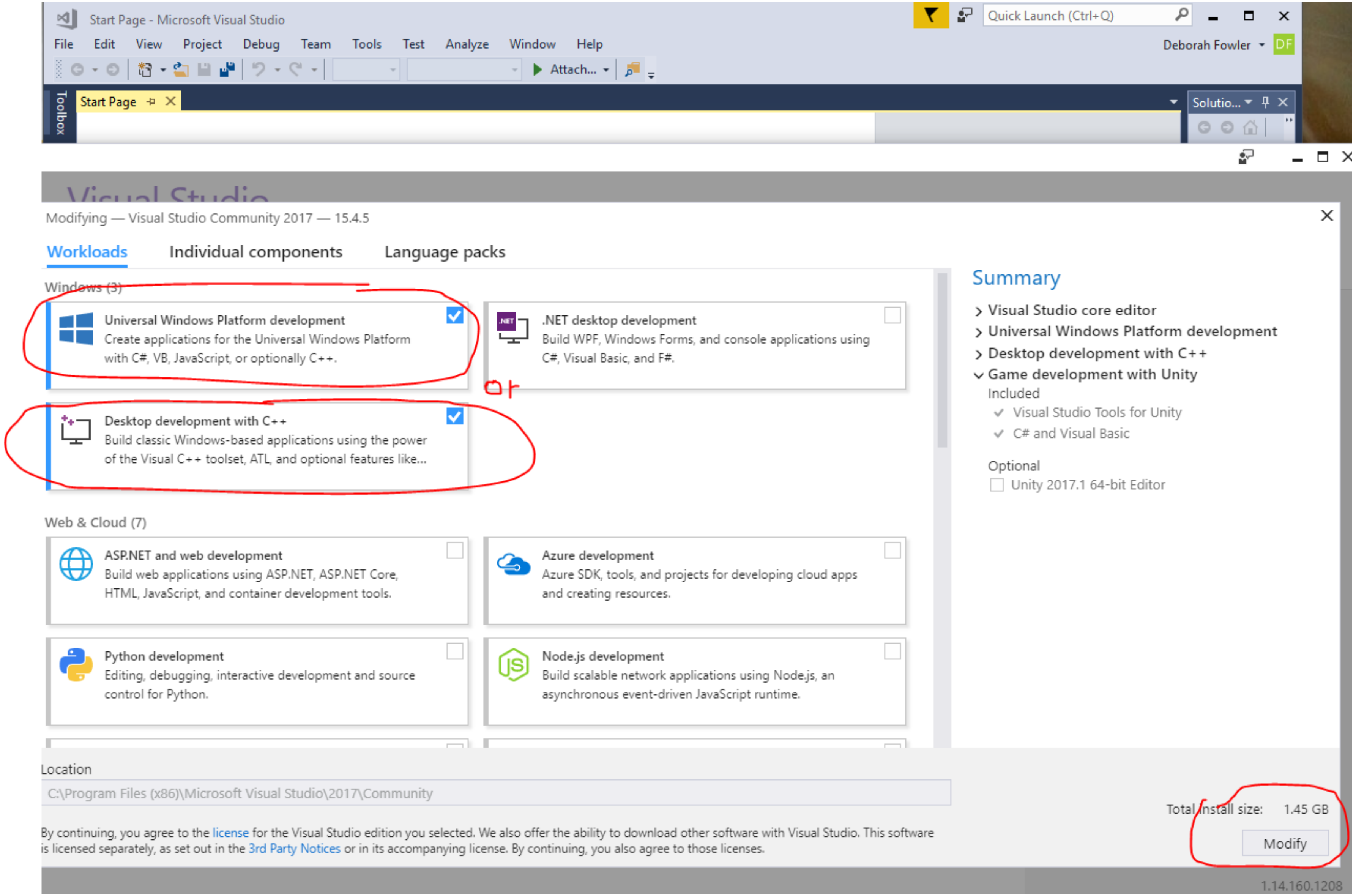
At home **Visual Studio 2017/19 Community** be sure you check options for C++ (no longer default)

You can modify your existing install
Launch visual studios installer from start menu

OR

Tools-> Get Tools and Features > Modify
(see next slide)

# Adding C++ Functionality to Existing VS 2017 Community



Modifying — Visual Studio Community 2017 — 15.4.5

Workloads | Individual components | Language packs

Windows (3)

Universal Windows Platform development ☑
Create applications for the Universal Windows Platform with C#, VB, JavaScript, or optionally C++.

.NET desktop development □
Build WPF, Windows Forms, and console applications using C#, Visual Basic, and F#.

or

Desktop development with C++ ☑
Build classic Windows-based applications using the power of the Visual C++ toolset, ATL, and optional features like...

Web & Cloud (7)

ASP.NET and web development □
Build web applications using ASP.NET, ASP.NET Core, HTML, JavaScript, and container development tools.

Azure development □
Azure SDK, tools, and projects for developing cloud apps and creating resources.

Python development □
Editing, debugging, interactive development and source control for Python.

Node.js development □
Build scalable network applications using Node.js, an asynchronous event-driven JavaScript runtime.

Summary

- Visual Studio core editor
- Universal Windows Platform development
- Desktop development with C++
- Game development with Unity

Included
- ✓ Visual Studio Tools for Unity
- ✓ C# and Visual Basic

Optional
- □ Unity 2017.1 64-bit Editor

Location

C:\Program Files (x86)\Microsoft Visual Studio\2017\Community

By continuing, you agree to the license for the Visual Studio edition you selected. We also offer the ability to download other software with Visual Studio. This software is licensed separately, as set out in the 3rd Party Notices or in its accompanying license. By continuing, you also agree to those licenses.

Total install size: 1.45 GB

Modify

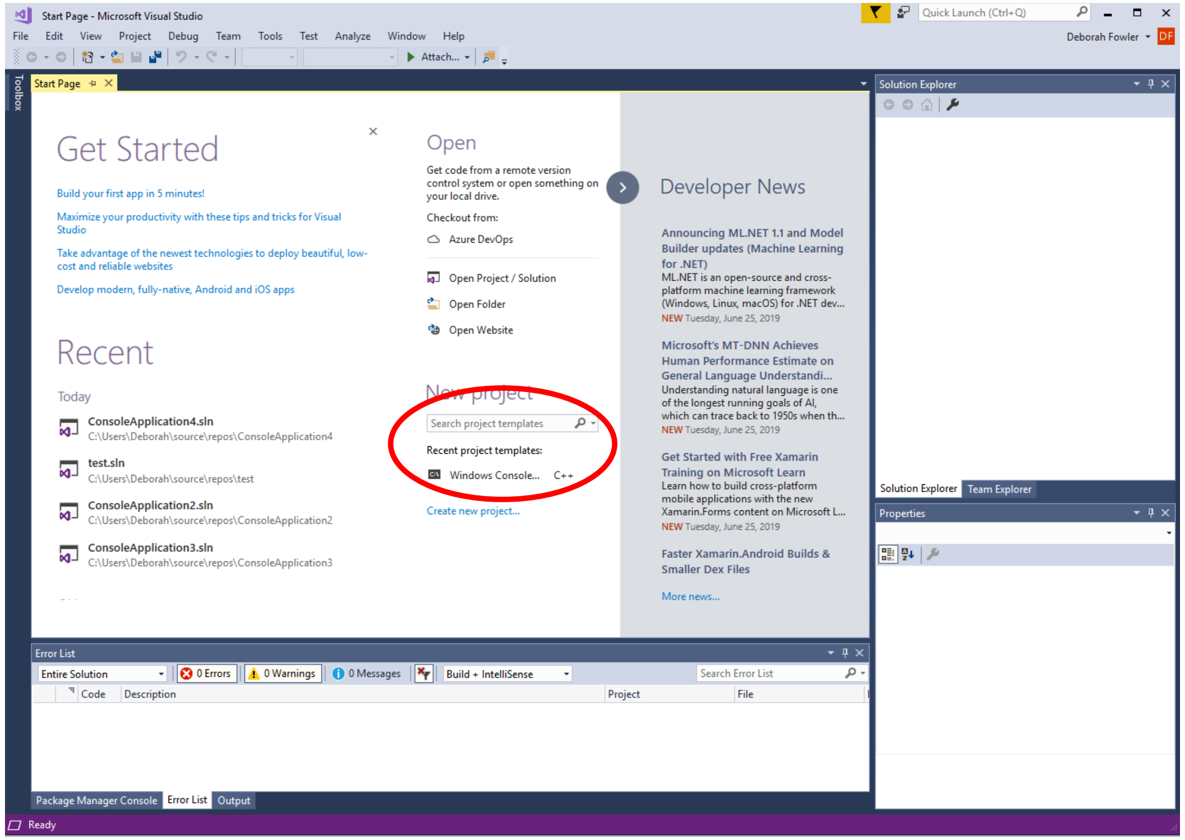
1.14.160.1208

The following instructions apply to
VS 2017 or 2019
if different, they will be noted on the following slides

NOTE: In 2019 you no longer need to #include “pch.h”
(which used to be “stdafx.h” … more later)

VS 2017

VS 2019



## Get Started

Build your first app in 5 minutes!

Maximize your productivity with these tips and tricks for Visual Studio

Take advantage of the newest technologies to deploy beautiful, low-cost and reliable websites

Develop modern, fully-native, Android and iOS apps

## Recent

Today

ConsoleApplication4.sln
C:\Users\Deborah\source\repos\ConsoleApplication4

test.sln
C:\Users\Deborah\source\repos\test

ConsoleApplication2.sln
C:\Users\Deborah\source\repos\ConsoleApplication2

ConsoleApplication3.sln
C:\Users\Deborah\source\repos\ConsoleApplication3

## Open

Get code from a remote version control system or open something on your local drive.

Checkout from:

- Azure DevOps
- Open Project / Solution
- Open Folder
- Open Website

## New project

Search project templates

Recent project templates:

Windows Console... C++

Create new project...

## Developer News

**Announcing ML.NET 1.1 and Model Builder updates (Machine Learning for .NET)**
ML.NET is an open-source and cross-platform machine learning framework (Windows, Linux, macOS) for .NET dev...
NEW Tuesday, June 25, 2019

**Microsoft's MT-DNN Achieves Human Performance Estimate on General Language Understandi...**
Understanding natural language is one of the longest running goals of AI, which can trace back to 1950s when th...
NEW Tuesday, June 25, 2019

**Get Started with Free Xamarin Training on Microsoft Learn**
Learn how to build cross-platform mobile applications with the new Xamarin.Forms content on Microsoft L...
NEW Tuesday, June 25, 2019

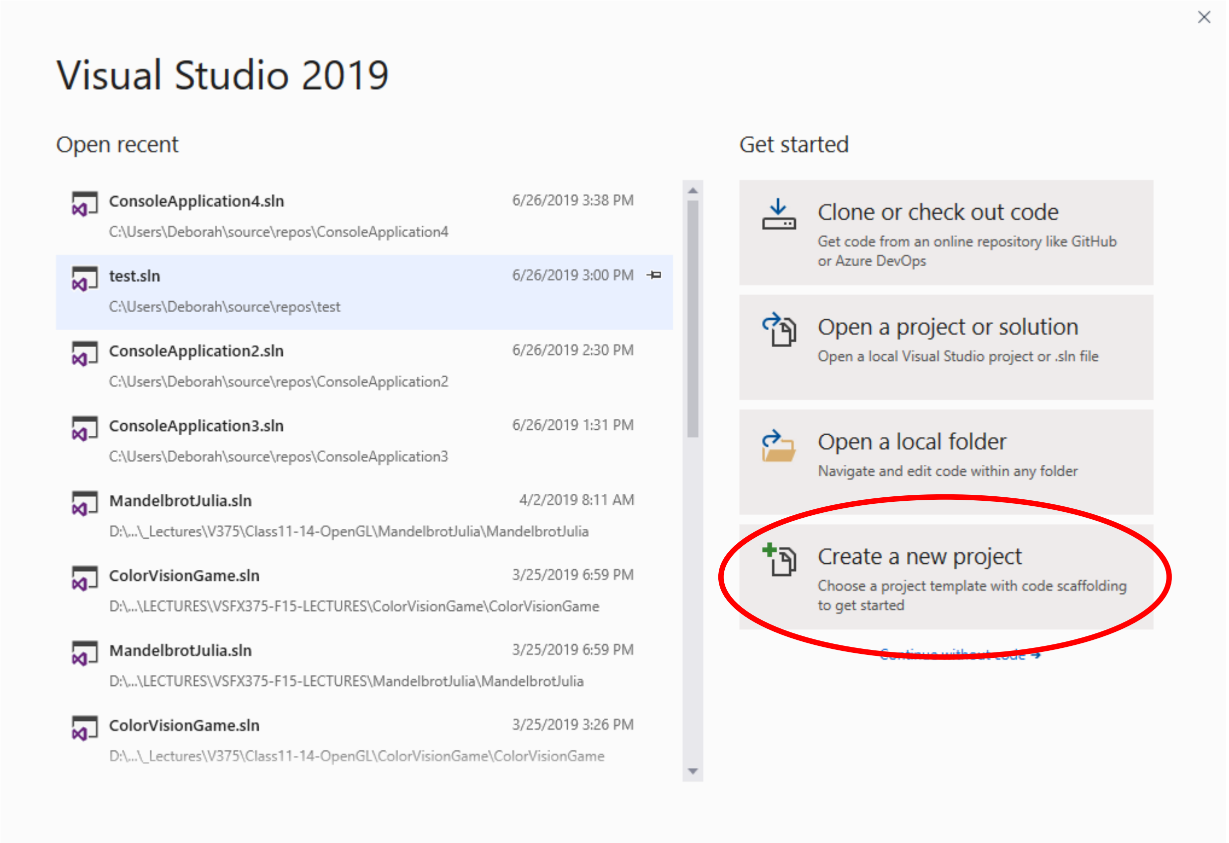
**Faster Xamarin.Android Builds & Smaller Dex Files**

More news...

Error List

Entire Solution | 0 Errors | 0 Warnings | 0 Messages | Build + IntelliSense | Search Error List

| Code | Description | Project | File |
|---|---|---|---|



## Visual Studio 2019

### Open recent

| | |
|---|---|
| ConsoleApplication4.sln<br>C:\Users\Deborah\source\repos\ConsoleApplication4 | 6/26/2019 3:38 PM |
| test.sln<br>C:\Users\Deborah\source\repos\test | 6/26/2019 3:00 PM |
| ConsoleApplication2.sln<br>C:\Users\Deborah\source\repos\ConsoleApplication2 | 6/26/2019 2:30 PM |
| ConsoleApplication3.sln<br>C:\Users\Deborah\source\repos\ConsoleApplication3 | 6/26/2019 1:31 PM |
| MandelbrotJulia.sln<br>D:\..._Lectures\V375\Class11-14-OpenGL\MandelbrotJulia\MandelbrotJulia | 4/2/2019 8:11 AM |
| ColorVisionGame.sln<br>D:\...\LECTURES\VSFX375-F15-LECTURES\ColorVisionGame\ColorVisionGame | 3/25/2019 6:59 PM |
| MandelbrotJulia.sln<br>D:\...\LECTURES\VSFX375-F15-LECTURES\MandelbrotJulia\MandelbrotJulia | 3/25/2019 6:59 PM |
| ColorVisionGame.sln<br>D:\..._Lectures\V375\Class11-14-OpenGL\ColorVisionGame\ColorVisionGame | 3/25/2019 3:26 PM |

### Get started

**Clone or check out code**
Get code from an online repository like GitHub or Azure DevOps

**Open a project or solution**
Open a local Visual Studio project or .sln file

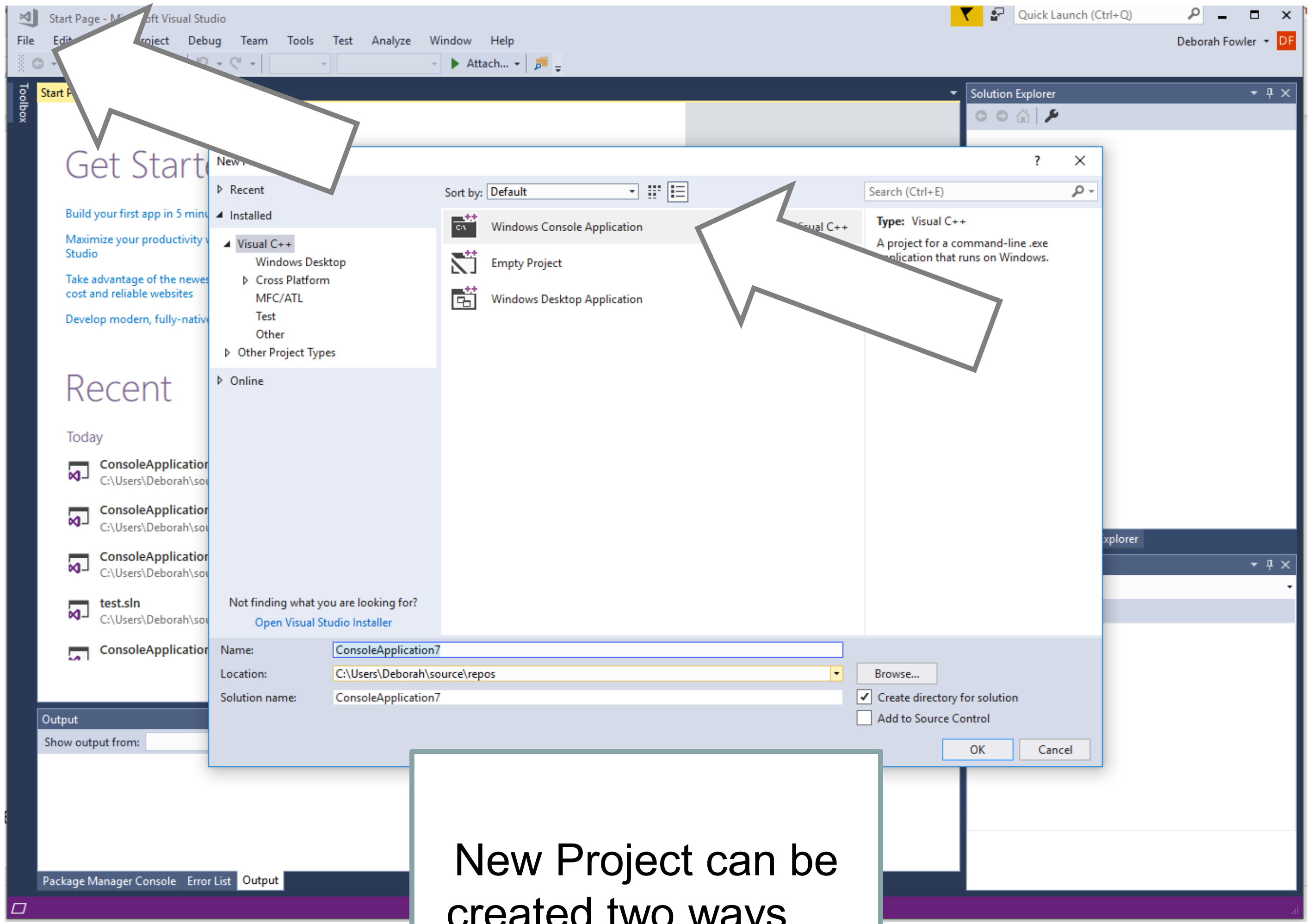
**Open a local folder**
Navigate and edit code within any folder

**Create a new project**
Choose a project template with code scaffolding to get started

Continue without code →

## VS 2017

## VS 2019


Start Page - Microsoft Visual Studio
File Edit Project Debug Team Tools Test Analyze Window Help
Attach...
Quick Launch (Ctrl+Q)
Deborah Fowler DF
Toolbox
Solution Explorer
Get Started
Recent
Today
Output
Show output from:
Package Manager Console Error List Output

Build your first app in 5 minu

Maximize your productivity Studio

Take advantage of the newes cost and reliable websites

Develop modern, fully-nativ

ConsoleApplication C:\Users\Deborah\so

ConsoleApplication C:\Users\Deborah\so

ConsoleApplication C:\Users\Deborah\so

test.sln C:\Users\Deborah\so

ConsoleApplication

New Project

- Recent
- Installed
  - Visual C++
    - Windows Desktop
    - Cross Platform
    - MFC/ATL
    - Test
    - Other
  - Other Project Types
- Online

Sort by: Default

Windows Console Application — Visual C++

Empty Project

Windows Desktop Application

Search (Ctrl+E)

Type: Visual C++

A project for a command-line .exe application that runs on Windows.

Not finding what you are looking for?
Open Visual Studio Installer

Name: ConsoleApplication7

Location: C:\Users\Deborah\source\repos

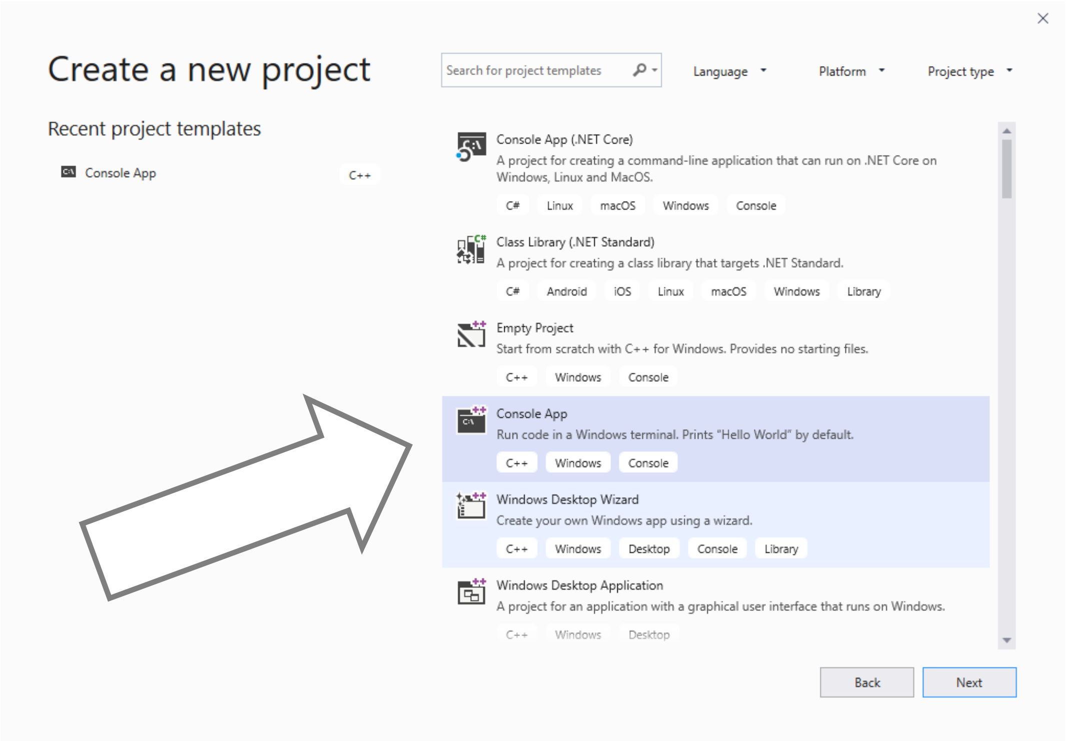
Solution name: ConsoleApplication7

Browse...

☑ Create directory for solution

□ Add to Source Control

OK Cancel



Create a new project

Search for project templates | Language | Platform | Project type

Recent project templates

Console App C++

Console App (.NET Core)
A project for creating a command-line application that can run on .NET Core on Windows, Linux and MacOS.
C# Linux macOS Windows Console

Class Library (.NET Standard)
A project for creating a class library that targets .NET Standard.
C# Android iOS Linux macOS Windows Library

Empty Project
Start from scratch with C++ for Windows. Provides no starting files.
C++ Windows Console

Console App
Run code in a Windows terminal. Prints "Hello World" by default.
C++ Windows Console

Windows Desktop Wizard
Create your own Windows app using a wizard.
C++ Windows Desktop Console Library

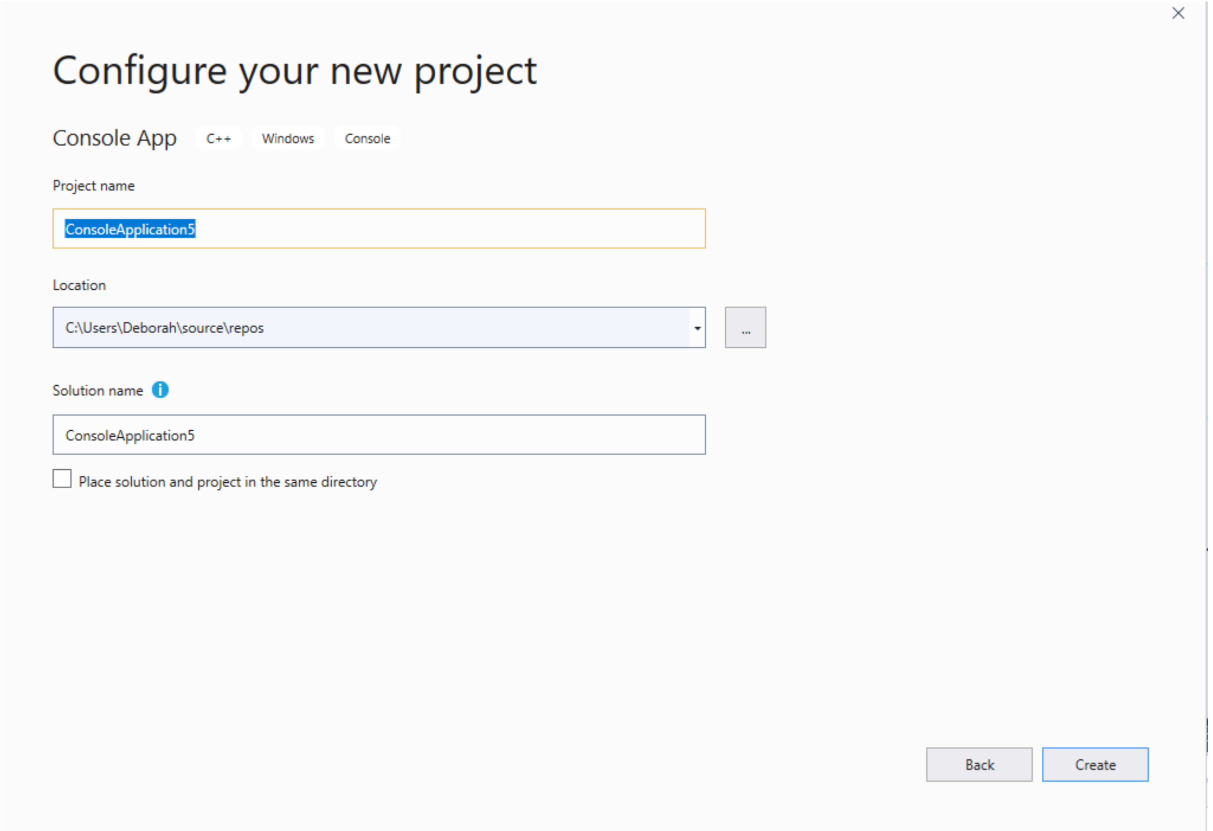
Windows Desktop Application
A project for an application with a graphical user interface that runs on Windows.
C++ Windows Desktop

Back Next

New Project can be created two ways …

VS 2017

VS 2019



# Configure your new project

Console App

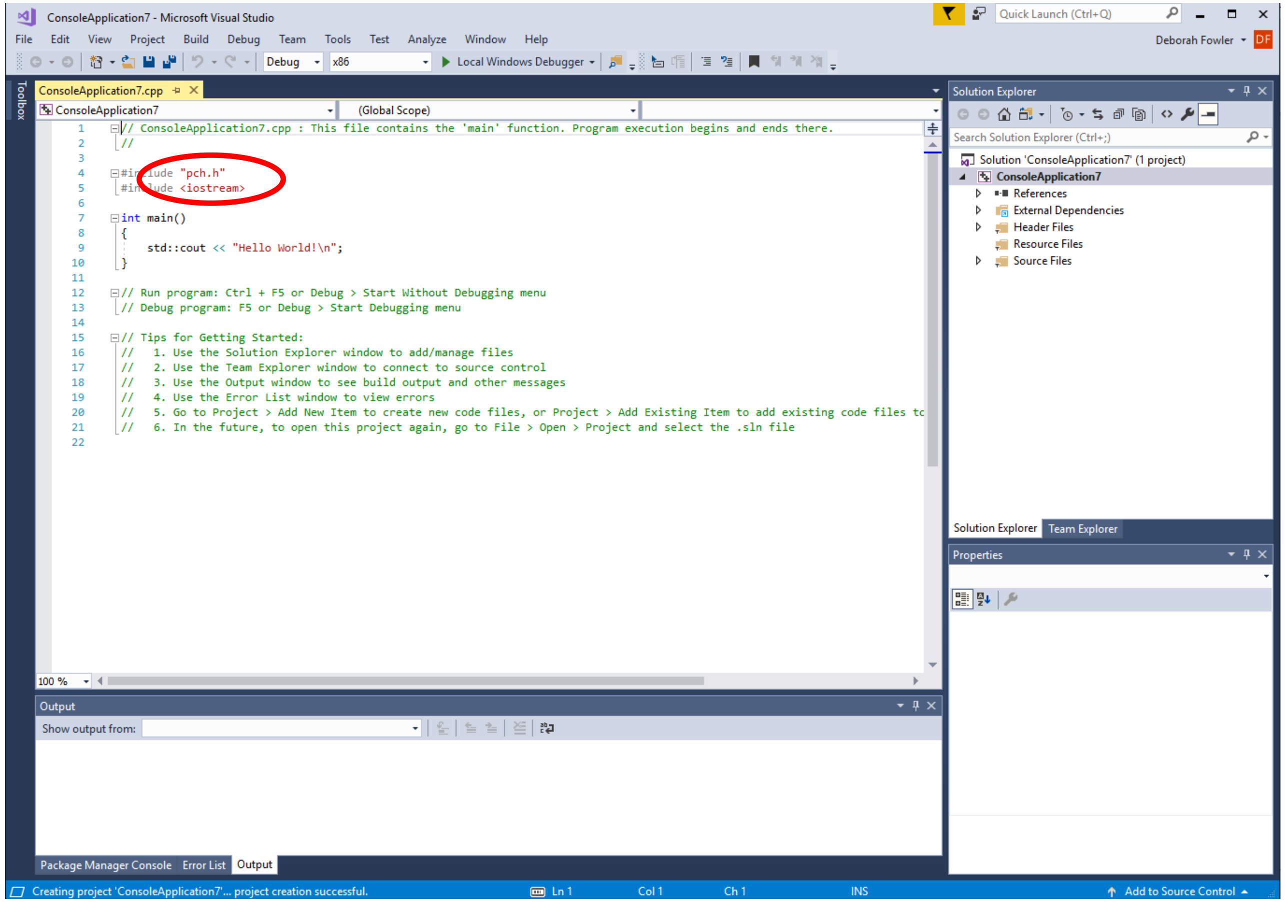
Project name: ConsoleApplication5

Location: C:\Users\Deborah\source\repos

Solution name: ConsoleApplication5

□ Place solution and project in the same directory

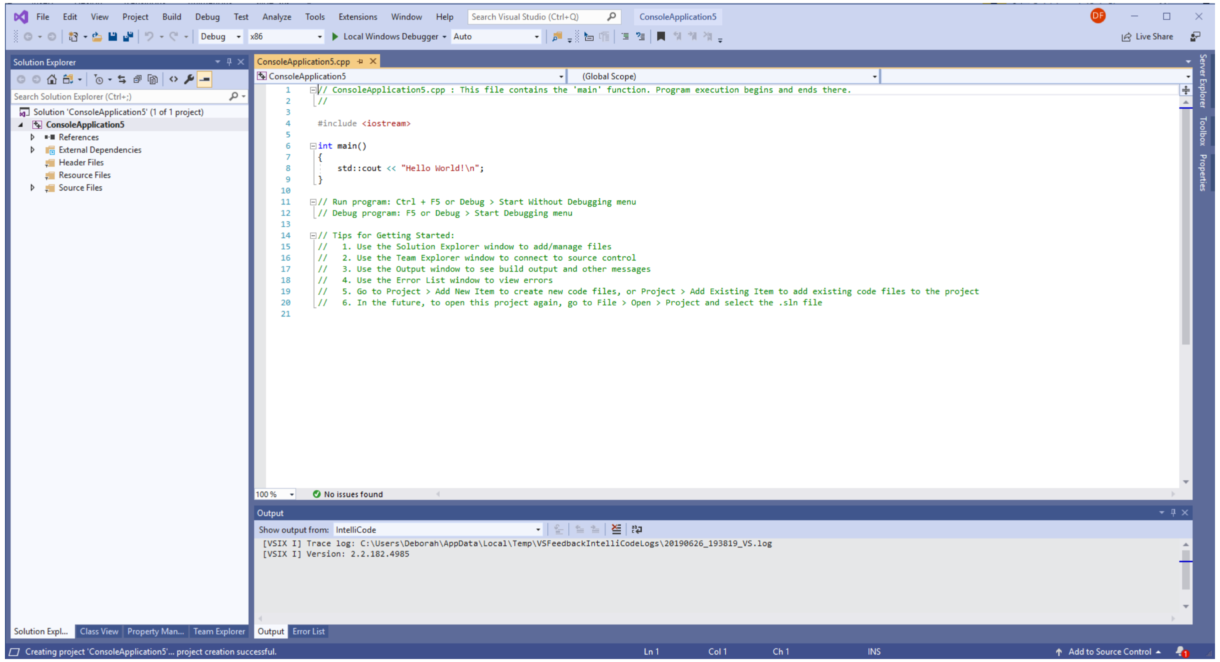
# VS 2017



```cpp
// ConsoleApplication7.cpp : This file contains the 'main' function. Program execution begins and ends there.
//

#include "pch.h"
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing Item to add existing code files tc
//   6. In the future, to open this project again, go to File > Open > Project and select the .sln file
```

Creating project 'ConsoleApplication7'... project creation successful. Ln 1 Col 1 Ch 1 INS Add to Source Control

# VS 2019



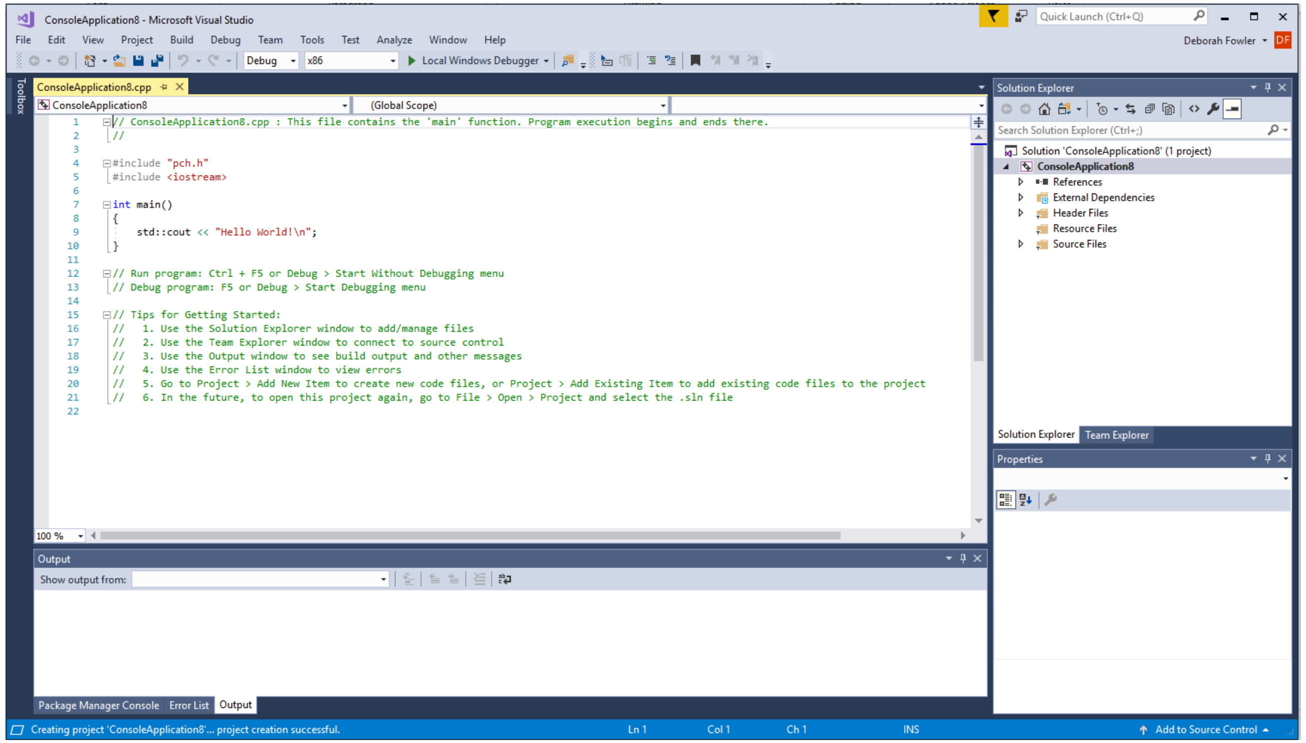
```cpp
// ConsoleApplication5.cpp : This file contains the 'main' function. Program execution begins and ends there.
//

#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing Item to add existing code files to the project
//   6. In the future, to open this project again, go to File > Open > Project and select the .sln file
```

```
[VSIX I] Trace log: C:\Users\Deborah\AppData\Local\Temp\VSFeedbackIntelliCodeLogs\20190626_193819_VS.log
[VSIX I] Version: 2.2.182.4985
```

Creating project 'ConsoleApplication5'... project creation successful. Ln 1 Col 1 Ch 1 INS Add to Source Control

# Now you have the screen where you will type in your program

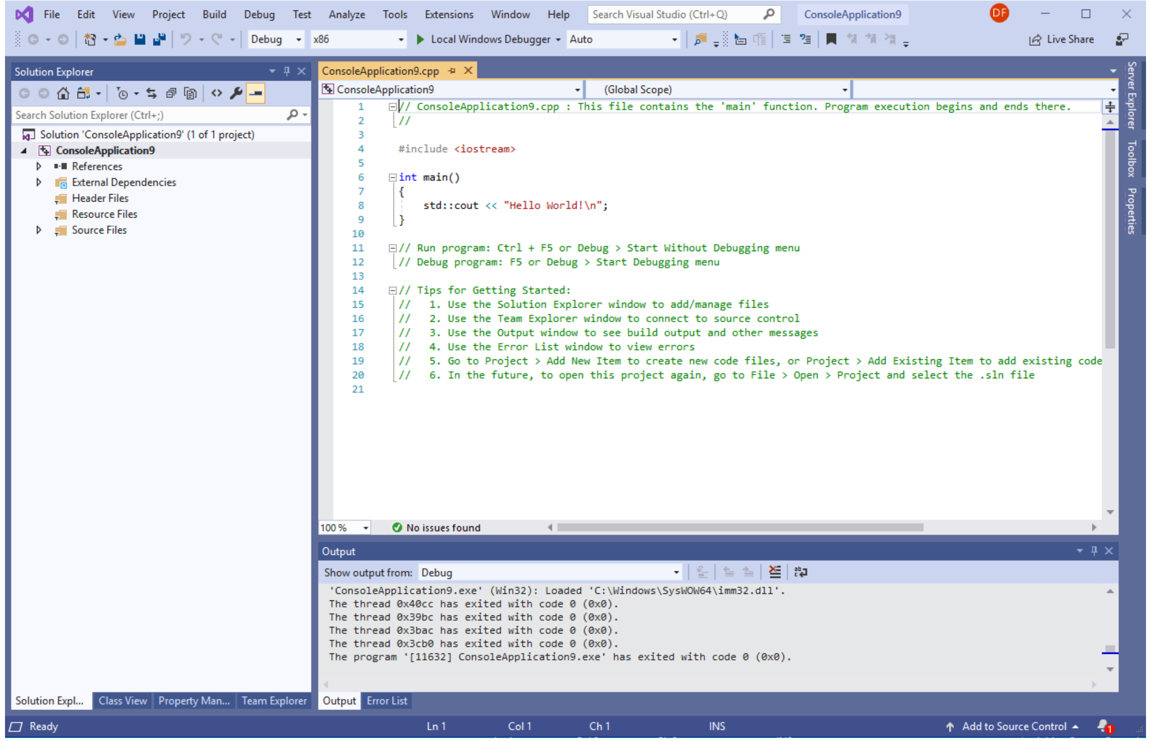
VS 2017



```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution begins and ends there.
//

#include "pch.h"
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing Item to add existing code files to the project
//   6. In the future, to open this project again, go to File > Open > Project and select the .sln file
```

Creating project 'ConsoleApplication8'... project creation successful.

VS 2019



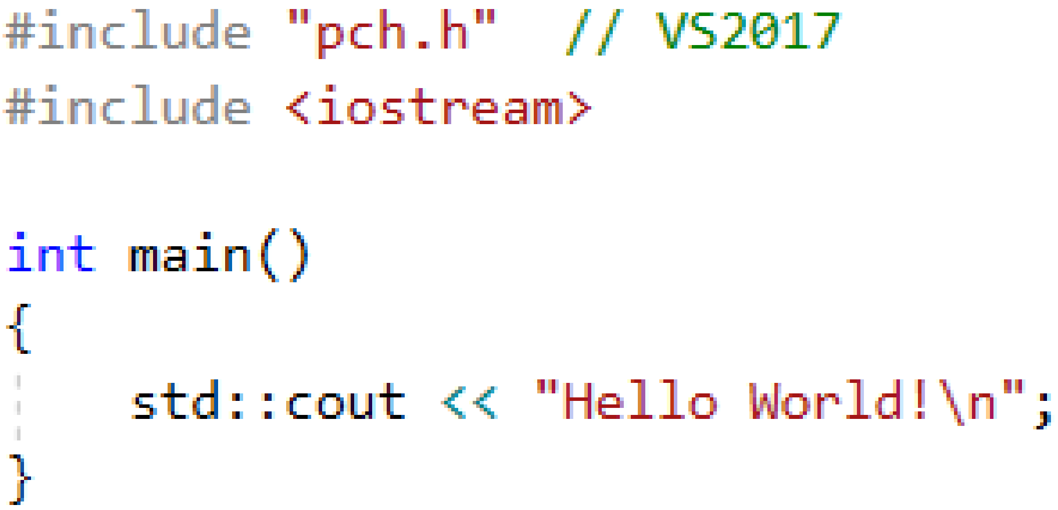
```
// ConsoleApplication9.cpp : This file contains the 'main' function. Program execution begins and ends there.
//

#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing Item to add existing code
//   6. In the future, to open this project again, go to File > Open > Project and select the .sln file
```

```
'ConsoleApplication9.exe' (Win32): Loaded 'C:\Windows\SysWOW64\imm32.dll'.
The thread 0x40cc has exited with code 0 (0x0).
The thread 0x39bc has exited with code 0 (0x0).
The thread 0x3bac has exited with code 0 (0x0).
The thread 0x3cb0 has exited with code 0 (0x0).
The program '[11632] ConsoleApplication9.exe' has exited with code 0 (0x0).
```

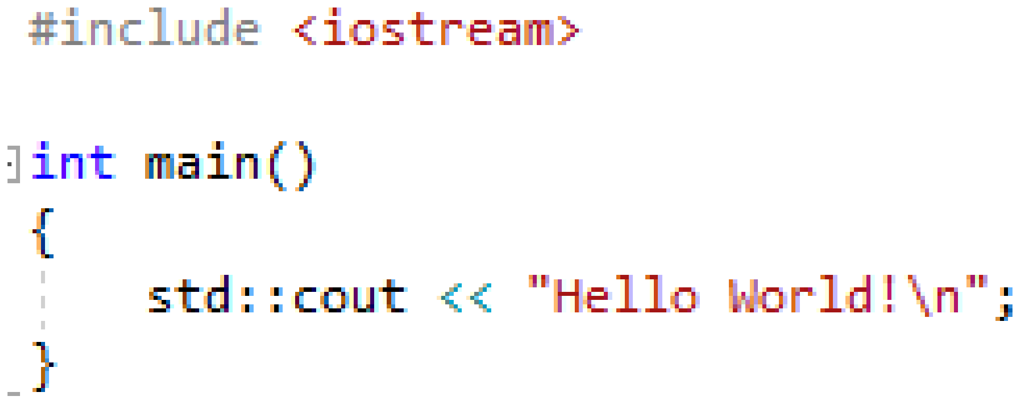
VS 2017 ONLY

- **pch.h** - is a precompiled file (all things above it are assumed precompiled)
- Unique to Visual Studio (take it out if not using VS/ add it if using VS2017 – not required in VS2019)
- Includes precompiled files that are frequently used and rarely changed

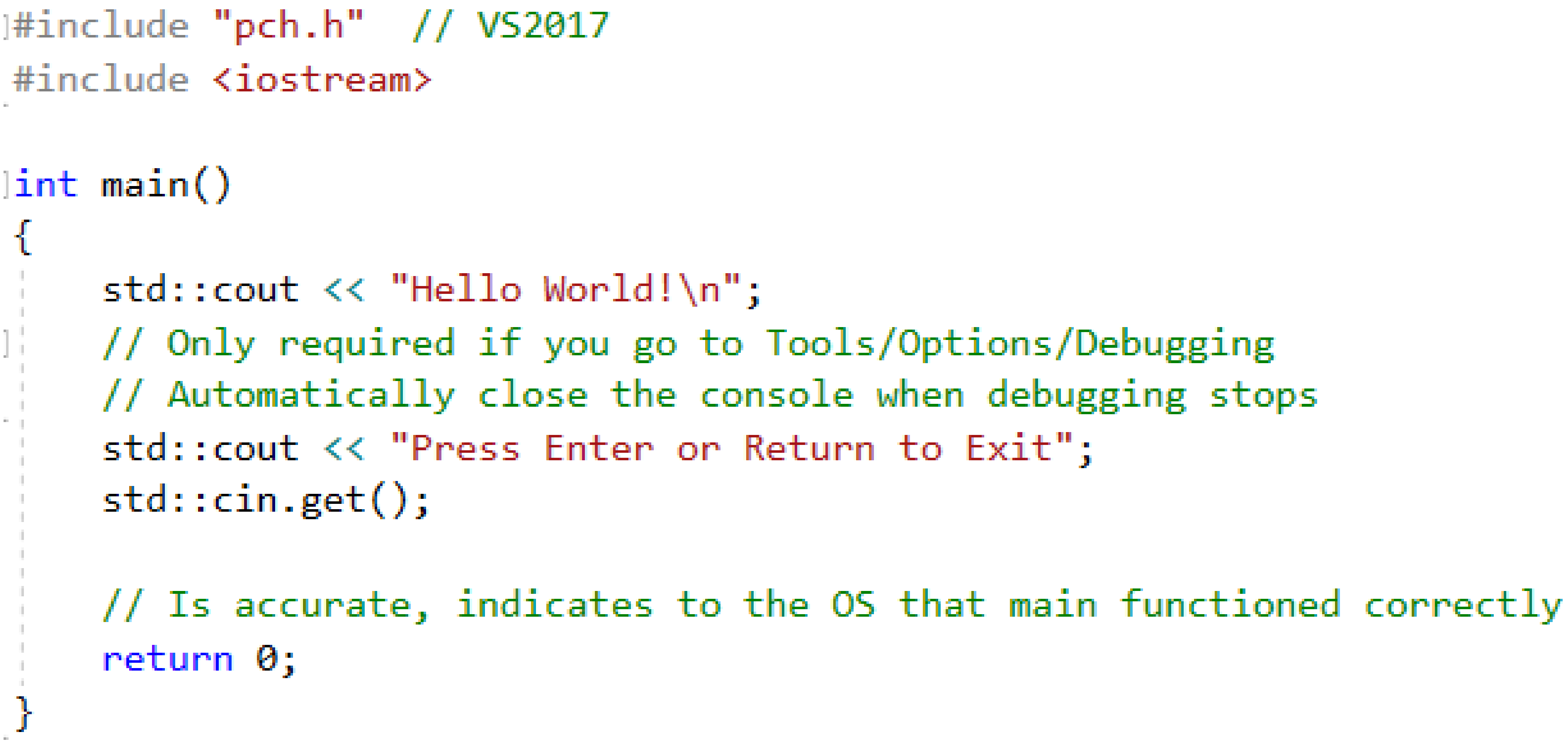
# Now type in your first program



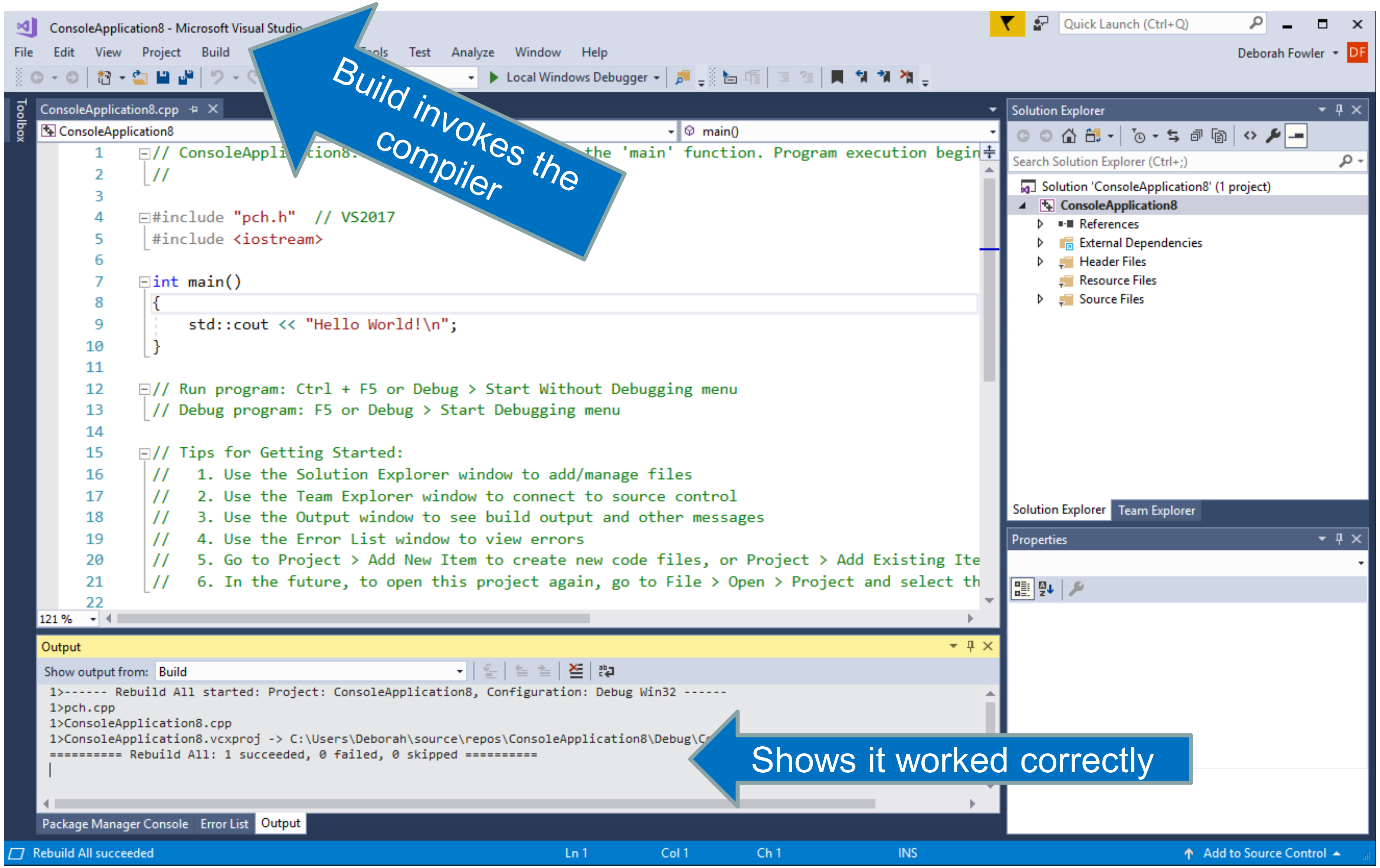
```
#include "pch.h"  // VS2017
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}
```



```
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}
```



```
#include "pch.h"  // VS2017
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
    // Only required if you go to Tools/Options/Debugging
    // Automatically close the console when debugging stops
    std::cout << "Press Enter or Return to Exit";
    std::cin.get();

    // Is accurate, indicates to the OS that main functioned correctly
    return 0;
}
```



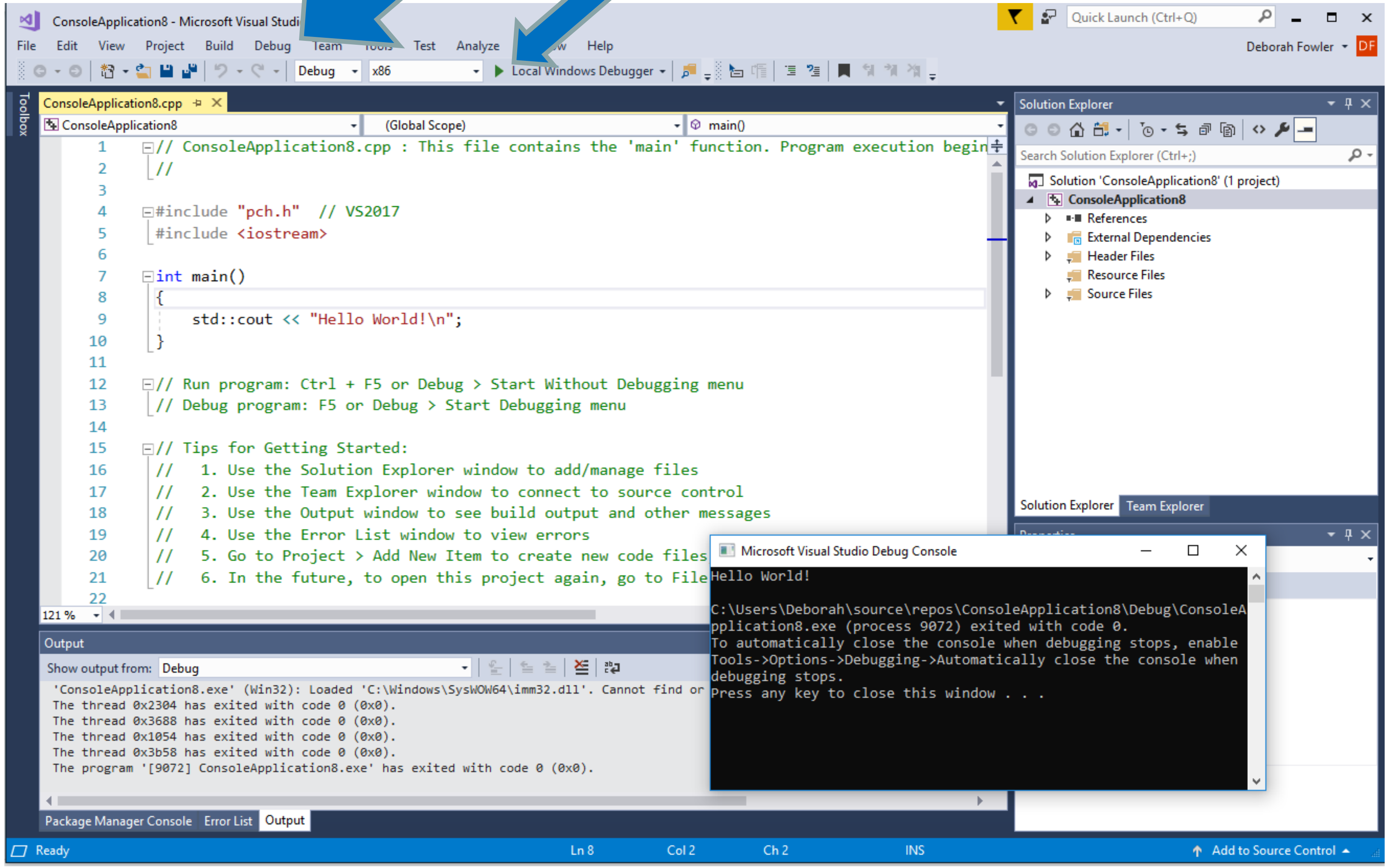
Build invokes the compiler

```
// ConsoleAppli      tion8:                the 'main' function. Program execution begin
//

#include "pch.h"  // VS2017
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing Ite
//   6. In the future, to open this project again, go to File > Open > Project and select th
```

```
1>------ Rebuild All started: Project: ConsoleApplication8, Configuration: Debug Win32 ------
1>pch.cpp
1>ConsoleApplication8.cpp
1>ConsoleApplication8.vcxproj -> C:\Users\Deborah\source\repos\ConsoleApplication8\Debug\Co
========== Rebuild All: 1 succeeded, 0 failed, 0 skipped ==========
```

Shows it worked correctly

Run the program by selecting **Start Debugging** from the **Debug** pull-down menu. *If it is out of date* it will ask “do you want to build your project “ (invokes compiler) (or **run by pressing the green arrow**)

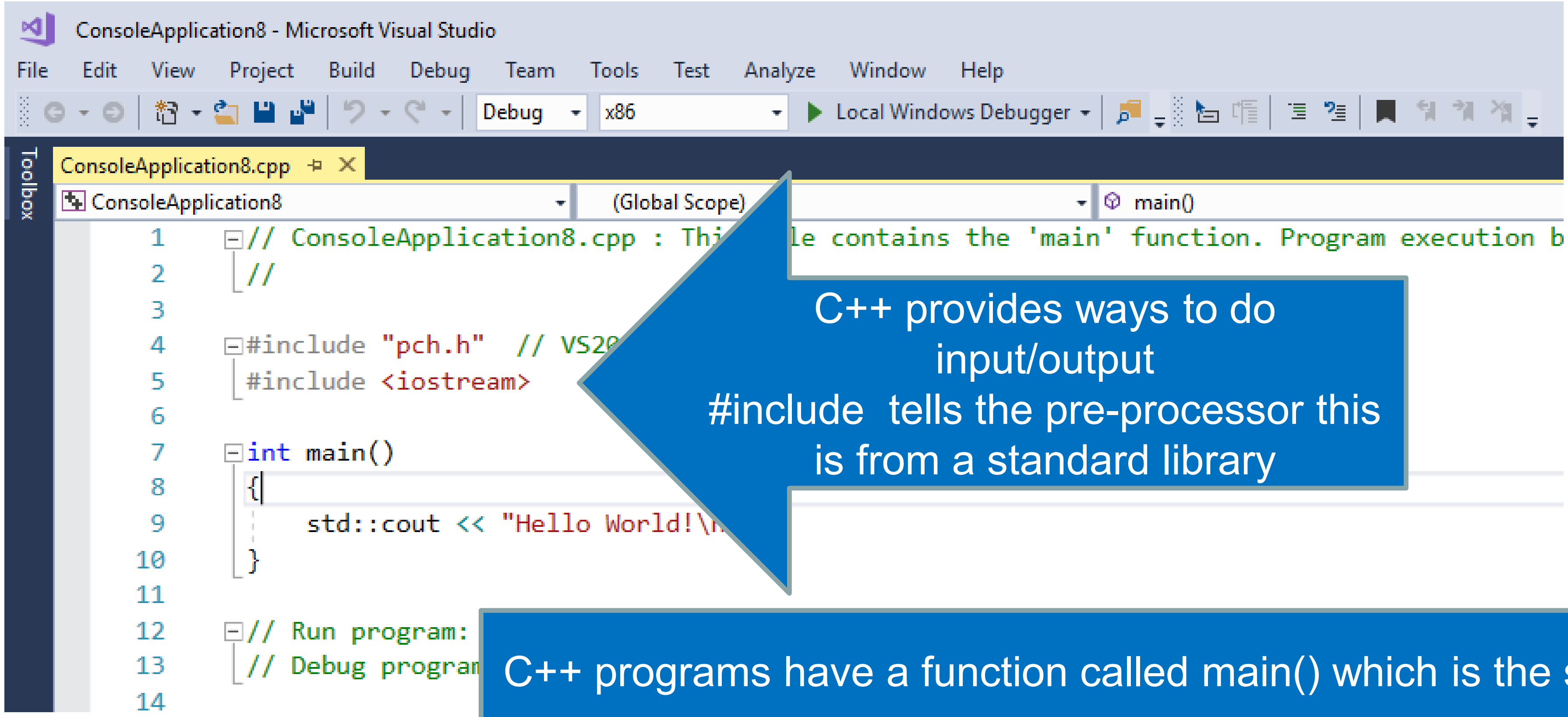


```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution begin
//

#include "pch.h"  // VS2017
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files
//   6. In the future, to open this project again, go to File
```

```
'ConsoleApplication8.exe' (Win32): Loaded 'C:\Windows\SysWOW64\imm32.dll'. Cannot find or
The thread 0x2304 has exited with code 0 (0x0).
The thread 0x3688 has exited with code 0 (0x0).
The thread 0x1054 has exited with code 0 (0x0).
The thread 0x3b58 has exited with code 0 (0x0).
The program '[9072] ConsoleApplication8.exe' has exited with code 0 (0x0).
```

```
Hello World!

C:\Users\Deborah\source\repos\ConsoleApplication8\Debug\ConsoleA
pplication8.exe (process 9072) exited with code 0.
To automatically close the console when debugging stops, enable
Tools->Options->Debugging->Automatically close the console when
debugging stops.
Press any key to close this window . . .
```

# Now let’s examine the code:

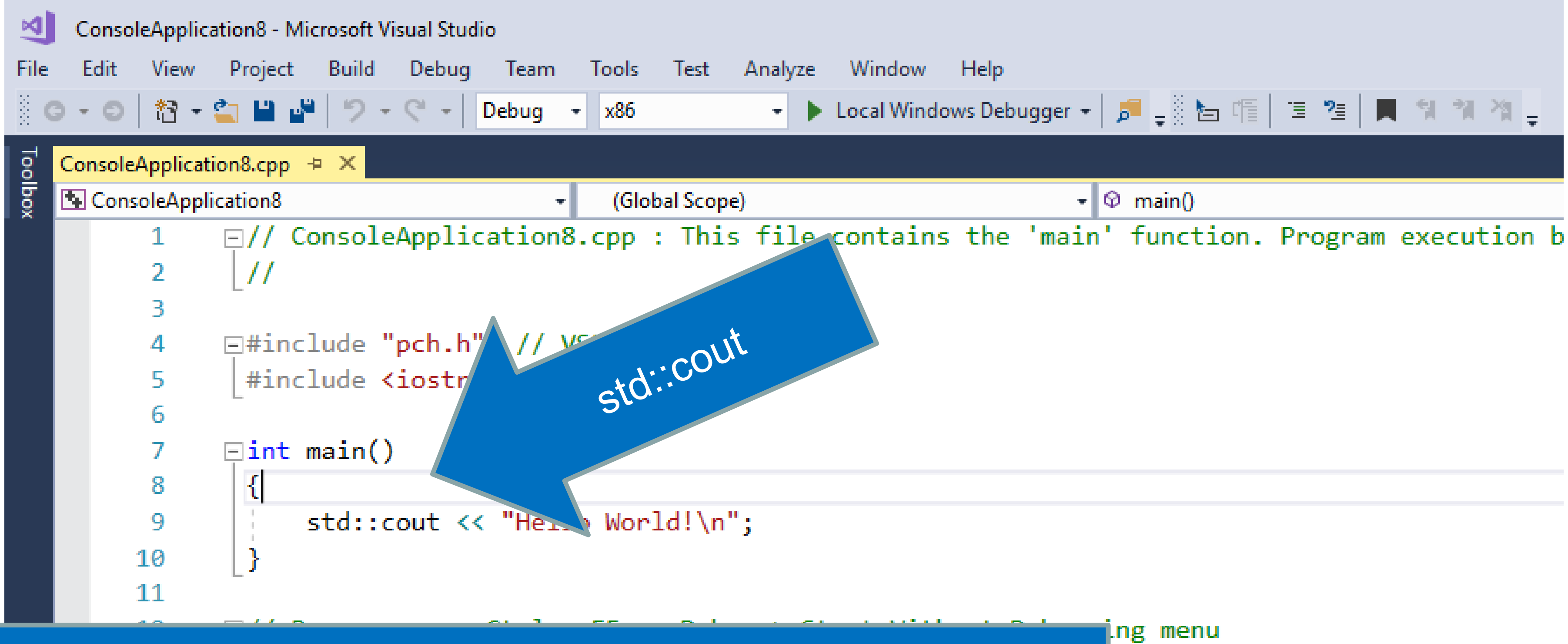

ConsoleApplication8 - Microsoft Visual Studio
File Edit View Project Build Debug Team Tools Test Analyze Window Help
Debug
x86
Local Windows Debugger
Toolbox
ConsoleApplication8.cpp
ConsoleApplication8
(Global Scope)
main()

```
// ConsoleApplication8.cpp : Thi   le contains the 'main' function. Program execution b
//

#include "pch.h"  // VS20
#include <iostream>

int main()
{
    std::cout << "Hello World!\n
}

// Run program:
// Debug program
```

C++ provides ways to do input/output
#include tells the pre-processor this is from a standard library

C++ programs have a function called main() which is the starting point

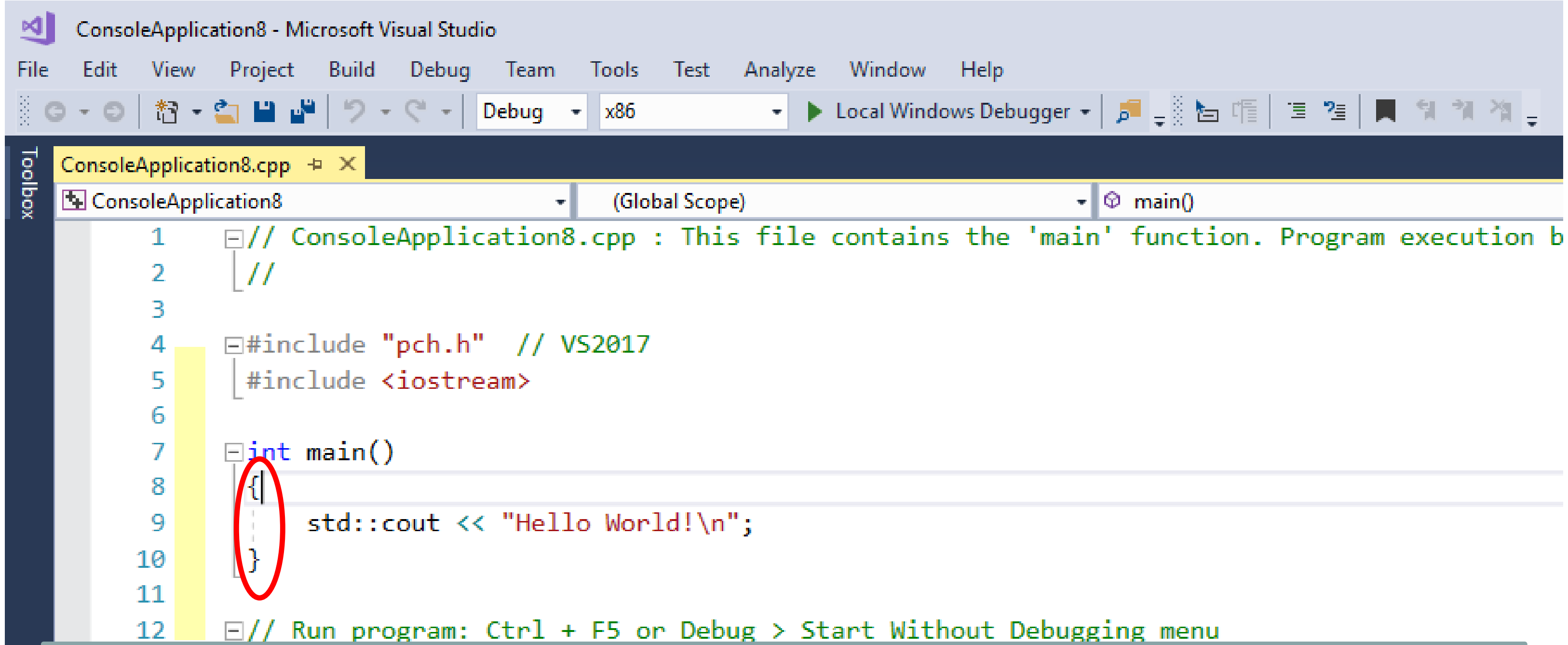
**int main() - is a function**
**A function is a group of programming code that does some work and returns a value (returns 0 if successful).**


ConsoleApplication8 - Microsoft Visual Studio
File Edit View Project Build Debug Team Tools Test Analyze Window Help
Debug
x86
Local Windows Debugger
Toolbox
ConsoleApplication8.cpp
ConsoleApplication8
(Global Scope)
main()

```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution b
//

#include "pch.h"  // V
#include <iostr

int main()
{
    std::cout << "He    World!\n";
}

                                                          ing menu
```

std::cout

std is the namespace (like a phone number’s area code)
:: scope resolution operator
**Note that statements end in a semicolon in C++**
**Will print what is in the quotation marks (string literal)**



```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution b
//

#include "pch.h"   // VS2017
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
```

**Note that the main() function body (group of statements) is surrounded by curly braces – this defines a block**

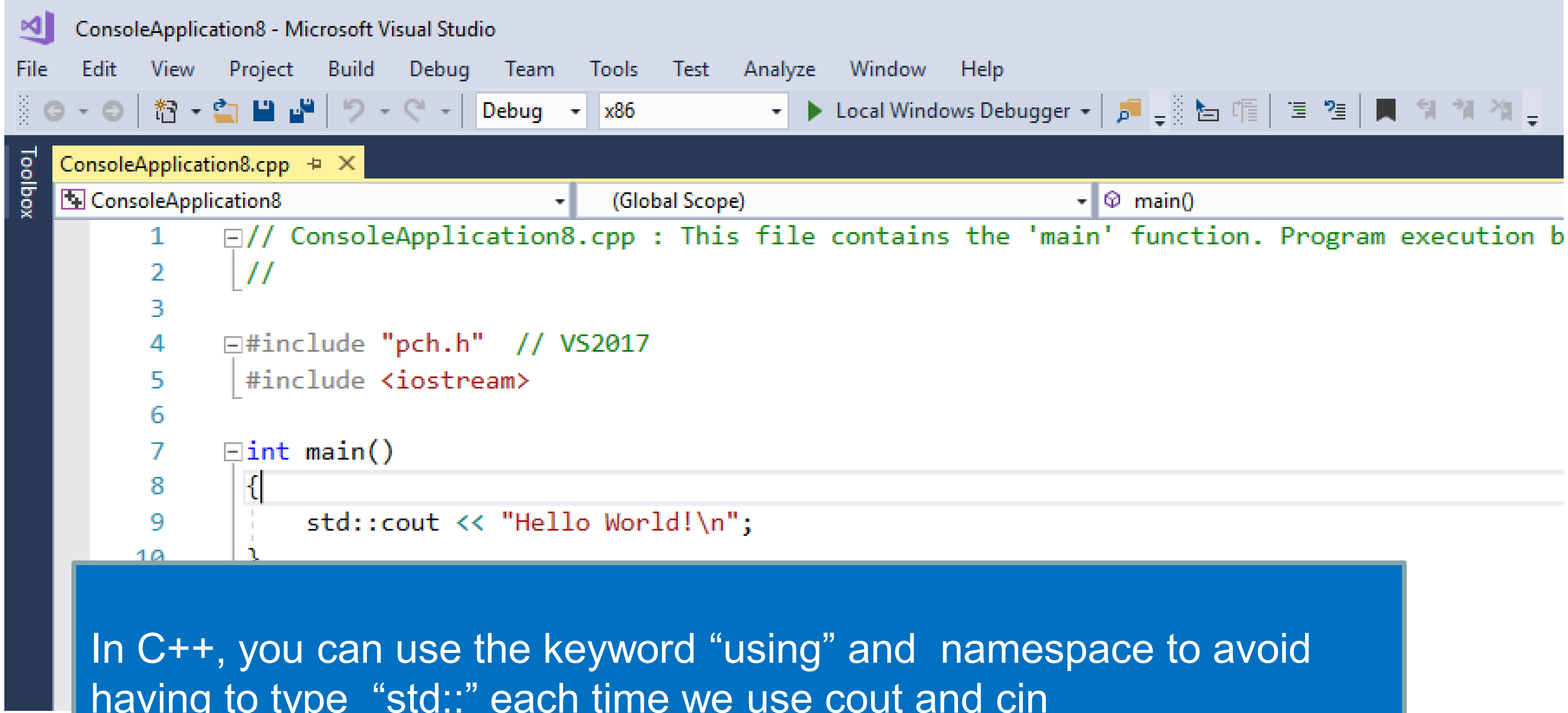
**Coding standards for this class will have these lined up as above**

# Coding Standards

What are coding standards?  All code written in class or on the job must conform to coding standards (the use of naming conventions and whitespace – formatting – of the program)

This is not the same as syntax – the rules to construct a legal statement or expression

**A complete list of the coding standards can be found on the class website – these will be mentioned as we introduce items as well**

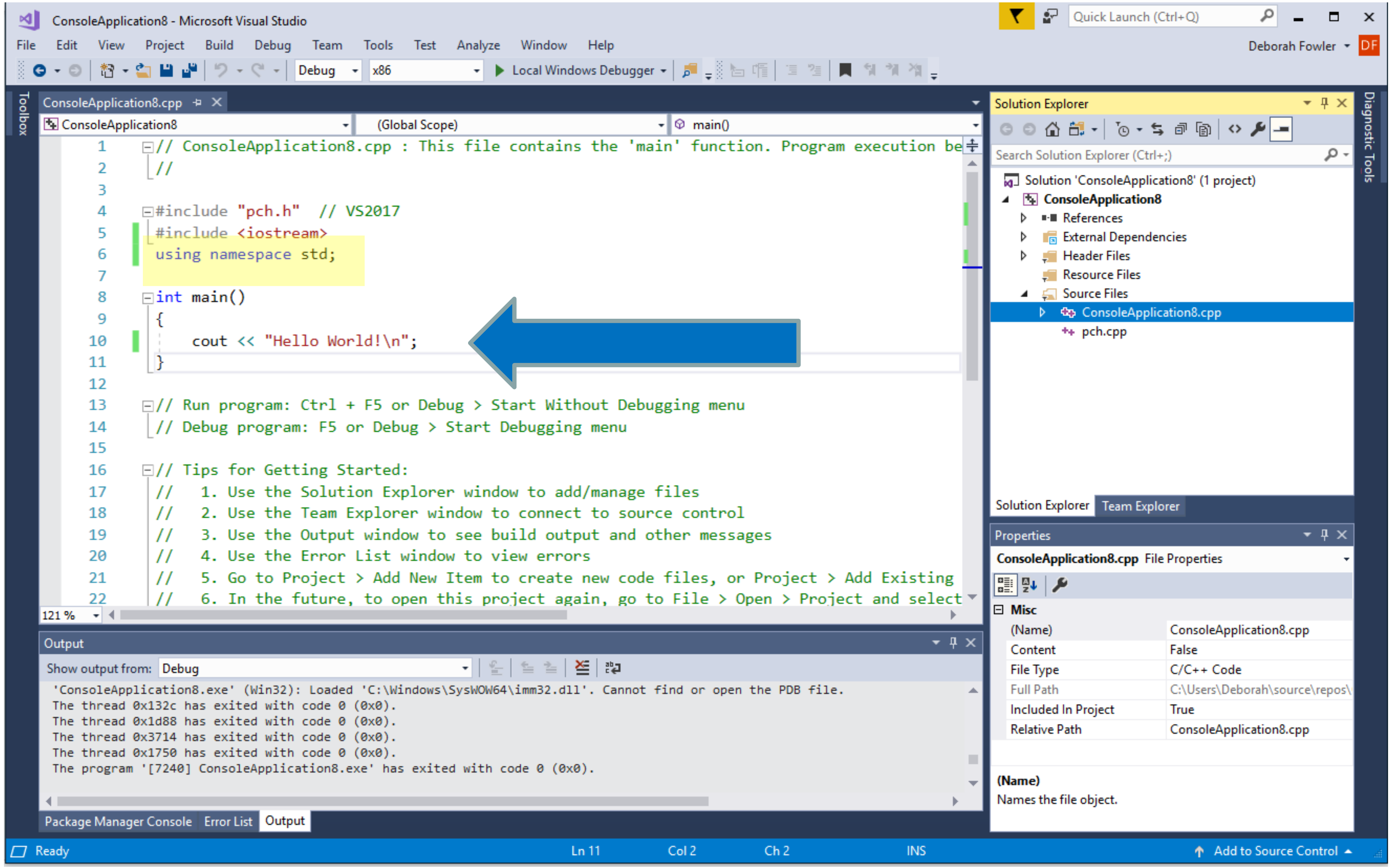


```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution b
//

#include "pch.h"   // VS2017
#include <iostream>

int main()
{
    std::cout << "Hello World!\n";
}
```

In C++, you can use the keyword “using” and  namespace to avoid having to type  “std::” each time we use cout and cin

Example: using namespace std      (called a using directive)

Example: using std::cout      (called a using declaration)



```cpp
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution be
//

#include "pch.h"  // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing
//   6. In the future, to open this project again, go to File > Open > Project and select
```

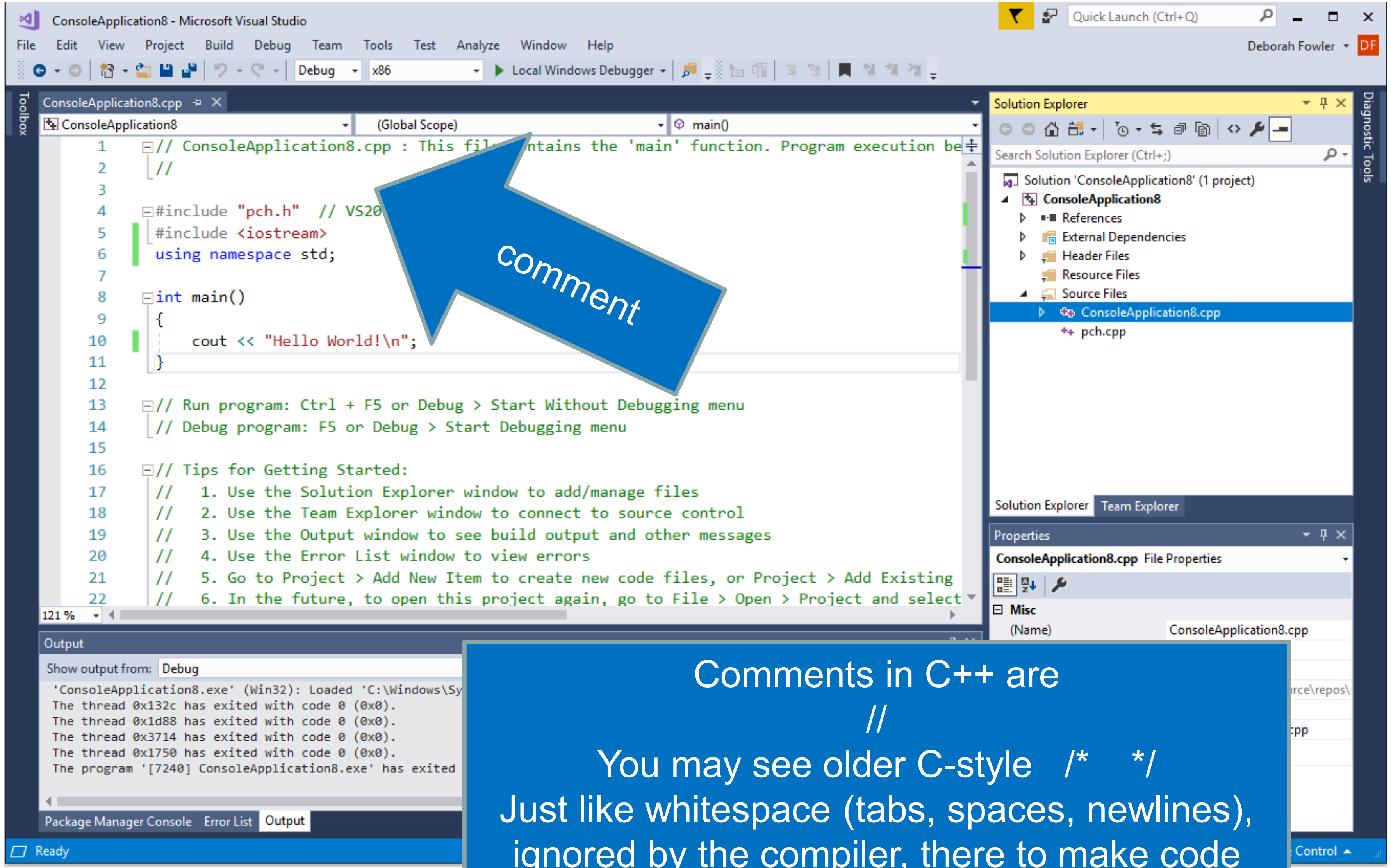
```
'ConsoleApplication8.exe' (Win32): Loaded 'C:\Windows\SysWOW64\imm32.dll'. Cannot find or open the PDB file.
The thread 0x132c has exited with code 0 (0x0).
The thread 0x1d88 has exited with code 0 (0x0).
The thread 0x3714 has exited with code 0 (0x0).
The thread 0x1750 has exited with code 0 (0x0).
The program '[7240] ConsoleApplication8.exe' has exited with code 0 (0x0).
```

Properties

**ConsoleApplication8.cpp** File Properties

| Misc | |
|---|---|
| (Name) | ConsoleApplication8.cpp |
| Content | False |
| File Type | C/C++ Code |
| Full Path | C:\Users\Deborah\source\repos\ |
| Included In Project | True |
| Relative Path | ConsoleApplication8.cpp |

**(Name)**
Names the file object.



```
// ConsoleApplication8.cpp : This fil     ntains the 'main' function. Program execution be
//

#include "pch.h"  // VS20
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing
//   6. In the future, to open this project again, go to File > Open > Project and select
```

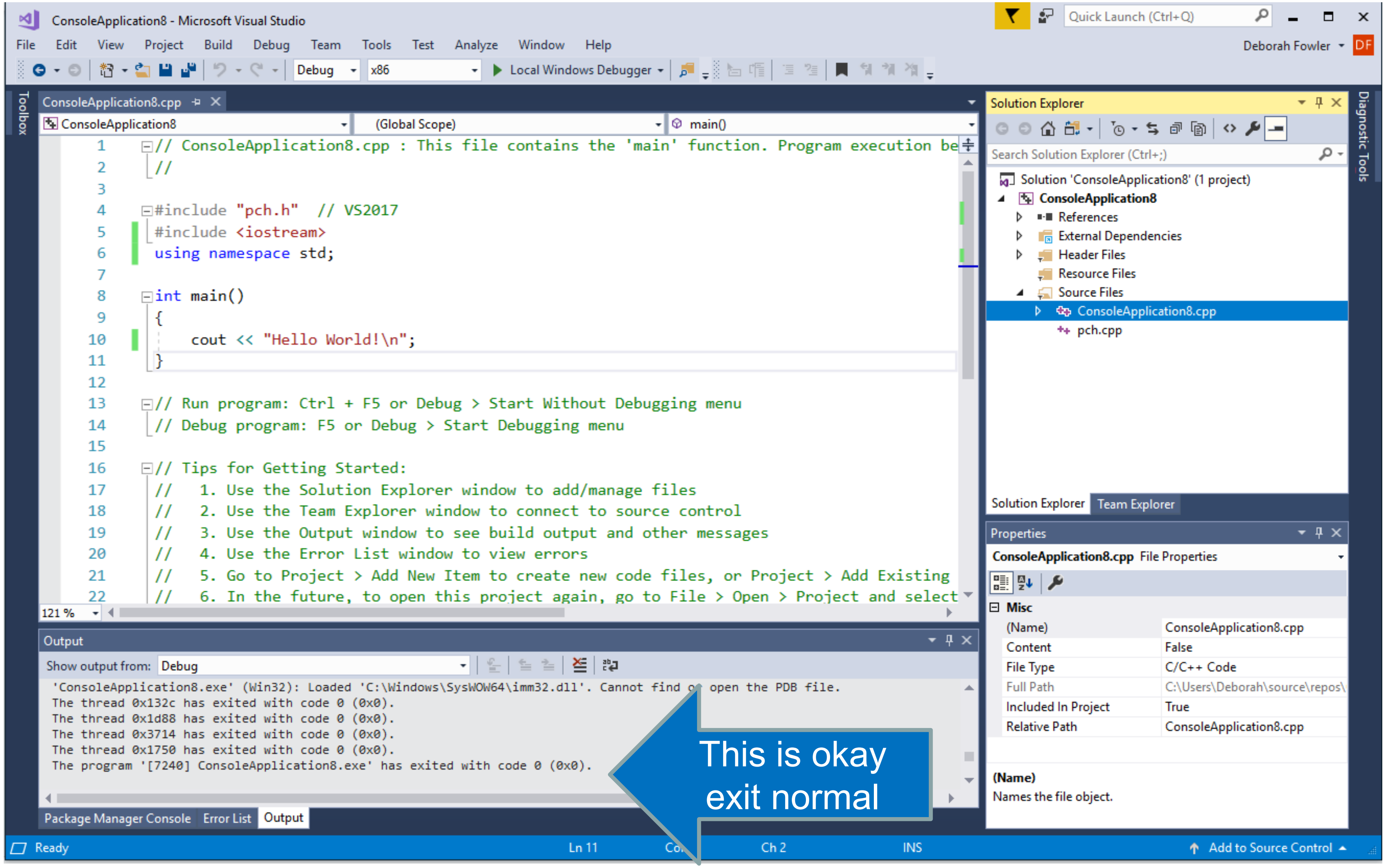
```
'ConsoleApplication8.exe' (Win32): Loaded 'C:\Windows\Sy
The thread 0x132c has exited with code 0 (0x0).
The thread 0x1d88 has exited with code 0 (0x0).
The thread 0x3714 has exited with code 0 (0x0).
The thread 0x1750 has exited with code 0 (0x0).
The program '[7240] ConsoleApplication8.exe' has exited
```

Comments in C++ are

//

You may see older C-style /* */

Just like whitespace (tabs, spaces, newlines), ignored by the compiler, there to make code more readable



```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution be
//

#include "pch.h"  // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
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//   6. In the future, to open this project again, go to File > Open > Project and select
```

Show output from: Debug

```
'ConsoleApplication8.exe' (Win32): Loaded 'C:\Windows\SysWOW64\imm32.dll'. Cannot find or open the PDB file.
The thread 0x132c has exited with code 0 (0x0).
The thread 0x1d88 has exited with code 0 (0x0).
The thread 0x3714 has exited with code 0 (0x0).
The thread 0x1750 has exited with code 0 (0x0).
The program '[7240] ConsoleApplication8.exe' has exited with code 0 (0x0).
```

Properties

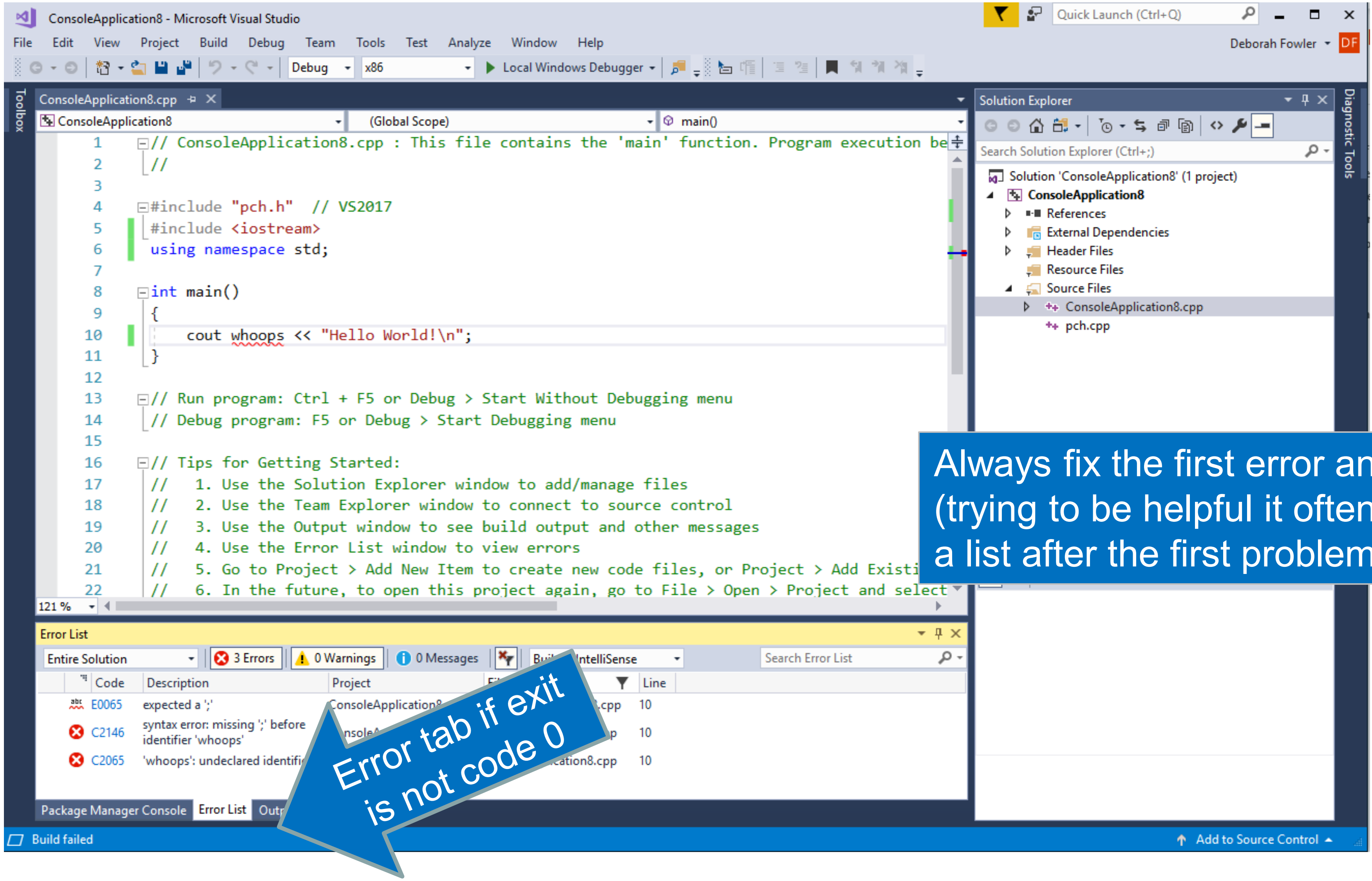
ConsoleApplication8.cpp File Properties

Misc

| | |
|---|---|
| (Name) | ConsoleApplication8.cpp |
| Content | False |
| File Type | C/C++ Code |
| Full Path | C:\Users\Deborah\source\repos\ |
| Included In Project | True |
| Relative Path | ConsoleApplication8.cpp |

(Name)
Names the file object.

This is okay
exit normal



```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution be
//

#include "pch.h"   // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout whoops << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
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//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existi
//   6. In the future, to open this project again, go to File > Open > Project and select
```
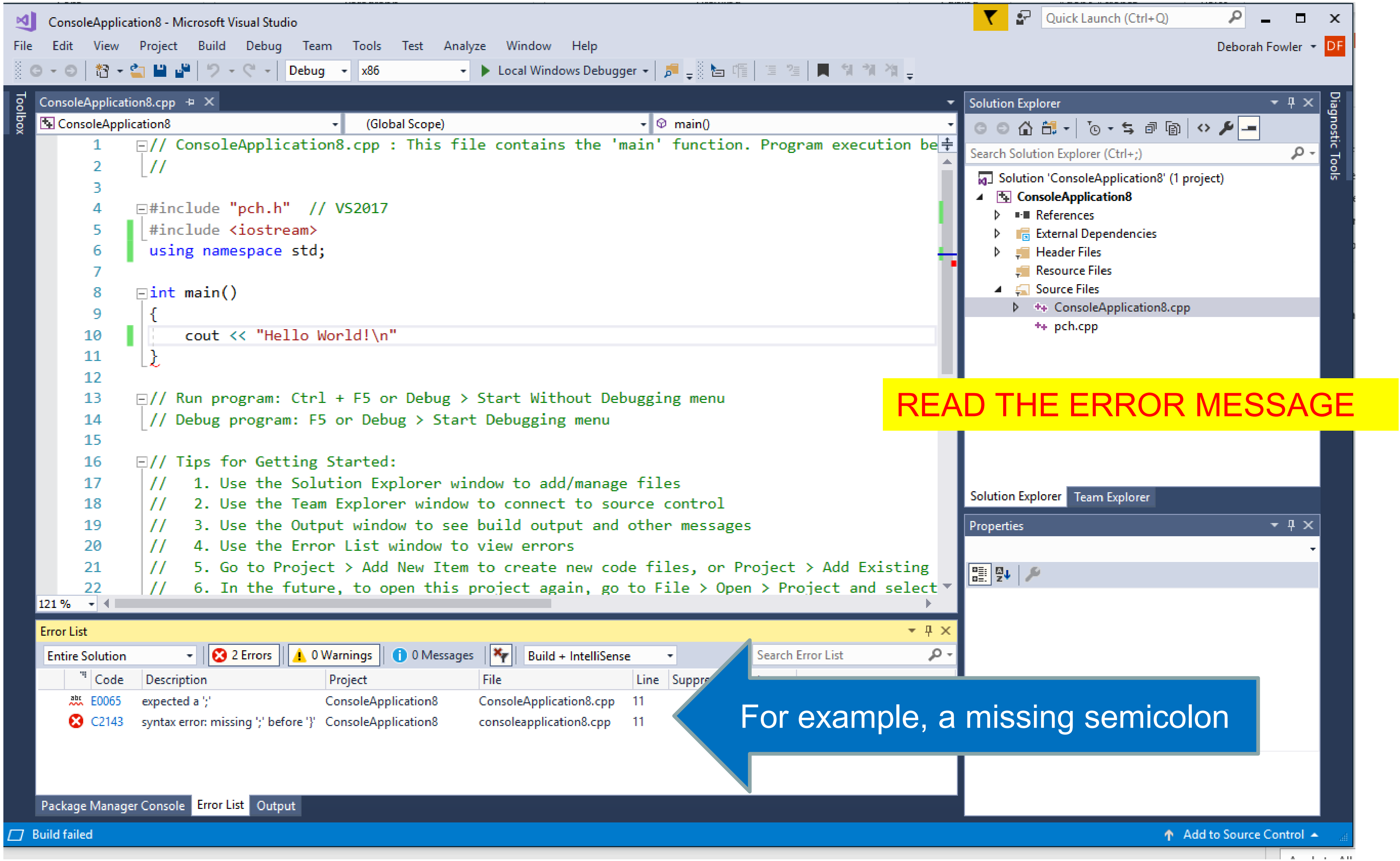

| Code | Description | Project | File | Line |
|---|---|---|---|---|
| E0065 | expected a ';' | ConsoleApplication8 | .cpp | 10 |
| C2146 | syntax error: missing ';' before identifier 'whoops' | nsole | p | 10 |
| C2065 | 'whoops': undeclared identifi | | cation8.cpp | 10 |

Always fix the first error and re-build – (trying to be helpful it often generates a list after the first problem)

Error tab if exit is not code 0



```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution be
//

#include "pch.h"  // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello World!\n"
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
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//   6. In the future, to open this project again, go to File > Open > Project and select
```
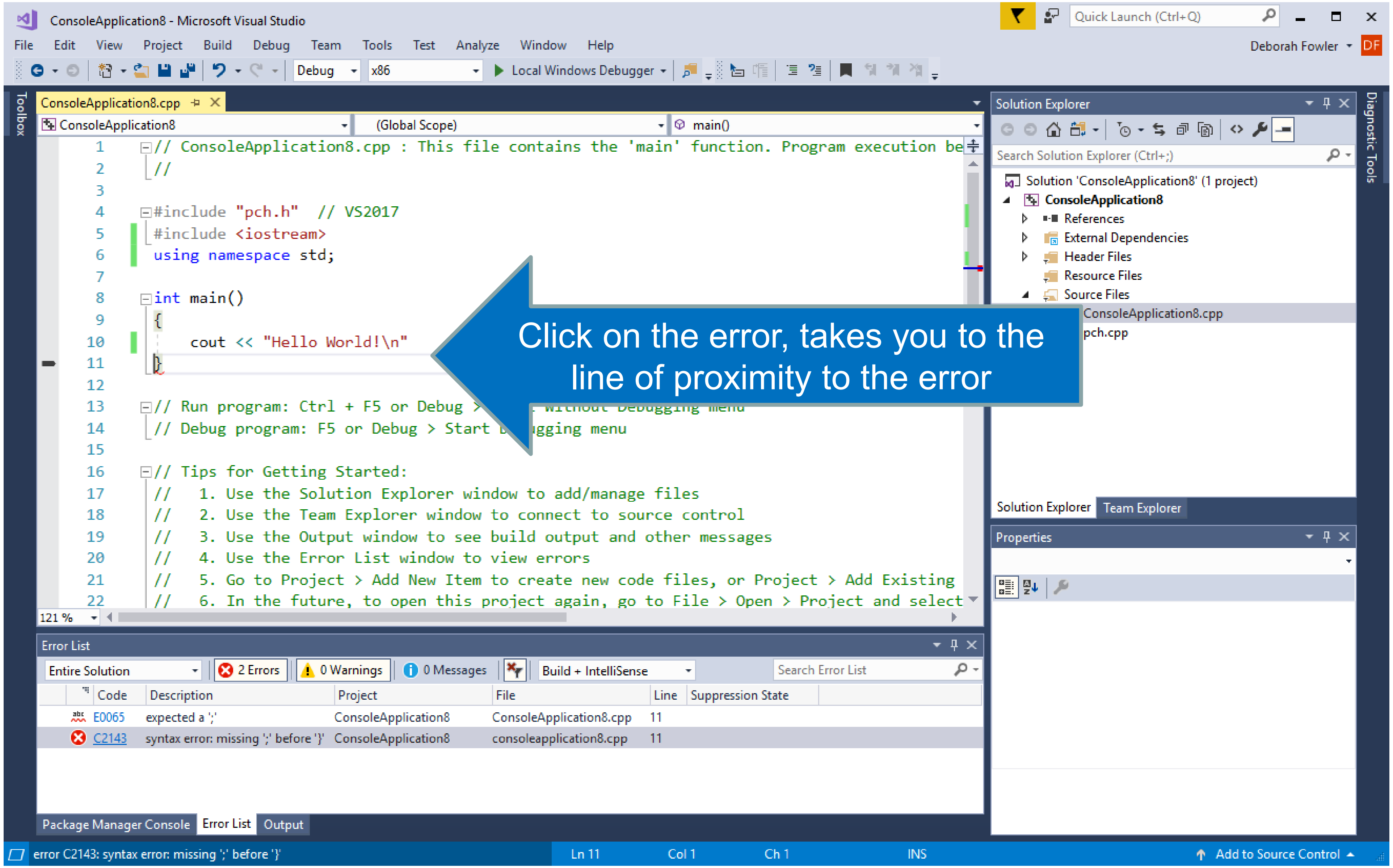

| Code | Description | Project | File | Line | Suppre |
|---|---|---|---|---|---|
| E0065 | expected a ';' | ConsoleApplication8 | ConsoleApplication8.cpp | 11 | |
| C2143 | syntax error: missing ';' before '}' | ConsoleApplication8 | consoleapplication8.cpp | 11 | |

READ THE ERROR MESSAGE

For example, a missing semicolon



```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution be
//

#include "pch.h"  // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello World!\n"
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
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//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing
//   6. In the future, to open this project again, go to File > Open > Project and select
```
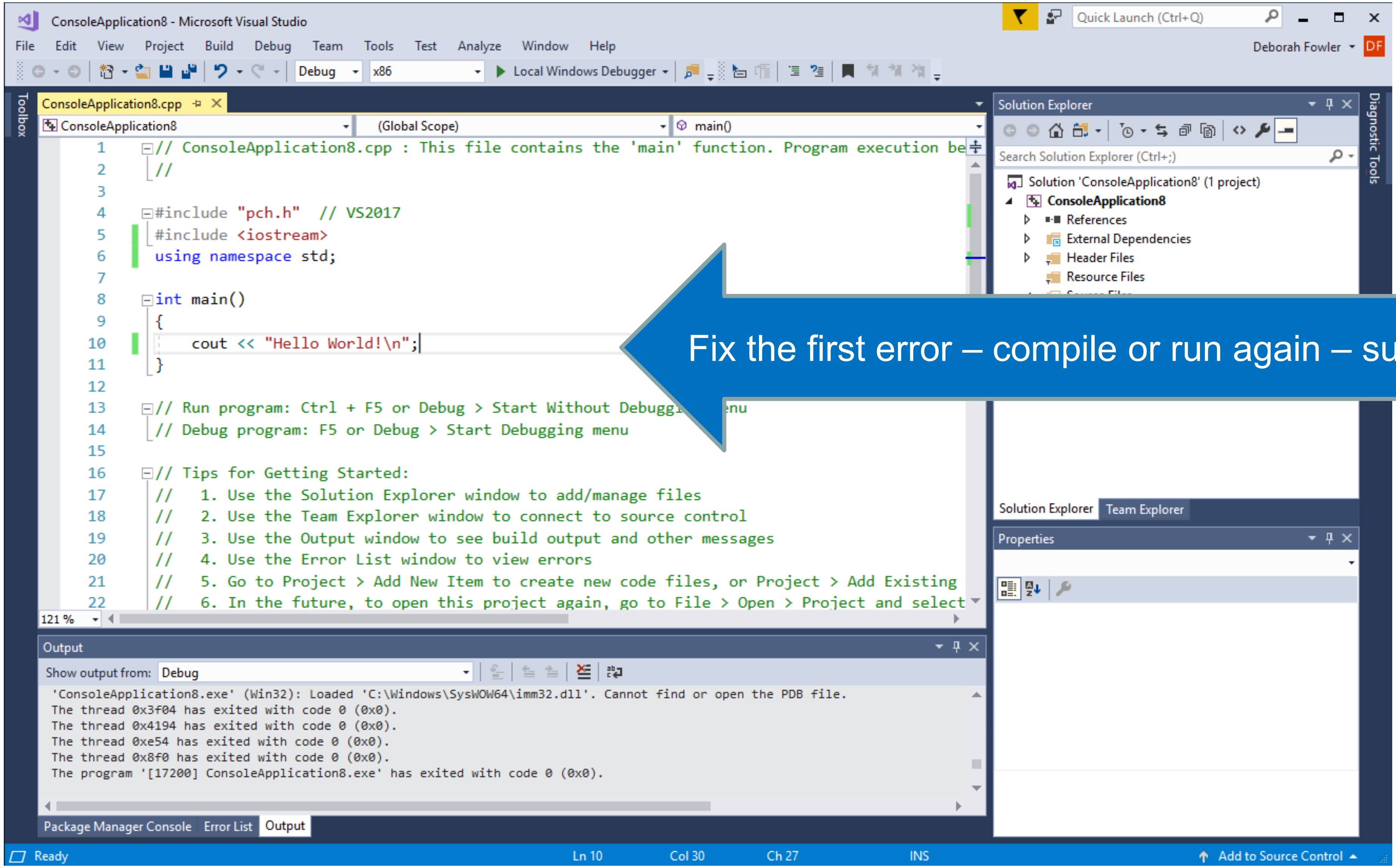

Error List

Entire Solution | 2 Errors | 0 Warnings | 0 Messages | Build + IntelliSense | Search Error List

| Code | Description | Project | File | Line | Suppression State |
|---|---|---|---|---|---|
| E0065 | expected a ';' | ConsoleApplication8 | ConsoleApplication8.cpp | 11 | |
| C2143 | syntax error: missing ';' before '}' | ConsoleApplication8 | consoleapplication8.cpp | 11 | |

error C2143: syntax error: missing ';' before '}'   Ln 11   Col 1   Ch 1   INS   Add to Source Control

Click on the error, takes you to the line of proximity to the error

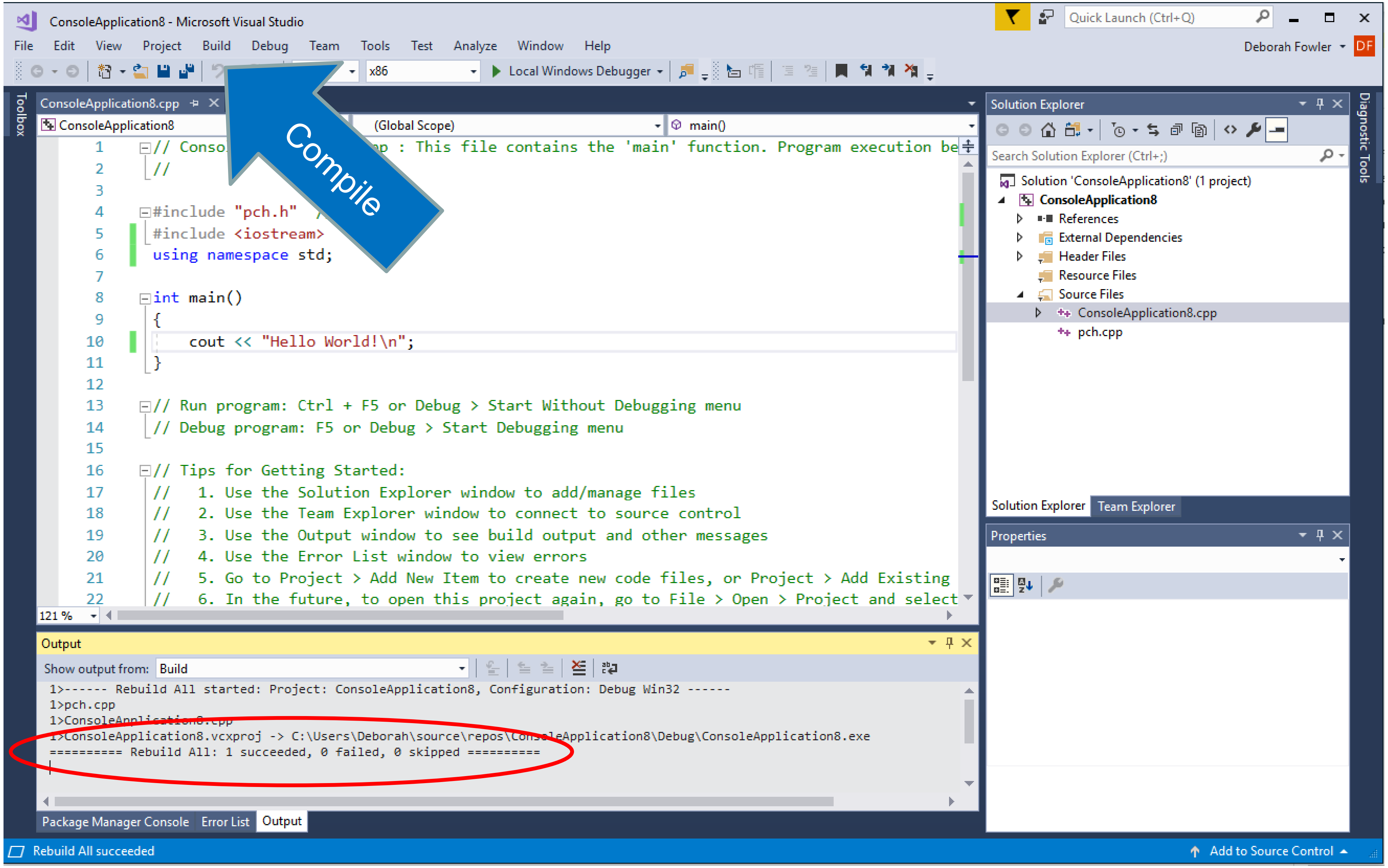


```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution be
//

#include "pch.h"  // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debuggi      nu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing
//   6. In the future, to open this project again, go to File > Open > Project and select
```

```
'ConsoleApplication8.exe' (Win32): Loaded 'C:\Windows\SysWOW64\imm32.dll'. Cannot find or open the PDB file.
The thread 0x3f04 has exited with code 0 (0x0).
The thread 0x4194 has exited with code 0 (0x0).
The thread 0xe54 has exited with code 0 (0x0).
The thread 0x8f0 has exited with code 0 (0x0).
The program '[17200] ConsoleApplication8.exe' has exited with code 0 (0x0).
```

Fix the first error – compile or run again – success!

If you are working in VS 2017 or VS 2019 Community
a build (compile) and run will look as follows

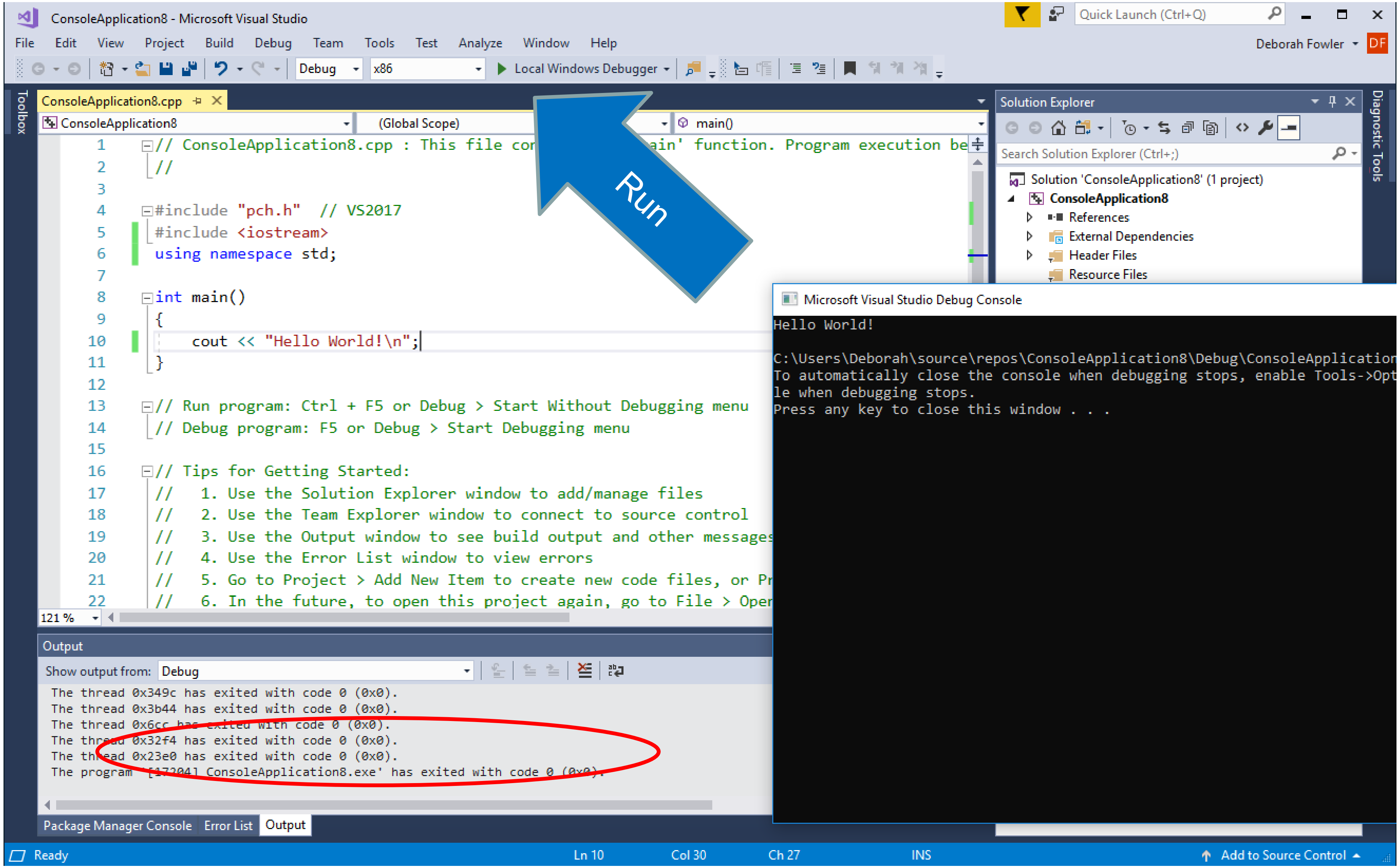


```
// Conso                 p : This file contains the 'main' function. Program execution be
//

#include "pch.h"     /
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing
//   6. In the future, to open this project again, go to File > Open > Project and select
```

Show output from: Build

```
1>------ Rebuild All started: Project: ConsoleApplication8, Configuration: Debug Win32 ------
1>pch.cpp
1>ConsoleApplication8.cpp
1>ConsoleApplication8.vcxproj -> C:\Users\Deborah\source\repos\ConsoleApplication8\Debug\ConsoleApplication8.exe
========== Rebuild All: 1 succeeded, 0 failed, 0 skipped ==========
```

Rebuild All succeeded



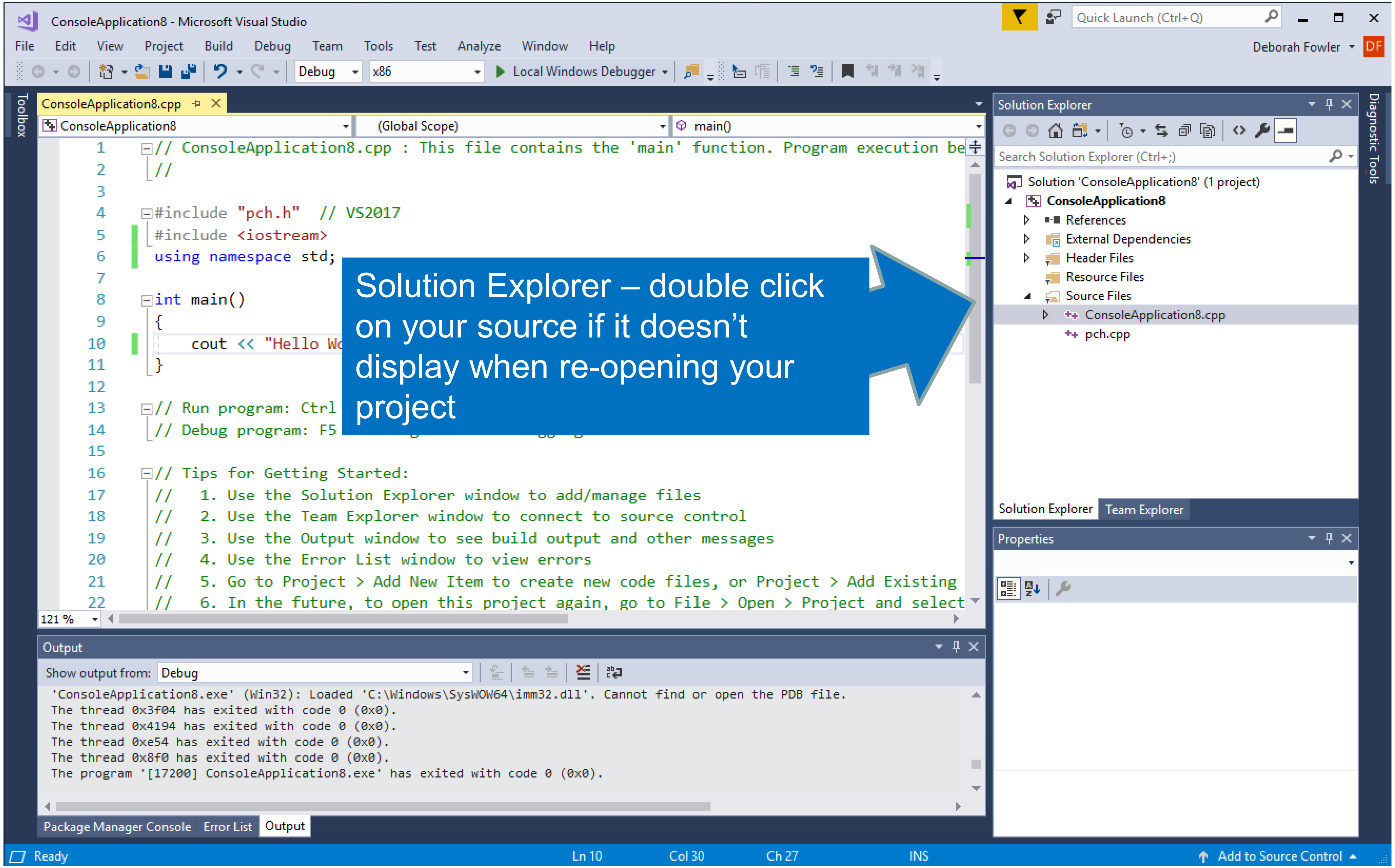
```
// ConsoleApplication8.cpp : This file con     ain' function. Program execution be
//

#include "pch.h"  // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello World!\n";
}

// Run program: Ctrl + F5 or Debug > Start Without Debugging menu
// Debug program: F5 or Debug > Start Debugging menu

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Pr
//   6. In the future, to open this project again, go to File > Oper
```

```
The thread 0x349c has exited with code 0 (0x0).
The thread 0x3b44 has exited with code 0 (0x0).
The thread 0x6cc has exited with code 0 (0x0).
The thread 0x32f4 has exited with code 0 (0x0).
The thread 0x23e0 has exited with code 0 (0x0).
The program '[17204] ConsoleApplication8.exe' has exited with code 0 (0x0).
```

```
Hello World!

C:\Users\Deborah\source\repos\ConsoleApplication8\Debug\ConsoleApplication
To automatically close the console when debugging stops, enable Tools->Opt
le when debugging stops.
Press any key to close this window . . .
```

Congratulations! You have written a successful C++ program using Visual Studio 2017

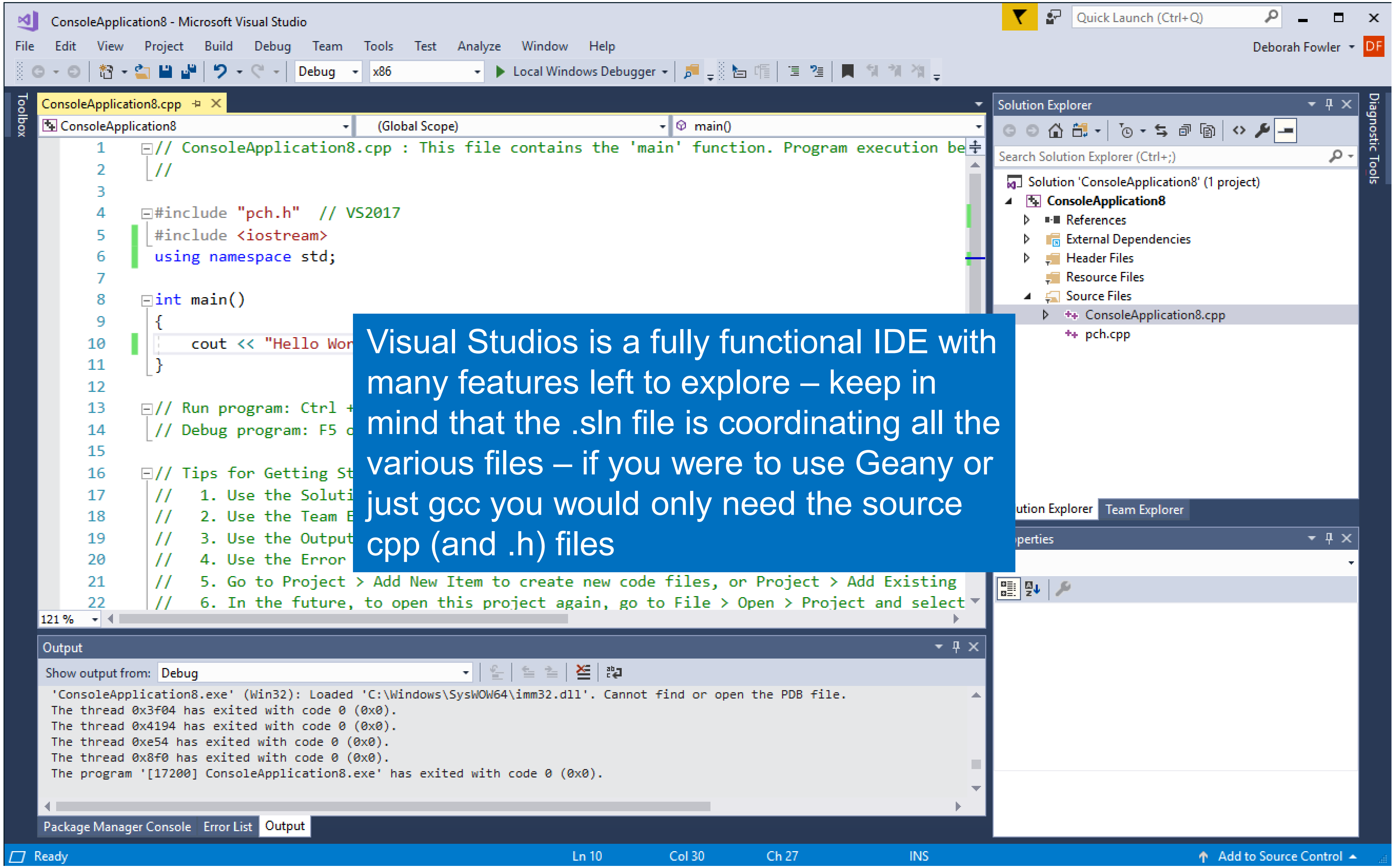
Or Visual Studio 2019 Community



```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution be
//

#include "pch.h"  // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello Wo
}

// Run program: Ctrl
// Debug program: F5

// Tips for Getting Started:
//   1. Use the Solution Explorer window to add/manage files
//   2. Use the Team Explorer window to connect to source control
//   3. Use the Output window to see build output and other messages
//   4. Use the Error List window to view errors
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing
//   6. In the future, to open this project again, go to File > Open > Project and select
```

```
'ConsoleApplication8.exe' (Win32): Loaded 'C:\Windows\SysWOW64\imm32.dll'. Cannot find or open the PDB file.
The thread 0x3f04 has exited with code 0 (0x0).
The thread 0x4194 has exited with code 0 (0x0).
The thread 0xe54 has exited with code 0 (0x0).
The thread 0x8f0 has exited with code 0 (0x0).
The program '[17200] ConsoleApplication8.exe' has exited with code 0 (0x0).
```

Solution Explorer – double click on your source if it doesn't display when re-opening your project



```
// ConsoleApplication8.cpp : This file contains the 'main' function. Program execution be
//

#include "pch.h"  // VS2017
#include <iostream>
using namespace std;

int main()
{
    cout << "Hello Wor
}

// Run program: Ctrl +
// Debug program: F5 o

// Tips for Getting St
//   1. Use the Soluti
//   2. Use the Team E
//   3. Use the Output
//   4. Use the Error
//   5. Go to Project > Add New Item to create new code files, or Project > Add Existing
//   6. In the future, to open this project again, go to File > Open > Project and select
```

```
'ConsoleApplication8.exe' (Win32): Loaded 'C:\Windows\SysWOW64\imm32.dll'. Cannot find or open the PDB file.
The thread 0x3f04 has exited with code 0 (0x0).
The thread 0x4194 has exited with code 0 (0x0).
The thread 0xe54 has exited with code 0 (0x0).
The thread 0x8f0 has exited with code 0 (0x0).
The program '[17200] ConsoleApplication8.exe' has exited with code 0 (0x0).
```

Visual Studios is a fully functional IDE with many features left to explore – keep in mind that the .sln file is coordinating all the various files – if you were to use Geany or just gcc you would only need the source cpp (and .h) files