

Lab 1

Getting Started with Visual Studio 2019

Fall 2021

Outline

- Introduction and installation of Visual studio (VS 2019)
 - 3 options
 - CSC Terminal
 - Install Own PC on Windows 10
 - Mac OS connected to CSC Lab
- Writing, compiling, and executing C++ programs using VS

Working Environment

- In this course, you will be working with **PC under Windows 10**, and all the programs will be written with **Visual Studio 2019**.
- In this lab, you will explore and get familiar with the MS Visual Studio 2019 compiler working environment.
- Visual Studio 2019 is an integrated developing environment (IDE). In Visual Studio 2019 compiler, you can **edit, compile, link, run, debug** and manage your programming projects.

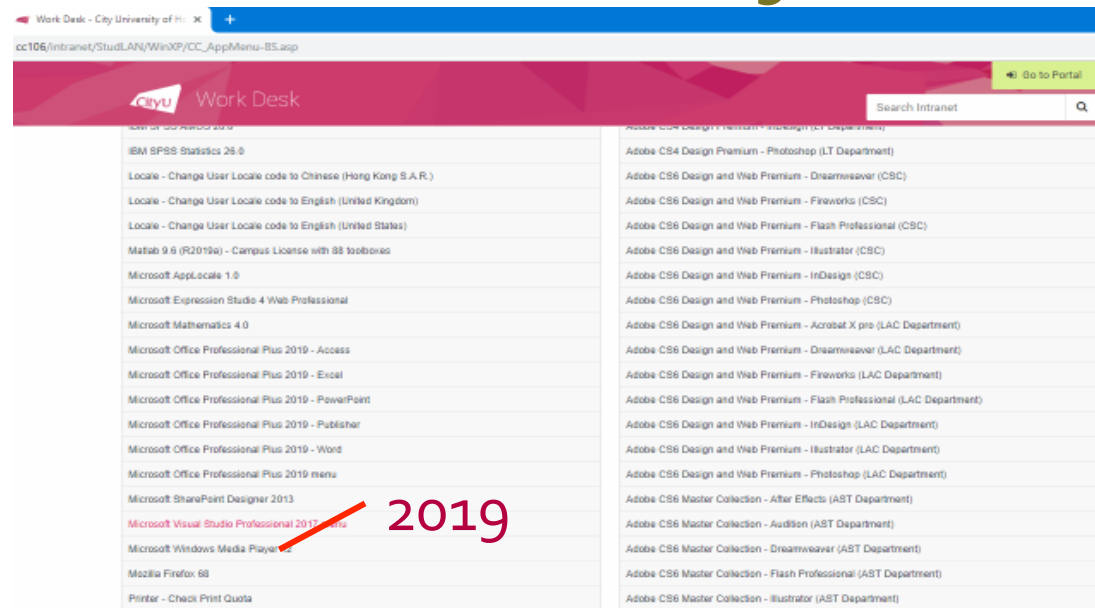
Options for Program Development with VS2019

- Option

1. **Work on CSC terminal**
2. **Install VS2019 on own PC/Windows 10**
3. **Connect to CSLab to use VS2019**

Option 1

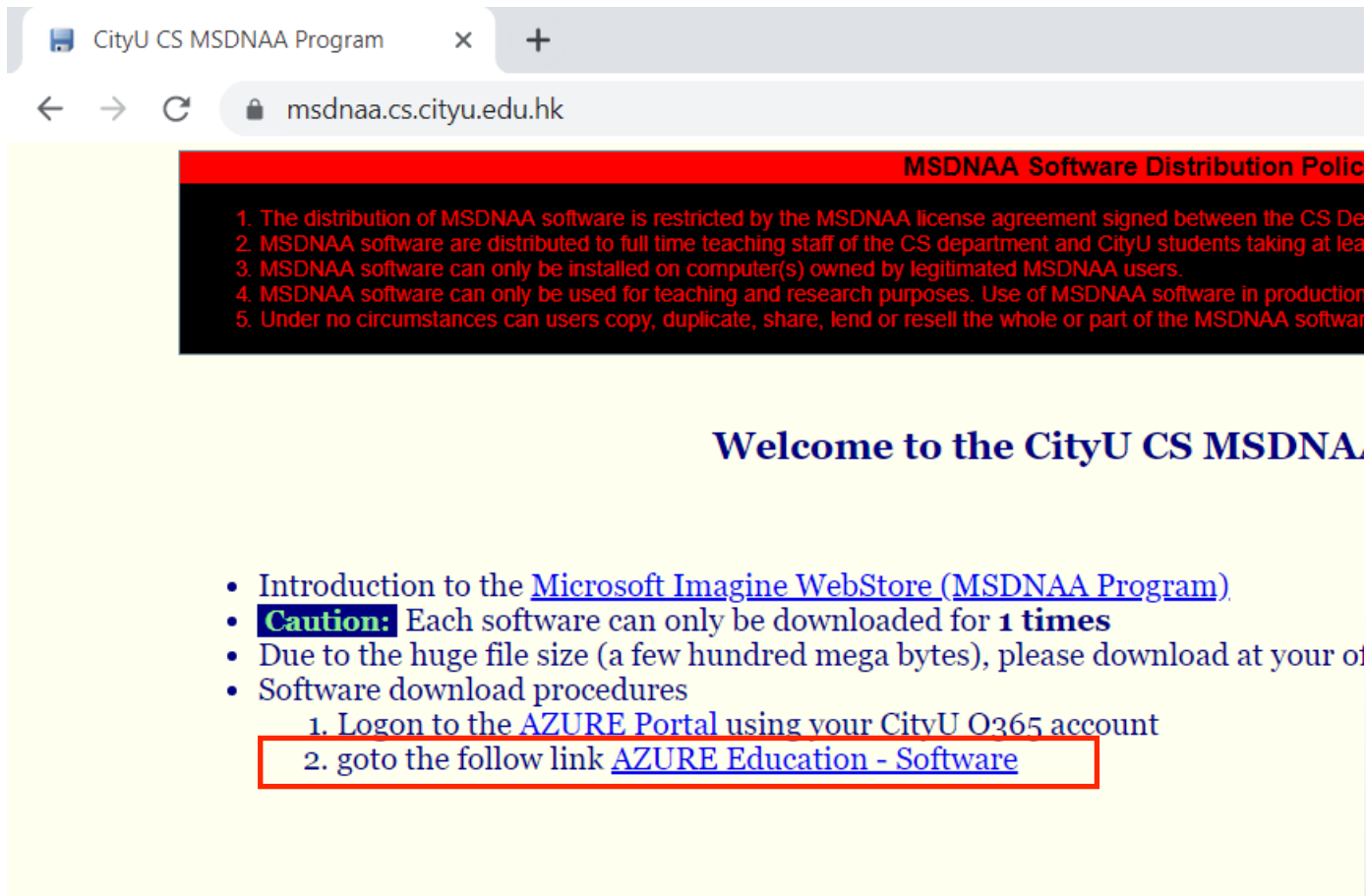
- Work on CSC terminal
 - Select from Work Desk
 - Select Microsoft Visual Studio Professional 2019 Menu
 - Select Microsoft Visual Studio 2019 - Visual Studio 2019



Option 2

- Install VS2019 on own PC/Windows 10

- <http://msdnna.cs.cityu.edu.hk/>



The screenshot shows a web browser window with the title 'CityU CS MSDNAA Program'. The address bar displays 'msdnna.cs.cityu.edu.hk'. The main content area has a red header 'MSDNAA Software Distribution Policy' followed by five numbered rules in red text. Below this is a blue heading 'Welcome to the CityU CS MSDNAA Program'. A list of instructions follows, including a 'Caution' box and a red-bordered box with two steps.

MSDNAA Software Distribution Policy

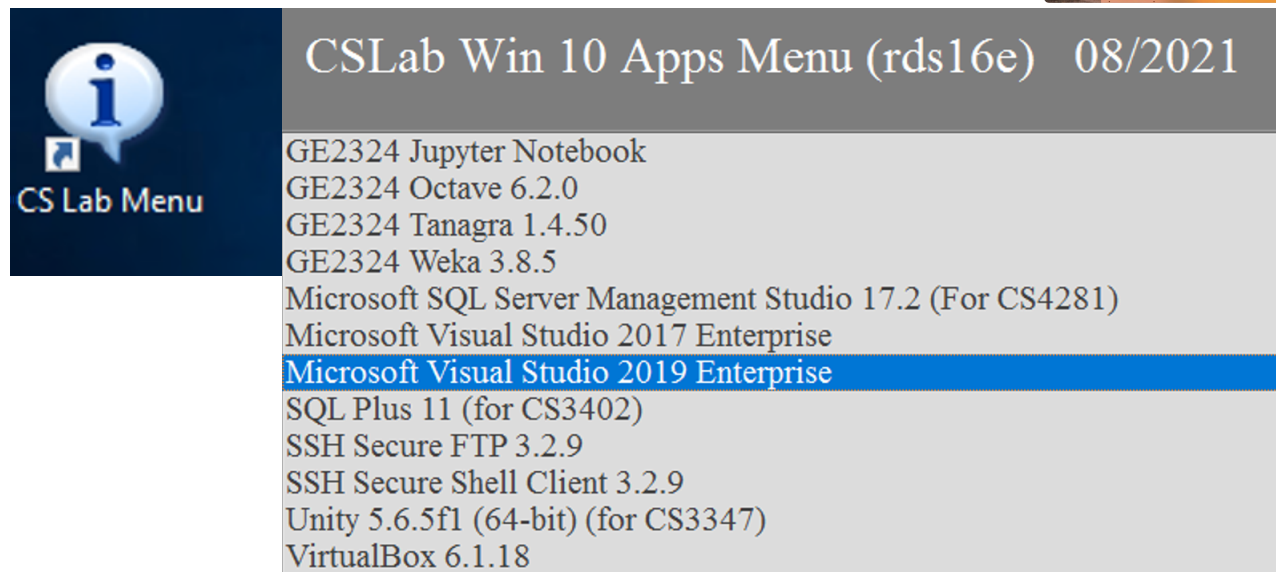
1. The distribution of MSDNAA software is restricted by the MSDNAA license agreement signed between the CS Department and Microsoft.
2. MSDNAA software are distributed to full time teaching staff of the CS department and CityU students taking at least one semester of CS courses.
3. MSDNAA software can only be installed on computer(s) owned by legitimated MSDNAA users.
4. MSDNAA software can only be used for teaching and research purposes. Use of MSDNAA software in production is not allowed.
5. Under no circumstances can users copy, duplicate, share, lend or resell the whole or part of the MSDNAA software.

Welcome to the CityU CS MSDNAA Program

- Introduction to the [Microsoft Imagine WebStore \(MSDNAA Program\)](#)
- **Caution:** Each software can only be downloaded for **1 times**
- Due to the huge file size (a few hundred mega bytes), please download at your own risk
- Software download procedures
 1. Logon to the [AZURE Portal](#) using your CityU O365 account
 2. goto the follow link [AZURE Education - Software](#)

Option 3

- Connect to CSLab to use VS2019 [for Mac]
 - Download & install Microsoft Remote Desktop
 - Run **Microsoft Remote Desktop**
 - Connect to rds16e.cs.cityu.edu.hk
 - Login with **CityU e-id** & password

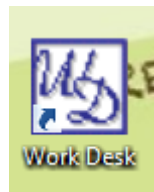


Option 1

Work on CSC terminal

How to start VS2019 in CSC labs

- Double click the "Work Desk" icon on the desk



Work Desk - City University of Hong Kong

cc106/intranet/StudLAN/WinXP/CC_AppMenu-85.asp

Go to Portal

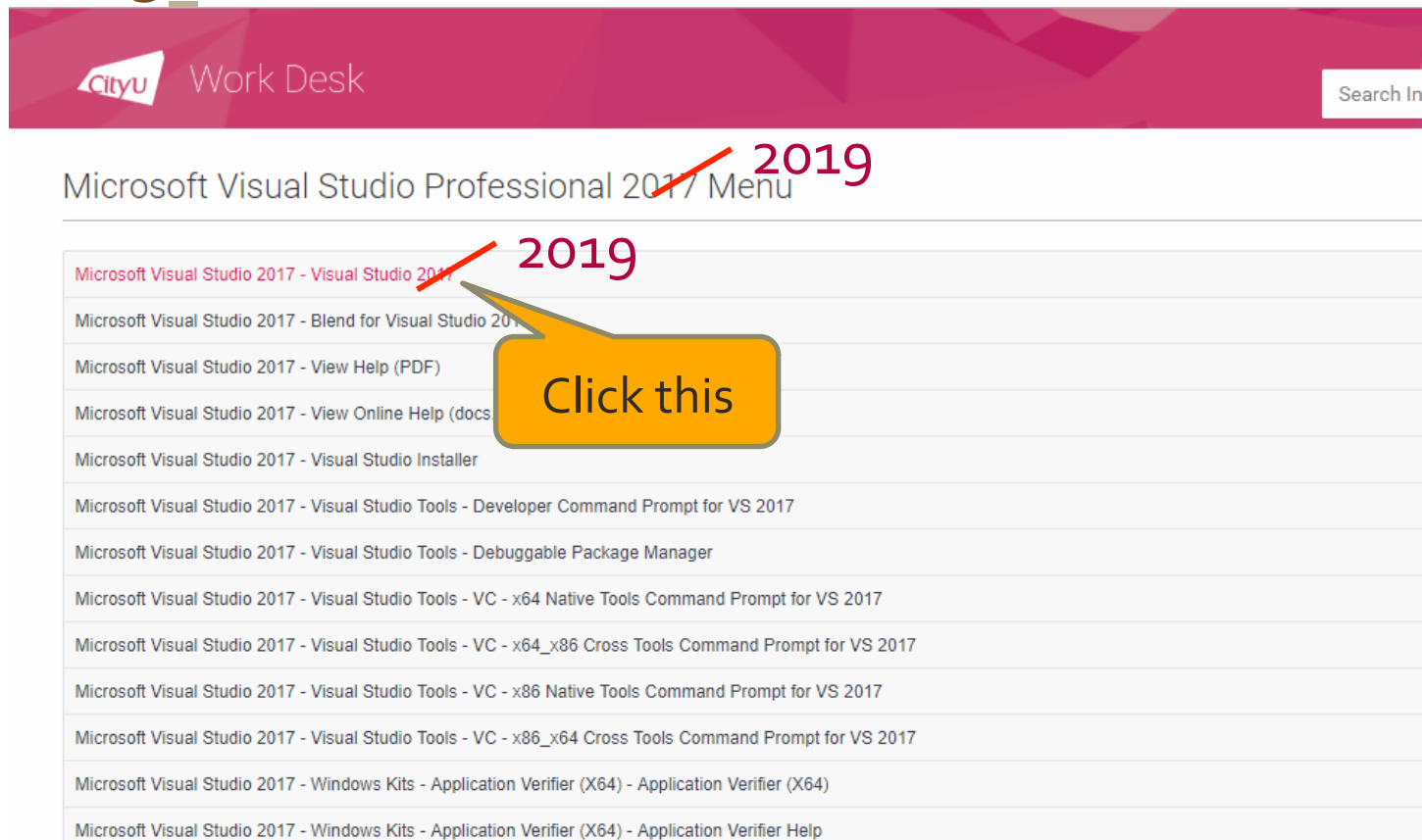
Search Intranet

IBM SPSS Statistics 26.0	Adobe C96 Design Premium - Photoshop (LT Department)
Locale - Change User Locale code to Chinese (Hong Kong S.A.R.)	Adobe C96 Design and Web Premium - Dreamweaver (C9C)
Locale - Change User Locale code to English (United Kingdom)	Adobe C96 Design and Web Premium - Fireworks (C9C)
Locale - Change User Locale code to English (United States)	Adobe C96 Design and Web Premium - Flash Professional (C9C)
Matlab 9.6 (R2019a) - Campus License with 88 toolboxes	Adobe C96 Design and Web Premium - Illustrator (C9C)
Microsoft AppLocale 1.0	Adobe C96 Design and Web Premium - InDesign (C9C)
Microsoft Expression Studio 4 Web Professional	Adobe C96 Design and Web Premium - Photoshop (C9C)
Microsoft Mathematics 4.0	Adobe C96 Design and Web Premium - Acrobat X pro (LAC Department)
Microsoft Office Professional Plus 2019 - Access	Adobe C96 Design and Web Premium - Dreamweaver (LAC Department)
Microsoft Office Professional Plus 2019 - Excel	Adobe C96 Design and Web Premium - Fireworks (LAC Department)
Microsoft Office Professional Plus 2019 - PowerPoint	Adobe C96 Design and Web Premium - Flash Professional (LAC Department)
Microsoft Office Professional Plus 2019 - Publisher	Adobe C96 Design and Web Premium - InDesign (LAC Department)
Microsoft Office Professional Plus 2019 - Word	Adobe C96 Design and Web Premium - Illustrator (LAC Department)
Microsoft Office Professional Plus 2019 menu	Adobe C96 Design and Web Premium - Photoshop (LAC Department)
Microsoft SharePoint Designer 2013	Adobe C96 Master Collection - After Effects (AST Department)
Microsoft Visual Studio Professional 2017 menu	Adobe C96 Master Collection - Audition (AST Department)
Microsoft Windows Media Player 12	Adobe C96 Master Collection - Dreamweaver (AST Department)
Mozilla Firefox 68	Adobe C96 Master Collection - Flash Professional (AST Department)
Printer - Check Print Quota	Adobe C96 Master Collection - Illustrator (AST Department)

2019

How to start VS2019 in CSC labs

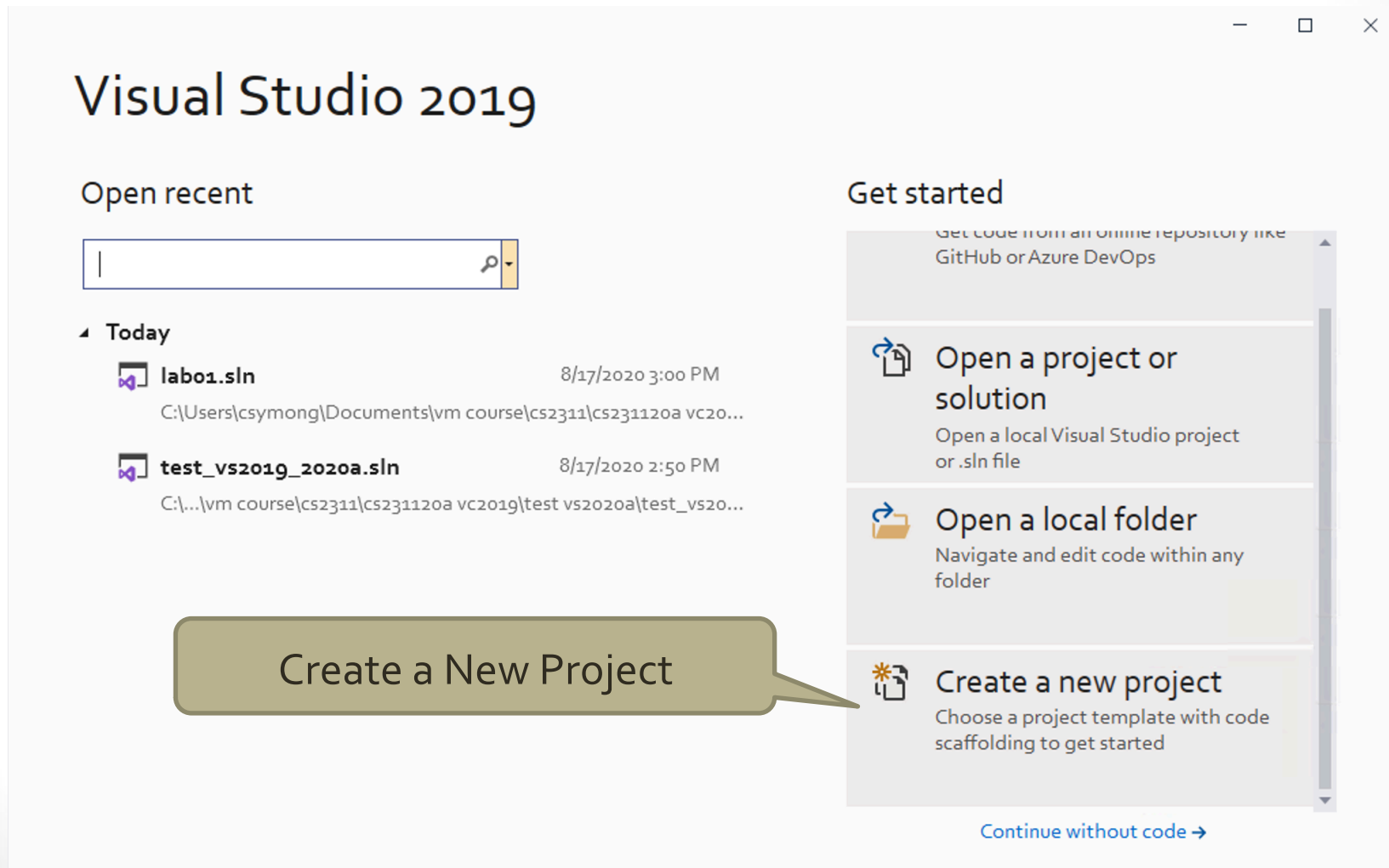
- Click "Microsoft Visual Studio 2019-Visual Studio 2019"



Steps for writing, compiling and running a C++ program

1. Create a project and project folder
2. Create a folder for storing programs (source code)
3. Add the source code to project
4. Compile and run the program

Start VS2019



Create a Project

Create a new project

Recent project templates

Empty Project

1. a C++ project

2. on Windows OS

3. a Console project

4. Create an Empty Project

-  **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 Console Desktop Library
-  **Shared Items Project**
A Shared Items project is used for sharing files between multiple projects.
C++ Android iOS Linux Windows Console Desktop

Back

Next

5. Next

Create a project

Configure your new project

Empty Project C++ Windows Console

Project name

Project1

Location

C:\Users\csymong\Documents\vm course\cs2311\cs231120a vc2019\labs ...

Solution name ⓘ

Project1

☒ Place solution and project in the same directory

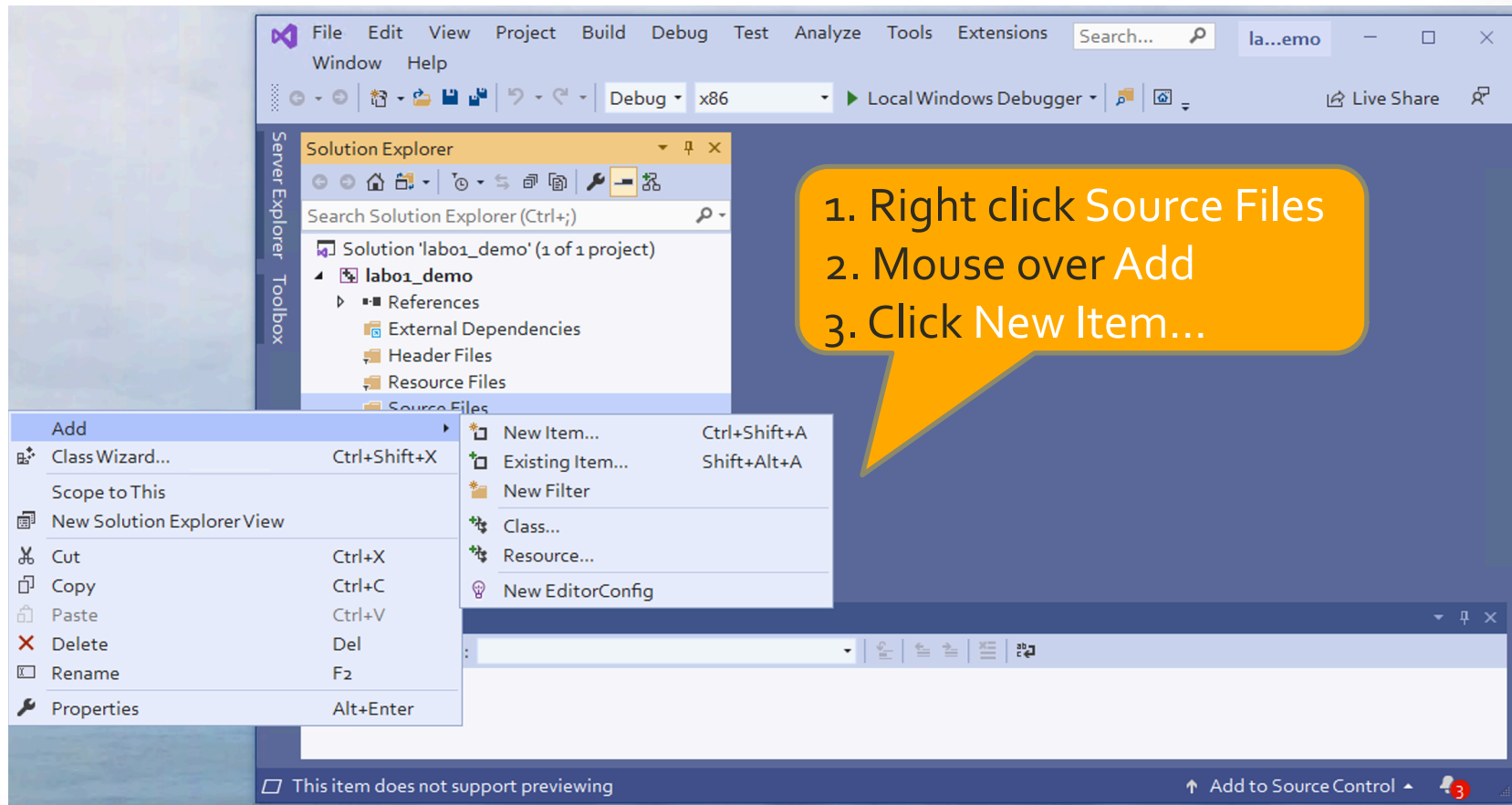
Back Create

2. Give a "meaningful" project name

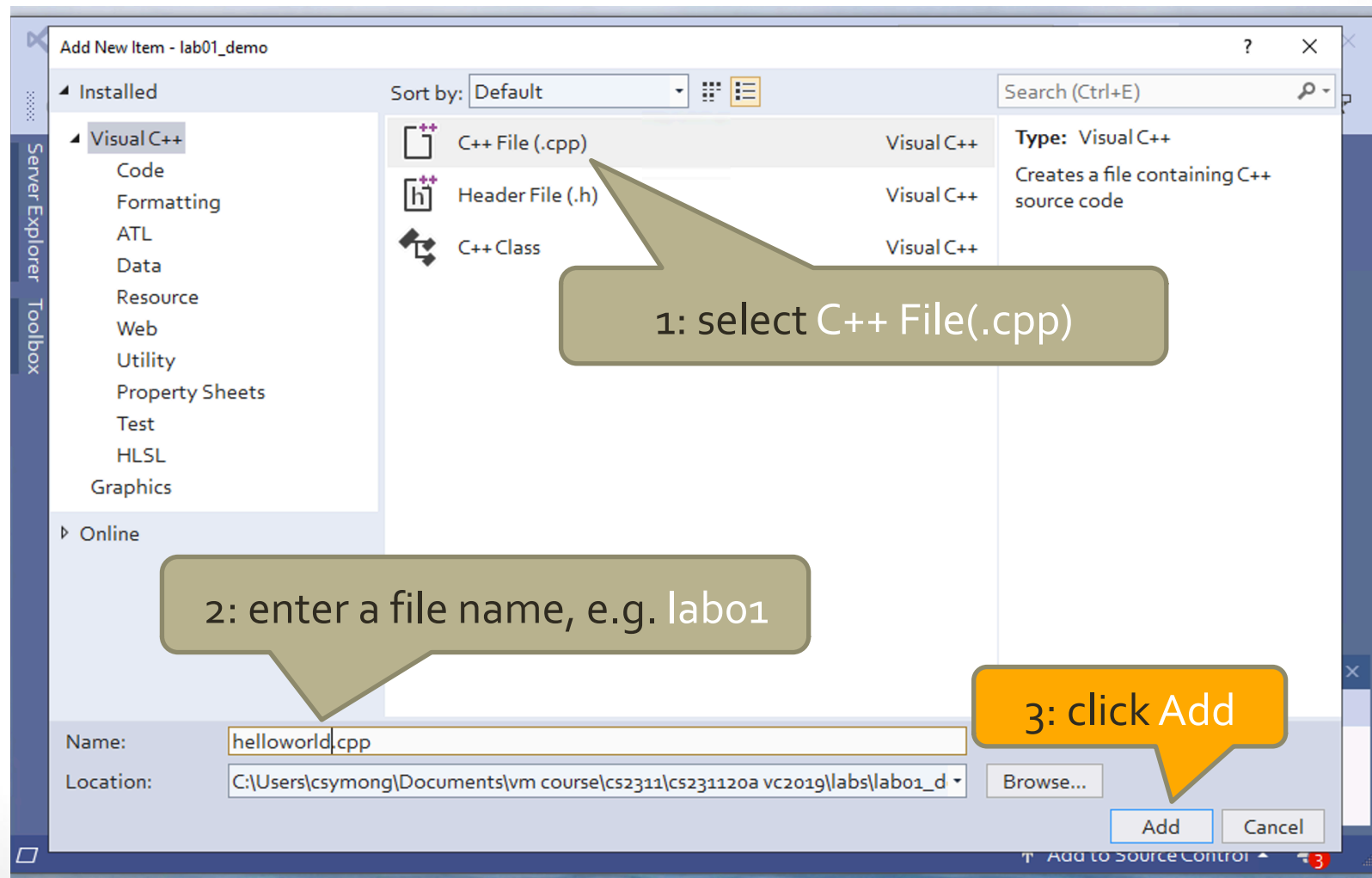
1. select an appropriate path for project

3. Create

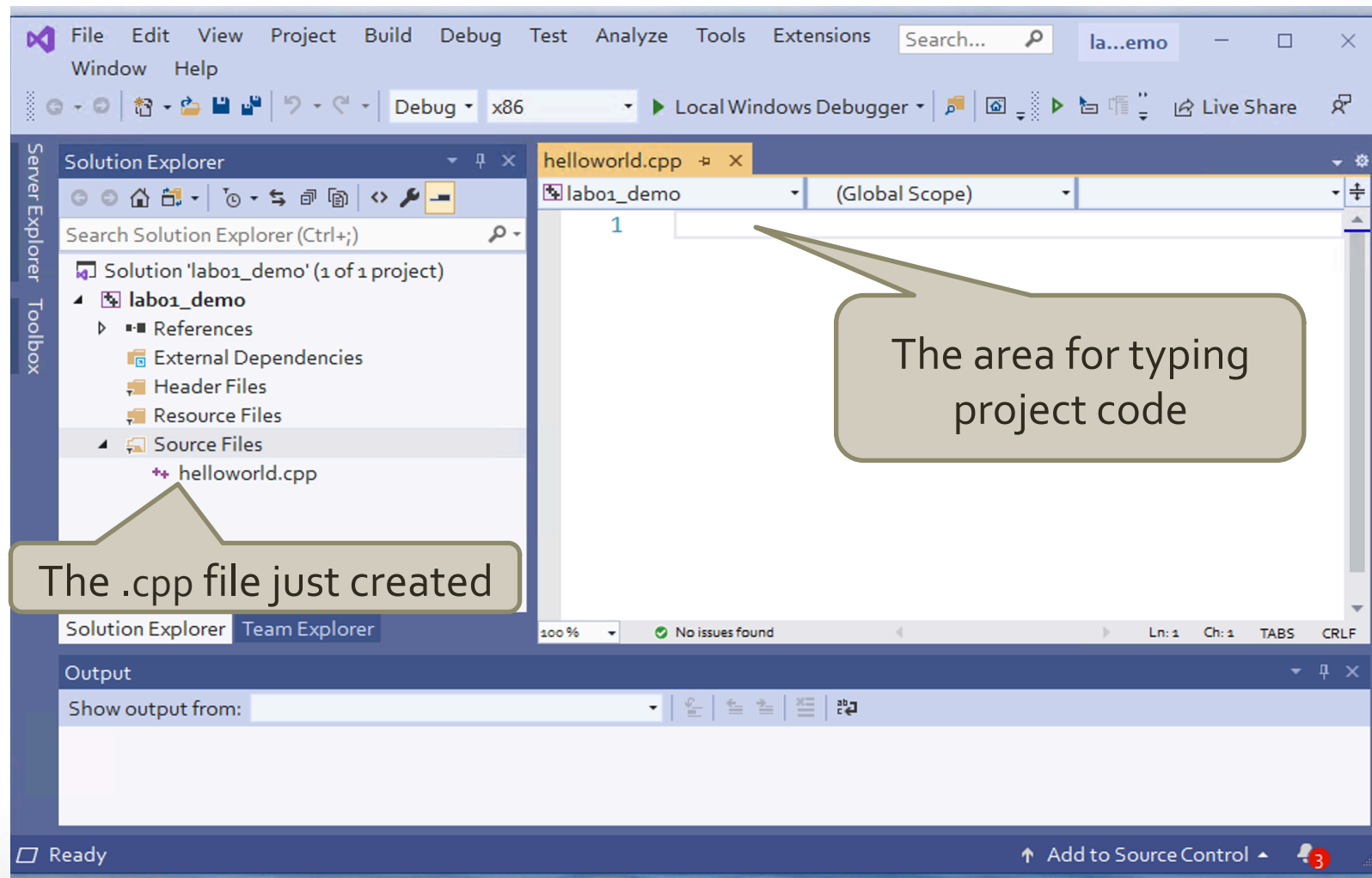
Add a C++ program file into the project



Add a C++ program file into the project



Writing code



Writing code

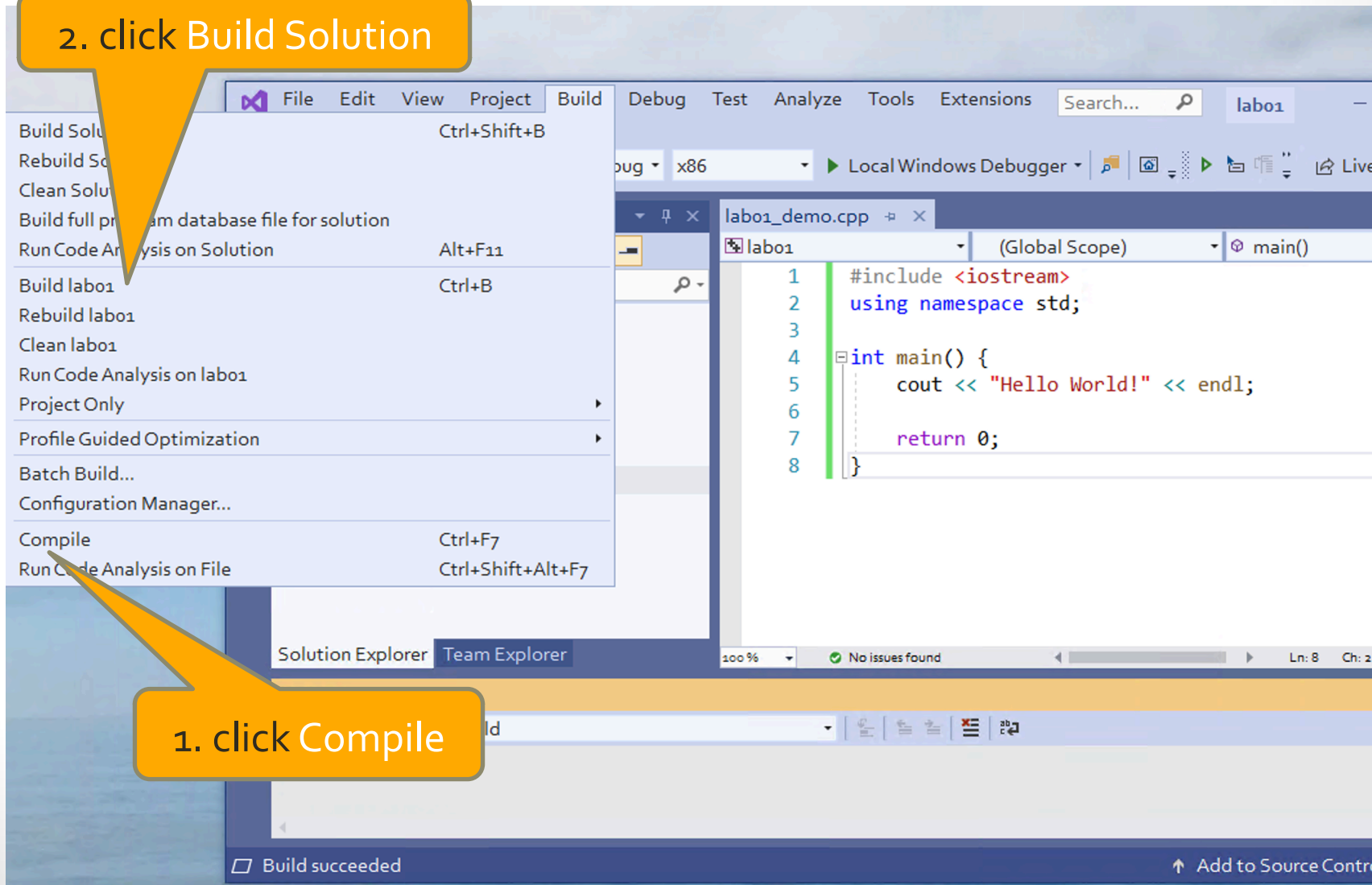
- Try to type the Hello World program, without looking at the lecture notes

```
#include <iostream>
using namespace std;

int main() {
    cout << "Hello World!" << endl;
    return 0;
}
```

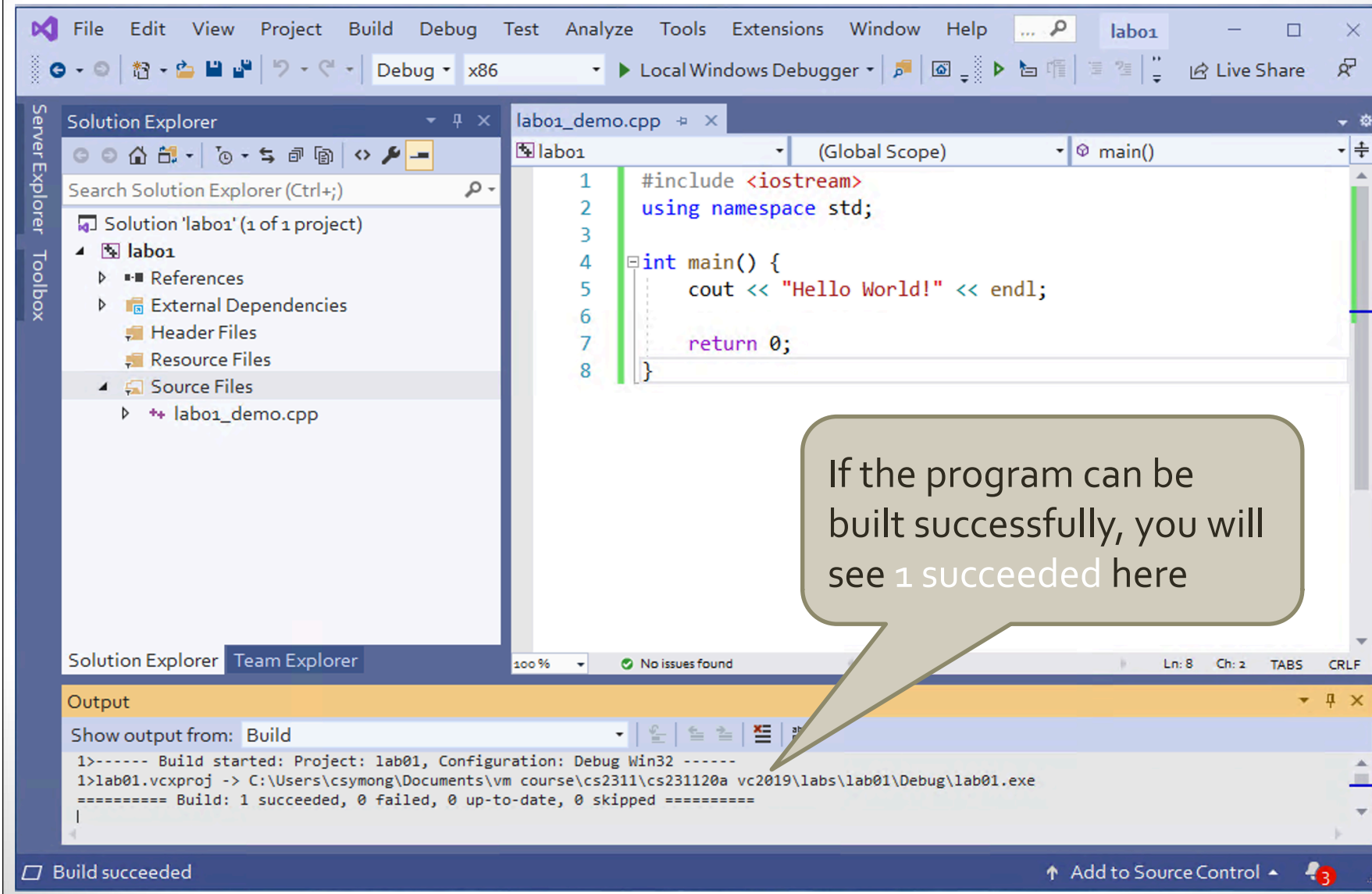
Compile & Build your program [Ctrl+F7 & Ctrl+Shift+B]

2. click Build Solution

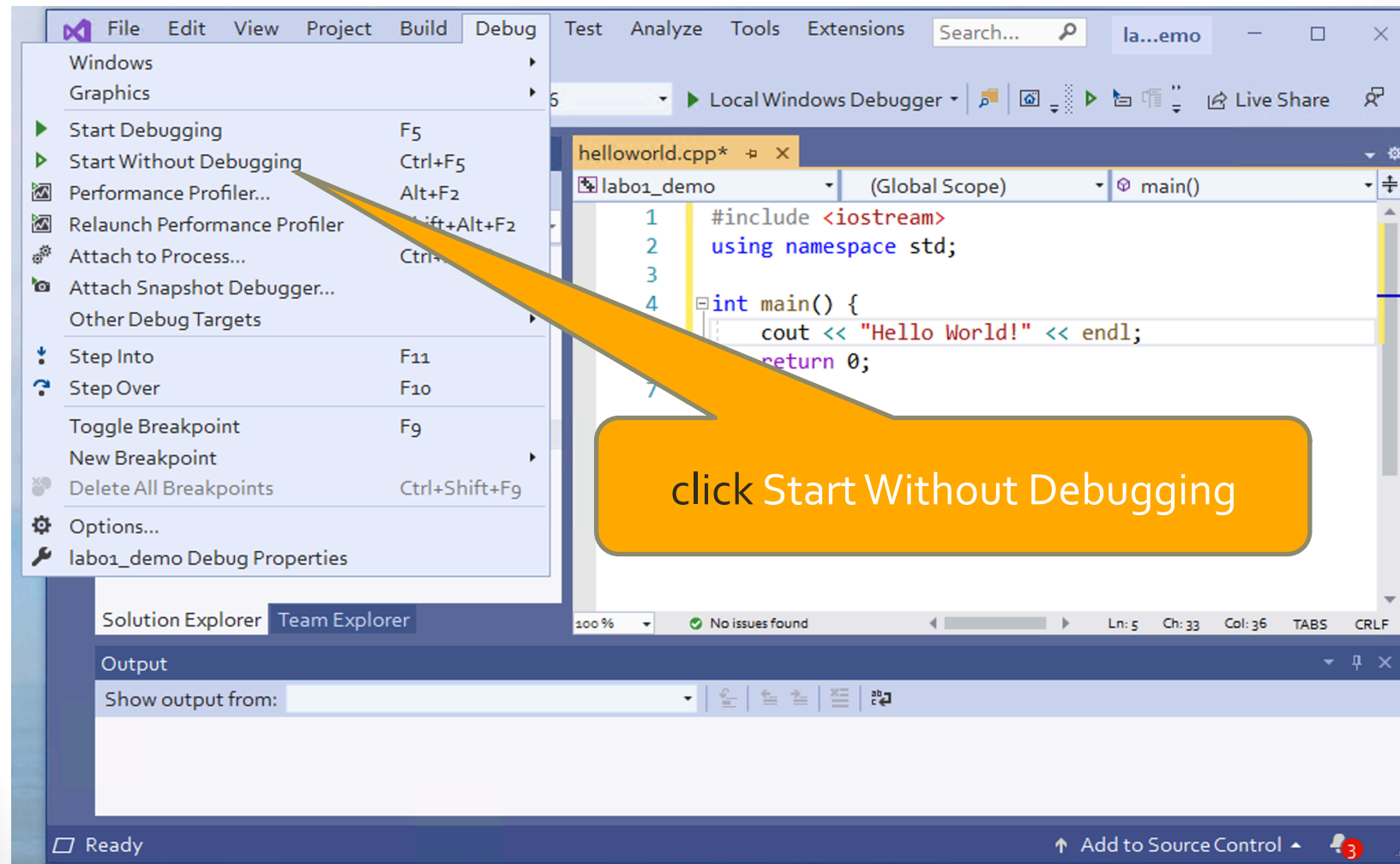


1. click Compile

Build your program



Execute your program [Ctrl+F5]



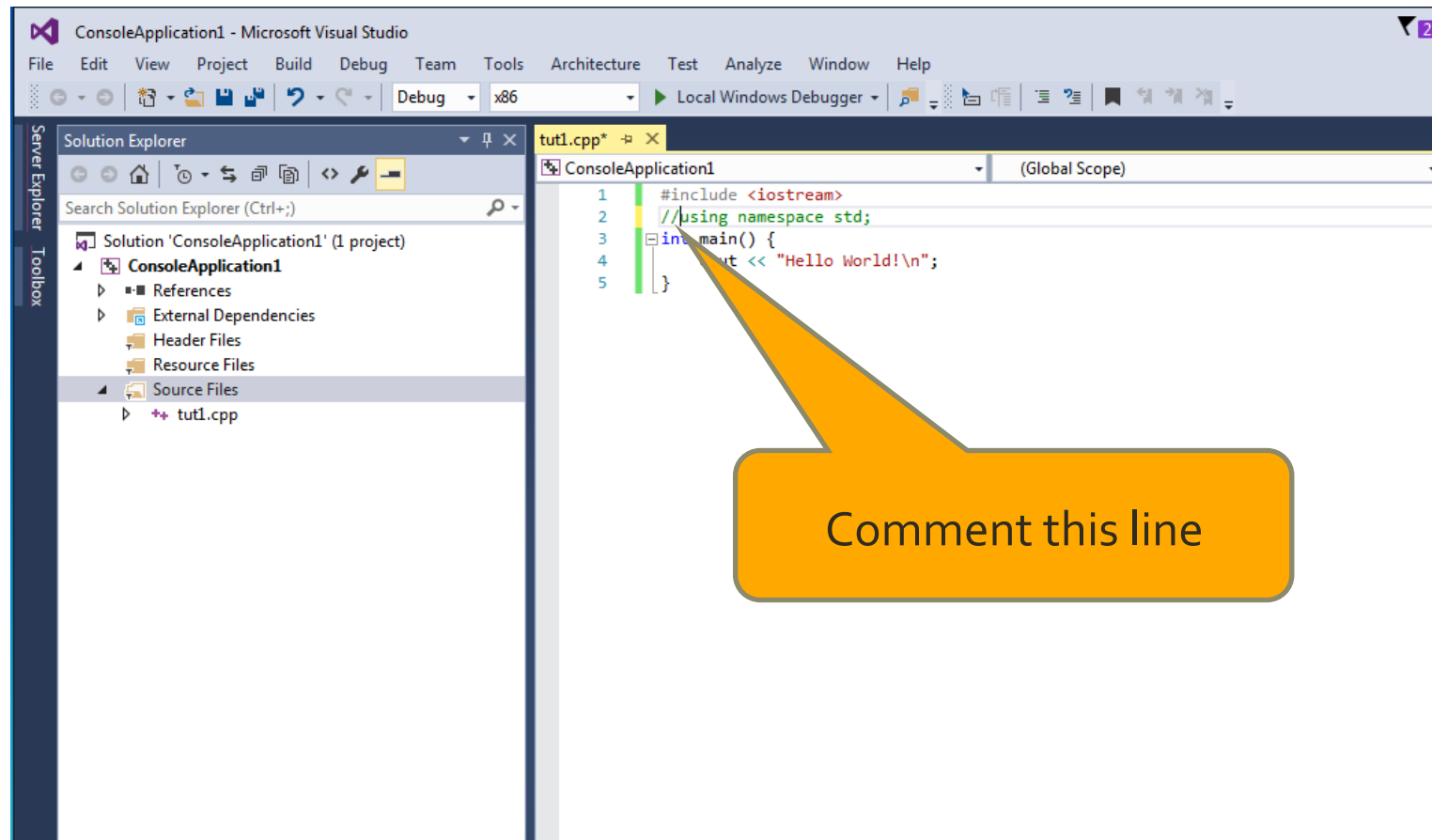
Result of Execution

Microsoft Visual Studio Debug Console

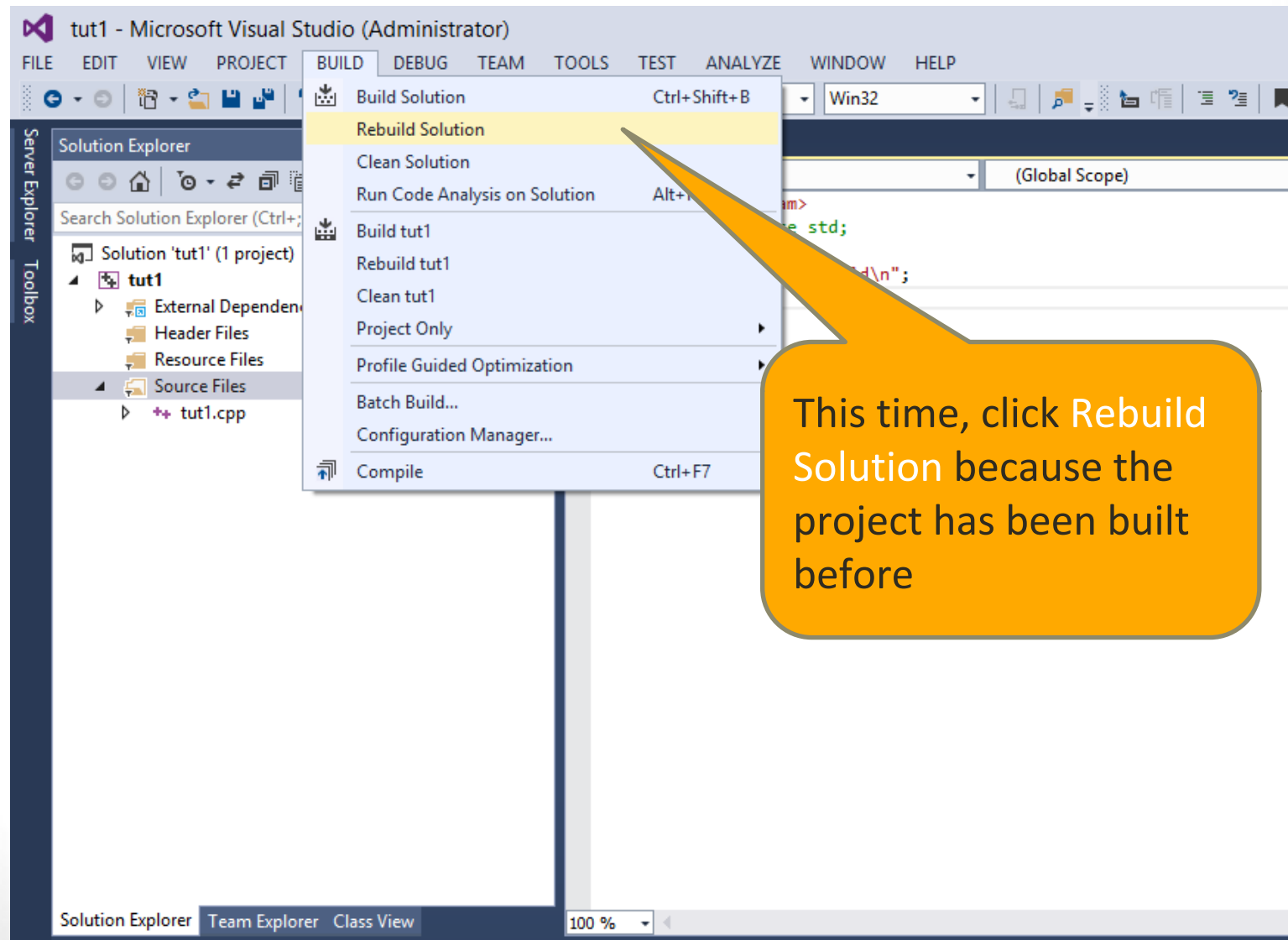
Hello World!

C:\Users\csymong\Documents\vm course\cs2311\cs231120a vc2019\labs\lab01\Debug\lab01.exe
(process 9460) exited with code 0.
Press any key to close this window . . .

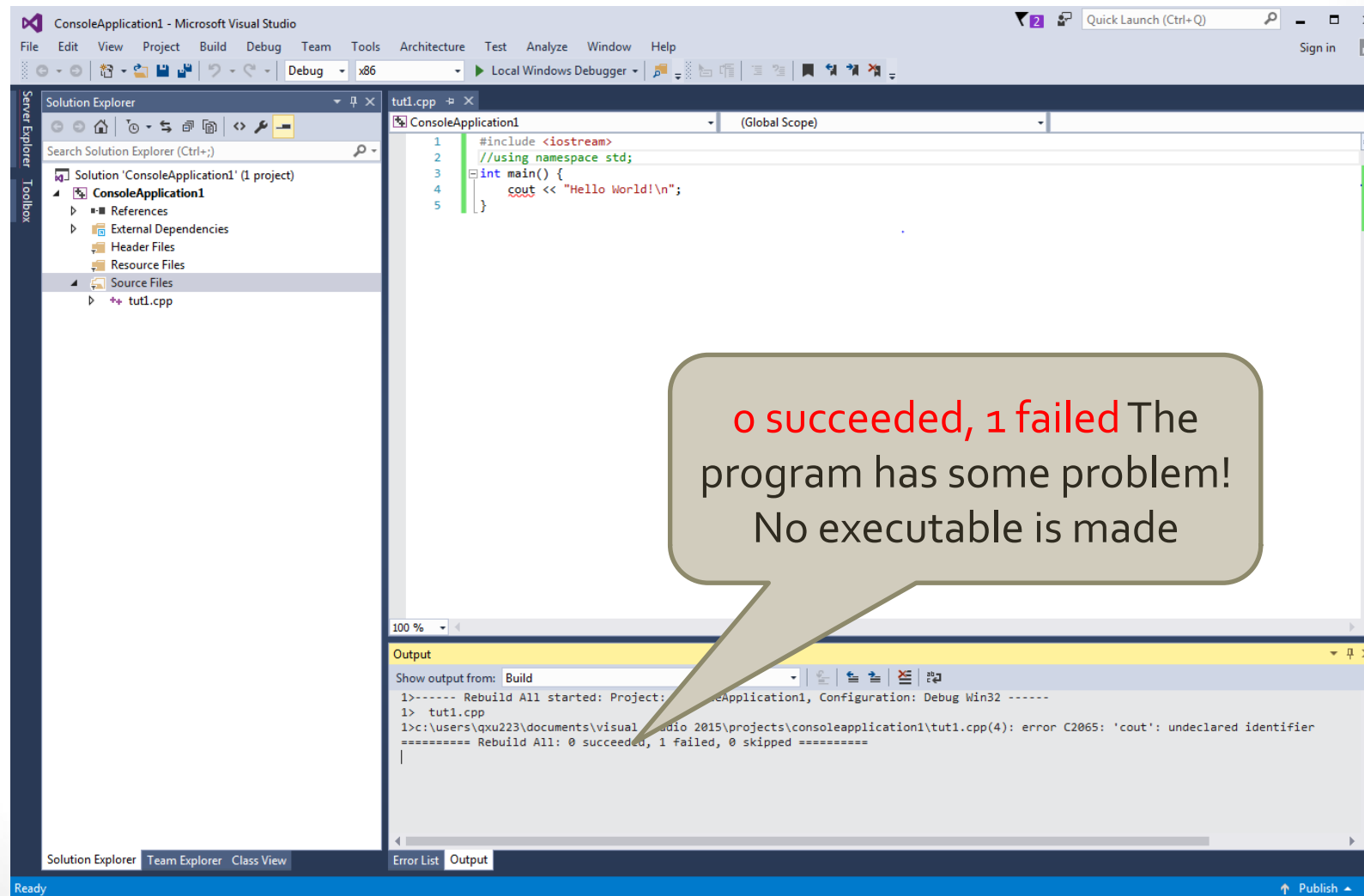
Try it out!



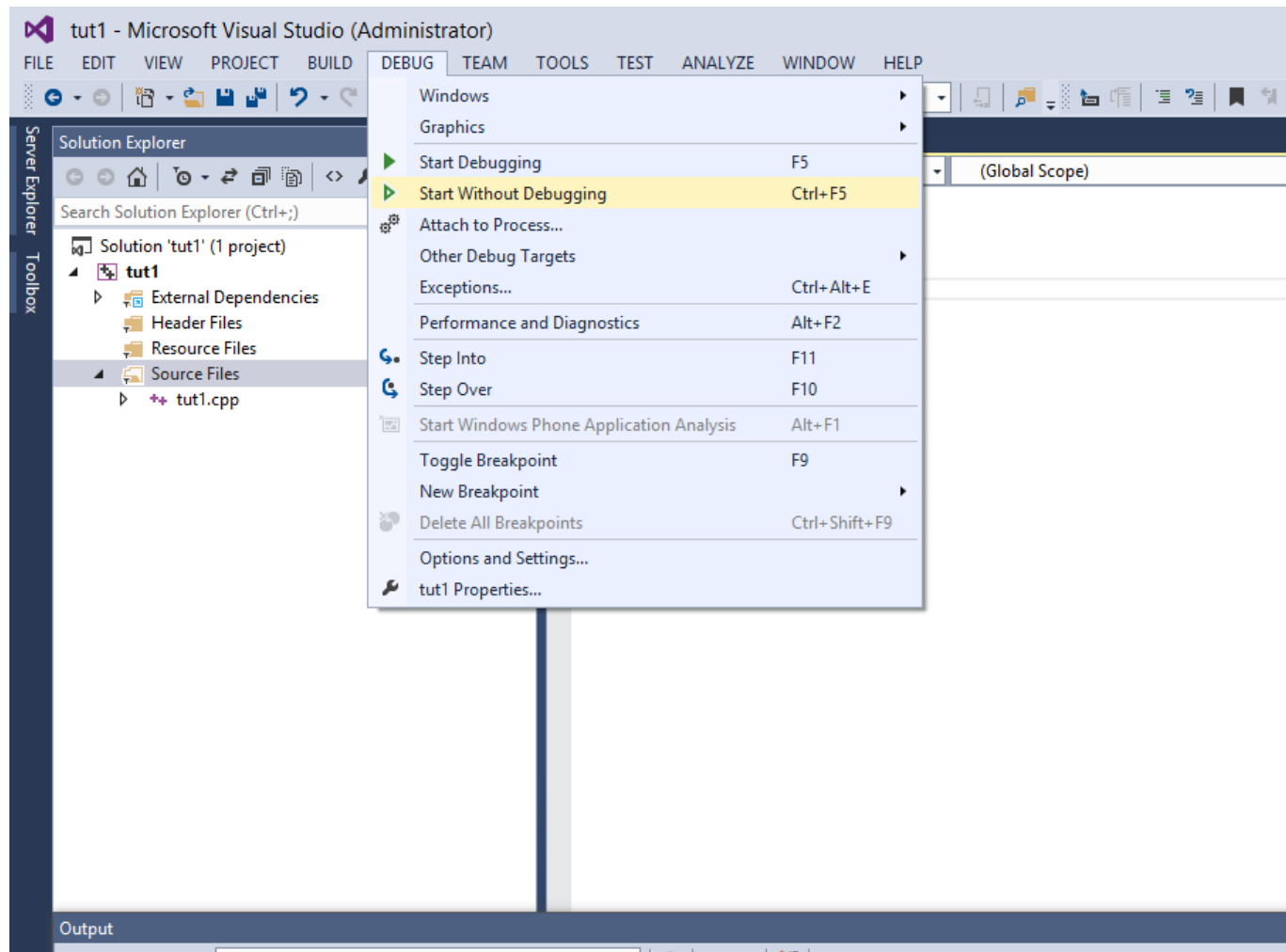
Rebuild the project



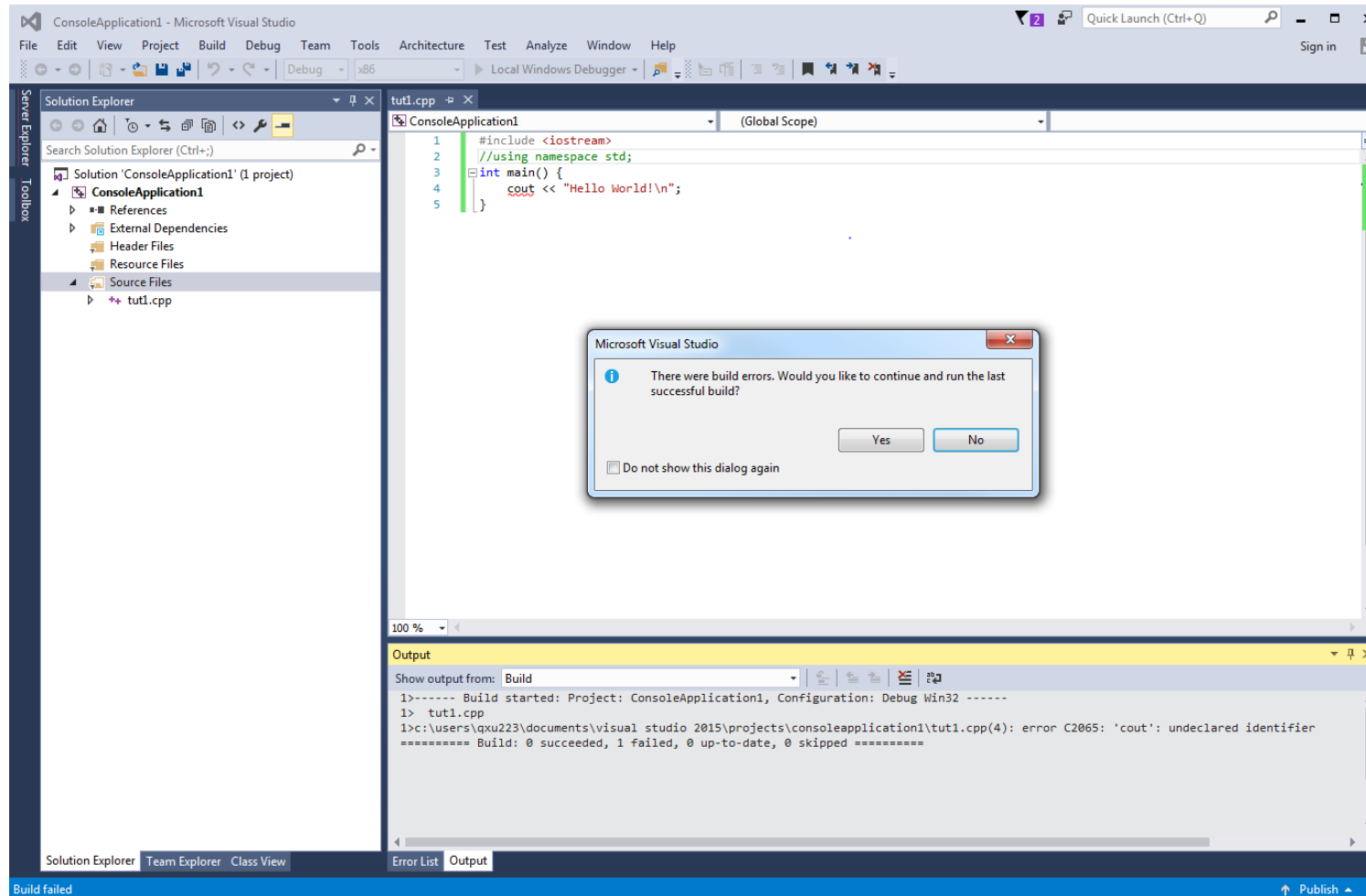
Got an error message



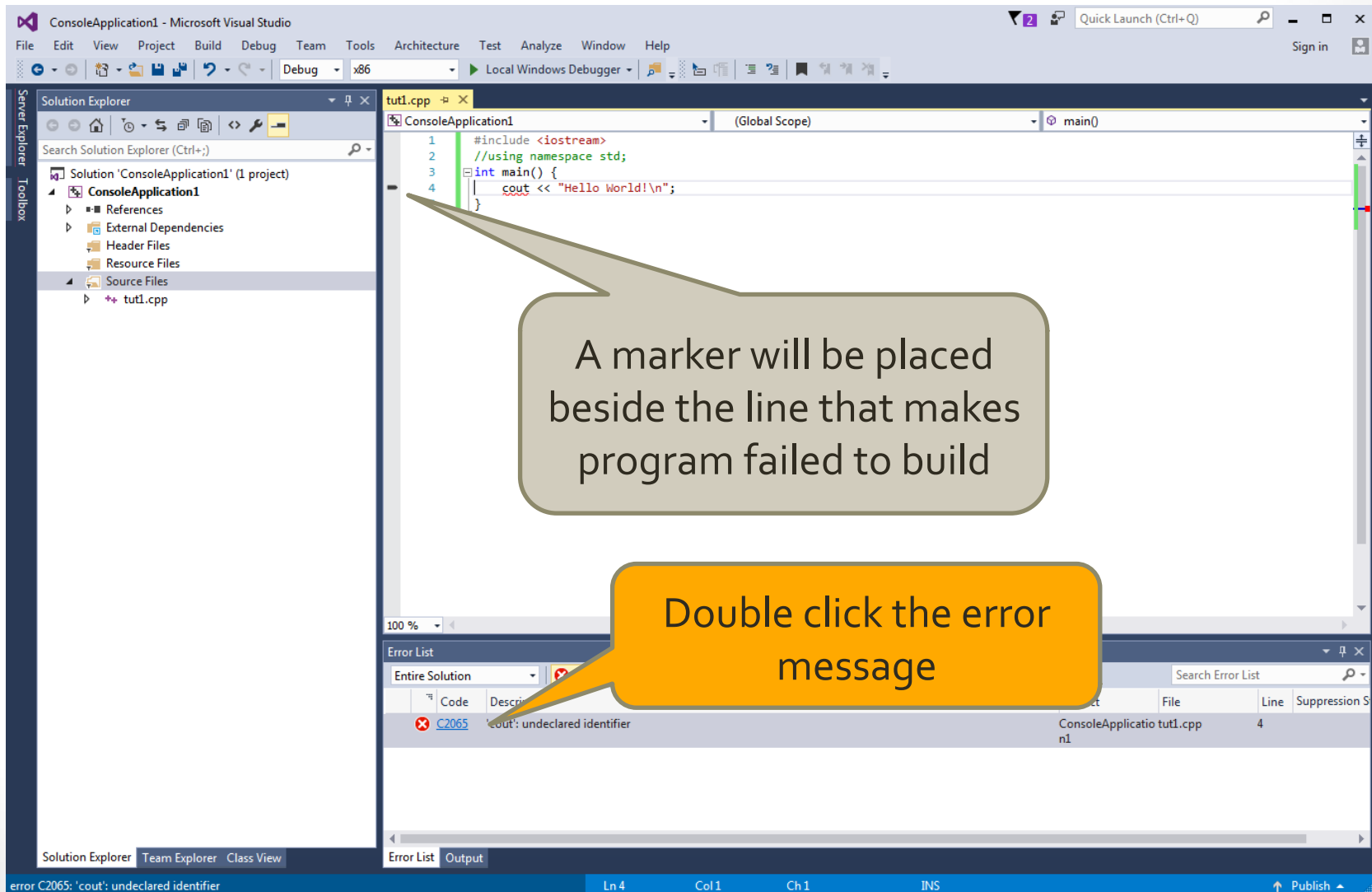
If you try to execute it anyway..



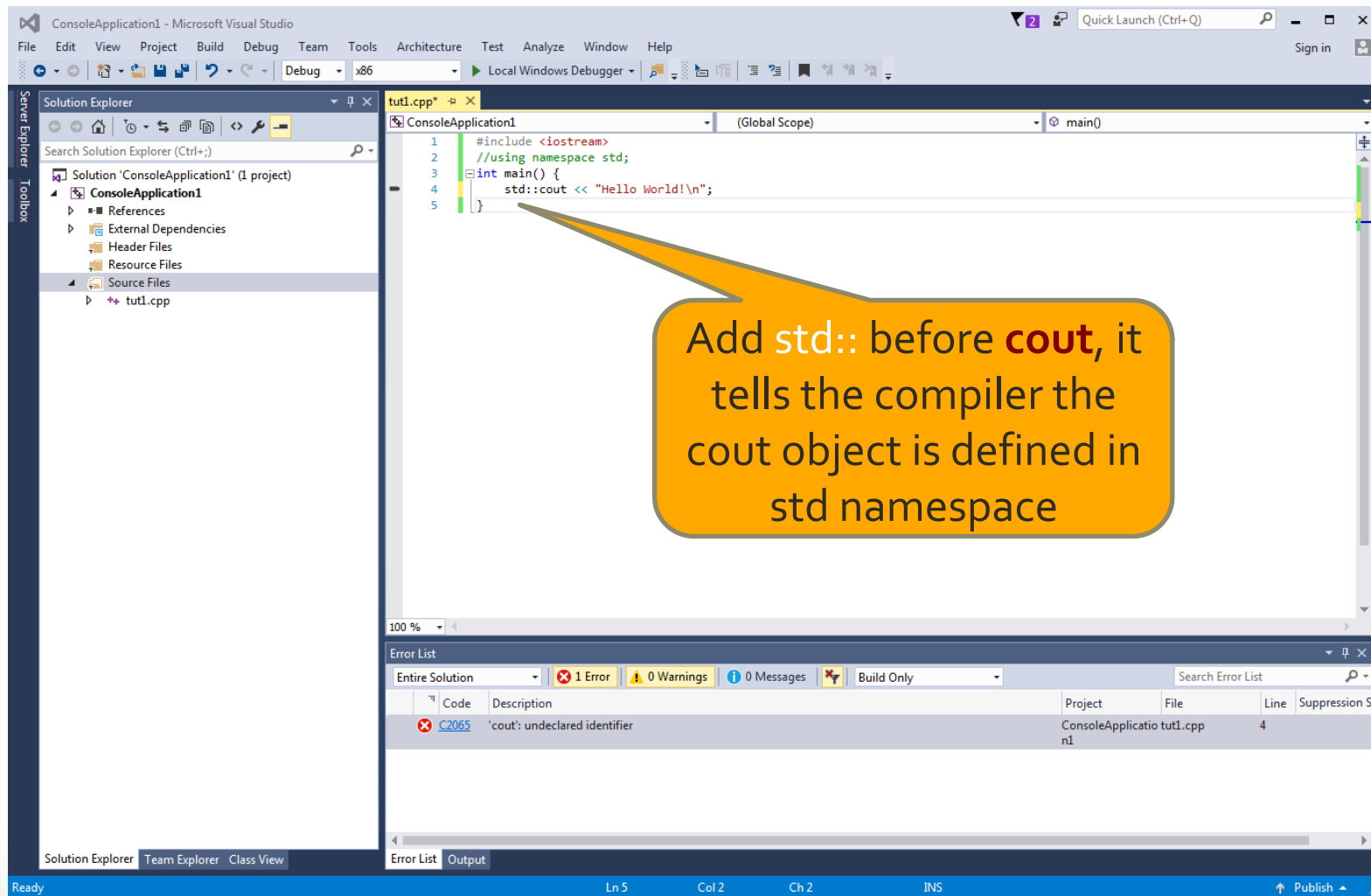
You will get an error message



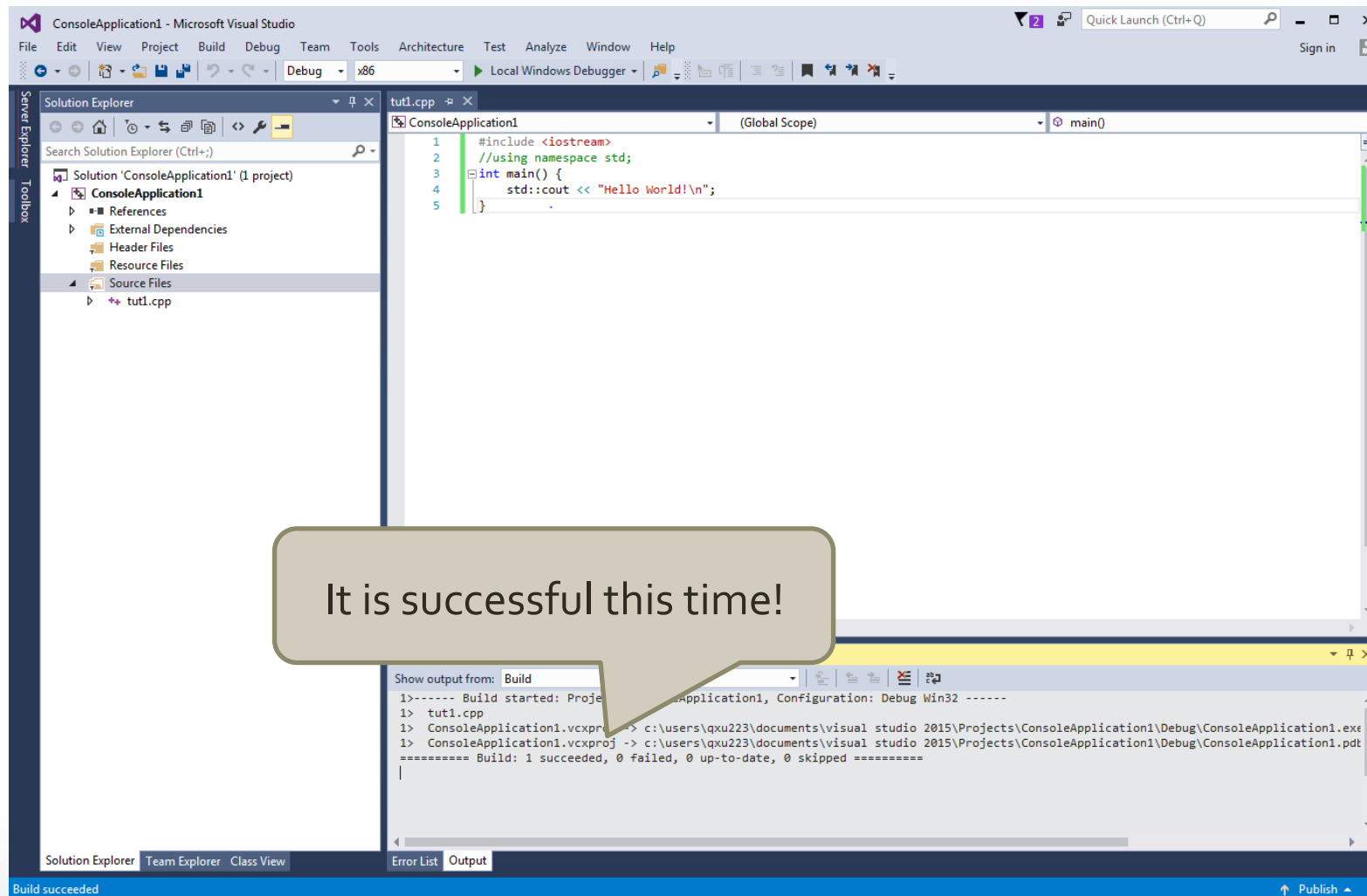
A better way: Locate the error



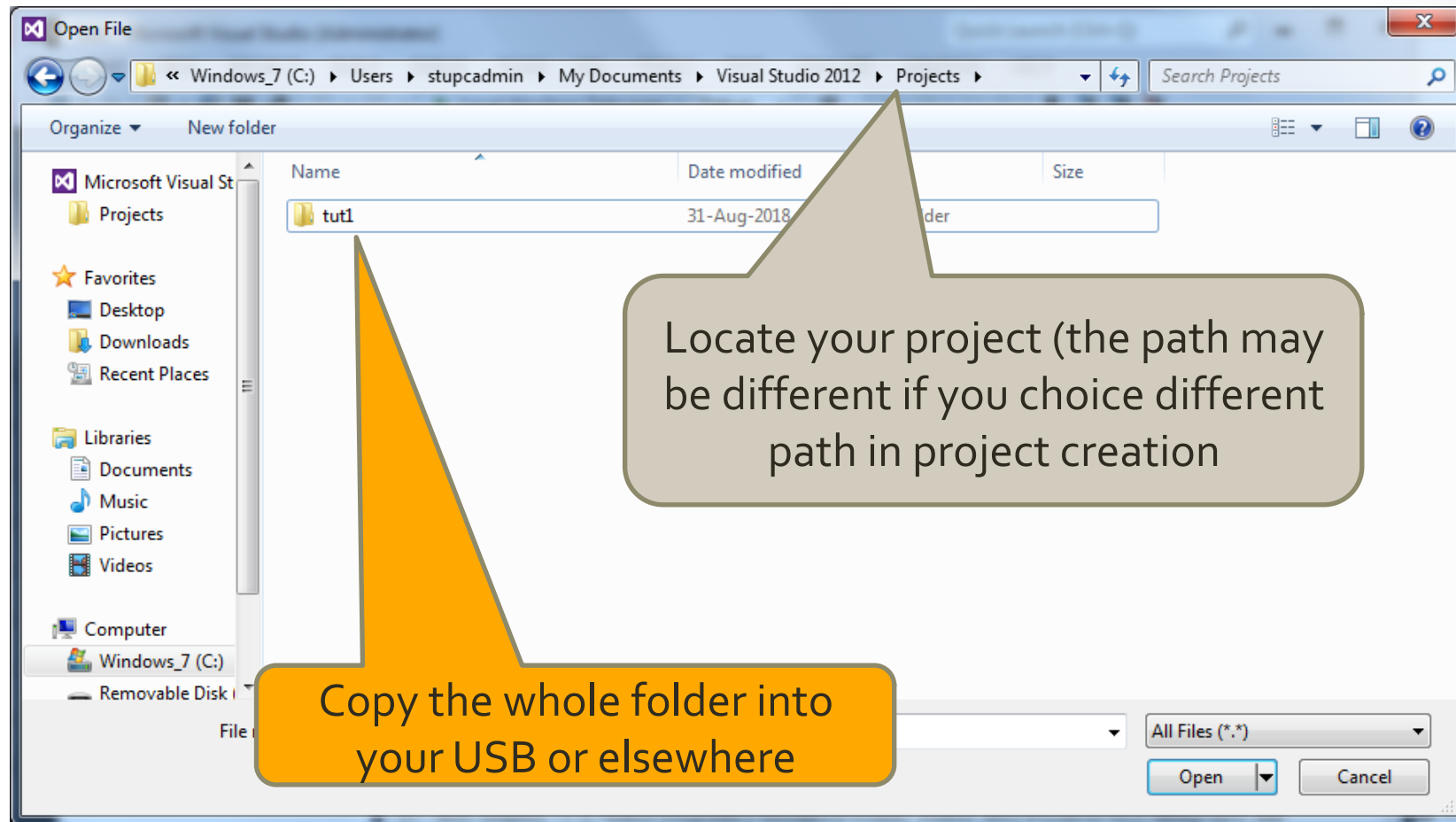
Fixed the error



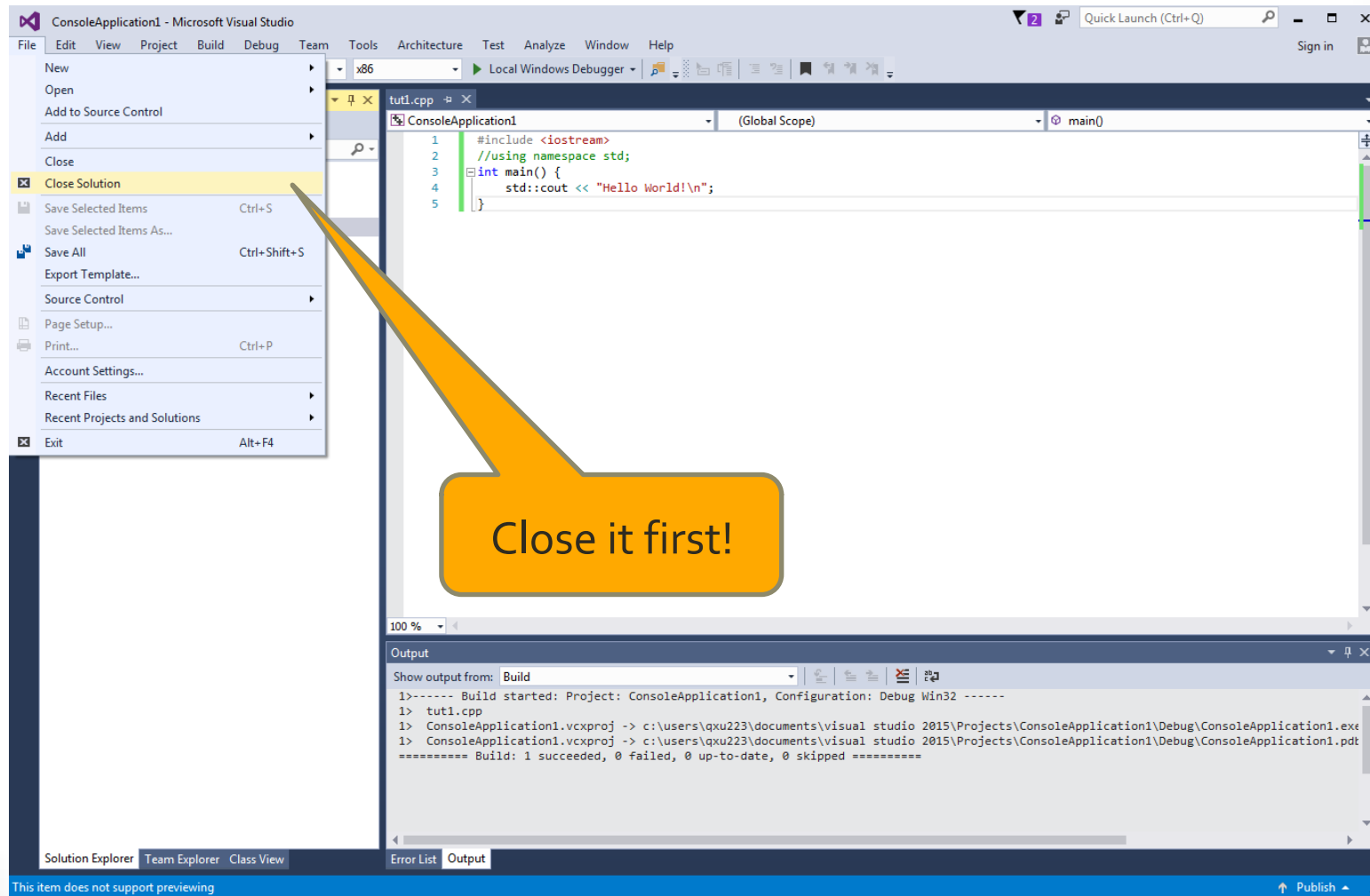
Rebuild the project: Fixed!



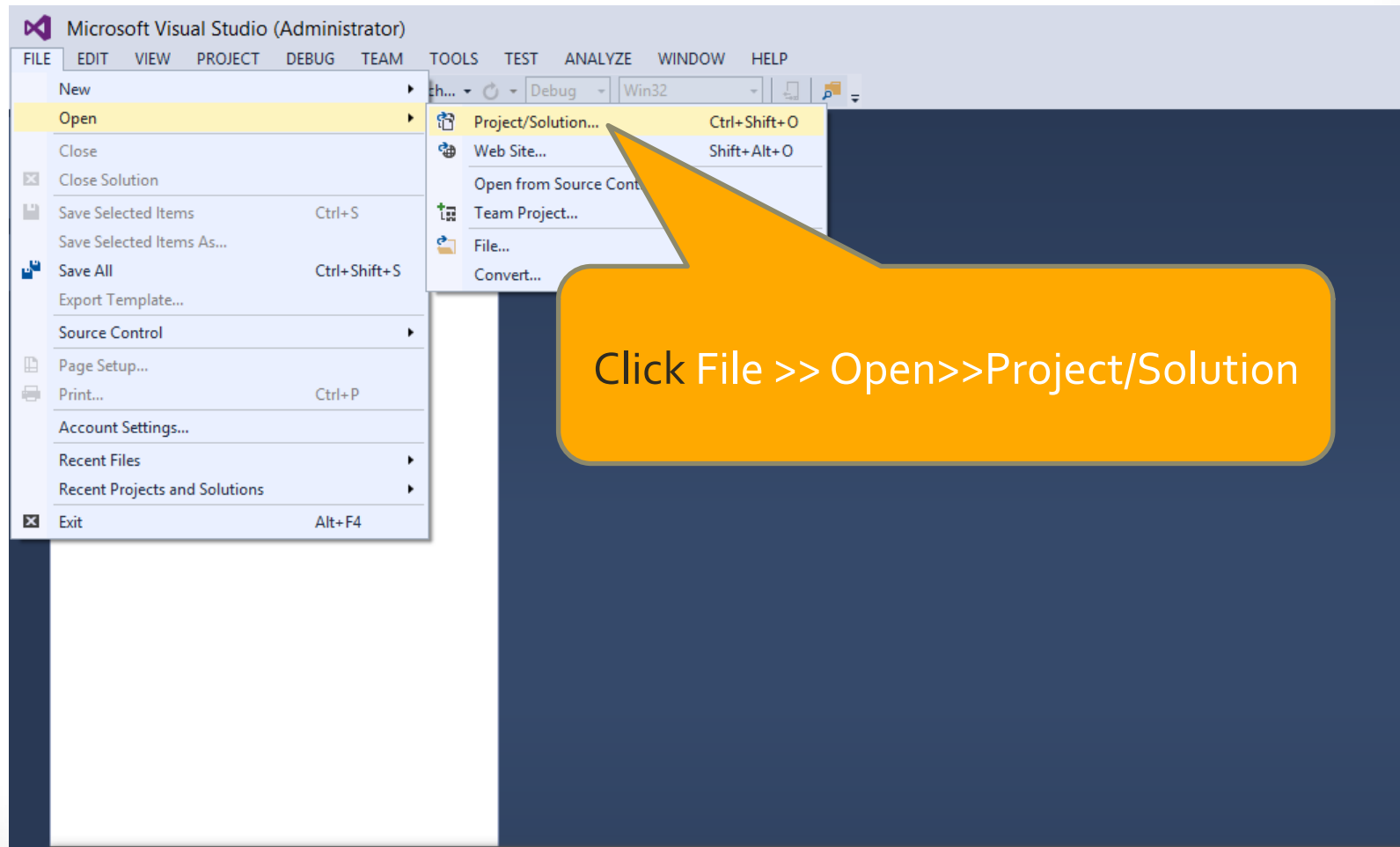
Copy your project out



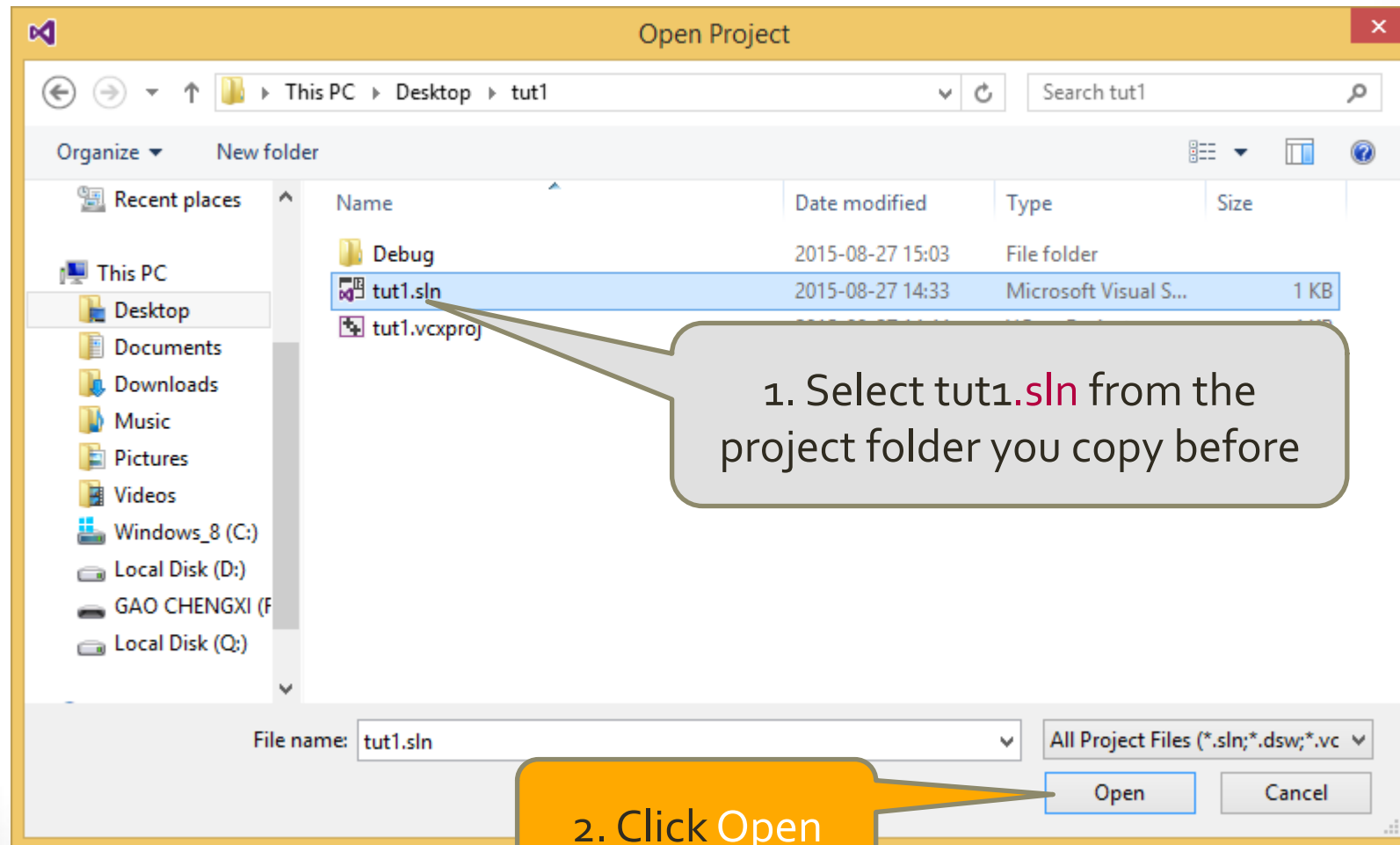
Reload your project



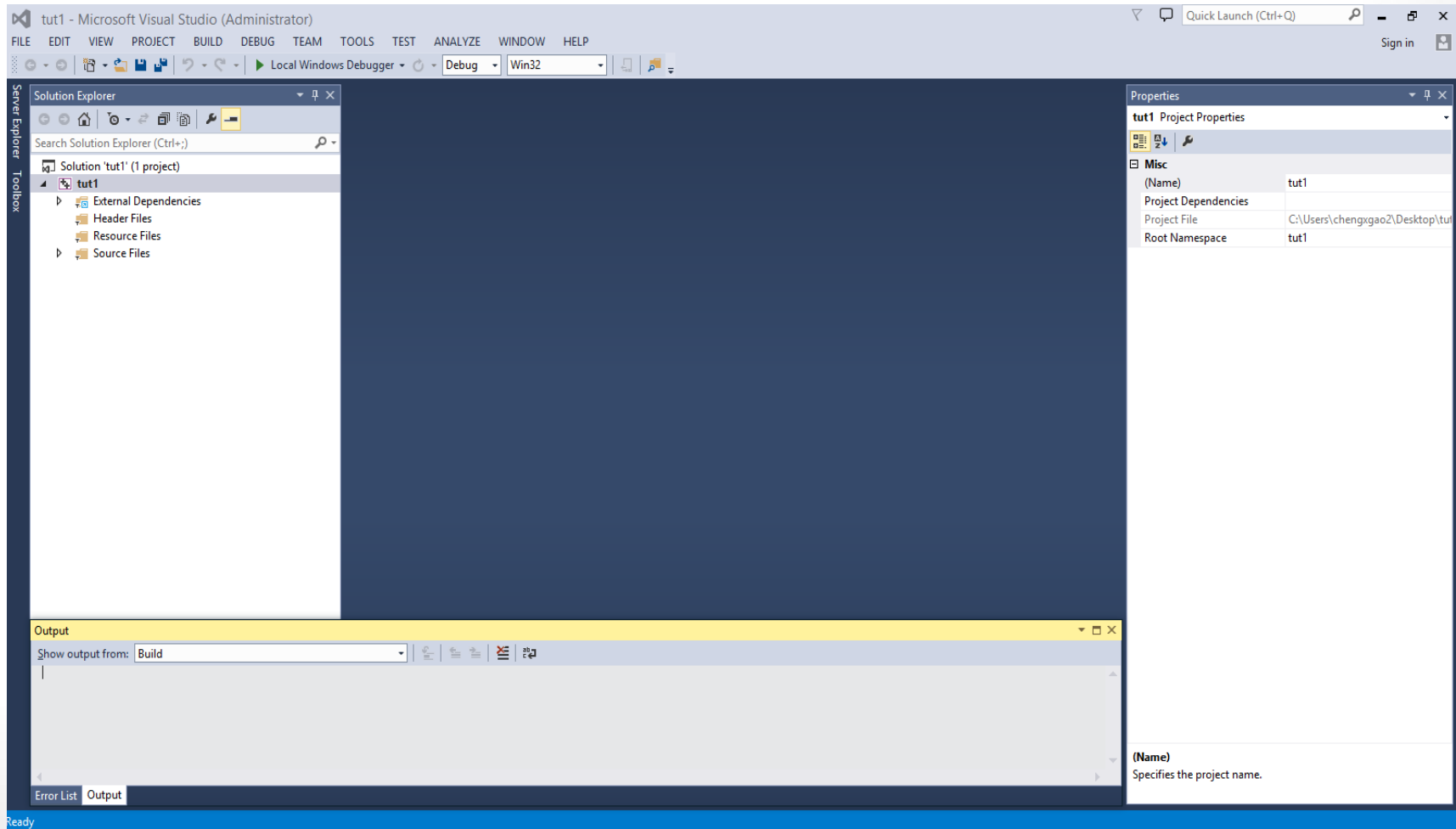
VS without project loaded



Locate and select your project

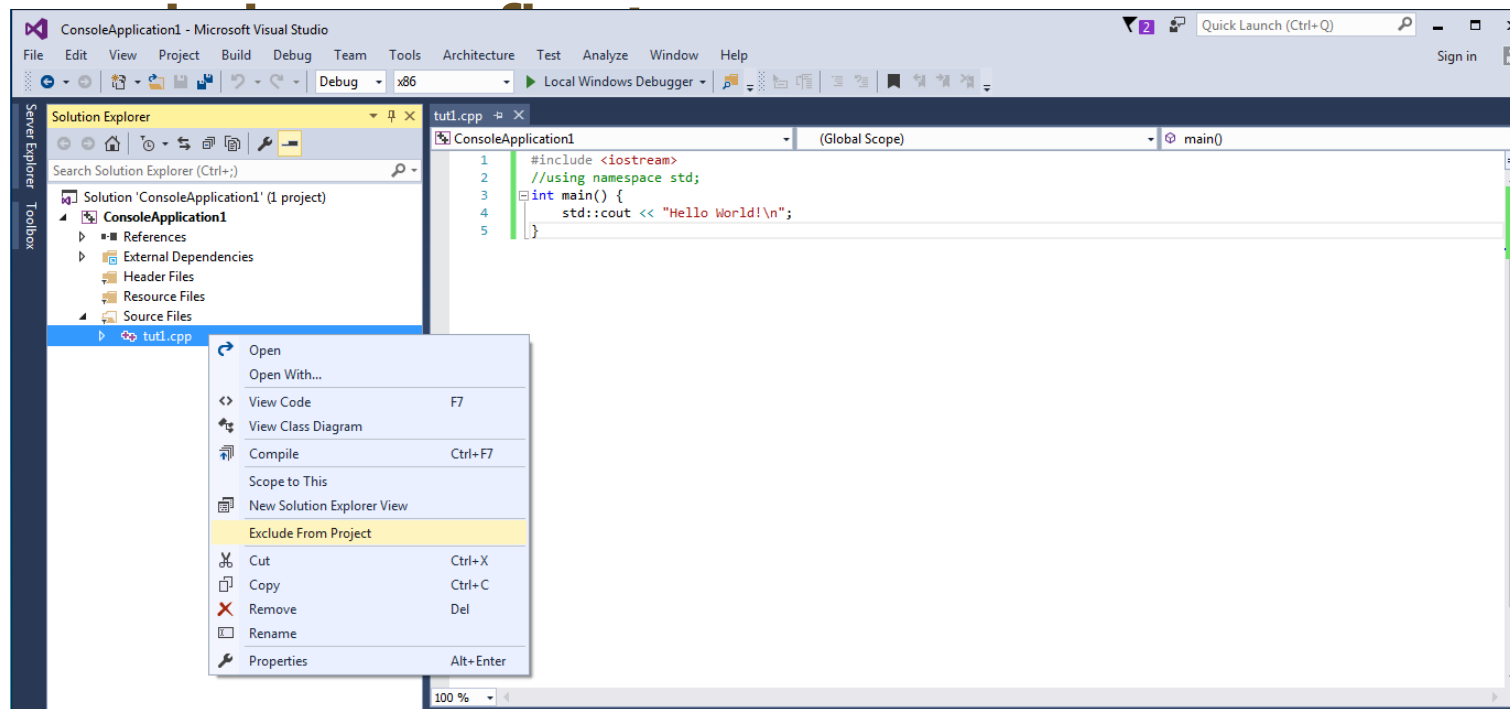


Your project is loaded



Work on other program with the same project

- Within the same project, **we can only have one "main" function**. If you want to add another program file with function main, exclude the



What you have done in this Tutorial

- Create a Visual Studio 2019 Project
- Create and add a C++ program into the project
- Write a simple Hello World Program
- Build and Execute the program
- Locate the syntax error of a program

Exercise – Output the following

In C++, `"\"` indicates an escape sequence.

For example, `"\n"` will output a new line, and `"\\"` will output the backslash character `"\"` itself.

Option 2

Install VS2019 on own PC/Windows 10

Downloading a Visual C++ 2019 compilers [for Windows 10]

- Visual Studio 2019 can be found at:
<http://msdnaa.cs.cityu.edu.hk/>
- Note: The site may not work in some versions of Firefox
- Login using your CityU O365 account.
- Select Visual Studio Community 2019
- Download and run the executable files.
- Click setup to install.

Enter the MSDNAA Software Center

The screenshot shows a web browser window with the address bar displaying 'msdnaa.cs.cityu.edu.hk'. The page content includes a red banner with the title 'MSDNAA Software Distribution Policy' and five numbered points. Below this is a blue heading 'Welcome to the CityU CS MSDNAA'. A bulleted list follows, with the last item containing a numbered list of steps. The second step, 'goto the follow link AZURE Education - Software', is highlighted with a red box. A yellow callout bubble with the text 'Click this' points to the red box.

CityU CS MSDNAA Program

msdnaa.cs.cityu.edu.hk

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Click this

Select Visual Studio Community 2019

Microsoft Azure Search resources, services, and docs (G+)

Home >

Education | Software

Are you a Student? Redeem the Azure for Students offer and get additional free benefits. →

Search

Product category : All Operating System : All System type : All

Product language : English, Multilanguage

5 Items

Name ↑↓	Category ↑↓	Operating System ↑↓	System type ↑↓	Language ↑↓
Visual Studio 2019 for Mac	Developer Tools	Mac	64 bit	Multilanguage
Visual Studio Code	Developer Tools	Windows	64 bit	Multilanguage
Visual Studio Community 2019 (version 16.0)	Developer Tools	Windows	64 bit	Multilanguage
SQL Server 2019 Developer	Database	Windows	64 bit	English
Machine Learning Server 9.4.7 for Windows	AI + Machine Learning	Windows	64 bit	English

Select Visual Studio Community 2019

Overview

Get started

Learning resources

Software

Learning

Need help?

Student FAQ

Select Visual Studio Community 2019

The screenshot shows the Microsoft Azure Education Software portal. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for csymong@um.cityu.edu.hk. The left sidebar contains navigation links for Home, Education | Software, Overview, Get started, Learning resources, Software (selected), Learning, and Need help? (Student FAQ). The main content area displays a list of 5 items under the heading 'Software Education'. The items are: Visual Studio 2019 for Mac, Visual Studio Code, Visual Studio Community 2019 (version 16.0) (highlighted), SQL Server 2019 Developer, and Machine Learning Server 9.4.7 for Windows. A modal window for 'Visual Studio Community 2019 (version 16.0)' is open, showing a description, operating system (Windows), product language (Multilanguage), and system architecture (64 bit). A yellow callout bubble points to the 'Download' button with the text 'Click Download'.

Microsoft Azure Search resources, services, and docs (G+/)

Home > Education | Software

Overview Get started Learning resources Software Learning Need help? Student FAQ

Are you a Student? Redeem the Azure for Student credit

Search

Product categories Product languages

5 Items

Name ↑↓

- Visual Studio 2019 for Mac
- Visual Studio Code
- Visual Studio Community 2019 (version 16.0)
- SQL Server 2019 Developer
- Machine Learning Server 9.4.7 for Windows

Visual Studio Community 2019 (version 16.0)

Visual Studio Community 2019 is a free, fully featured, and extensible IDE for individual developers, open source projects, academic research, education, and small professional teams. Create applications for Windows, Android, and iOS as well as web applications and cloud services. Build apps for any platform. Use designers, editors, debuggers, and profilers in a single tool. Access thousands of extensions and more.

Operating System
Windows

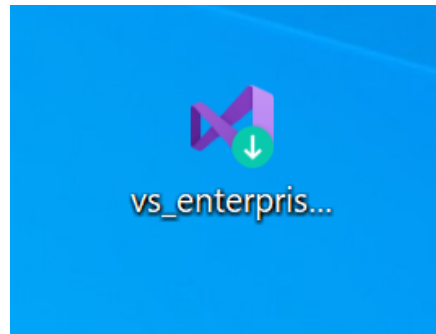
Product language
Multilanguage

System
64 bit

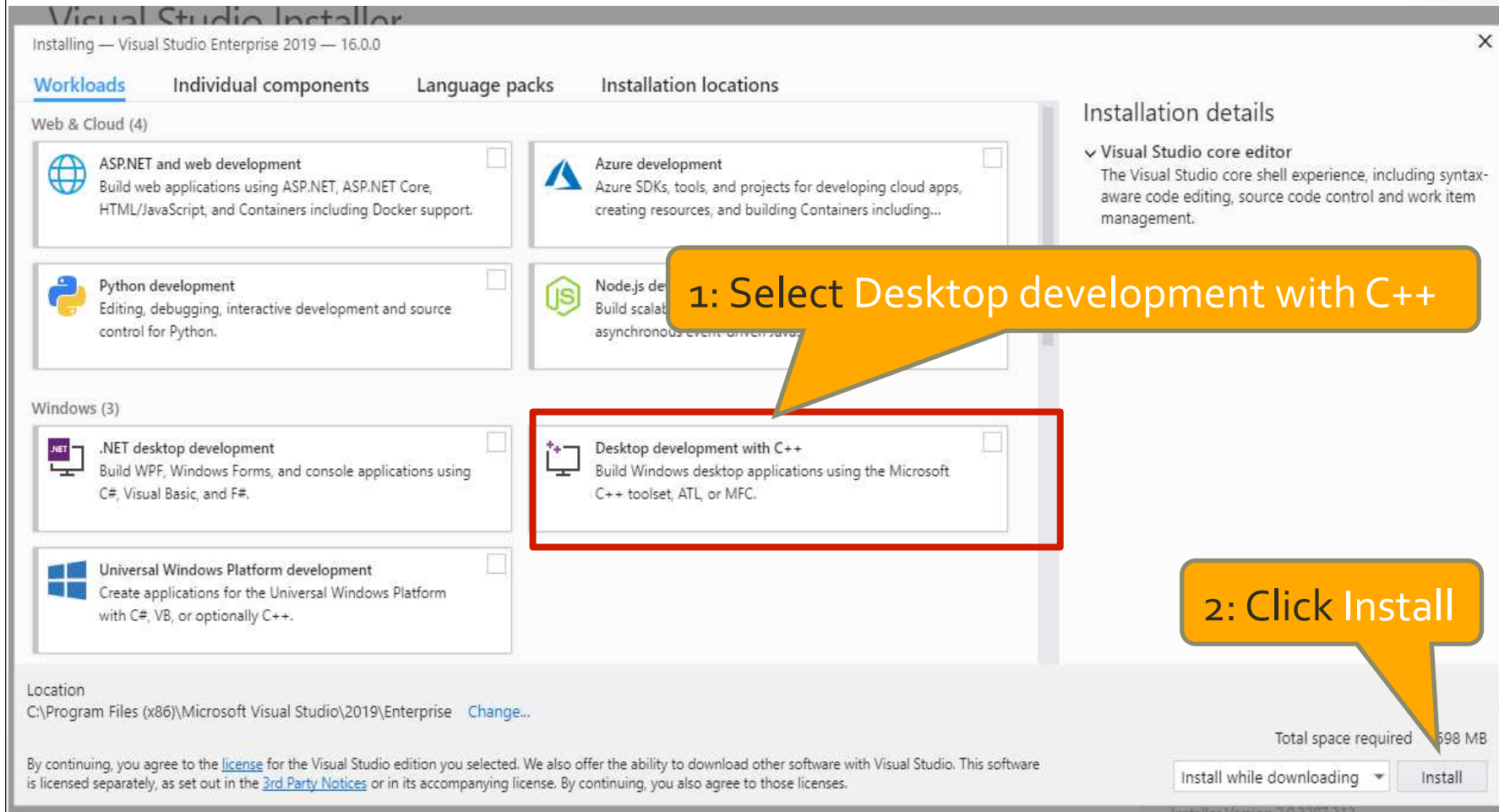
Click Download

Download Cancel

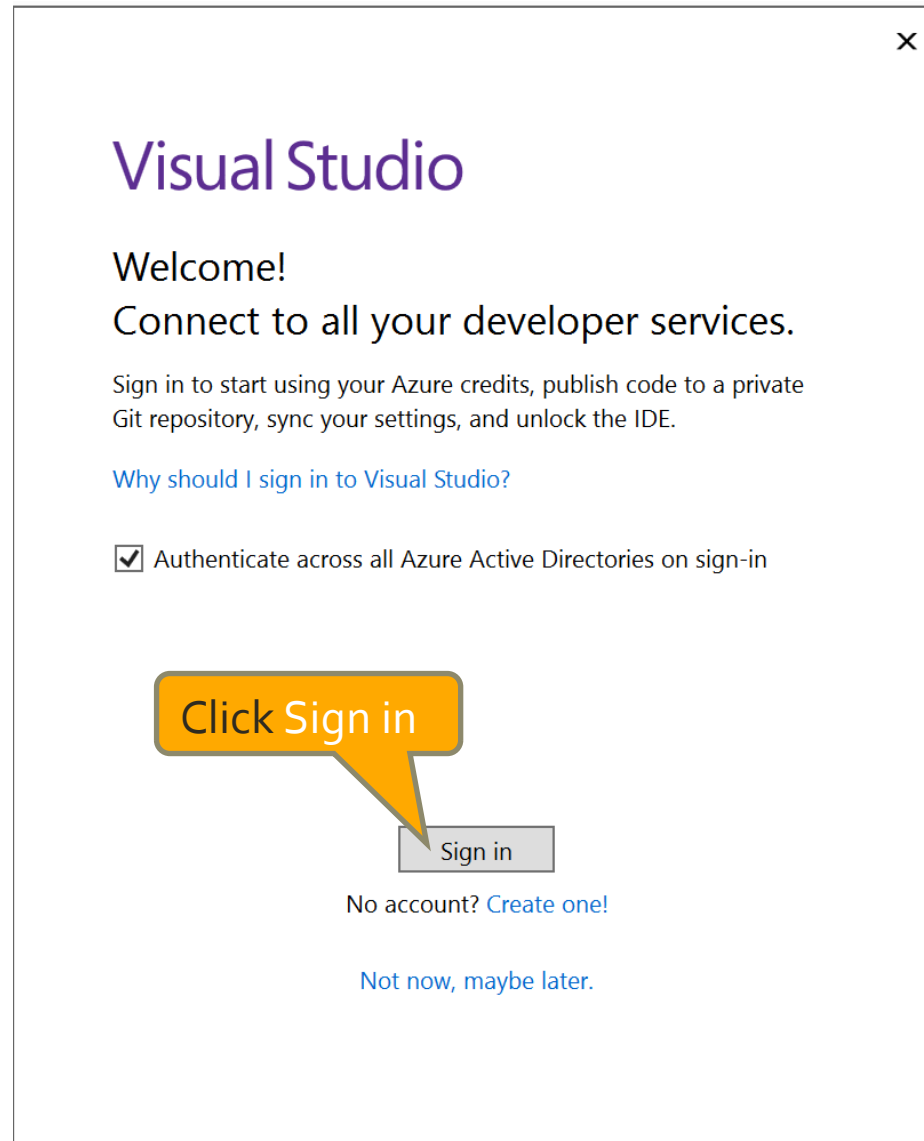
Run the downloaded executable file to obtain the Visual Studio Installer



Select useful workloads



Open VS2019 and Sign in with your CityU 360 account

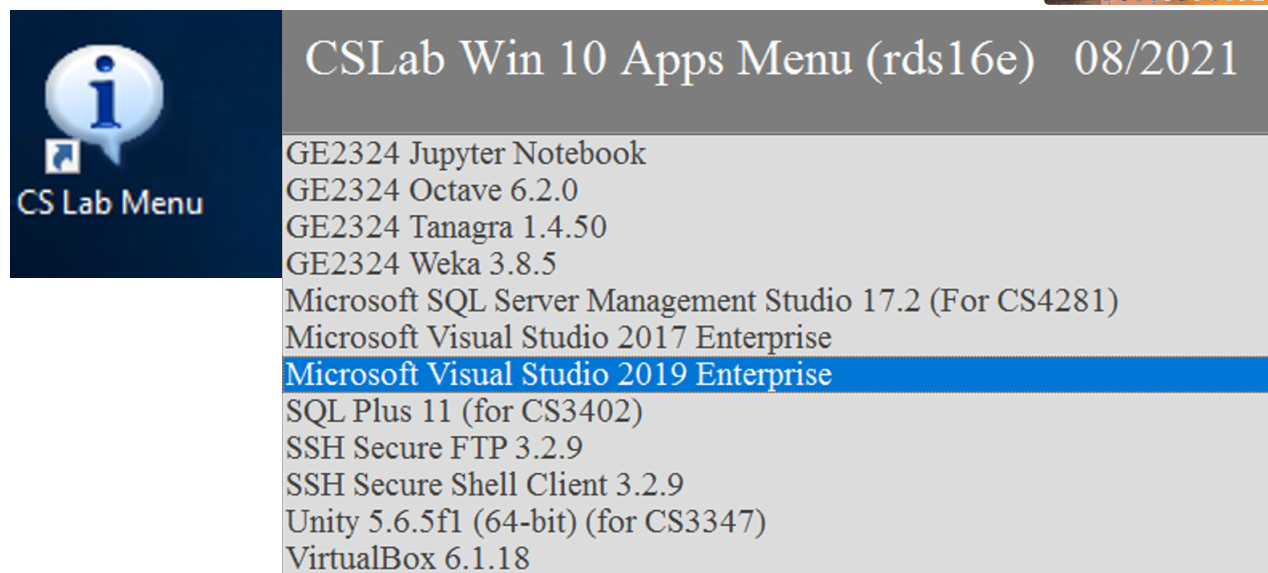
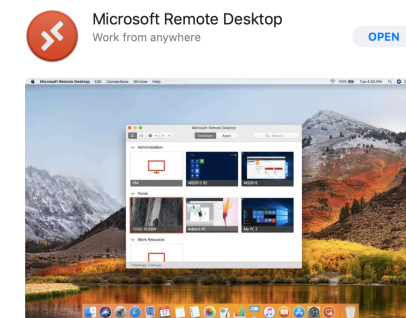


Option 3 for Mac OS

Connect to CSLab Windows 10

Option 3

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 - Run **Microsoft Remote Desktop**
 - Connect to rds16e.cs.cityu.edu.hk
 - Login with **CityU e-id** & password



For Linux users

As for Linux users, you can use CLion, which is a Cross-Platform IDE for C and C++ by JetBrains. Students can get the education support by registering with school email for free use of CLion. (recommended.)

Another alternative is Visual Studio Code:

Reference: <https://code.visualstudio.com/docs/languages/cpp>
<https://code.visualstudio.com/docs/editor/debugging>

It is also very convenient to use command line with g++ to compile and run .cpp files.

Details could be found in the (optional) references on Canvas