



# Chapter 01. C++ The first step of programming

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1. Understanding C ++
2. Installation Visual Studio 2013
3. A simple output programs

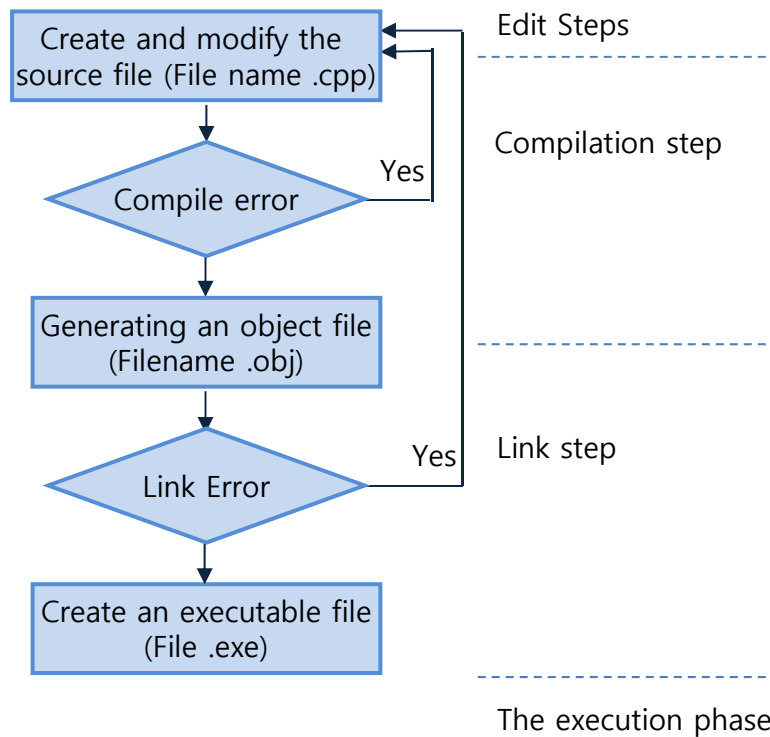
# Objective

- Understand the concept of what is programming in C ++.
- Students learn how to write a simple program by using C++.
- Understand the basic structure of the C ++ programming.
- Students learn the basic use of Visual Studio 2013.

# 01. Understanding C ++

## ■ What is programming in C ++

- It means to start a program using C ++ as a tool to allow the desired action to a computer that gender programming in C ++.
- The process of writing a C ++ program has a four significant steps Editing (edit), compile (compile), a link (link), consists of a run (execute) stage.



[그림 1-1] C++ 프로그램 작성 단계

# 01. Understanding C ++

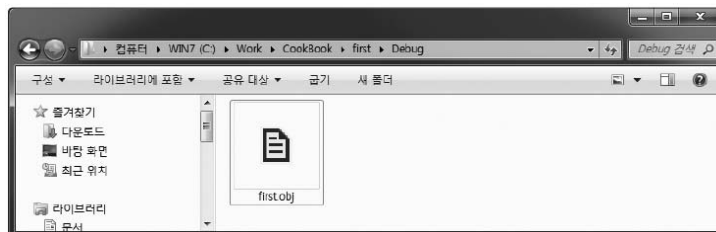
## ■ Edit Steps

- After the programmer created the source file that is called a file created by the program for the syntax of C ++ source file must be attached the cpp extension, which means that the C ++ source file.



## ■ Compilation step

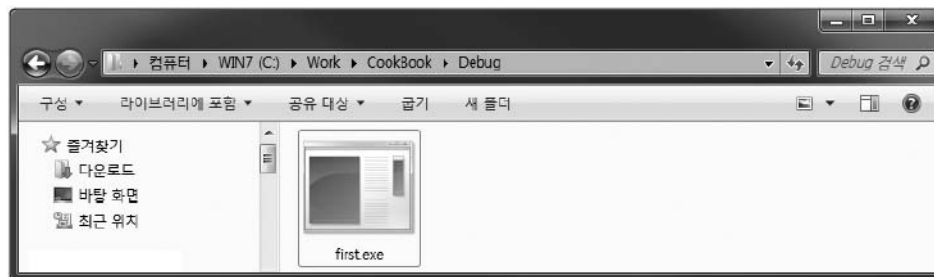
- If you check the compilation stage, after verifying the correct syntax by the C ++ compiler source file which is created in the editing stage. If it has no grammatically error then it changes into machine language object files to create the conditions.



# 01. Understanding C ++

## ■ Link step

- Predefined logic which is often used in the program is called the library that provides it. In the link step checks whether used according to the format provided by the library. If it makes correct reference object files which created in the compile step into an executable file.



## ■ The execution phase

- The executable file (a file with the extension exe can be run directly from your computer. Click the tool runs to run the executable using input from a console window, or provided by Visual Studio.



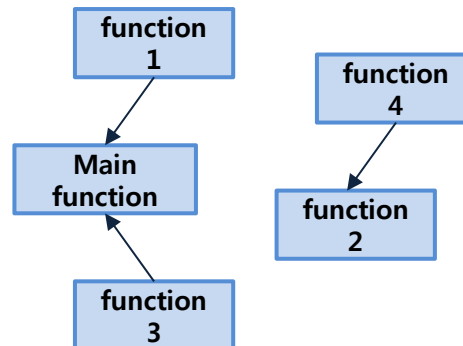
# 01. Understanding C ++

## ■ Object-oriented language C ++

- ① Procedural programming: Since the program is composed of a set of functions defining a function used to declare the data required for the function. Representative language has C.
- ② Object-Oriented Programming: Since the program an object oriented way by defining a function, after the user interface (UI) designed to deal with this class for the production of an object is to handle the object as a function. Representative language may include C ++, Java.

## ■ Procedural Programming

- ① A program designed around the function and then define the data required for the function.

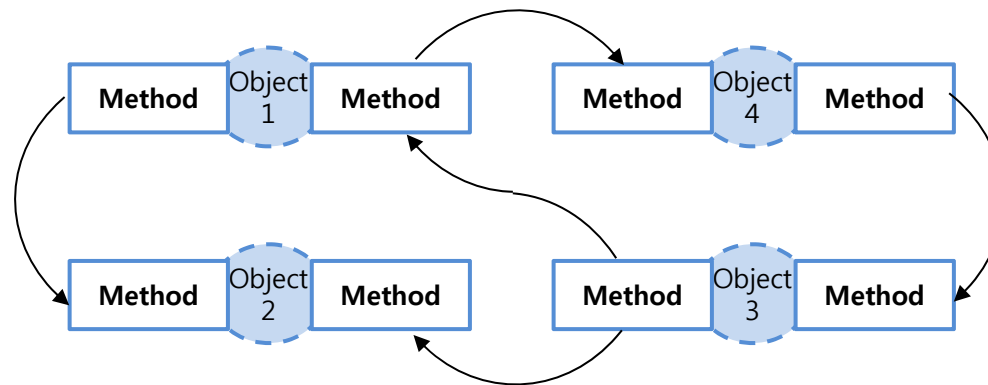


[picture 1-2] Procedural Programming

# 01. Understanding C ++

## ■ Object Oriented Programming

- Program technique for solving various problems by developing a modelling object in the real world. Here the object is to include all the entities (data) and behavior (process, method, function) associated with that entity.
- Example) For sale to the ticket at the train station instance, the reality of 'guest' and the procedure 'Buy Tickets' is a single object, and one object is also a reality 'attendant' procedure and the 'ticket sale'. For ticket sale between objects send and receive messages ( "KTX Busan, please go single table"). Object receiving the message and executes the operations (steps).
- Object-oriented programming is a technique that promotes modularity, encapsulation of the complicated system rebuilding, with easy-to-use software that huge, filling, easy to maintain direction.



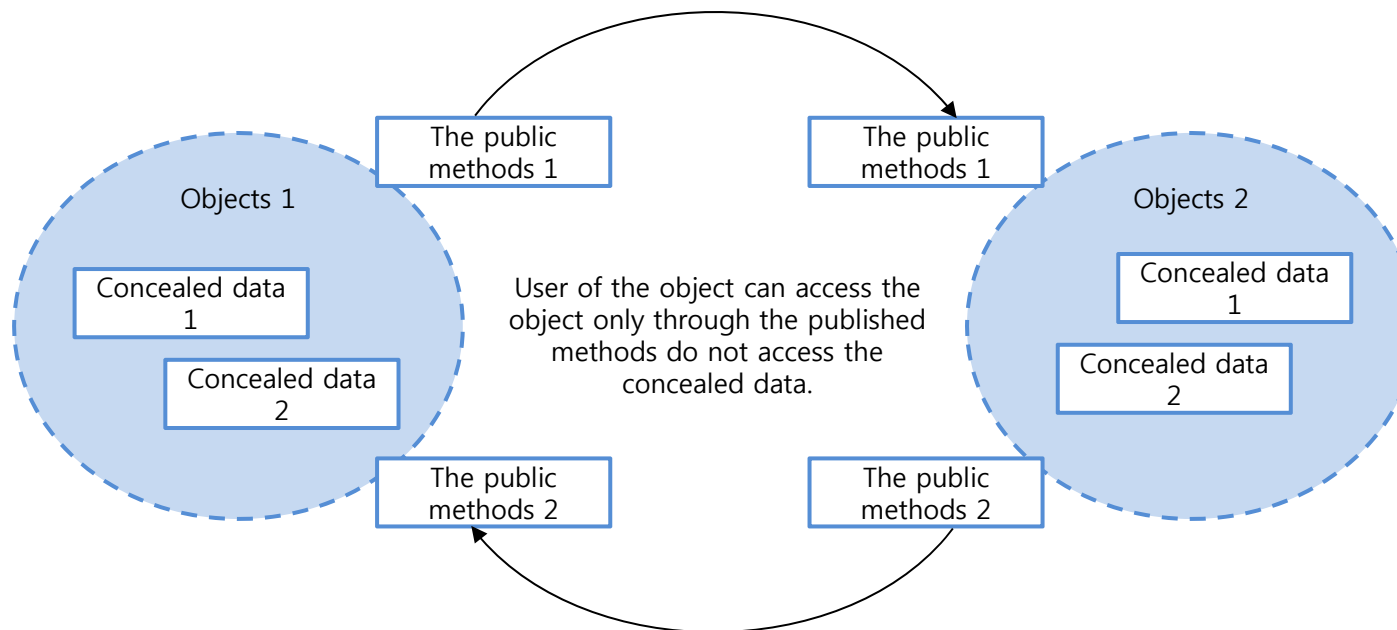
[Picture 1-3] Object Oriented Programming



# 01. Understanding C ++

## ■ The main features of object-oriented programming

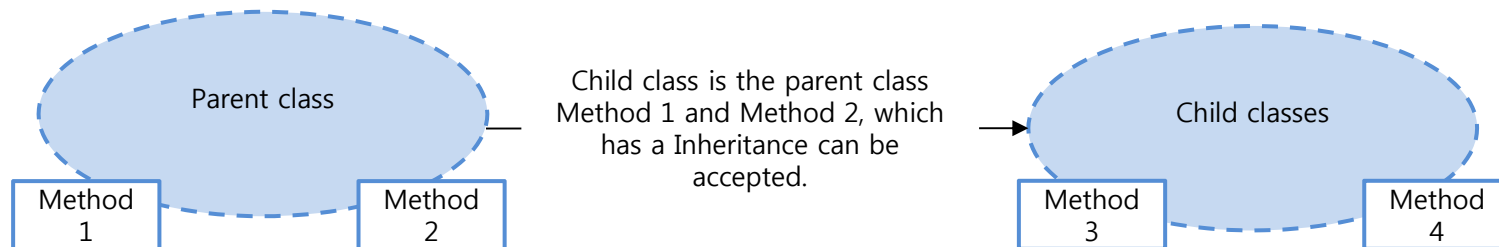
- Encapsulation and Data Hiding
  - Poor handling of the data, so data may be damaged. If it is encapsulated and data hiding is provided to prevent this.
  - Thoroughly hide the details of the object to an object external to simply make the interaction with the object, only the message.



[Picture 1-4] Public functions and concealment of data objects

# 01. Understanding C ++

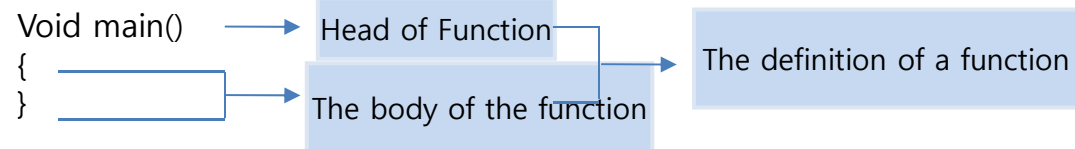
- Polymorphism and overloading of functions, operator overloading
  - Polymorphism (polymorphism) is to provide a different implementation using a single interface.
  - Through overloading or overriding also to operate differently depending on the same case function or operator.
- Inheritance
  - Inheritance is the most typical object-oriented features, to the nature of the particular object for use by other objects inherit.



# 01. Understanding C ++

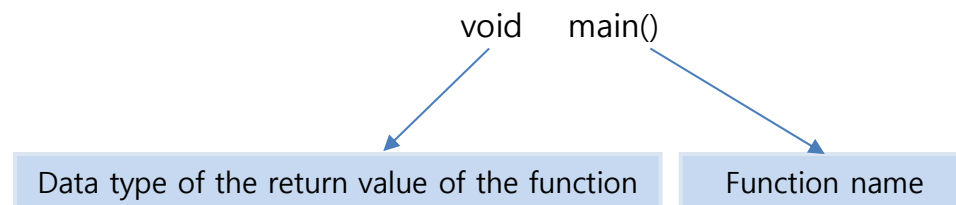
## ■ A simple C ++ program

- one program required the one function main ()



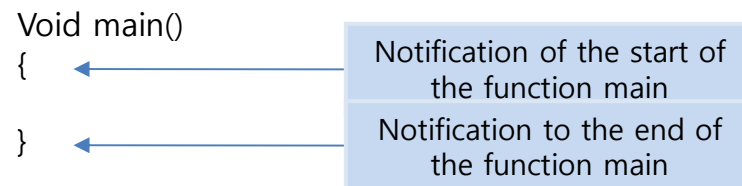
[Picture 1-6] The structure of the function

- Void type functions that is not to have a return value



- Symbols for the start and end of the function {}

[Picture 1-7] The structure of the function head

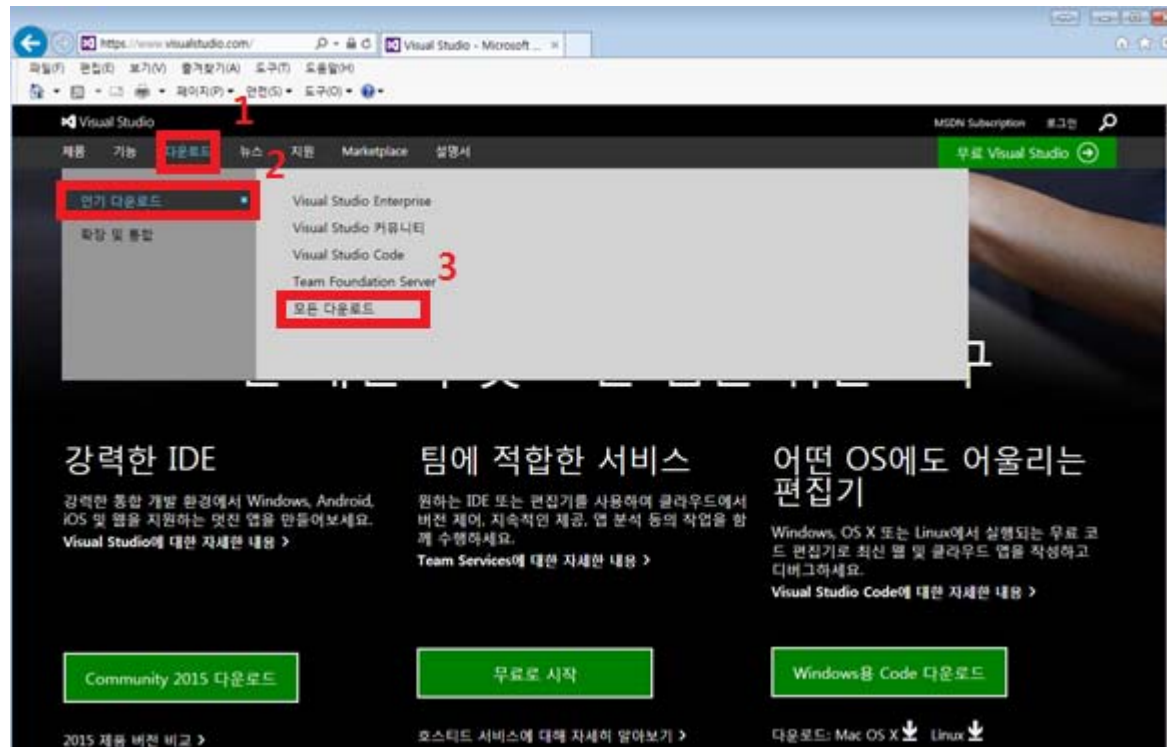


[Picture 1-8] Start and end of the function

## 02 Installing Visual Studio 2013

### ■ Installing Visual Studio 2013

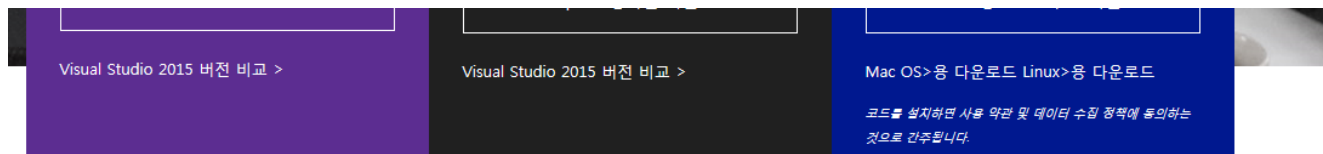
- Access to the site in Visual Studio (<https://www.visualstudio.com/>)
  - Downloads - Top Downloads - Download Mode



## 02 Installing Visual Studio 2013

### ② Download

- Visual Studio 2013 – Community 2013 – Download



### Visual Studio 다운로드

[Visual Studio 2015](#)

[Team Foundation Server 2015](#)

[Visual Studio Code](#)

[Visual Studio 2015용 도구](#)

[Visual Studio 2013](#)

■ [Community 2013](#)

Ultimate 2013

Premium 2013

Professional 2013

Test Professional 2013

Express 2013 for Desktop

Express 2013 for Web

Express 2013 for Windows

Visual Studio 2013 업데이트 5

[Team Foundation Server 2013](#)

[Visual Studio 2013용 도구](#)

#### Visual Studio Community 2013 업데이트 5

Visual Studio Community 2013은 무료로 제공되고 모든 기능을 갖춘 IDE로, 강력한 코딩 생산성 기능, Windows, iOS 및 Android용 플랫폼 간 모바일 개발 도구, 그리고 수천 개의 확장에 대한 액세스를 제공합니다. 이 Visual Studio 버전은 비 엔터프라이즈 응용 프로그램 개발에 무료로 사용할 수 있습니다. 설치 후 [Visual Studio 갤러리](#)를 확인하세요. 도구, 컨트롤 및 템플릿에 빠르게 액세스하여, Visual Studio를 최대한 활용할 수 있도록 해줍니다.

참고: Visual Studio Community 2013(원래 릴리스 버전)이 이미 설치되어 있는 상태에서 이 다운로드를 실행하면 업데이트 5만 설치됩니다. Visual Studio Community 2013이 설치되어 있지 않은 상태에서 이 다운로드를 실행하면 Visual Studio Community 2013과 업데이트 5가 모두 설치됩니다. 두 경우 모두 Visual Studio 2013 언어 팩(원래 릴리스 버전)도 설치할 수 있습니다.

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[시스템 요구 사항](#)  
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형식 선택: ☒ 웹 설치 관리자 ☐ ISO

다운로드

Visual Studio Community 2013 업데이트 5 - 영어

#### Visual Studio 2013 언어 팩

Visual Studio 2013 언어 팩은 Visual Studio 사용자 인터페이스에 표시된 언어를 전환하는 데 사용할 수 있는 무료 추가 기능입니다.

언어 선택:

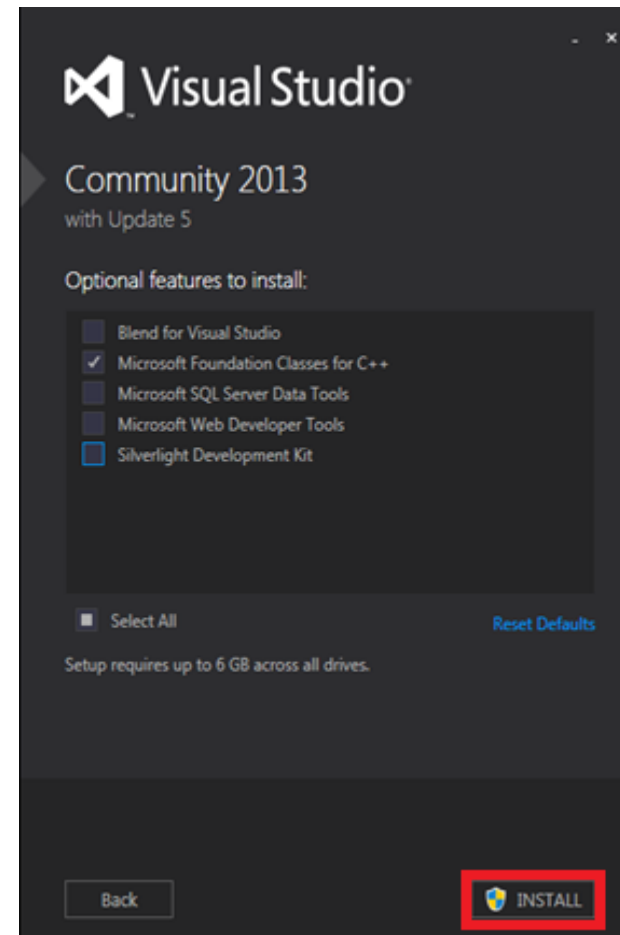
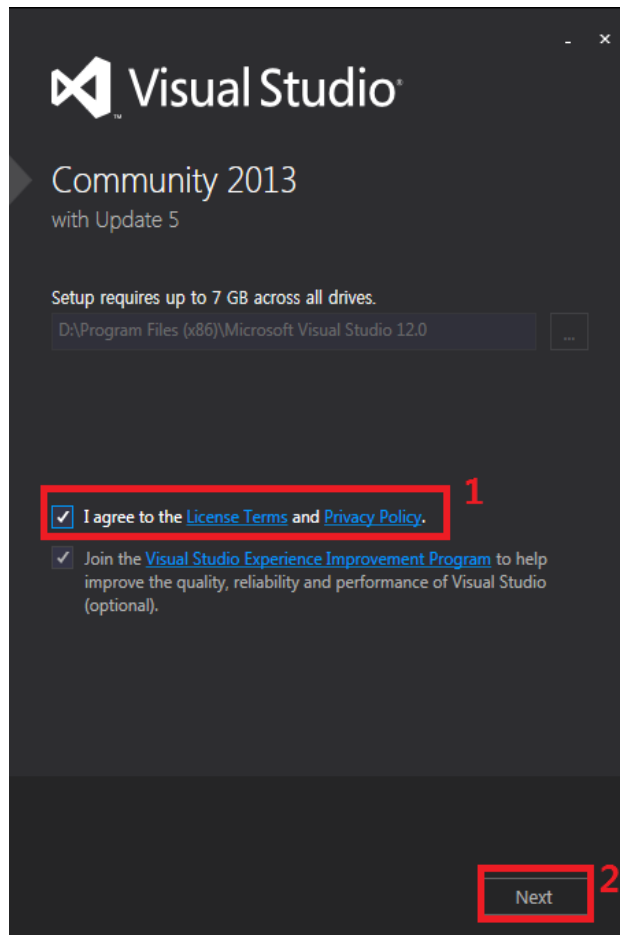
다운로드

Visual Studio 2013 언어 팩 - 한국어

## 02 Installing Visual Studio 2013

### ③ Install

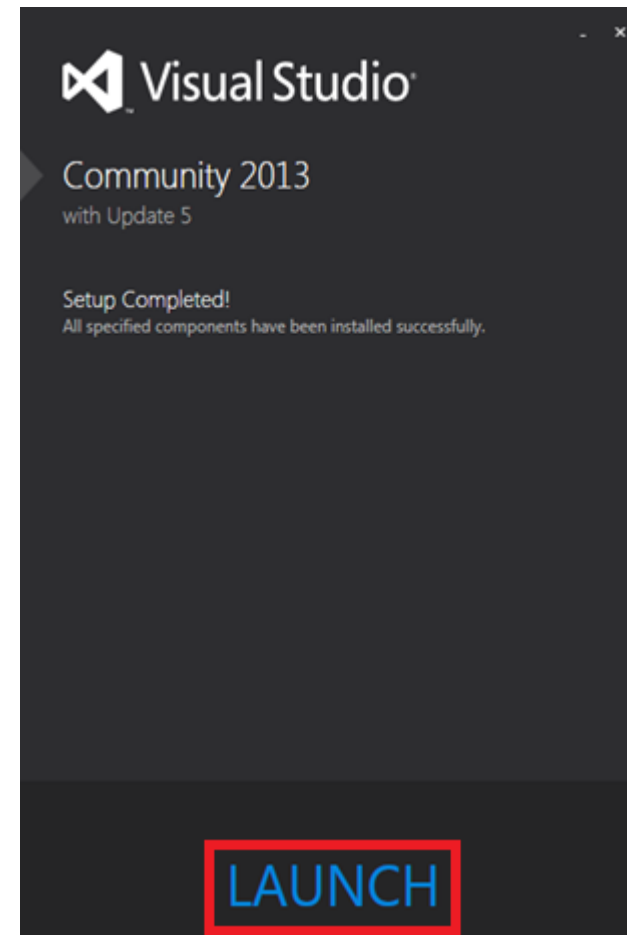
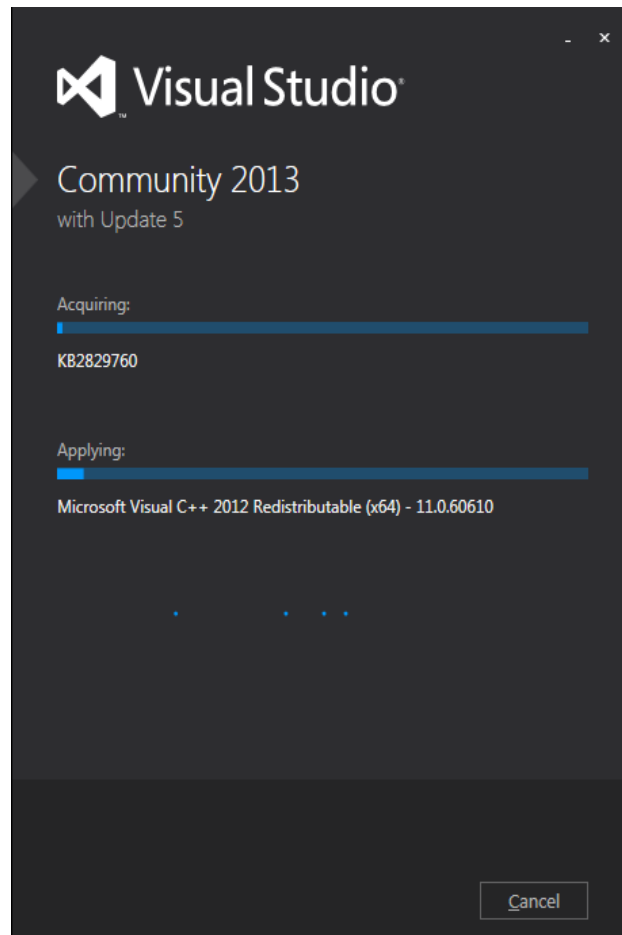
- Terms of agreement - following - Microsoft Foundation Classes for C++ selection - Installation



## 02 Installing Visual Studio 2013

### ④ Start

- installed - LAUNCH



## 02 Installing Visual Studio 2013

### ⑤ Enrollment

- Sign in - Sign in to your account Microsoft
- If there is no progress to join Microsoft account through a simple e-mail then you make an authentication

The image displays three sequential screenshots of the Visual Studio 2013 enrollment process, each in a window with a close button (x) in the top right corner.

**First Screenshot:** The Visual Studio logo is at the top left. Below it, the text reads "Welcome. Sign in to Visual Studio." followed by "Visual Studio will automatically keep you signed in, sync your settings between devices, and connect to online developer services." and a "Learn more" link. At the bottom, there is a "Sign in" button highlighted with a red rectangle, and a link "Not now, maybe later." below it. At the very bottom, it says "By signing in, you agree to the Team Foundation Services Terms of Use and Privacy Statement".

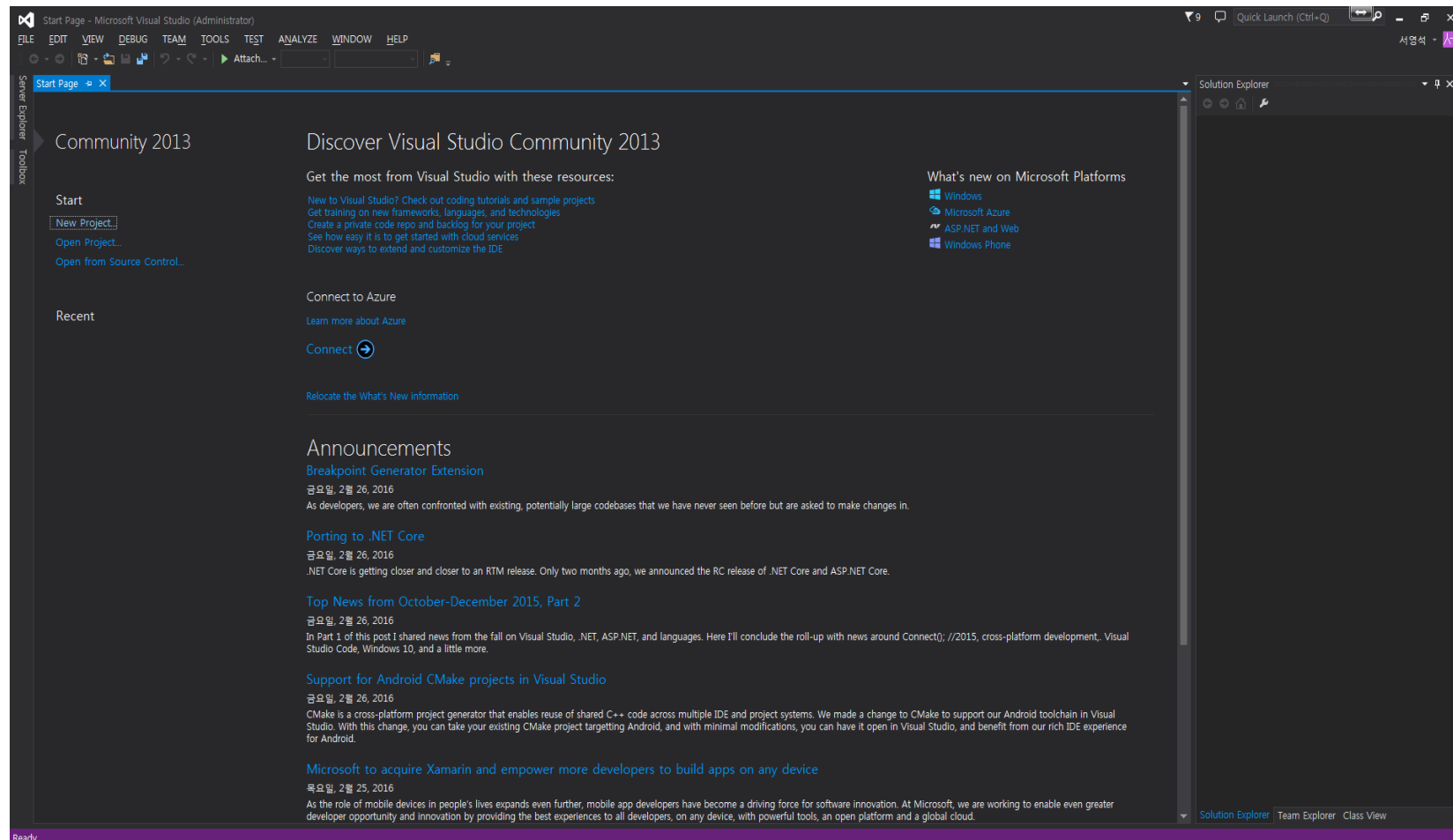
**Second Screenshot:** The window has a blue header bar with the text "Microsoft 계정" (Microsoft Account). Below the header, the title "로그인" (Login) is centered. There are two input fields: the first is labeled "Microsoft 계정" and contains the email "ddlsck2@gmail.com"; the second is labeled "암호" (Password) and contains ten black dots. Below the password field is a blue "로그인" (Login) button. At the bottom, it says "Microsoft 계정이 없으신가요? 지금 등록" (Don't have a Microsoft account? Register now).

**Third Screenshot:** The Visual Studio logo is at the top left. Below it, the text reads "We're getting things ready" followed by "Thanks for your patience." and three dots indicating a loading or waiting state.



# 02 Installing Visual Studio 2013

⑥ installed



## 02 Installing Visual Studio 2013

### ■ Using Visual Studio Hangul

- Language Pack Download
  - Download a language pack from the download site

The screenshot shows the Visual Studio download page. At the top, there are navigation links: 'Visual Studio 2015 버전 비교 >', 'Visual Studio 2015 버전 비교 >', and 'Mac OS>용 다운로드 Linux>용 다운로드'. Below these, a blue banner contains the text: '코드를 설치하면 사용 약관 및 데이터 수집 정책에 동의하는 것으로 간주됩니다.'.

### Visual Studio 다운로드

[Visual Studio 2015](#)  
[Team Foundation Server 2015](#)  
[Visual Studio Code](#)  
[Visual Studio 2015용 도구](#)  
[Visual Studio 2013](#)

- Community 2013
  - Ultimate 2013
  - Premium 2013
  - Professional 2013
  - Test Professional 2013
  - Express 2013 for Desktop
  - Express 2013 for Web
  - Express 2013 for Windows
  - Visual Studio 2013 업데이트 5

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형식 선택: ☒ 웹 설치 관리자 ☐ ISO

[다운로드](#) [오프라인으로 파일을 설치하는 방법](#)

Visual Studio Community 2013 업데이트 5 - 영어

#### Visual Studio 2013 언어 팩

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언어 선택:

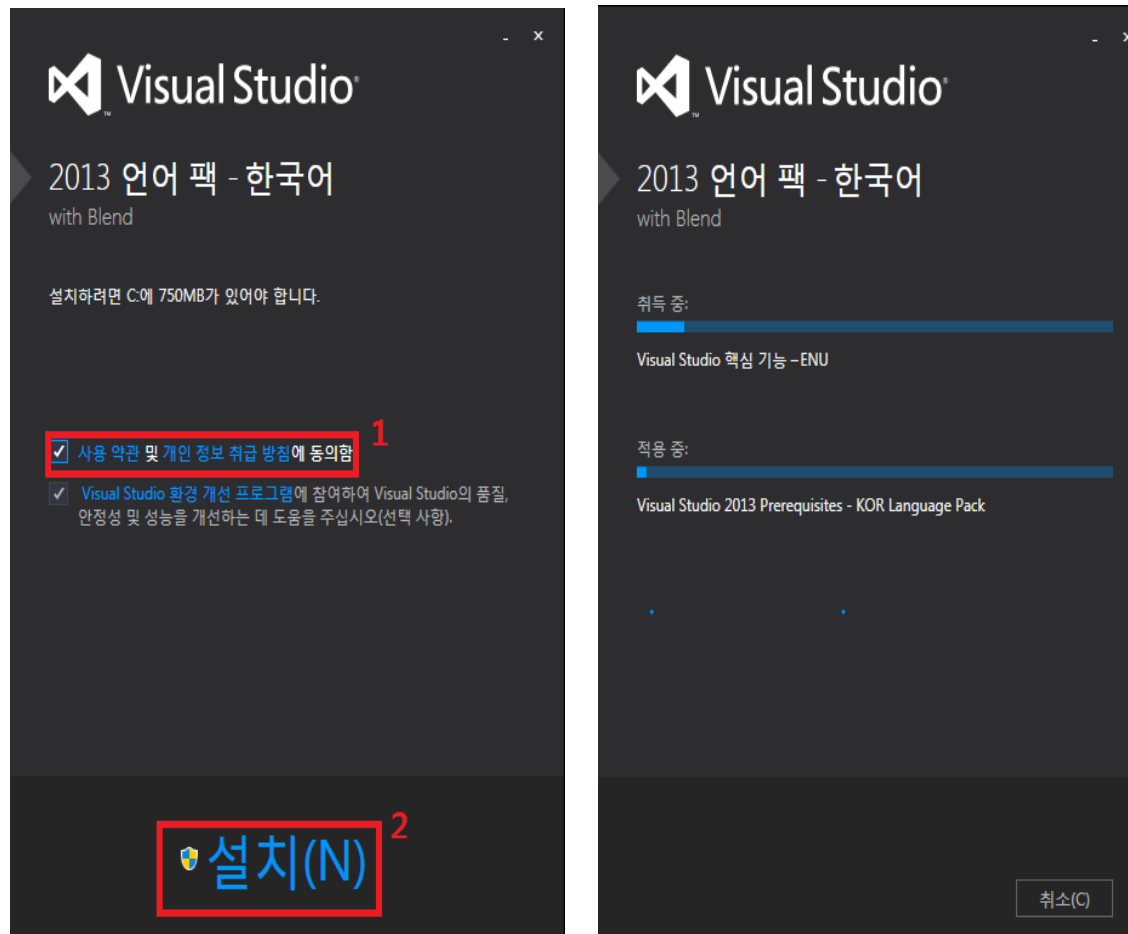
[다운로드](#)

Visual Studio 2013 언어 팩 - 한국어

## 02 Installing Visual Studio 2013

### ② Install

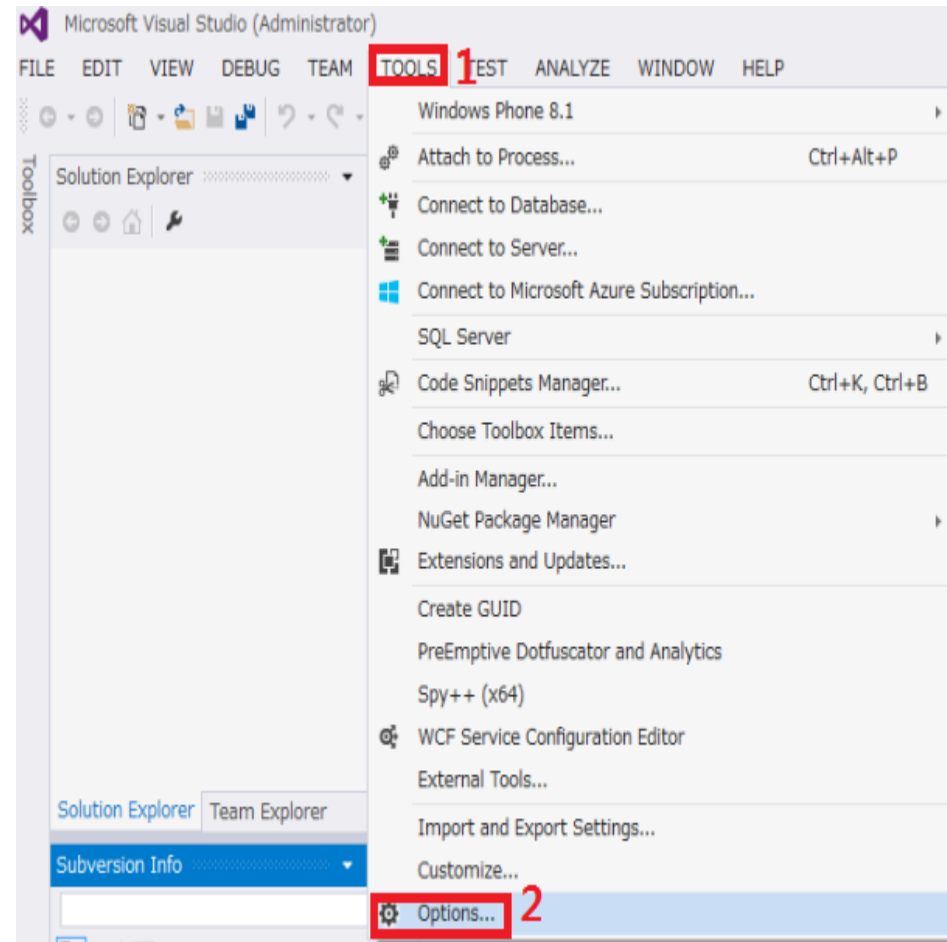
- Terms of agreement - Installation



## 02 Installing Visual Studio 2013

### ③ Change Settings

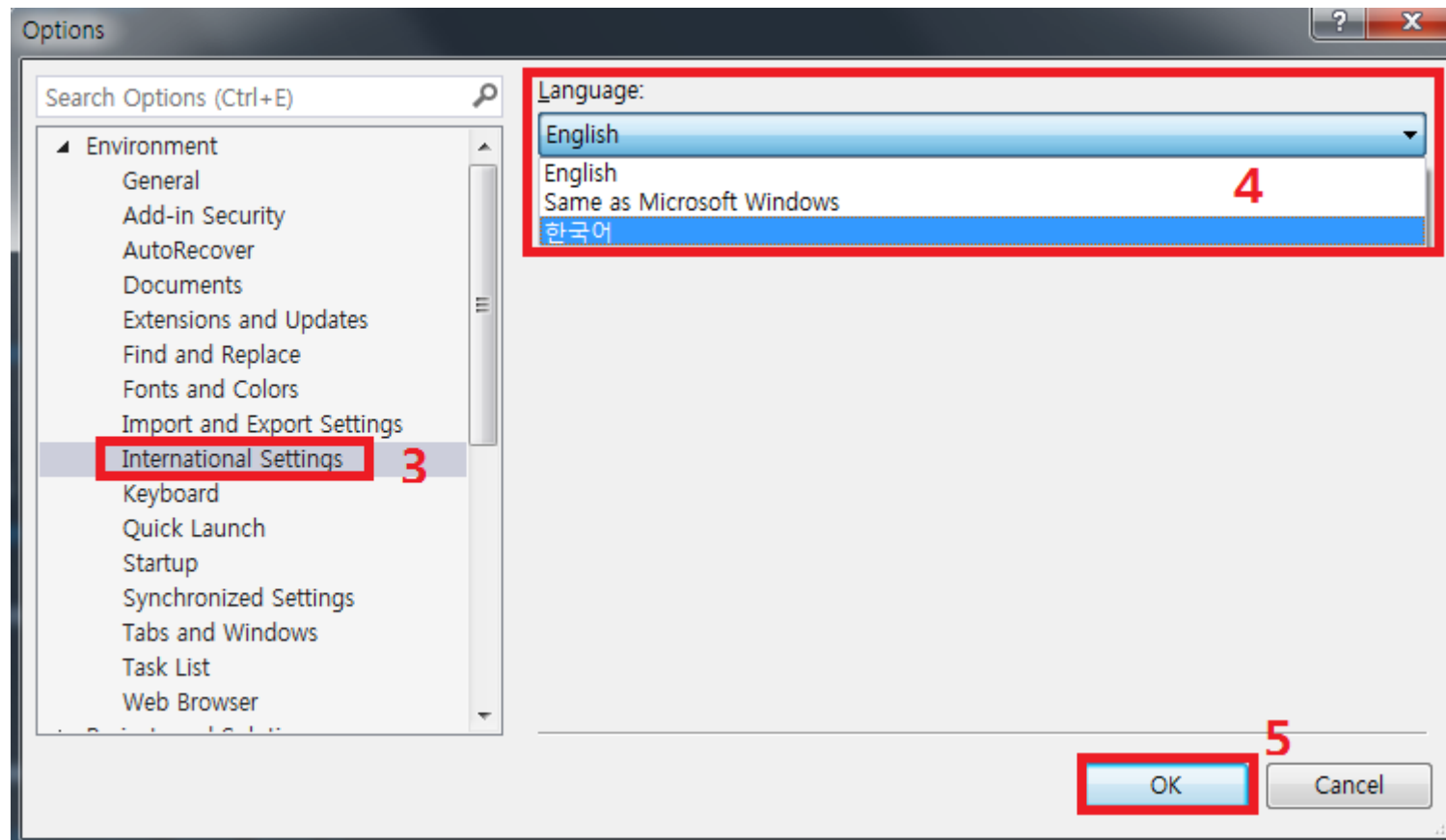
- Visual Studio 2013 execution – Tools – Options



## 02 Installing Visual Studio 2013

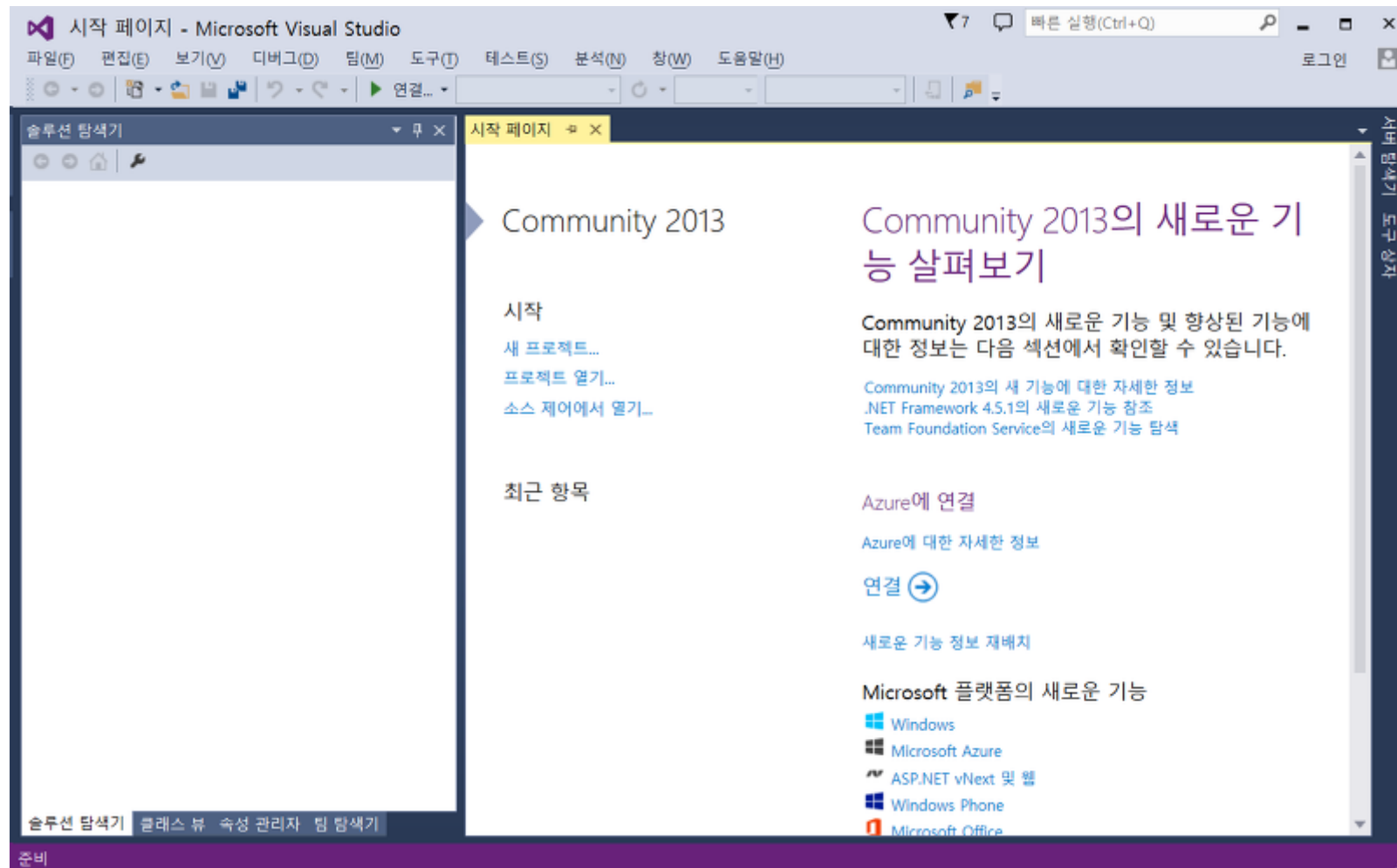
### ④ Change Settings

- Environment – International Settings – Language changes in Korean - Ok - Visual Studio restarts



## 02 Installing Visual Studio 2013

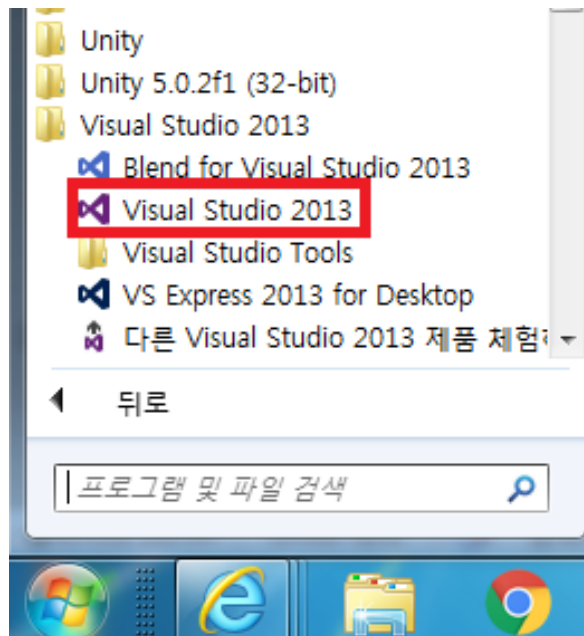
### ⑤ Complete change



## 02 Installing Visual Studio 2013

### ■ Programming in Visual Studio C ++

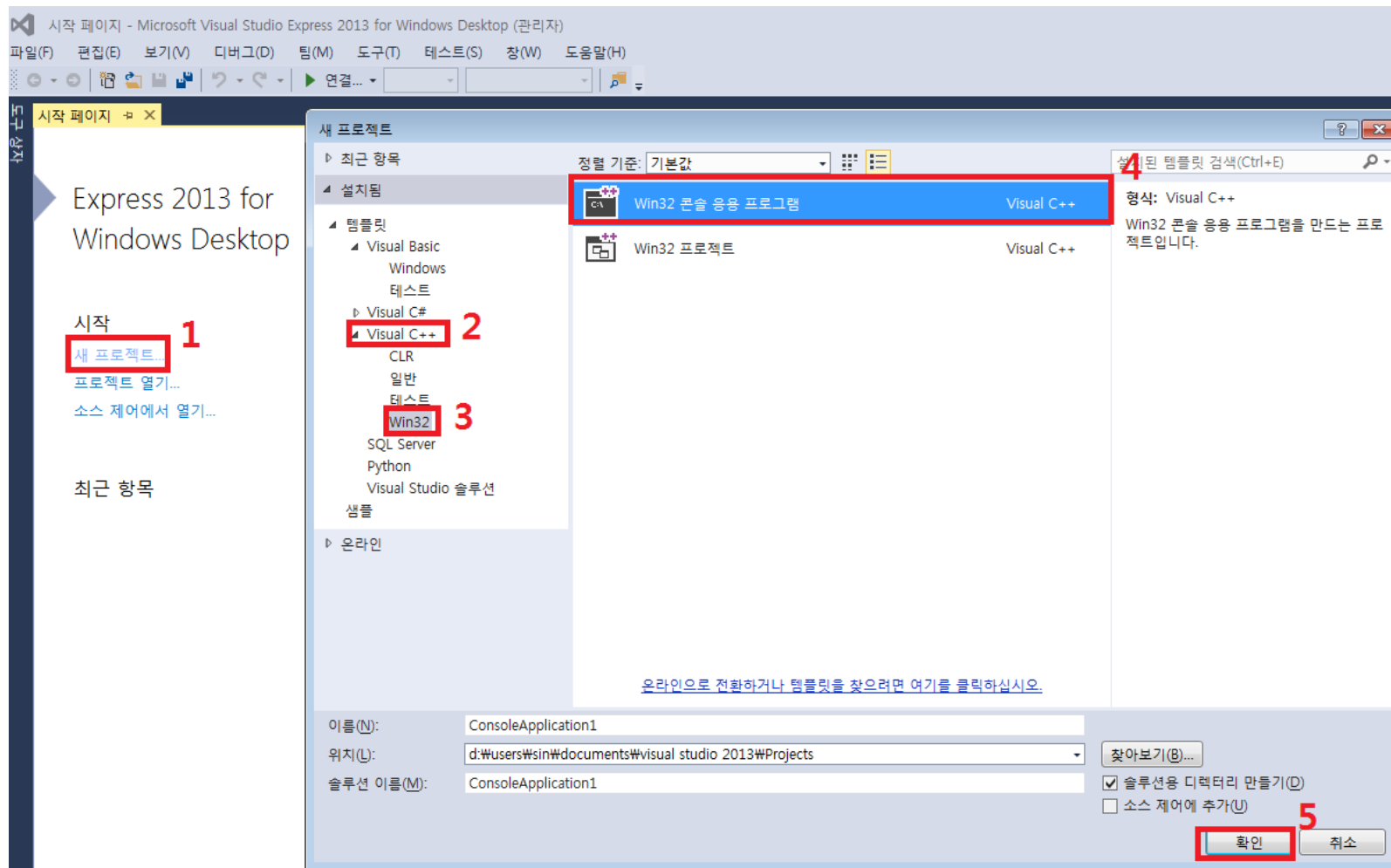
- Visual Studio is running
  - Run installed Visual Studio 2013



## 02 Installing Visual Studio 2013

### ② New Project Settings item

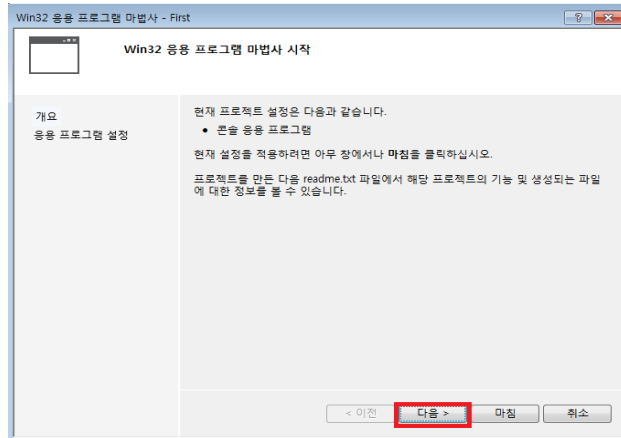
- New project - Visual C ++ - Win32 - Win32 console application - Confirm



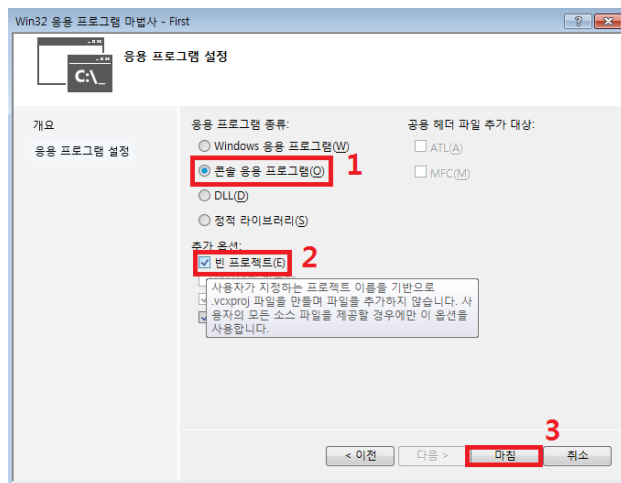


## 02 Installing Visual Studio 2013

### ③ The Win32 Application Wizard



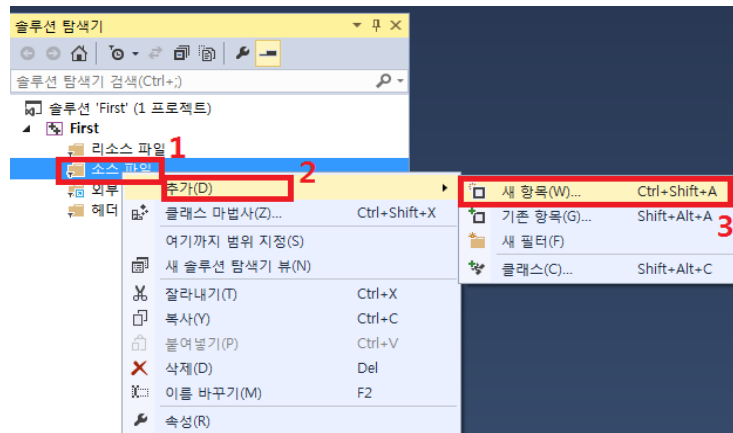
### ④ Application Settings



## 02 Installing Visual Studio 2013

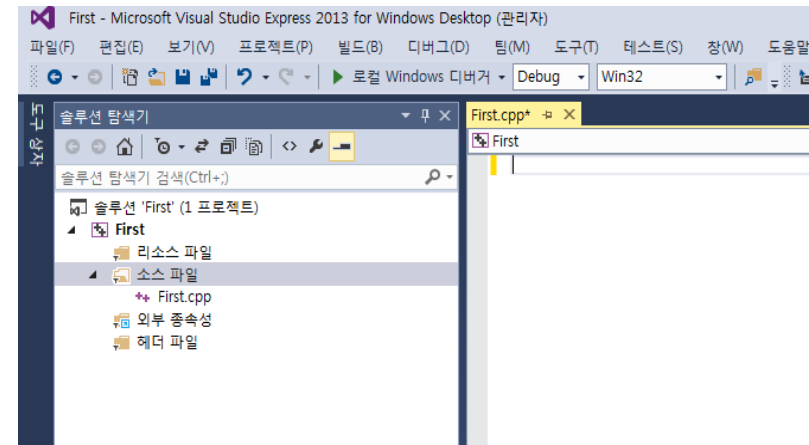
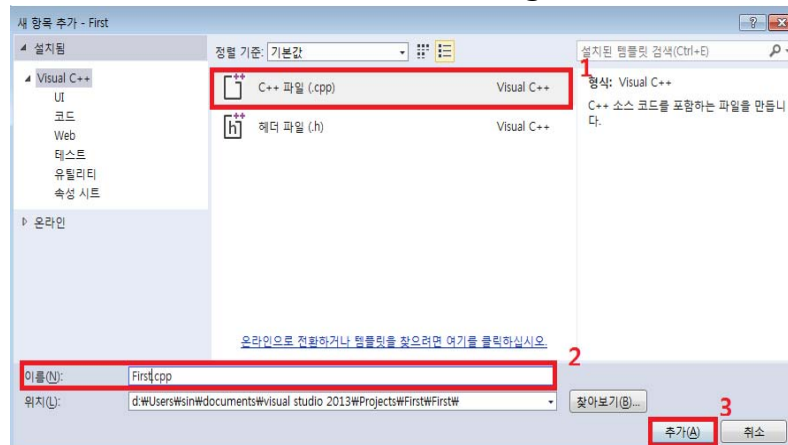
### ⑤ Add New Item

- Right-click the source file - add - new item (shortcut: Ctrl + Shift + A)



### ⑥ C++ projects generated source files

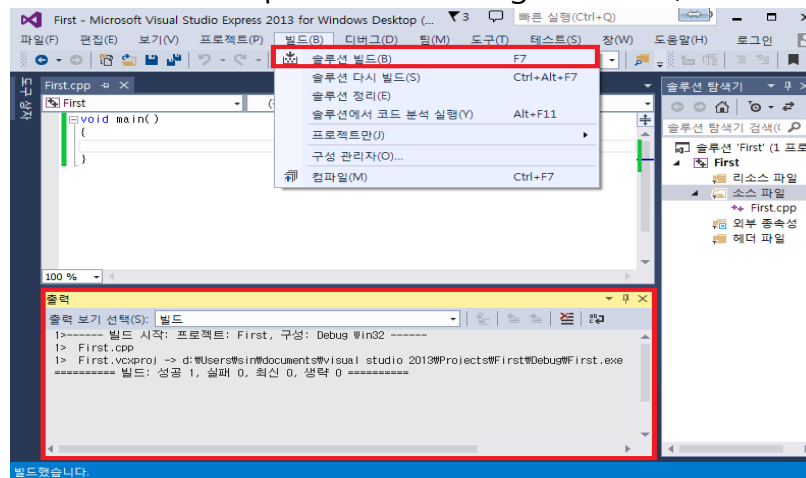
- C++, select File - Name Settings - Add



## 02 Installing Visual Studio 2013

### ⑦ Build (compile, link) Step

- The source input-build-building solution (shortcut: F7)

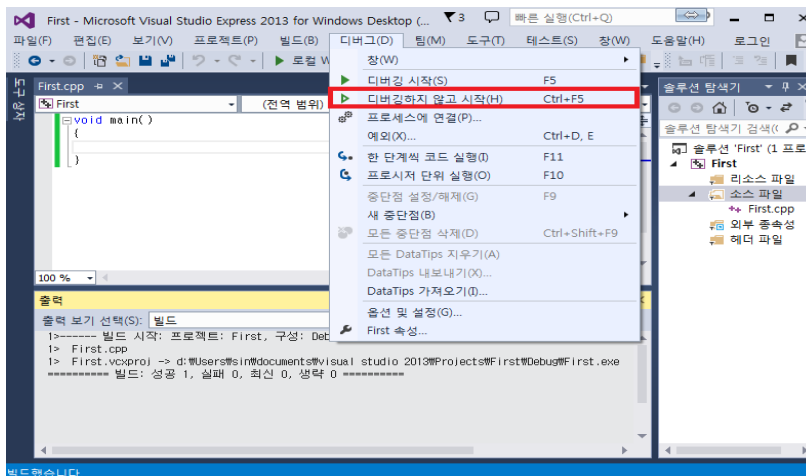


입력 소스

```
void main()
{
}
```

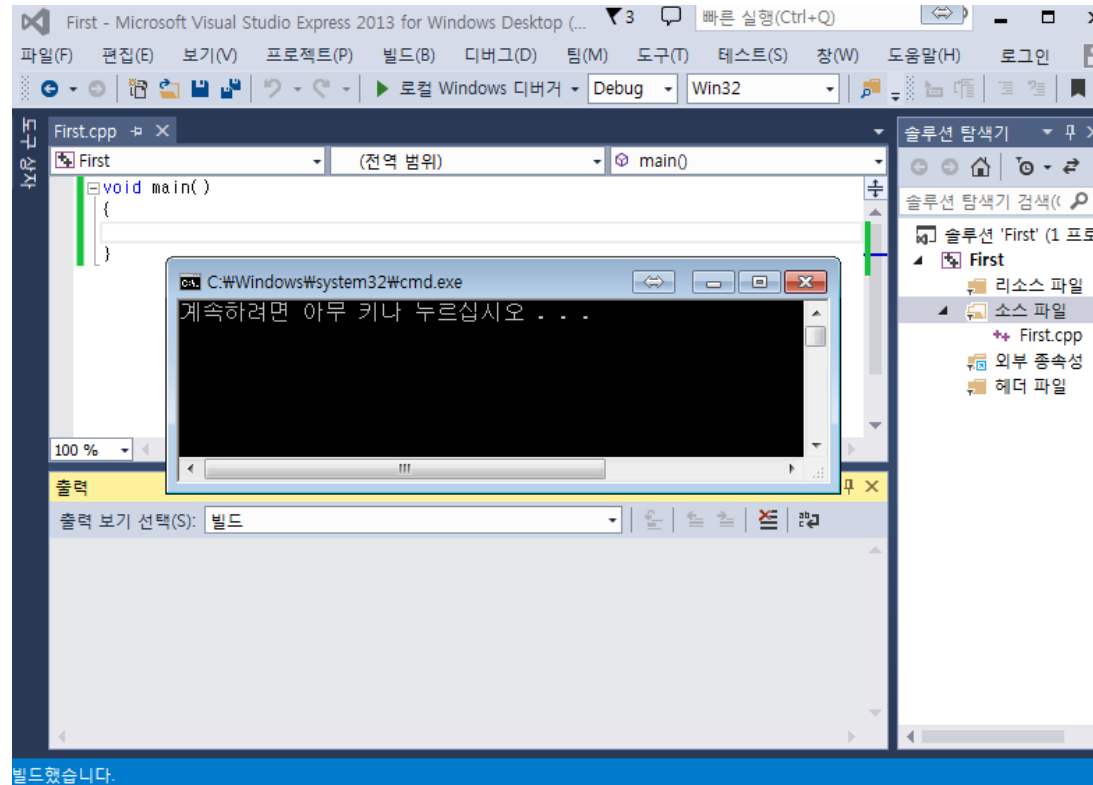
### ⑧ The execution phase

- Debug - Start Without Debugging (shortcut: Ctrl + F5)



## 02 Installing Visual Studio 2013

### ⑩ The results



## Example 1-2. Program that prints a simple string (01\_02.cpp)

```
01 #include <iostream> // Statements that include the header file
02 void main()
03 {
04 /* cout is as the object that is responsible for the output,
05 The stream insertion operator (stream insertion operator)
06 <<With the outputs a string in "". * /
07
08 std::cout<<"C++ 세계에 오신 것을 환영합니다. \n";
09 }
```

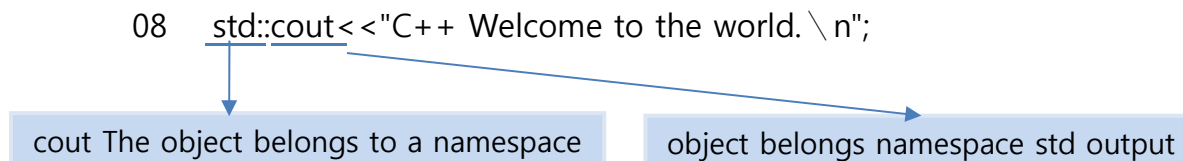
## 03 A simple output program

### ■ #include statements that contains the external file such as iostream file

- It is used to include files between appearing immediately after the <> symbol: #include statement.
- iostream: io refers to the input and output, it **deuleogandago** earlier program source code, also called a header file.

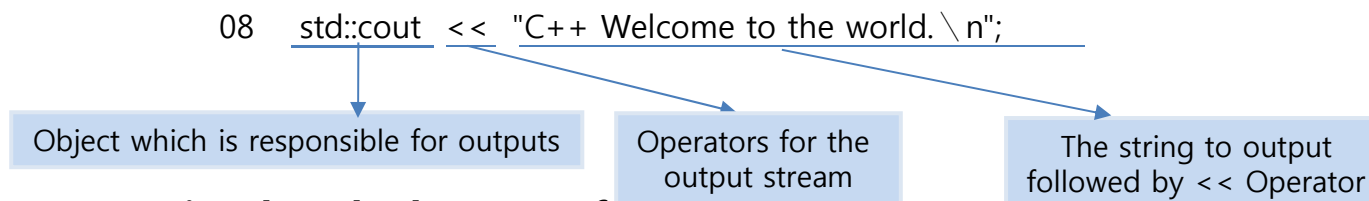
### ■ namespace std

- The meaning of the name space to which it belongs.



### ■ cout Objects and output operators <<

- cout (console output) is an object which is responsible for the output. It uses a stream of the << operator (operator insertion stream) to the output.



### ■ Line break character features \n

- <Enter> It plays a role, such as the key.

## 03 A simple output program

### ■ Type of punctuation;

- Use a semicolon (;) in order to distinguish whether a sentence finished.

```
08  std::cout<<"C++ Welcome to the world. \n" ;
```



Semicolon indicate the end of a sentence

### ■ Comments to help understand the programmer

- Comments is supplement the description of the source code, or a sentence describing additional materials.

- Line-by-line comments: // is used when treatment with just a one line comment.

```
01  #include <iostream> // 헤더파일을 포함시키는 문장
```

- Block comment / \* \* /: All statements described in the internal is treated as a comment.

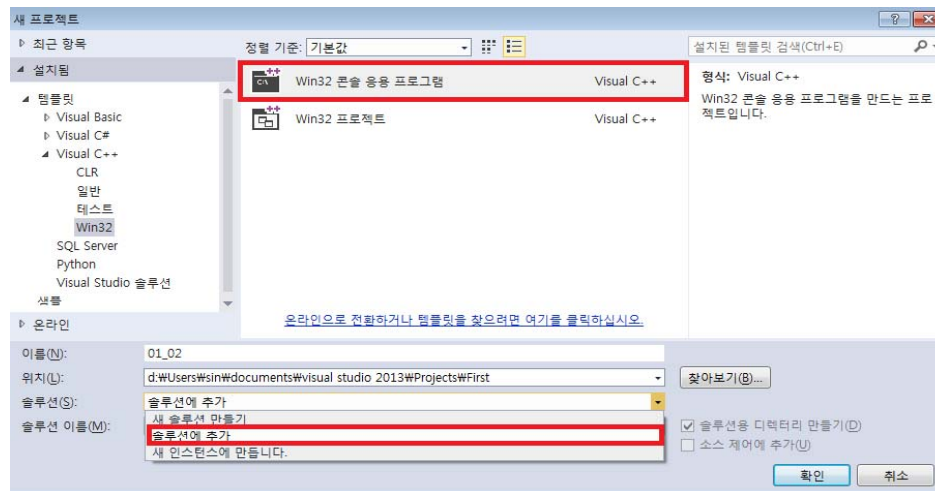
```
04  /* cout은 출력을 담당하는 객체로서  
05  스트림 삽입 연산자(stream insertion operator)인  
06  <<를 이용해서 ""내부의 문자열을 출력한다. */
```

## 03 A simple output program

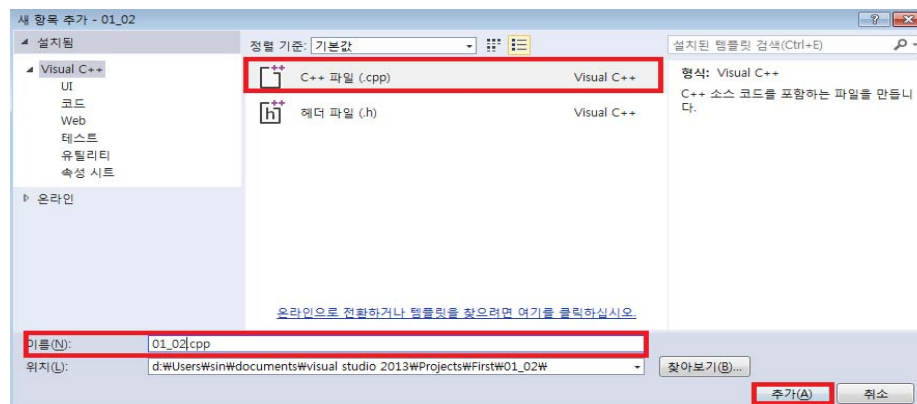
### ■ Add your project to your solution

#### 1. Create a Project

- Solution (S) to set the entries added to the solution



#### ② Generate C++ source file to the project



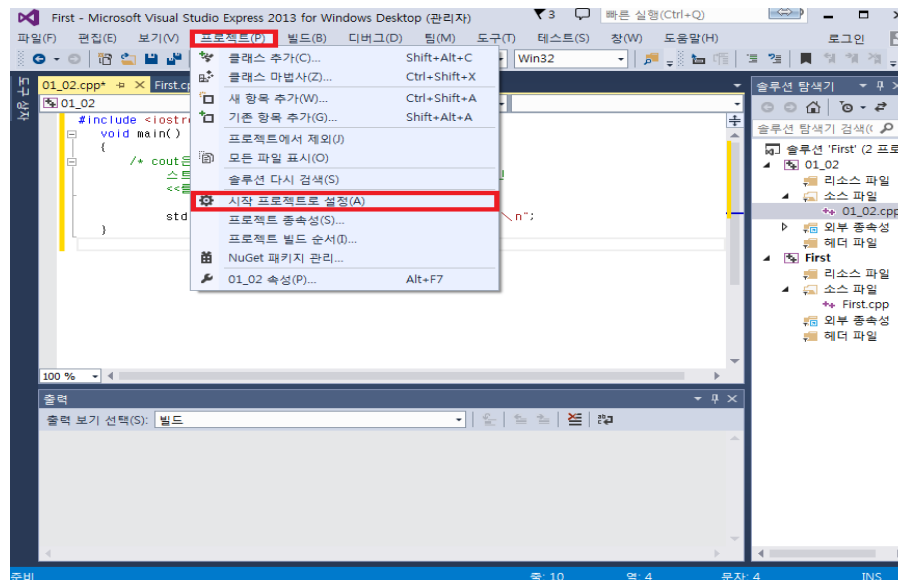


## 03 A simple output program

### ③ Input Source Code

```
01 #include <iostream> // 헤더파일을 포함시키는 문장
02 void main()
03 {
04     /* cout은 출력을 담당하는 객체로서
05     스트림 삽입 연산자(stream insertion operator)인
06     <<를 이용해서 ""내부의 문자열을 출력한다. */
07
08     std::cout<<"C++ 세계에 오신 것을 환영합니다.\n";
09 }
```

### ④ Set as Startup Project

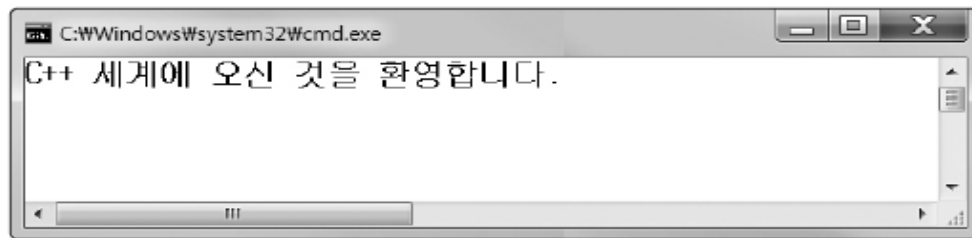


## 03 A simple output program

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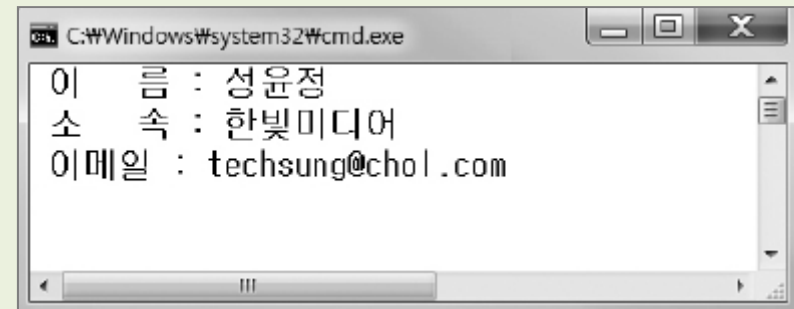
### ⑤ The results

- If the [Build] → [Build Solution (F7) menu and run the Debug] → [Start Without Debugging (CTRL + F5) menu to select the error does not occur, and output the results in a separate console window.



## Example 1-3. Output to multiple statements over several lines (01\_03.cpp)

```
01 #include <iostream> // 헤더파일을 포함시키는 문장
02 void main()
03 {
04     std::cout<<" 이 름 : 성윤정 "<<std::endl;
05     std::cout<<" 소 속 : 한빛미디어 "<<std::endl;
06     std::cout<<" 이메일 : techsung@chol.com "<<std::endl;
07 }
```



## Example 1-4. Using namespaces (01\_04.cpp) by using the syntax

```
01 #include <iostream> // 헤더파일을 포함시키는 문장
02 using namespace std; // 네임스페이스를 지정
03 void main()
04 {
05     cout<<" 이름 : 성윤정 " <<endl;
06     cout<<" 소속 : 한빛미디어 " <<endl;
07     cout<<" 이메일 : techsung@chol.com " <<endl;
08 }
```

