"Hello World!"

Using Bloodshed Dev-C++ on Windows and GCC on Linux

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Introduction

- **Installing Dev-C++**

- **Starting the Dev-C++**

- **A Simple Example of Dev-C++**
  - Simple program 1
  - Simple program 2
  - Simple program 3

- **Write the first program**
  - "Hello world"

Introduction to Dev-C++

■ **Dev-C++**

- Write and compile C++ programs.

- Full featured IDE(Integrated Development Environment).

- Support **GCC** based compilers.

■ **Dev-C++ programming**

- Need to install software: **<u>Bloodshed Dev-C++</u>**
- Free C++ compiler and development environment.

- It can also handle the Insight **Debugger**.

- Another good free alternative is Microsoft Visual Studio Express.

- (Visual Studio Express in free only for home users.)

Installing Dev-C++

■ **Download Dev-C++**

- Official website: http://www.bloodshed.net/dev/devcpp.html

- Download Dev-C++: devcpp-4.9.9.2_setup.exe

Downloads

Dev-C++ 5.0 beta 9.2 (4.9.9.2) (9.0 MB) with Mingw/GCC 3.4.2
Dev-C++ version 4.9.9.2, includes full Mingw compiler system with GCC 3.4.2 and GDB 5.2.1 See NEWS.txt for changes in this release.
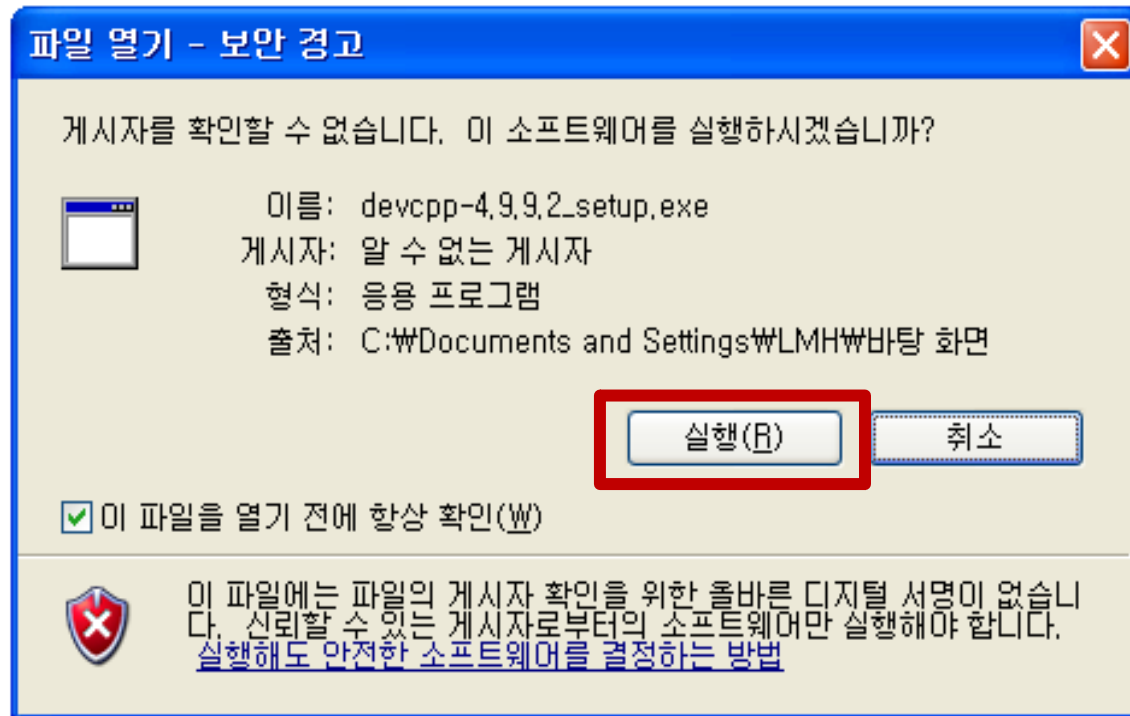
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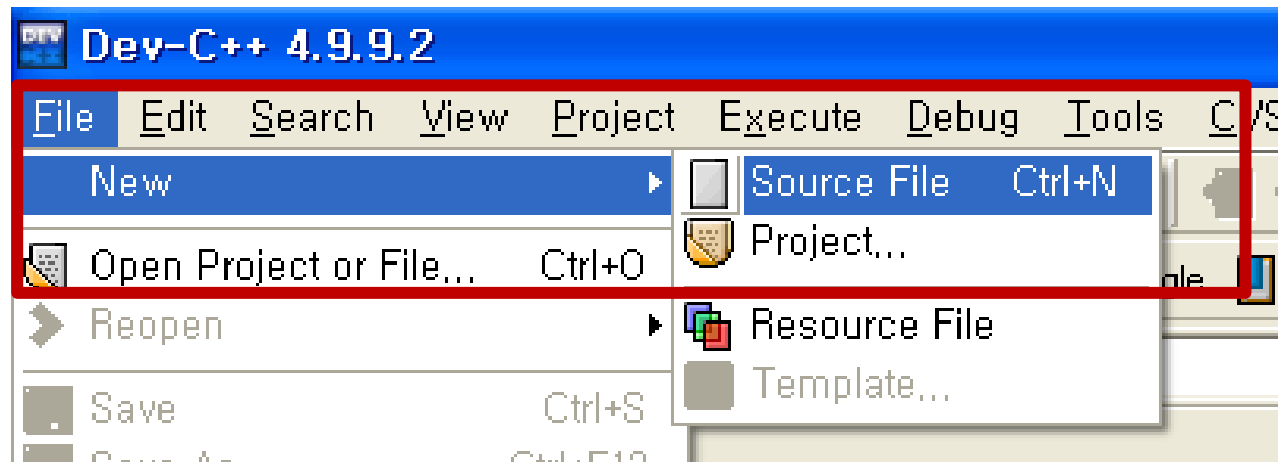Problems with the download? Check your browser's security bar, or try a direct link, or try another mirror.

Installing Dev-C++

■ **Install Dev-C++**

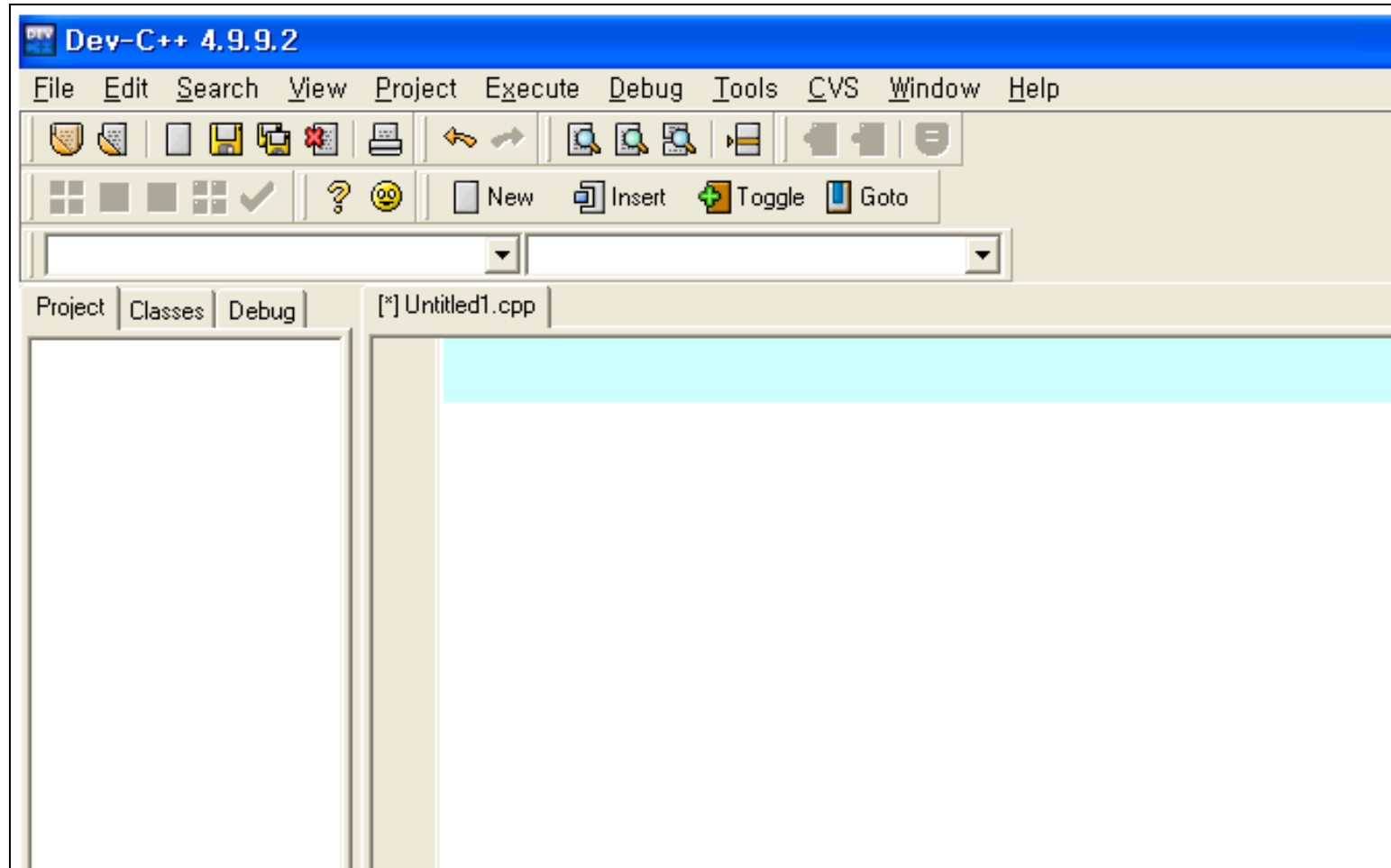# Starting the Bloodshed Dev-C++

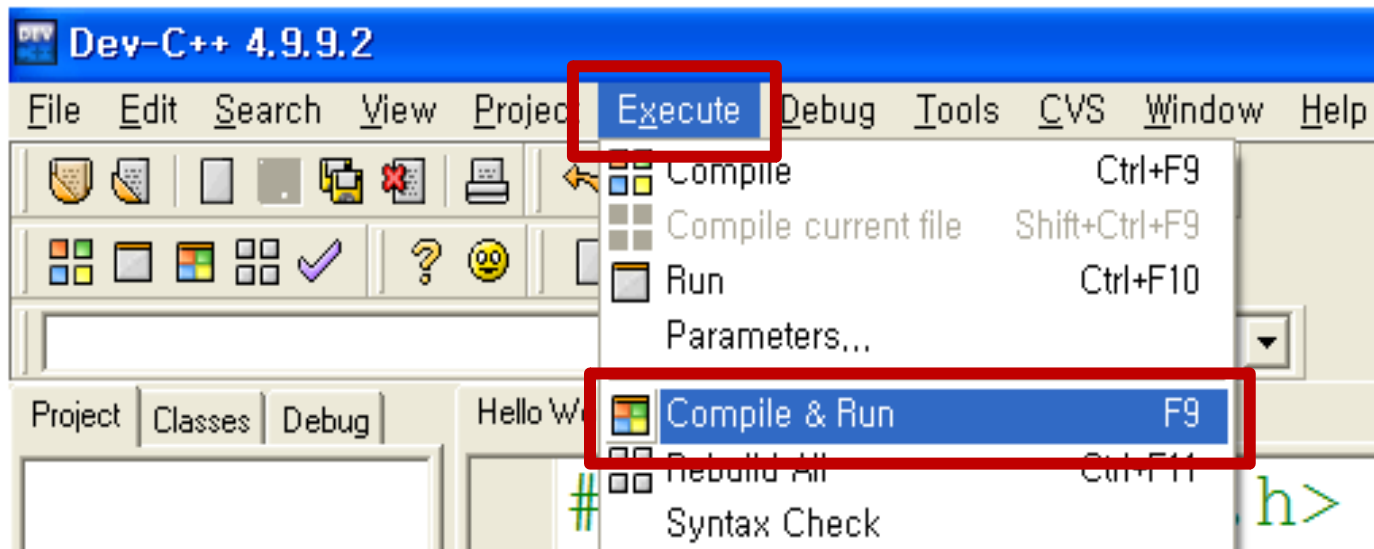■ **Bloodshed Dev-C++ 4.9.9.2**

Starting the Bloodshed Dev-C++

- **Bloodshed Dev-C++ 4.9.9.2**

Starting the Bloodshed Dev-C++

Bloodshed Dev-C++ 4.9.9.2

- Execute a program.
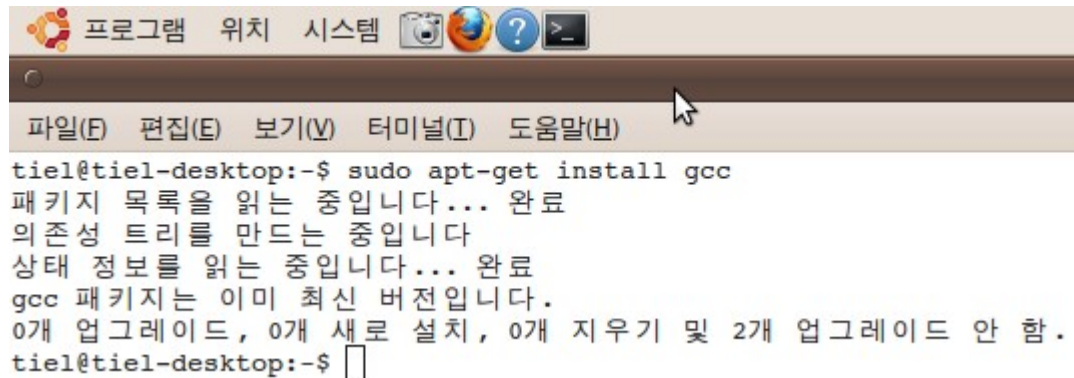- choose **Execute > Compile & Run** or just press the **F9 key.**

VirtualBox 에 Ubuntu 12.04 LTS 설치
(Windows 안에 가상으로 Ubuntu 설치하는 법)

- Ubuntu Desktop 최신 버전 받기 (32-bit) http://www.ubuntu.com/getubuntu/download
- VirtualBox 에서 우분투 (Ubuntu) 용 가상머신 만들기
    - http://www.psychocats.net/ubuntu/virtualbox
    - http://www.deltalounge.net/wpress/2012/06/virtualbox-install-ubuntu-12-04/
- 기본설정에서는 가상 머신의 해상도가 모니터 해상도와 달라서 불편함 .
    - 해결 방법
    - Download the guest edition for your virtualbox version!
    - 버젼 .1.20 을 가정하면
        - visit   http://download.virtualbox.org/virtualbox/4.1.20/
        - download   VBoxGuestAdditions_4.1.20.iso
    - 게스트 에디션 설치
    - http://www.dedoimedo.com/computers/virtualbox-guest-addons.html
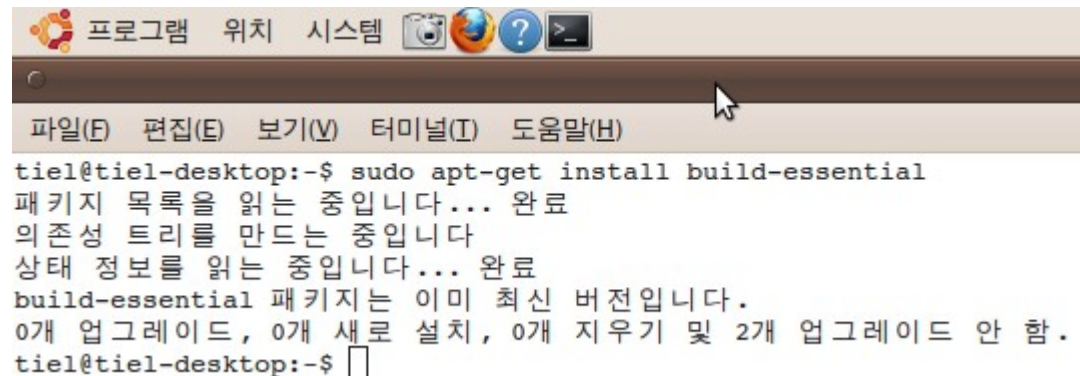   - (see "Install Guest Additions on Linux guest" section)

GCC 설치 (UBUNTU 기준)

▪ sudo apt-get install gcc
- (gcc 자체를 인터넷에서 받아와 설치함)


```
tiel@tiel-desktop:-$ sudo apt-get install gcc
패키지 목록을 읽는 중입니다... 완료
의존성 트리를 만드는 중입니다
상태 정보를 읽는 중입니다... 완료
gcc 패키지는 이미 최신 버전입니다.
0개 업그레이드, 0개 새로 설치, 0개 지우기 및 2개 업그레이드 안 함.
tiel@tiel-desktop:-$ ▯
```

▪ sudo apt-get install build-essential
- (gcc 를 제대로 사용하기 위해 관련 라이브러리 설치)


```
tiel@tiel-desktop:-$ sudo apt-get install build-essential
패키지 목록을 읽는 중입니다... 완료
의존성 트리를 만드는 중입니다
상태 정보를 읽는 중입니다... 완료
build-essential 패키지는 이미 최신 버전입니다.
0개 업그레이드, 0개 새로 설치, 0개 지우기 및 2개 업그레이드 안 함.
tiel@tiel-desktop:-$ ▯
```
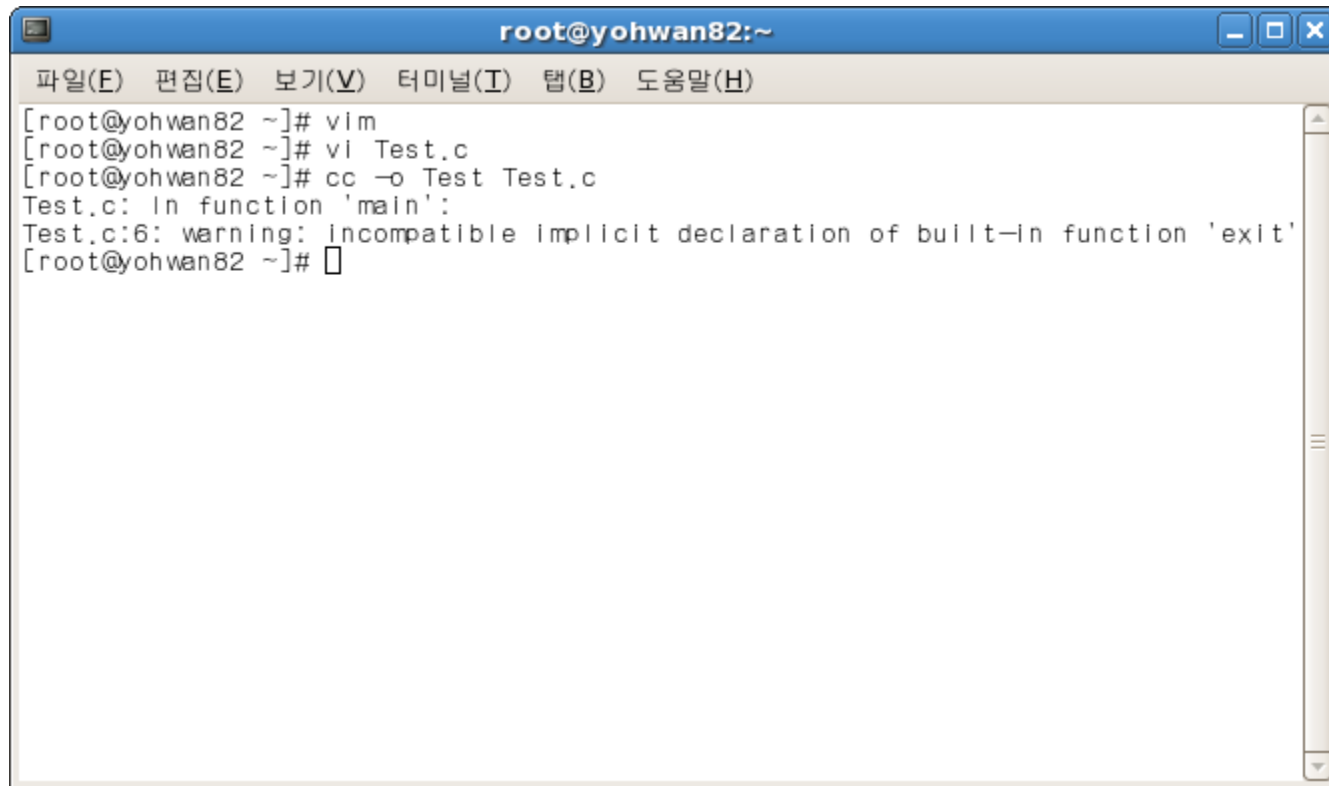
개발 환경 – gcc

- gcc 를 이용한 Source code 컴파일
- g++ -o Test test.cpp
- gcc -o Test Test.c

Program name

Source code

test.cpp

```cpp
#include <iostream>
int main()
{
    std::cout << "Hello\n";
}
```
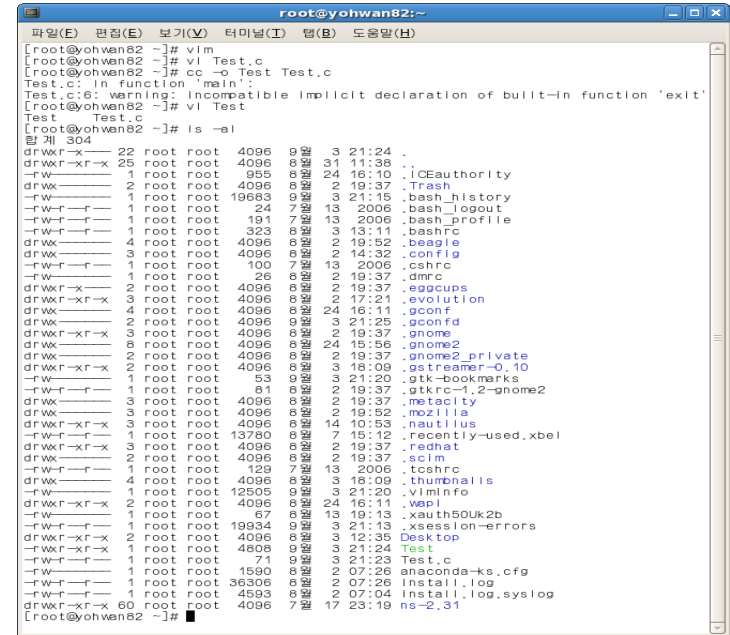
```
root@yohwan82:~

파일(F)  편집(E)  보기(V)  터미널(T)  탭(B)  도움말(H)

[root@yohwan82 ~]# vim
[root@yohwan82 ~]# vi Test.c
[root@yohwan82 ~]# cc -o Test Test.c
Test.c: In function 'main':
Test.c:6: warning: incompatible implicit declaration of built-in function 'exit'
[root@yohwan82 ~]# 
```

Let's learn Unix shell commands
(These days, everybody uses GUI.
But shell commands are still absolutely useful for programmers!)

- ls   파일 목록

- ls -l

- mkdir ttt   디렉토리 만들기

- cd ttt   디렉토리 변경

- rm abc   파일 삭제

- cd ~   홈디렉토리로 이동

- cat abc   파일 보기

- find . -iname "*.txt"   하위 디렉토리에서 파일 찾기

- grep "asdf" *.txt   여러 파일에서 문자열 검색

- vim a.txt

- gedit a.txt

http://freeengineer.org/learnUNIXin10minutes.html

Starting the C language

Basic Structure

- **#include**
- Include another file.

- **int main()**
- Always the first function called.

- **Statements**
- Declaration

- Assignment

- Function

- Control

- Null

A Simple Example

- **Simple program1**

```
C:₩Dev-Cpp₩Simple program1.exe
I am a simpleComputer.
My favorite number is 1 because it is first.
계속하려면 아무 키나 누르십시오 . . .
```

A Simple Example

■Simple program1

- **Source code**

```c
/* Simple program(1) */

#include <stdio.h>
#include <stdlib.h>

int main(void)
{
    int num;
    num = 1;

    printf("I am a simple");
    printf("Computer.\n");
    printf("My favorite number is %d because it is first.\n", num);

    system("PAUSE");
    return 0;
}
```

system("read one");
// 리눅스에서는 pause 명령 대신 read 명령을 사용할 것

A Simple Example

Code explanation

- **Comment**
- Just reminds us what this program does.

```
/* Simple program(1) */
```

```
// Simple program(1)
```

A Simple Example

Code explanation

- **Header file**

```
#include <stdio.h>
```

- Standard buffered **input/output.**

- Most of the C file input/output functions are defined in stdio.h.

```
#include <stdlib.h>
```

- Standard **library** definitions.

A Simple Example

Code explanation

- **Printf()** function
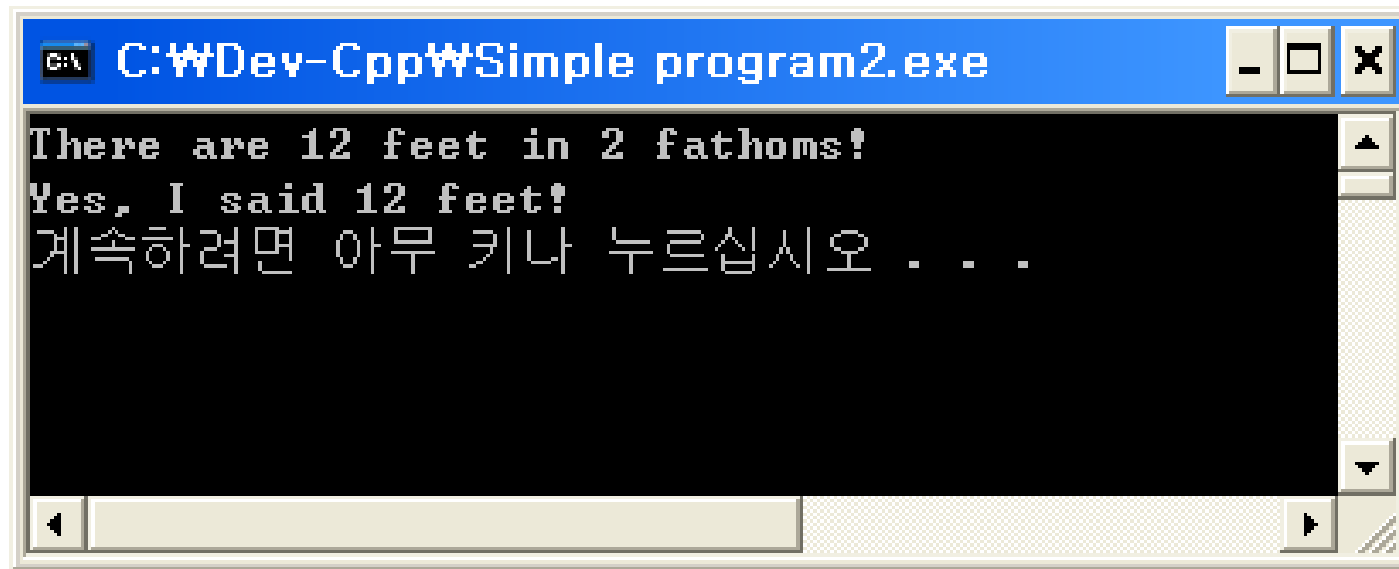
```
printf("I am a simple");
printf("Computer.\n");
printf("My favorite number is %d because it is
first.\n", num);
```

- Stop the console window

```
system("PAUSE");
```

A Simple Example

■ **Simple program2**

A Simple Example

Simple program2

- ### Source code

```c
/* Simple program(2) */

#include <stdio.h>
#include <stdlib.h>

int main(void)
{
    int feet, fathoms;
    fathoms = 2;
    feet = 6 * fathoms;

    printf("There are %d feet in %d fathoms!\n", feet, fathoms);
    printf("Yes, I said %d feet!\n", 6 * fathoms);

    system("PAUSE");
    return 0;
}
```

A Simple Example

Code explanation

- **Using operator**
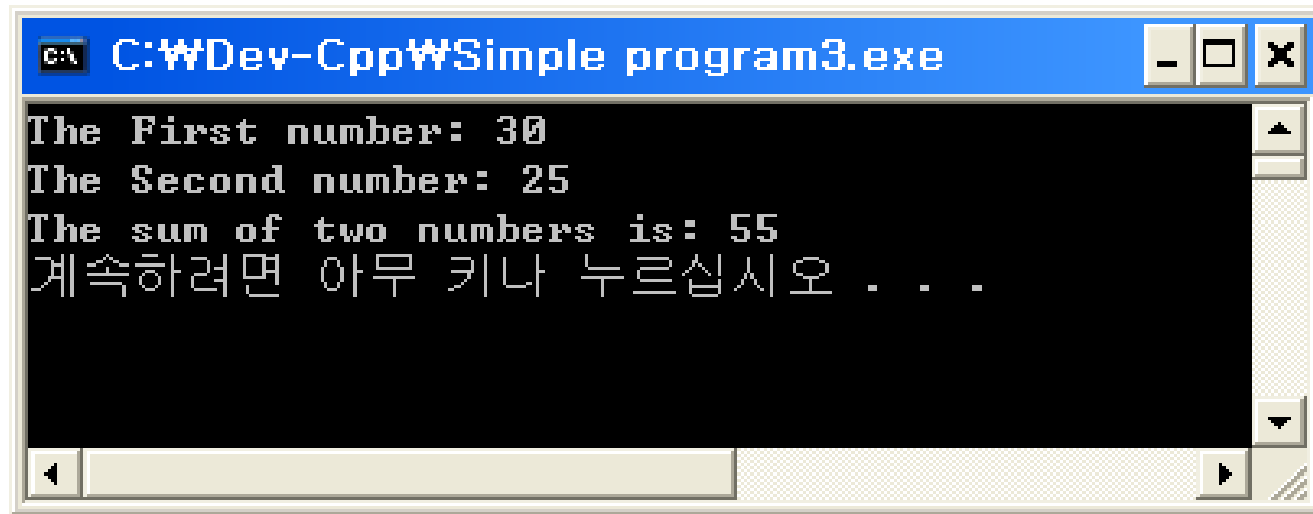
```
int feet, fathoms;
fathoms = 2;
```

- **Multiplication**

```
feet = 6 * fathoms
```

A Simple Example

- **Simple program3**

A Simple Example

Simple program3
– **Source code**

```c
/* Simple program(3) */

#include <stdio.h>
#include <stdlib.h>

int main(void)
{
    int num1, num2;

    printf("The First number: ");
    scanf("%d", &num1);
    printf("The Second number: ");
    scanf("%d", &num2);
    printf("The sum of two numbers is: %d\n", num1+num2);

    system("PAUSE");
    return 0;
}
```

A Simple Example

Code explanation

- **Using `scanf()`**

```
int a;
scanf("%c", &variablename);
```

- Read formatted string, character, or numeric data from a file.

- **"%c"**

  - Interpret input as a **character.**

- If you use `scanf()` to Read a string into a **character array**

  - **don't use an &**

A Simple Example

Code explanation

- **ANSI C Conversion specifiers for `scanf()`**

Conversion Specifier	Meaning
%c	Interpret input as a **character**
%d	Interpret input as a **integer**
%e, %f, %g, %a	Interpret input as a **floating-point number**
%o	Interpret input as a **unsigned octal integer**
%p	Interpret input as a **pointer (an address)**
%s	Interpret input as a **string**

Write the first program "Hello World!"

Python program "Hello World!"

```
7k Python Shell

File  Edit  Shell  Debug  Options  Windows  Help

Python 2.7.2 (default, Jun 12 2011, 15:08:59) [MSC v.1500 32 bit (Intel)] on win
32
Type "copyright", "credits" or "license()" for more information.
>>> ============================ RESTART ================================
>>>
Hello world!
What is your name?
Albert
It is good to meet you, Albert
>>>

                                                                    Ln: 9 Col: 4
```

Write the first program "Hello World!"

■Quiz

- **Convert <u>Python</u> program to <u>Dev-C++</u> program.**

Hello world!
What is your name?
Albert
It is good to meet you, Albert
계속하려면 아무 키나 누르십시오 . . .

Write the first program "Hello World!"

Programs "Hello World!"

- **Python source code**

```
# Python program "Hello World!"

print 'Hello world!'
print 'What is your name?'
myName = raw_input()
print 'It is good to meet you, ' + myName
```

- **Dev-C++ source code**

```
/* Hello World! */

#include <stdio.h>
#include <stdlib.h>

int main(void)
{
```

Write the first program "Hello World!"

■ **Programs "Hello World!"**

- **Python source code**

```python
# Python program "Hello World!"

print 'Hello world!'
print 'What is your name?'
myName = raw_input()
print 'It is good to meet you, ' + myName
```

- **Dev-C++ source code**

```c
char name[10];

printf("Hello world!\n");
printf("What is your name?\n");

scanf("%s", name);
```

Write the first program "Hello World!"

Programs "Hello World!"

- **Python source code**

```
# Python program "Hello World!"

print 'Hello world!'
print 'What is your name?'
myName = raw_input()
print 'It is good to meet you, ' + myName
```

- **Dev-C++ source code**

```
    printf("It is good to meet you, %s\n", name);
    system("PAUSE");
    return 0;
}
```

Write the first program "Hello World!"

Programs "Hello World!"

- **Dev-C++ source code**

```c
/* Hello World! */

#include <stdio.h>
#include <stdlib.h>

int main(void)
{
    char name[10];

    printf("Hello world!\n");
    printf("What is your name?\n");

    scanf("%s", name);

    printf("It is good to meet you, %s\n", name);
    system("PAUSE");
    return 0;
}
```