

## Difference between Compiler and Interpreter

| No | Compiler   | Interpreter   |
|----|--|---|
| 1  | Compiler Takes <b>Entire</b> program as input                        | Interpreter Takes <b>Single</b> instruction as input .                        |
| 2  | Intermediate Object Code is <b>Generated</b>                         | <b>No</b> Intermediate Object Code is <b>Generated</b>                        |
| 3  | Conditional Control Statements are Executes <b>faster</b>            | Conditional Control Statements are Executes <b>slower</b>                     |
| 4  | <b>Memory Requirement : More</b><br>(Since Object Code is Generated) | <b>Memory Requirement is Less</b>   |
| 5  | Program need not be <b>compiled</b> every time                       | Every time higher level program is converted into lower level program         |
| 6  | <b>Errors</b> are displayed after <b>entire program</b> is checked   | <b>Errors</b> are displayed for <b>every instruction</b> interpreted (if any) |
| 7  | <b>Example :</b> C Compiler  | <b>Example :</b> BASIC  |

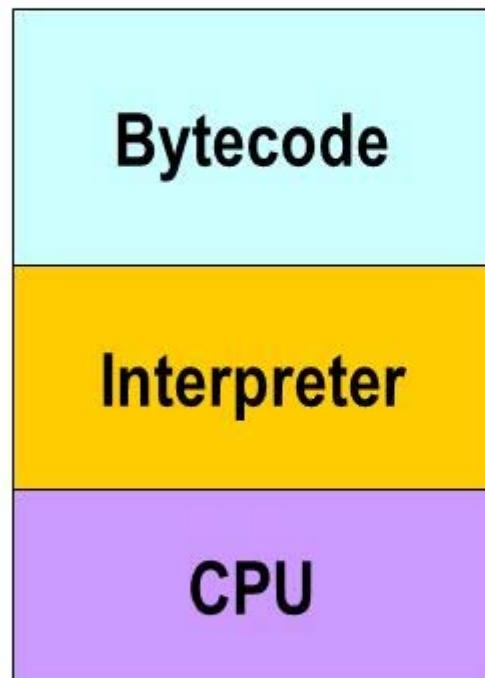
# Compiler



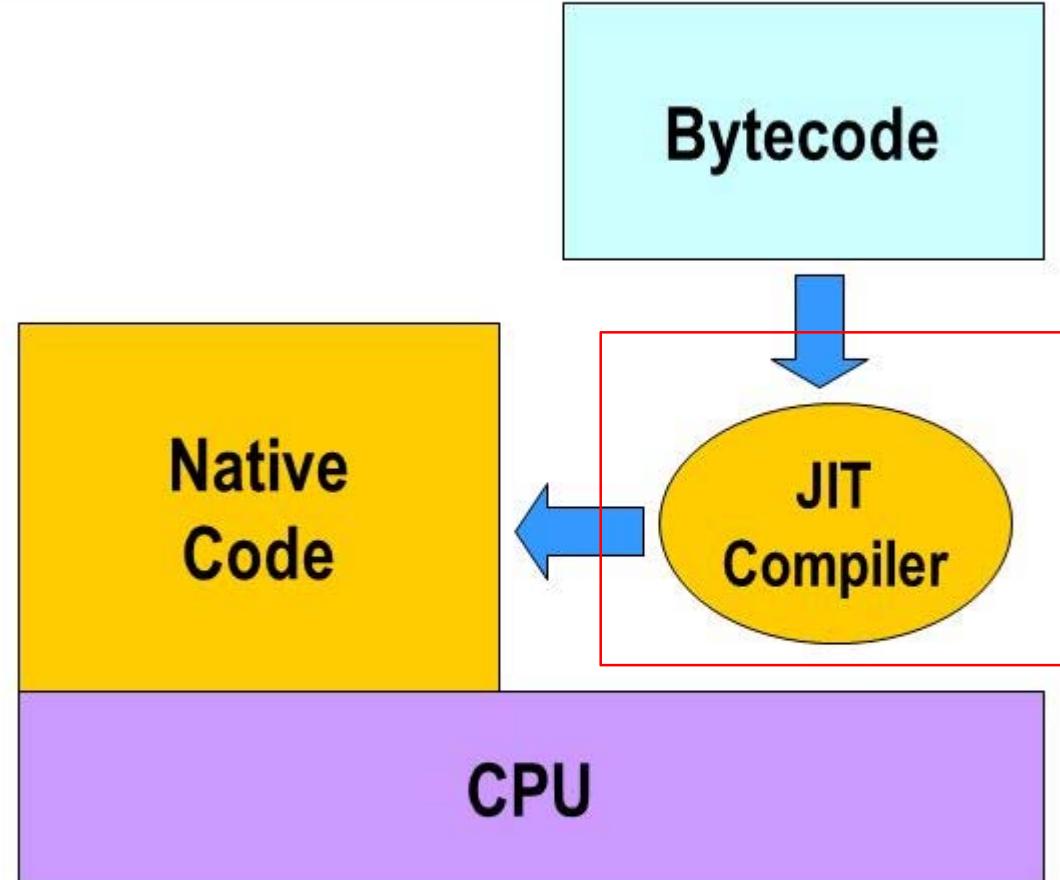
# Interpreter



# Interpreter vs Just-In-Time Compiler



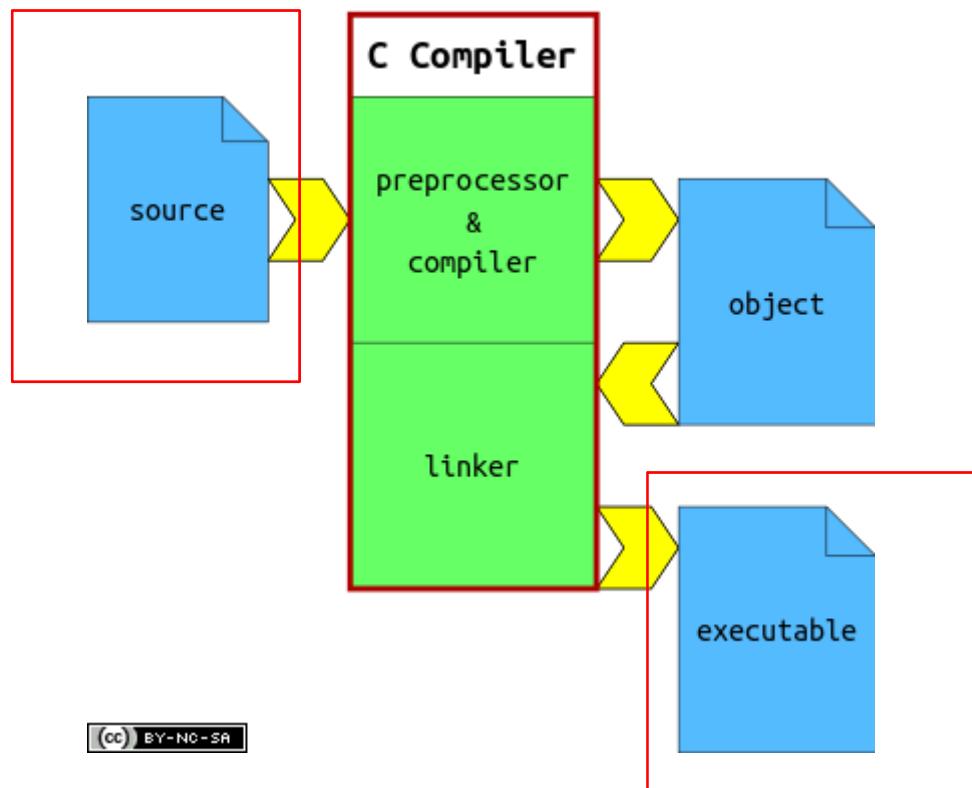
**Interpretation**

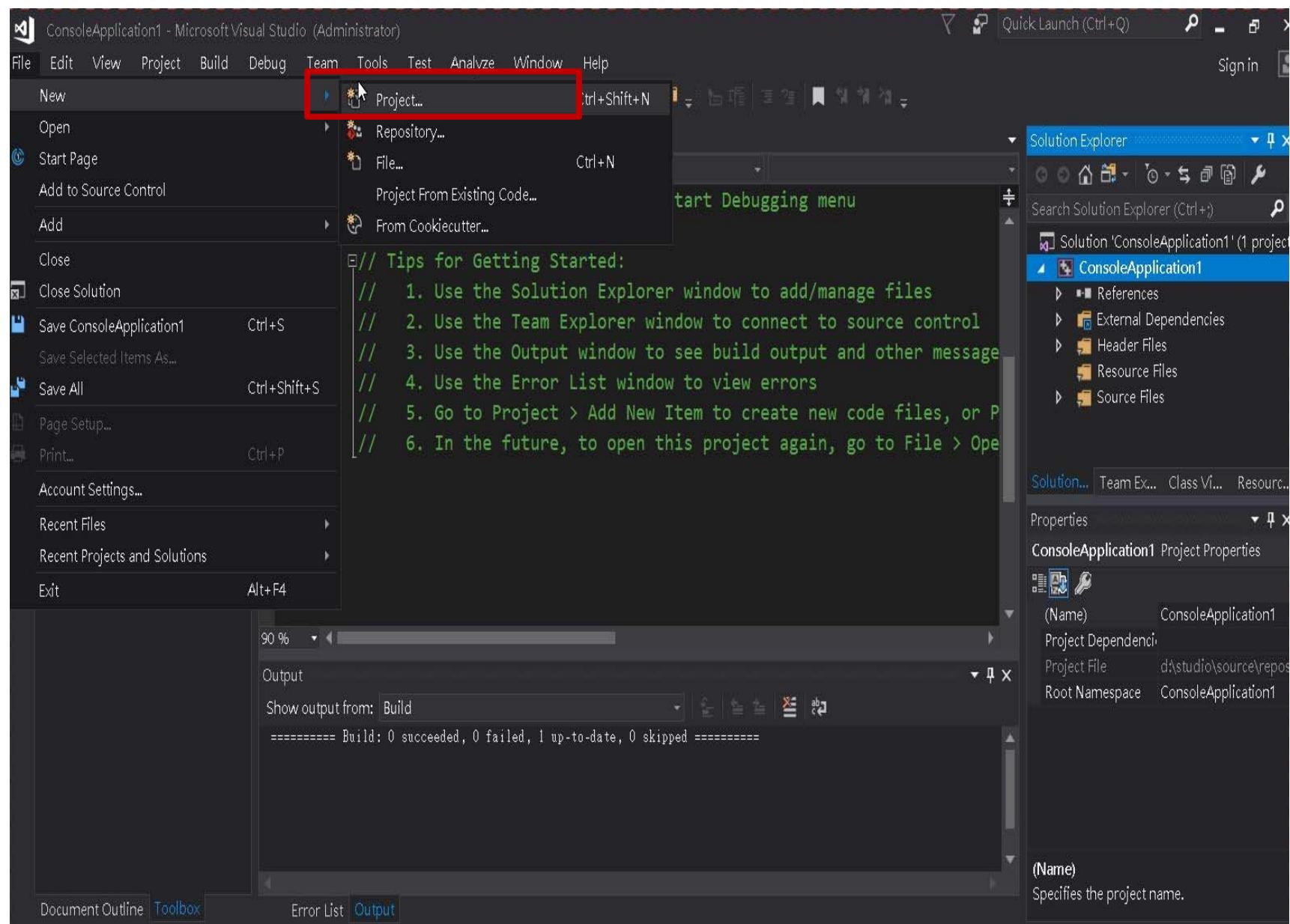


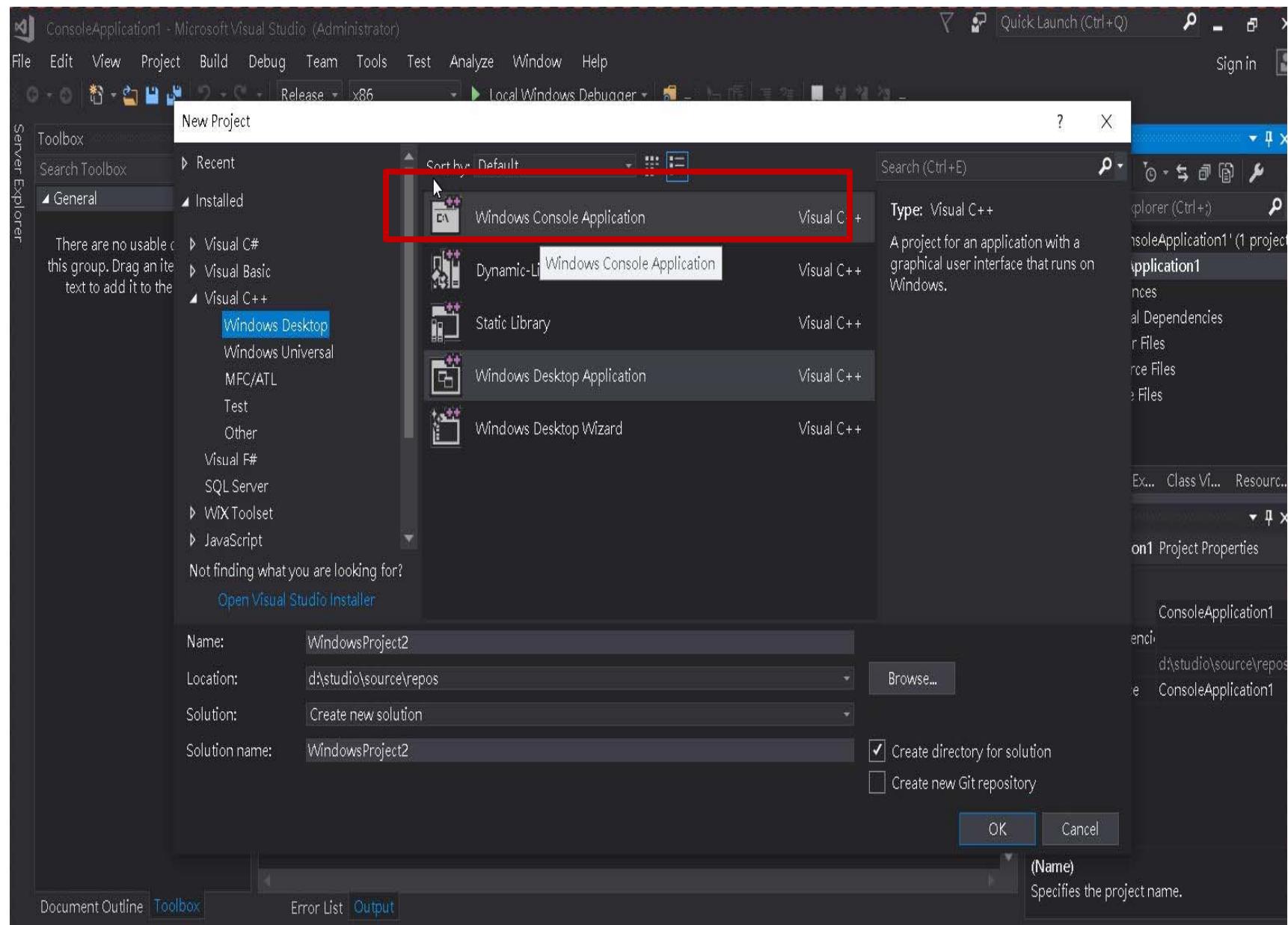
**JIT Compilation**

IDE(Visual Studio)

# C COMPILE







A screenshot of Microsoft Visual Studio showing a console application project named "ConsoleApplication1".

The main window displays the code for `ConsoleApplication1.cpp`:

```
// ConsoleApplication1.cpp : This file contains the 'main' function
//
#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:
```

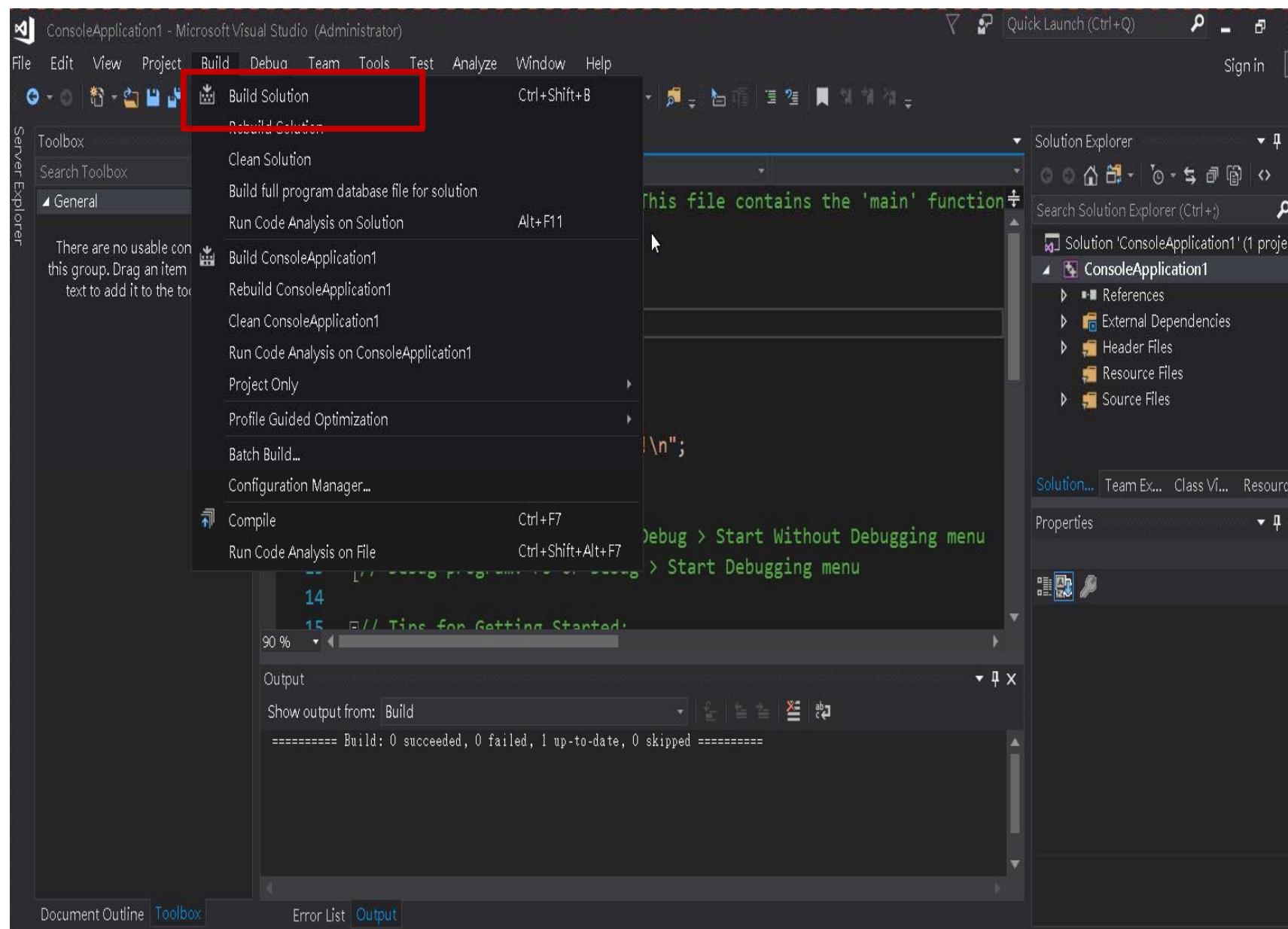
The code is highlighted with a red rectangle around the main function body.

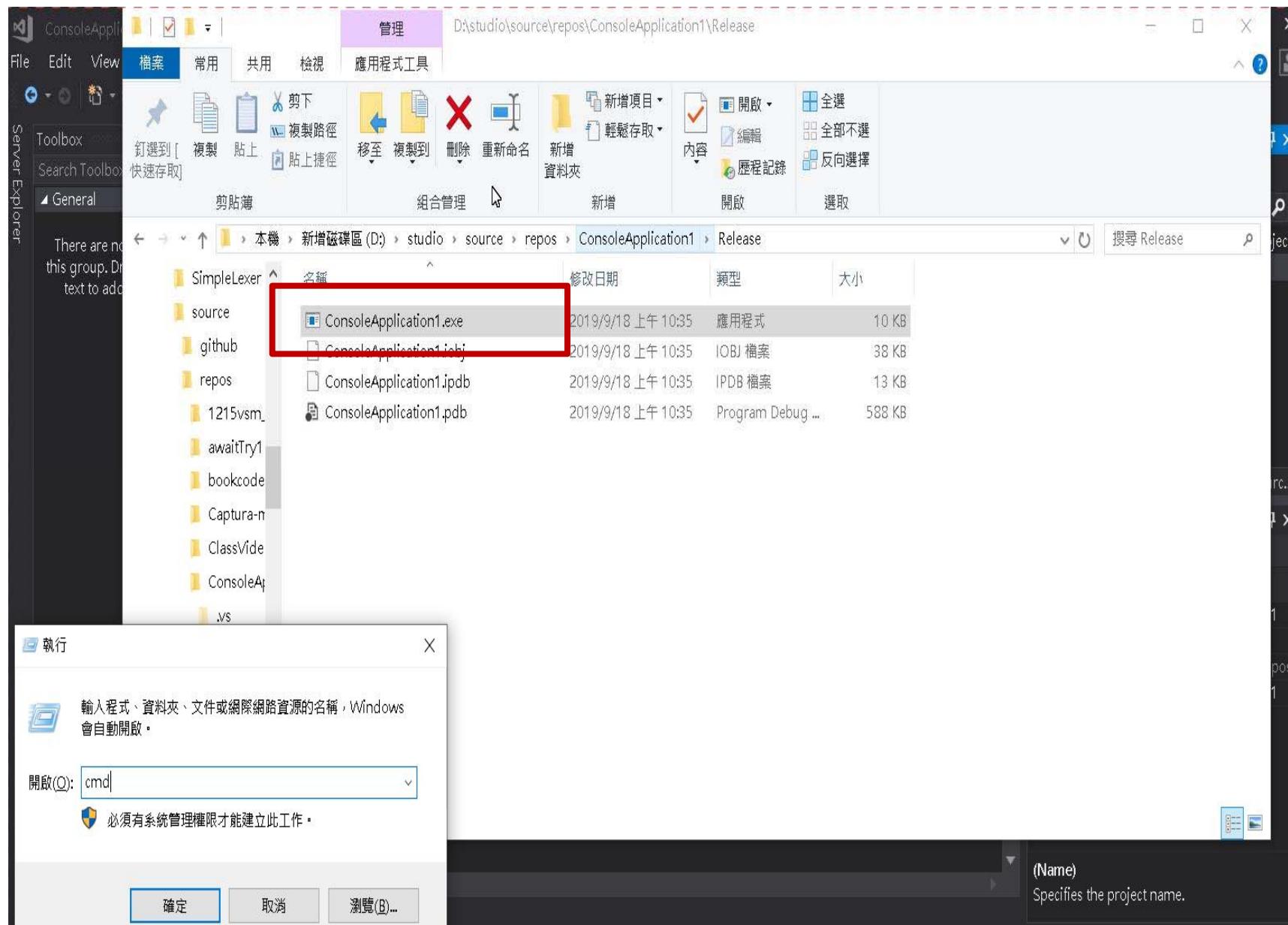
The Solution Explorer shows the project structure:

- Solution 'ConsoleApplication1' (1 project)
  - ConsoleApplication1
    - References
    - External Dependencies
    - Header Files
    - Resource Files
    - Source Files

The Output window shows the build results:

```
===== Build: 0 succeeded, 0 failed, 1 up-to-date, 0 skipped =====
```





The screenshot shows a Windows PowerShell window within the Visual Studio interface. The command entered is:

```
PS D:\studio\source\repos\ConsoleApplication1\Release> cmd
```

The output shows the directory listing for the Release folder:

```
PS D:\studio\source\repos\ConsoleApplication1\Release> dir
There 磁碟區 D 中的磁碟是 新增磁碟區
磁碟區序號: B005-69BB
D:\studio\source\repos\ConsoleApplication1\Release 的目錄

2019/09/18 上午 10:35    <DIR>    .
2019/09/18 上午 10:35    <DIR>    ..
2019/09/18 上午 10:35                10,240 ConsoleApplication1.exe
2019/09/18 上午 10:35                37,983 ConsoleApplication1.iobj
2019/09/18 上午 10:35                12,400 ConsoleApplication1.ipdb
2019/09/18 上午 10:35                602,112 ConsoleApplication1.pdb
                           4 個檔案   662,735 位元組
                           2 欄目錄  31,445,690,128 個子組可用
```

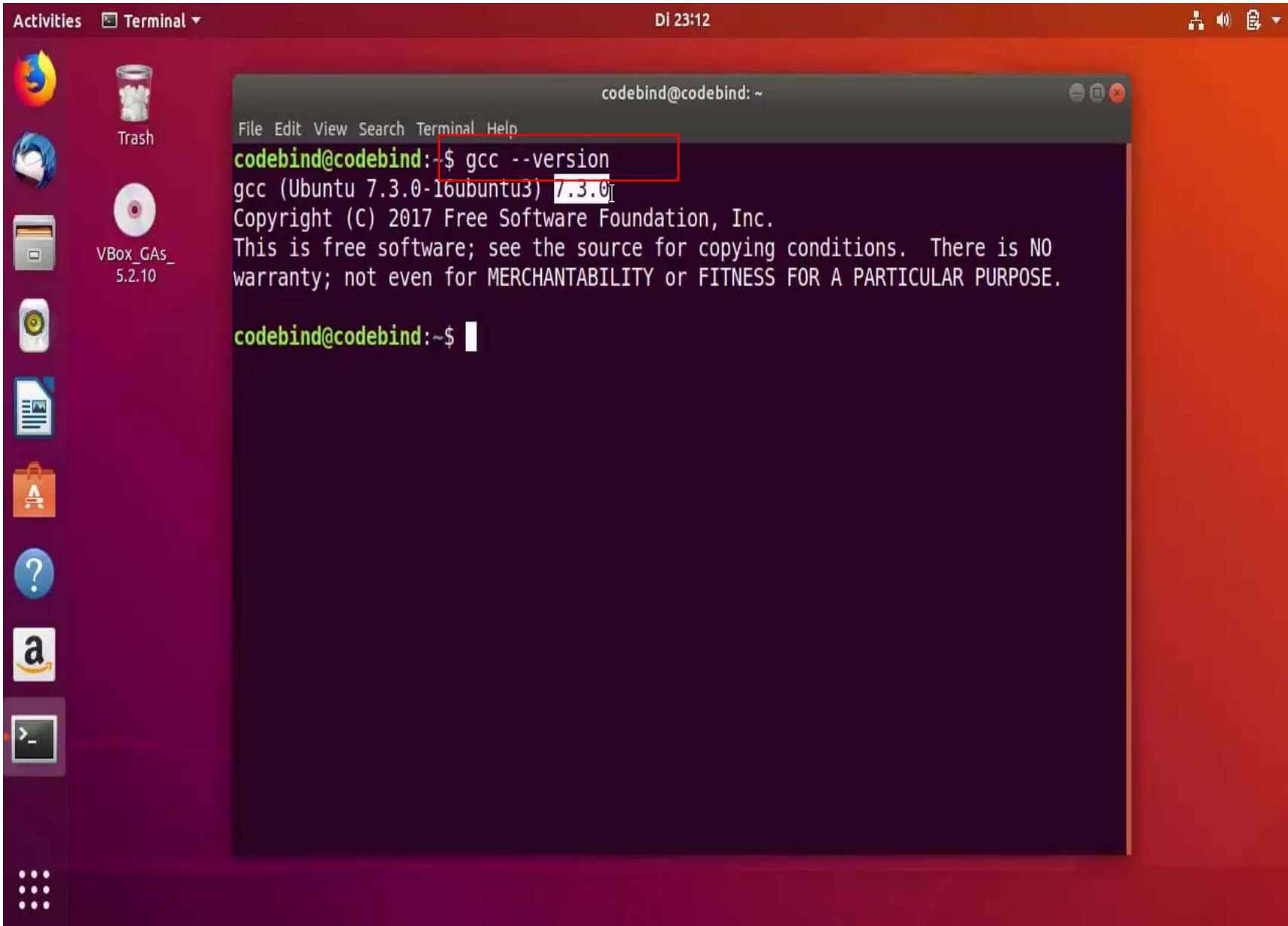
Following the directory listing, the command to run the application is entered:

```
D:\studio\source\repos\ConsoleApplication1\Release>ConsoleApplication1
Hello World!
```

The output "Hello World!" is highlighted with a red box.

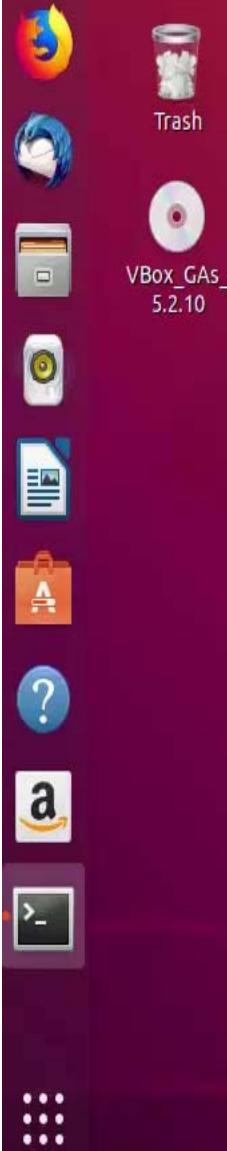
linux GCC command line

# C COMPILE



Activities Terminal ▾

DI 23:13



Activities Text Editor ▾

DI 23:17

Open Save

hello.c  
~/Desktop

```
#include <stdio.h>

/* The simplest C Program */

int main(int argc, char **argv)
{
    printf("Hello World\n");

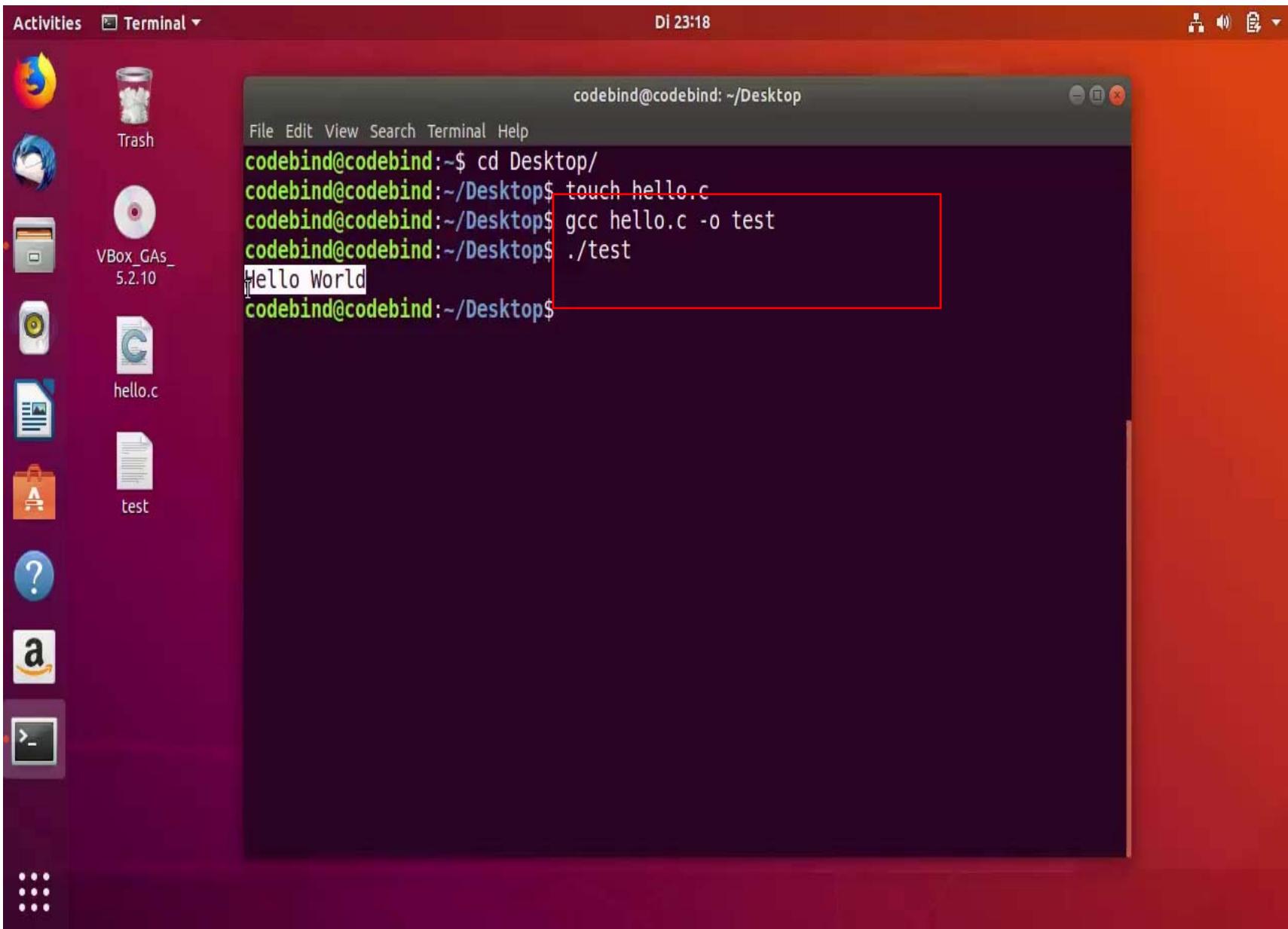
    return 0;
}

/*
OUTPUT:
Hello World
*/
```

Saving file "/home/codebind/Desktop/hello.c"...

C ▾ Tab Width: 8 ▾ Ln 10, Col 12 ▾ INS

The screenshot shows a Linux desktop environment with a dark theme. A text editor window titled "hello.c" is open, displaying a simple "Hello World" program. The window has standard Linux window controls at the top right. On the left, there's a vertical dock with various icons: a browser, a terminal, a file manager, a system settings gear, a document, a folder, a help question mark, and an Amazon icon. The "document" icon is highlighted with a red box. The status bar at the bottom shows the file path and some text editor settings. The desktop background is a gradient from purple to orange.



**JAVA**

<https://www.compilejava.net>

```
public class MyFirstJavaProgram {  
  
    /* This is my first java program.  
     * This will print 'Hello World' as the output  
     */  
  
    public static void main(String []args) {  
        System.out.println("Hello World"); // prints Hello World  
    }  
}
```

```
public class HelloWorld{  
    public static void main(String []args)  
    {  
        System.out.println("Hello World");  
    }  
}
```

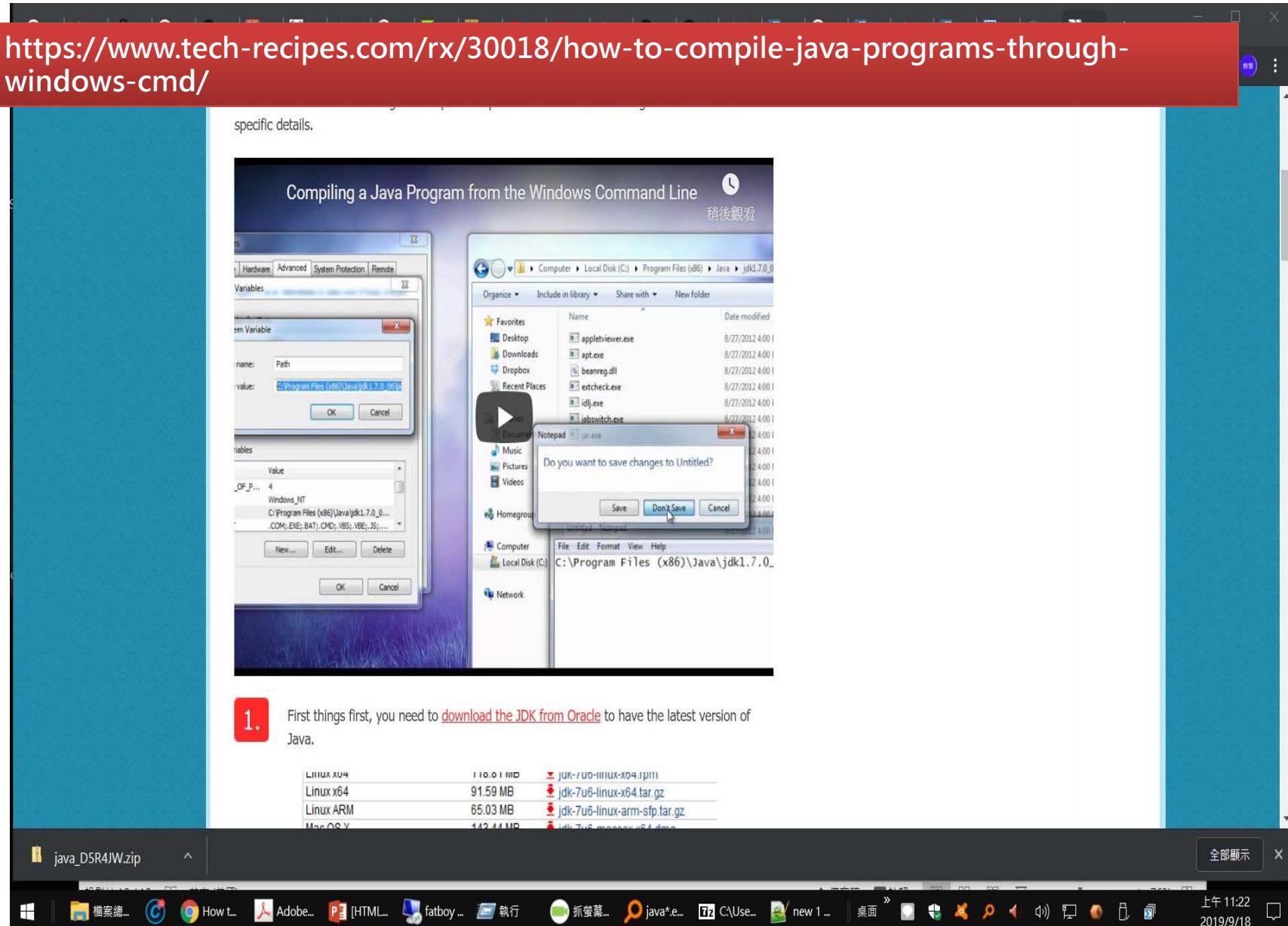
一般系統上已經有java run time

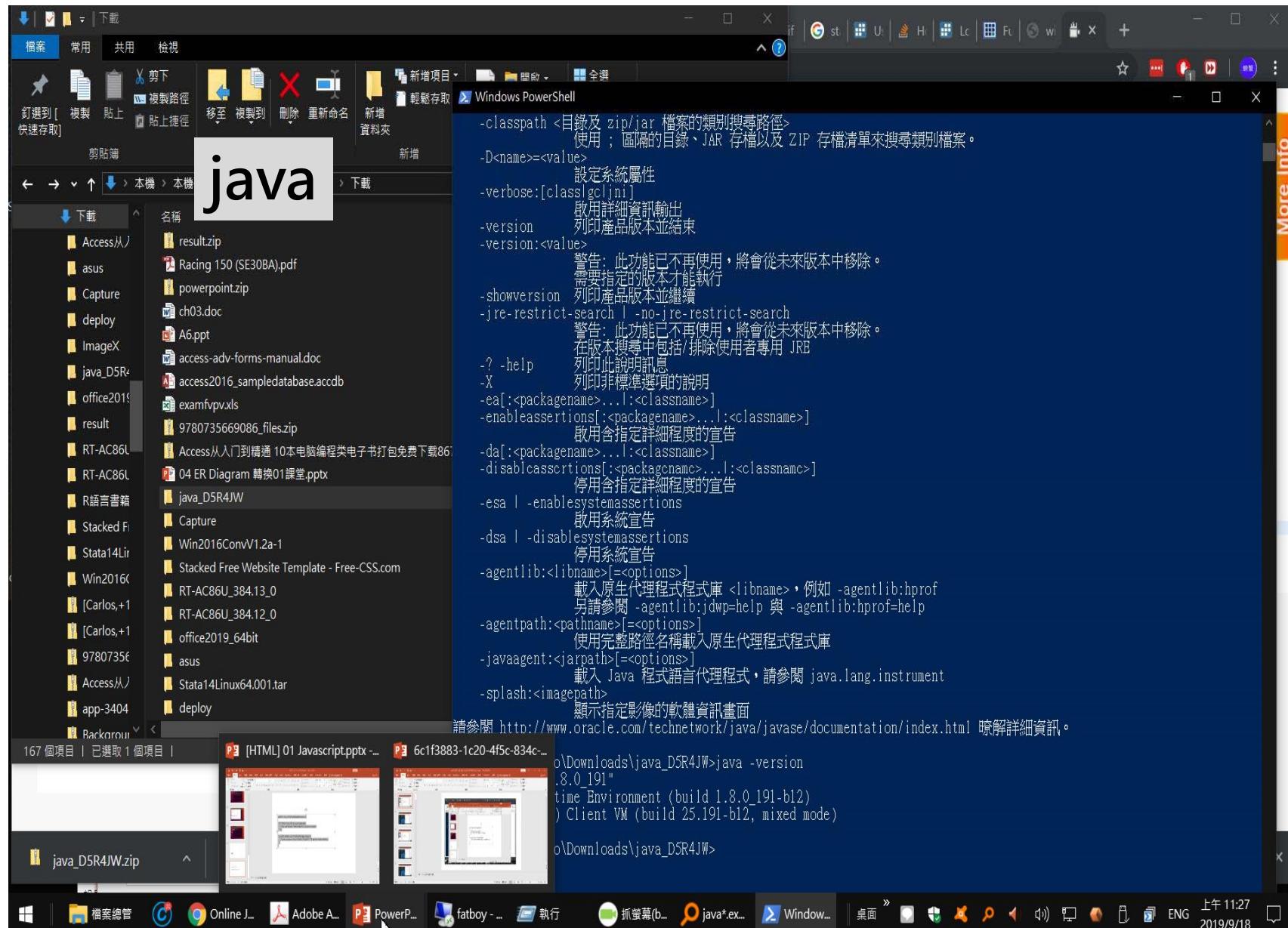
但是要編譯java code, 需要java sdk 中的javac

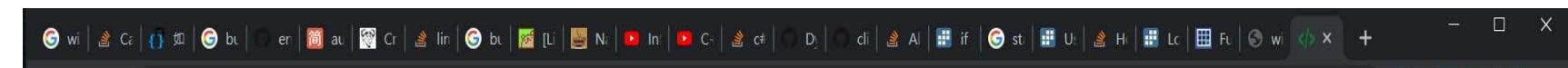
javac hello.java -->hello.class

java hello, or hello.class

<https://www.tech-recipes.com/rx/30018/how-to-compile-java-programs-through-windows-cmd/>







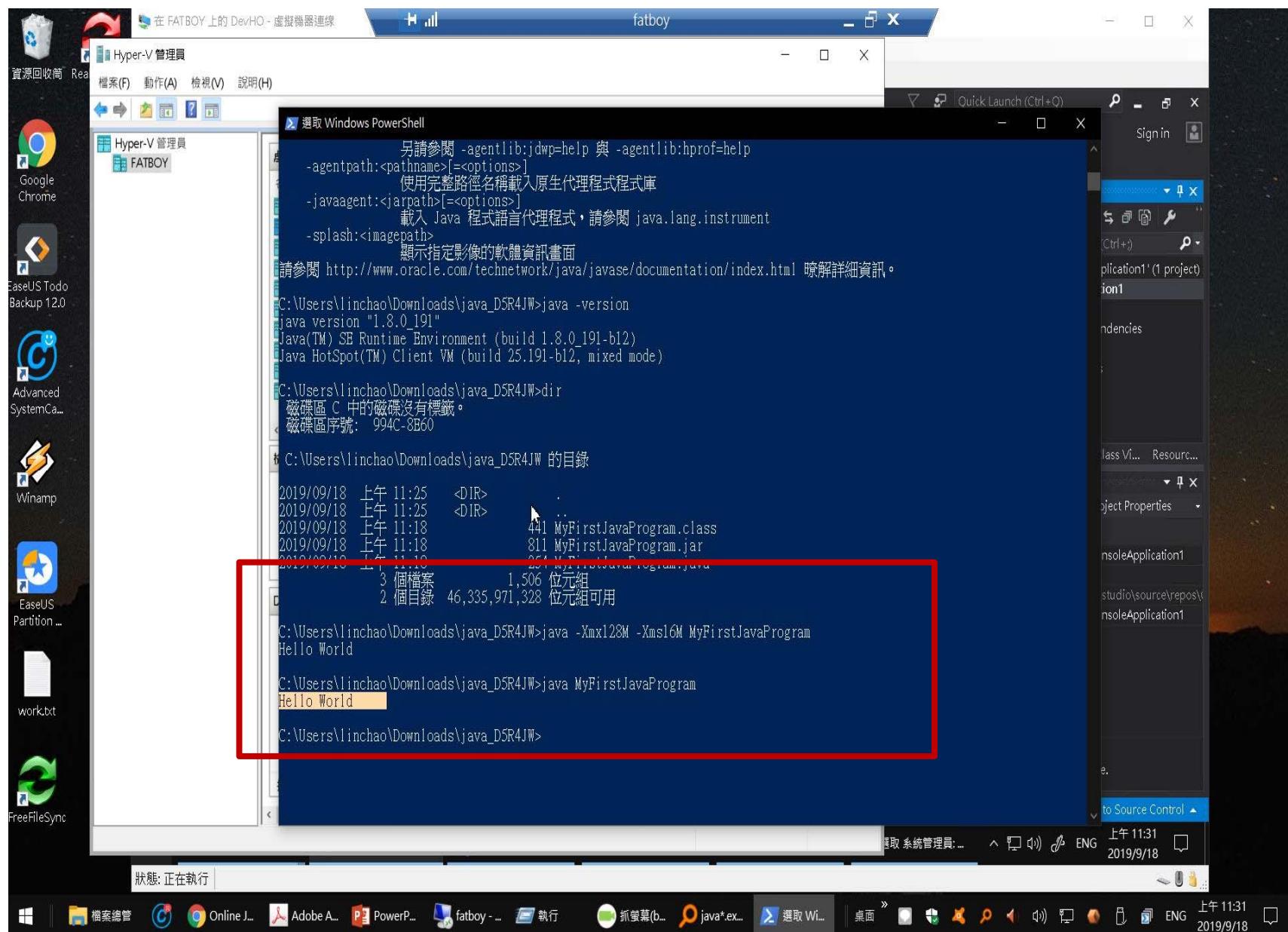
[https://www.tutorialspoint.com/compile\\_java\\_online.php](https://www.tutorialspoint.com/compile_java_online.php)

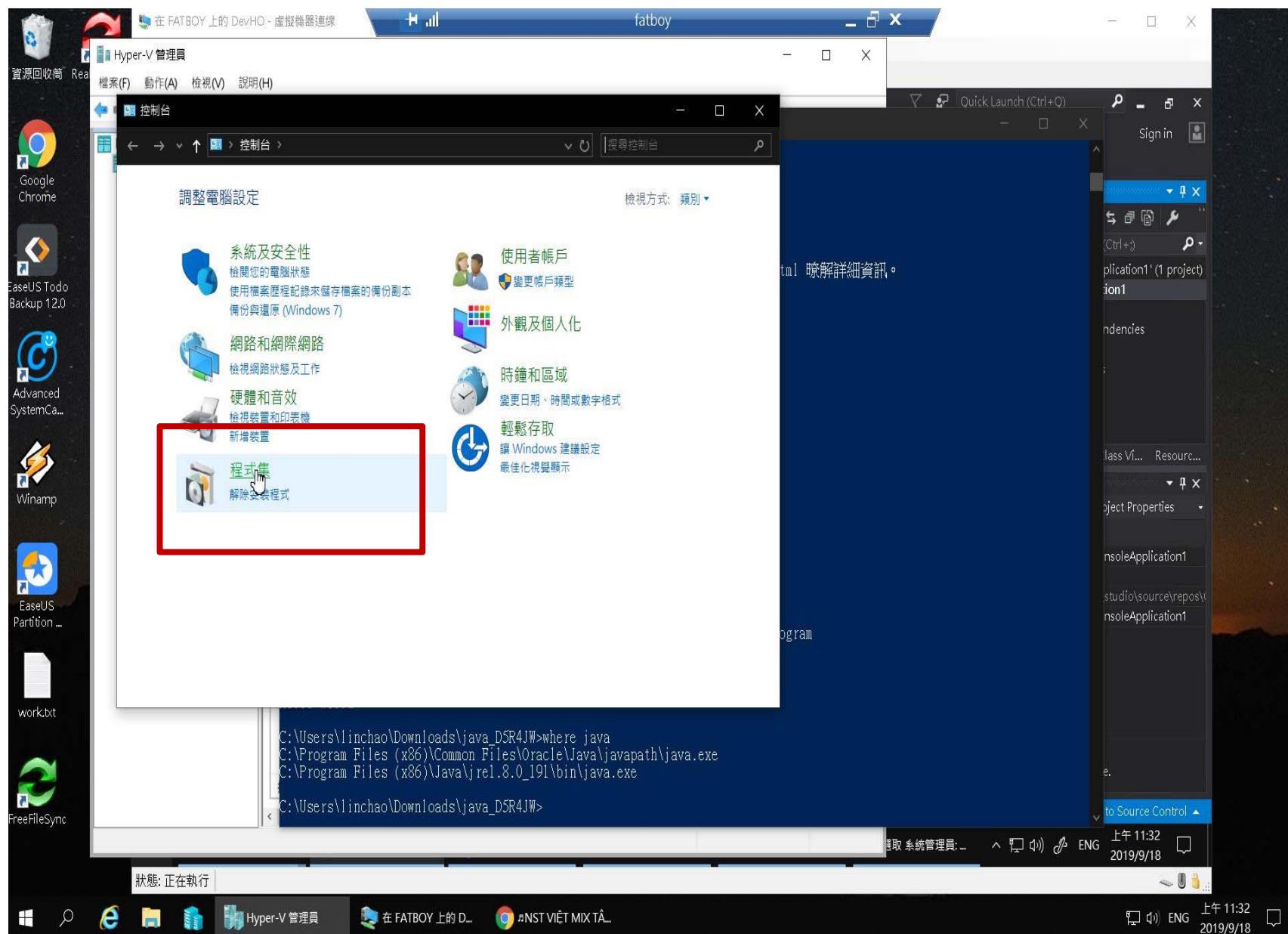
```
1 public class HelloWorld{  
2     public static void main(String []args){  
3         System.out.println("Hello World");  
4     }  
5 }  
  
$javac HelloWorld.java  
$java -Xmx128M -Xms16M HelloWorld  
Hello World
```

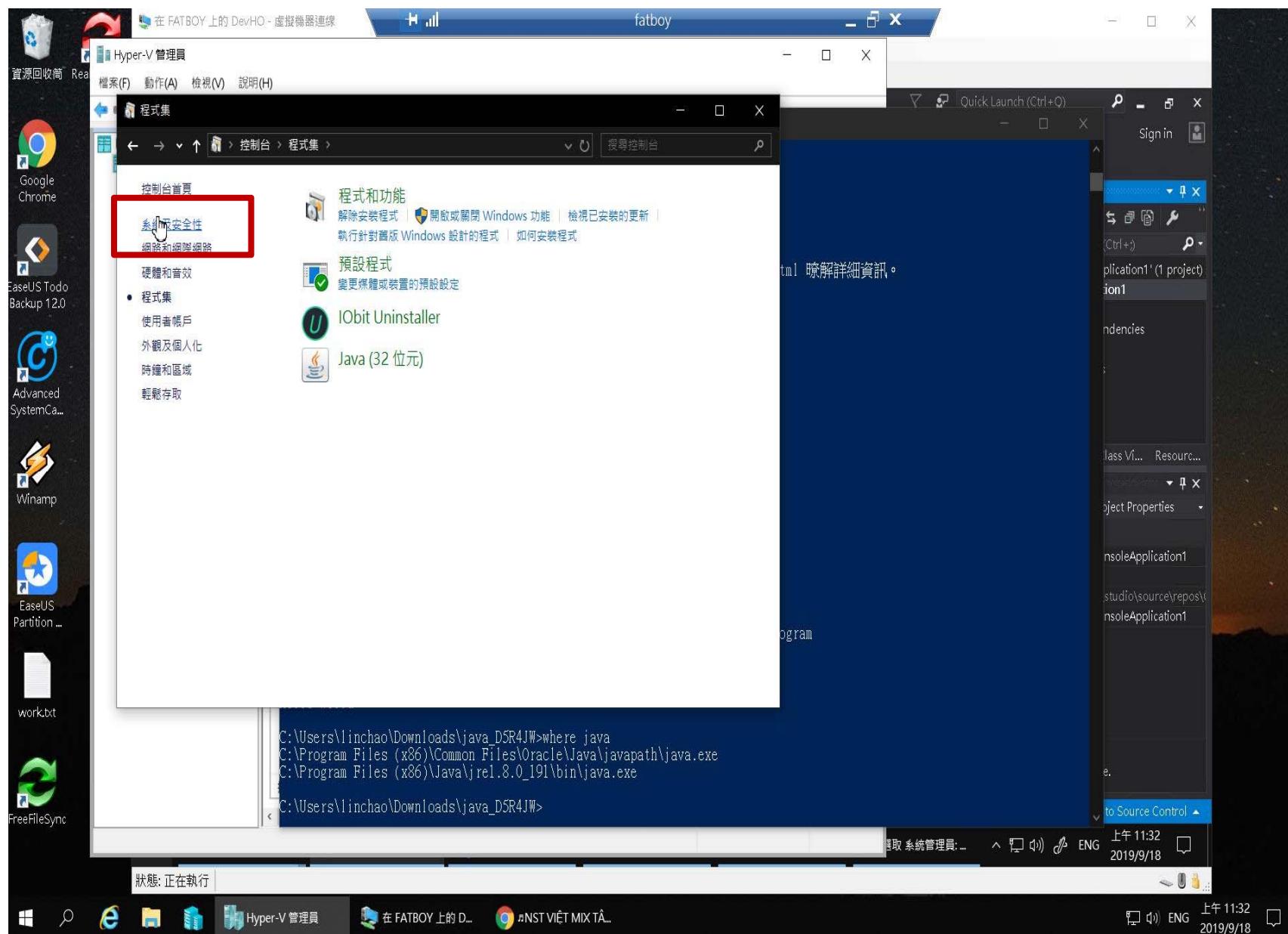
java\_D5R4JW.zip

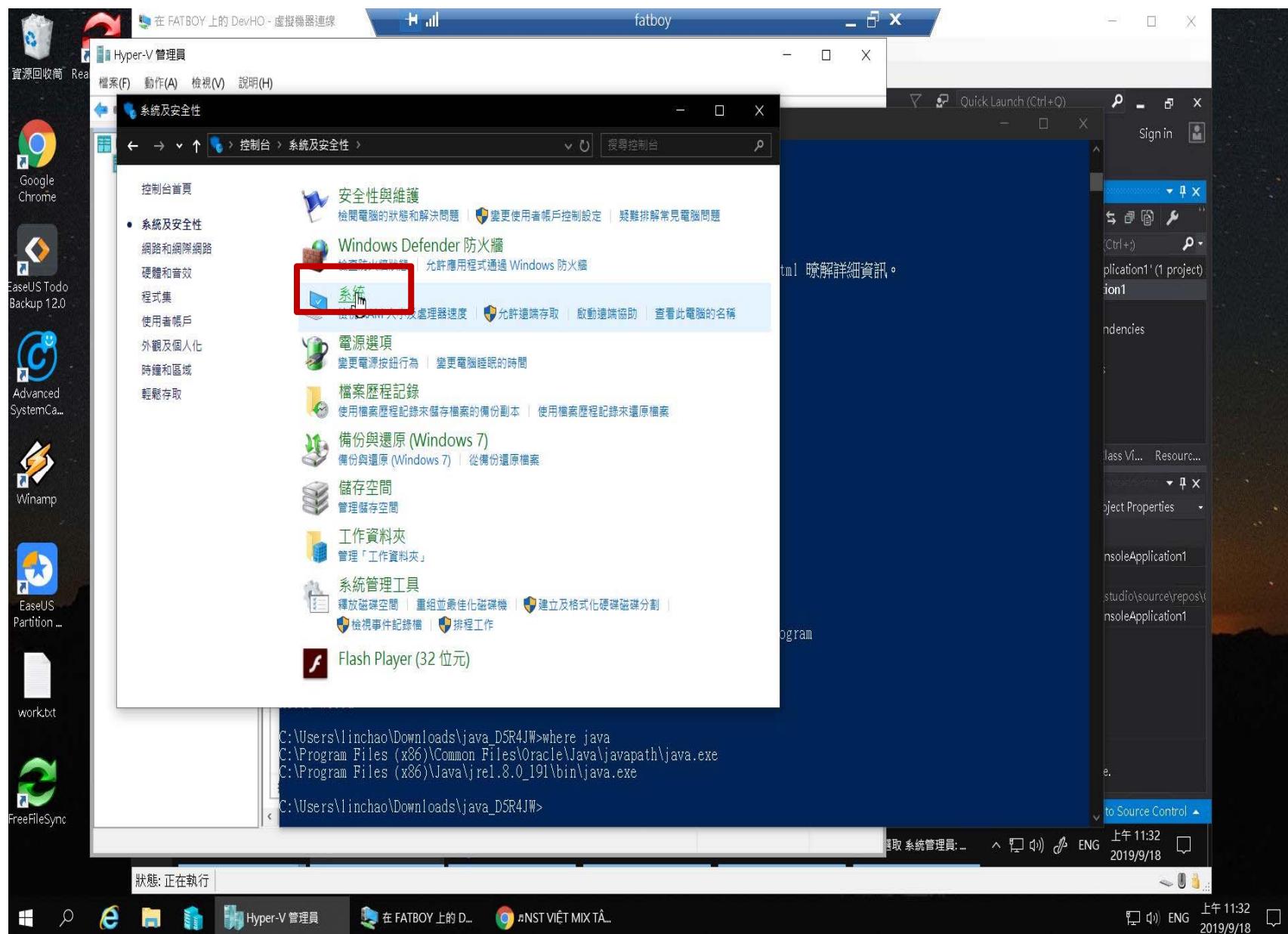
全部顯示 X

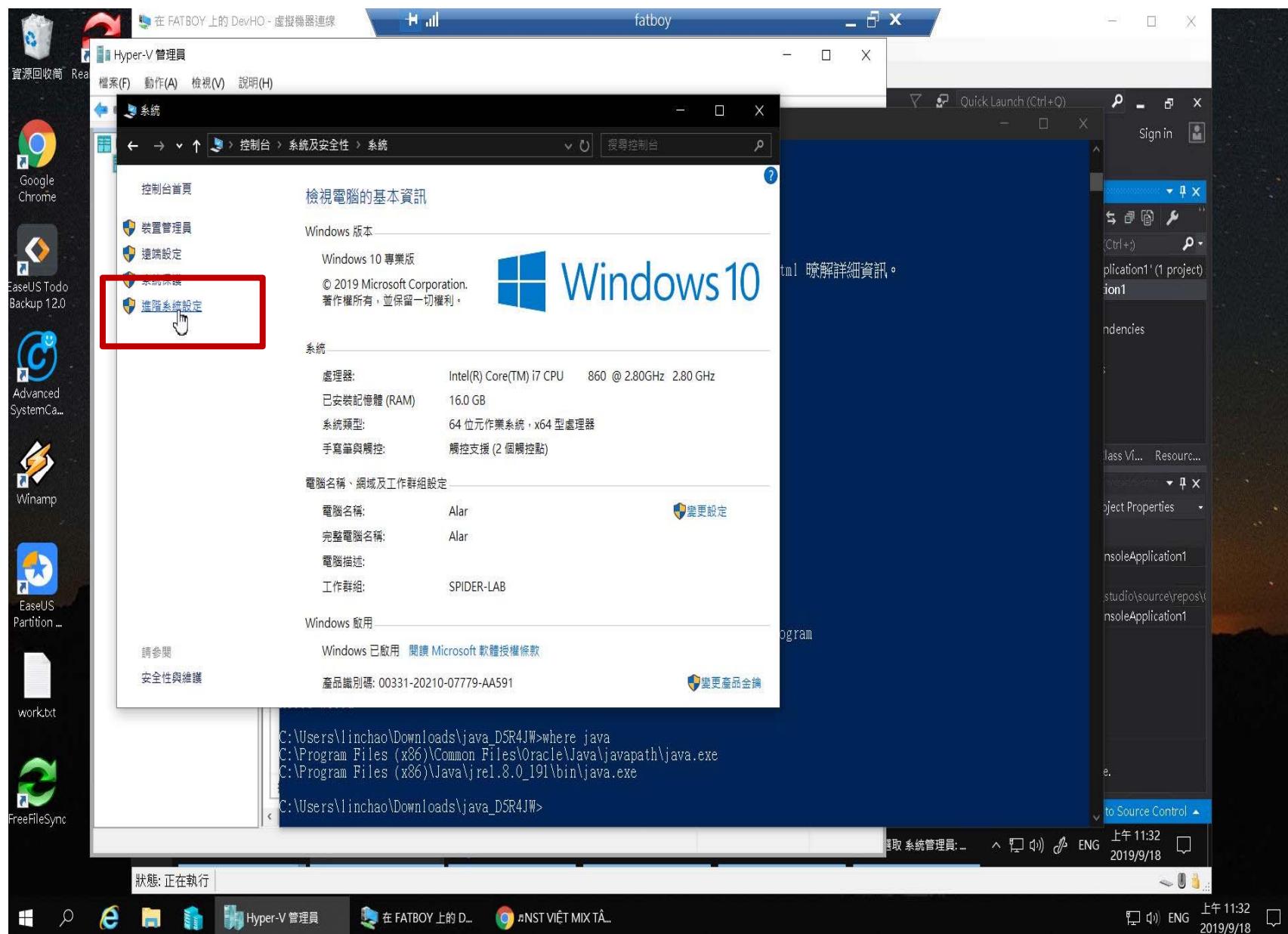
上午 11:29 2019/9/18

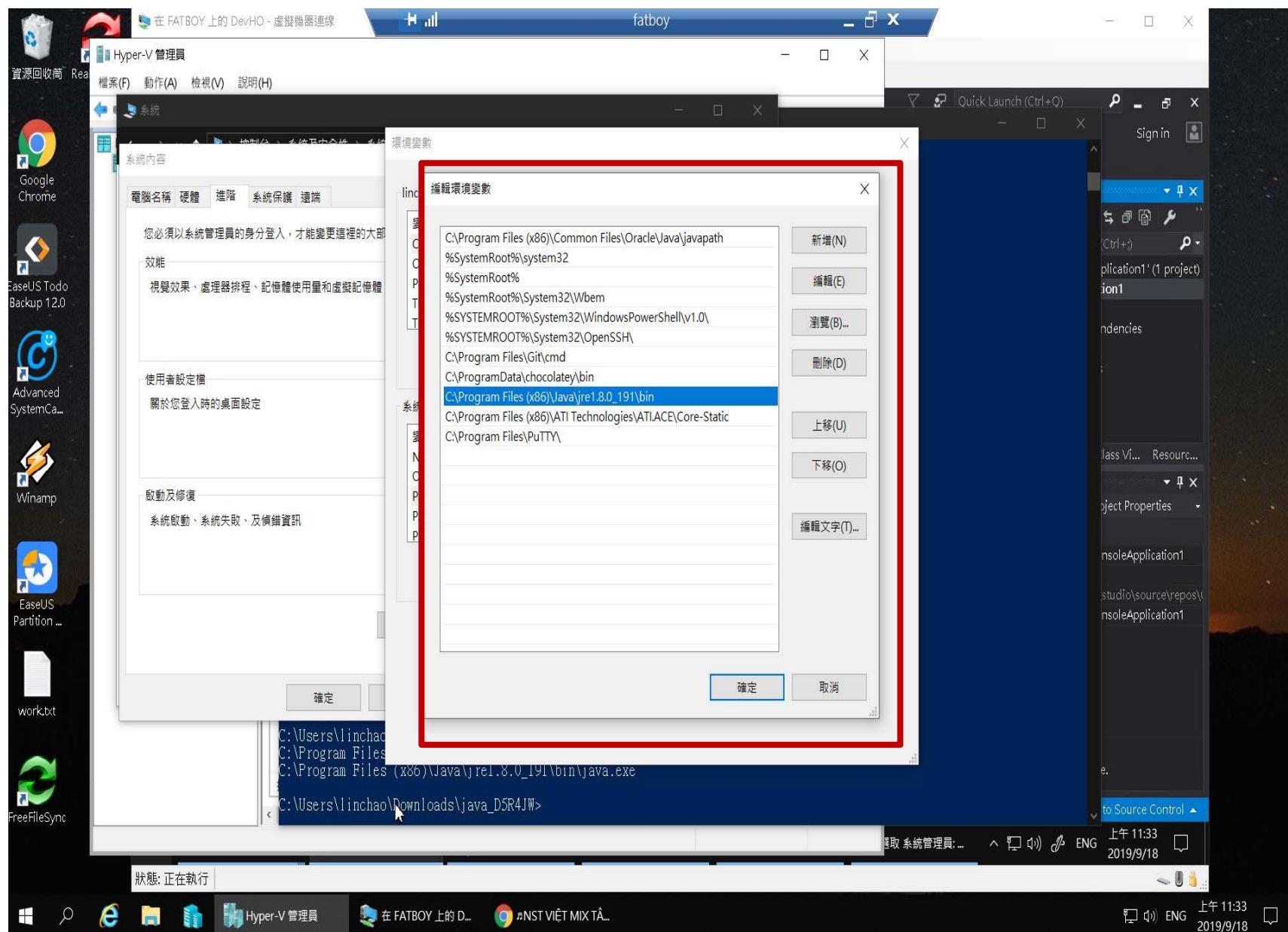












```
另請參閱 -agentlib:jdpw=help 與 -agentlib:hprof=help
-agentpath:< pathname>[=<options>]
    使用完整路徑名稱載入原生代理程式程式庫
-javaagent:<jarpath>[=<options>]
    載入 Java 程式語言代理程式，請參閱 java.lang.instrument
-splash:<imagepath>
    顯示指定影像的軟體資訊畫面
請參閱 http://www.oracle.com/technetwork/java/javase/documentation/index.html 瞭解詳細資訊。
C:\Users\linchao\Downloads\java_DSR4JW>java -version
java version "1.8.0_191"
Java(TM) SE Runtime Environment (build 1.8.0_191-b12)
Java HotSpot(TM) Client VM (build 25.191-b12, mixed mode)

C:\Users\linchao\Downloads\java_DSR4JW>dir
磁碟區 C 中的磁碟沒有標籤。
磁碟區序號: 994C-8E60

C:\Users\linchao\Downloads\java_DSR4JW 的目錄

2019/09/18 上午 11:25    <DIR>    .
2019/09/18 上午 11:25    <DIR>    ..
2019/09/18 上午 11:18          441 MyFirstJavaProgram.class
2019/09/18 上午 11:18          811 MyFirstJavaProgram.jar
2019/09/18 上午 11:18          254 MyFirstJavaProgram.java
2019/09/18             3 檔案      1,506 位元組
                           2 目錄   46,335,971,328 位元組可用

C:\Users\linchao\Downloads\java_DSR4JW>java -Xmx128M -Xms16M MyFirstJavaProgram
Hello World

C:\Users\linchao\Downloads\java_DSR4JW>java MyFirstJavaProgram
Hello World

C:\Users\linchao\Downloads\java_DSR4JW>where java
C:\Program Files (x86)\Common Files\Oracle\Java\javapath\java.exe
C:\Program Files (x86)\Java\jre1.8.0_191\bin\java.exe

C:\Users\linchao\Downloads\java_DSR4JW>
```

The screenshot shows a Windows PowerShell window running on a Chinese operating system. It displays Java command-line options, a directory listing of a Java project folder, and the execution of a Java program. A red box highlights the 'where java' command, which outputs the paths to the Java executable files located in the system's PATH environment variable.