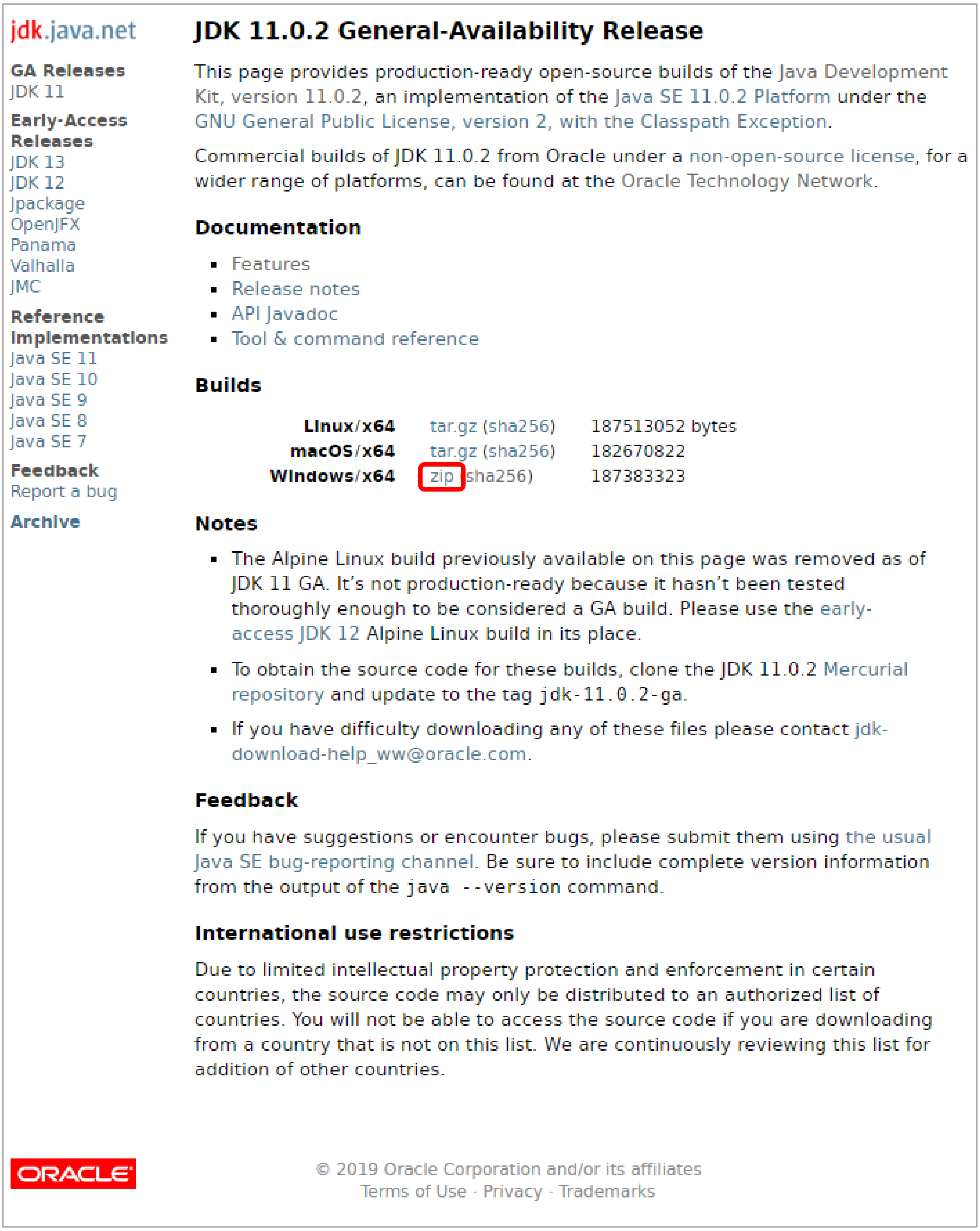
JAVA Lab0

Step 1 : Download Java Jdk

OpenJDK 11: https://jdk.java.net/11/

- **Select OpenJDK corresponding to your OS and download it, we take Windows version as example, the compressed file name is "openjdk-11.0.2_windows-x64_bin.zip".**



jdk.java.net

GA Releases
JDK 11

Early-Access Releases
JDK 13
JDK 12
Jpackage
OpenJFX
Panama
Valhalla
JMC

Reference Implementations
Java SE 11
Java SE 10
Java SE 9
Java SE 8
Java SE 7

Feedback
Report a bug

Archive

JDK 11.0.2 General-Availability Release

This page provides production-ready open-source builds of the Java Development Kit, version 11.0.2, an implementation of the Java SE 11.0.2 Platform under the GNU General Public License, version 2, with the Classpath Exception.

Commercial builds of JDK 11.0.2 from Oracle under a non-open-source license, for a wider range of platforms, can be found at the Oracle Technology Network.

Documentation

- Features
- Release notes
- API Javadoc
- Tool & command reference

Builds

Linux/x64	tar.gz (sha256)	187513052 bytes
macOS/x64	tar.gz (sha256)	182670822
Windows/x64	zip (sha256)	187383323

Notes

- The Alpine Linux build previously available on this page was removed as of JDK 11 GA. It's not production-ready because it hasn't been tested thoroughly enough to be considered a GA build. Please use the early-access JDK 12 Alpine Linux build in its place.
- To obtain the source code for these builds, clone the JDK 11.0.2 Mercurial repository and update to the tag `jdk-11.0.2-ga`.
- If you have difficulty downloading any of these files please contact jdk-download-help_ww@oracle.com.

Feedback

If you have suggestions or encounter bugs, please submit them using the usual Java SE bug-reporting channel. Be sure to include complete version information from the output of the `java --version` command.

International use restrictions

Due to limited intellectual property protection and enforcement in certain countries, the source code may only be distributed to an authorized list of countries. You will not be able to access the source code if you are downloading from a country that is not on this list. We are continuously reviewing this list for addition of other countries.

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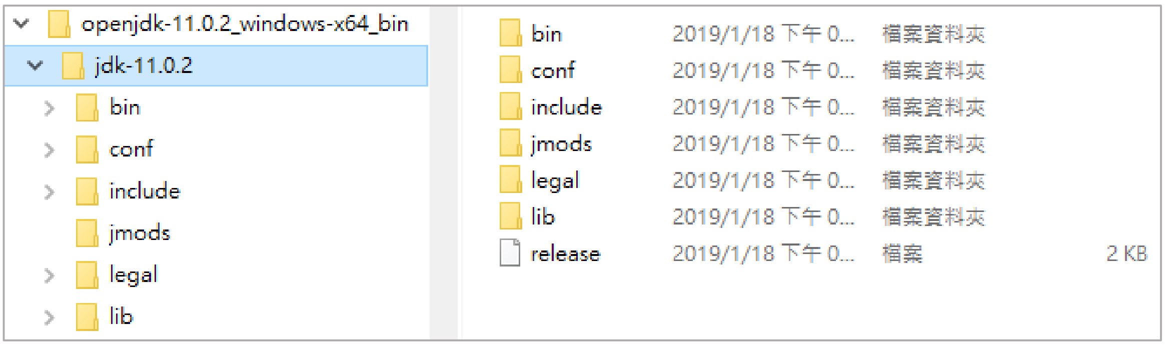
Step 2: Install Java Jdk

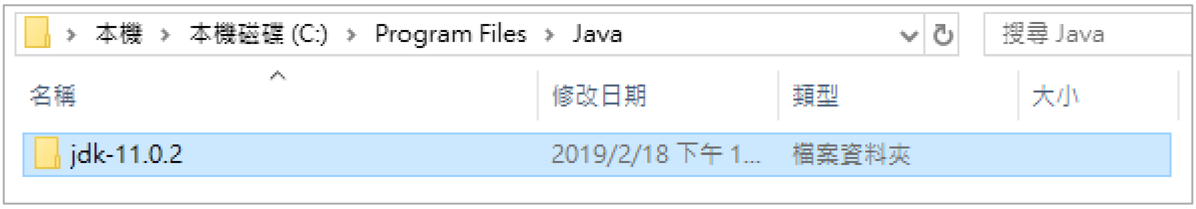
- Extract the file and you can see following archive structure.



- openjdk-11.0.2_windows-x64_bin
  - jdk-11.0.2
    - bin
    - conf
    - include
    - jmods
    - legal
    - lib

bin	2019/1/18 下午 0...	檔案資料夾	
conf	2019/1/18 下午 0...	檔案資料夾	
include	2019/1/18 下午 0...	檔案資料夾	
jmods	2019/1/18 下午 0...	檔案資料夾	
legal	2019/1/18 下午 0...	檔案資料夾	
lib	2019/1/18 下午 0...	檔案資料夾	
release	2019/1/18 下午 0...	檔案	2 KB

- Create a folder “Java” in “C:\Program Files” and put “jdk-11.0.2” in this folder as following figure.



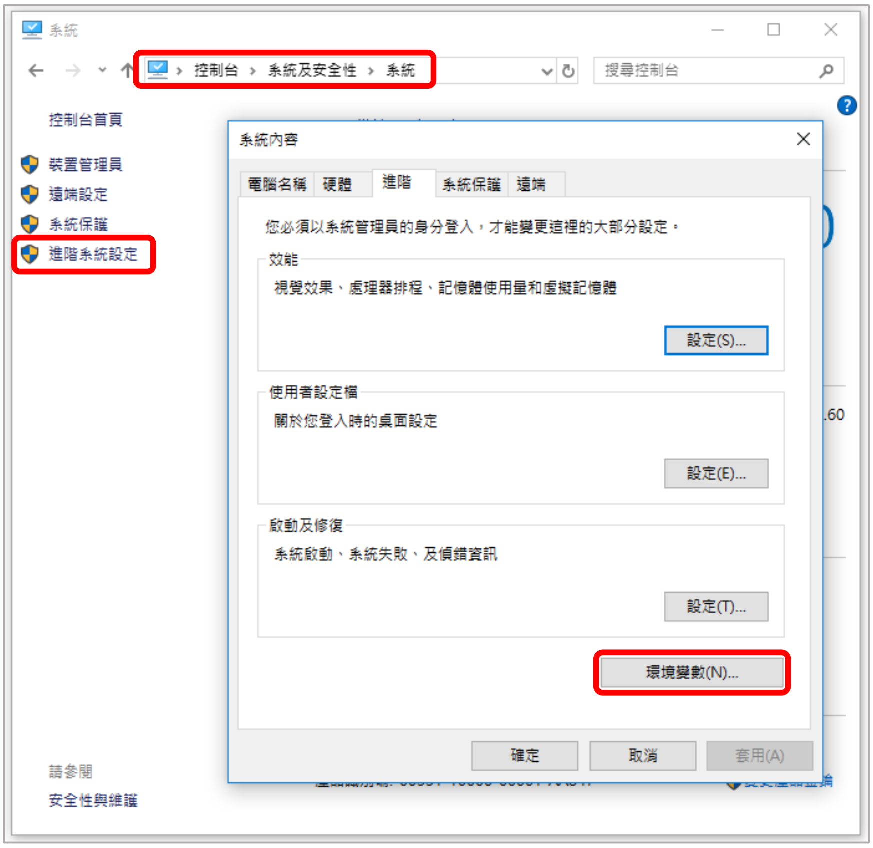
本機 › 本機磁碟 (C:) › Program Files › Java

名稱	修改日期	類型	大小
jdk-11.0.2	2019/2/18 下午 1...	檔案資料夾	

Step 3: Path Setting

- Add environment variable in “Path” with value “C:\Program Files\Java\jdk-11.0.2\bin” shown as following figures, and move it to the first position.

  (控制台\系統及安全性\系統 ->進階系統設定 -> 環境變數)



系統內容

您必須以系統管理員的身分登入，才能變更這裡的大部分設定。

效能

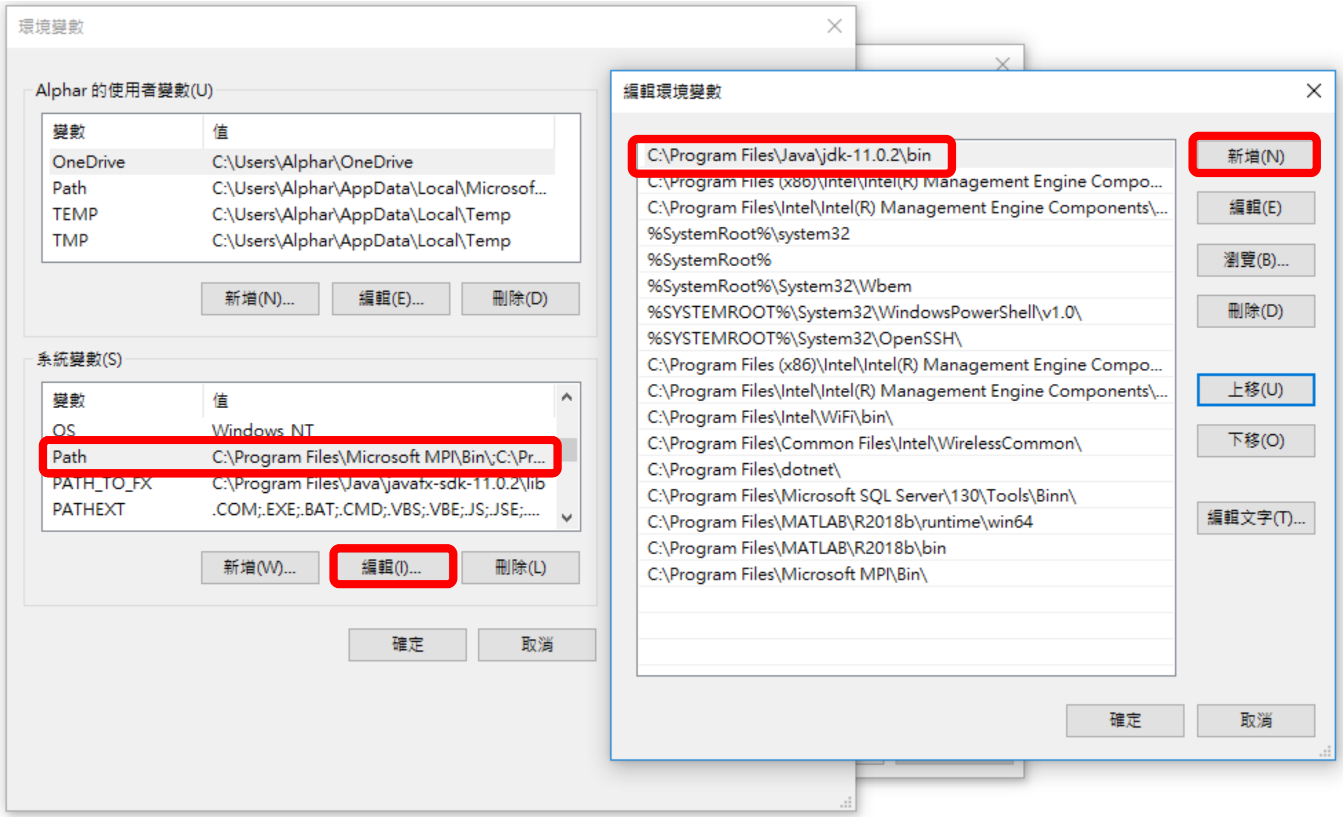
視覺效果、處理器排程、記憶體使用量和虛擬記憶體

使用者設定檔

關於您登入時的桌面設定

啟動及修復

系統啟動、系統失敗、及偵錯資訊



環境變數

Alphar 的使用者變數(U)

變數	值
OneDrive	C:\Users\Alphar\OneDrive
Path	C:\Users\Alphar\AppData\Local\Microsof...
TEMP	C:\Users\Alphar\AppData\Local\Temp
TMP	C:\Users\Alphar\AppData\Local\Temp

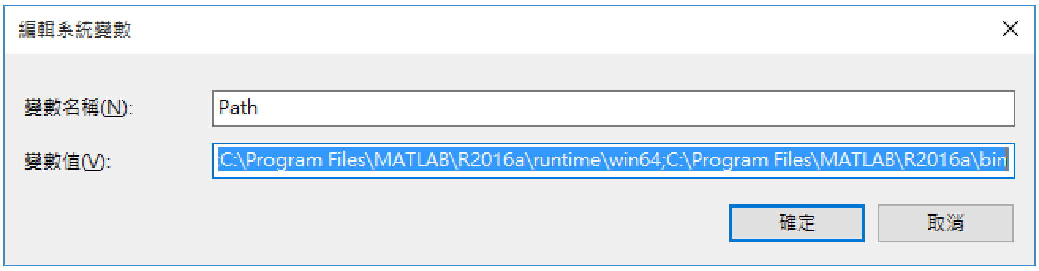
系統變數(S)

變數	值
OS	Windows_NT
Path	C:\Program Files\Microsoft MPI\Bin\;C:\Pr...
PATH_TO_FX	C:\Program Files\Java\javafx-sdk-11.0.2\lib
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;....

編輯環境變數

```
C:\Program Files\Java\jdk-11.0.2\bin
C:\Program Files (x86)\Intel\Intel(R) Management Engine Compo...
C:\Program Files\Intel\Intel(R) Management Engine Components\...
%SystemRoot%\system32
%SystemRoot%
%SystemRoot%\System32\Wbem
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\
%SYSTEMROOT%\System32\OpenSSH\
C:\Program Files (x86)\Intel\Intel(R) Management Engine Compo...
C:\Program Files\Intel\Intel(R) Management Engine Components\...
C:\Program Files\Intel\WiFi\bin\
C:\Program Files\Common Files\Intel\WirelessCommon\
C:\Program Files\dotnet\
C:\Program Files\Microsoft SQL Server\130\Tools\Binn\
C:\Program Files\MATLAB\R2018b\runtime\win64
C:\Program Files\MATLAB\R2018b\bin
C:\Program Files\Microsoft MPI\Bin\
```

Note: If your system show as follows, do not delete the original text, first append “;”, and then add “C:\Program Files\Java\jdk-11.0.2\bin” in the end.



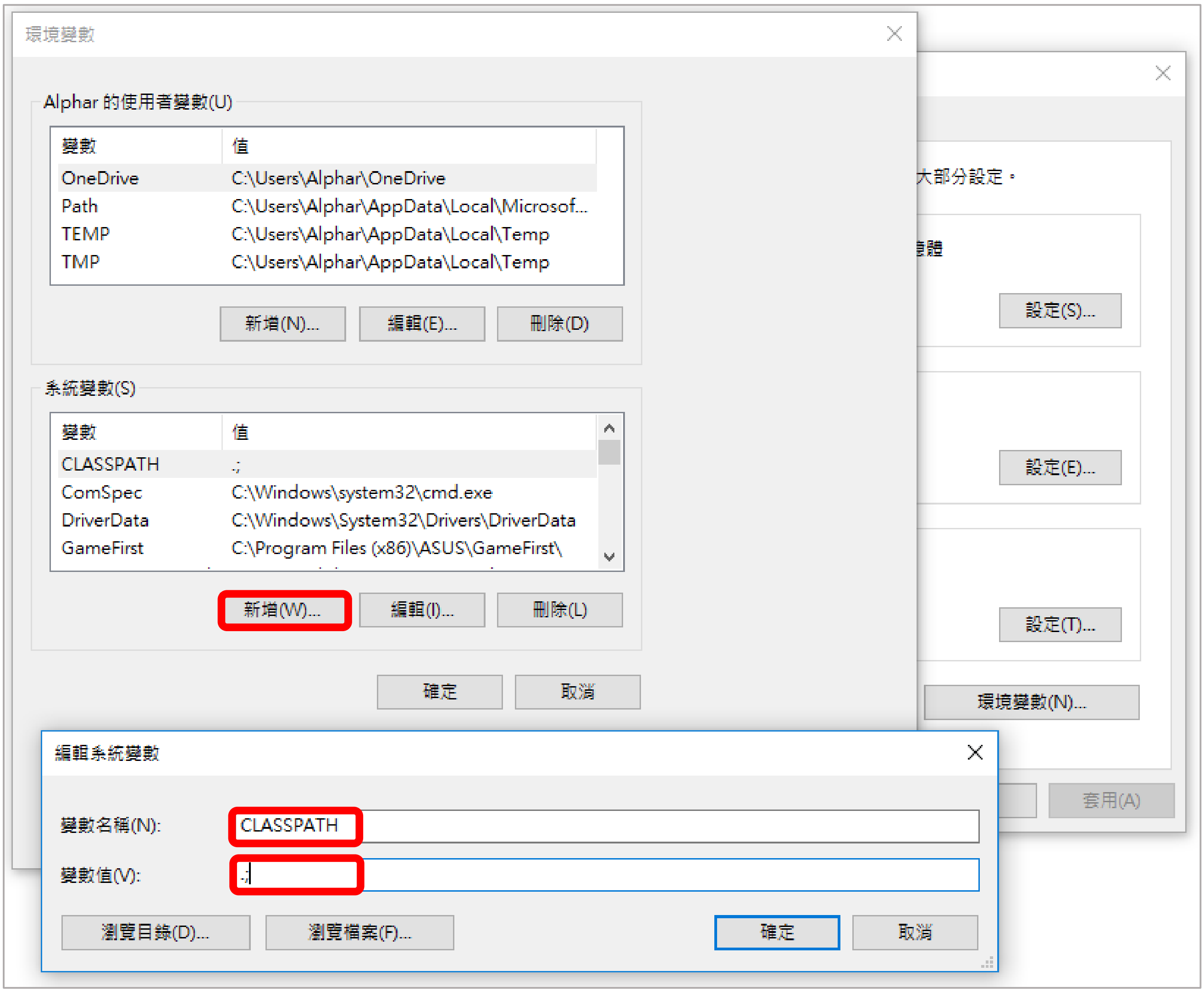
編輯系統變數

變數名稱(N): Path

變數值(V): C:\Program Files\MATLAB\R2016a\runtime\win64;C:\Program Files\MATLAB\R2016a\bin

- **Click ”新增” and add following new environment variable.**

變數名稱: CLASSPATH
變數值: .;



環境變數

Alphar 的使用者變數(U)

變數	值
OneDrive	C:\Users\Alphar\OneDrive
Path	C:\Users\Alphar\AppData\Local\Microsof...
TEMP	C:\Users\Alphar\AppData\Local\Temp
TMP	C:\Users\Alphar\AppData\Local\Temp

系統變數(S)

變數	值
CLASSPATH	.;
ComSpec	C:\Windows\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
GameFirst	C:\Program Files (x86)\ASUS\GameFirst\

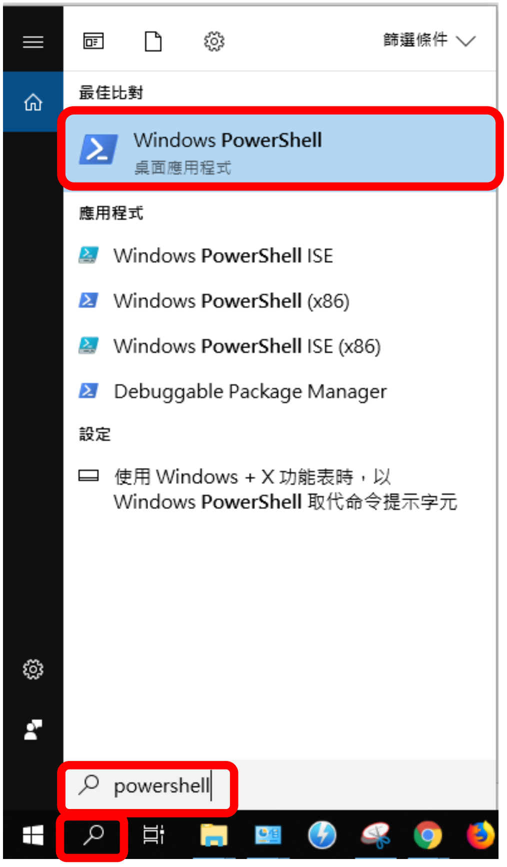
編輯系統變數

變數名稱(N): CLASSPATH

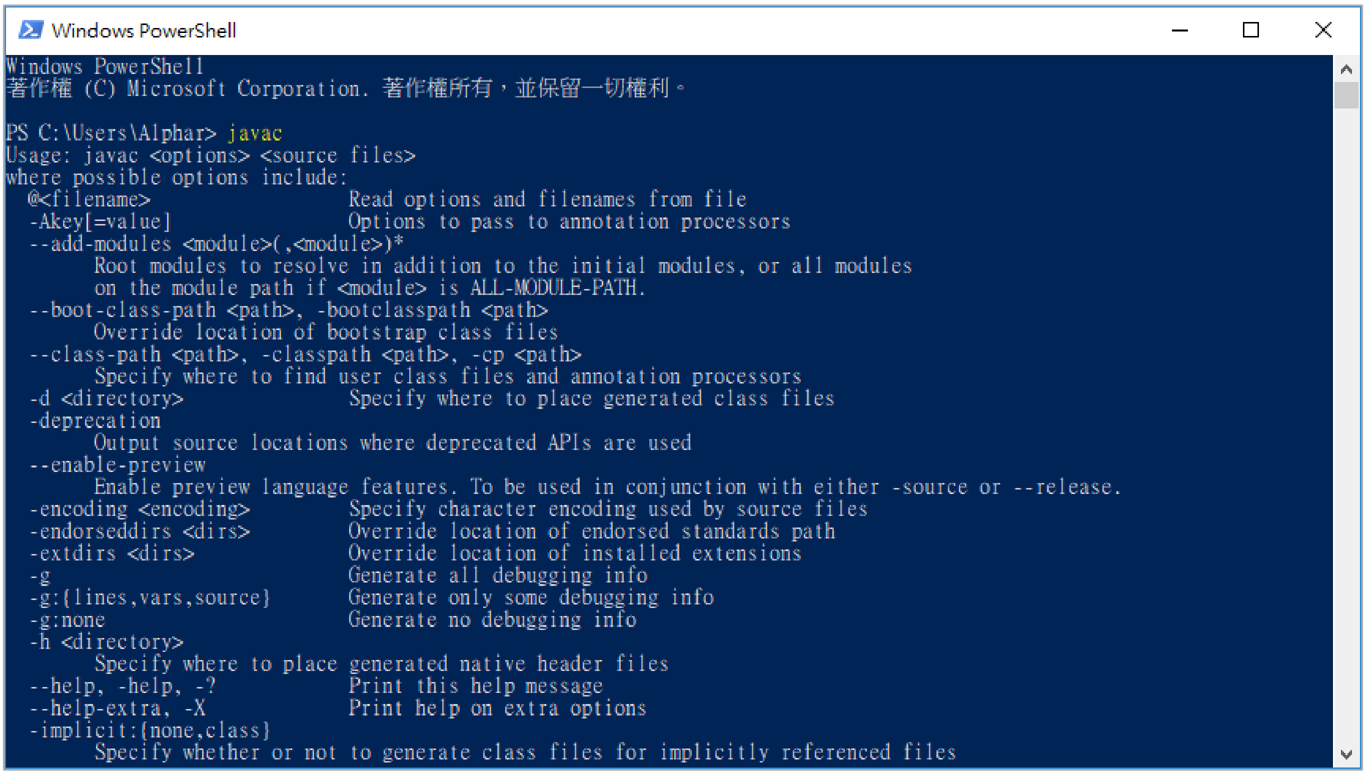
變數值(V): .;

Step 4: Testing

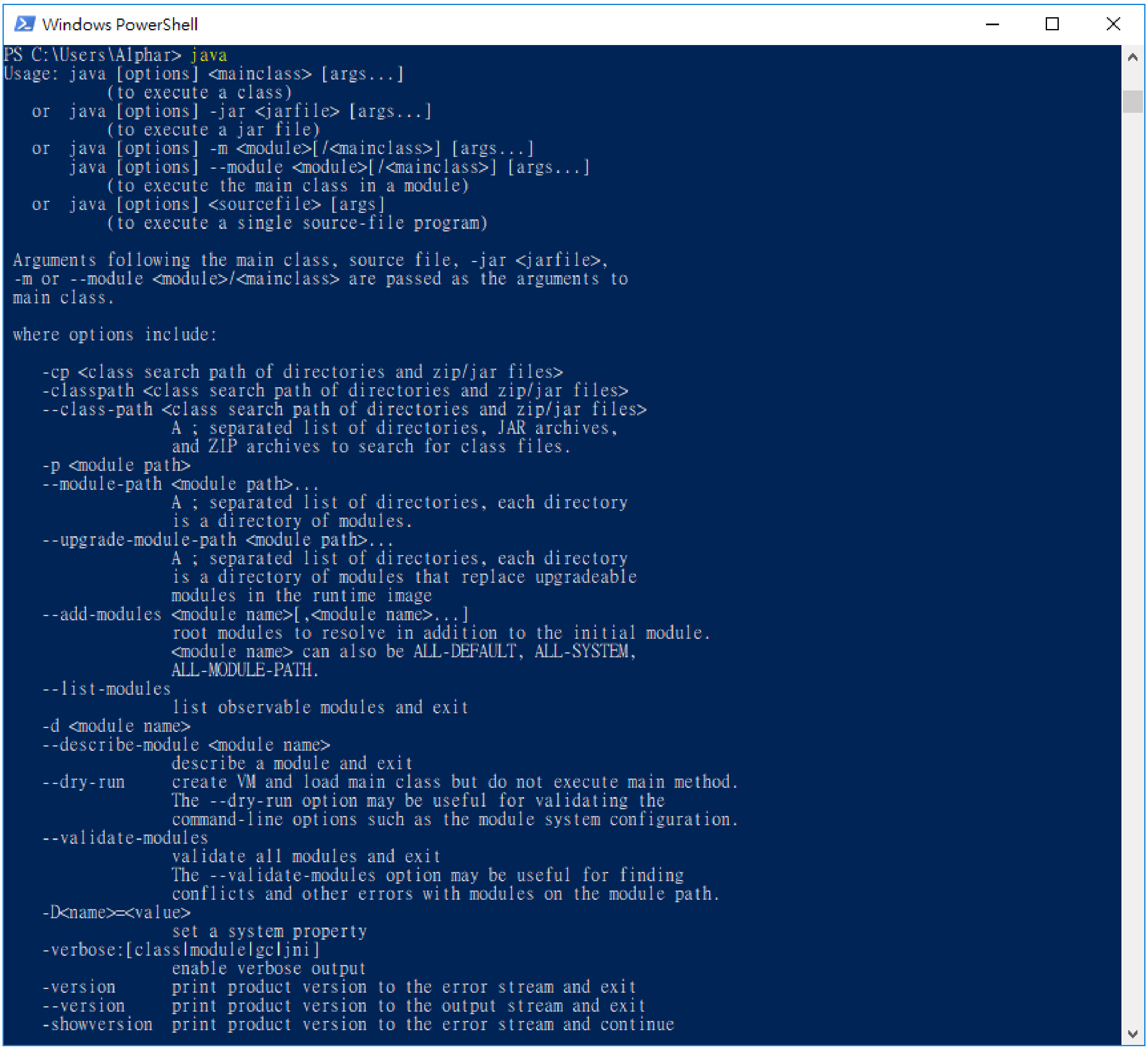
- Execute “powershell” shown as follows.
  (or press “window key” + “R” and input “powershell”)


篩選條件
最佳比對
Windows PowerShell
桌面應用程式
應用程式
Windows PowerShell ISE
Windows PowerShell (x86)
Windows PowerShell ISE (x86)
Debuggable Package Manager
設定
使用 Windows + X 功能表時，以 Windows PowerShell 取代命令提示字元
powershell

- Input “javac” and “java”, if following results are shown, the installation is successful.



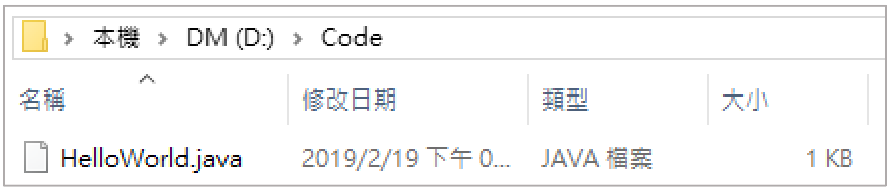
```
Windows PowerShell
著作權 (C) Microsoft Corporation. 著作權所有，並保留一切權利。

PS C:\Users\Alphar> javac
Usage: javac <options> <source files>
where possible options include:
  @<filename>                  Read options and filenames from file
  -Akey[=value]                Options to pass to annotation processors
  --add-modules <module>(,<module>)*
        Root modules to resolve in addition to the initial modules, or all modules
        on the module path if <module> is ALL-MODULE-PATH.
  --boot-class-path <path>, -bootclasspath <path>
        Override location of bootstrap class files
  --class-path <path>, -classpath <path>, -cp <path>
        Specify where to find user class files and annotation processors
  -d <directory>               Specify where to place generated class files
  -deprecation
        Output source locations where deprecated APIs are used
  --enable-preview
        Enable preview language features. To be used in conjunction with either -source or --release.
  -encoding <encoding>         Specify character encoding used by source files
  -endorseddirs <dirs>         Override location of endorsed standards path
  -extdirs <dirs>              Override location of installed extensions
  -g                           Generate all debugging info
  -g:{lines,vars,source}       Generate only some debugging info
  -g:none                      Generate no debugging info
  -h <directory>
        Specify where to place generated native header files
  --help, -help, -?            Print this help message
  --help-extra, -X             Print help on extra options
  -implicit:{none,class}
        Specify whether or not to generate class files for implicitly referenced files
```



```
PS C:\Users\Alphar> java
Usage: java [options] <mainclass> [args...]
           (to execute a class)
   or  java [options] -jar <jarfile> [args...]
           (to execute a jar file)
   or  java [options] -m <module>[/<mainclass>] [args...]
       java [options] --module <module>[/<mainclass>] [args...]
           (to execute the main class in a module)
   or  java [options] <sourcefile> [args]
           (to execute a single source-file program)

 Arguments following the main class, source file, -jar <jarfile>,
 -m or --module <module>/<mainclass> are passed as the arguments to
 main class.

 where options include:

    -cp <class search path of directories and zip/jar files>
    -classpath <class search path of directories and zip/jar files>
    --class-path <class search path of directories and zip/jar files>
                  A ; separated list of directories, JAR archives,
                  and ZIP archives to search for class files.
    -p <module path>
    --module-path <module path>...
                  A ; separated list of directories, each directory
                  is a directory of modules.
    --upgrade-module-path <module path>...
                  A ; separated list of directories, each directory
                  is a directory of modules that replace upgradeable
                  modules in the runtime image
    --add-modules <module name>[,<module name>...]
                  root modules to resolve in addition to the initial module.
                  <module name> can also be ALL-DEFAULT, ALL-SYSTEM,
                  ALL-MODULE-PATH.
    --list-modules
                  list observable modules and exit
    -d <module name>
    --describe-module <module name>
                  describe a module and exit
    --dry-run     create VM and load main class but do not execute main method.
                  The --dry-run option may be useful for validating the
                  command-line options such as the module system configuration.
    --validate-modules
                  validate all modules and exit
                  The --validate-modules option may be useful for finding
                  conflicts and other errors with modules on the module path.
    -D<name>=<value>
                  set a system property
    -verbose:[class|module|gc|jni]
                  enable verbose output
    -version      print product version to the error stream and exit
    --version     print product version to the output stream and exit
    -showversion  print product version to the error stream and continue
```

Step 5: First Java Code

- Create one file named “HelloWorld.java” in a folder. Note that the extension name is “java”.



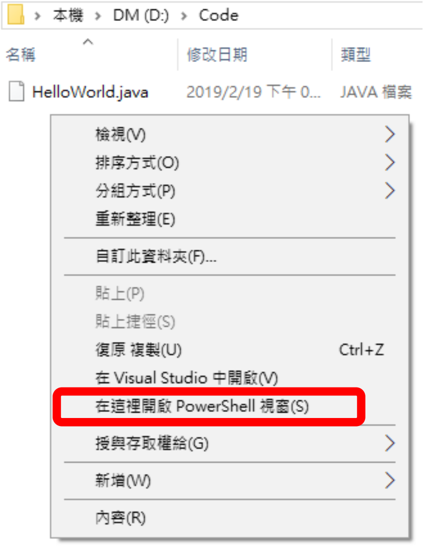
本機 › DM (D:) › Code

名稱	修改日期	類型	大小
HelloWorld.java	2019/2/19 下午 0...	JAVA 檔案	1 KB

- Use any plain text editor to edit the file “HelloWorld.java” and key in following code.

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

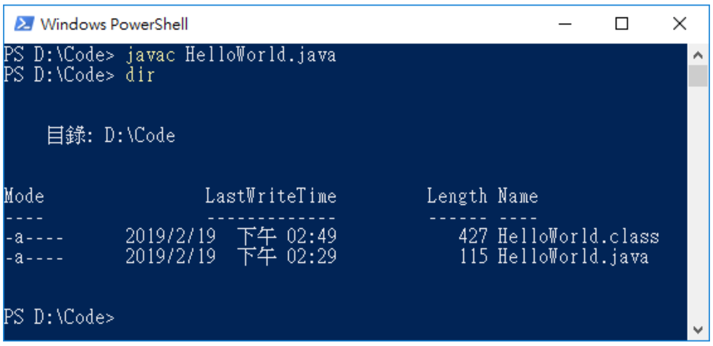
- Press “Shift” and right click the mouse in the same folder, and open “PowerShell” (new Windows version) or “命令提示字元” (old Windows version).



本機 › DM (D:) › Code

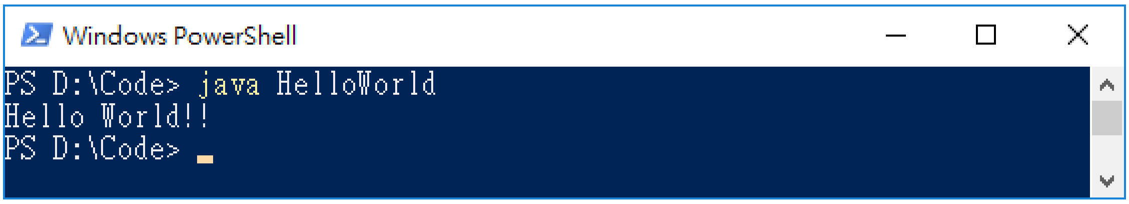
名稱	修改日期	類型
HelloWorld.java	2019/2/19 下午 0...	JAVA 檔案

- Input “javac HelloWorld.java” to compile the code, and you can find it generates HelloWorld.class in the same folder.



```
PS D:\Code> javac HelloWorld.java
PS D:\Code> dir


    目錄: D:\Code


Mode                LastWriteTime         Length Name
----                -------------         ------ ----
-a----        2019/2/19  下午 02:49            427 HelloWorld.class
-a----        2019/2/19  下午 02:29            115 HelloWorld.java


PS D:\Code>
```

- **Input “java HelloWorld” to run the program and you can see following result.**

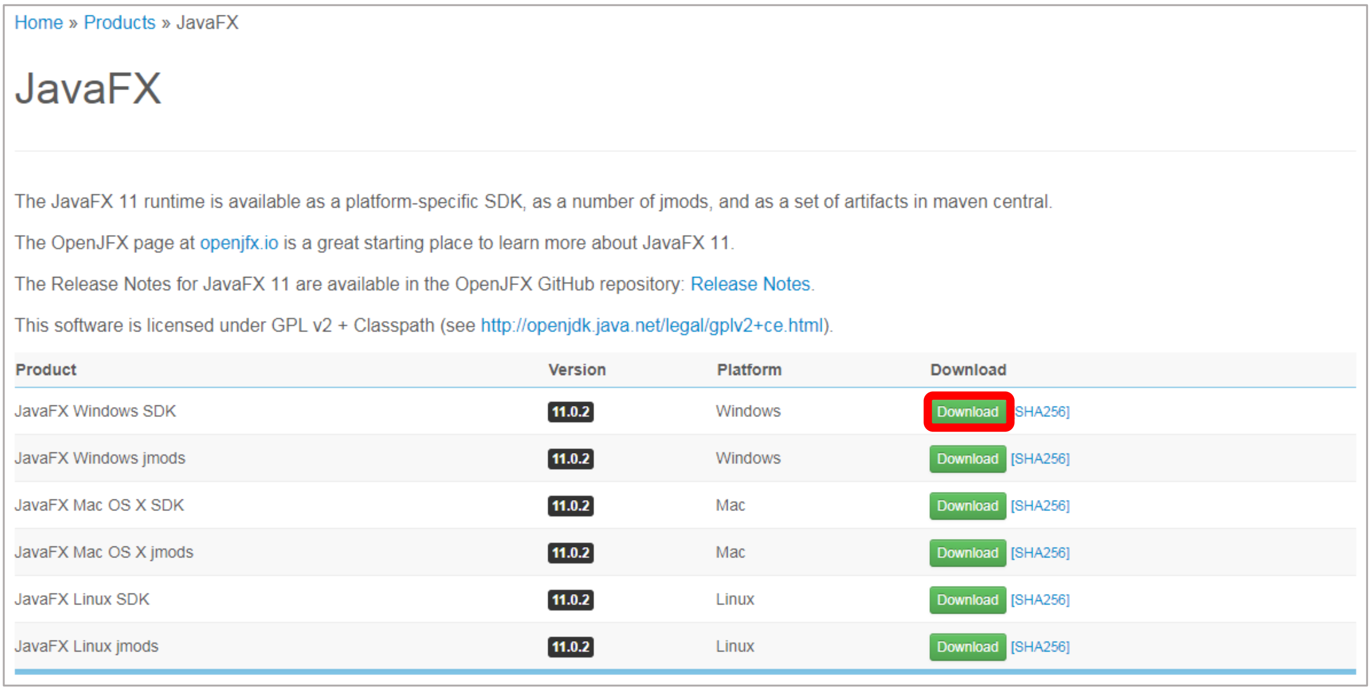


```
PS D:\Code> java HelloWorld
Hello World!!
PS D:\Code> _
```

Step 6 : Download JavaFX

JavaFX 11: https://gluonhq.com/products/javafx/

- **Select JavaFX corresponding to your OS and download it, we take Windows version as example, the compressed file name is "openjfx-11.0.2_windows-x64_bin-sdk.zip".**



Home » Products » JavaFX

JavaFX

The JavaFX 11 runtime is available as a platform-specific SDK, as a number of jmods, and as a set of artifacts in maven central.

The OpenJFX page at openjfx.io is a great starting place to learn more about JavaFX 11.

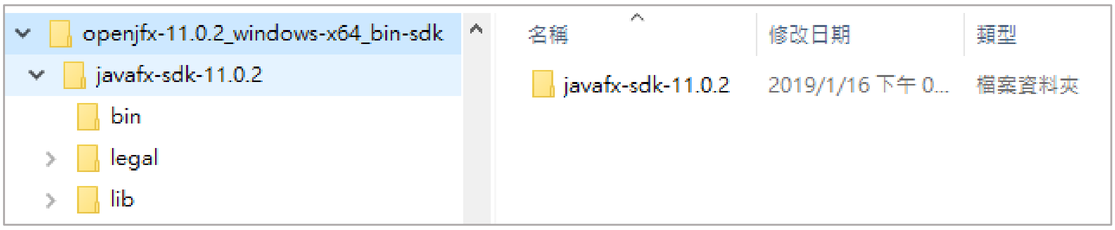
The Release Notes for JavaFX 11 are available in the OpenJFX GitHub repository: Release Notes.

This software is licensed under GPL v2 + Classpath (see http://openjdk.java.net/legal/gplv2+ce.html).

Product	Version	Platform	Download
JavaFX Windows SDK	11.0.2	Windows	Download [SHA256]
JavaFX Windows jmods	11.0.2	Windows	Download [SHA256]
JavaFX Mac OS X SDK	11.0.2	Mac	Download [SHA256]
JavaFX Mac OS X jmods	11.0.2	Mac	Download [SHA256]
JavaFX Linux SDK	11.0.2	Linux	Download [SHA256]
JavaFX Linux jmods	11.0.2	Linux	Download [SHA256]

Step 7: Install JavaFX

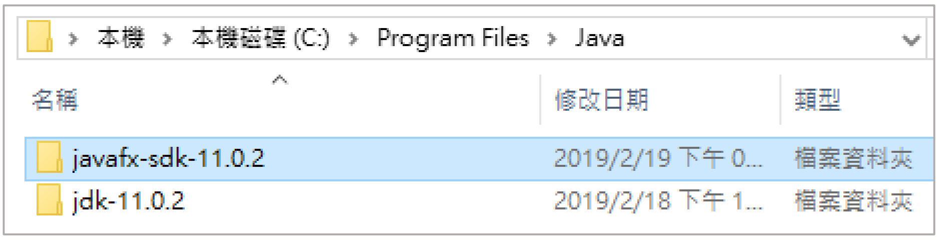
- **Extract the file and you can see following archive structure.**



- openjfx-11.0.2_windows-x64_bin-sdk
  - javafx-sdk-11.0.2
    - bin
    - legal
    - lib

名稱	修改日期	類型
javafx-sdk-11.0.2	2019/1/16 下午 0...	檔案資料夾

- **Put "javafx-sdk-11.0.2" in the same folder as jdk-11.0.2.**

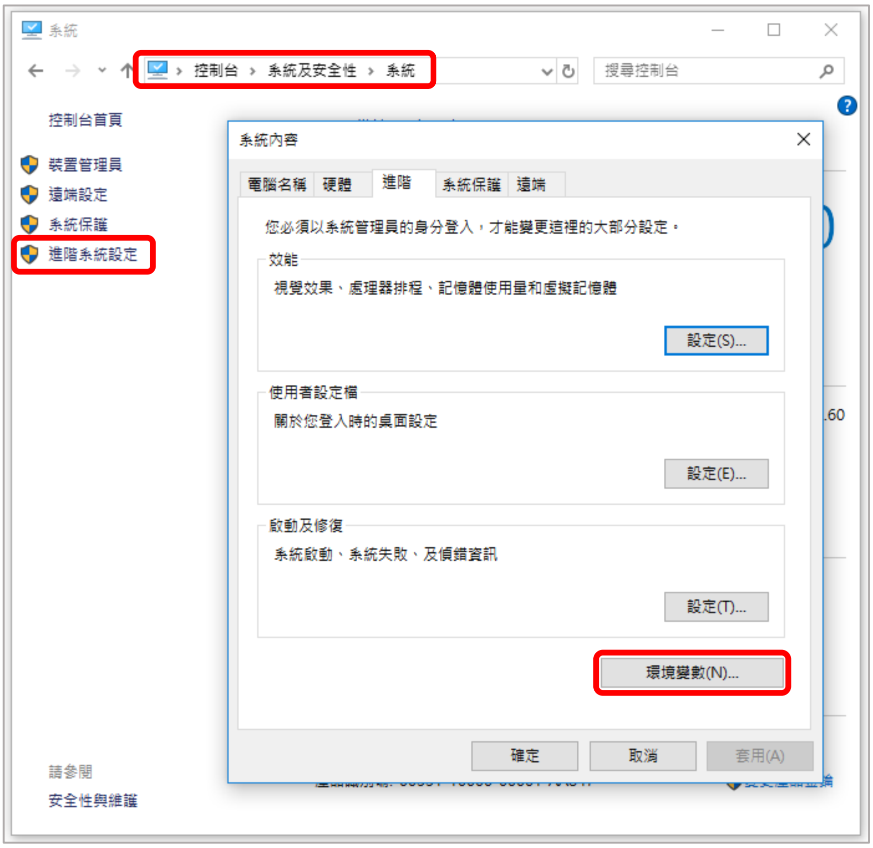


本機 › 本機磁碟 (C:) › Program Files › Java

名稱	修改日期	類型
javafx-sdk-11.0.2	2019/2/19 下午 0...	檔案資料夾
jdk-11.0.2	2019/2/18 下午 1...	檔案資料夾

Step 8: Path Setting for JavaFX

- **Add new environment variable as follows.**
  變數名稱: PATH_TO_FX
  變數值: C:\Program Files\Java\javafx-sdk-11.0.2\lib

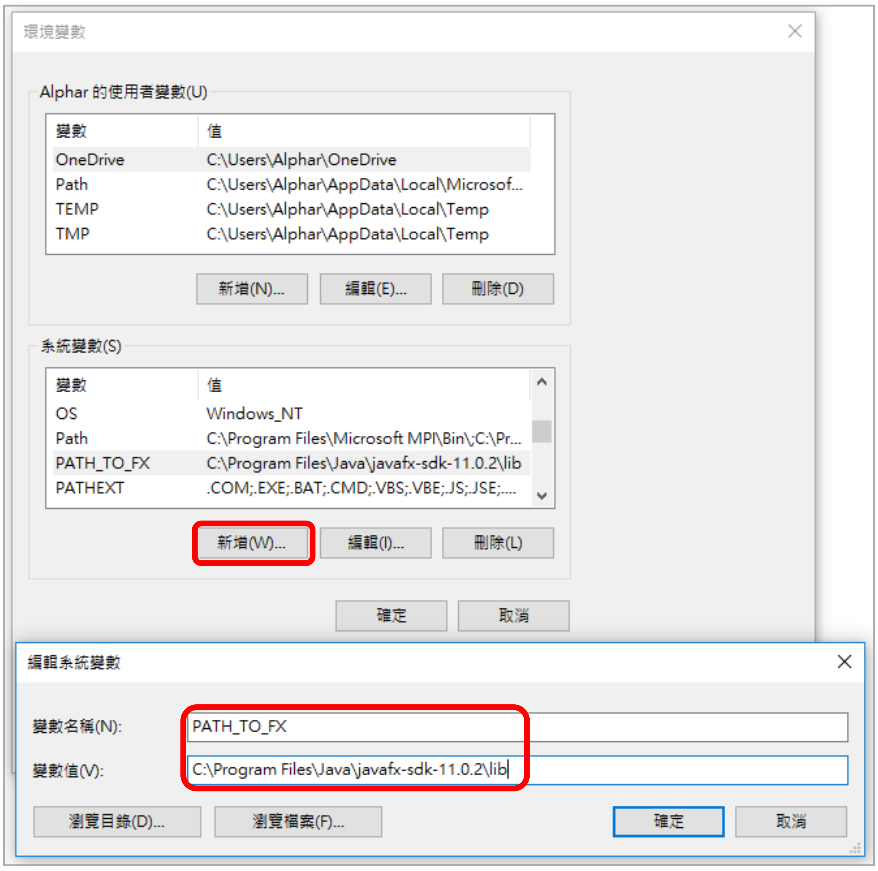


您必須以系統管理員的身分登入，才能變更這裡的大部分設定。

視覺效果、處理器排程、記憶體使用量和虛擬記憶體

關於您登入時的桌面設定

系統啟動、系統失敗、及偵錯資訊



Alphar 的使用者變數(U)

變數	值
OneDrive	C:\Users\Alphar\OneDrive
Path	C:\Users\Alphar\AppData\Local\Microsof...
TEMP	C:\Users\Alphar\AppData\Local\Temp
TMP	C:\Users\Alphar\AppData\Local\Temp

系統變數(S)

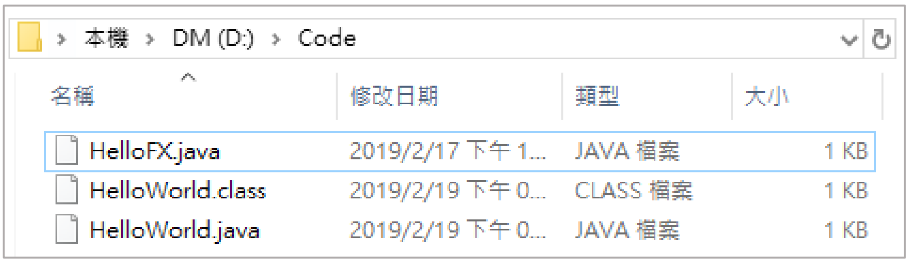
變數	值
OS	Windows_NT
Path	C:\Program Files\Microsoft MPI\Bin\;C:\Pr...
PATH_TO_FX	C:\Program Files\Java\javafx-sdk-11.0.2\lib
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;....

變數名稱(N): PATH_TO_FX

變數值(V): C:\Program Files\Java\javafx-sdk-11.0.2\lib

Step 9: First JavaFX Code

- Create one file named “HelloFX.java” in a folder. Note that the extension name is “.java”.



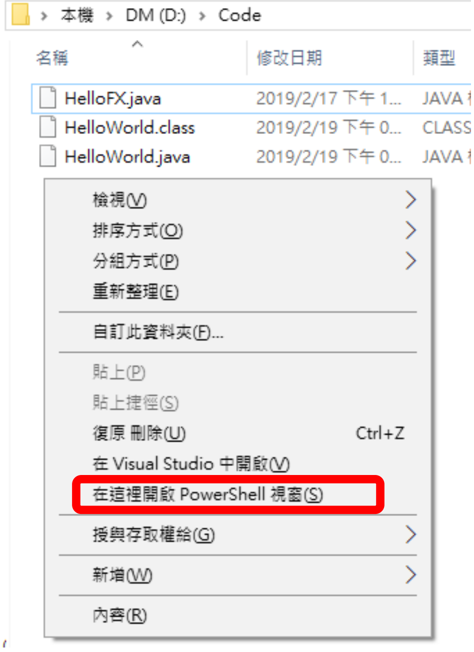
本機 › DM (D:) › Code

名稱	修改日期	類型	大小
HelloFX.java	2019/2/17 下午 1...	JAVA 檔案	1 KB
HelloWorld.class	2019/2/19 下午 0...	CLASS 檔案	1 KB
HelloWorld.java	2019/2/19 下午 0...	JAVA 檔案	1 KB

- Use any plain text editor to edit the file “HelloFX.java” and key in following code.

```java
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.Label;
import javafx.scene.layout.StackPane;
import javafx.stage.Stage;

public class HelloFX extends Application {

    @Override
    public void start(Stage stage) {
        String javaVersion = System.getProperty("java.version");
        String javafxVersion = System.getProperty("javafx.version");
        Label l = new Label("Hello, JavaFX " + javafxVersion + ", running on Java " + javaVersion + ".");
        Scene scene = new Scene(new StackPane(l), 640, 480);
        stage.setScene(scene);
        stage.show();
    }

    public static void main(String[] args) {
        launch();
    }

}
```

- **Press “Shift” and right click the mouse in the same folder, and open “PowerShell” (new Windows version) or “命令提示字元” (old Windows version).**



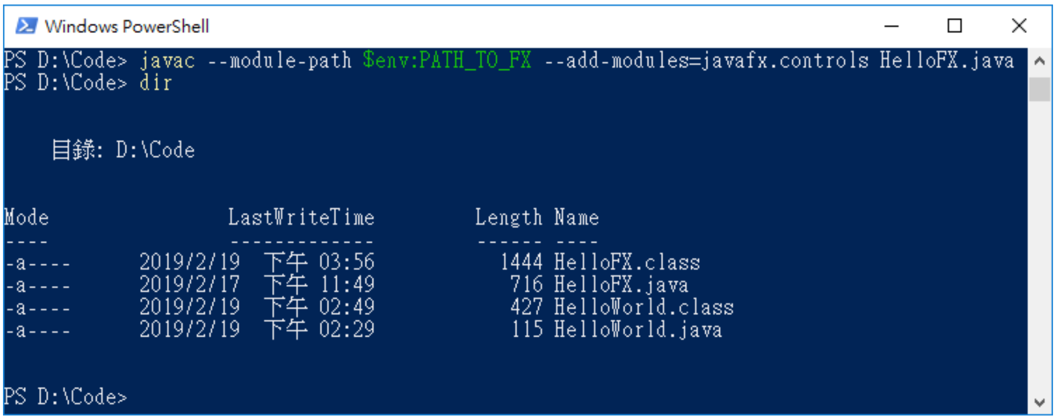
› 本機 › DM (D:) › Code

名稱	修改日期	類型
HelloFX.java	2019/2/17 下午 1...	JAVA ‡
HelloWorld.class	2019/2/19 下午 0...	CLASS
HelloWorld.java	2019/2/19 下午 0...	JAVA ‡

- **Input**

  Javac --module-path $env:PATH_TO_FX --add-modules=javafx.controls HelloFX.java

  to compile the code, and you can find it generates HelloFX.class in the same folder.

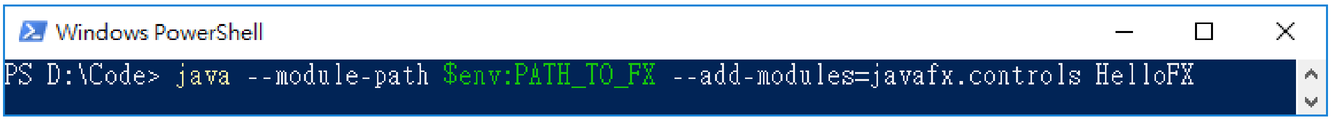


```
PS D:\Code> javac --module-path $env:PATH_TO_FX --add-modules=javafx.controls HelloFX.java
PS D:\Code> dir


    目錄: D:\Code


Mode                LastWriteTime         Length Name
----                -------------         ------ ----
-a----        2019/2/19  下午 03:56           1444 HelloFX.class
-a----        2019/2/17  下午 11:49            716 HelloFX.java
-a----        2019/2/19  下午 02:49            427 HelloWorld.class
-a----        2019/2/19  下午 02:29            115 HelloWorld.java


PS D:\Code>
```

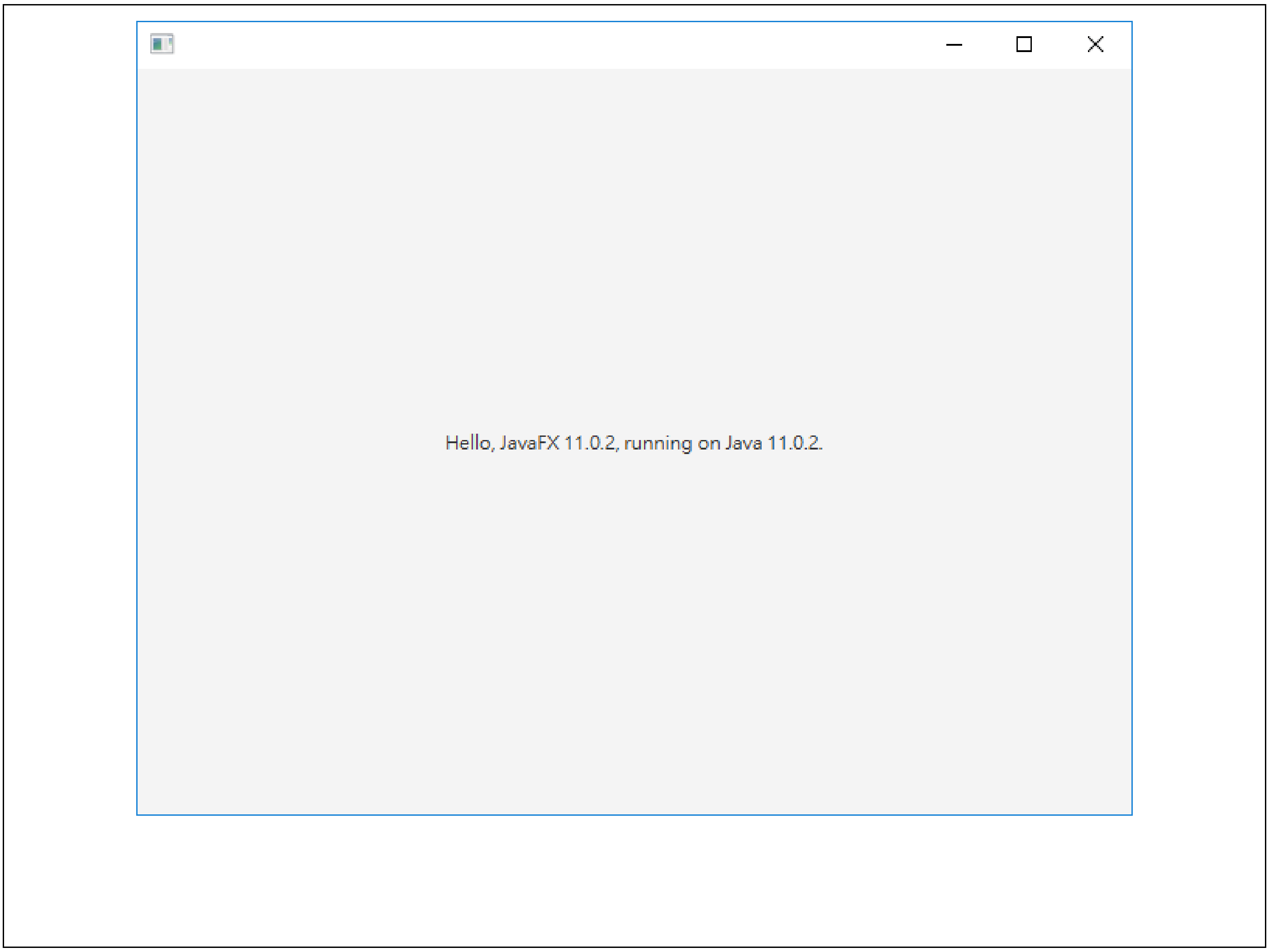
- **Input**

  java --module-path $env:PATH_TO_FX --add-modules=javafx.controls HelloFX

  to run the program and you can see following result.



```
PS D:\Code> java --module-path $env:PATH_TO_FX --add-modules=javafx.controls HelloFX
```



Hello, JavaFX 11.0.2, running on Java 11.0.2.

You can refer to following web page for all classes of java jdk 11.

API Javadoc for JDK11:

https://docs.oracle.com/en/java/javase/11/docs/api/index.html