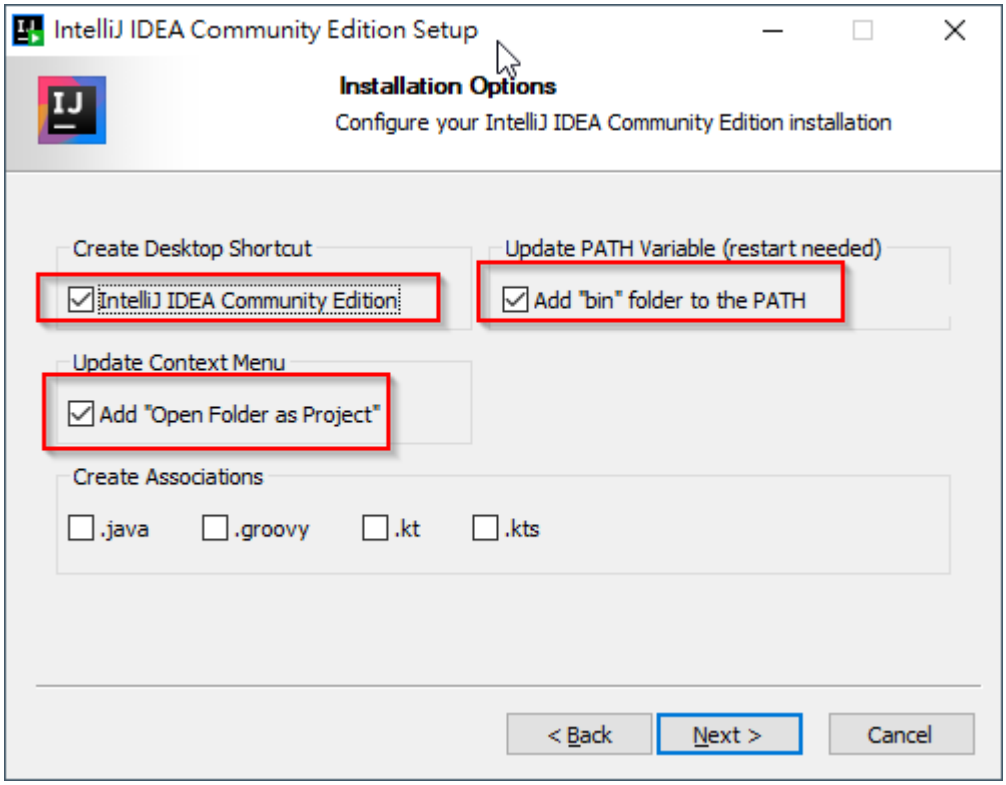
下載 IntelliJ IDEA 並安裝

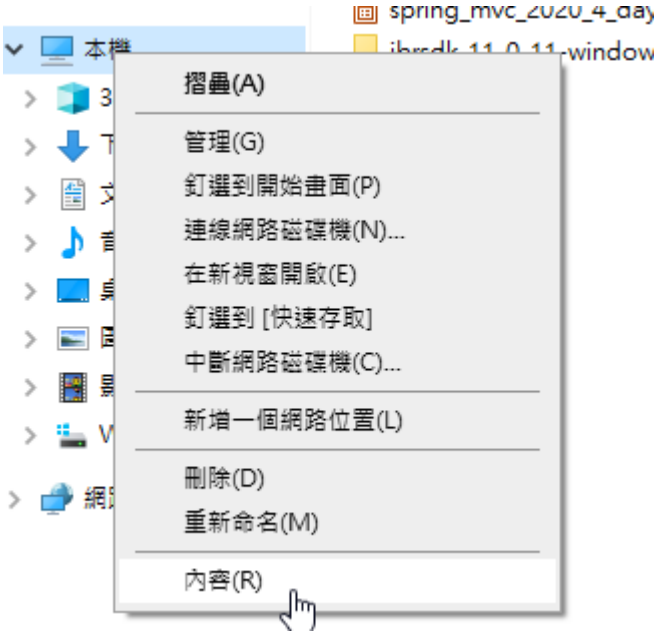
[Download IntelliJ IDEA: The Capable & Ergonomic Java IDE by JetBrains]



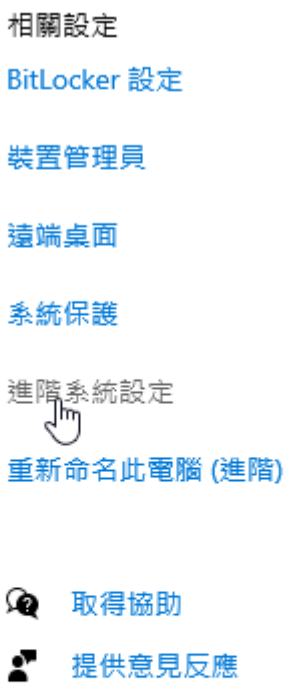

下載 JBRSDK 並解壓縮加入環境變數

[11.0.11+9-b1504.5 - JetBrains Runtime - Confluence]


本機→內容


摺疊(A)
管理(G)
釘選到開始畫面(P)
連線網路磁碟機(N)...
在新視窗開啟(E)
釘選到 [快速存取]
中斷網路磁碟機(C)...
新增一個網路位置(L)
刪除(D)
重新命名(M)
內容(R)

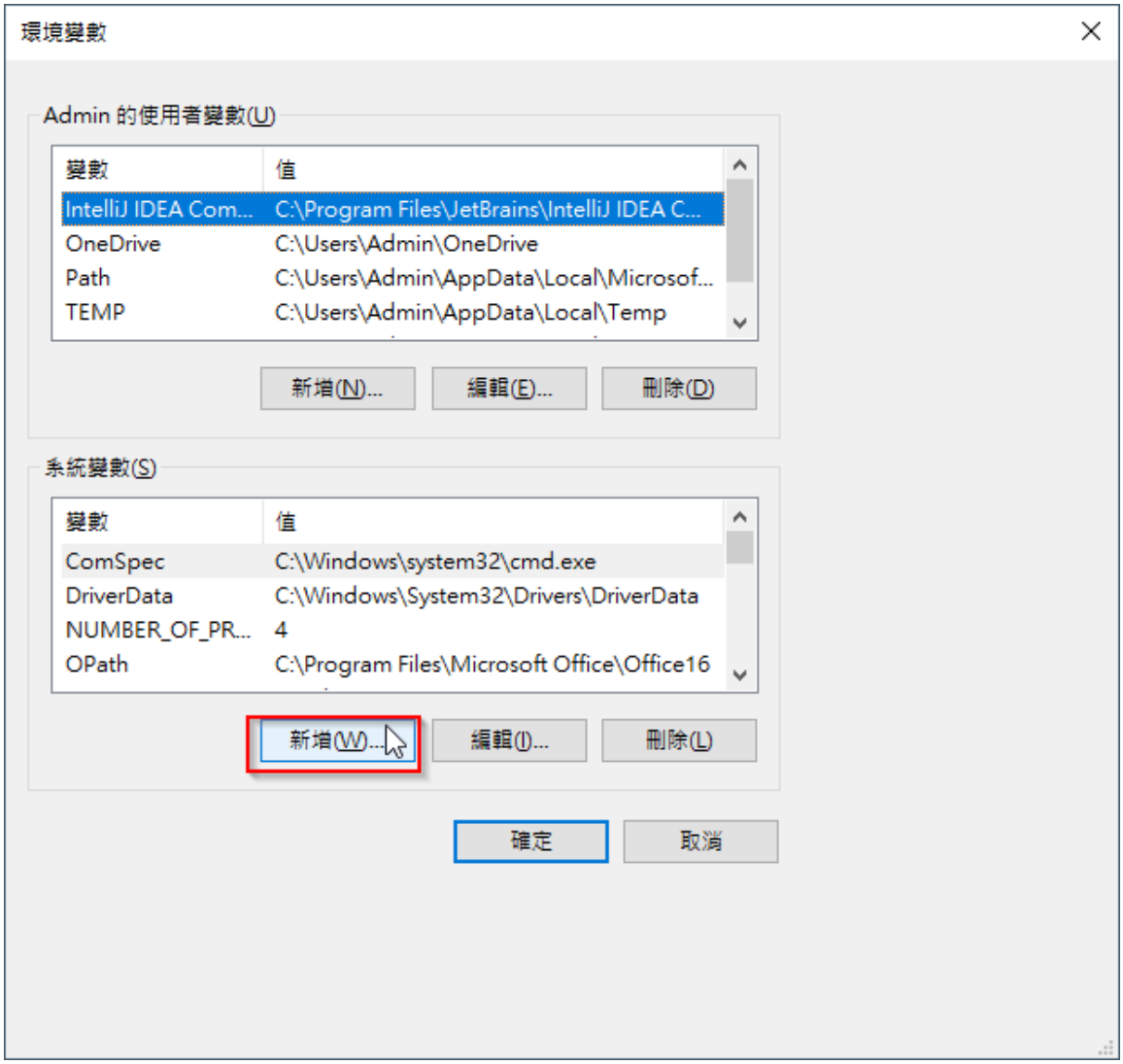
進階設定

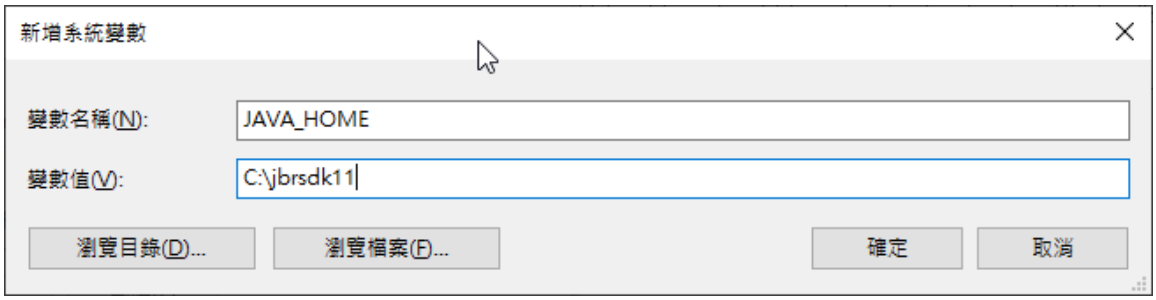

相關設定
BitLocker 設定
裝置管理員
遠端桌面
系統保護
進階系統設定
重新命名此電腦 (進階)
取得協助
提供意見反應

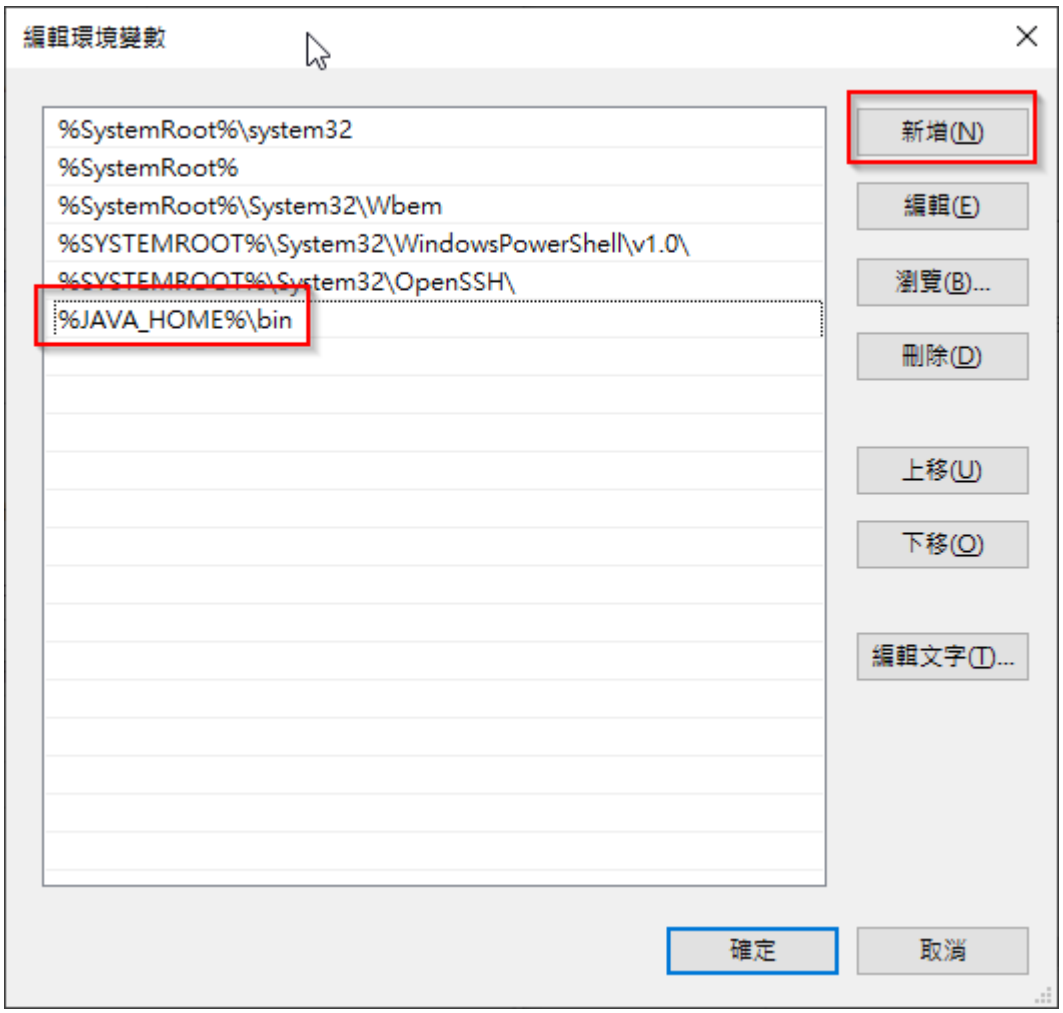
環境變數


系統內容
電腦名稱
硬體
進階
系統保護
遠端
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
設定(S)...
使用者設定檔
關於您登入時的桌面設定
設定(E)...
啟動及修復
系統啟動、系統失敗、及偵錯資訊
設定(T)...
環境變數(N)...
確定
取消
套用(A)

新增系統變數


環境變數
Admin 的使用者變數(U)
變數
值
IntelliJ IDEA Com...
C:\Program Files\JetBrains\IntelliJ IDEA C...
OneDrive
C:\Users\Admin\OneDrive
Path
C:\Users\Admin\AppData\Local\Microsof...
TEMP
C:\Users\Admin\AppData\Local\Temp
新增(N)...
編輯(E)...
刪除(D)
系統變數(S)
變數
值
ComSpec
C:\Windows\system32\cmd.exe
DriverData
C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PR...
4
OPath
C:\Program Files\Microsoft Office\Office16
新增(W)...
編輯(I)...
刪除(L)
確定
取消


新增系統變數
變數名稱(N):
JAVA_HOME
變數值(V):
C:\jbrsdk11
瀏覽目錄(D)...
瀏覽檔案(F)...
確定
取消




打開 CMD　set JAVA

```
C:\Users\bgete>set JAVA
JAVA_HOME=C:\jbrsdk11
```

輸入 javac -version　和　java -version　確認版本

```
C:\Users\bgete>javac -version
javac 11.0.11

C:\Users\bgete>java -version
openjdk version "11.0.11" 2021-04-20
OpenJDK Runtime Environment JBR-11.0.11.9-1504.5-jcef (build 11.0.11+9-b1504.5)
OpenJDK 64-Bit Server VM JBR-11.0.11.9-1504.5-jcef (build 11.0.11+9-b1504.5, mixed mode)
```

下載並安裝　visualvm JAVA記憶體查看軟體

https://visualvm.github.io/

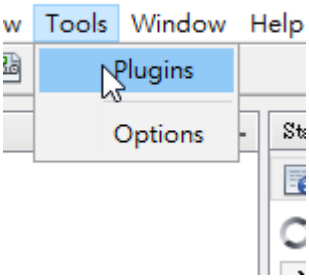
找到安裝目錄底下的設定檔

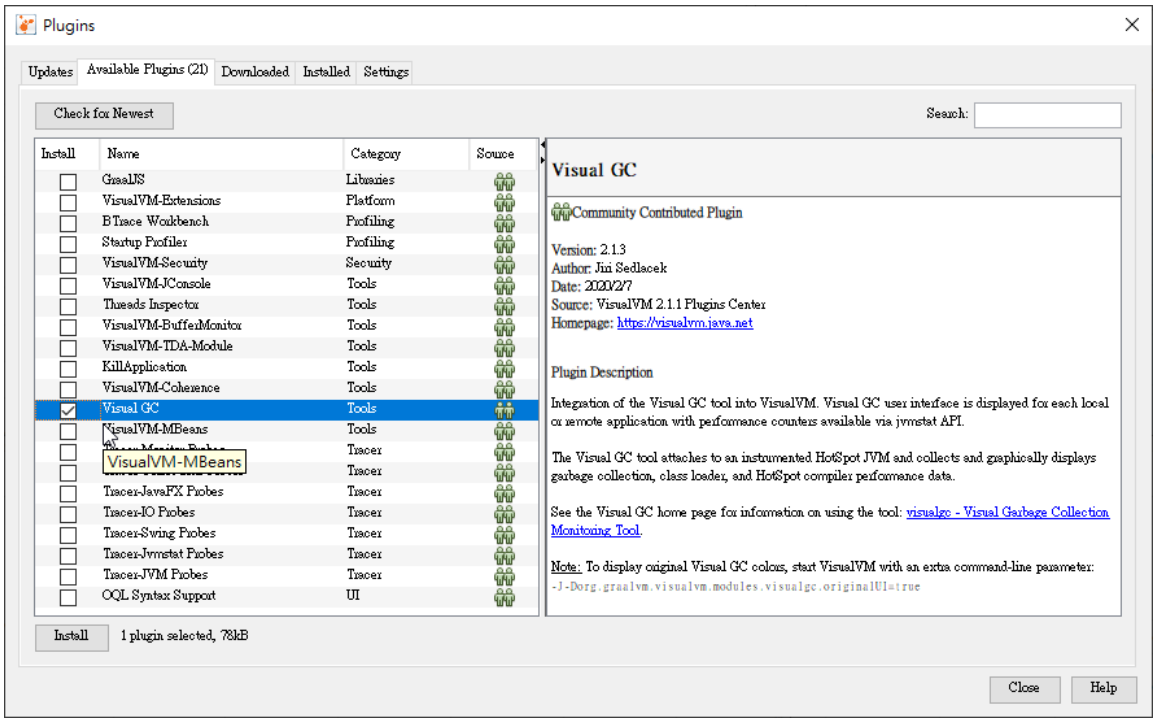
`C:\Users\bgete\visualvm_211\etc\visualvm.conf`

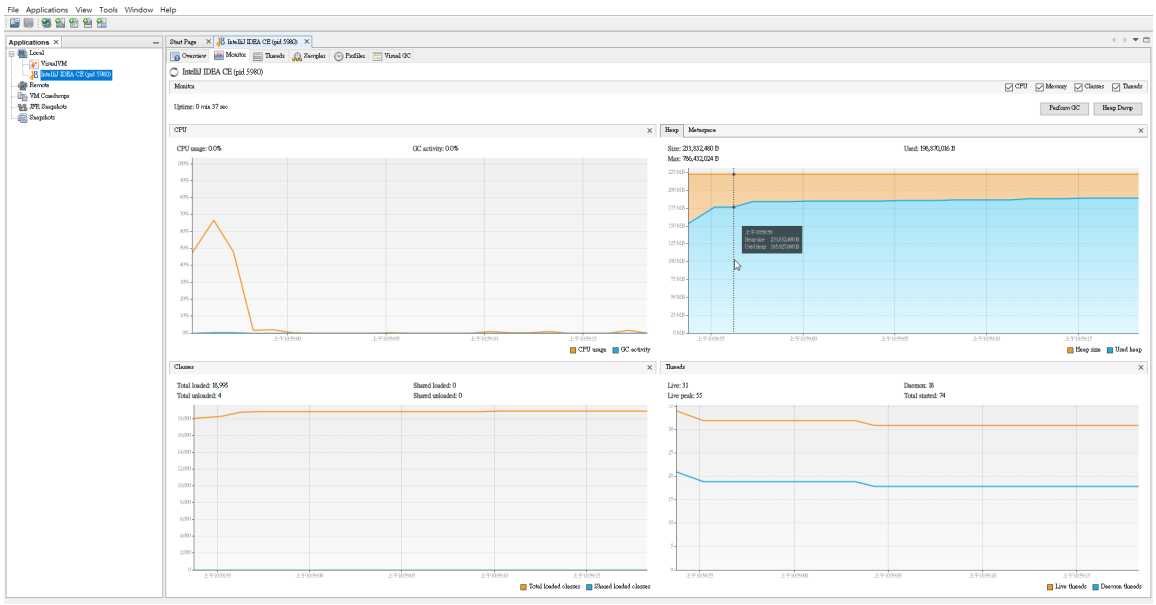
設定JDK路徑

```
visualvm_jdkhome="C:\\jbrsdk11"
```

打開軟體並安裝擴充插件

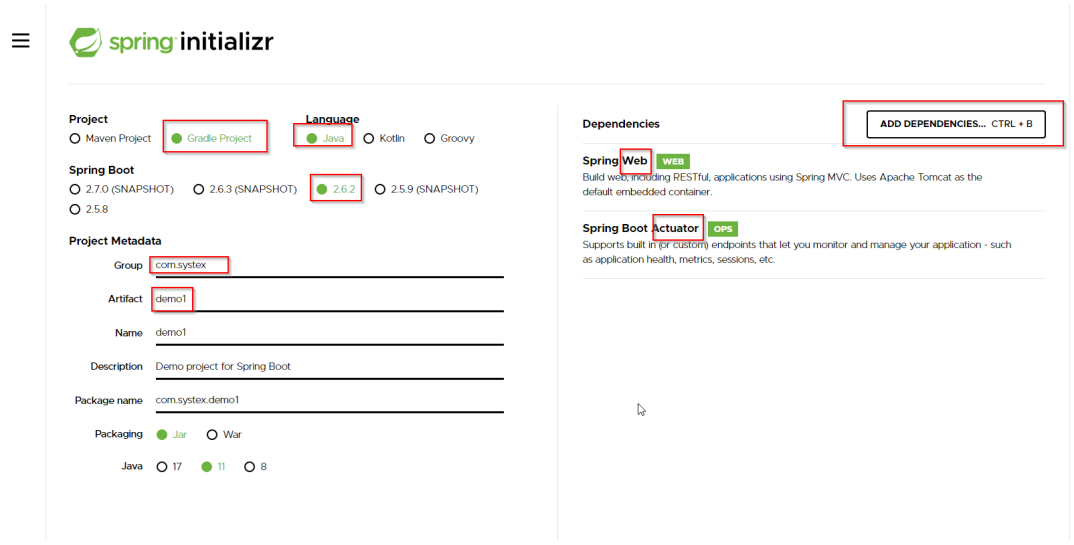


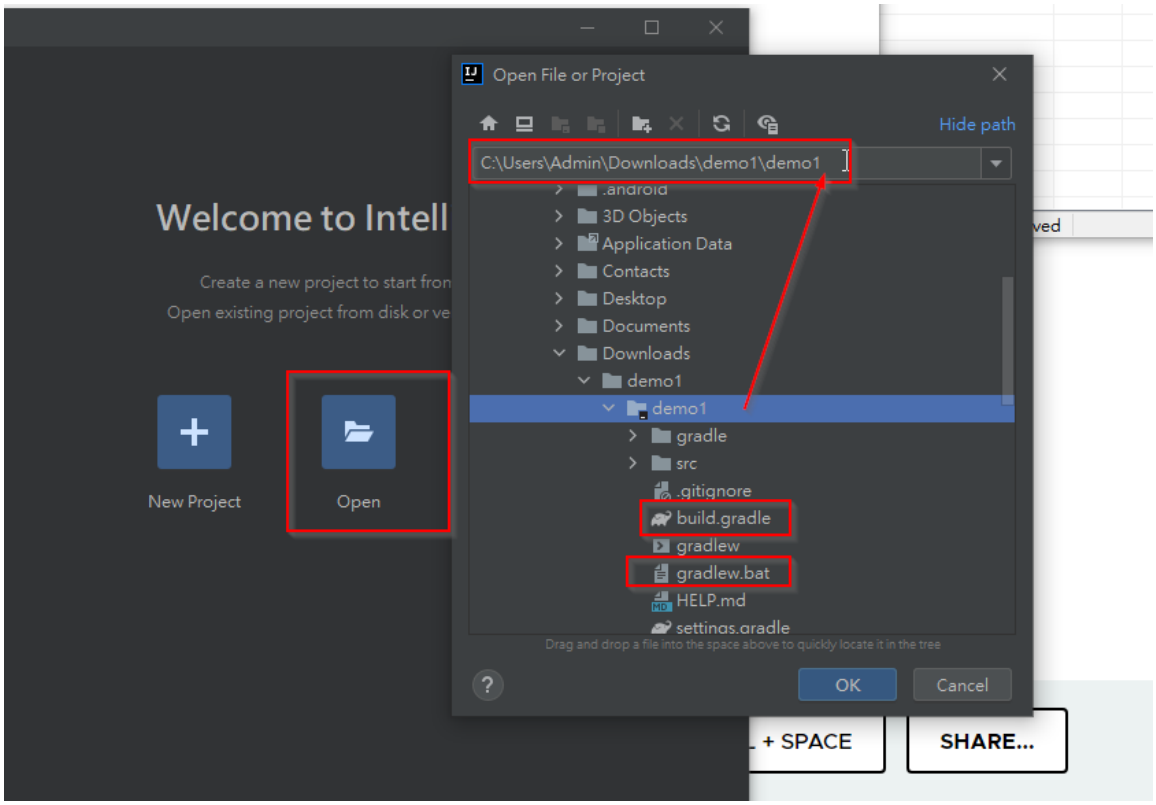



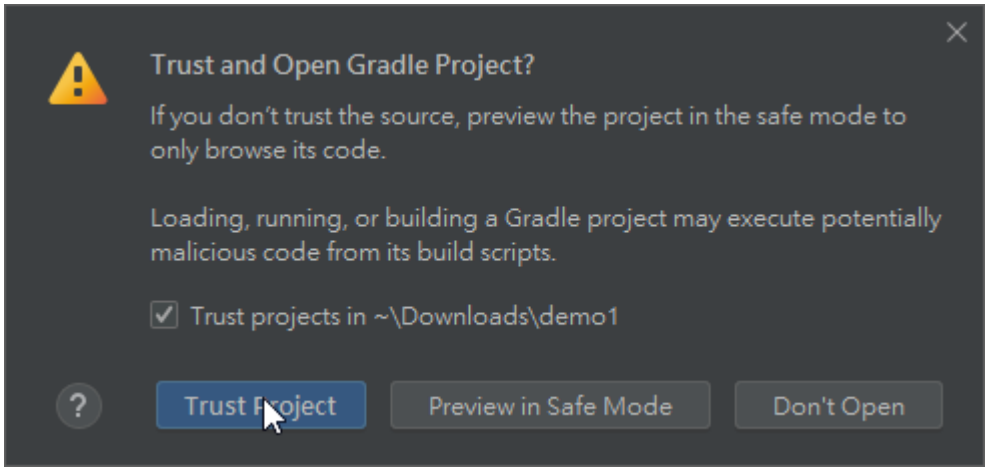
> 去spring網站按照以下設定下載初始包

Spring Initializr

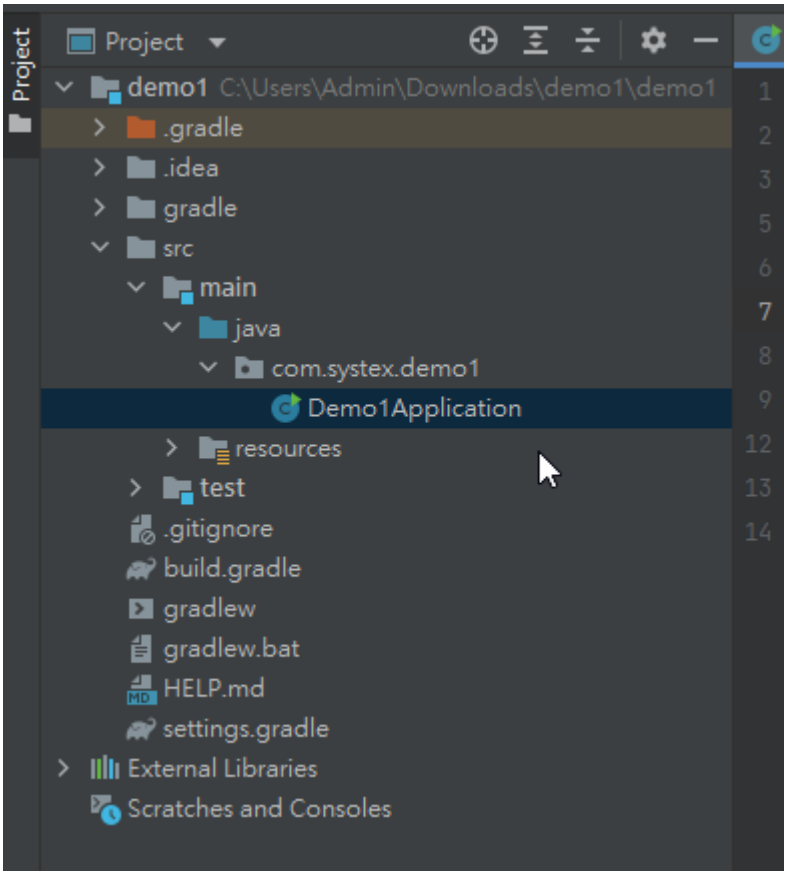



下載完後按照以下步驟打開初始包

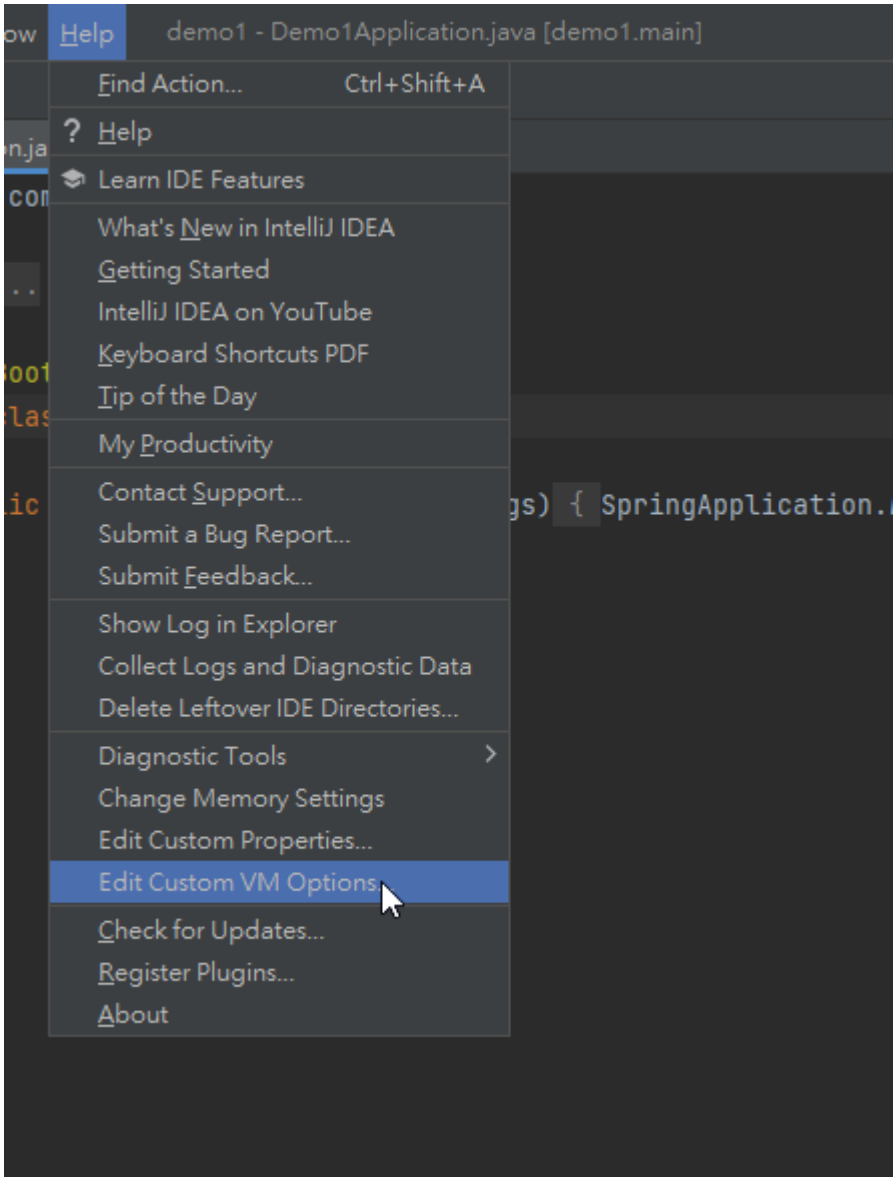


執行預設路徑index




預設為http://localhost:8080/
按照以下方式修改可用記憶體大小




點選並輸入

`-Xmx2048m`

`-Xms2048m`

去以下路徑 `C:\Users\Admin\.gradle` 新增並修改gradle.properties
將檔案內改成以下

```
org.gradle.daemon=True
org.gradle.parallel=True
org.gradle.jvmargs=-Xms2048m -Xmx2048m
```

回到專案內點選build.gradle並將以下依賴項及套件修改為

```
dependencies {
        implementation 'org.springframework.boot:spring-boot-starter-actuator'
        implementation 'org.springframework.boot:spring-boot-starter-web'
        implementation 'org.springframework.boot:spring-boot-starter-data-jpa'
        implementation 'org.springframework.boot:spring-boot-starter-thymeleaf'
        runtimeOnly 'com.h2database:h2'
        testImplementation 'org.springframework.boot:spring-boot-starter-test'
        }
```

```
plugins {
        id 'org.springframework.boot' version '2.6.2'
        id 'io.spring.dependency-management' version '1.0.11.RELEASE'
        id 'java'
        id "io.freefair.lombok" version "6.3.0"
}
```

> 創建一個新的html路徑如下src/main/resources/templates 名稱為home.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Hello World</title>
</head>
<body>
    <h1>My First spring boot</h1>
</body>
</html>
```

> 在以下com.systex.demo1路徑創建java class 名稱為RootController

```
package com.systex.demo1;

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.Mapping;

@Controller
```

```
public class RootController {
    @GetMapping("/")
    public String myHome() {
        return "home";
    }
}
```

@Controller標示為一個控制器 @GetMapping("/")接受到GET 為"/"路徑為回傳home

修改home.html 新增一個圖片路徑 注意此寫法是固定路徑假設初始網頁有更改圖片會找不到

自動換行

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Hello World</title>
</head>
<body>
    <h1>My First spring boot</h1>
<img src="/images/image1.jpg"/>
</body>
</html>
```


```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Hello World</title>
</head>
<body>
    <h1>My First spring boot</h1>
<img src="/images/image1.jpg"/>
</body>
</html>
```

> 改成以下方式則可以自動帶入初始網頁路徑 這有初始網頁路徑有改也沒關西

```
<!DOCTYPE html>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
<head>
    <meta charset="UTF-8">
    <title>Hello World</title>
</head>
<body>
    <h1>My First spring boot</h1>
<img th:src="@{/images/image1.jpg}"/>
</body>
</html>
```

> 在src\main\resources 的 application.properties可以修改網頁顯示初始路徑
> 新增以下

```
server.servlet.context-path=/demo1
```

則初始路徑變為
http://localhost:8080/demo1

> 在com.systex.demo1 新增Test1.java
> @SpringBootTest 進行單元測試
> @Test測試得單元
> @Autowired預設會依注入對象的類別型態來選擇容器中相符的物件來注入
> 也就是省去寫宣告物件的get 和 set

```
import org.junit.jupiter.api.Test;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.test.context.SpringBootTest;

import static org.assertj.core.api.Assertions.assertThat;

@SpringBootTest
public class Test1 {
    @Autowired
    private RootController rootController;
```

```
    @Test
    void contextLoad() {
        assertThat(rootController).isNotNull();
    }
}
```

建立test2

```
package com.systex.demo1;

import org.junit.jupiter.api.Test;
import org.springframework.beans.factory.annotation.Autowired;
import
org.springframework.boot.test.autoconfigure.web.servlet.AutoConfigureMockMvc;
import org.springframework.boot.test.context.SpringBootTest;
import org.springframework.test.web.servlet.MockMvc;

import static org.hamcrest.core.StringContains.containsString;

import static
org.springframework.test.web.servlet.request.MockMvcRequestBuilders.get;
import static
org.springframework.test.web.servlet.result.MockMvcResultMatchers.content;
import static
org.springframework.test.web.servlet.result.MockMvcResultMatchers.status;

@SpringBootTest
@AutoConfigureMockMvc
public class Test2 {
    @Autowired
    private MockMvc mockMvc;

    @Test
    public void testRootPage() throws Exception {
        mockMvc.perform(get("/"))
                .andExpect(status().isOk())
                .andExpect(content().string(containsString("spring boot2")));
    }
}
```

將test2修改為下面 使用@WebMvcTest是指啟用WEB層也就是展示層

```
package com.systex.demo1;

import org.junit.jupiter.api.Test;
import org.springframework.beans.factory.annotation.Autowired;
import
org.springframework.boot.test.autoconfigure.web.servlet.AutoConfigureMockMvc;
import org.springframework.boot.test.autoconfigure.web.servlet.WebMvcTest;
import org.springframework.boot.test.context.SpringBootTest;
import org.springframework.test.web.servlet.MockMvc;

import static org.hamcrest.core.StringContains.containsString;

import static
org.springframework.test.web.servlet.request.MockMvcRequestBuilders.get;
import static
org.springframework.test.web.servlet.result.MockMvcResultMatchers.content;
import static
org.springframework.test.web.servlet.result.MockMvcResultMatchers.status;
//1
//@SpringBootTest
//@AutoConfigureMockMvc
//2
@WebMvcTest
public class Test2 {
    @Autowired
    private MockMvc mockMvc;

    @Test
    public void testRootPage() throws Exception {
        mockMvc.perform(get("/"))
                .andExpect(status().isOk())
                .andExpect(content().string(containsString("spring boot")));
    }
}
```

將test2修改為下列 使用@WebMvcTest 可以測試單一Controller項

```java
package com.systex.demo1;

import org.junit.jupiter.api.Test;
import org.springframework.beans.factory.annotation.Autowired;
import
org.springframework.boot.test.autoconfigure.web.servlet.AutoConfigureMockMvc;
import org.springframework.boot.test.autoconfigure.web.servlet.WebMvcTest;
import org.springframework.boot.test.context.SpringBootTest;
import org.springframework.test.web.servlet.MockMvc;

import static org.hamcrest.core.StringContains.containsString;

import static
org.springframework.test.web.servlet.request.MockMvcRequestBuilders.get;
import static
org.springframework.test.web.servlet.result.MockMvcResultMatchers.content;
import static
org.springframework.test.web.servlet.result.MockMvcResultMatchers.status;
//1
//@SpringBootTest
//@AutoConfigureMockMvc
//2
//@WebMvcTest
//3
@WebMvcTest(controllers = RootController.class)
public class Test2 {
    @Autowired
    private MockMvc mockMvc;

    @Test
    public void testRootPage() throws Exception {
        mockMvc.perform(get("/"))
                .andExpect(status().isOk())
                .andExpect(content().string(containsString("spring boot")));
    }
}
```

在com.systex.demo1 新增一個java calss 名稱為GreetingService

GreetingService.java

```
package com.systex.demo1;

import org.springframework.stereotype.Service;

@Service
public class GreetingService {
    public String greet() {
        return "hello my service, send someting....";
    }
}
```

> 在RootController 新增為

```
package com.systex.demo1;


import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.ResponseBody;

@Controller
public class RootController {
    @Autowired
    private GreetingService service;
    @GetMapping("/")
    public String myHome() {
        return "home";
    }
    @RequestMapping("/greeting")
    public @ResponseBody String greeting() {
        return service.greet();
    }
}
```

> 用寫成服務的形式 以範例來說此時輸入在網頁輸入localhost:8080/greeting
> 則為直接回傳greet()所執行的也就是
> 回傳"hello my service, send someting...."字串

> 創建test3 使用MVC可以在service傳回時傳回想要的內容

```
package com.systex.demo1;

import org.junit.jupiter.api.Test;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.test.autoconfigure.web.servlet.WebMvcTest;
import org.springframework.boot.test.mock.mockito.MockBean;
import org.springframework.test.web.servlet.MockMvc;

import static org.hamcrest.Matchers.containsString;
import static org.mockito.Mockito.when;
import static
org.springframework.test.web.servlet.request.MockMvcRequestBuilders.get;
import static
org.springframework.test.web.servlet.result.MockMvcResultMatchers.content;
import static
org.springframework.test.web.servlet.result.MockMvcResultMatchers.status;

@WebMvcTest(RootController.class)
public class Test3 {
    @Autowired
    private MockMvc mockMvc;
    @MockBean
    private GreetingService service;
    @Test
    public void testService() throws Exception {
        when(service.greet()).thenReturn("I think it should be 29");
        mockMvc.perform(get("/greeting"))
                .andExpect(status().isOk())
                .andExpect(content().string(containsString("should be 29")));

    }
}
```

在build.gradle新增baan validator api

```
dependencies {
        implementation 'org.springframework.boot:spring-boot-starter-actuator'
        implementation 'org.springframework.boot:spring-boot-starter-web'
        implementation 'org.springframework.boot:spring-boot-starter-data-jpa'
        implementation 'org.springframework.boot:spring-boot-starter-thymeleaf'
        implementation 'org.springframework.boot:spring-boot-starter-validation'
        runtimeOnly 'com.h2database:h2'
        testImplementation 'org.springframework.boot:spring-boot-starter-test'
}
```

在com.systex.demo1 新增一個java class 名稱為NormalUser1
@NotNull 不能為null，但可以為empty

```
package com.systex.demo1;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;

import javax.validation.constraints.NotNull;

@Data
@AllArgsConstructor
@NoArgsConstructor
public class NormalUser1 {
    @NotNull(message = "name should not be null")
    private String name;


}
```

在com.systex.demo1 新增一個java class 名稱為NormalUser2
@NotEmpty不能為null，而且長度必須大於0

```
package com.systex.demo1;
```

```
import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;

import javax.validation.constraints.NotEmpty;

@Data
@AllArgsConstructor
@NoArgsConstructor
public class NormalUser2 {
    @NotEmpty(message = "name should not be Empty")//不能為null，而且長度必須大於0
 private String name;
}
```

> 在com.systex.demo1 新增一個java class 名稱為NormalUser3
> @NotBlank 只能作用在String上，不能為null，而且调用trim()後，長度必須大於0

```
package com.systex.demo1;


import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;

import javax.validation.constraints.NotBlank;
import javax.validation.constraints.NotEmpty;

@Data
@AllArgsConstructor
@NoArgsConstructor
public class NormalUser3 {
    @NotBlank(message = "name should not be Blank")//只能作用在String上，不能为null，而且调用trim()后，长度必须大于0
 private String name;
}
```

> 創建test4 測試API
> 標記為@Before的代碼在每次測試之前執行，而@BeforeAll則在整個測試夾具之前運行一次。

```
package com.systex.demo1;


import org.junit.jupiter.api.BeforeAll;
import org.junit.jupiter.api.Test;

import javax.validation.ConstraintViolation;
import javax.validation.Validation;
import javax.validation.Validator;
import java.util.Set;

import static org.assertj.core.api.Assertions.assertThat;


public class Test4 {
    private static Validator validator;
    @BeforeAll
    public static void setupValidationInstance() {
        validator = Validation.buildDefaultValidatorFactory().getValidator();
    }
    @Test
    public void test41() {
        NormalUser1 user = new NormalUser1("Mark");
        Set<ConstraintViolation<NormalUser1>>violations =
validator.validate(user);
        assertThat(violations.size()).isEqualTo(0);
    }

}
```