

測試驅動程式開發簡介

徐効群

Jack Hsu

jack23h67@Hotmail.com

範例下載連結

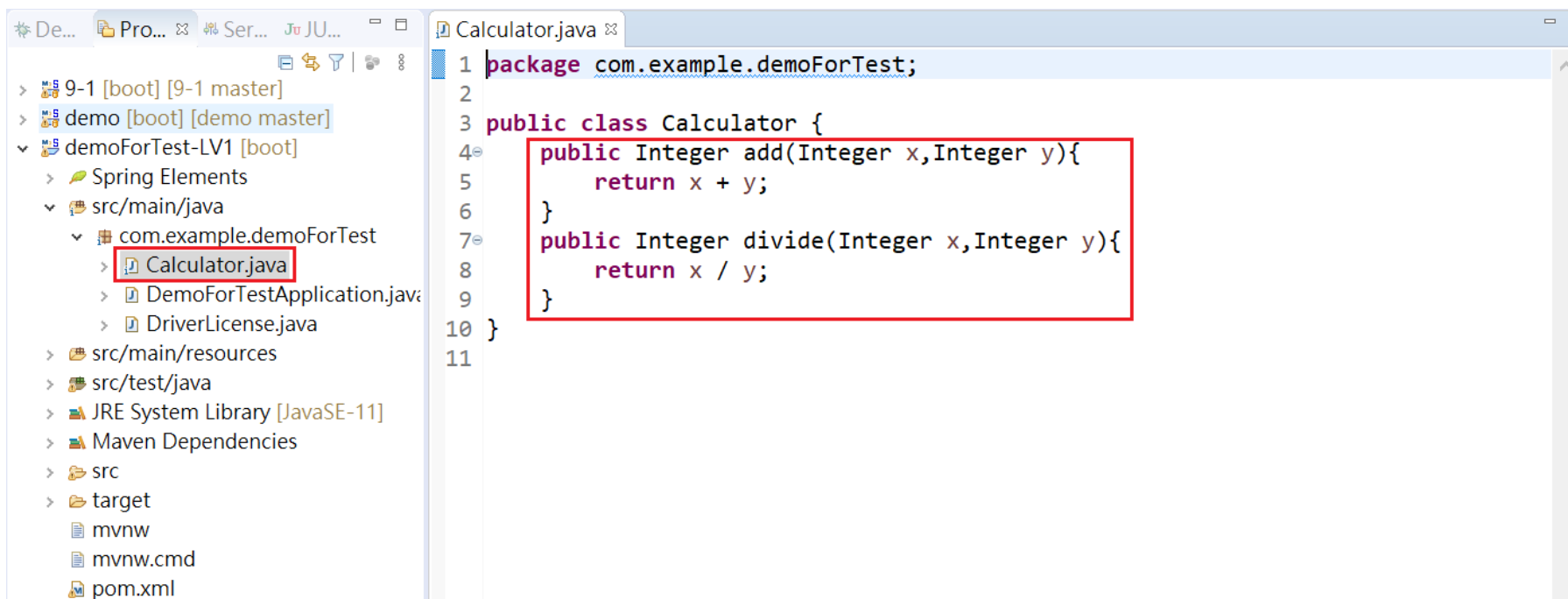
- ▶ <https://github.com/jack23h67/demoForTest>

單元測試工具JUnit-pom.xml

```
▼ demoForTest-LV1 [boot]
  > Spring Elements
  ▼ src/main/java
    ▼ com.example.demoForTest
      > Calculator.java
      > DemoForTestApplication.java
      > DriverLicense.java
  ▼ src/main/resources
    > application.properties
  ▼ src/test/java
    ▼ com.example.demoForTest
      > CalculatorTest.java
      > DemoForTestApplicationTest
      > DriverLicenseTest.java
  > JRE System Library [JavaSE-11]
  > Maven Dependencies
  > src
  > target
  mvnw
  mvnw.cmd
  pom.xml
```

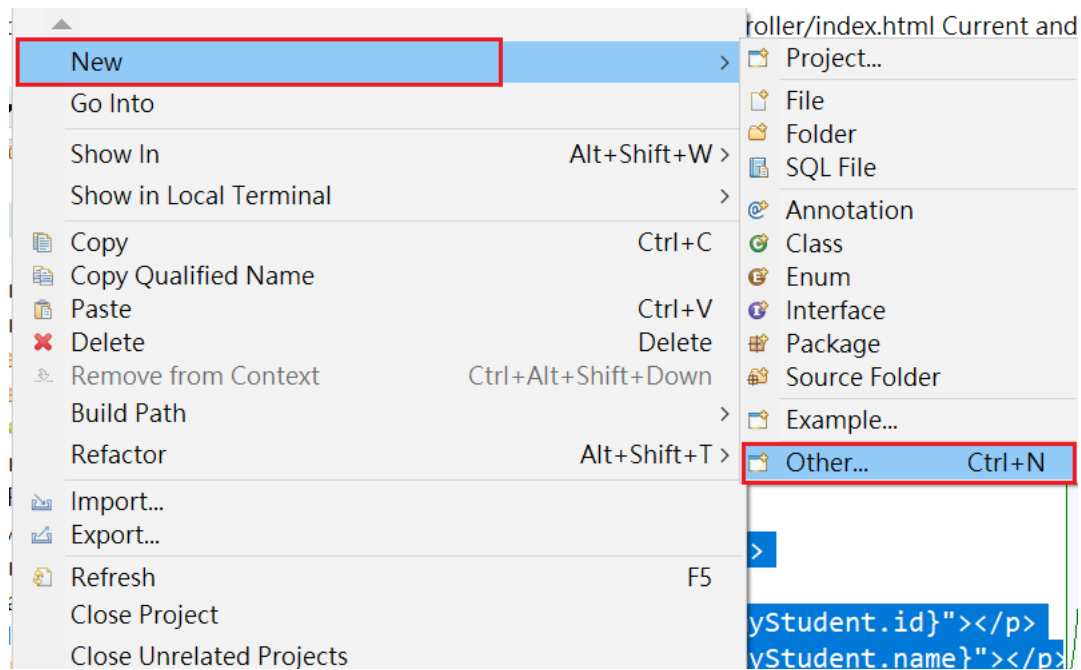
```
10 </parent>
11 <groupId>com.example</groupId>
12 <artifactId>demoForTest</artifactId>
13 <version>0.0.1-SNAPSHOT</version>
14 <name>demoForTest</name>
15 <description>Demo project for Spring Boot</description>
16 <properties>
17   <java.version>11</java.version>
18 </properties>
19 <dependencies>
20   <dependency>
21     <groupId>org.springframework.boot</groupId>
22     <artifactId>spring-boot-starter-web</artifactId>
23   </dependency>
24   <!-- https://mvnrepository.com/artifact/org.junit.jupiter/junit-jupiter-api -->
25   <dependency>
26     <groupId>org.junit.jupiter</groupId>
27     <artifactId>junit-jupiter-api</artifactId>
28     <version>5.8.2</version>
29     <scope>test</scope>
30   </dependency>
```

單元測試工具JUnit-開發程式(小算盤)

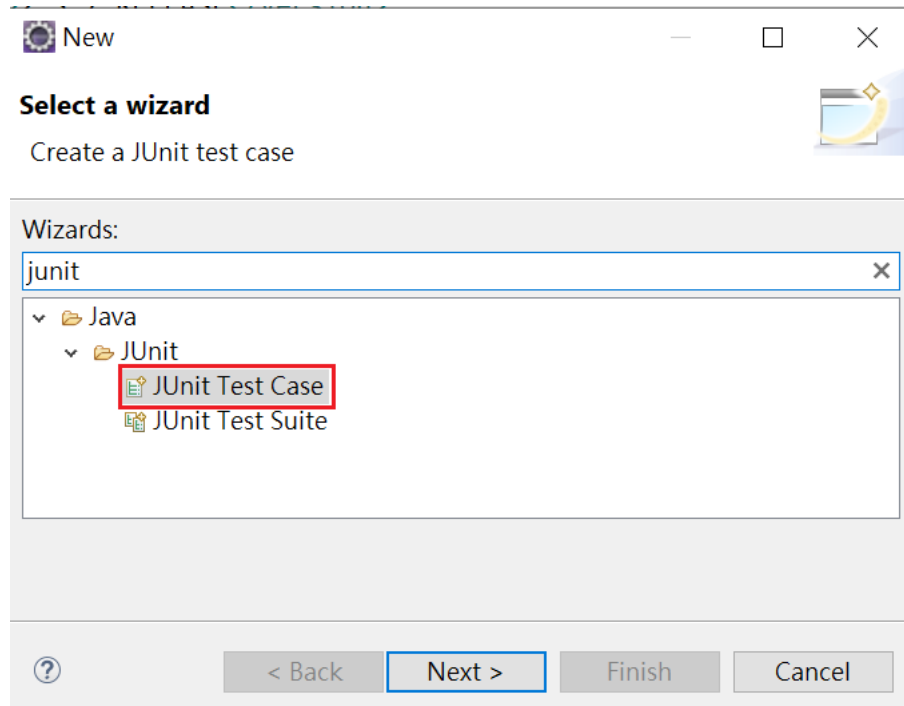


```
1 package com.example.demoForTest;
2
3 public class Calculator {
4     public Integer add(Integer x,Integer y){
5         return x + y;
6     }
7     public Integer divide(Integer x,Integer y){
8         return x / y;
9     }
10 }
11
```

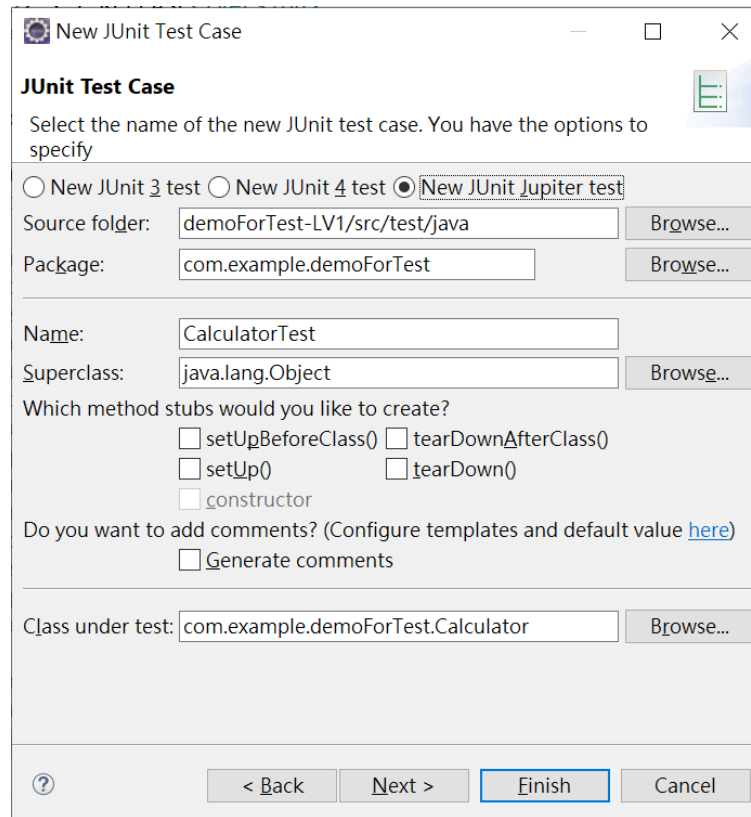
單元測試工具JUnit(1)



單元測試工具JUnit(2)



單元測試工具JUnit(3)



New JUnit Test Case

Select the name of the new JUnit test case. You have the options to specify

☐ New JUnit 3 test ☐ New JUnit 4 test ☒ New JUnit Jupiter test

Source folder:

Package:

Name:

Superclass:

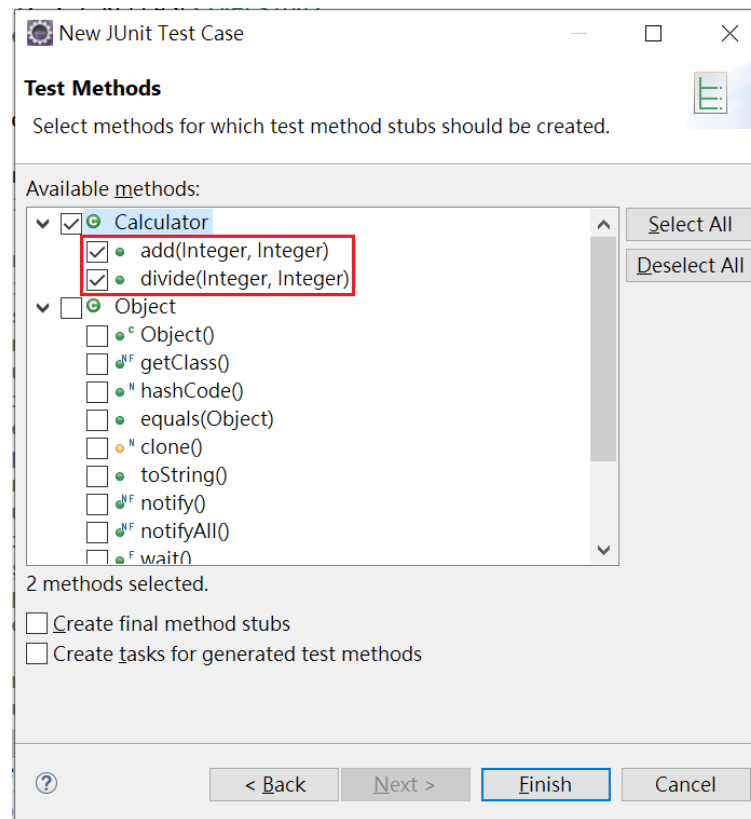
Which method stubs would you like to create?

☐ setUpBeforeClass() ☐ tearDownAfterClass()
☐ setUp() ☐ tearDown()
☐ constructor

Do you want to add comments? (Configure templates and default value [here](#))
☐ Generate comments

Class under test:

單元測試工具JUnit(4)



單元測試工具JUnit(5)產生測試程式

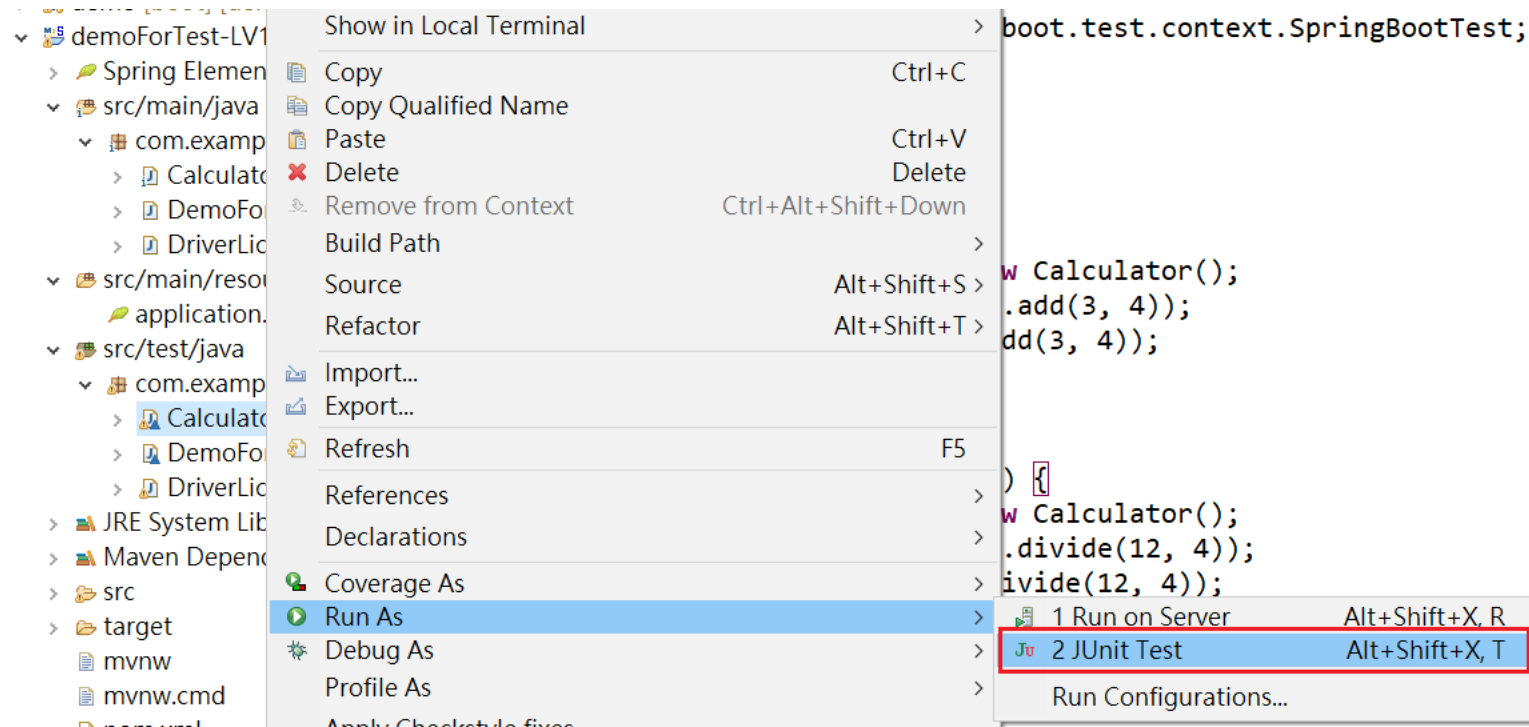
```
1 package com.example.demoForTest;
2
3 import static org.junit.jupiter.api.Assertions.*;
4
5 import org.junit.jupiter.api.AfterAll;
6 import org.junit.jupiter.api.AfterEach;
7 import org.junit.jupiter.api.BeforeAll;
8 import org.junit.jupiter.api.Test;
9 import org.springframework.boot.test.context.SpringBootTest;
10
11 @SpringBootTest
12 class CalculatorTest {
13
14     @Test
15     void testAdd() {
16         fail("Not yet implemented");
17     }
18
19     @Test
20     void testDivide() {
21         fail("Not yet implemented");
22     }
23 }
24
25
```

單元測試工具JUnit(6) 斷言

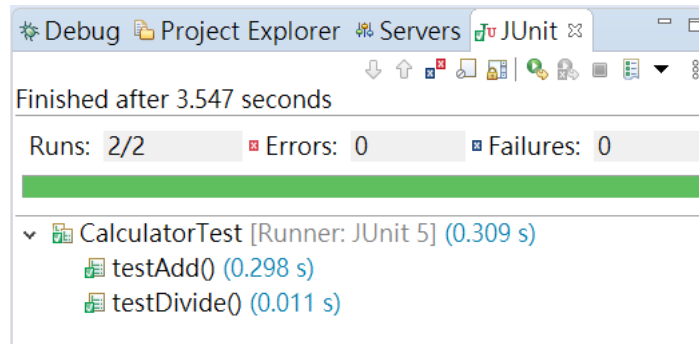
- ▶ <https://junit.org/junit5/docs/5.0.3/api/org/junit/jupiter/api/Assertions.html>

```
11 @SpringBootTest
12 class CalculatorTest {
13
14     @Test
15     public void testAdd() {
16         Calculator cal = new Calculator();
17         assertEquals(7, cal.add(3, 4));
18         assertNotNull(cal.add(3, 4));
19     }
20
21     @Test
22     public void testDivide() {
23         Calculator cal = new Calculator();
24         assertEquals(3, cal.divide(12, 4));
25         assertNotNull(cal.divide(12, 4));
26         assertThrows(ArithmeticException.class,
27                     () -> {
28                         cal.divide(12, 0);
29                     },
30                     "ArithmeticException");
31     }
32
33 }
```

單元測試工具JUnit(7)Run Junit Test



單元測試工具JUnit(8) test result



測試驅動開發

- ▶ 先寫好method的框，先讓它return null
- ▶ 產生測試檔
- ▶ 在測試檔中寫斷言(盡量以使用者的角度設想)
- ▶ 完成method功能
- ▶ Run測試檔，看斷言是否pass
- ▶ 別忘了Error test

測試驅動開發-Lab

► 考駕照

thanks for listening