

Ch7 課堂練習

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安裝Eclipse IDE

- <https://www.eclipse.org/downloads/packages/release/2023-06/r>

練習一：套件使用

1. 開啟 Eclipse IDE

- 指定工作目錄

2. 建立EmployeePractice 專案

- 建立 com.example 及 com.example.domain 套件

3. com.example.domain.Employee 類別設計如下圖

- 屬性：員工編號 empId, 姓名 name, 身分證字號 ssn, 薪水 salary
- 定義方法 displayInformation()：將物件屬性資料印在螢幕上

4. com.example.EmployeeTest 類別

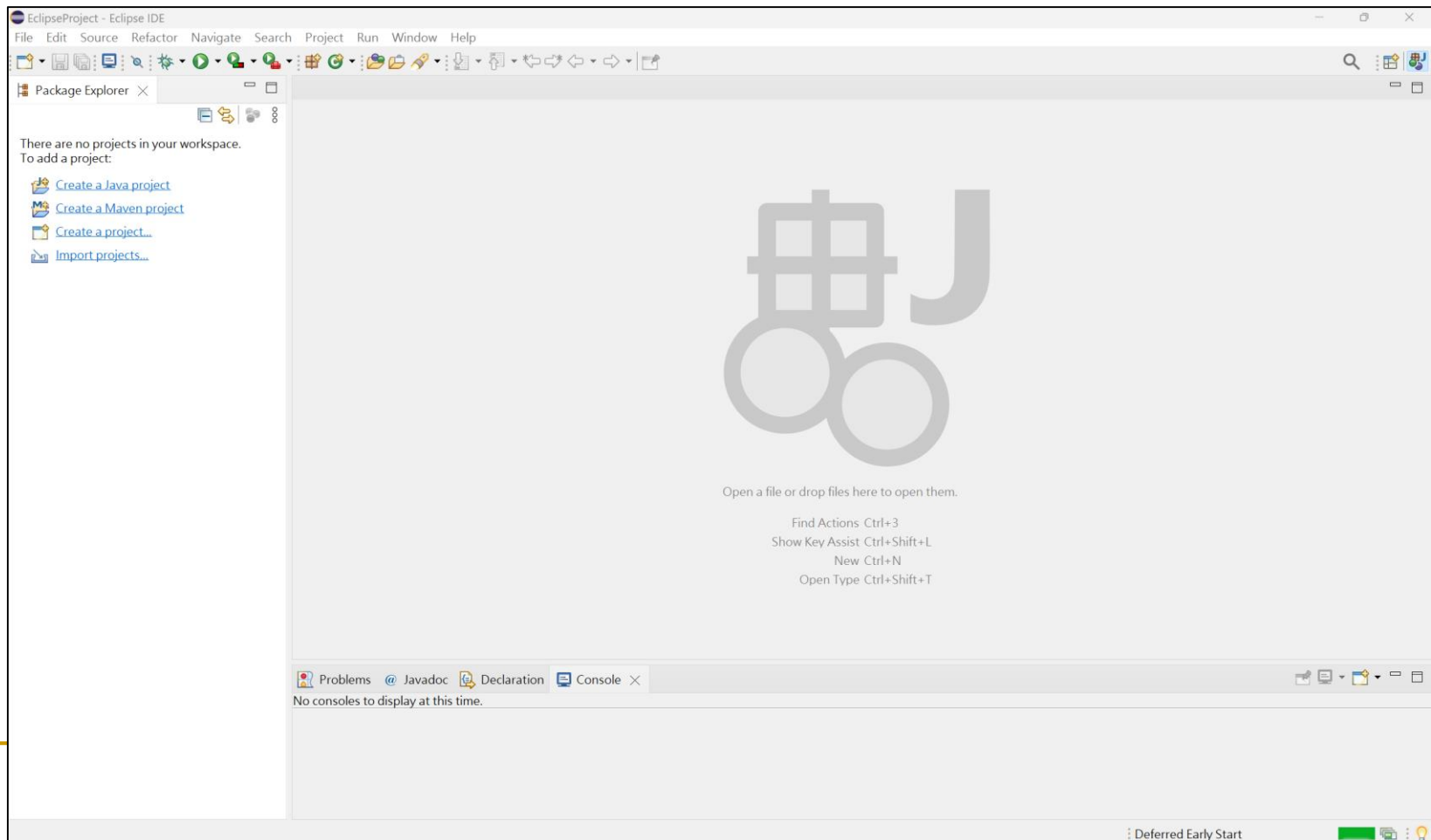
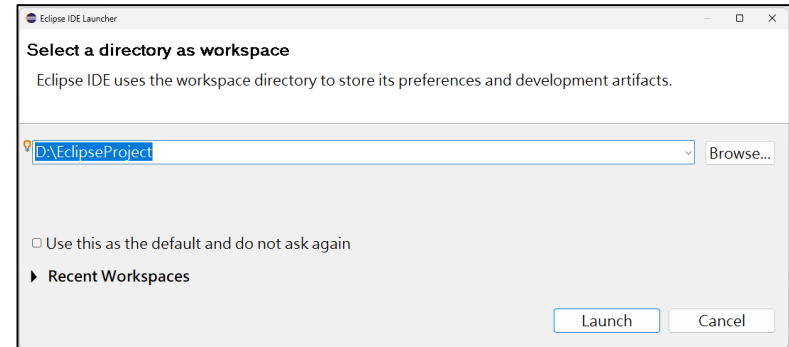
- 使用建構子建立多個員工
- 呼叫物件的 displayInformation() 方法，顯示物件資料

5. 執行 EmployeeTest

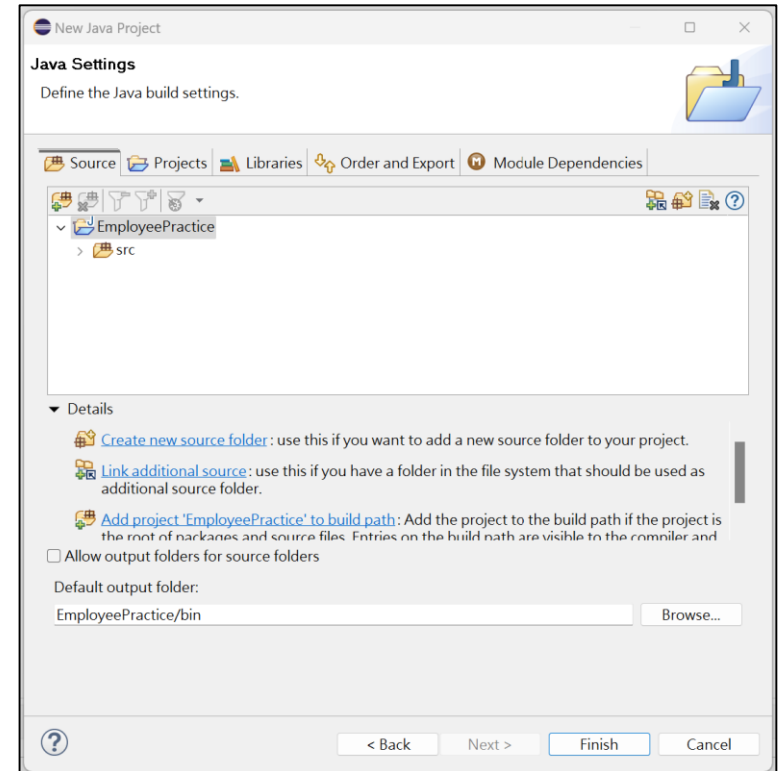
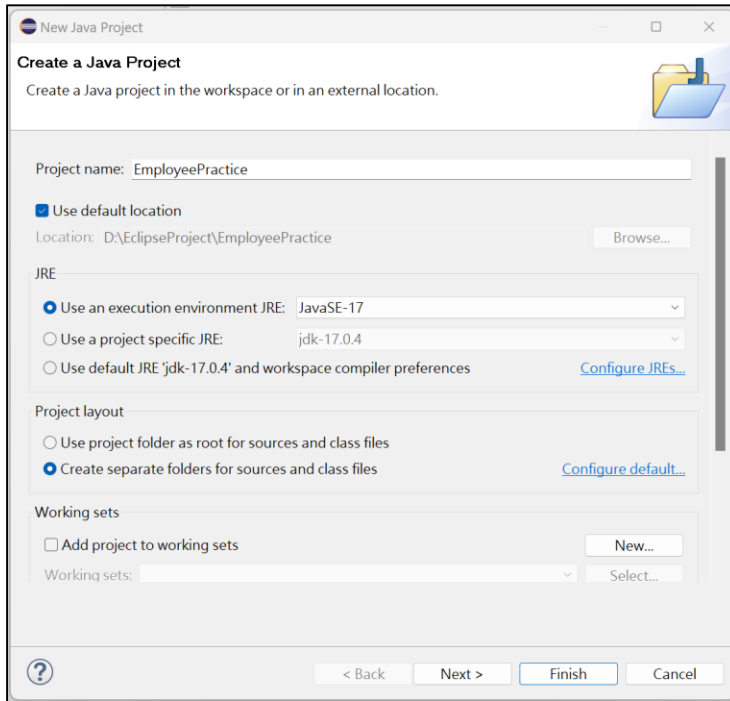
- 檢視於 output區的模擬執行結果

Employee
+ nextId : int
+ empId : int
+ name : String
+ ssn : String
+ salary : double
+ Employee(name: String, ssn String, salary double)
+ displayInformation()

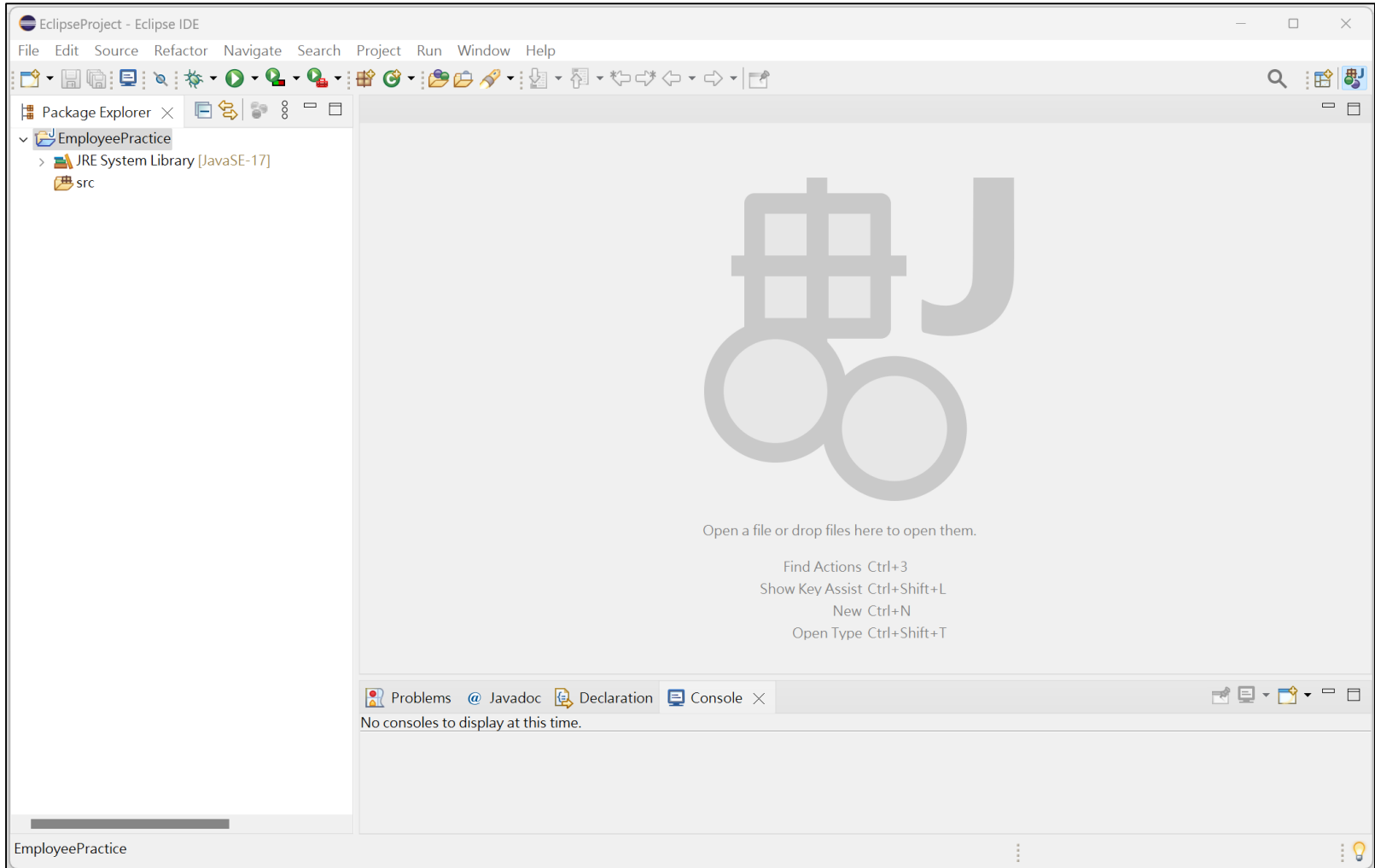
開啟 Eclipse IDE



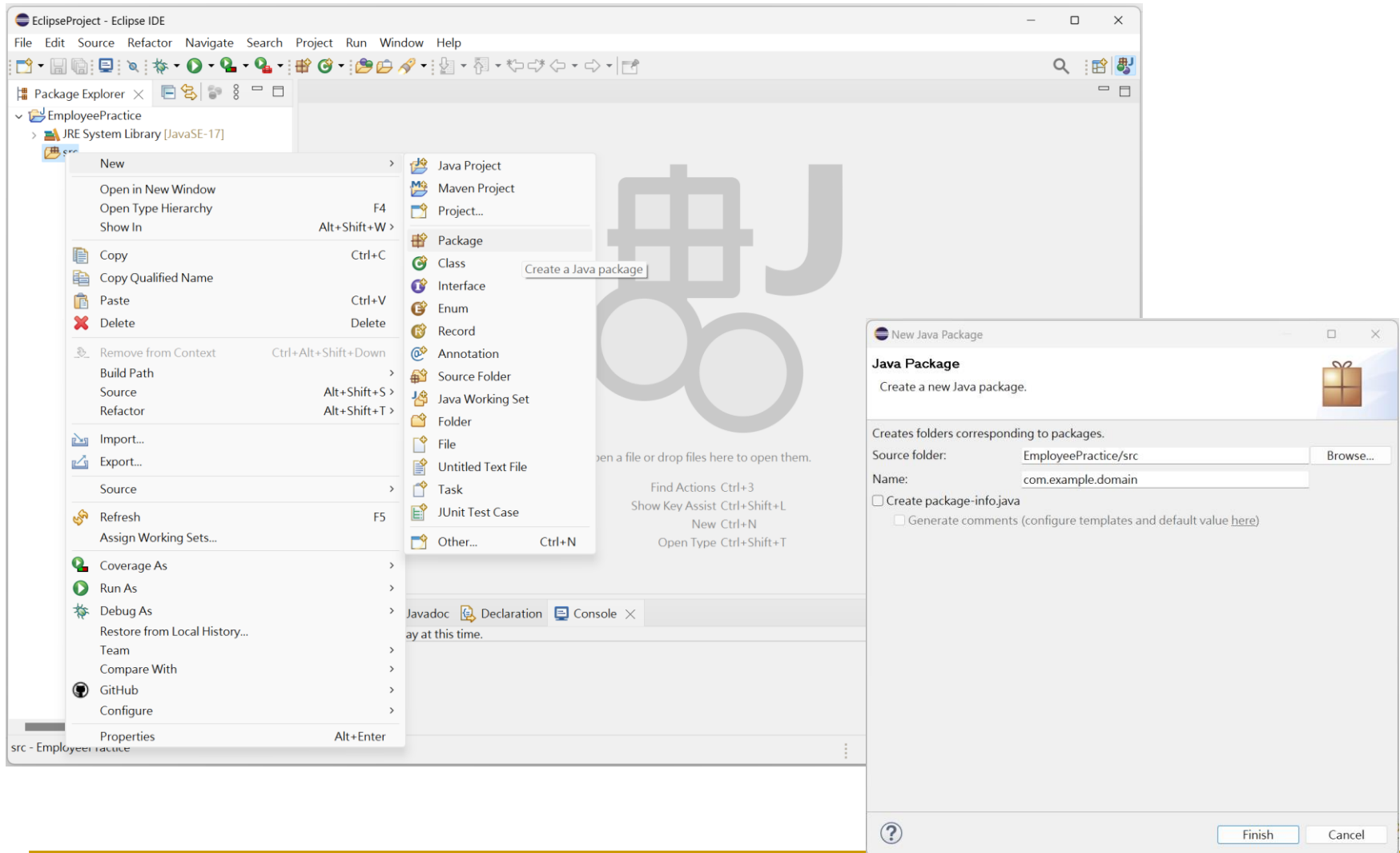
建立EmployeePractice 專案



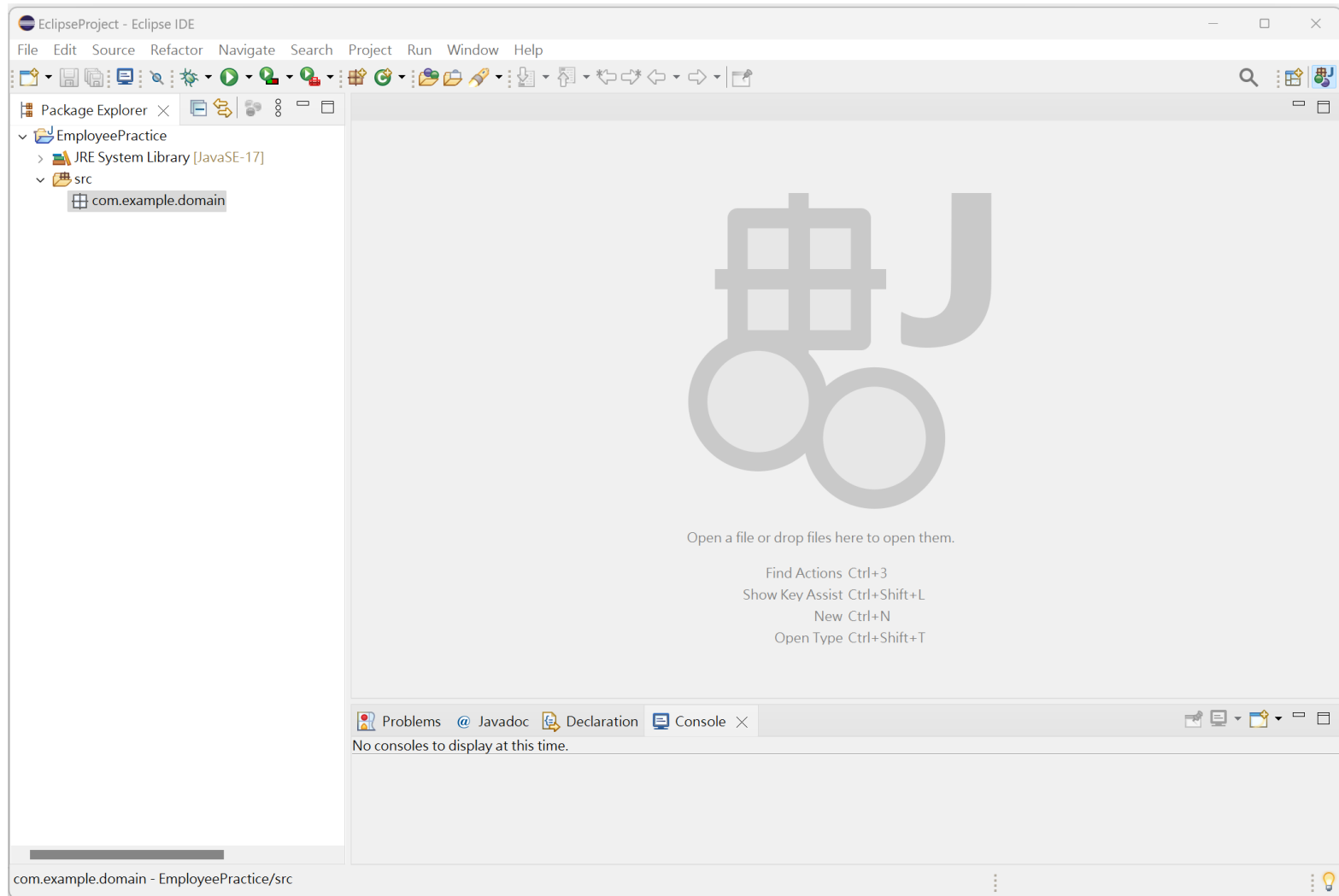
建立EmployeePractice 專案



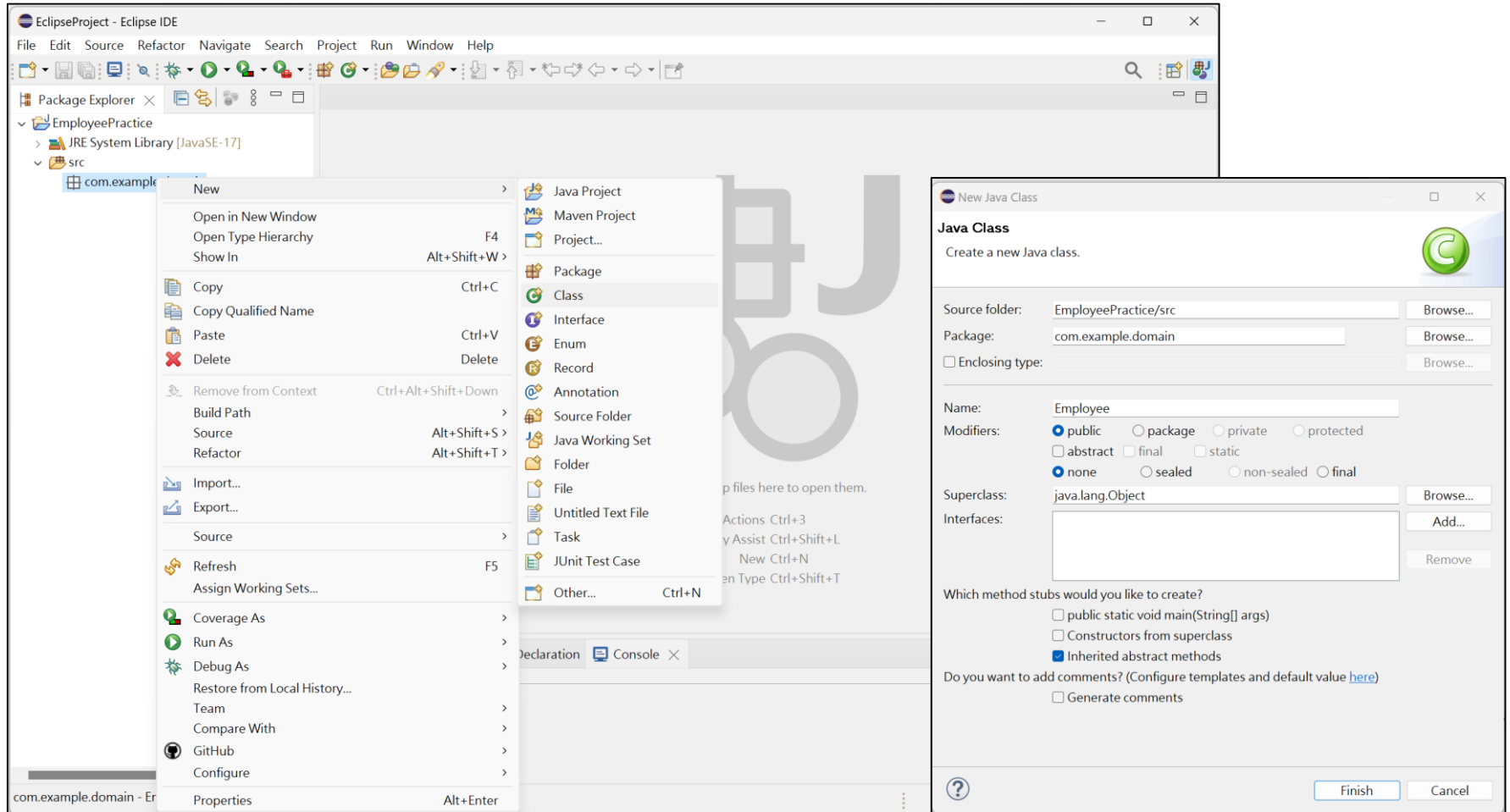
建立com.example.domain套件



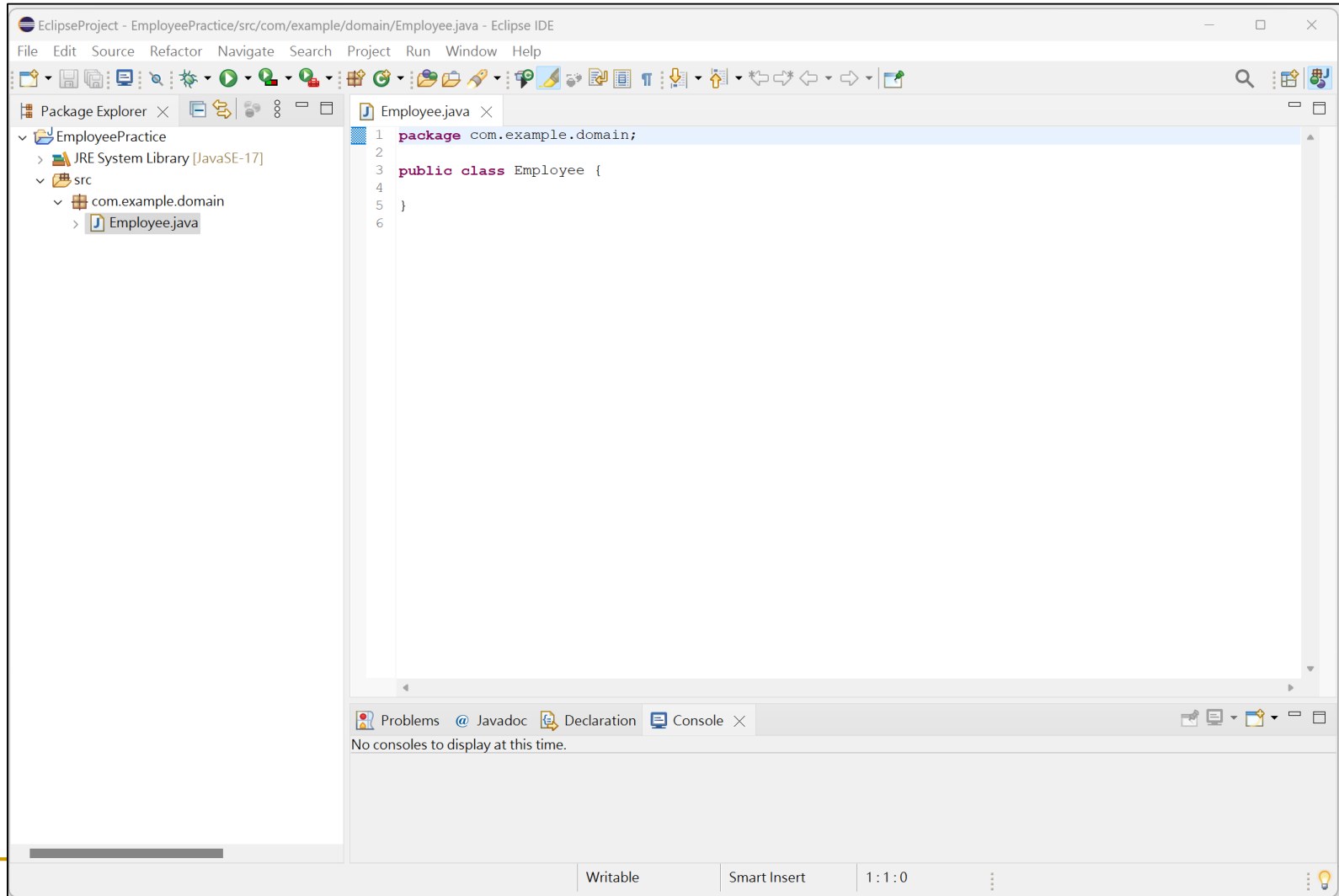
建立com.example.domain套件



com.example.domain.Employee



com.example.domain.Employee



建立Employee 屬性 / 建構子

```
Employee.java ×
1  package com.example.domain;
2
3  public class Employee {
4      public static int nextId = 1;
5      public int empId;
6      public String name;
7      public String ssn;
8      public double salary;
9
10 public Employee(String name, String ssn, double salary) {
11     this.empId = nextId++;
12     this.name = name;
13     this.ssn = ssn;
14     this.salary = salary;
15 }
16
17 }
18
```

建立displayInformation()方法

Employee.java ×

```
1 package com.example.domain;
2
3 public class Employee {
4     public static int nextId = 1;
5     public int empId;
6     public String name;
7     public String ssn;
8     public double salary;
9
10    public Employee(String name, String ssn, double salary) {
16
17    public void displayInformation() {
18        System.out.println("====員工資料====");
19        System.out.println("編號: "+this.empId);
20        System.out.println("姓名: "+this.name);
21        System.out.println("SSN: "+this.ssn);
22        System.out.println("薪水: "+this.salary);
23
24    }
25
26 }
27
```

EmployeeTest 類別

New Java Class

Java Class
Create a new Java class.

Source folder: EmployeePractice/src Browse...

Package: com.example Browse...

☐ Enclosing type: Browse...

Name: EmployeeTest

Modifiers: ☒ public ☐ package ☐ private ☐ protected
☐ abstract ☐ final ☐ static
☒ none ☐ sealed ☐ non-sealed ☐ final

Superclass: java.lang.Object Browse...

Interfaces: Add... Remove

Which method stubs would you like to create?
☒ public static void main(String[] args)
☐ Constructors from superclass
☒ Inherited abstract methods

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

Finish Cancel

EclipseProject - EmployeePractice/src/com/example/EmployeeTest.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer

- EmployeePractice
 - JRE System Library [JavaSE-17]
 - src
 - com.example
 - EmployeeTest.java
 - com.example.domain
 - Employee.java

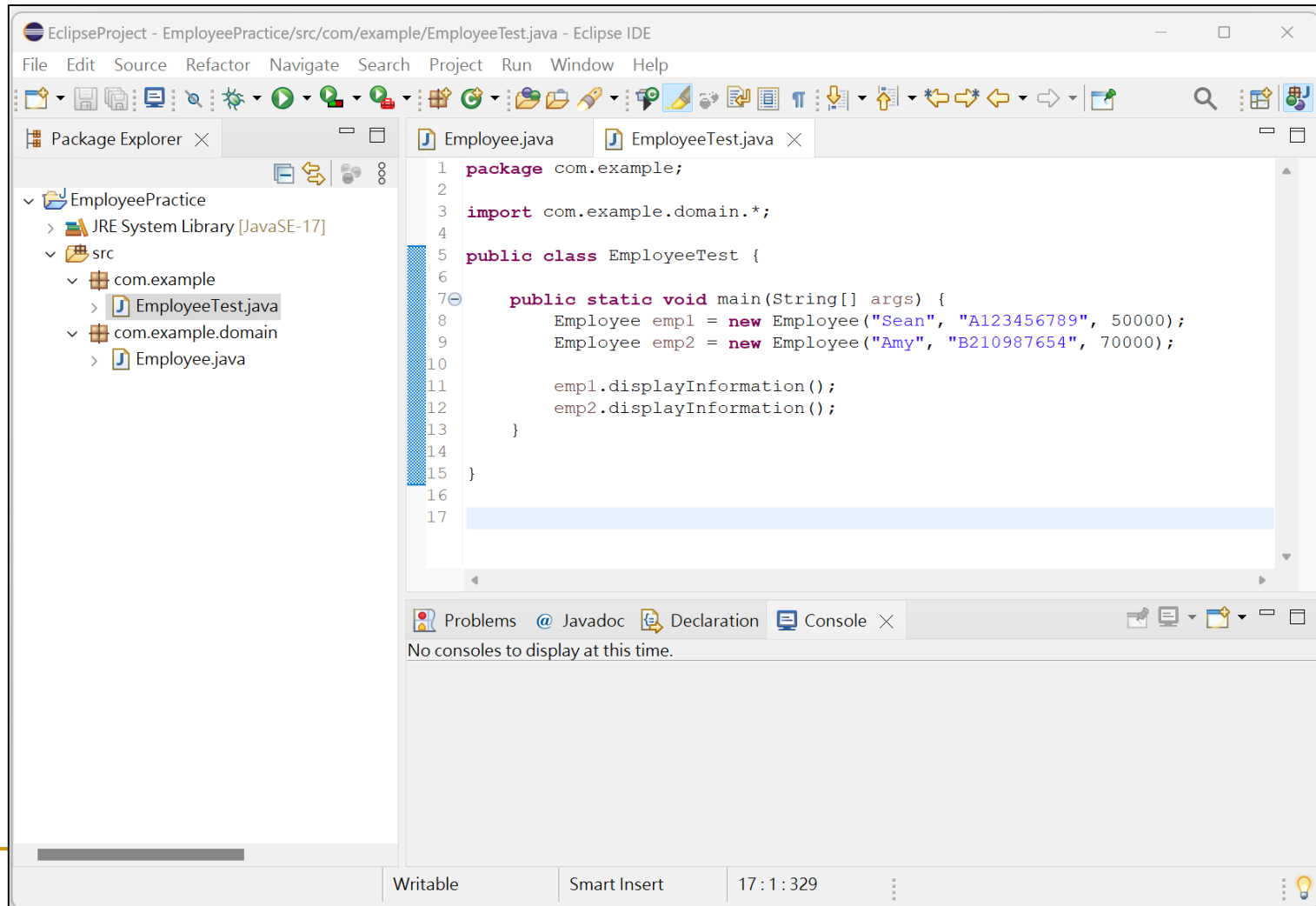
```
1 package com.example;  
2  
3 public class EmployeeTest {  
4  
5     public static void main(String[] args) {  
6         // TODO Auto-generated method stub  
7     }  
8  
9  
10 }  
11
```

Problems @ Javadoc Declaration Console

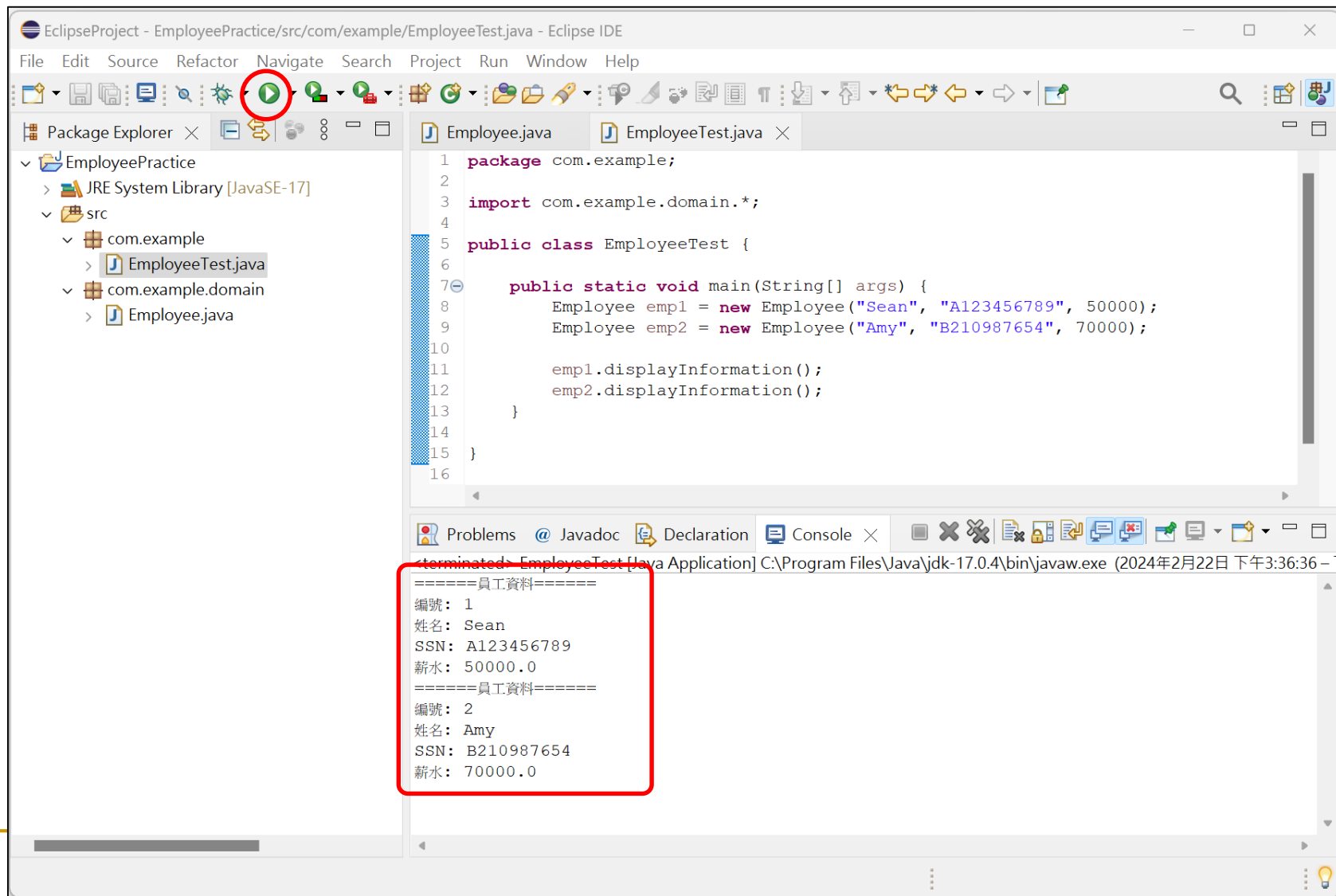
No consoles to display at this time.

Writable Smart Insert 1:1:0

EmployeeTest 類別



測試



練習二：封裝設計準則

1. 修改 EmployeePractice 專案

2. 修改 Employee 類別設計如右

- 屬性修改為 private
- 所有屬性提供 getter
- name 與 salary 提供 setter
 - ✓ setName() 中防止傳入參數為 null 或空白字串
 - ✓ raiseSalary() 中防止傳入負的 increase 值
- 建構子 Employee(name:String, ssn:String, salary: double)
 - ✓ empld 由類別屬性 nextId 自動產生，初始值為 101

3. EmployeeTest 類別

- 使用建構子建立多個員工
- 呼叫物件的 displayInformation() 方法，顯示物件資料
- 修改員工姓名及薪水

com.example.domain.Employee
- nextId : int
- empld : int
- name : String
- ssn : String
- salary : double
+ Employee(name: String, ssn: String, salary: double)
+ getEmpld() : int
+ getName() : String
+ getSsn () : String
+ getSalary () : double
+ setName (name: String)
+ raiseSalary (increase: double)
+ displayInformation()

應用封裝規則修改Employee類別

The screenshot displays the Eclipse IDE interface. The Package Explorer on the left shows the project structure: EmployeePractice > JRE System Library [JavaSE-17] > src > com.example > EmployeeTest.java. The main editor shows the code for EmployeeTest.java:

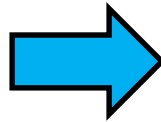
```
1 package com.example;
2
3 import com.example.domain.*;
4
5 public class EmployeeTest {
6
7     public static void main(String[] args) {
8         Employee emp1 = new Employee("Sean", "A123456789", 50000);
9         Employee emp2 = new Employee("Amy", "B210987654", 70000);
10
11         emp1.displayInformation();
12         emp2.displayInformation();
13     }
14 }
15
16
```

The Console window at the bottom shows the output of the Java application:

```
<terminated> EmployeeTest [Java Application] C:\Program Files\Java\jdk-17.0.4\bin\javaw.exe (2024年2月22日 下午3:36:36 -)
=====員工資料=====
編號: 1
姓名: Sean
SSN: A123456789
薪水: 50000.0
=====員工資料=====
編號: 2
姓名: Amy
SSN: B210987654
薪水: 70000.0
```

Employee類別

```
Employee.java ×  
1 package com.example.domain;  
2  
3 public class Employee {  
4     public static int nextId = 1;  
5     public int empId;  
6     public String name;  
7     public String ssn;  
8     public double salary;  
9 }
```



```
Employee.java ×  
1 package com.example.domain;  
2  
3 public class Employee {  
4     public static int nextId = 101;  
5     private int empId;  
6     private String name = "John";  
7     private String ssn = "A123456789";  
8     private double salary = 26400;  
9 }
```

Employee類別

```
*Employee.java ×
1 package com.example.domain;
2
3 public class Employee {
4     public static int nextId = 101;
5     private int empId;
6     private String name = "John";
7     private String ssn = "A123456789";
8     private double salary = 26400;
9
10    public Employee(String name, String ssn, double salary) {}
19
20    public void displayInformation() {
21        System.out.println("====員工資料====");
22        System.out.println("編號: "+this.empId);
23        System.out.println("姓名: "+this.name);
24        System.out.println("SSN: "+this.ssn);
25        System.out.println("薪水: "+this.salary);
26    }
27
28    public int getEmpId() {
29        return empId;
30    }
31
32    public String getName() {
33        return name;
34    }
35
36
37    public String getSsn() {
38        return ssn;
39    }
40
41    public double getSalary() {
42        return salary;
43    }
44
```

修改Employee類別

Setter方法中提供保護的邏輯

- setName()中防止null 傳入參數
- raiseSalary()中防止負的increase值

```
44
45- public void setName(String name) {
46     if(name!=null && name.length()!=0)
47         this.name = name;
48     else
49         System.out.println("參數為空值改名失敗!");
50 }
51
52- public void raiseSalary(double increase) {
53     if(increase>0)
54         this.salary += increase;
55     else
56         System.out.println("參數錯誤加薪失敗!");
57 }
58
59 }
60
```

修改建構子

```
10 ⊖ public Employee(String name, String ssn, double salary) {  
11     this.empId = nextId++;  
12     if(name!=null && name.length()!=0)  
13         this.name = name;  
14     if(ssn!=null && ssn.length()!=0)  
15         this.ssn = ssn;  
16     if(salary>26400)  
17         this.salary = salary;  
18 }  
19
```

EmployeeTest 類別

```
EmployeeTest.java ×
1 package com.example;
2
3 import com.example.domain.*;
4
5 public class EmployeeTest {
6     public static void main(String[] args) {
7         Employee emp1 = new Employee("Sean", "A123456789", 50000);
8         Employee emp2 = new Employee("Amy", "B210987654", 70000);
9
10        emp1.displayInformation();
11        emp2.displayInformation();
12
13        System.out.println("Amy改名並加薪.....");
14        emp2.setName("Amy Wang");
15        emp2.raiseSalary(1000);
16
17        emp1.displayInformation();
18        emp2.displayInformation();
19    }
20 }
```

```
Console ×
<terminated> EmployeeTest
=====員工資料=====
編號: 101
姓名: Sean
SSN: A123456789
薪水: 50000.0
=====員工資料=====
編號: 102
姓名: Amy
SSN: B210987654
薪水: 70000.0
Amy改名並加薪.....
=====員工資料=====
編號: 101
姓名: Sean
SSN: A123456789
薪水: 50000.0
=====員工資料=====
編號: 102
姓名: Amy Wang
SSN: B210987654
薪水: 71000.0
```