

20230310 計算機實習 Practice 04

題目：

請利用 class 幫忙設計一支簡易的學生系統

題目要求：

Class **Student** 中需包含有以下元件(程式中必須使用此 class 否則 0 分)

名稱	權限	型態	說明
name	private	String	學生名稱
id	public	int	學生 id
dept	private	String	學生科系
getName	public	String function()	回傳學生名稱

Class **Department** 中需包含有以下元件(程式中必須使用此 class 否則 0 分)

名稱	權限	型態	說明
students	private	Student 陣列 List<Student>	科系中存在的學生
name	private	String	科系名稱
addStudent()	public	void function (Student student)	將 student 加入 students 的 list 中
getStudents ()	public	Student 陣列 List<Student>	回傳科系中的學生 list
getTotalStudentsInDep	public	int function()	回傳科系中的學生人數
showDepStudents	public	Void function()	印出該學系中的所有學生名稱

程式一開始於 main 中新增以下物件並於螢幕輸出"1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:"

需新增的物件如下：Department CSIE, Department EE, Department MATH

之後依據使用者的輸入執行不同動作：

若使用者輸入"1"：

於螢幕印出 "**Please input the student info name/id/department:**"，並讓使用者依序輸入 學生名稱 學生 id 學生科系 後

新增相應 **Student** 物件 並加入至 **Department** 物件中的 students 中，並再次循環功能選擇

若使用者輸入"2"：

於螢幕印出 "Please input the department:" 輸入欲查看人數的科系後並呼叫

getTotalStudentInDep function，並再次循環功能選擇

若使用者輸入”3”：

於螢幕印出 "Please input the department:" **輸入欲查看的科系後並呼叫**

showDepStudents function，印出該學系內所有學生，格式為一行一個學生，並再次循環功能選擇

若使用者輸入”4”：

結束程式

注意：

1. 功能選擇不會出現除 1~4 外的其他狀況，無須判斷此例外
2. 輸入之科系以及學院皆為英文大寫：CSIE, EE, MATH, EECS（電資學院）, SCI（理學院）
3. 功能 1 add student 中測資不會有同一時間存在重複學生 id 以及不存在科系的狀況，無須判斷此例外
4. 功能 2 和 3 中測資不會有不存在的科系的情況，無須判斷此例外
5. 所有 print 方法皆須換行(例如，利用 System.out.println())
6. 測資中 students 陣列內容長度最多不超過 10

詳情見下方範例

The actual input and output for running your program is something that looks like the following：

例一：

input 自此始，但不包括此行

```
1
Amy 1 CSIE
1
Hank 1 EE
2
EE
3
CSIE
```

4

input 至此止，但不包括此 comment

output 自此始，但不包括此行

1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:

Please input the student info name/id/department:

1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:

Please input the student info name/id/department:

1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:

Please input the department:

1

1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:

Please input the department:

Amy

1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:

output 至此止，但不包括此 comment

```
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
1
Please input the student info name/id/department:
Amy 1 CSIE
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
1
Please input the student info name/id/department:
Hank 1 EE
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
2
Please input the department:
EE
1
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
3
Please input the department:
CSIE
Amy
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
4
```

例二：

input 自此始，但不包括此行

2

CSIE

```
1
David 1 CSIE
2
CSIE
3
CSIE
1
Fread 2 CSIE
3
CSIE
4
# input 至此止，但不包括此 comment
```

```
# output 自此始，但不包括此行
```

```
1.add student 2.show the number of students in a department 3.show all the students
in a department 4.exit:
```

```
Please input the department:
```

```
0
```

```
1.add student 2.show the number of students in a department 3.show all the students
in a department 4.exit:
```

```
Please input the student info name/id/department:
```

```
1.add student 2.show the number of students in a department 3.show all the students
in a department 4.exit:
```

```
Please input the department:
```

```
1
```

```
1.add student 2.show the number of students in a department 3.show all the students
in a department 4.exit:
```

```
Please input the department:
```

```
David
```

```
1.add student 2.show the number of students in a department 3.show all the students
in a department 4.exit:
```

```
Please input the student info name/id/department:
```

```
1.add student 2.show the number of students in a department 3.show all the students
in a department 4.exit:
```

```
Please input the department:
```

```
David
```

```
Fread
```

```
1.add student 2.show the number of students in a department 3.show all the students
```

in a department 4.exit:

output 至此止，但不包括此 comment

```
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
2
Please input the department:
CSIE
0
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
1
Please input the student info name/id/department:
David 1 CSIE
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
2
Please input the department:
CSIE
1
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
3
Please input the department:
CSIE
David
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
1
Please input the student info name/id/department:
Fread 2 CSIE
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
3
Please input the department:
CSIE
David
Fread
1.add student 2.show the number of students in a department 3.show all the students in a department 4.exit:
4
```

評分標準：

For each input (test data) file, your program must produce an output file with a content that is **EXACTLY THE SAME AS** the expected output. This is the only way your program can "pass" any particular test.

In general, we will use 5 test data to test your project. The total score of this project is 100 points, and each test data accounts for 20%.

繳交格式：

繳交方式、內容錯誤的斟酌扣分，完整作業格式詳見 ee-class 教材區「111-2 JAVA 作業繳交及評分標準.pptx」。若對作業有疑問，請上 Discord 留言或詢問助教，如有作業勘誤會於 ee-class 公告區或 DC 公告版公告，請自行留意。