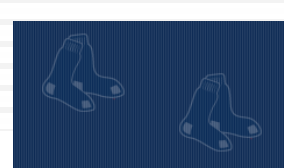# 海大資工 Java程式設計課程

2014

Homework 3-1$_1$

- □ Create a class called *Complex* for performing arithmetic with complex numbers. Complex numbers have the form

  *realPart + imaginaryPart * i*

  - ◘ Use floating-point variables *real* and *imaginary* to represent the private data of the class.

  - ◘ Provide a constructor that enables an object of this class to be initialized when it is declared.

  - ◘ Provide a no-argument constructor with default values in case no initializers are provided.

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Homework 3-1$_2$

◻ Provide public methods that perform the following operations:

- Add two Complex numbers: The real parts are added together and the imaginary parts are added together.

- Subtract two Complex numbers: The real part of the right operand is subtracted from the real part of the left operand, and the imaginary part of the right operand is subtracted from the imaginary part of the left operand.

- Print Complex numbers in the form (a, b) , where a is the real part and b is the imaginary part.

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Sample Output

a = (9.5, 7.7)

b = (1.2, 3.1)

a + b = (10.7, 10.8)

a - b = (8.3, 4.6)

(不需使用者輸入，只要在Test程式中new兩個 Complex物件，並呼叫其add與subtract方法，再印出即可)

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Hint

- For the add and subtract methods of class Complex, return a new Complex object with the results of the calculations.

Homework 3-2$_1$

- Employee是一個abstract class ，有一個abstract method: int getEarnings ()，並有四個subclass：
  - (1) Salaried-Employee：領週薪(weeklySalary)
  - (2) Hourly-Employee：如果一週工作時數小於或等於40小時，薪水為wage*hours, 如果工作時數多於40小時，超過40小時部份的薪水再乘1.5倍。
  - (3) Commission-Employee：薪水為commissionRate(佣金比例)*grossSales(銷售金額)
  - (4) PieceWorker：薪水為wage*piece(完成作品的件數)
  - (5) BasePlusCommission-Employee是Commission-Employee的subclass，薪水除了commissionRate(佣金比例)*grossSales(銷售金額)，還要加上底薪(baseSalary)

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Homework 3-2$_2$

□ 根據上述描述，請設計文字式的互動選單，透過 Scanner API讓使用者選擇要新增上述五種員工的哪一種，並讓使用者輸入選定類型所需的資料（舉例而言，若選Salaried-Employee需要輸入 weekly salary和working weeks）。

　◘ 當選擇類型時，若使用者輸入-1則輸入程序結束，直接顯示所有使用者輸入的詳細員工資料，並計算薪資總和。

　◘ 處理方法上，所有類型的員工物件資料需儲存至型態為 Employee之陣列，再呼叫陣列內Employee物件之 toString()方法列印詳細資訊，並呼叫getEarnings ()方法取得各別之薪資進行加總，並輸出總和薪資。

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Hint

- 請參考課本範例10.4~10.8

作業要求

- 命名都要符合Camel Case

- 類別都要設定package，名稱為ntou.cs.java2014.你的英文名字

- 類別內要有註解，至少要簡述此類別與每個方法

- 每題都至少要有兩個類別(可以更多)，一個為主要類別，一個為測試類別(只包含main)

- 請繳交電子檔，電子檔包含.java檔與.class檔(上傳至moodle)

- 屍體(無法compile或執行)不計分

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