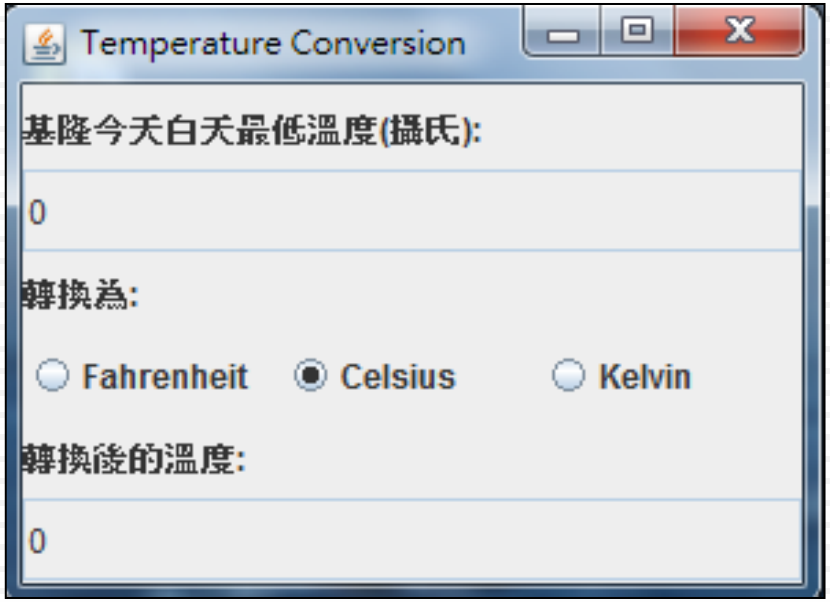
海大資工 Java程式設計課程

Fall 2014

Homework 4-1$_1$

- 請建立一個溫度顯示與溫度轉換的圖形化介面(GUI)程式，如下頁所示：
  - 轉換前之溫度(為攝氏Celsius溫度)請先直接設定預設值為攝氏0度
  - 兩個顯示溫度的TextField均需設定為不可編輯 (setEditable(false))
  - 三種溫度單位之轉換公式為
    - Celsius = 5/9 * (Fahrenheit – 32)
    - Kelvin = Celsius + 273.15
  - 三種溫度單位選項之radio button建議放置於一個Panel中，再連同其他四個元件透過Grid Layout放置於Frame中
  - 只要點選任何一個溫度單位選項，即會顯示轉換後之溫度

Sample Output1



Homework 4-1₂

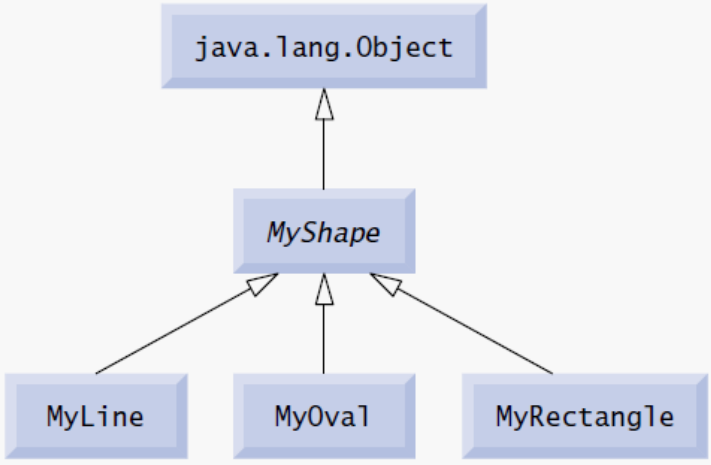
- 使用API (TemperatureFetcher.java與TemperatureBundle.java)，顯示動態溫度(如下所示)
  - 轉換前之溫度(為攝氏溫度)改透過呼叫TemperatureFetcher之getTemperature ()方法取得
    - 請輸入參數"基隆"
    - 回傳之資料為TemperatureBundle物件，請透過回傳之物件取得今天基隆的白天溫度 (即API回傳之dayTemps的第一筆資料)
    - 回傳的溫度格式為15 ~ 21，請辦法取得低溫，並轉為整數
  - 請留意要能成功使用TemperatureFetcher，需設定classpath，將jsoup-1.8.1.jar納入

*此API為分析中央氣象局網頁所得到之結果
(http://www.cwb.gov.tw/V7/forecast/week/week.htm)

Sample Output2

Homework 4-2: Shape Generator

- Please create classes that know how to draw themselves (if provided with a Graphics object that tells them where to draw).
- Once the program creates an object from this hierarchy of classes, it can manipulate it polymorphically for the rest of its lifetime as a MyShape.



Homework 4-2$_2$

- In your solution, class MyShape must be abstract.
- Since MyShape represents any shape in general, you cannot implement a draw method without knowing exactly what shape it is.
- The data representing the coordinates and color of the shapes in the hierarchy should be declared as private members of class MyShape.

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- In addition to the common data, class MyShape should declare the following methods:
  - A no-argument constructor that sets all the coordinates of the shape to 0 and the color to Color.BLACK.
  - A constructor that initializes the coordinates and color to the values of the arguments supplied.
  - Set methods for the individual coordinates and color that allow the programmer to set any piece of data independently for a shape in the hierarchy.
  - Get methods for the individual coordinates and color that allow the programmer to retrieve any piece of data independently for a shape in the hierarchy.
  - The abstract method public abstract void draw(Graphics g); which will be called from the program's paintComponent method to draw a shape on the screen.

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- To ensure proper encapsulation, all data in class MyShape must be private. This requires declaring proper set and get methods to manipulate the data.
- Class MyLine should provide a no-argument constructor and a constructor with arguments for the coordinates and color.
- Classes MyOval and MyRect should provide a no-argument constructor and a constructor with arguments for the coordinates, color and determining whether the shape is filled.
  - The no-argument constructor should, in addition to setting the default values, set the shape to be an unfilled shape.

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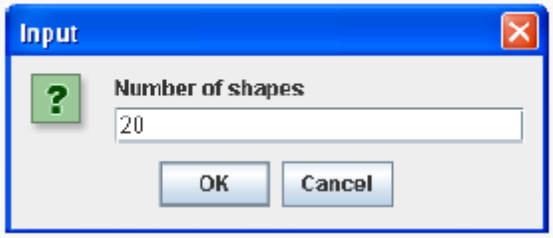
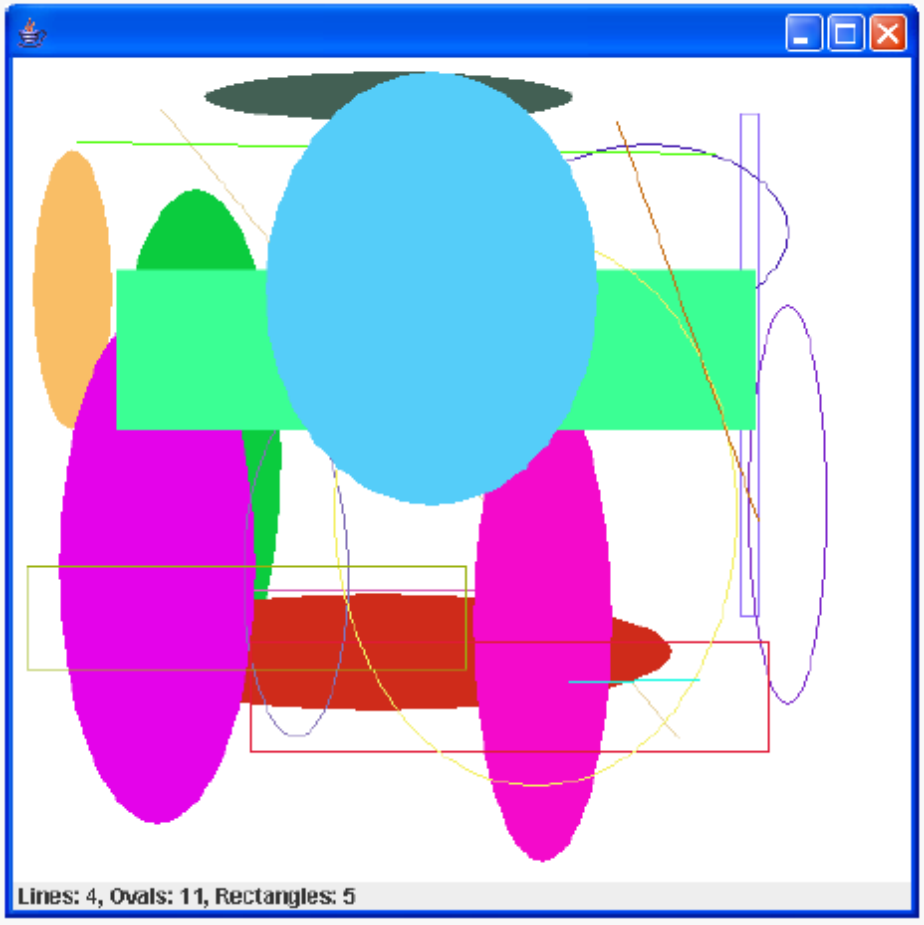
- There should be no MyLine, MyOval or MyRectangle variables in the program—only MyShape variables that contain references to MyLine, MyOval and MyRectangle objects.
- The program should generate random shapes and store them in an array of type MyShape. Method paintComponent should walk through the MyShape array and draw every shape (i.e., polymorphically calling every shape's draw method).
- Allow the user to specify (via an input dialog) the number of shapes to generate. The program will then generate and display the shapes along with a status bar that informs the user how many of each shape were created.

Sample Output





Other Requirements

- 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(此次共二題、第二題為加分題)都要有多個類別
- 請繳交電子檔(上傳至moodle)，電子檔包含.java檔與.class檔 (class檔須按照套件階層擺放)，並由助教規劃是否現場demo
- 屍體(無法compile)不予計分