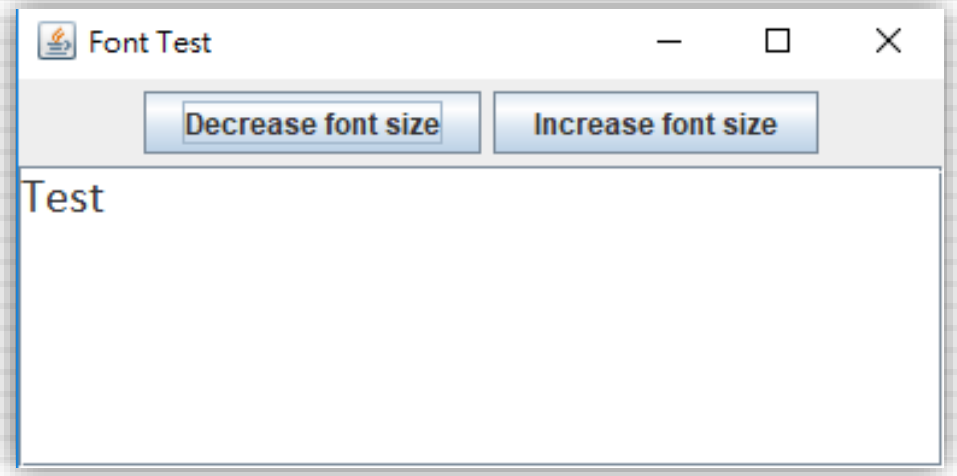
海大資工 Java程式設計課程

SOSEL
Service-Oriented Software Engineering Lab

Fall 2017

Homework 4-1₁

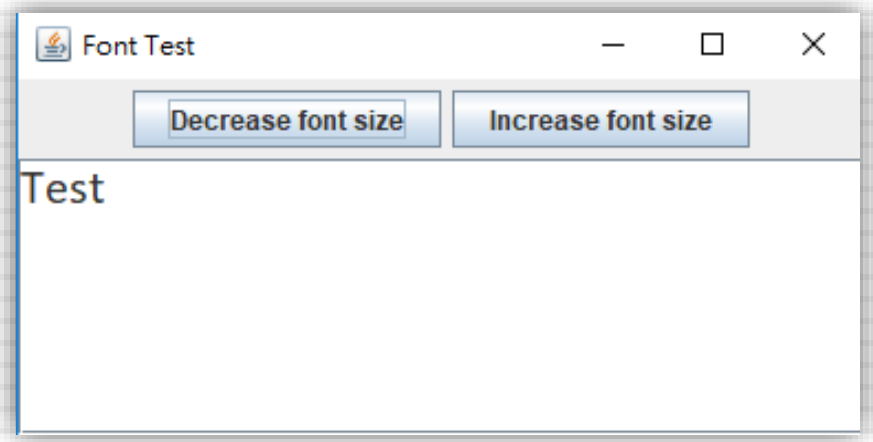
- 請建立簡易的文字放大縮小GUI，預設介面如下：



  - 視窗大小400 x 200
  - 預設字型Calibri，大小20
  - 文字區塊請用JTextArea

Homework 4-1$_2$

- 當使用者按下[Decrease font size]或[Increase Font size]，就縮小或放大字型，一次減或加2 points



  - 若縮小到小於8，則用JOptionPane顯示“No, it cannot be smaller!”，讓大小停留在8。
  - 若放大到大於160，則用JOptionPane顯示No, it cannot be larger!，讓大小停留在160。

Homework 4-13

- 若文字大小超過視窗範圍，請透過JScrollPane顯示Scroll Bar：

  - https://docs.oracle.com/javase/tutorial/uiswing/components/scrollpane.html (看第一段即可)

Homework 4-2$_4$

- Java Class請分別命名為FontUI.java與FontUITest.java (包含main)

Homework 4-2₁

- 請建立一個顯示氣象的圖形化介面(GUI)程式，如Sample Output頁面所示：
  - 氣象資料來源：http://www.cwb.gov.tw/V7/forecast/week/week.htm
  - Layout方式是採GridLayout，將畫面切成4x2的格狀
  - 依序放入JLabel ("請選擇城市：")、JComboBox (城市選單)、JLabel ("請選擇日期：")、JComboBox (日期選單)、JLabel ("白天氣溫：") 、JTextField (白天氣溫數值)與JLable(白天天氣圖示)、JLabel ("晚上氣溫：")、JTextField (晚上氣溫數值)與JLable(晚上天氣圖示)
    - 請留意氣溫與圖示是在Grid中的同一格，因此要用JPanel多設定一層Layout

Homework 4-2₂

- 兩個ComboBox分別設定選項為網頁中的全部城市(如基隆市、臺北市、新北市、桃園市等)，以及一週之日期
- 兩個ComboBox點選後均只先顯示3個選項，用scrollbar才能往下選擇其他選項
- 兩個顯示溫度的TextField均需設定為不可編輯
  (*setEditable(false)*)
- 只要點選任何一個ComboBox，即會顯示選取之城市與日期的(1)白天氣溫與圖示以及(2)晚上氣溫與圖示

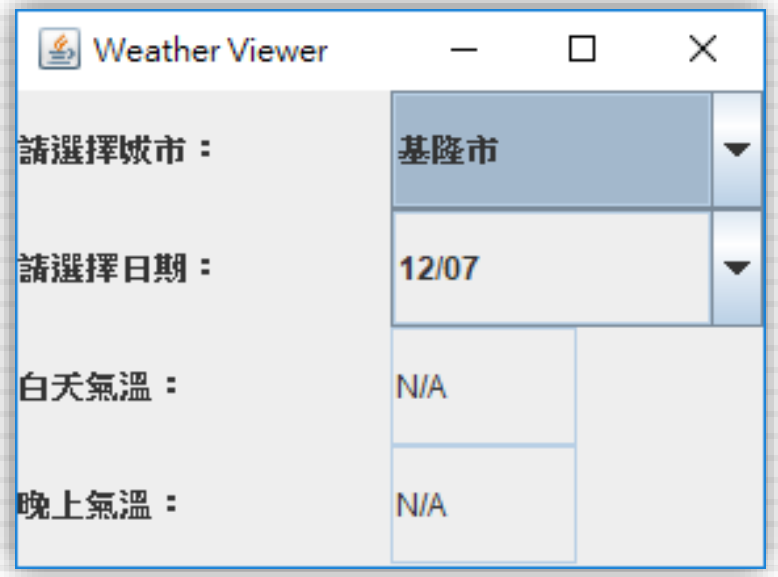
Homework 4-2$_3$

- 需使用TemperatureFetcher.java與TemperatureBundle.java兩個類別，取得溫度資料：
  - 溫度資料為透過呼叫TemperatureFetcher之getTemperature ()函式所取得，參數需輸入城市名稱
  - 回傳之資料為TemperatureBundle物件
    - 一週日期是透過呼叫TemperatureBundle之getWeekDates()函式所取得
    - 白天與晚上溫度透過呼叫TemperatureBundle的getDayTemps()與getNightTemps()函式取得
    - 白天與晚上天氣圖示網址透過呼叫TemperatureBundle的getDayImages()與getNightImages()函式取得
  - 請參考TemperatureFetcher之main函式，撰寫相同的Exception Handling處理程式，以能成功呼叫getTemperature ()
  - 請留意要能成功使用API，需將jsoup-1.10.3.jar納入classpath
    - jar檔下載：http://jsoup.org/download

Homework 4-2$_4$

- Java Class請分別命名為WeatherViewer.java與WeatherViewerTest.java (包含main)

Sample Output

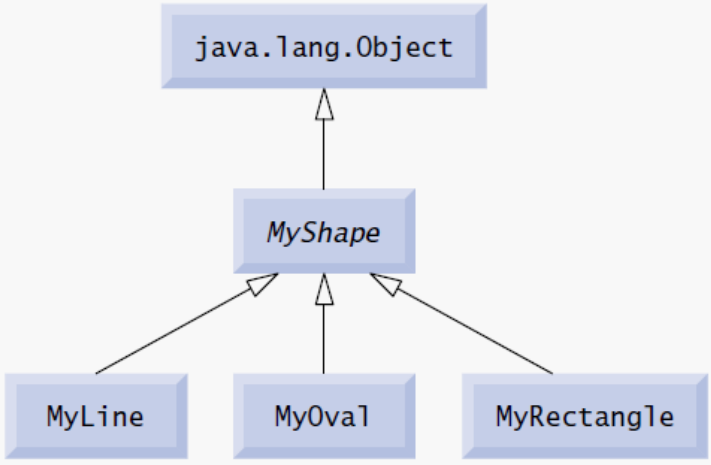


Hint

- 請熟悉JLabel放圖片的方法
- 請熟悉JCombox之API，以及ItemListener之處理方式
- 請練習引用外部jar檔的方式，先確保TemperatureFetcher.java之main方法可成功執行
- 請練習Exception Handling之寫法，以能成功使用TemperatureFetcher之功能

Homework 4-3: 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 4-3$_2$

- 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.

Homework 4-3$_3$

- 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.

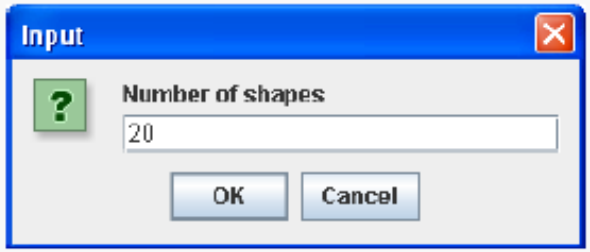
Homework 4-3$_4$

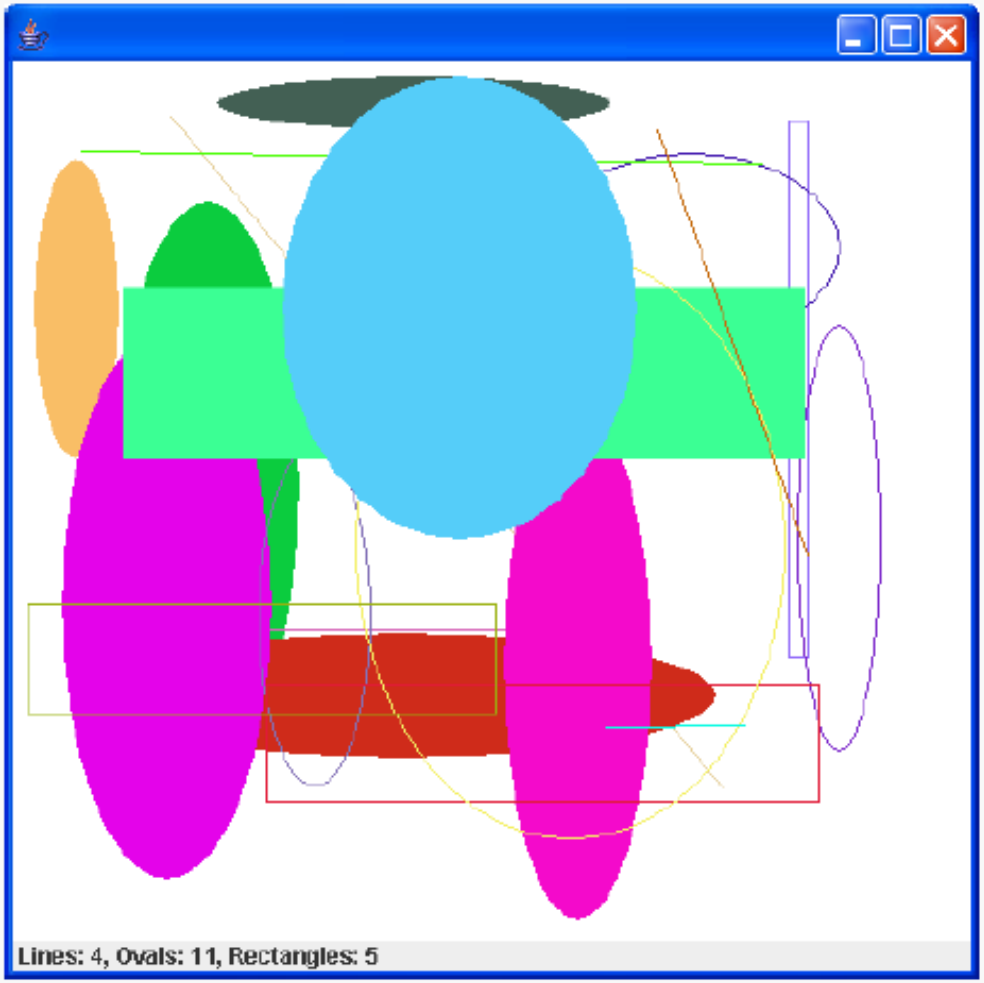
- To ensure proper encapsulation, all data in class MyShape must be private. This requires declaring proper set and get methods to manipulate the data.
- Class MyLine should provide a no-argument constructor and a constructor with arguments for the coordinates and color.
- Classes MyOval and MyRect should 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.

Homework 4-35

- 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





Extra Bonus

- 讓產生的圖形中，Filled Oval與Filled Rectangle可以用滑鼠拖曳！

Other Requirements

- 程式題命名都要符合Camel Case
- 程式題類別都要設定package，名稱為ntou.cs.java2017.你的英文名字.hw4
- 類別內要有註解，至少要簡述此類別與每個方法
- 程式題都要有多個類別
- 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