**物件導向設計**

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**作業二(Q7)**

1. **程式簡介：**

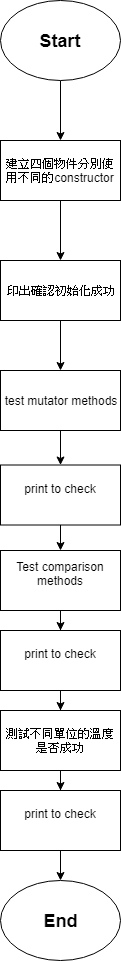
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| **程式名稱:** | **HW2\_Q7** |
| **程式說明:** | **按照題目的需求設定參數，以及methods，並測試所有methods為可執行之狀態。** |
| **程式功能:** | 1. **儲存兩筆(temperature, scale)資料** 2. **比較兩筆資料的溫度(temperature)是否相同(equals)** 3. **印出指定資料的溫度(temperature)及單位(scale)** |

1. **程式規格：**

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| **Q7程式規格：** | |
| **1個Class Temperature** | **1.儲存Q7詳細資料(temperature, scale)，並提供methods** |

|  |  |
| --- | --- |
| **(一)1個private double** | **1. 儲存temperature(溫度)** |
| **(二)1個private char** | **1. 儲存單位(scale)** |
| **(三)4個constructor method** | **1. Temperature () 沒傳參數**  **2. Temperature (float temperature) 只傳溫度**  **3. Temperature(char scale) 只傳單位**  **4. Temperature(float temperature, char scale) 溫物、單位都傳** |
| **(四)2個 accessor method** | **1.取得以華式(F)為單位的溫度getemperatureF()**  **2. 取得以攝式(C)為單位的溫度getemperatureF()** |
| **(五)3個mutator method** | **1.設定溫度setValue(float temperature)**  **2.設定單位成績setScale(char scale)**  **3.設定溫度、單位setall(float temperature, char scale)** |
| **(六)一個比較method** | **1.比較溫度是否相同equals(Temperature othertemperature)**  **2.比較溫度誰比較大greater(Temperature othertemperature)**  **3.比較誰比較小less(Temperature** othertemperature) |
| **(七)一個輸出method** | **1.輸出溫度、單位(tostring())** |

1. **流程圖:**



1. **部份程式碼解說：**

**(1)利用constructors進行初始化。**

Temperature record1 = **new** Temperature();

Temperature record2 = **new** Temperature(0);

Temperature record3 = **new** Temperature('C');

Temperature record4 = **new** Temperature(0,'F');

**(2)印出確認**

//print to check

System.***out***.println(record1.tostring());

System.***out***.println(record2.tostring());

System.***out***.println(record3.tostring());

System.***out***.println(record4.tostring() + "\n");

**(3)測試mutator methods，並印出確認**

record1.setall(10, 'F');

record2.setScale('F');

record4.setValue(10);

System.***out***.println(record1.tostring());

System.***out***.println(record2.tostring());

System.***out***.println(record3.tostring());

System.***out***.println(record4.tostring() + "\n");

**(4)測試comparison methods並印出確認**

**if**(record1.equals(record4)) {

System.***out***.println("record1 is equals to record4");

System.***out***.println(record1.tostring());

System.***out***.println(record4.tostring() + "\n");

}**else** {

System.***out***.println("record1 is not equals to record4" + "\n");

}

//test comparison methods

**if**(record1.greater(record2)) {

System.***out***.println("record1 is greater than record2" );

System.***out***.println(record1.tostring());

System.***out***.println(record2.tostring() + "\n");

}**else** {

System.***out***.println("record1 is not greater than record2" );

System.***out***.println(record1.tostring());

System.***out***.println(record2.toString() + "\n");

}

//test comparison methods

**if**(record1.less(record2)) {

System.***out***.println("record1 is less than record2" );

System.***out***.println(record1.tostring());

System.***out***.println(record2.tostring() + "\n");

}**else** {

System.***out***.println("record1 is not less than record2" );

System.***out***.println(record1.tostring());

System.***out***.println(record2.tostring() + "\n");

**(5)測試accessor methods並測試是否能依照題目給的數字轉換單位成功**

//test 題目的要求

record1.setall(0, 'C');

record2.setall(-40, 'C');

record3.setall(100, 'C');

//print to check

System.***out***.println(record1.getemperatureC() + "C = " + record1.getemperatureF() + "F");

System.***out***.println(record2.getemperatureC() + "C = " + record2.getemperatureF() + "F");

System.***out***.println(record3.getemperatureC() + "C = " + record3.getemperatureF() + "F");

**由於依照題目的要求，accessor methods得到的溫度會自動轉換成離原始溫度較近的十位數，所以轉換出來的數字不會與題目要求的一樣**

}

1. **心得:**

這個作業主要也是在練習如何自定義一個class並且宣告物件，以達到自己想要的效果，還在想說上一題不知道怎麼測試，下一題就馬上要求要寫了，在寫這份作業的時候發現了一些自定義Class的小Bug，讓我對怎麼自己做出自己想要的工具有更深度得了理解，總地來說，這份作業給了我很大的收穫。