**Institute of Technology Tralee**

**Ord/Hons BSc. in Computing with Specialism (Group D) - Year 1**

**Continuous Assessment #3**

**Date: 25/4/13**

**Time: 1 p.m. – 3.30 p.m.**

**Object Oriented Programming 1**

**Instructions:** Attempt the following question. You should use the JCreator IDE. When you are finished coding, print out your code in **landscape** format.

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**Q1.**

Write a Java program that contains a JFrame window. This window should contain a 2 labels and a 2 text-fields. It should have dimensions of 300 x 100 pixels. It should use a flow-layout style and the application should terminate when the close button is hit on its title bar. The labels should simply prompt the user respectively for the kinetic energy (E) and mass (m) of an object. These values should be input by the user into the text-fields. When the user hits return on the text-field where the mass is inputted, having supplied both values, a **message dialog** should get displayed indicating the velocity of the object to **3 decimal places**. The velocity can be calculated using the formula:

When the user hits the “OK” button on this message dialog (or hits return) then the **text-fields get cleared** and the user can enter further information.

Note that hitting return on the mass text-field constitutes an **ActionEvent**, just like pressing a button, so treat it in exactly the same manner as this code-wise from the point of view of event-handling.

Note that there should be a little **validation** in the application. If the user hits return on the mass text-field but no value has been entered into either it or the kinetic energy text-field, a suitable **error message** in a message dialog should appear to the user. Likewise, if a negative number has been entered for either the kinetic energy or mass then an **error message** will display on a message dialog when the user hits return on the mass text-field. If values are supplied to the GUI, you can **assume they are numeric in nature**.

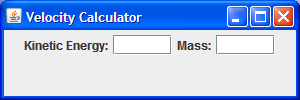
You should make use of the **appendix** of method definitions from the X: drive when answering this question.

For full marks your program should, along with a logically correct solution for the problem above, include comments and meaningful variable names.

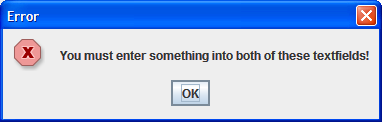
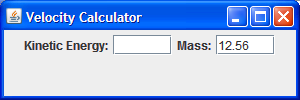
Some sample runs of the program are as illustrated below.

**Sample Screenshots**

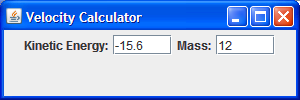
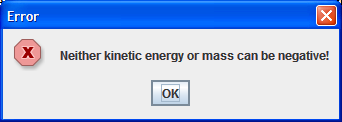
**After launching the application it appears as follows**



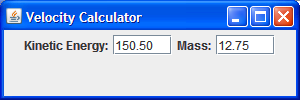
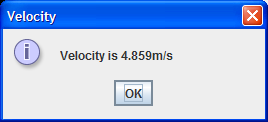
**If the user enters nothing into either text-field and then hits return on the mass text-field, a message dialog will appear indicating this problem:**



**If the user enters a negative number into either text-field and then hits return on the mass text-field, a message dialog will appear indicating this problem:**

**If the user enters non-negative numbers into both text-fields and then hits return on the mass text-field, a message dialog will appear indicating the velocity of the object**

**When the users presses the “OK” button on this message dialog (or hits return) the text-fields are cleared and more information can be supplied**