COSC2391/2401 Further Programming

Tutelab 03

These exercises can be solved most effectively using abstract classes and interfaces however since these are probably fairly new concepts for most students just do your best (your tutor will guide you) and we will look at a more comprehensive example with abstract classes and interfaces next week.

Part 1 - Inheritance & Polymorphism

1. Create a class/interface hierarchy that will support the following classes

    a. Aquaman
    b. Superman
    c. Batman
    d. Birdman
    e. WonderWoman

2. Each class should support calling a "saveTheWorld" method that prints a message to the console. The message should read:

    "[character_name] saves the world again!"

3. You should provide a specialise message for the following superheroes.

    a. Aquaman   "Aquaman saves Atlantis again!"
    b. Batman   "Batman saves Gotham City again!"
    c. Superman   "Superman saves the world and Lois Lane again!"

4. Create a collection and populate it with all the superhero objects and iterate over the collection and call the "saveTheWorld" method.

5. Modify your class heirarchy so that the following superheroes support the use of a "fly" method that prints an appropriate message to the console.

    a. Superman   "Superman is flying to the fortress of solitude"
    b. Birdman   "Birdman is flying close to the sun."

Original Author: Rodney Cocker

Part 2 – Handling more partial commonality

1. Consider a class/interface hierarchy that will support the following classes

   a. Eagle
   b. Emu
   c. Parrot
   d. Penguin

2. Two of these classes (guess which ones) should support calling a "fly" method that prints a message to the console. The message should read:

   "The [character_name] is soaring

   "The [character_name] is flying in all its glorified colour"

3. Create collections and populate with objects from your class hierarchies as necessary to generate the following output by iterating and polymorphically calling the "saveTheWorld" and "fly" methods.

Sample output:

   Aquaman saves Atlantis again!
   Batman saves Gotham City again!
   Wonder Woman saves The World again!
   Superman saves The World again!
   Birdman saves The World again!
   Superman is flying to the fortress of solitude
   Birdman is flying close to the sun

   The eagle is soaring
   The parrot is flying in all its glorified colour
   Superman is flying to the fortress of solitude
   Birdman is flying close to the sun

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