CSI-155 Object-Oriented Programming

May 10th , 2018

Midterm Exam

(Make sure all the sound files and the image files should be saved in debug folder of you library

**Create a windows application** (make sure the solution check box is checked)

Provide a name for the solution. The windows application name should include your name + midterm, the solution name should include your name + solution

Add a class library project to this solution: name it your name + animalLib

**Define an interface IAnimal** with the following methods:

* **Voice** that returns a void and takes no parameter
* **IsCarnivore** that returns true if the animal is carnivore
* **IsHerbivore** that returns true if the animal is herbivore
* **IsOmnivore** that returns true if the animal is omnivore
* **GetPicture** that returns an Image (image of the animal), but takes no parameter

**Add an abstract class Animal** that inherits from IAnimal interface. The class Animal should conatain the following members:

Private field: \_weight, \_imageFilename (filename of the image) , \_soundFile (filename of the sound associated with this animal) , and \_id (every animal captured is given an id)

The Animal class should implement (inherit) the interface IAnimal.

Add Constructor

Add Properties

(The first 4 methods should be declared abstract in the Animal class)

The GetPicture should be declared virtual and should return the image (type Image)

Of the animal. Use **return Image.FromFile(\_imageFilename);** to return the proper image

The Voice method should play the sound of that animal given its \_soundFile  
here is the code to play a sound

**System.Media.SoundPlayer player = new System.Media.SoundPlayer(\_soundFile);**

**player.Play();**

* **Add class Eagle** that inherits from Animal;
* **Add class Elephant** that inherits from Animal
* **Add class Whale,** that inherits from Animal

For each class add the correct (proper) implementations of the inherited methods

* **Add an abstract class Cat** that inherits from Animal, but should override the **Is…** methods, and keep the voice and the GetPicture methods abstract.
* **Add class Lion** that inherits from Cat
* **Add class Tiger** that inherits from Cat

(you are provided with sounds and images of the animal stated above)

In Form1: Create a List of IAnimals (animal list)

In Form1\_Load: Populate the list with at least a couple of animals from each class (total of at least 10 animals)

In Form1 :

* Add a method: Animal GetAnimalById(int id) (takes an id and returns the Animal object with that id)

In Form1[Design] Add Gui to:

* Display (in a listview) all the animals in the list, including the type of animal it is (by using the GetType method). No need to display images in this case, just id, weight, (carnivore, herbivore, or omnivore) and sound string.
* When an animal is selected in a listview display its image in a picture box and play its sound