**CSI-155 Midterm Exam Monday, October 23rd, 2017**

**In the question below, provide complete answer by formulating complete and concise statements. Important: Number all the answers 1 through 17**

1. List the 3 principles of object oriented programming
2. In your own words, what does the “is a” property means when applied to inheritance
3. Can a class inherit from 2 or more other classes at the same time?
4. Can a class inherit from 2 or more interfaces at the same time?
5. What is an abstract method?
6. What is an interface?

Create a new Windows app, then Add a class library project

1. Define an interface **IAge** with a single method int **GetAge()** and a property **ImportantDate** of type DateTime
2. Define three classes **(Person, Tree, Car**) that implement the interface IAge

Person class: \_firstname, \_lastname, \_dateOfBirth, where ImportantDate represents \_dateOBirth

Tree class: \_typeOfTree, \_location, \_datePlanted, where ImportantDate represents \_datePlanted

Car class: \_make, \_model, \_dateBuilt, where ImportantDate represents \_dateBuilt

1. Override the ToString in each class, so each class returns a string that contains its

data, which allows a Form to display it.

1. in Form1:Define/create a single List to hold objects of type Person,

Tree, and Car.

1. Populate the list with at least 5 objects of each class
2. Define a method that DisplayAll to display the list, including each object Age
3. To the above library   
   Add an interface IAnimal with 2 methods Voice and Draw  
   the Voice method takes no parameter. It is to play a sound of the given animal using its voice filename (it is provided to you).  
   the Draw method should take a single parameter of type PictureBox to draw the animal image in the given picturebox.(the image file of a given animal is provided as well)
4. Define an abstract class Animal that inherits the interface IAnimal. This class should define the following private fields: \_imageFilename, \_voiceFilename, and an \_id. (each animal will be provided a unique id)  
   Add constructor and properties as well
5. In Form1 create a second List of hold all the animal (of type IAnimal)  
   Add an object animal of each class to the list.  
   using a richtextbox or a listbox display all the animal in the list ( ID, VoiceFilename, and ImageFilename)
6. Define a method GetAnimalById(). This method should take a single parameter, the id of the animal and returns the IAnimal object with the given id
7. Provide a textbox to enter an animal id. Provide a picturebox to display the animal with the entered id, when a button is clicked.

Provide a button that reads the id and display the image of the animal in the picturebox, by using the GetAnimalById and by calling the Draw method of the Animal class.

How to play sound in c#

Your code can call the playSound() method, by passing it the path of the sound file.

private void playSound(string path)

{

System.Media.SoundPlayer player =

new System.Media.SoundPlayer();

player.SoundLocation = path;

player.Load();

player.Play();

}

How to display an image in an picturebox:

pictureBox1.Image = Image.FromImage(Path)

where path is the path to the image file