Programming Exercise 04
Animal Farm

C# Step by Step

This activity consists of four programming exercises. The following exercises are open book and open note. You are free to use any written documentation you wish. However, these are individual exercises, and you cannot consult with each other in writing your programs.

This programming exercise has four parts consisting of four requirements. The grade for each requirement is indicated, for a maximum of 100 points. At a minimum, your program must compile successfully and run.

Using classes and objects, implement a farm. Create a class containing a `Main()` function that exercises your other classes. Create classes representing several types of domesticated animals, such as cows, sheep, chickens, goats, etc. Instantiate several objects of each class. For example, for your Rabbit class, you might instantiate objects Bugs Bunny, Roger Rabbit, Thumper, and Peter Cottontail.

Implementing one class: 70 points Implement one class of a farm animal. You can choose your type of animal: horses, cows, pigs, sheep, etc. For our class, implement at least one field, such as a `name` field, and at least two methods, such as a `speak` or an `eat` method. Also implement two constructors, a default constructor that takes no parameters and another constructor that takes at least one parameter, such as (for example) the object name.

Unit tests: 80 points For your class for the previous step, implement a unit test that invokes each method. You should create a `Test` project and create unit test for your class. Test all methods.

Four instances: 90 points Create four or more animals from your class. Invoke all methods for each. If you create pigs, you can have Porky, Wilbur, Miss Piggy, and Napoleon (the pig leader in Orwell's *1984*). You can implement a `speak()` method for each animal. A pig can say, "Oink." A cow can say, "Moo." A chicken can say, "Cluck." You get the idea.

Four classes, four instances: 100 points Implement one farm animal by creating a class and a method. For example, you may elect to create a `Horse` type, and a `speak()` method. In your main program, instantiate a `Horse`, name him `MrEd`, and call the `speak()` method. When Mr. Ed speaks, he might say something like, "Hello, my name is Mr. Ed, and I am a horse. I say neigh."

This should be a fun project. I hope you enjoy doing this.