AP CS A Inheritance Programming Projects

You must complete one of these projects!
Put your last name in the project names. Please also include your full name as a comment in every class.

3D SHAPES: Write an inheritance hierarchy for three-dimensional shapes. Make a top-level shape interface that has methods for getting information, such as the volume and surface area of a three-dimensional shape. Then make classes and subclasses that implement various shapes such as cubes, rectangular prisms, spheres, triangular prisms, cones, and cylinders. Place common behavior in superclasses whenever possible and use abstract classes/interfaces when it is appropriate. Add methods to the subclasses to represent the unique behavior of each 3D shape, such as a method to get a sphere's radius. Be sure to include a tester class where you create objects out of the classes you write!

ANIMALS: Write sets of classes that define the behavior of certain animals. Then write some client code - make a class that instantiates your animal classes in a simulation of many animal classes moving around. In the simulation, when two animals are in the same location, they should have a dance off (the losing animal will leave immediately to start dance lessons). The simulation will choose one of the two to win, either randomly or using some sort of system. You should add other interesting happenings to the simulation, as well. Make sure your program squares with the table below:

Class	getChar	getMove
Bird	B	Randomly selects one of the four directions each time
Frog	F	Picks a random direction, moves 3 in that direction, repeat (same as bird, but staying in a single direction longer)
Mouse	M	West 1, north 1, repeat (zig zag to the NW)
Turtle	T	South 5, west 5, north 5, east 5, repeat (clockwise box)
Wolf	W	You define this to have any custom behavior you want

POP STARS: Write an inheritance hierarchy that stores data about pop stars. Create a common superclass and/or interface to store information that is common to any star, no matter what type of artist they are (ex: name, salary, level). Then create sub-classes for players of different art forms of your choosing. Place art-specific information and behavior in here (ex: music genre, first movie, reality tv show title). Be sure to include a tester class where you create objects out of the classes you write!

BREAKFAST: Create a breakfast food hierarchy. There should be 4 classes (at least) that all inherit from one grand-superclass. Also create a Restaurant class in which the user can make an order. After they select the items they wish to purchase, it will report their order and the total price.

DIY: Make up your own. This should have an interface and at least 4 classes that implement it. There should be some inheritance relationships between those classes, as well. Be sure to include a tester class where you create objects out of the classes you write!