ABSTRACT CLASS

Diagram

Description automatically generated

**Write code for the class diagram.**

**Write TestShape class which has main() to test your code**

INTERFACE

Diagram

Description automatically generated

*Notes:*

moveUp() { y++; }

moveDown() { y--; }

moveLeft() { x--; }

moveRight() { x++; }

**Write code for the class diagram.**

**Write TestPoint class which has main() to test your code**

ABSTRACT + INTERFACE

Diagram

Description automatically generated

1. Create the Animal class, which is the abstract base class of all animals.
   1. Declare a read-only property Legs, which records the number of legs for this animal.
   2. Define a public constructor that initializes the Legs property.
   3. Declare an **abstract method Eat**.
   4. Declare a concrete method Walk that prints out something about how the animals walks.
2. Create the Spider class.
   1. The Spider class extends the Animal class.
   2. Define a default constructor that calls the base classconstructor to specify that all spiders have eight legs.
   3. Implement the eat method.
3. Create the Pet interface specified by the UML diagram.
4. Create the Cat class that extends Animal and implements Pet.
   1. This class must include a String property to store the name of the pet.
   2. Define a constructor that takes one String parameter that specifies the cat's name. This constructor must also call the base class constructor to specify that all cats have **four legs**.
   3. Define another constructor that takes no parameters. Have this constructor call the previous constructor in (b) (using **this** keyword) and pass an empty string as the argument.
   4. Implement the Pet interface methods.
   5. Implement the eat method.
5. Create the Fish class. Override the Animal methods to specify that fish can't walk and don't have legs.
6. Create an TestAnimals program which has main() method. Have the main method create and manipulate instances of the classes you created above. Start with:

Fish d = new Fish();

Cat c = new Cat("Fluffy");

Animal a = new Fish();

Animal e = new Spider();

Pet p = new Cat();

For each object, test all of its methods