Java module 3

Exercises Day 4

1 - Interface	Uncle Tobia's Old Farm
| Instructions | At Uncle Tobia's old farm, we have 3 animals that produce milk: cows, sheep, and goats. In particular, sheep also provide wool, just like alpacas. Create parent classes and child classes (with their respective attributes and methods) for all the animals at Uncle Tobia's farm. Create at least:<br>● An abstract Animal class<br>● An interface called MilkProducer and an interface called WoolProducer. These will be implemented by the appropriate animals.<br>● One class for each different animal that exists in the farm. Each animal should have a method to make a sound.<br><br>Create a MainProgram class with the following code to test your implementation:<br><br>```java
public class MainProgram {
    public static void main(String[] args) {
        //Create some animals
        Animal[] animals = new Animal[5];
        animals[0] = new Alpaca();
        animals[1] = new Cow();
        animals[2] = new Goat();
        animals[3] = new Goat();
        animals[4] = new Sheep();
        //All animals make a sound
        for(int i = 0; i < 5; i++) {
            System.out.print(animals[i].name + " is making
the sound: ");
            animals[i].makeSound();
        }
        //All animals should produce
        for(int i = 0; i < 5; i++) {
            if(animals[i] instanceof MilkProducer) {
                ((MilkProducer) animals[i]).produceMilk();
            }
            if(animals[i] instanceof WoolProducer) {
                ((WoolProducer) animals[i]).produceWool();
            }
        }
    }
}
``` |
| Expected output | Alpaca is making the sound: Hum
Cow is making the sound: Moo
Goat is making the sound: Bleat
Goat is making the sound: Bleat
Sheep is making the sound: Baa
Producing alpaca wool
Producing milk
Producing goat milk |

	Producing goat milk Producing sheep milk Producing wool

2 - Abstract	Animal Caretaking Simulation
Instructions	As a user, you have the option to choose an animal to take to school: an owl, a cat, or a toad (create a class for each). Once the preferred animal is chosen, an instance of that animal is created. Now it's time to take care of it! Give it a name, feed it, play with it, and clean up after it. Don't forget to create an Abstract class, it can be called Animal. Create another class to host the main method. It should allow the user to choose which animal they will take to school as many times as they want.
Expected output	Choose an animal to take to school: 1.Owl 2.Cat 3.Toad or 0 to exit. 1 Hedwig is eating mice. Hedwig is playing in the night. Cleaning up Hedwig's feathers. Choose an animal to take to school: 1.Owl 2.Cat 3.Toad or 0 to exit. 2 Whiskers is eating fish. Whiskers is chasing a laser pointer. Cleaning up Whiskers's litter box. Choose an animal to take to school: 1.Owl 2.Cat 3.Toad or 0 to exit. 3 Trevor is eating bugs. Trevor is jumping around. Cleaning up Trevor's aquarium. Choose an animal to take to school: 1.Owl 2.Cat 3.Toad or 0 to exit. 4 Invalid choice Choose an animal to take to school: 1.Owl 2.Cat 3.Toad or 0 to exit. 0 Good bye!