UF UNIVERSITY of FLORIDA
Herbert Wertheim College of Engineering

COMPUTING FOR LIFE
COP3502

Lab 10: Return of the Cow

Overview

This lab's purpose is to provide students with experience in file I/O. It is recommended that students use command line tools and editors for this lab (though it is not strictly speaking required). This lab will require students to build on their previous lab experience, in which a version of the **cowsay** utility was created.

Specification

Students will update the driver program class (`Cowsay`) and also add one new class - `FileCow`. The `FileCow` class should extend the `Cow` class, and `IceDragon` must be derived from `Dragon`. As before, `HeiferGenerator.java` is provided for you – but updated to handle the new FileCow class. (Please refer to specification for previous lab for a refresher.) Students may implement protected attributes and methods if they chose to do so. This is not required – it is purely optional. **No public attributes / methods should be added to the specification!**

Cowsay Class (Program Driver)

Your program must accept command line arguments as follows:

`java cowsay -l`	Lists the available cows
`java cowsay MESSAGE`	Prints out the MESSAGE using the default COW
`java cowsay -n COW MESSAGE`	Prints out the MESSAGE using the specified built-in COW
`java cowsay -f COW MESSAGE`	Prints out the MESSAGE using the specified file COW

Note that this version of the utility handles a special set of `Cow`-derived `FileCow` objects. The `HeiferGenerator` will automatically create `FileCow` objects (using the `FileCow` constructor) from files in the "cows" directory.

```
>java Cowsay -l
Regular cows available: heifer kitteh dragon ice-dragon
File cows available: moose turkey turtle tux
```

Previous Work

The following classes, developed previously, are required for this lab to function.

Cow
```
public Cow(String name)                 // Constructor
public String getName()                 // Returns name of this cow object
public String getImage()                // Return image for this cow object
public void setImage(String image)      // Sets the image for this cow object to image
```

Dragon (extends Cow)
```
public Dragon(String name, String image)     // Constructor
public boolean canBreatheFire()              // Defaults to true
```

IceDragon (extends Dragon)
```
public Dragon(String name, String image)     // Constructor
public boolean canBreatheFire()              // Returns false
```

FileCow Class

The **FileCow** class must be derived from the **Cow** class. In addition, **FileCow** must add the following behavior:

`public FileCow(String name, String filename)`
Constructor; creates a new **FileCow** object with the given **name** and an image loaded from **filename**.

If the file cannot be loaded, it should ***throw*** a new **RuntimeException** with the message **"MOOOOO!!!!!!"**. This should be the **only** public constructor for the **FileCow** class!

`public void setImage()`
Should immediately ***throw*** a new **RuntimeException** with the message **"Cannot reset FileCow Image"**.

Submissions

NOTE: Your output must match the example output *exactly*. If it does not, ***you will not receive full credit for your submission***!

Files:	Cowsay.java, FileCow.java Cow.java, Dragon.java, IceDragon.java
Method:	Submit on Canvas

Sample Output

```
>javac Cowsay.java
>java Cowsay Hello World!

Hello World!
       \
        \
         \
        ^__^
        (oo)\_______
        (__)\       )\/\
            ||----w |
            ||     ||

>java Cowsay -n kitteh Moew-Moew!

Moew-Moew!
       \
        \
         \
       ("`-'  '-/") .___..--' ' "`-._
         ` *_ * )     `-.   (      ) .`-.__. `)
         (_Y_.) ' ._   )   `._` ;  `` -. .-'
      _.. `--'_..-_/   /--' _ .' ,4
   ( i l ),-''  ( l i),'  ( ( ! .-'

>java Cowsay -l
Regular cows available: heifer kitteh dragon ice-dragon
File cows available: moose turkey turtle tux

>java Cowsay -n ninja Hello world!
Could not find ninja cow!

>java Cowsay -f tux Do you have any herring?

Do you have any herring?
        .--.
       |o_o |
       |:_/ |
      //   \ \
     (|     | )
    /'\_   _/`\
    \___)=(___/

>java Cowsay -f alien Earth is ours!
Could not find alien cow!

>java Cowsay -f kitteh MEOW!!!
Could not find kitteh cow!

>java Cowsay -n tux How about tuna?
Could not find tux cow!
```