Lab 08: The Cow Strikes Back

Overview

This lab's purpose is to provide students with experience in inheritance of classes and working with multiple classes. 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

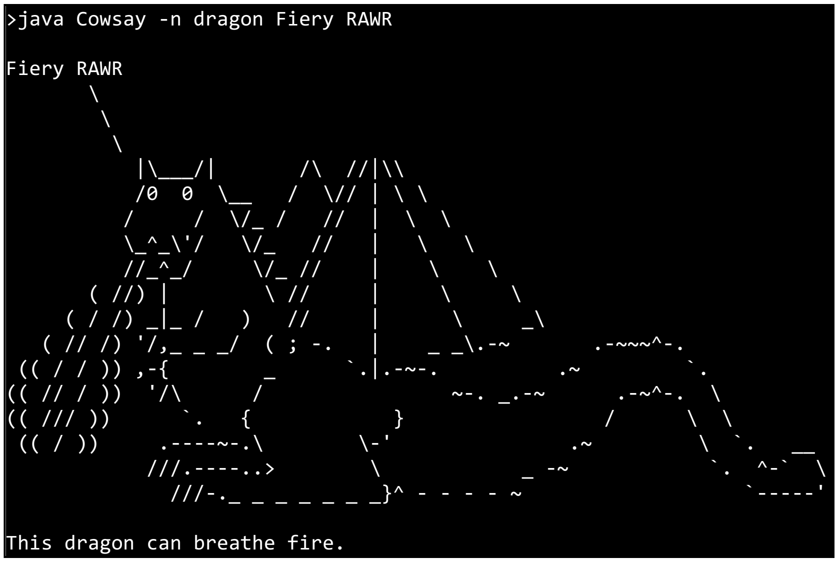
Students will update the driver program class (`Cowsay`) and also create two new classes - `Dragon` and `IceDragon`. The `Dragon` class should extend the `Cow` class, and `IceDragon` must be derived from `Dragon`. As before, `HeiferGenerator.java` is provided for you – but updated to handle the new Dragon class and its subtypes. (Please refer to specification for previous lab for a refresher.) Students may implement private 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 COW

In addition, this version of the utility handles a special set of `Cow`-derived `Dragon` classes (and its subclasses). Whenever a dragon-type cow is selected, the display of the message **must be followed by a line stating whether or not the dragon is fire-breathing**:



```
>java Cowsay -n dragon Fiery RAWR

Fiery RAWR
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This dragon can breathe fire.
```

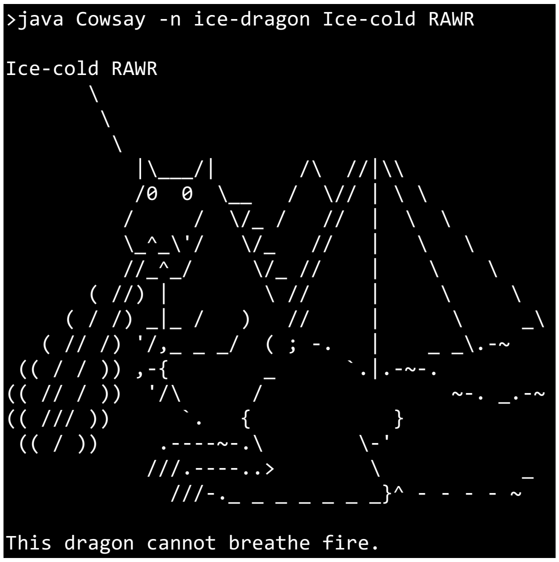

```
>java Cowsay -n ice-dragon Ice-cold RAWR

Ice-cold RAWR
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This dragon cannot breathe fire.
```

Cow Class

The **Cow** class must have all of the same methods as previously required, though students may add private methods.) The methods are repeated here, briefly, for reference.

```
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 Class

The **Dragon** class must be derived from the **Cow** class and must make all of its methods available. In addition, Dragon must provide the following methods:

`public Dragon(String name, String image)`

Constructor; creates a new **Dragon** object with the given **name** and **image**. This should be the **only** public constructor for the **Dragon** class!

`public boolean canBreatheFire()`

This method should exist in **every** **Dragon** class. For the default **Dragon** type, it should always return **true**.

IceDragon Class

The **IceDragon** class must be derived from the **Dragon** class and must make all of its methods available:

`public IceDragon(String name, String image)`

Constructor; creates a new **IceDragon** object with the given **name** and **image**. This should be the **only** public constructor for the **IceDragon** class!

`public boolean canBreatheFire()`

For the **IceDragon** type, this method should always return **false**.

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, Cow.java, Dragon.java, IceDragon.java, HeiferGenerator.java
Method:	Submit on ZyLabs

Sample Output

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

Hello World!
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>java Cowsay -n kitteh Moew-Moew!

Moew-Moew!
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>java Cowsay -l
Cows available: heifer kitteh dragon ice-dragon

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

>java Cowsay -n dragon Firey RAWR

Fiery RAWR
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This dragon can breathe fire.

>java Cowsay -n ice-dragon Ice-cold RAWR

Ice-cold RAWR
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           |\___/|       /\  //|\\
           /0  0  \__   /  \// | \ \
          /     /  \/_ /   //  |  \  \
          \_^_\'/   \/_   //   |   \   \
          //_^_/     \/_ //    |    \    \
       ( //) |        \ //      |     \     \
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This dragon cannot breathe fire.
```