

Making Objects, Using Loops and If Statements

Purpose: Build class files with constructors, getters and setters that utilize Java control structures

Learning Objectives:

- Creating and using constructors;
- Building and modifying accessor and mutator methods;
- Developing Boolean expressions;
- Utilizing if / else if structures;
- Creation of simple loops

Instructions:

A. The Pirate class

1. **Make a Pirate class with the following instance variables:**

name	Name of the pirate
parrot	Which parrot belongs to the pirate
doubloons	How many doubloons the pirate has
ships	How many ships the pirate has

2. Create two constructors for pirates
 - i. A constructor with all of the fields
 - ii. A no-argument constructor
3. Create getters and setters for all instance variables.
4. The constructors and the setter for number of ships should correct mistakes from the user by converting negative numbers to positive numbers. In other words, if someone tries to say that a pirate has -5 ships, you should change that value to +5.
5. The no-argument constructor should set the default number of doubloons to 100.
6. Create a method getDangerous() that returns a String that describes how dangerous the pirate is. If the pirate has no ships, he is not dangerous. If the pirate has one or two ships, he is slightly dangerous. If the pirate has more than two ships, he is very dangerous. Use a switch statement when coding getDangerous().
7. Create a method speak() that takes an integer parameter to determine how often the pirate will speak. Inside the method implement a loop. We want our pirate to speak like this:

```
System.out.print("Aaaaargh ");
```

If you pass the speak() method the number 2, the pirate will say "Aaaaargh" two times.

B. The Parrot class

1. **Make a Parrot class with the following instance variables:**

name	Name of the pirate
isHungry	Whether the parrot is hungry or not
canSpeak	Whether the parrot can speak or not
knowsName	Whether the parrot knows its name

2. Create two constructors for parrots
 - i. A constructor with all the fields
 - ii. A one-argument constructor that uses name as the parameter, but creates a parrot that speaks by default
3. Create a method speak () that returns a String. If the parrot does not know how to speak, it will just squawk. If the parrot knows how to speak and knows its name, it will speak its name. If the parrot knows how to speak, but does not know its name, it will just say "I". Talking parrots that are hungry will say they want a cracker; otherwise, they will say they are not hungry.

IOOP: Polly Wants a Cracker

Here are some examples:

Hungry?	Can Speak?	Knows Name?	Example of what a parrot (e.g. Sam, Joe or Harry) says
Yes	Yes	Yes	Sam says, "Sam want a cracker."
No	Yes	No	Joe says, "I not hungry."
Yes	No		Harry says, "Squawk!"

C. The Driver

1. Create the following pirates and parrots. Depending on which constructor you use, you might need to use some setters.

object	Name	Parrot	Doubloons	Ships	Constructor to Use
Pirate	Blackbeard	Polly	200	-5	All-fields constructor
Pirate	Captain Jack Sparrow	Iago		-2	No-argument constructor
Pirate	Cabin Boy Lou	Molly			No-argument constructor
	Name	isHungry	canSpeak	knowsName	
Parrot	Polly	Yes	Yes	Yes	All-fields constructor
Parrot	Iago				One-argument constructor
Parrot	Molly	Yes	No	Yes	All-fields constructor

2. Test the Parrot's speak() method to make sure all combinations work. (You might want to make a "Test" parrot for this.)
3. Prompt the user on which pirate they wish to select. Make sure that case does not matter. Accept either "Captain Jack" or "Jack" for Captain Jack Sparrow.
4. Depending on which pirate is selected, use the methods of the Pirate and Parrot class to display information about the chosen pirate and make your pirate speak. Here is an example of what your output should look like:

```
Polly says, "Polly want a cracker."
Iago says, "I not hungry."
Molly says, "Squawk!"
```

← Examples of testing your speak() method.

```
Choose your favorite pirate (Blackbeard, Captain Jack or Lou)
blackbeard
Blackbeard has 200 doubloons.
He is very dangerous
His parrot says, "Polly want a cracker."
Aaaaargh Aaaaargh Aaaaargh
```

Note that if the user inputs a pirate that does not exist, you should let the user know. Also, in order to print quotation marks, you need to escape that character by using the backslash. (\ ")

Set up your driver so that Blackbeard speaks 3 Aaaaargh's, Captain Jack speaks 1, and Cabin Boy Lou does not speak at all.