Java Fundamentals
2-5: Declare Procedures Project

This project will progress with you throughout the course. After each lesson there will be more to add until it builds into a complete animation that you can upload to YouTube or export as a local animation file.

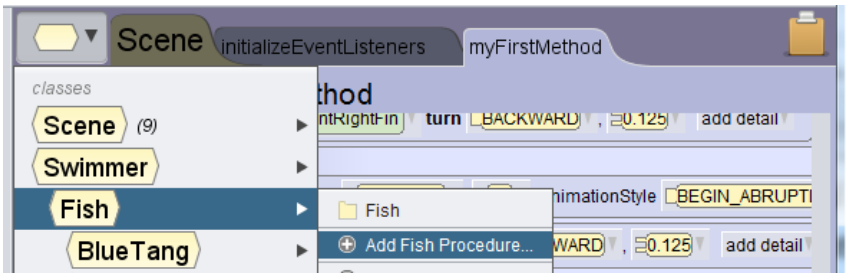
Lesson Objectives:

- Compare and define an animation and a scenario
- Write a storyboard
- Flowchart a storyboard
- Describe inheritance and how traits are passed from superclasses to subclasses
- Describe when to implement procedural abstraction
- Demonstrate how to declare a procedure
- Identify and use procedural abstraction techniques to simplify animation development

Instructions:

1. Open Alice 3 on your computer.
2. Either using the My Projects tab or the File System tab, browse for and open the Fish_4.a3p file.
3. Using the Save As command from the file menu, rename the file to Fish_5.a3p.
4. If you are not already in the code editor use the Edit Code button to go to the code editor.

   You have been coding directly for individual objects within your code. In Alice 3 you can make use of the superclass subclass structure. In your project you have created a code block that allows the Blue Tang fish to shake its head. You can adapt your code to place that at the fish level so that any fish in your project have the ability to shake their heads.
5. In your code remove the say procedure from the do in order statement and place it underneath the control statement.
6. Click on the Classes list button and select FISH and then



7. Name the new procedure shakeHead and click ok.
8. Click on the myFirstMethod tab and drag the left edge of the do in order statement to the clipboard. This causes a move where the code is removed from the code editor and placed on the clipboard.
9. Click on the new shakeHead tab and drag the code from the clipboard into the code editor.
10. When you drag the code in to the code editor the BlueTang references are lost and are turned red. Click on the arrow and change it to "this". This allows any object that can call the shakeHead procedure to use the lines of code.
11. Change the comment to reflect the fact that any fish can use the procedure.
12. Return to the myFirstMethod tab and drag the shakeHead procedure call from the BlueTang Fish into the code editor above the say procedure.
13. Follow the same method to create a procedure at the FISH level called swim. Then move the do in order statement that makes the clown fish swim and turn, into the swim procedure via the clipboard.
14. Add the swim procedure from the Clown fish into the code window in myFirst method above the Blue Tang fish's shakehead procedure.
15. Fish don't sit still in the water so we can create a procedure that simulates the bobbing motion of a fish in the water. In the FISH class create another procedure called bob.
16. In the bob procedure add two move statements that make the fish move up and then down 0.25. Set the animation style to begin and end gently.
17. In myFirstMethod add a bob procedure from the Pajama fish above the swim procedure.
18. Add a do together statement to surround the bob and swim procedure calls so that they are executed together.
19. Add a do together under the say statement and drag a shakeHead procedure from each fish into it.
20. Run and test your program!
21. The text goes off of the screen too quickly so change the duration of it to 2.0
22. Run and test your program!
23. Save your program.
24. Exit Alice 3.