

Lesson 10: Using Loops, Variables, and Strings

Try It: Practice Activities

Objectives

- Create a while loop in a constructor to build a world
- Describe an infinite loop and how to prevent one from occurring
- Use an array to store multiple variables used to create a world
- Create an expression using logic operators
- Describe the scope of a local variable in a method
- Use string variables to store and concatenate strings

Vocabulary

Identify the vocabulary word for each definition below.

	A type of item stored in an array, such as a string or integer, accessed using an index.
	A statement that can execute a section of code multiple times. There are several types of loops in Java programming.
	Symbols that can be used to combine multiple boolean expressions into one boolean expression.
	A position number in the array object that specifies which array element to access.
	An object that holds multiple variables. An index can be used to access the variables.
	A variable declared inside the body of the method to temporarily store values, such as references to objects or integers.
	A loop that causes the code to keep executing. The code does not stop because the end to the code isn't established.

Project

1. Continue the project from Section 3 Lesson 9.
2. Open the Project named FrogFlyL9. From the Scenario Menu, choose "Save as" and

use the name FrogFlyL10. This will keep a copy from Lesson 9 in case there is a need to refer to it later.

3. Compile the Greenfoot Project.
4. Open the FrogWorld Code Editor.
5. Instead of adding one Frog object, use a for loop to add two instances of Frog to the world at random locations.
6. Instead of adding two Fly objects, use a while loop to add two instances of Fly to the world at random locations.
7. Open the Fly Code Editor.
8. Change the code so that when the “b” character is pressed, the image for each Fly is “bee.png,” and when the “f” character is pressed the image for each Fly is “fly.png.”
9. Open the Frog Code Editor.
10. Change the code so that when the “r” character is pressed, each Frog makes a “ribbit” sound. You can record your own sound or import it from an open source sound library.
11. Add code to FrogWorld to create an array of three Frog objects.
12. Add the array of Frogs to the World to a random location.
13. Compile and test the new features.
14. Save your project and exit.

Optional Practice

1. In a scenario, create a while loop that creates 10 new instances each time the world is re-initialized. The instances should react to the “x” keyboard key, and play a sound file. The instances should be placed at coordinates x = 95 and y = 100 in the world.
2. In your scenario, create a logic operator that switches between displaying two different images, depending on whether the “a” or “b” keyboard keys are pressed.
3. For an Actor subclass in your scenario, create a string variable that holds an array object. The array object should have up to 5 sound file names. Create a diagram that illustrates the string variable and a table with the array object and positions.