Programming with Alice

Week 2 Methods and Data

Objectives
• Write methods to add potential behaviors to objects.
• Declare and set the value of variables.
• Use variables in expressions to calculate new results.
• Generate random numbers in a particular range.
• Design methods to accept parameters.

Chapter 2 PowerPoint
Source Code for CH2

2.1 Methods
Cheerleader.a2w
TryThis: 1-3

Methods define the behaviors of an object.
We can create our own “custom” methods to work along with the predefined methods provided for us with each object.
Separate methods for each logical behavior of objects
Get organized! Encapsulate!
2.2 Data and Expressions

Frog.a2w
TryThis: 4-5

Variable = “think algebra”…variable means it can change.
You MUST declare a variable BEFORE you use it. ALWAYS initialize variables at creation.
An object’s properties are managed using variables.
Variable locations in memory hold data: number (integer or floating point), Boolean (true or false), a character string (like a name or a label), any other type of object.
A variable declared in a method is local data….Locals Rule!
A mathematical expression is a combination of operands (data) and operators that produce a numerical result. frog move up (distance * 0.75)... is an example of an expression used to calculate the amount our frong moves up in his/her hop.
Generating Random Numbers

Random Frog.a2w

TryThis: 6-7

random number function in Alice

A function is not called as a separate statement but as part of a larger statement like a method that will use the function’s resulting value.

random number needs to know the range of value sought, and will allow you to specify if your result should be an integer or a floating point number. distance set value to random number minimum = 1 maximum = 2.25 generates a random number to assign to the variable distance.
2.3 Parameters

Jet.a2w
TryThis: 8-11

We can call the circle method with varying speeds. The speed parameter in the circle method makes this possible.

Parameters provide the opportunity to design a method that is general and becomes specific when it is called with a complementary set of parameters.

2.4 More to Explore

- Renaming Objects
- Object as Data
- Quad View
- Duplicating Objects