Discussion 4: Scoping and Mutability

Scoping

1. For each of the following code snippets, write what the Sprite would say after the script executes. If you believe the code produces an error, write “Error.”

a. Assume we create a global variable named global (and no other global variables) and then run the script below. Explanation at this link

b. Assume we create a global variable named Dan and then run the script below.

c. 

d. 

Explanation at this link
Mutability

1. What are the values of \(x\) and \(y\) after the scripts below stop running?

   a. 
      \[
      \begin{align*}
      &\text{set } x \text{ to } 123, \ y \text{ to list } [1, 2, 3] \\
      &\text{set } x \text{ to six, } y \text{ to six}
      \end{align*}
      \]
      x: 123
      y: list [1, 2, 3]
      Explanation at this link

   b. 
      \[
      \begin{align*}
      &\text{set } x \text{ to } 123, \ y \text{ to list } [1, 2, 3] \\
      &\text{add six to } x, \ y
      \end{align*}
      \]
      x: 123
      y: list [1, 2, 3, 6]
      Explanation at this link

   c. 
      \[
      \begin{align*}
      &\text{set } x \text{ to list [1, 2, 3]} \\
      &\text{set } y \text{ to list [a, b, c], } \text{mystery } x, \ y
      \end{align*}
      \]
      x: list [1, 2, 3, 5]
      y: list [a, b, c]
      Explanation at this link

2. Fill in the block copy below so that after the script to the right runs, \(x\) is list [1, 2, 3, 4] and \(y\) is list [1, 2, 3].

   copy of (list):
   
   \[
   \begin{align*}
   &\text{set } x \text{ to list [1, 2, 3]} \\
   &\text{set } y \text{ to copy of } x \\
   &\text{add 4 to } x
   \end{align*}
   \]