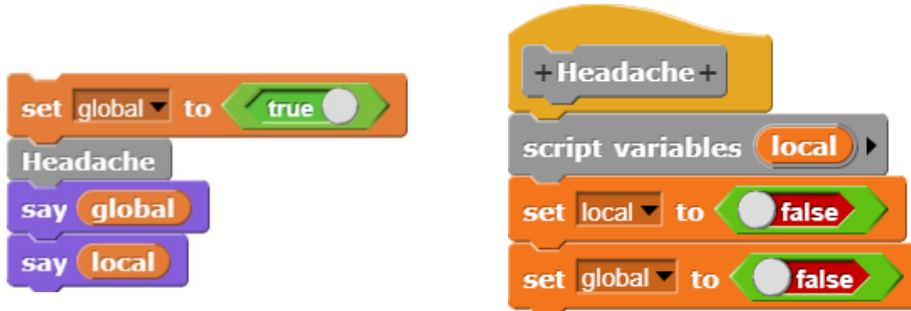


## Discussion 4: Scoping, Mutability, & Algorithmic Complexity (Solutions)

### Scoping Practice

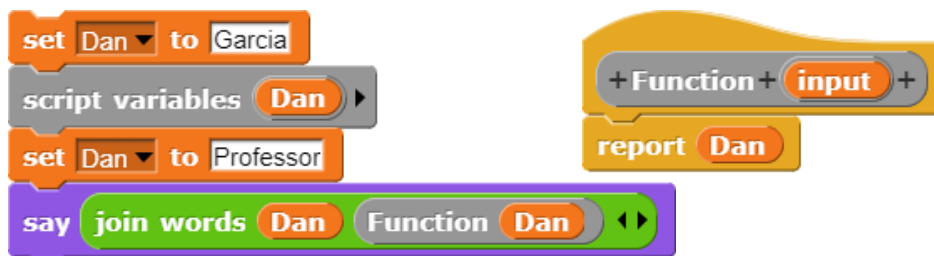
For each of the following code snippets, write what the Sprite would say after the script executes. If you believe the code produces any sort of error message, write "Error." If there are multiple "say" blocks, write the result of each block in a separate box.

- a. Assume we create a global variable named "global" (and no other global variables) and then run the script below.



1. False
2. Error

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



**Professor Garcia**

c.

```
script variables input result
set input to 0
set result to 0
change result by mystery1 input
say result - input

+ mystery1 + input +
change input by 10
report input
```

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### Mutability Practice

What are the values of the script variables x and y after the given script finishes running?

```
script variables x y
set x to 123
set y to list 1 2 3
set x to six
set y to six
```

```
+ set + input + to + six +
set input to 6
```

x: 123

y: [1,2,3]

```
script variables x y
set x to 123
set y to list 1 2 3
add six to x
add six to y
```

```
+ add + six + to + input +
if is input a list?
add 6 to input
else
change input by 6
```

x: 123

y: [1,2,3,6]

## Challenge Problem Mutability (recycled from last week)

Given the following expression, what does NAMES evaluate to?

```
set NUMBERS to list 2 1
set NAMES to list Dan Garcia
for i = 1 to 2
  replace item item i of NUMBERS of NAMES with i
```



## Quest Problem Scoping (straight from your Quest)

```
Make a variable
Delete a variable
global

script variables outer script
set global to G
set outer script to OS
Command global outer script
say join global outer script

Command input1 input2
set global to Gnew
set input1 to I1
set input2 to I2
```

What gets *said* when we run the above script?

Let's trace this: global gets set to G, outer script to OS. The value of these variables are passed to Command, which sets global to Gnew and input1 and input2 to values that don't matter, since all input parameters are local variables and don't affect anything outside. So when it returns, only global has been changed (to Gnew), and GnewOS is said (this solution is straight from Dan's Quest solutions).

**Extra for Practice:**

Up to you! What other questions from the Quest would people like to go over?