

Discussion 4: Scoping and Mutability

Scoping

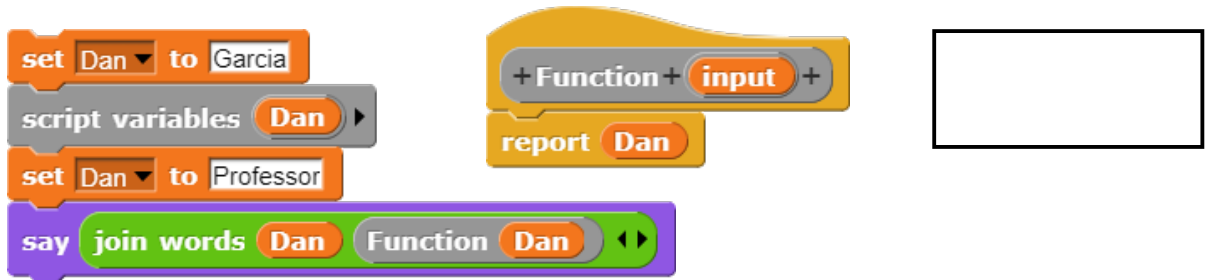
1. For each of the following code snippets, write what the Sprite would say after the script executes. If you believe the code produces an error, write "Error."

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



The script for part a consists of two columns of code blocks. The left column contains: a 'set global to true' block, a 'Headache' block, a 'say global' block, and a 'say local' block. The right column contains: a '+ Headache +' block, a 'script variables local' block, a 'set local to false' block, and a 'set global to false' block. To the right of the code are two empty rectangular boxes for the answer.

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



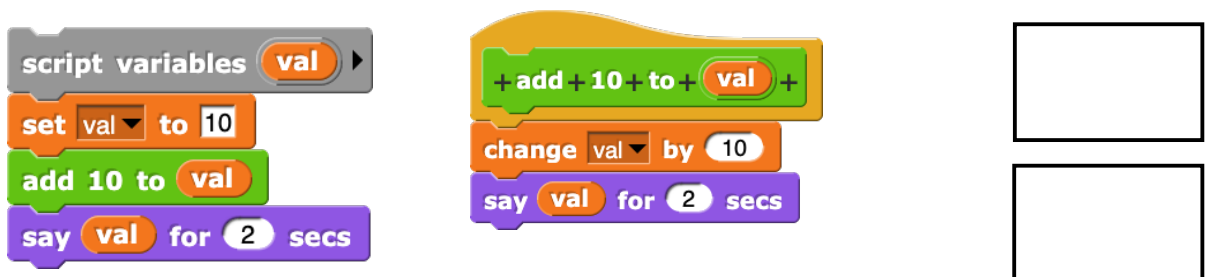
The script for part b consists of two columns of code blocks. The left column contains: a 'set Dan to Garcia' block, a 'script variables Dan' block, a 'set Dan to Professor' block, and a 'say join words Dan Function Dan' block. The right column contains: a '+ Function + input +' block and a 'report Dan' block. To the right of the code is one empty rectangular box for the answer.

c.



The script for part c consists of two columns of code blocks. The left column contains: a 'script variables input result' block, a 'set input to 0' block, a 'set result to 0' block, a 'change result by mystery1 input' block, and a 'say result - input' block. The right column contains: a '+ mystery1 + input +' block, a 'change input by 10' block, and a 'report input' block. To the right of the code is one empty rectangular box for the answer.

d.



The script for part d consists of two columns of code blocks. The left column contains: a 'script variables val' block, a 'set val to 10' block, an 'add 10 to val' block, and a 'say val for 2 secs' block. The right column contains: a '+ add + 10 + to + val +' block, a 'change val by 10' block, and a 'say val for 2 secs' block. To the right of the code are two empty rectangular boxes for the answer.

Mutability

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

a.

```

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: _____

y: _____

b.

```

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: _____

y: _____

c.

```

script variables x y
set x to list 1 2 3
set y to list a b c
mystery x y
    
```

```

+mystery+ y + x +
add 5 to y
set x to list cs10
    
```

x: _____

y: _____

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`.

```

script variables x y
set x to list 1 2 3
set y to copy of x
add 4 to x
    
```

copy of (list):