Functions Activity

Scratch allows you to create custom functions. These can be used to simplify your code and exploit repeating patterns. In this activity, we’re going to create our own functions to solve simple problems.

In particular, notice that:

* For every **function** we create in scratch, we need to define the input and the output
* A **function** helps us hide details from the caller (abstraction)
* A **function** by itself doesn’t do anything, we need a **program** to call the function as well

Assignment:

First, we’re going to experiment with functions. Create a program exactly like the one seen below:

A screenshot of a phone

Description automatically generated

1. Before you run the program, what do you think will happen when the green flag is clicked?
2. Describe what happens when you run the program. Was your prediction correct?
3. If you only created the function, but **didn’t** create the program, what would happen when you clicked the green flag?
4. If you increased the amount by which my variable is changed, what would happen?
5. Rather than do\_something, what would be a better name for the function?
6. Rather than var, what would be a better name for the input of the function?

Now you’re going to create your own functions/programs. Note that, **we are not going to use the backpack for functions**. Instead, leave your functions in the main coding space.

* 1. Create a **function** named “triangle” that takes a size as an input and then creates a triangle of that size. *After* you create the function, create a **program** that uses the new block to make sure it works.
  2. Create a **function** named “square” that takes a size as an input and then creates a square of that size. *After* you create the function, create a **program** that uses the new block to make sure it works.
  3. Create a **function** named “pentagon” that takes a size as an input and then creates a pentagon of that size. *After* you create the function, create a **program** that uses the new block to make sure it works.
  4. Create a **function** named “polygon” that takes a size and a number of sides as inputs and then creates a polygon of that size and shape (hint: look at how the number of sides relate to the degree turn in prior problems). *After* you create the function, create a **program** that uses the new block to make sure it works.
  5. A blue line drawing of a house

     Description automatically generatedCreate a **program** that uses a loop, a variable, and the function from the previous problem to create the following shape:
  6. Create a **function** named “square\_number” that takes a number as an input and then says the square of that number. For example, an input of 5 should result in the cat saying 25. *After* you create the function, **create** a program that uses the new block to make sure it works.
  7. (Bonus) Create a **program** that uses a loop, a variable, and the function from previous problem to say all of the squares of the numbers between one and ten.