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. For example, the function below takes three numbers as input and then prints out their sum. This could be used to simplify a program that is doing a lot of addition.

A screenshot of a computer

Description automatically generated

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 called (abstraction

Assignment:

For each of the following problems, create a function to solve it. Each time you complete a task, **move the code into the “backpack”**, and then start a new piece of code.

* 1. Create a function named “triangle” that takes a size as an input and then creates a triangle of that size. Test it in a program to make sure it works.
  2. Create a function named “square” that takes a size as an input and then creates a pentagon of that size. Test it in a program 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. Test it in a program to make sure it works.
  4. Create a function named “shape” 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). Test it in a program to make sure it works.
  5. Create a program that uses a loop, a variable, and the function from the previous problem to create the following shape:

A blue line drawing of a house

Description automatically generated

* 1. Make a function named “house” that takes a size as an input and then draws a simple house of that size. Test it in a program to make sure it works. For example:

A drawing of a house

Description automatically generated

* 1. Create a program that draws a triangle AND at each corner of the triangle, draws a house (using the function from the previous problem).
  2. Make three (or more) functions that make a sprite “dance” in different ways (e.g., jump, twirl, slide left). Create a program that combines these “dance move” functions to create a dance routine set to music.
  3. Create a function named “square\_number” that takes a number as an input and then prints out the square of that number. For example, an input of 5 should result in the number 25 being printed. Test it in a program to make sure it works.
  4. Create a program that uses a loop, a variable, and the function from previous problem to print all of the squares of the numbers between one and ten.
  5. (Bonus) Create a function named “prime” that takes a number as an input and then prints out “YYY is a Prime”.
  6. (Bonus) Create a program that uses a loop, a variable, and the function from the previous problem to print all of the numbers that are primes between one and one hundred.