

CSCI 127: Joy and Beauty of Data

Lecture 4: Python Functions

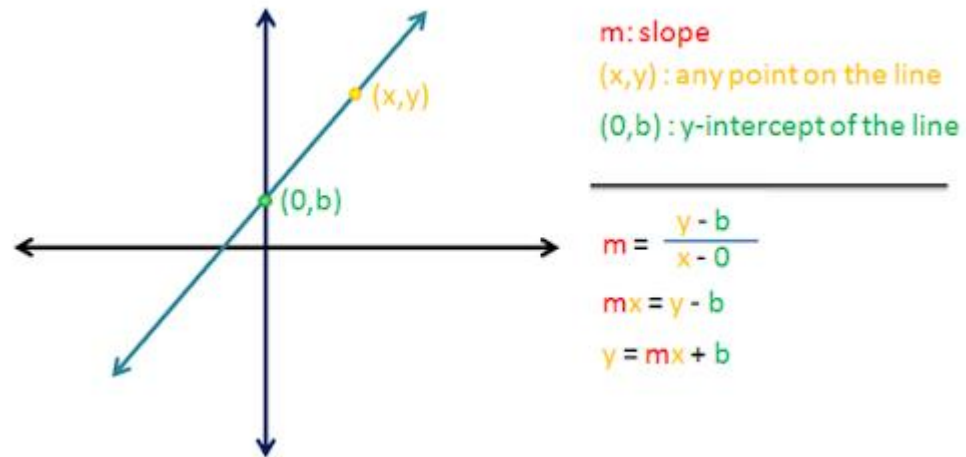
Reese Pearsall
Summer 2021

<https://reese.github.io/classes/summer2021/127/main.html>

What is a function?

You might think of something like a math function, i.e. something that has some input and output value

$$y = mx + b$$



quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

What is a function (in Python)?

A function is a block of **organized, reusable** code that is used to perform a single, related task

A function can take in some set of inputs (a Fahrenheit temperature, name, etc)

and can output some value (for example, a Celsius temperature)

In some cases, a function doesn't need to have an input or output

What is a function (in Python)?

Let's write a program to that asks the user for number of quarters, dimes, nickels, and pennies. The program should then output the total value of change

Function basics

Name of function

Input parameters / arguments

```
def sum_change(quarters,dimes,nickels,pennies):
```

Function body

```
    answer = (quarters * .25) + (dimes * .10) + (nickels * .05) + (pennies * .01)
```

Return value (output)

```
    return answer
```

Calling our function

```
print( sum_change(4,3,2,2) )
```

Values of input parameters:
quarters = 4
dimes = 3
nickels = 2
pennies = 2

Function basics

Fruitful function – A function that returns a value

Non-fruitful function – A function that does not return a value

Functions Practice

Birthday song- Write a function that takes in a name and prints out the happy birthday song using that name

Test average- Write a function that takes in 3 exam scores and returns the average of the exam scores