

CSCI 127: Joy and Beauty of Data

Lecture 4: Python Functions

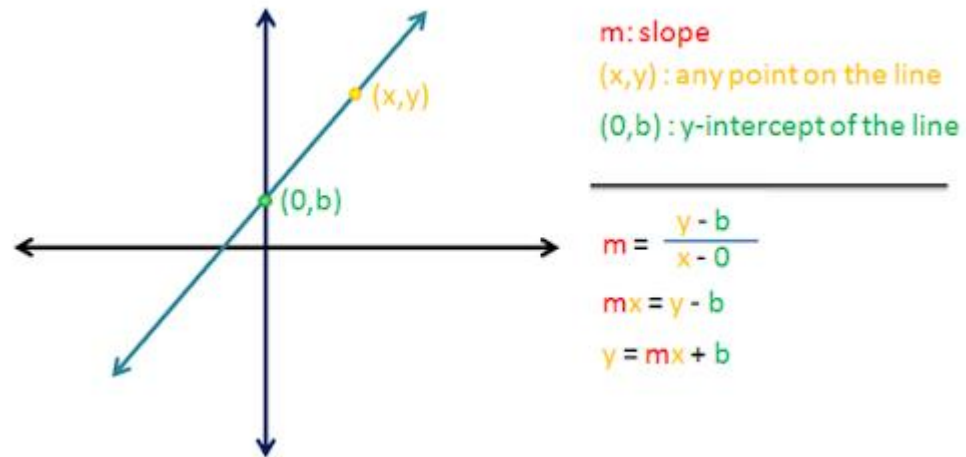
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<https://reese.github.io/classes/summer2021/127/main.html>

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

Announcements

Lab 2 due MONDAY at 11:59 PM

-> After today, you will be able to finish it

We have a Discord server!!

-> The invite link can be found near the top of course website

-> Ask questions, get help, chat with other students and Reese

Program 1 due Sunday 5/23 at 11:59 PM

-> You can look at it and start it now, but you will need Monday's content in order to finish it

We are skipping over a few chapter in the textbook

Today

More function examples, selection



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

Write a function that will calculate the cost per square inch of a circular pizza, given its diameter (inches) and price. You should then call the function a few different times with different input values

| STEP 1: CONFIRM YOUR SELECTIONS | | QUANTITY | PRICE |
|---|---|---|---------|
|  | Large (14\") Hand Tossed Pizza Cheese 290 Calories / 1 slice (1/8 of pizza) | 1  remove edit | \$14.99 |
|  | Medium (12\") Hand Tossed Pizza Cheese 200 Calories / 1 slice (1/8 of pizza) | 1  remove edit | \$12.49 |
| Make this a Large (14\") for only \$2.50 more?  | | | |
|  | Small (10\") Hand Tossed Pizza Cheese 410 Calories / 2 slices (1/3 of pizza) | 1  remove edit | \$9.99 |

Functions Practice

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

Fantasy Football Points- In fantasy football, quarterbacks score

- 1 fantasy point for every 25 passing yards
- 4 points for throwing a touchdown
- -2 points for throwing an interception

Write a function that will take in the name of player, # of passing yards, # of touchdowns, and # of interceptions. The program should then calculate and print out the number of fantasy football points scored.