

Lesson 3

Python: Functions & Methods

Name: _____ Date: _____

Temperature Program: Script

```
##Functions Engage
##Python Lesson #3

##Title:      Temperature Program
##Description: Python program that converts Fahrenheit
##            tempertures to Celsius and vice versa

fahrenheit = float(input("Enter a temperature in degrees Fahrenheit.\n"))
celsius = round(((5*(fahrenheit - 32)/9)),2)

print(str(fahrenheit) + " degrees Fahrenheit converts to " + str(celsius) + " degrees Celsius.\n")

celsius2 = float(input("Enter a temperature in degrees Celsius.\n"))
fahrenheit2 = round(((9/5)*celsius2 + 32),2)

print(str(celsius2) + " degrees Celsius converts to " + str(fahrenheit2) + " degrees Fahrenheit.\n")
```

Name: _____ Date: _____

Temperature Program

- 1.) What does the input() function do?
- 2.) What does the float() function do?
- 3.) What does the print() function do?
- 4.) What does the round(,2) function do?

Bonus! What does the str() function do? Why do we need it?

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Temperature Program

- 1.) What does the input() function do?
- 2.) What does the float() function do?
- 3.) What does the print() function do?
- 4.) What does the round(,2) function do?

Bonus! What does the str() function do? Why do we need it?

Name: _____ Date: _____

Tip and Tax Functions: Script

```
##Functions Explore
##Python Lesson #3

##Title:      Tax and Tip
##Description: Python program that provides the bill
##            total after both tax and tip are
##            calculated.

##Function to calculate the bill total with 8% tax

def tax(bill):
    bill *= 1.08
    print("The bill's total with 8% tax is: $ %.2f") %bill
    return bill

##Function to calculate the bill total with 20% tip

def tip(bill):
    bill *= 1.20
    print("The bill's total with 20% tip is: $ %.2f") %bill
    return bill

mealCost = float(input("How much did your meal cost?\n"))

mealWithTax = tax(mealCost)
mealWithTip = tip(mealWithTax)
```

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Tip and Tax Functions: Part 01: Debugging

Directions: Copy and Paste or upload the “Tip and Tax Functions” Python file into the script mode of IDLE. Work with a partner and use the code to answer all the following questions.

1.) When prompted with the error:

Type Error: unsupported operand type(s) for %: 'None Type' and 'float'

a.) What line(s) of code are throwing that error?

b.) How did you resolve this error? Provide an explanation and the valid code changes.

2.) When prompted with the error:

Value Error: unsupported format character 't' (0x74) at index 25

a.) What line(s) of code are throwing that error?

b.) How did you resolve this error? Provide an explanation and the valid code changes.

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Tip and Tax Functions: Part 02: Evaluating

1.) What does each line of the following function do? Define and describe all key concepts.

```
def tax(bill):  
    bill *= 1.08  
    print("The bill's total with 8" + '%' + " tax is: $ %.2f" %bill)  
    return bill
```

2.) Why do we use 1.08 for the tax but not 0.08?

3.) What does each line of the following variable assignments do?

```
mealCost = float(input("How much did your meal cost?\n"))  
mealWithTax = tax(mealCost)  
mealWithTip = tip(mealWithTax)
```

Bonus! What would happen if the “return bill” statements were not there?

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Investigation and Programming

Directions:

Your role as an assistant computer programmer means that you must learn to be proficient in many types of programming and coding. For this assignment you will have to learn how to use a high-level programming tool known as Python. Because you are in training, you will be working on several modules and continue to build upon your skills. You will work on various skills in Python and submit them to the head computer programmer to make sure your codes are both sufficient and efficient. For this task, you will learn and utilize functions and modules in Python by designing your own program.

Prompt:

JP Morgan and Chase is an investment banking company. The employers enjoy celebrating their employees' birthdays, but no one likes to sing "Happy Birthday!" JP Morgan and Chase hired you to write a Python code that can be programmed into their stereo system so the "Happy Birthday!" song can be played during the celebrations. They provided the following rules:

1. One user defined function must print the "Happy Birthday!" song that takes the employee's name as an argument.
2. One user defined function that asks the user for the name of the employee and that calls the birthday song function from number 1.

Bonus!

As an investment banking company, JP Morgan and Chase computes compounding interest for their clients. They hired you to design a Python program to handle these computations more easily. They provided the following rules:

1. One user defined function must take four arguments: principle, interest rate, compounding period, and number of years. This function must complete the appropriate computation with those variables.
2. One user defined function that asks the user for the necessary variables for number 1 and that calls the investment balance function.
3. To verify that your investment balance function is computing properly, use the following example:
 - a. If a principle amount of \$5,000 is deposited into a savings account at an interest rate of 5% and that is compounded monthly, what is the value of the investment after 10 years?

Answer: $A = 5000(1 + (0.05/12))^{(12*10)} = \$8,235.05$

Here are some helpful tips for you:

1. Compounding Interest formula: $A = P(1 + \frac{r}{n})^{nt}$
2. Math Module into script mode: `import math`
3. Exponents: `math.pow(x,y)` (where x is the base and y is the power)