

Homework 1 - Functions and Expressions

CS 1301 - Intro to Computing - Fall 2020

Important

- Due Date: **Tuesday, August 25th, 11:59 PM.**
- This is an individual assignment. High-level collaboration is encouraged, **but your submission must be uniquely yours.**
- Resources:
 - TA Helpdesk
 - Email TA's or use class Piazza
 - [How to Think Like a Computer Scientist](#)
 - [CS 1301 YouTube Channel](#)
- Comment out or delete all function calls. Only import statements, global variables, and comments are okay to be outside of your functions.
- **Read the entire document before starting this assignment.**

The goal of this homework is for you to practice and understand how to write functions and evaluate expressions. The homework will consist of 5 functions for you to implement. You have been given `HW01.py` skeleton file to fill out. However, below you will find more detailed information to complete your assignment. Read it thoroughly before you begin.

Hidden Test Cases: In an effort to encourage debugging and writing robust code, we will be including hidden test cases on Gradescope for some functions. You will not be able to see the input or output to these cases. Below is an example output from a failed hidden test case:

```
Test failed: False is not true
```

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Helpful Information To Know

String Formatting

A concept that will be very helpful for this homework is string formatting. String formatting allows you to manipulate strings using variables so that string values can change based on whatever information is stored in the variables. To explore this concept, let's look at an example where a user inputs a name and age, and the code prints out the corresponding information:

```
name = input("What is your name?")
age = input("How old are you?")
print("Your name is {} and you are {} years old!".format(name, age))
```

Anywhere in a string, you can put `{}` to indicate a placeholder for a variable. After the end quotation marks of the string, you write `.format()`, and inside the parentheses will be the variables that you want to include. The variables inside the parentheses must be in the order that you want them to be included in the string.

Rounding Numbers

Python has a built-in function that allows you to round numbers. For example:

```
>>> rounded_number = round(3.1415926, 4)
>>> print(rounded_number)
3.1416
```

Inside the parentheses of the `round()` function, put the number you want to round, followed by a comma and the number of decimal places you want to round the number to.

Listen

Function Name: listen()

Parameters: N/A

Returns: None

Description: During your trip down to Georgia Tech, you listened to a lot of songs and maybe some podcasts. Songs are about 3 minutes long and podcasts are typically 25 minutes. Write a function that asks the user how many songs and podcasts they've listened to, and print a response with how much time they spent listening to Spotify in hours and minutes. **You may assume all inputs will be integers.**

```
>>> listen()
How many songs did you listen to? 15
How many podcasts did you listen to? 8
By listening to 15 songs and 8 podcasts, you have spent 4 hours and 5 minutes
on Spotify.
```

```
>>> listen()
How many songs did you listen to? 9
How many podcasts did you listen to? 1
By listening to 9 songs and 1 podcasts, you have spent 0 hours and 52 minutes
on Spotify.
```

Domino's Time

Function Name: dominosTime()

Parameters: N/A

Returns: None

Description: During the summer, you ordered a lot of food from Domino's. Pizzas are \$12, an order of pasta is \$6, and chicken wings are \$8. Write a function that asks the user how many of each food item they would like, and then print a response telling them what their order total will be. **The order total should be an integer.**

```
>>> dominosTime()
How many pizzas do you want? 3
How many orders of pasta do you want? 2
How many orders of chicken wings do you want? 2
By ordering 3 pizzas, 2 orders of pasta, and 2 orders of chicken wings, your
order total comes to $64.
```

```
>>> dominosTime()
How many pizzas do you want? 14
How many orders of pasta do you want? 5
How many orders of chicken wings do you want? 8
By ordering 14 pizzas, 5 orders of pasta, and 8 orders of chicken wings, your
order total comes to $262.
```

Tip and Split

Function Name: tipAndSplit()

Parameters: N/A

Returns: None

Description: You are hanging out with your friends at home and decide to order some food. The delivery man was really nice, and you want to tip him. Additionally, you want to split the total between your friends after adding the tip to the total. Write a function that takes as an input the order total, the percentage you want to tip the driver, and the number of friends that are splitting the food. Print the tip and how much each friend must pay. **All inputs will be positive integers. Round all outputs to 2 decimal places.**

```
>>> tipAndSplit()
What was the order total? 150
What percentage would you like to tip? 20
How many people are splitting the order? 3
The driver got a tip of $30.0. Each person paid $60.0.
```

```
>>> tipAndSplit()
What was the order total? 25
What percentage would you like to tip? 18
How many people are splitting the order? 1
The driver got a tip of $4.5. Each person paid $29.5.
```

YouTuber

Function Name: youtuber()

Parameters: N/A

Returns: None

Description: You are quarantined and you are bored, so you decide to become a YouTuber. You become successful, and are getting paid from ads. You decide to set up a function that

calculates how much money you have made. Write a function that takes as an input the number of videos you have made, how many views each video has, and the amount you are getting paid per view. We assume that every video has the same amount of views. Print how much money you have earned. **Round your answer to 2 decimal places.**

```
>>> youtuber()
How many videos have you made? 4
How much do you get paid per view? 0.01
How many views do your videos have? 100000
You have made $4000.0 by making YouTube videos!
```

```
>>> youtuber()
How many videos have you made? 22
How much do you get paid per view? 0.01
How many views do your videos have? 1500000
You have made $330000.0 by making YouTube videos!
```

Bath Bomb

Function Name: bathBomb()

Parameters: N/A

Returns: None

Description: In order to relax before your classes pick up, you decided to take a bath. Before dropping the bath bomb, you decided to measure the volume of it.

Write a function that asks the user what the radius of the bath bomb is, and then calculate the volume of the sphere with the given dimensions. **The radius can be a float. Round your answer to 2 decimal points.**

Note: Use 3.14 as the value for pi.

Note: The volume of a sphere is $V = (4/3)(\pi)(r^3)$.

```
>>> bathBomb()
What is the radius of the bath bomb? 3
The volume of a bath bomb with radius 3.0 is 113.04.
```

```
>>> bathBomb()
What is the radius of the bath bomb? 7
The volume of a bath bomb with radius 7.0 is 1436.03.
```

Grading Rubric

Function	Points
listen()	20
dominosTime()	20
tipAndSplit()	20
youtuber()	20
bathBomb()	20
Total	100

Provided

The `HW01.py` skeleton file has been provided to you. This is the file you will edit and implement. All instructions for what the functions should do are in this skeleton and this document.

Submission Process

For this homework, we will be using Gradescope for submissions and automatic grading. When you submit your `HW01.py` file to the appropriate assignment on Gradescope, the auto-grader will run automatically. The grade you see on Gradescope will be the grade you get, unless your grading TA sees signs of you trying to defeat the system in your code. You can re-submit this assignment an unlimited number of times until the deadline; just click the “Re-submit” button at the lower right-hand corner of Gradescope. You do not need to submit your `HW01.py` on Canvas.