

Homework 01 - Functions & Expressions

CS 1301 - Intro to Computing - Fall 2022

Important

- Due Date: **Tuesday, August 30th, 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 a [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.

Taste of Tech Square

Function Name: tasteOfTech()

Parameters: N/A

Returns: None

Description: There are so many restaurants for you to try at this year's Taste of Tech Square. The Student Government Association (SGA) has announced that you can earn Dodgecoins for every dollar you spend at the restaurants. Since you're new to Georgia Tech and you'd like to earn some Dodgecoins, you decide you'll try out as many restaurants as possible. Write a function that asks the user for the total amount of money in USD they spent at three restaurants: Tin Drum, Waffle House and Buffalo Wild Wings. This function should also ask the user for their name. Then, print their total earnings in DOGE.

Note: 1 USD = 14.57 DOGE

Round all outputs to two decimal places.

```
>>> tasteOfTech()
What is your first name? Josh
How much did you spend at Tin Drum? 23.50
How much did you spend at Waffle House? 12.00
How much did you spend at Buffalo Wild Wings? 51.20
Congratulations Josh! You spent $86.7 in total and earned 1263.22 DOGE.
```

```
>>> tasteOfTech()
What is your first name? Daisy
How much did you spend at Tin Drum? 27
How much did you spend at Waffle House? 0
How much did you spend at Buffalo Wild Wings? 23
Congratulations Daisy! You spent $50.0 in total and earned 728.5 DOGE.
```

Shopping Money

Function Name: shoppingMoney()

Parameters: N/A

Returns: None

Description: You are a heavy spender who loves to go shopping. However, you are also a college student who doesn't earn that much money, so you want to give yourself a budget for each month. From your monthly income, you want to keep 60% of it for your savings account, but you have to pay for some of your food and housing expenses first. If housing costs \$700 a month and you spend \$80 on food expenses every week, write a function that asks the user how much their monthly income is and prints out how much money the user can save, and have left to spare to do some extra shopping.

Note: You may assume that all inputs will be positive integers.

Round all outputs to two decimal places.

```
>>> shoppingMoney()  
How much is your monthly income? 1200  
You can save $108.0 and spend the remaining $72.0 on anything this month.
```

```
>>> shoppingMoney()  
How much is your monthly income? 1800  
You can save $468.0 and spend the remaining $312.0 on anything this month.
```

House Party at Bobby Dodd

Function Name: houseParty()

Parameters: N/A

Returns: None

Description: You and your friends are organising a house party at Bobby Dodd this weekend and you need to buy some finger foods. You have narrowed the list down to some very important snacks: chicken nuggets, onion rings, donuts and cookies. Now that you have narrowed your choices, you need to get an estimate of the number of snacks to buy for the party. Write a function that asks the user for an estimate of how many snacks each person would eat and the number of expected guests. Then, print the total number of snacks you need to buy for the house party.

All inputs will be integers.

```
>>> houseParty()  
How many chicken nuggets will each guest eat? 3
```

```
How many onion rings will each guest eat? 3
How many donuts will each guest eat? 1
How many cookies will each guest eat? 3
How many guests are you expecting at the party? 100
You need to buy 300 chicken nuggets, 300 onion rings, 100 donuts and 300
cookies for 100 guests.
```

```
>>> houseParty()
How many chicken nuggets will each guest eat? 5
How many onion rings will each guest eat? 2
How many donuts will each guest eat? 3
How many cookies will each guest eat? 7
How many guests are you expecting at the party? 50
You need to buy 250 chicken nuggets, 100 onion rings, 150 donuts and 350
cookies for 50 guests.
```

Spare Time

Function Name: spareTime()

Parameters: N/A

Returns: None

Description: This is your first semester at Tech and you want to make sure you can balance both your academic and social life. For each credit you take, you are recommended to study 3 hours outside of lecture hours per week. Assuming you have 16 hours in a day that you can use, write a function that asks the user how many credits they're taking and prints out how much spare time they have **per day** by specifying the hours and minutes. In addition to the extra 3 hours per credit recommended, you may assume that each credit is equivalent to 1 lecture hour.

Note: Round the minutes to one decimal place.

All inputs will be positive integers.

```
>>> spareTime()
How many credits are you taking? 12
You have 9 hours and 8.6 minutes per day to spare for other activities.
```

```
>>> spareTime()
How many credits are you taking? 16
You have 6 hours and 51.4 minutes per day to spare for other activities.
```

Rats Night

Function Name: ratsNight()

Parameters: N/A

Returns: None

Description: You and your friends have decided to check out Rats Night at the Georgia Tech Library. Rats Night is an event filled with fun activities such as video games, trivia, and arts/crafts. Each activity has a fixed time slot that you can book. However, you can book multiple time slots for an activity. Each video game time slot is 30 minutes, trivia time slot is 10 minutes and arts/crafts time slot is 45 minutes. Write a function that asks the user how many slots they would like to book for each activity. Then, print how long (in hours and minutes) they will spend at Rats Night.

All inputs will be integers.

```
>>> ratsNight()
How many slots would you like to book for video games? 2
How many slots would you like to book for trivia time? 3
How many slots would you like to book for arts/crafts? 5
You will spend 5 hours and 15 minutes at Rats Night.
```

```
>>> ratsNight()
How many slots would you like to book for video games? 6
How many slots would you like to book for trivia time? 1
How many slots would you like to book for arts/crafts? 1
You will spend 3 hours and 55 minutes at Rats Night.
```

Grading Rubric

Function	Points
tasteOfTech()	20
shoppingMoney()	20
hourseParty()	20
spareTime()	20
ratsNight()	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 autograder 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 “Resubmit” button at the lower right-hand corner of Gradescope. You do not need to submit your `HW01.py` on Canvas.