

CIS 122 Summer 2015
Project 5: Testing, Debugging and Random

Due: Thursday 6th August 2015 5:00 PM

Goals:

By the end of this assignment you should be able to:

1. Debug and Test Code
2. Write programs using random.

Getting started: This homework uses the editor window (open Idle, then go to the menu and choose File>New File (may say "New Window" in some versions), a shortcut is ctrl+N on Windows, probably command+N on Macs.

Add comments to indicate the start of a problem using the # sign. Example: #Problem 1 The # sign tells Python to ignore everything after it.

Project Instructions:

Test Cases: Test cases are particular inputs that reveal the working logic of the program. Show inputs that would test every branch in your program.

Part 1: Debugging project5a.py

i)The following function is broken.The docstring describes what it is supposed to do.

```
def t_triangle(n):
```

```
    """
```

```
    (int) ->None
```

```
    Prints a right triangle with n lines, where the first line prints 1 'T' and the last line prints n 'T's. If n <= 0, do not print anything. None value is returned.
```

```
    For example,
```

```
    >>>t_triangle(6)
```

```
    T
    TT
    TTT
    TTTT
    TTTTT
    TTTTTT
    """
```

```
        ct = 1
```

```
        while ct < n:
```

```
            print('T' * ct)
```

```
            return #None
```

a.)Generate 5 examples to test t_triangle. [5 points]

b) Fix the bug(s) in the current version of t_triangle. Comment any code you change [5 points]

ii) The following function is broken. fix the code so it works.

10 points

Write comments where you make changes

```
def find_min_and_max(values):
```

```
    """(string)-> None
```

```
    finds the minimum and maximum digits in a non-empty string of integers and prints them.
```

```
    >>> find_min_and_max('45312')
```

```
    The minimum is 1.
```

```
    The maximum is 5.
```

```
    """
```

```
        min = 0
```

```
        max = 0
```

```
        for value in values:
```

```
            if value > max:
```

```
                max = value
```

```
            if value < min:
```

```
                min = value
```

```
        print('The maximum value is ' + max + '.')
```

```
        print('The minimum value is ' + min + '.')
```

iii) Another programmer was supposed to write a function that will average a bunch of survey values together while ignoring zeros. Unfortunately their code doesn't work and you've been tasked with fixing it. fix the code so it works.

10 points

```
def my_average(values):
```

```
    """(string)->float
```

```
    returns average of the digits in the input string except for zeroes which are ignored.
```

```
    >>> my_average('23')
```

```
    2.5
```

```
    >>> my_average('203')
```

```
    2.5
```

```
    """
```

```
        count = 0
```

```
        total = 0
```

```
        for value in values:
```

```
if value != '0':
    total += int(value)
    count += 1
avg = total/count
return avg
```

Part 2: Random project 5b.py

i) Using turtle(remember week2?), loops and random, design and implement a turtle function to simulate a random walk. Sometimes they create very nice patterns

Note: The aim isn't to have multiple turtles, it is write a program/function to simulate a random walk.

XC for getting multiple turtles

[10 points]



XC: upto 10 points Is there any other way you could combine random, loops and turtle? Please elucidate on what you make.

ii) **Password generator:**

Write a program that would help a user generate a 'random' password. Ask the user to input the Day and month they were born (eg. 1-30, Jan-Dec) and the name of their first pet. Using choice create a password that is 11 characters long. The generator follows the following formula

password= [3 random letters from the name]
+[3 random letters from pet's name]
+[3 random letters from birthday month]+ birthday date.

If you would like to take the month and date separately for the birthday it wouldn't be considered incorrect.

Usage:

```
>>>random_password()
```

```
Enter your name:Gautam
```

```
Enter your birthday:1 july
```

```
Enter the name of your first pet:Tuffy
```

```
Congrats Gautam your random generated 10 character password is aaGfTfyyy
```

```
>>>random_password()
```

```
Enter your name:Mitch
```

```
Enter your birthday:2 February
```

```
Enter the name of your first pet:lala
```

```
Congrats Mitch your random generated 10 character password is ihMllayr2
```

XC +5: Make this a looping program to keep generating passwords. Keep track of the number of passwords generated.

+2 :Initialize the seed using random.seed(seed), what do you observe?