

CSE 231 Spring 2010

Programming Project 3

This assignment is worth 30 points and must be **completed and turned in before 11:59 on Monday, 02 / 01/ 2010**

Assignment Overview

This assignment will give you more experience on the use of loops

In this project, we are going to compute the number of times a given digit D appears in a given number N . For example, the number of times 5 appears in 1550 is 2. The number of times 0 appears in 1550 is 1. The number of times 3 appears in 155 is 0. Etc.

Task

Your task is to implement the following the algorithm.

- 1- initialize a counter to 0
- 2- decompose the number N into its corresponding digits by calculating quotients and remainders of dividing it by 10
- 3- increment the counter each time the digit D appears

Example:

Given the number $N = 1550$ and the digit $D = 5$:

Calculated	
Digit	Counter
0	0
5	1
5	2
1	2

Project Description / Specification

1. Prompt the user for the given number and the given digit.
2. The program should have error checking to make sure the user inputs are valid. For example, if a user gives non-integer inputs, notify the user that the inputs are incorrect and prompt again.
4. Decompose the number in a loop and increment the counter within the loop as described in the example above.

Deliverables

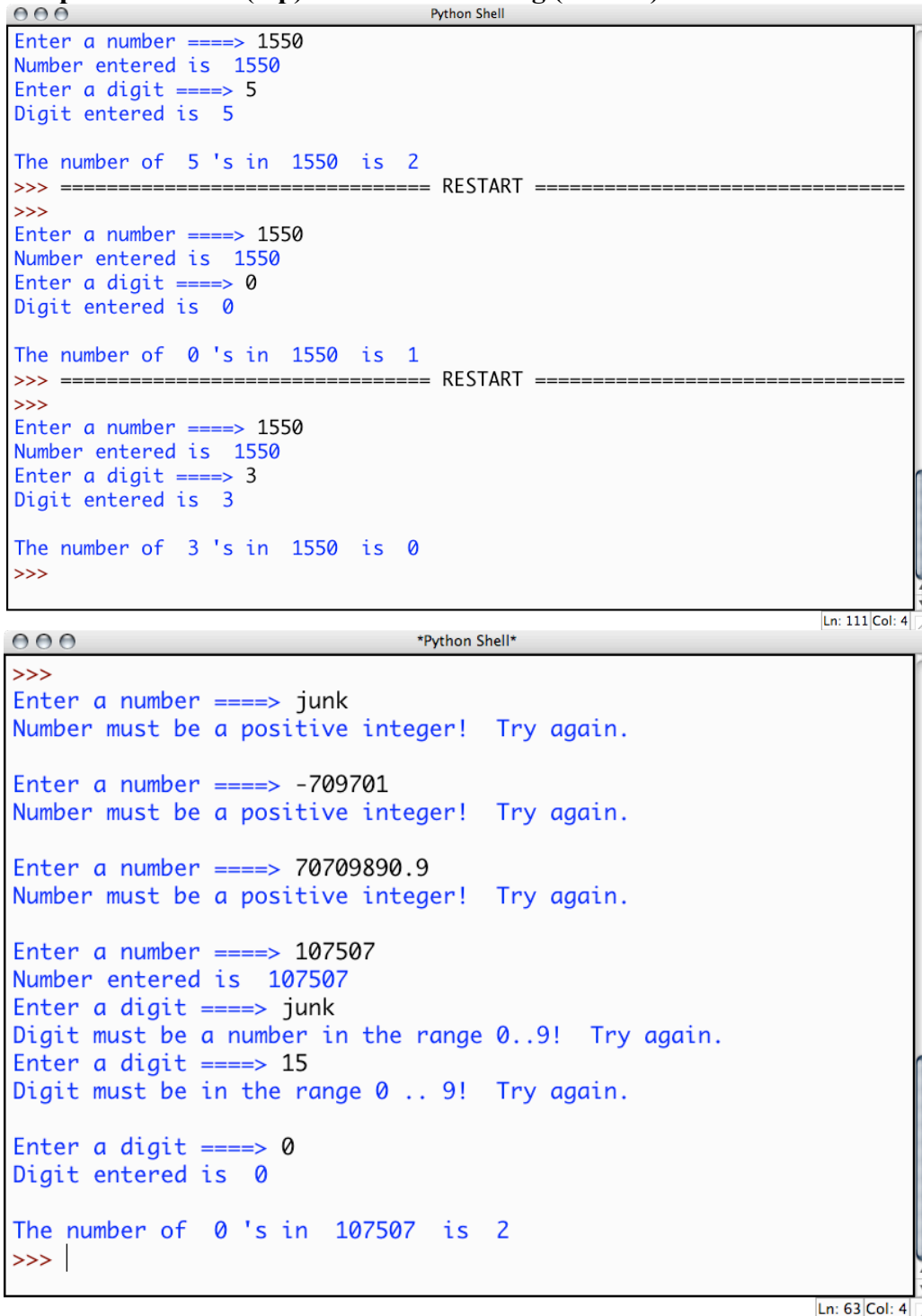
Proj03.py -- your source code solution (remember to include your section, the date, project number and comments).

1. Please be sure to use the specified file name, i.e. "**proj03.py**"
2. Save a copy of your file in your CS account disk space (H drive on CS computers).
3. Electronically submit a copy of the file.

Helpful hint

To check if a string consists of digits only, you can use the “isdigit” method of the “str” type. Test out this method by assigning different string values to a variable, say “A”, and then calling the “digits” method on this variable, as in “A.isdigit()”. Type “help(str.isdigit)” to find more information.

An example interaction (top) and error handling (bottom)



The image shows two screenshots of a Python Shell window. The top screenshot shows a program that prompts the user to enter a number and a digit, then counts the occurrences of the digit in the number. The bottom screenshot shows the same program with error handling, displaying messages like "Number must be a positive integer! Try again." and "Digit must be a number in the range 0..9! Try again." when the user enters invalid input.

```
Python Shell

Enter a number ==> 1550
Number entered is 1550
Enter a digit ==> 5
Digit entered is 5

The number of 5 's in 1550 is 2
>>> ===== RESTART =====
>>>
Enter a number ==> 1550
Number entered is 1550
Enter a digit ==> 0
Digit entered is 0

The number of 0 's in 1550 is 1
>>> ===== RESTART =====
>>>
Enter a number ==> 1550
Number entered is 1550
Enter a digit ==> 3
Digit entered is 3

The number of 3 's in 1550 is 0
>>>

Ln: 111|Col: 4

*Python Shell*

>>>
Enter a number ==> junk
Number must be a positive integer! Try again.

Enter a number ==> -709701
Number must be a positive integer! Try again.

Enter a number ==> 70709890.9
Number must be a positive integer! Try again.

Enter a number ==> 107507
Number entered is 107507
Enter a digit ==> junk
Digit must be a number in the range 0..9! Try again.
Enter a digit ==> 15
Digit must be in the range 0 .. 9! Try again.

Enter a digit ==> 0
Digit entered is 0

The number of 0 's in 107507 is 2
>>> |

Ln: 63|Col: 4
```