Lab 4 – ASCII Alphabet and Translator

Goals

- For loops
- String processing and manipulation
- ASCII conversion

Setup

- Create a new PyCharm file in your desired directory
- When you name the code, use the following naming convention
  `ITP115_l#_lastname_firstname`
  (replace # with this lab number)
- Your new file must begin with comments in the following format (replace the name and email with your actual information):

```
# Name
# ITP 115, Spring 2016
# Lab practical L^ (replace ^ with this lab number)
# USC email
```

Background

- Internally, computers store all characters as numbers.
- The ASCII (American Standard Code for Information Interchange) code is a standard for representing all characters (including digits and symbols).
- Sequential letters have consecutive numbers.
  - For example:
    ASCII code for "A" is 65
    ASCII code for "B" is 66

    ASCII code for "a" is 97
    ASCII code for "b" is 98
- Python has two functions for translating ASCII code:
  - **`ord(`*`letter`*`)`**
    This function takes a string of one letter, and returns the ASCII integer code as and integer. For example, **`print(ord("b"))`** will display **`98`**
  - **`chr(`*`num`*`)`**
    This function takes an integer, and returns the string of the letter. For example, **`print(chr(98))`** will display **`"b"`**

Requirements

Your program must perform the following:

- Write a program that asks the user if they would like to view the ASCII code for the alphabet or if they would like to translate a word into its ASCII code.
- **ASCII Alphabet Requirements:**
  - Ask the user if they would like to view the ASCII code for the either the uppercase or lowercase alphabet.
  - The program will reject invalid input and accept only "**U**" or "**L**" from the user.
  - Your program must generate the alphabet automatically—you may not simple call a print statement that has the alphabet store ahead of time
  - You must use a **for loop** with the **range** command to iterate through the alphabet (cycle through each letter).
  - Hint: recall that the range command takes in 3 numbers as input (start, end, increment).
- **ASCII Translator Requirements:**
  - Ask the user for a word that they would like to translate.
  - Using a for loop, translate the word letter by letter into its ASCII code.

Sample Output

Example 1:

```
Would you like to:
a) See the ASCII code for the alphabet
b) Translate a word into its ASCII code
Select a or b: a

Do you want to see the alphabet in upper (u) or lowercase (l)? q
**You have entered an invalid choice. Please try again.

Do you want to see the alphabet in upper (u) or lowercase (l)? r
**You have entered an invalid choice. Please try again.

Do you want to see the alphabet in upper (u) or lowercase (l)? U
65 A
66 B
```

```
… (your program should display each letter, not dots)
89 Y
90 Z
```

Example 2:

```
Would you like to:
a) See the ASCII code for the alphabet
b) Translate a word into its ASCII code
Select a or b: A

Do you want to see the alphabet in upper (u) or lowercase (l)? l
97 a
98 b
… (your program should display each letter, not dots)
121 y
122 z
```

Example 3:

```
Would you like to:
a) See the ASCII code for the alphabet
b) Translate a word into its ASCII code
Select a or b: B

Enter the word you would like to translate into ASCII: python
p: 112
y: 121
t: 116
h: 104
o: 111
n: 110
```

Example 4:

```
Would you like to:
a) See the ASCII code for the alphabet
b) Translate a word into its ASCII code
Select a or b: b

Enter the word you would like to translate into ASCII: pYthoN
p: 112
Y: 89
t: 116
h: 104
o: 111
N: 78
```

Deliverables and Submission Instructions

- A compressed folder (zip file) containing you Python code. This can be done by:
    a. Windows *(you must find the folder on your computer—this can't be done within PyCharm):*
        i. Select your lab file
        ii. Right click
        iii. Send to ->
        iv. Compressed (zipped) folder
        v. Rename this folder with the following name:
            `ITP115_l#_lastname_firstname`
            (replace # with this assignment number)
        vi. Submit this zipped folder through Blackboard
    b. OSX *(you must find the folder on your computer—this can't be done within PyCharm)*:
        i. Select your lab file
        ii. Right click
        iii. Compress 1 item
        iv. Rename this folder with the following name:
            `ITP115_l#_lastname_firstname`
            (replace # with this assignment number)
        v. Submit this zipped folder through Blackboard