Lab Assignment Week 07

CSC/DSCI 1301 – Principles of CS/DS I

Week of February 19th, 2024

Introduction

Welcome to the seventh programming lab of CSC/DSCI 1301! Today we will be covering the following topics:

- Creating while loops
- Creating for loops
- Using range() function

Lab policy reminders:

- Attendance is mandatory.
- Labs must be completed **individually.**
- TAs are here to help you. Ask them for help!
- Lab assignments are due at the end of each lab.

Deliverables:

1. Python files for all 3 programs in the lab
2. Screenshots of program output for all 3 programs

If you have any questions, please do not hesitate to ask your TA!

Program 1: password.py

Many user-created passwords are simple and easy to guess. Write a program that takes a simple password and makes it stronger by replacing characters using the key below, and by appending "!" to the end of the input string.

- o becomes 0
- i becomes 1
- a becomes @
- e becomes 3
- A becomes 4
- B becomes 8
- s becomes $

Example Output

```
Please Enter Your Password: IHaveAStrongPassword
Your new strong password is: IH@v34Str0ngP@$$w0rd!
```

Skills Covered

- Creating for loops

Deliverables

For this program you will need to provide the python file containing your code as well as a screenshot of the output of your program. Please name your files as follows:

- Python Files
  - lastname_firstname_filename.py
  - For example: **hawamdeh_faris_password.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_password.png**

Program 2: reverse.py

Write a program that takes in a line of text as input, and outputs that line of text in reverse. The program repeats, ending when the user enters "Quit", "quit", or "q" for the line of text. Hints: Individual characters of a string can be accessed like elements in a list. The range function can create a countdown sequence if given a negative *step*.

Example Output

```
Please Enter Your String: The quick brown fox jumps over the lazy dog
Reversed: god yzal eht revo spmuj xof nworb kciuq ehT

Please Enter Your String: quit
```

Skills Covered

- Creating while loops
- Creating for loops
- Using range() function

Deliverables

For this program you will need to provide the python file containing your code as well as a screenshot of the output of your program. Please name your files as follows:

- Python Files
  - lastname_firstname_filename.py
  - For example: **hawamdeh_faris_reverse.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_reverse.png**

Program 3: normalize.py

When analyzing data sets, such as data for human heights or for human weights, a common step is to adjust the data. This adjustment can be done by normalizing to values between 0 and 1, or throwing away outliers.

For this program, you will need to adjust the values by dividing all values by the largest value. The input begins with an integer indicating the number of floating-point values that follow.

Output each floating-point value with two digits after the decimal point, which can be achieved as follows: print(f'{your_value:.2f}')

Example Output:

```
Please enter the number of floating-point values: 5
Please enter a floating-point value: 30.0
Please enter a floating-point value: 50.0
Please enter a floating-point value: 10.0
Please enter a floating-point value: 100.0
Please enter a floating-point value: 65.0

Normalized Floating-Point Values:
0.30
0.50
0.10
1.00
0.65
```

Skills Covered

- Creating for loops
- Using range() function

Deliverables

For this program you will need to provide the python file containing your code as well as a screenshot of the output of your program. Please name your files as follows:

- Python Files
  - lastname_firstname_filename.py
  - For example: **hawamdeh_faris_normalize.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_normalize.png**