Lab Assignment Week 04

CSC/DSCI 1301 – Principles of CS/DS I

Week of January 29th, 2024

Introduction

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

- Using the modulo and floor division operators
- Lists and Sequence Functions
- Sets and Set Operations
- Creating and Accessing Dictionary

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: phone.py

For the first program in today's lab, you will need to write a program that formats a given phone number as input. Given an integer representing a 10-digit phone number, output the area code, prefix, and line number using the format (800) 555-1212.

If the input is:

8005551212

The output in the terminal should be:

(800) 555-1212

For simplicity, assume any part starts with a non-zero digit. So, 0119998888 is not allowed.

Example Terminal Output:

```
Please enter your phone number: 5551845433

Phone Number: (555) 184-5433
```

Hints

1. Use % to get the desired rightmost digits.
    a. Ex: The rightmost 2 digits of 572 is gotten by 572 % 100, which is 72.
2. Use // to shift right by the desired amount.
    a. Ex: Shifting 572 right by 2 digits is done by 572 // 100, which yields 5. (Recall integer division discards the fraction).

Skills Covered

- Using the modulo and floor division operators

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_phone.py**
- Screenshots
    - lastname_firstname_filename.png
    - For example: **hawamdeh_faris_phone.png**

Program 2: grades.py

For your second program in today's lab, you will need to write a program that stores student's exam grades as a list and student attendance as a set. Your program will then need to print out the answers to the following questions:

1. Grades
    a. How many students took the exam?
    b. What was the highest exam grade?
    c. What was the lowest exam grade?
    d. What was the class average for the exam?
2. Attendance
    a. How many students attended the class?
    b. Who attended both days of class?
    c. Who attended only one day of class?

Report any floating-point values to 1 decimal place.

Grades List

Exam Grades: 83, 85, 72, 65, 76, 90, 79, 88, 93, 70, 67, 80

Attendance Sets

Day 1: Mary, Jake, Sam, Alex, Percy, Jessica, Trent, Mahmoud

Day 2: Jake, Sam, Alex, Percy, Mahmoud, Trent, Caleb, Zayne

Example Output

```
12 Students took the exam.
The highest grade was a 93
The lowest grade was a 65
The average grade for the exam was a 79.0

10 students attended the class.
{'Trent', 'Jake', 'Mahmoud', 'Alex', 'Sam', 'Percy'} attended both class days.
{'Caleb', 'Jessica', 'Zayne', 'Mary'} attended one class day.
```

Skills Covered

- Lists and Sequence Functions
- Sets and Set Operations

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_grades.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_grades.png**

Program 3: food.py

For your third program in today's lab, you will write a program that simulates a point-of-sale device for a restaurant. Your program will store the menu items and their prices as a dictionary. Users will be prompted for the quantity of each item on the menu. The program will then calculate the total cost of the order.

Menu Item	Price
Hot Dog	$1.50
Slice of Pizza	$1.99
Whole Pizza	$9.95
Soft Drink	$0.59

Each item should be stored in the dictionary using the name of the item as the key and the price as the value.

Example Output:

```
Please enter the number of Hot Dogs: 1

Please enter the number of Pizza Slices: 2

Please enter the number of Whole Pizzas: 1

Please enter the number of Soft Drinks: 3

The total cost of the order is $17.20
```

Skills Covered

- Creating and Accessing Dictionary

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_food.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_food.png**