420-LCU-05 Programming in Python - Lab 6
March 07, 2022

Identification section: This section must be either in a comment, with a '#' preceding each line, or enclosed within triple quotes ('''). The grader and I need this section for the accurate processing of your lab. This section appears on top of all files you submit through Omnivox.

```
"""
Your Name and ID
420-LCU Computer Programming Lab 6
S. Hilal, instructor
"""
```

Submission: Submit your Lab 6 in a single Python file with the extension .py. Be sure to carefully read and answer all lab questions. An important part of lab exercises is to correctly follow the instructions as closely as possible. **Each question is a short program of about 6-8 lines**. All programs can be done in 1 python file.

Objectives for this lab:

- Basic Interactive programming using ***input*** function
- Applying list methods and ***using range function with for loop***
- Using split() method to process user input.

Part 1

A Vickrey auction is a kind of auction in which the bidder with the highest bid wins, but the price paid is the amount of the second highest bid. We'll write a little program to implement this idea by doing the following:

1. Have the user input a list of the bidder names separated by commas. This should be entered on a single line.
2. Have the user input a list of integers representing the bid amounts separated by spaces. This should be entered on a single line. There should be at least two bids. You can assume that the number of bids is the same as the number of bidders entered above. You can also assume that there are no duplicate bids.
3. Use the split() method 2 times to split each input line (in 1 & 2) into a list of substrings. Print both lists to see how they look like.
4. Convert the list of strings (for bid values) that you created in step 3 into a list of numbers. Hint: Write a for loop with the range(len(x)) idiom (from Lecture 5), then use the int() function to transform each element of the list.
5. Use the sorted() function to produce a new list of bids in increasing (ascending) order.
6. Now, figure out who was the bidder with the **highest bid**. The amount s/he has to pay is the second-highest bid amount. Print a complete appropriate message to show the result… **But read below** sample for **exact output message**.
7. Similarly, figure out who was the bidder with the second highest bid. The winner gets to pay his bid. Print an appropriate message as shown below.
8. No need to worry about a tie or ties for winners.
9. **Important:** Your code should work for any set of input bids and bidder names.

Sample input: (7 bids)
Sam,Joe,Ann,Bob,Lea,Greg,Leo
20 34 22 30 23 25 32
Printed Messages:
Joe had the highest bid of $34.
Leo had the second highest bid of $32, Joe pays this bid.

Part 2

Now, you will practice to enter and process a student record similar to A2.
Example:
Enter Student Record (Name, ID, program, and 5 grades separated by commas and no spaces): Lea Smith, 12345, HH,20,24.5,10,9.5,28
Your program prints:
Student list is **["Lea Smith",12345,"HH",20.0,24.5,10.0,9.5,28.0,92.0,'A']**

Part 3

Here's a whole bunch of range function practice. Each line should print a list as output. In a big comment, indicate the output **without using IDLE** then validate your answer and type the answer from IDLE. Please write both answers even if your initial answer was correct.

```
"""
   1. My answer is [0,1,2,4,5,6] IDLE >> [0,1,2,4,5]
   2.
"""
 1-   print(list(range(0, 6)))
 2-   print(list(range(7)))
 3-   print(list(range(4, 15, 2)))
 4-   print(list(range(11, 15)))
 5-   print(list(range(25, 36)))
 6-   print(list(range(-10, 1)))
 7-   print(list(range(-10, -8)))
 8-   print(list(range(-19, -9)))
 9-   print(list(range(-7, 7)))
10-   print(list(range(-120, -115)))
11-   print(list(range(0, -5)))
12-   print(list(range(0, -5, -1)))
13-   print(list(range(2, 40, 4)))
14-   print(list(range(25, 60, 5)))
15-   print(list(range(150, 300, 25)))
16-   print(list(range(1000, 1, -100)))
17-   print(list(range(1000, -1, -100)))
18-   print(list(range(-10, 1, 3)))
19-   print(list(range(-40, -5, 5)))
20-   print(list(range(300, 1, -50)))
```