

CMPSC-122: Intermediate Programming
Spring 2018

Lab #13

Due Date: 04/20/2018, 11:59PM

Instructions:

- The work in this lab must be completed alone.
- If you need guidance, attend to your recitation class.
- Read the “Submitting assignments to Vocareum” file for instructions on how to submit this lab
- Do not change the function names or given code on your script
- The file name must be LAB13.py (incorrect name files will get a 0 score)
- You are responsible for testing your code. Use `python -i LAB13.py` (or `python3` for Mac or Linux users) in your terminal (or command prompt) to provide input to your functions. Test with as many data as you feel comfortable
- **Do not include test code outside any function in the upload. Remove all your testing code before uploading your file. If you are using `input()` to insert values in your functions and `print` to see the values, remove them.**

Exercise 1 [3 pts]. Insert 96,12,6,14,42,36,59,10,26 into an empty hash table of size 11 using:

- a) Linear Probing [1 pt]
- b) Linear Probing with a +3 probe [1 pt]
- c) Quadratic Probing [1 pt]

Exercise 2 [7 pts]. As discussed in class, bubble sort is a simple sorting algorithm that works by repeatedly stepping through the list to be sorted, comparing each pair of adjacent items and swapping them if they are in the wrong order. The pass through the list is repeated until no swaps are needed, which indicates that the list is sorted. Write the function `bubble_sort(numList)` that takes an unsorted list of numbers and uses the bubble sort algorithm to **return** the sorted list. The function should also **print** the state of the list after each pass.

EXAMPLES:

```
>>> bubble_sort([2,3,5,4,1])
[2, 3, 4, 1, 5]
[2, 3, 1, 4, 5]
[2, 1, 3, 4, 5]
[1, 2, 3, 4, 5]
[1, 2, 3, 4, 5]
[1, 2, 3, 4, 5] #returned value
```

#printed values. Each printed value
must be a list

Depending on your implementation, this is another valid output:

```
>>> bubble_sort([2,3,5,4,1])
[2, 3, 4, 1, 5]
[2, 3, 1, 4, 5]
[2, 1, 3, 4, 5]
[1, 2, 3, 4, 5]
[1, 2, 3, 4, 5] #returned value
```

#printed values. Each printed value
must be a list