CSCI 150 HW: dictionary + heap reading practice

Due: Wednesday, October 31

To receive full credit, for each exercise you should do the following:

1. **Predict**: First, complete the exercise *without* using the Python interpreter. *Trace the execution of the code, keeping track of the function stack, the heap, all variables, and any output produced.*

   If you like, you may print out copies of the tracing template found at `http://ozark.hendrix.edu/~yorgey/150/static/heap-tracing-template.pdf` (if you have this PDF open on your computer you may simply click the link above).

2. **Check**: Run the code. Does the actual output agree with what you wrote down in step 1?

3. **Evaluate**: If your answer to part 1 was different than the actual output, keep experimenting with it, consult the textbook or Python documentation, ask a friend or TA or professor, *etc.* until you can explain why the code works the way it does *and* what your misunderstanding(s) were in part 1.

You should consider the code in each exercise separately from the other exercises.

This line is intentionally left blank.

1. Trace the execution of the following code.

```python
def alice(lst : List[int], n : int):

    len_lst : int = len(lst)
    for i in range(len_lst):
        lst[i] = lst[i] % n

def bob(lst: List[int]) -> str:
    s = ''
    letters: List[str] = ['t','e','a','h','p','!','s','y']
    for num in lst:
        s += letters[num]

    return s

def main():

    mylist = [3,25,14,-2,5]
    alice(mylist,6)
    print(bob(mylist))

main()
```

2. Trace the execution of the following code.

```python
def harry(s: str)-> Dict[str,int]:
    return_dict = {}
    for char in s:
        return_dict[char] = s.find(char)

    return return_dict

def hermione(s: str, in_dict: Dict[str,int]):
    for char in s:
        if char in in_dict:
            in_dict[char] += s.find(char)
        else:
            in_dict[char] = -5

def main1():
    s = '4 privet drive'

    main_dict = harry(s)
    hermione('hendrix',main_dict)
    for key in main_dict:
        print(key + " " + str(main_dict[key]))

main1()
```