

NAME: _____

CS21 Quiz 5, Swarthmore College Fall 2015

1. Work through the entire execution of the following program, show the program's output, and draw the stack as it exists just before the return statement in `mystery` is executed.

```
def mystery(L1, L2):
    count = 0
    for i in range(len(L1)):
        if L1[i] == L2[i]:
            L2[i] = L2[i].upper()
            count = count+1
        else:
            L2[i] = "-"

    #draw stack here
    return count

def main():
    word1 = "pets"
    word2 = "pass"
    ls1 = list(word1)
    ls2 = list(word2)
    val = mystery(ls1, ls2)
    print(word2)
    print(ls2)
    print(val)

main()
```

PROGRAM OUTPUT

2. Show what the low, high, and mid *index* values are for each step in searching the list L for the value 15 using a *binary search*. Also show L[mid] for each step. The indices for each item in the list are shown below each element in L.

```
x = 15
L =    [-45, -30, 0, 10, 15, 32, 48, 50, 65, 70, 77]
index  0   1  2  3  4  5  6  7  8  9 10]

low   mid   high  L[mid]
-----
```

3. If there are $n = 16$ items in a list, what is the maximum number of steps/comparisons linear and binary search will each need to lookup a value in the list? What is the minimum number of steps/comparisons each search will need?

4. Write a function called `countShort` that has two parameters, a string containing zero or more words separated by spaces, and an integer value `val`. The function should return the number of words whose length is less than or equal to `val`.

For example, `countShort("a bee sees De", 3)` should return 3 while

`countShort("Swarthmore College Computer Science", 5)` should return 0.