

TA 141 Recitation Week 7 – Greedy Algorithms / Python Lists

1. Show the results of the following list operations performed in order.

```
# create a list of values: [10, 11, 12, 13, 14, 15]
lst = [i for i in range(10,16)]

a.)    print(lst.pop())

b.)    print(lst)

c.)    print(lst.count(11))

d.)    print(lst.index(11))

e.)    print(lst.index(15))

f.)    lst.insert(2, 99)
        print(lst)

g.)    lst.insert(len(lst), 100)
        print(lst)

h.)    lst.append(101)
        print(lst)

i.)    lst.sort()
        print(lst)

j.)    lst.reverse()
        print(lst)
```

2. Does this piece of code create one or two lists? If it is only one list, how do you make a copy of it?

```
lstA = [1,2,3,4]
lstB = lstA
```

3. What is a tuple? What is the difference between a tuple and a list? A tuple is declared as follows:

```
t = ('a', 'b', 'c', 'd', 'e')
t[0] = 'A'
print(t)
```

What is the output of the above sequence of statements?

4. What is the output of the following program?

```
def eggMachine(eggs):
    goodEggs = []
    badEggs = []
    for i in eggs:
        if i % 2 == 0:
            goodEggs.append(i)
        else:
            badEggs.append(i)
    return goodEggs, badEggs

eggs = [57, 12, 35, 1, 32, 5, 102, 99]
good, bad = eggMachine(eggs)
print('Good: ', good)
print('Bad: ', bad)
```

5. A programmer who wrote this function complains that it is not working correctly. It is supposed to remove all even numbers from a list. However it prints: [1, 3, 6, 9, 11, 13, 16, 22]. What is wrong with the code and how can you fix it?

```
def removeEvens(values):
    for val in values:
        print(val)
        if val % 2 == 0:
            values.remove(val)

values = [1, 2, 3, 4, 6, 8, 9, 10, 11, 13, 14, 16, 20, 22]
removeEvens(values)
print(values)
```

6. What is the output of the following operations?

```
L1 = [2,3,4]
L2 = [3,4,1]
print(L1 + L2)
L1 = L1 + L2
L1.append(L2)
print(L1)
print(L1[6])
print(L1[6][1])
```

7. What is the output of the following operation?

```
def killTime(data):
    data[0] = 9
    print(data)
    data = data[1:]
    print(data)

def killSomeMoreTime():
    lst = [2,3,4]
    killTime(lst)
    print(lst)

#Let's kill some time!
killSomeMoreTime()
```

8. Suppose you want to make a class, `Point2D`, which represents a 2-D point with an `x` and a `y` value. How do you create this class in Python? Create the point, `(100, 200)`, and then print `p`'s values to standard output. How would you change `p`'s `y` coordinate to be 300?

9. Develop a program that can draw a polygon. It should read a series of 2-D points from a file (one point per line) into a list. Using the list it should draw the polygon as a series of lines in turtle.