

Lecture 06 In-class work Problem 3

Find the asymptotic running time of the following procedure

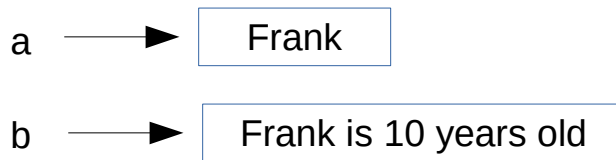
```
n = input("Enter an integer number greater than 5:") 1 step
for i in range(n): n iterations
    for j in range(n//10): n//10 iterations
        print("i = ", i, ", j = ", j) 1 step
```

Therefore, $T(n) = 1 + n \times \lfloor n/10 \rfloor = \Theta(n^2)$

Answer: $T(n) = \Theta(n^2)$

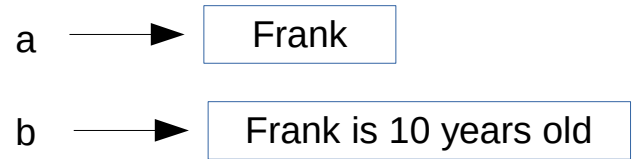
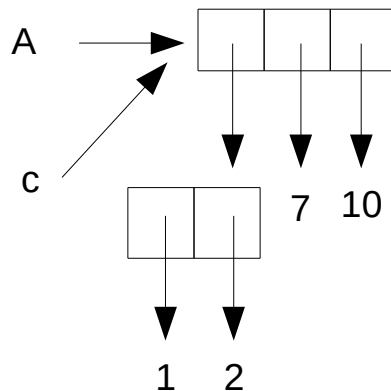
Problem 4

```
a="Frank"
b=a
b+=" is 10 years old"
```

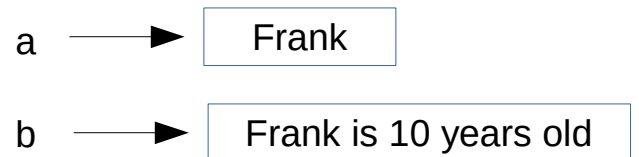
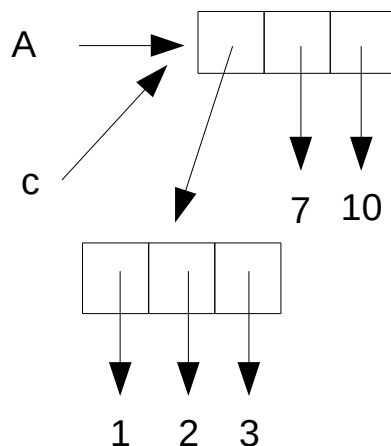


```
print(a, "\t", b)
Frank Frank is 10 years old
```

```
import copy
A=[[1,2],7,10]
c=A
```

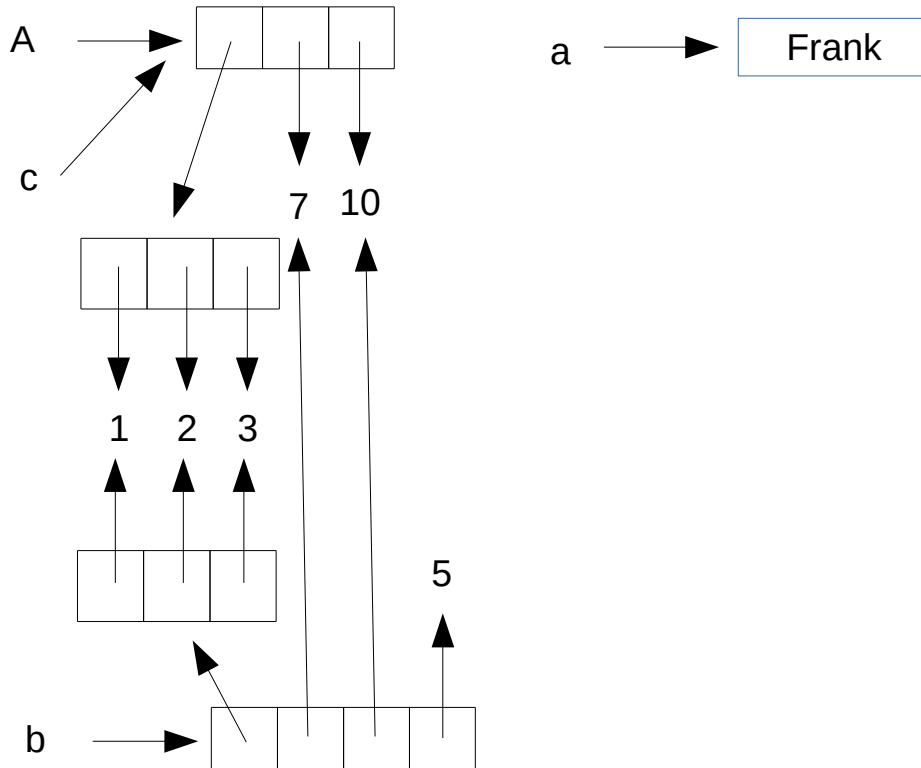


```
c[0]=[1,2,3]
```



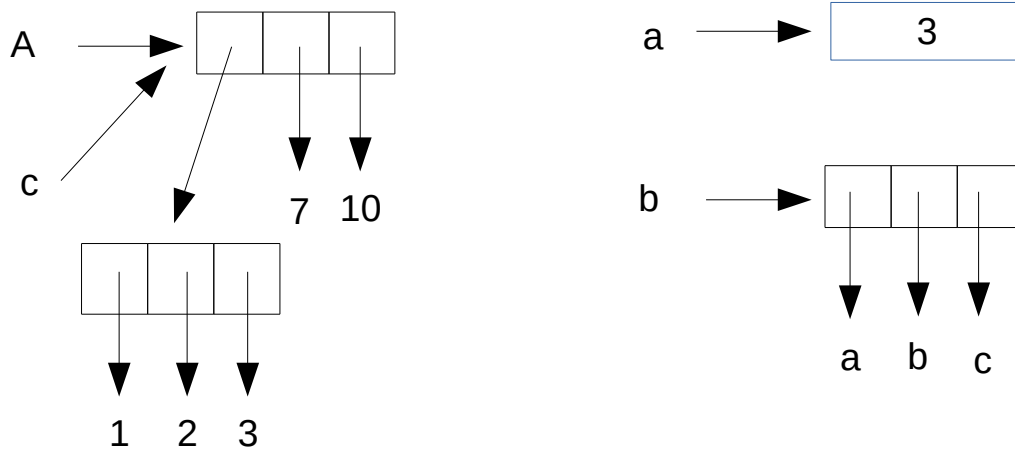
```
b = copy.deepcopy(A)
b.append(5)
```

```
print(A,"\\t",c,"\\t",b)
```



[[1,2,3],7,10] [[1,2,3],7,10] [[1,2,3],7,10,5]

```
a=3
b=['a','b','c']
```



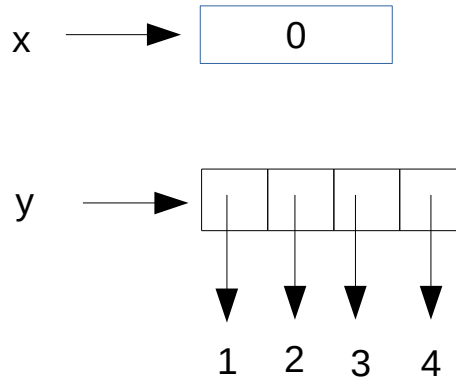
```
def f2(x,y):
    x=3
    y.append('d')
    y=[1,2,3,4]
    print(x,"\t",y)
```

Noting the definition of function, but the body of the function is not executed yet,

```
f2(a,b)
print(a,"\t",b)
```

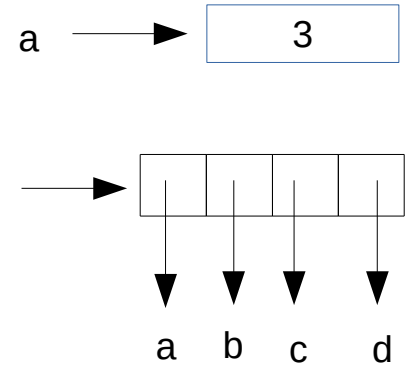
3 ['a','b','c','d']

Inside function f2:



0 [1,2,3,4]

outside function f2:

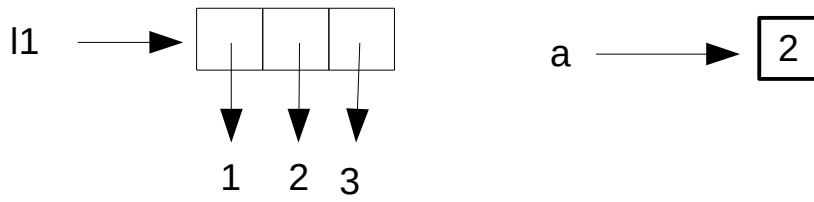


This is what we will see printed (all print statements accumulated):

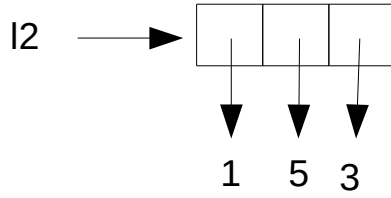
```
Frank      Frank is 10 years old
[[1, 2, 3], 7, 10]  [[1, 2, 3], 7, 10]  [[1, 2, 3], 7, 10, 5]
0      [1, 2, 3, 4]
3      ['a', 'b', 'c', 'd']
```

Problem 5

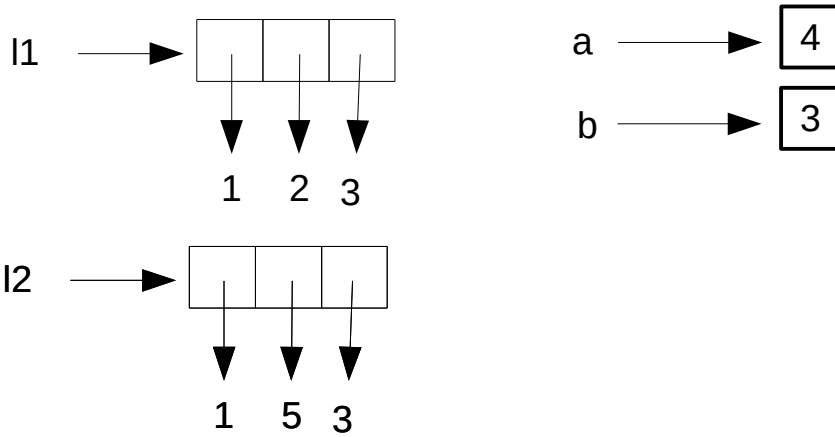
l1=[1,2,3]
a = 2
b = 3



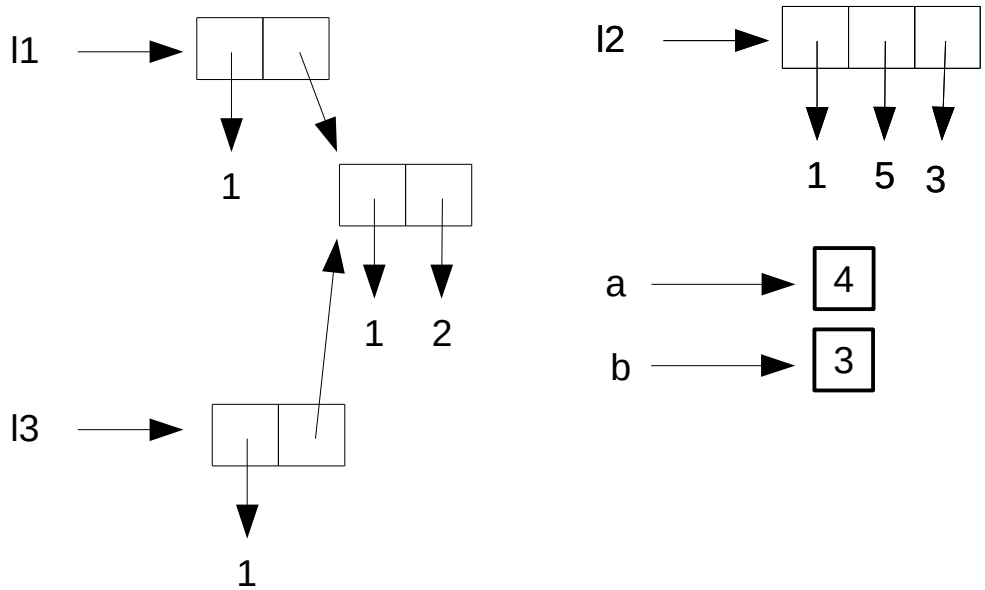
l2 = copy(l1)
l2[1]=5



a=4



l1=[1,[1,2]]
l3 = copy(l1)



l3[1][1]= 5
b=5

