# MOE 1.5 Asymptotic Complexity Exercise

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1. ► def measure(inputList):

int n = len(inputList)

int sum = 0;

for i in range(0, n):

for j in range(0, 5):

sum += j \* inputList[i]

for k in range(0, n):

sum -= inputList[k]

**The asymptotic complexity of this algorithm is: ,** because the i loop and k loops are both range(0,n). The j loop is ignored for two reasons: 1) the range is 0 to 5 so it runs in constant time, and also because even if the loop was range 0 to n, Bog O notation describes how the algorithm grows which would still only be by n2.

1. ► def addElement(ele):

myList =[]

myList.append(666)

print myList

**The asymptotic complexity of this algorithm is:**

1. ► num = 10

def addOnesToTestList(num):

testList = []

for i in range(0, num):

testList.append(1)

print(testList)

return testList

**The asymptotic complexity of this algorithm is:** where n is num.

1. ► testList = [1, 43, 31, 21, 6, 96, 48, 13, 25, 5]

def someMethod(testList):

for i in range(len(testList)):

for j in range(i+1, len(testList)):

if testList[j] < testList[i]:

testList[j], testList[i] = testList[i], testList[j]

print(testList)

**The asymptotic complexity of this algorithm is:** O(n \* (n-1)) == O(n2 - n), but we ignore lower order elements so the complexity is: **.**

1. ► def searchTarget(target\_word):

for (i in range1):

for (j in range2):

for (k in range 3):

if (aList[k] == target\_word):

return 1

return -1

return -1

**The asymptotic complexity of this algorithm is:** where i is range 1, j is range2, and k is range

**THIS ONE IS CONSTANT**

3.

1. def someSearch(sortedList, target):

left = 0

right = len(sortedList) – 1

while (left <= right):

mid = (left + right)/2

if (sortedList(mid) == target):

return mid

elif(sortedList(mid) < target):

left = mid + 1

else:

right = mid – 1

return -1

**The asymptotic complexity of this algorithm is:**