Set A

Lab Quiz 2

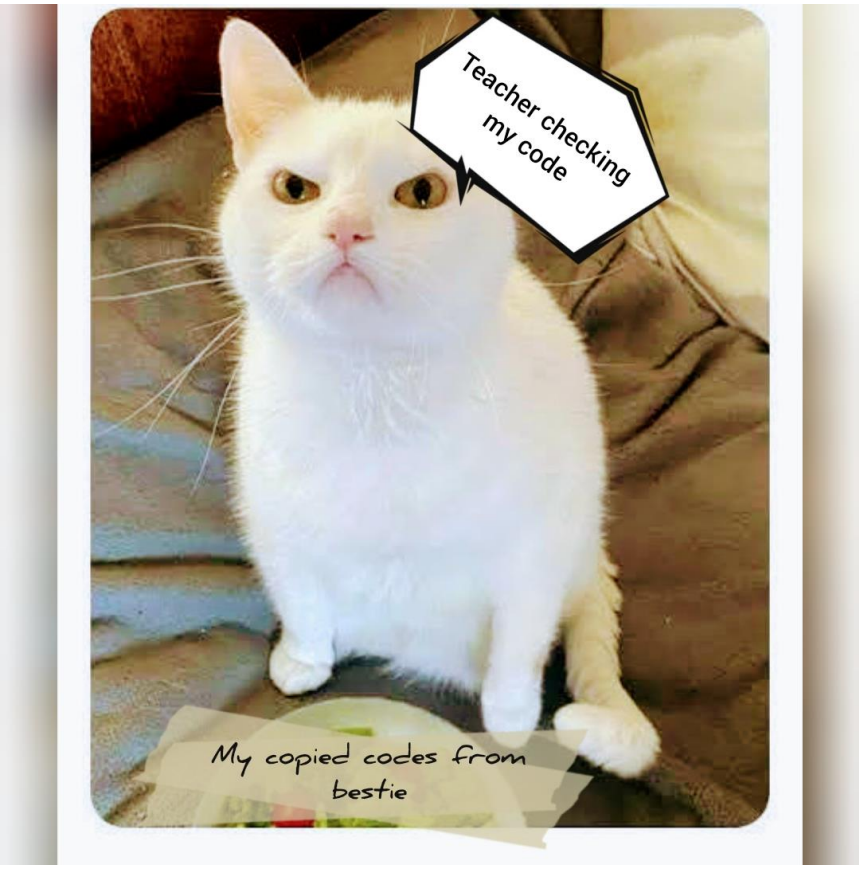
CSE 2218/CSI 228 (B): Algorithms Laboratory/Data Structure and Algorithms II Laboratory

Total marks: 15 **Time: 1 hr. 45mins**

Instructions:

1. Do not adopt unfair means. **10 marks will be deducted from the final marks for adopting unfair means**.
2. No more than 40% marks for uncompilable codes.
3. Late Submission Not allowed.

Caution: Don't make the teacher Grumpy!



Q1: Lazy Coder [3]

Difficulty: Easy

Problem Statement:

Suppose, you are a coder. You write code for customers. You charge all customers the same amount of money irrespective of how many hours it takes to write the code. Your customers let you know when he will come to you and how many hours it will take to write the code for him in the beforehand (the previous day). You can write code for one customer at a time.

But the condition is **you need x hour break between two code writing tasks**.

Input:

A line stating how many coding request you get

Lines describing 'task name', start time, duration

Last line containing how many hours break you need between two tasks.

Output:

Tasks you can complete satisfying the condition

Sample input	Sample output
4 'a', 2, 8 'b', 3, 4 'd', 8, 1 'c', 7, 1 1	'b' 'd'

Q2: Trip to Bandarban [3]

Difficulty: Easy

Problem Statement:

We miss the vacation on December after final examinations of our school life. Right?

Let's assume that your little brother Hasan is in class seven now. So, he got a long vacation after the final examinations in his school. Hasan is going to Bandarban to enjoy the vacation. There are a lot of tourist spots in Bandarban. But for some weird reason, there is a rule to visit the places. If you enter the spot, you can't leave the spot before a particular time and the entry should be on a particular time as well. (It's all about our imagination) Hasan has the **entry-exit** time of **n** tourist spots. Hasan wants to visit all the spots, otherwise he won't go to Bandarban. He will change his plan on that case.

But Hasan can't figure out whether it is possible to visit all the places or not. Hasan needs your help!!!

When you exit from a spot you can't enter another spot on the same time.

Constraints:

2<=n<=500

0 <= entry time <= 86400

0 <= exit time <= 86400

Sample Input 1:

5

86202 86300

85369 86100

500 980

600 1000

40 80

Sample Output 1: **Not Possible**

Sample Input 2:

5

40 90

1800 2000

1201 1400

800 1200

100 600

Sample Output 2: **Possible**

Q3: Fill in the mugs [4]

Difficulty: Easy-Medium

Problem Statement:

You are given container full of water. Container can have limited amount of water. You also have N bottles to fill. You need to find the maximum numbers of bottles you can fill.

Constraint: You can't carry partial filled bottle. If such case arises, don't take that partial filled bottle.

Input:

You are given two integer, N and X, number of bottles and capacity of the container.

Second line of each test case contains N space separated integers, capacities of bottles.

Output:

Print the maximum number of bottles you can fill.

Sample Input:

1

5 10

8 5 4 3 2

Sample Output:

3

Q4: Greedy Friend [5]

Difficulty Level: Medium

Problem Statement:

Habib and Fahim are two friends. While walking on the road, Habib found some stones. Each of the stones has some values written in it. Now, Habib wants to take the stones and share some stones with Fahim as Fahim is a good friend of Habib. But as Habib discovered the stones, he wants to get the larger part of the benefit. Habib wants to take the minimum number of stones so that the summation of the values of those stones is strictly greater than the rest of the stones. Help Habib to find the minimum number of stones he needs to take to fulfill his desire.

The first line of the input represents the number of stones Habib found in the road. The next line has n integers the values that were written in the stones. Help Habib to find the minimum number of stones that the summation of values of those stones is strictly greater than the rest of the stones.

Sample Input:

8

2 3 4 1 2 1 5 3

Output:

3

Explanation: elements are [3, 4, 5]. The summation of 3+4+5 = 12, the summation of rest of the elements is 2+1+2+1+3 = 9