

TCS NQT Coding Question

Q1- Problem Statement –

A chocolate factory is packing chocolates into the packets. The chocolate packets here represent an array of N number of integer values. The task is to find the empty packets(0) of chocolate and push it to the end of the conveyor belt(array).

Example 1 :

N=8 and arr = [4,5,0,1,9,0,5,0].

There are 3 empty packets in the given set. These 3 empty packets represented as 0 should be pushed towards the end of the array

Input :

8 – Value of N

[4,5,0,1,9,0,5,0] – Element of arr[0] to arr[N-1], While input each element is separated by newline

Output:

4 5 1 9 5 0 0 0

Example 2:

Input:

6 — Value of N.

[6,0,1,8,0,2] – Element of arr[0] to arr[N-1], While input each element is separated by newline

Output:

6 1 8 2 0 0

Q-2 Problem Statement –

Joseph is learning digital logic subject which will be for his next semester. He usually tries to solve unit assignment problems before the lecture. Today he got one tricky question. The problem statement is “A positive integer has been given as an input. Convert decimal value to binary representation. Toggle all bits of it after the most significant bit including the most significant bit. Print the positive integer value after toggling all bits”.

Constraints-

$1 \leq N \leq 100$

Example 1:

Input :

10 -> Integer

Output :

5 -> result- Integer

Explanation:

Binary representation of 10 is 1010. After toggling the bits(1010), will get 0101 which represents “5”. Hence output will print “5”.

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Q-3 Problem Statement –

Jack is always excited about Sunday. It is favourite day, when he gets to play all day. And goes to cycling with his friends.

So every time when the months starts he counts the number of sundays he will get to enjoy. Considering the month can start with any day, be it Sunday, Monday.... Or so on.

Count the number of Sunday jack will get within n number of days.

Example 1:

Input

mon-> input String denoting the start of the month.

13 -> input integer denoting the number of days from the start of the month.

Output :

2 -> number of days within 13 days.

Explanation:

The month start with mon(Monday). So the upcoming sunday will arrive in next 6 days. And then next Sunday in next 7 days and so on.

Now total number of days are 13. It means 6 days to first sunday and then remaining 7 days will end up in another sunday. Total 2 sundays may fall within 13 days.

Q4- Problem Statement –

Airport security officials have confiscated several item of the passengers at the security check point. All the items have been dumped into a huge box (array). Each item possesses a certain amount of risk[0,1,2]. Here, the risk severity of the items represent an array[] of N number of integer values. The task here is to sort the items based on their levels of risk in the array. The risk values range from 0 to 2.

Example :

Input :

7 -> Value of N

[1,0,2,0,1,0,2]-> Element of arr[0] to arr[N-1], while input each element is separated by new line.

Output :

0 0 0 1 1 2 2 -> Element after sorting based on risk severity

Example 2:

input : 10 -> Value of N

[2,1,0,2,1,0,0,1,2,0] -> Element of arr[0] to arr[N-1], while input each element is separated by a new line.

Output :

0 0 0 0 1 1 1 2 2 2 ->Elements after sorting based on risk severity.

Explanation:

In the above example, the input is an array of size N consisting of only 0's, 1's and 2s. The output is a sorted array from 0 to 2 based on risk severity.

Q5- Problem Statement –

An international round table conference will be held in india. Presidents from all over the world representing their respective countries will be attending the conference. The task is to find the possible number of ways(P) to make the N members sit around the circular table such that.

The president and prime minister of India will always sit next to each other.

Example 1:

Input :

4 -> Value of N(No. of members)

Output :

12 -> Possible ways of seating the members

Explanation:

2 members should always be next to each other.

So, 2 members can be in $2!$ ways

Rest of the members can be arranged in $(4-1)!$ ways.(1 is subtracted because the previously selected two members will be considered as single members now).

So total possible ways 4 members can be seated around the circular table $2*6 = 12$.

Hence, output is 12.

Example 2:

Input:

10 -> Value of N(No. of members)

Output :

725760 -> Possible ways of seating the members

Explanation:

2 members should always be next to each other.

So, 2 members can be in $2!$ ways

Rest of the members can be arranged in $(10-1)!$ Ways. (1 is subtracted because the previously selected two members will be considered as a single member now).

So, total possible ways 10 members can be seated around a round table is

$2 \times 362880 = 725760$ ways.

Hence, output is 725760.

The input format for testing

The candidate has to write the code to accept one input

First input – Accept value of number of N(Positive integer number)

The output format for testing

The output should be a positive integer number or print the message(if any) given in the problem statement(Check the output in example 1, example2)

Constraints :

$2 \leq N \leq 50$

Q-6 Problem Statement –

Particulate matters are the biggest contributors to Delhi pollution. The main reason behind the increase in the concentration of PMs include vehicle emission by applying Odd Even concept for all types of vehicles. The vehicles with the odd last digit in the registration number will be allowed on roads on odd dates and those with even last digit will on even dates.

Given an integer array $a[]$, contains the last digit of the registration number of N vehicles traveling on date D (a positive integer). The task is to calculate the total fine collected by the traffic police department from the vehicles violating the rules.

Note : For violating the rule, vehicles would be fined as X Rs.

Example 1:

Input :

4 -> Value of N

{5,2,3,7} -> $a[]$, Elements $a[0]$ to $a[N-1]$, during input each element is separated by a new line

12 -> Value of D , i.e. date

200 -> Value of x i.e. fine

Output :

600 -> total fine collected

Explanation:

Date $D=12$ means , only an even number of vehicles are allowed.

Fine will be collected from 5,3 and 7 with an amount of 200 each.

Hence, the output = 600.

Example 2:

Input :

5 -> Value of N

{2,5,1,6,8} -> a[], elements a[0] to a[N-1], during input each element is separated by new line

3 -> Value of D i.e. date

300 -> Value of X i.e. fine

Output :

900 -> total fine collected

Explanation:

Date D=3 means only odd number vehicles with are allowed.

Fine will be collected from 2,6 and 8 with an amount of 300 each.

Hence, the output = 900

Constraints:

- $0 < N \leq 100$
- $1 \leq a[i] \leq 9$
- $1 \leq D \leq 30$
- $100 \leq x \leq 5000$

The input format for testing

The candidate has to write the code to accept 4 input(s).

First input – Accept for N(Positive integer) values (a[]), where each value is separated by a new line.

Third input – Accept value for D(Positive integer)

Fourth input – Accept value for X(Positive integer)

The output format for testing

The output should be a positive integer number (Check the output in Example 1, Example e) if no fine is collected then print "0"



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