Inter IIT Placement 2018-2019

Find C++ solutions to coding problems at the following github page:
https://github.com/kaushal02/interview-coding-problems

Some interview experiences here(please share more if you have)-+1

1. Interview questions:
   https://docs.google.com/document/d/1rDZA_tqdTdGVE_VHf8szw_cYNwAALKQE6HPkPtd-4Cs
2. Placement_Interviews_2011_CS:
   https://docs.google.com/document/d/1rvf0VTDlhbRR4LOC5czU2LIKI73L6qRhlD37Sil6SGs/

Instructions:

- Apply HEADING-1 **(ctrl + alt + 1) style for new company name to show in outline**
- **Apply HEADING-2 (ctrl + alt + 2) style for your college name**
- While typing, use **Ctrl + Enter** to go to new pages
- **PLEASE KEEP COMPANIES ON SEPARATE PAGES**
- Enable outline for Company Shortcuts **View Show Document Outline**
- Page edit history will be maintained in **History Page**
- If possible, mention whether the company is open for M.Tech. or notF
- While adding external solution links, please apply green color highlights
- Mention **CPI Cutoff and eligible discipline,** please apply red color highlights

Please don't edit or remove heading 1 or heading 2 style , it screws up the outline and makes the document look chaotic.

You can search the questions of the companies.

KINDLY ENTER COMPANY HERE, IF ANY INFO IS ADDED IN DOC

(Anyone who solved the question completely is requested to share the solution and/or approach)

Microsoft	Qualcomm	Adobe	Goldman Sachs	Cisco	Samsung R&D (Bangalore)
Citrix	KLA Tencor	Zendrive	BNY Mellon	Flipkart	Cohesity
Samsung R&D Delhi	Samsung R&D Noida	Nutanix	Alphonso	UBS	Phone pe
Jaguar Land Rover	Walmart	Ansys	SAP Labs	Uber	Appdynamics
Mentor Graphics	Juniper Networks	Sandvine	Quadeye	Rivigo	EXL
Indeed	Fractal Analytics	NetApp	Sprinklr	J.P. Morgan Chase (Software)	Razorpay
Trexquant	Squarepoint Capital	Oracle	Johnson Matthey	Estee	Gartner
Optiver	Publicis Sapient	Paytm	Credit Suisse (EORM)	Honeywell	HSBC GM
MindTickle	PayU	AQR Capital	PayPal	Societe Generale	Apple
Salesforce	One plus	Xilinx	Optum	Tiger Analytics	Veritas

Zomato	Myntra	Yahoo Japan	Headout	Shuttl	Quadeye
Tower	WorldQuant	Rubrik	Bidgely	Innovacer	Euler
Vmware	Citi	cure.fit	Oyo	Mathworks	Deloitte

History of Companies

Date	Company + College
6/7/2018	(Microsoft, Goldman Sachs-IIIT Delhi)
7/7/2018	(Qualcomm, Adobe - IIIT Delhi)
22/9/2018	Alphonso-Business and data analyst (IIT Delhi)
24/9/2018	(Samsung R&D Bangalore - IIT Madras), (Inautix/BNY Mellon Tech-IIT(BHU))
30/9/2018	(Mykaarma, Axella Advisory-IIT(BHU))
4/10/2018	HSBC (IIT(BHU))
23/9/2018	(IIT Delhi)
25/9/2018	Citrix (IIT Madras), KLA Tencor (IIT Madras)
26/9/2018	Zendrive (IIT Delhi)
27/9/2018	Nutanix(IIT Delhi), Cohesity(IIT Delhi)
28/9/2018	Samsung R&D Bangalore(IIT Delhi)
29/9/2018	Samsung R&D Noida(IIT Delhi)
28/9/2018	UBS(IIT BHU)
1/10/2018	BNY Mellon (IIT Kanpur), PhonePe(IITM)
6/10/2018	(IIT ISM), Adobe (IITM), Tesco (IITM), Qualcomm(IITM)
7/10/2018	ANSYS Software (IIT Guwahati), Da Vinci Derivatives (IIT Delhi), Sterlite(IIT Kanpur),Samsung Semiconductor(IIT Kanpur)
8/10/2018	KLA Tencor(IIT Kanpur), SAP Labs(IITM)
9/10/2018	AppDynamics(IIT Delhi), Uber(IIT Delhi) Samsung R&D Noida(IIT BHU), Harness (IITR), Samsung Bangalore (IITK)
10/10/2018	Juniper Networks(IITK), Microsoft(IITR),Microsoft(IITG),Greenland Investment Management(IITK), Tesco(IIT BHU)
11/10/2018	Samsung R&D Delhi(IIT Kanpur), Rivigo(IITD),Quadeye(IITD)
12/10/2018	Citrix(IITG), Quadeye(IITK)
13/10/2018	Indeed(IITK), Fractal Analytics(IITK), NetApp(IITG), Rivigo(IITG), Quadeye(IITB)
14/10/2018	AppDynamics(IITG),Sprinklr(IITK),Oracle(IITR), Fidelity(IITG)
15/10/2018	AppDynamics(IITK),Samsung Bangalore(IITG), Cohesity(IITK)
16/10/2018	Razorpay(IITR), AppDynamics(IITR)
17/10/2018	Walmart Labs(IITG), SAP Labs(IITG),Squarepoint Capital(IITR)

18/10/2018	Uber (IITR), Squarepoint(IITM)
21/10/2018	Saavn(IITR), Trexquant(IITK), Squarepoint Capital(IITD)
22/10/2018	SAP Labs(IITK), SAP Labs(IIT BHU), Phonepe(IITR), CISCO(IITR)
23/10/2018	Citrix(IITB), Axis Bank(IITD), Qualcomm(IITD),Zendrive(IITR),Credit Suisse(IITK), Trexquant(IITM)
24/10/2018	Gartner(IITD), Open Futures(IITD), SAP Labs(IITK-set2), Johnson Matthey(IITK), AppDynamics(IIT Kgp), BNY Mellon(IITR), Flipkart(IITR),Flipkart(IITKGP),Flipkart(IITM),Flipkart(IITG), Flipkart(IIT BHU),Flipkart(IITB)
25/10/2018	Finmechanics(IITD), Adobe(IITD),Optiver(IITB), Sapient(IITR, IITG), Oracle(IITK),Razorpay(IITG)
26/10/2018	Paytm(IIT BHU),Appdynamics(IITB, IITM),Rivigo(IITR),Mercari(IITD), Trexquant(IITD),Alphonso(IITD), Sapient(IITB)
27/10/2018	Rakuten(IITB), Mercari(IITB), TrexQuant(IITB), Alphonso(IITR), J.P.Morgan Quant(IITR,IIT Kgp, IITD), Honeywell(IITKgp), Jaguar(IITK), Sapient(IITM), Nutanix(IITM)
28/10/2018	Honeywell(IITK), SDE(IITD), Jaguar(IITD), Microsoft(IITD), Flipkart(IITD),Flipkart(IITH),Samsung Delhi(IITB),SAP labs(IITB), Indeed(IITB),Zendrive(IITB), UBS(IITB), Sprinklr(IITR), Nutanix(IITKGP), Sapient(IIT Kgp),Honeywell(IITG), Alphonso(IITM)
29/10/2018	Intel(IITD), IBM(India, IITD), Tower Research(IITD), Indus Insights(IITR), Thoughtspot(IITR), Morgan Stanley (IITG), Intel (IITG), Samsung Noida(IITB), GE(IITM)
30/10/2018	SRIB(Harness(IITD),PhonePe(IITB),FinMechanics(IITB), Microsoft(IITM)
31/10/2018	Sapient(IITD),Salesforce(IITD),Uber(IITB),HSBC(GM), Adobe(IITR)
1/11/2018	PayU(IITR), AQR(IITR), PayPal(IIT Kgp), Mercari(IIT Kgp), JPMC-SDE(IITB), KLA Tencor (IITB) Microsoft(IIT BHU)
2/11/2018	Societe Generale(IITR), Goldman Sachs(IITD) AQR capital(IIT BHU)
3/11/2018	Cohesity, Microsoft, Blackrock (IITKGP) Apple(IITB), Samsung R&D Bangalore(IITB), Goldman Sachs(IITR, IITM,IITB,IIT BHU), Zomato (IITD), GE(IITD), OnePlus(IITB), Yahoo(IITB), Jaguar(IITB), AB InBev(IITB), Gulftalent(IITB) Apple (IIT BHU)
4/11/2018	Zomato(IITR), Salesforce(IITR, IITM,IITB), Paypal(IITM), RazorPay(IITM), Myntra (IITM), Oracle(IITD,IITB), Rakuten(IITD), Schlumberger(IITD), Apple(IITD),Microsoft(IITB),Samsung Semiconductors(IITB),Intel(IITB),Sprinklr(IITB),Google Hardware(IITB) Sprinklr(IIT BHU) Veritas(IIT BHU)
5/11/2018	JPMC_SDE(IITKGP),Xilinx(IITB), Fidelity(IITR)
6/11/2018	Myntra(IIT BHU)
10/11/2018	Tesco(IIT Kgp) Amazon(IIT BHU)
11/11/2018	UBER(IIT BHU)
13/11/2018	Salesforce(IITH) Headout(IIT BHU) JIO(IIT BHU),Alphonso BDA(IIT BHU)
14/11/2018	Salesforce(IIT BHU),Microsoft ML(IIT BHU)
21/11/2018	Bidgely(IITR)
23/11/2018	Veritas(IITR), Innovacer(IITR), Microland(IITR)
24/11/2018	Amazon (IIT KGP), Vmware(IITR)
25/11/2018	Citi(IITR), Cure.fit(IITR)
26/11/2018	Zilingo(IITR), Headout(IITR)

27/11/2018	Paytm(IITR), Oyo(IITR), Innoplexus(IITR), Ixigo(IITR), Visa(IITKGP)
28/11/2018	Samsung Delhi(IITR), Mathworks(IITR), Codenation(IITR), Deloitte(IITR), Amazon(IITR), Codenation (IITKGP)
	KINDLY ENTER COMPANY HERE, ONLY IF THE QUES ARE ADDED IN DOC

Answered Queries

Has Apple shortlisted for SRE role from any of the colleges apart from IIIT-H? If so, when is the interview?

IITR guys, please update questions for Societe Generale.

IITD guys please add questions for Rivigo's business analyst profile
IIT M guys please update the questions for AQR capital. Exam tomorrow evening.
Dell in any IIT ?????????- Dell's test is scheduled in IITB on 26th Nov.
IITD people, please share questions of Axis Bank? Please……. ?+10

Can someone from IITK post the questions asked in the EORM profile of Credit Suisse ?

IITR people, Please share Squarepoint Capital Questions? Updated

Someone please add Flipkart Questions!!! IITD? +1+1+1

Guys, what's the link for FB group as mentioned in other G-Doc?

https://www.facebook.com/groups/1540488506008368

Can you tell about the Morgan Stanley written pattern? In my college it will be for 3 hours.

What is the compensation offered by Microsoft in any campus this year?
39-LPA https://www.thehindubusinessline.com/news/record-offers-at-campus-placements-in-tn/article24949073.ece

Have FICO visited any college yet?

Does Flow Traders look at the CGPA? ---->>> **Nope**.

Anybody had a technical interview after HR round ?

Where can I find the last years DOCs?

Have Saavn visited any college yet??Plz upload question IIT Roorkee question already uploaded.

Please update fquestions
Please update Finmechanics IITD

Have Lenskart visited any IIT??

Gartner(Lead-it)

IITK, IITD

Platform : amcat
5 sections
14 LR questions in 14 minutes
22 Verbal questions in 14 minutes
12 Machine data questions in 18 minutes
12 basic statistics questions in 15 minutes
12 python questions in 15 minutes

Oyo Rooms

IITR

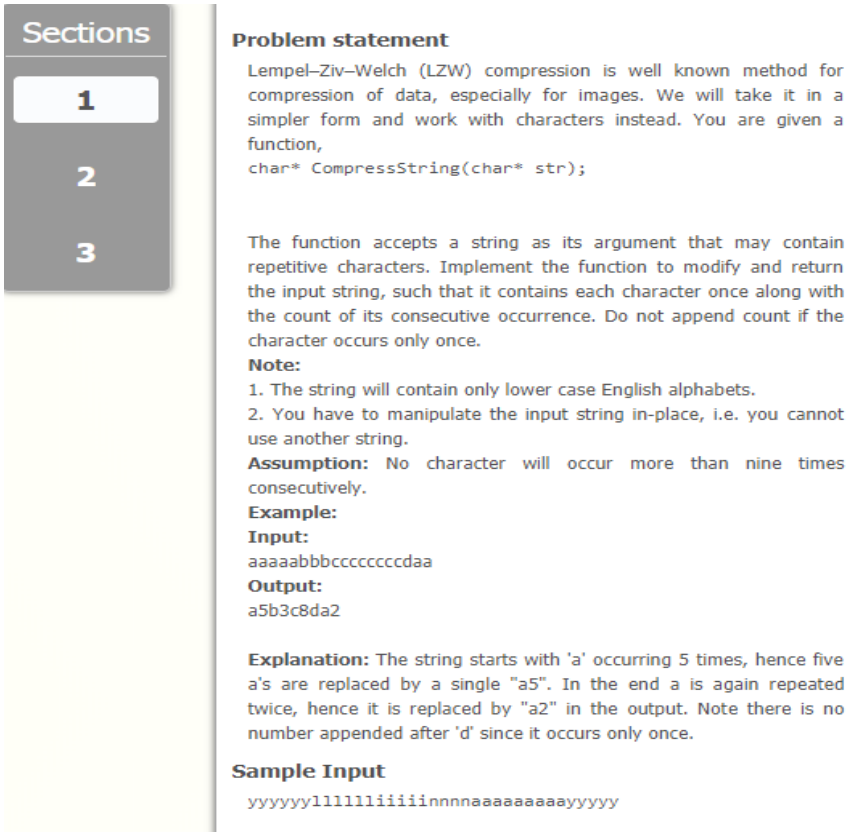
25 MCQ, 2 coding questions on hackerearth
- https://www.geeksforgeeks.org/maximum-profit-by-buying-and-selling-a-share-at-most-k-times/
-

Paytm

IIT BHU

Platform :Cocubes
Note: No constraints mentioned in problems.

3 Coding questions in 70 minutes
1. https://www.geeksforgeeks.org/merge-two-sorted-linked-lists-such-that-merged-list-is-in-reverse-order/
2. https://www.geeksforgeeks.org/find-maximum-path-sum-two-leaves-binary-tree/
3. https://www.geeksforgeeks.org/find-combinations-k-bit-numbers-n-bits-set-1-n-k-sorted-order/
4. https://www.geeksforgeeks.org/merging-intervals/
5. https://www.geeksforgeeks.org/transform-one-string-to-another-using-minimum-number-of-given-operation/
6. https://www.geeksforgeeks.org/count-bst-subtrees-that-lie-in-given-range/
7. https://www.codechef.com/problems/CHINSM
8. Sum of unique elements in array



Sections
1
2
3

the count of its consecutive occurrence. Do not append count if the character occurs only once.

Note:

1. The string will contain only lower case English alphabets.
2. You have to manipulate the input string in-place, i.e. you cannot use another string.

Assumption: No character will occur more than nine times consecutively.

Example:

Input:

aaaaabbbccccccccdaa

Output:

a5b3c8da2

Explanation: The string starts with 'a' occurring 5 times, hence five a's are replaced by a single "a5". In the end a is again repeated twice, hence it is replaced by "a2" in the output. Note there is no number appended after 'd' since it occurs only once.

Sample Input

```
yyyyyy1111111iiiiinnnnaaaaaaaaayyyyy
```

Sample Output

```
y616i5n4a9y5
```

Sections
1
2
3

Infinite number of people are crossing a 2-D plane. They march in such a way that each integral x coordinate will have exactly one person who moves along it in positive y direction, starting from (x, 0).

You have to implement the following function:

```
int MaximumBarrier(int n, int** barrier);
```

The function takes an integer matrix 'barrier' having 'n' rows and '3' columns where n denotes the number of barriers. The i^{th} barrier is defined by (x_i, y_i, d_i), which means that the barrier is blocking all the people who want to pass through points lying on line segment connecting (x_i, y_i) and ($x_i + d_i$, y_i). Once a person encounters a barrier, he stops moving.

Given all the barriers, your task is to find the total number of people who will be blocked at some point in their march.

Assumption:

- n > 0
- Length of barrier (d) > 0

Note:

- Overlapping of barriers is possible.
- Do not use extra memory.

Example:

Input:

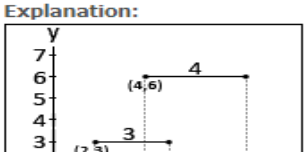
n: 2

```
            x y d
barrier 1: 2 3 3
barrier 2: 4 6 4
```

Output:

7

Explanation:



Sections

1

2

3

- Do not use extra memory.

Example:

Input:

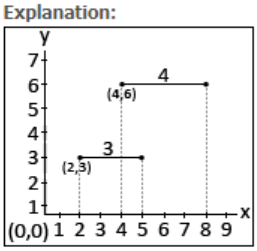
n: 2

```
          x y d
barrier 1: 2 3 3
barrier 2: 4 6 4
```

Output:

7

Explanation:



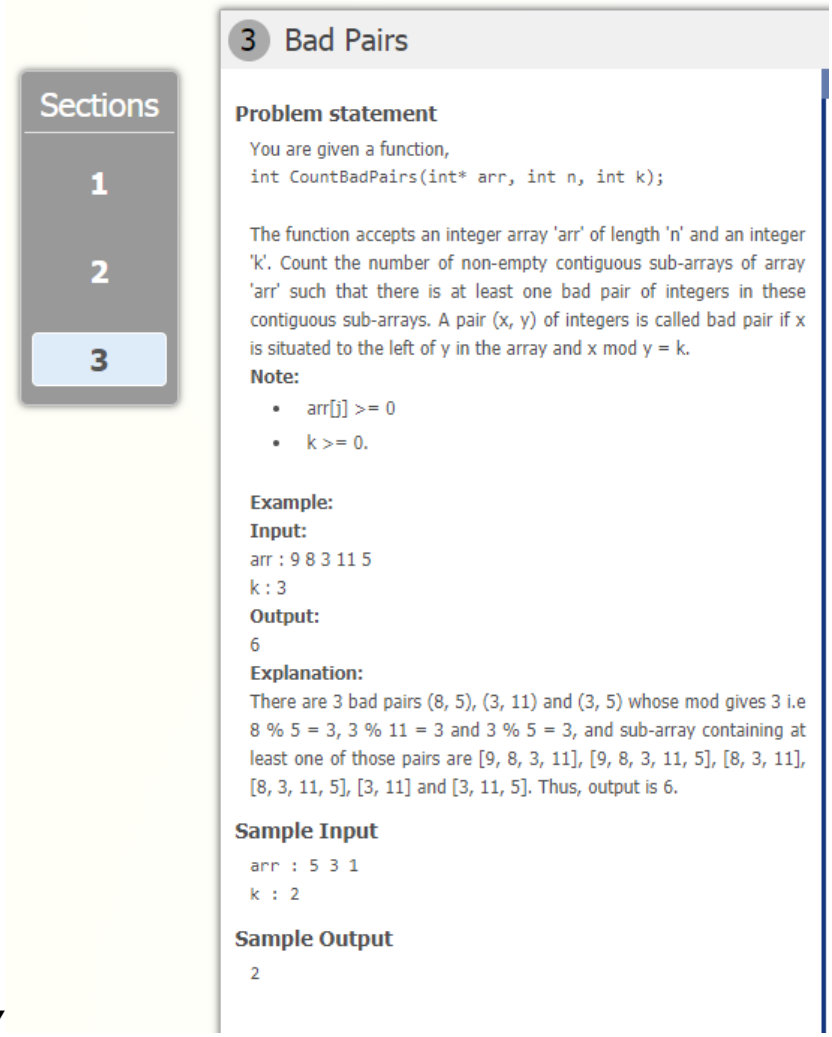
1st barrier blocks people of x-coordinates (2,3,4,5), similarly, 2nd barrier blocks people of x-coordinates (4,5,6,7,8), forming a total of '7' blocked people (excluding overlapped values (4,5) for 2nd barrier).

Sample Input

```
n: 3
            x  y  d
barrier 1:  1  1  2
barrier 2:  6  5  3
barrier 3: 11  4  4
```

Sample Output

```
12
```



IIT GHY

Platform - Cocubes

Set-1

1. https://www.geeksforgeeks.org/transform-one-string-to-another-using-minimum-number-of-given-operation/
2. https://www.geeksforgeeks.org/number-of-elements-that-can-be-seen-from-right-side/
3. https://www.geeksforgeeks.org/find-maximum-path-sum-two-leaves-binary-tree/
4. Given a matrix representing which child likes which toy.
matrix[i][j]=1 represents that child i likes toy j. One child can get only 1 toy and one toy can be assigned to only 1 child.Find maximum number of children who can get the toy they wished.
5. LIS problem
6. https://www.interviewbit.com/problems/largest-number/
7. Subtract two linked lists in place.

Note: Paytm has been asking questions mostly from its archives - https://www.geeksforgeeks.org/tag/paytm/
I got to know this just before the test, from one of my friend. But questions for me were easy. (^ Might be helpful for others.)

IITR

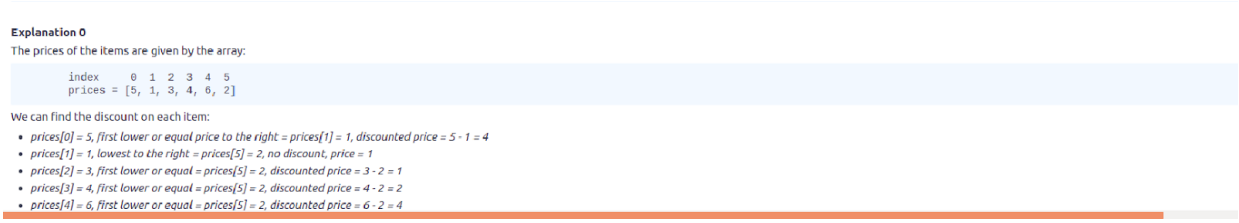
Same questions as mentioned above

PayPal

IIT Kgp

Please update second question

1.



Explanation 0

The prices of the items are given by the array:

```
index     0  1  2  3  4  5
prices = [5, 1, 3, 4, 6, 2]
```

We can find the discount on each item:

- *prices[0] = 5, first lower or equal price to the right = prices[1] = 1, discounted price = 5 - 1 = 4*
- *prices[1] = 1, lowest to the right = prices[5] = 2, no discount, price = 1*
- *prices[2] = 3, first lower or equal = prices[5] = 2, discounted price = 3 - 2 = 1*
- *prices[3] = 4, first lower or equal = prices[5] = 2, discounted price = 4 - 2 = 2*
- *prices[4] = 6, first lower or equal = prices[5] = 2, discounted price = 6 - 2 = 4*

2. Number of distinct substrings of a string (Use suffix array).

IITM

Same as in IIT

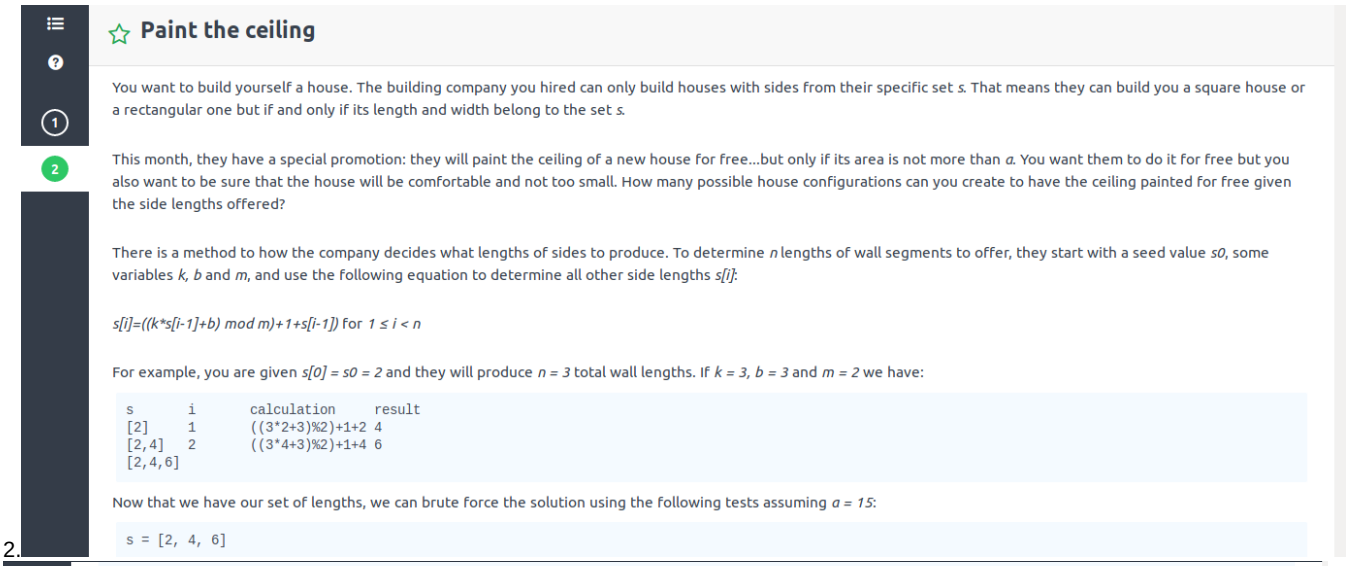
IITKGP.

The second question on finding all the distinct substrings of a string passed only 5 test cases using Map, 6 with Trie, and all using only suffix array.(For passing all the test cases, take the substrings lengthwise and clear the map on inc the length of substring.)

IITH

1. Mobile Keypad problem. Variation of this: https://www.geeksforgeeks.org/combinations-strings-can-used-dial-given-phone-number/

2.



☆ Paint the ceiling

You want to build yourself a house. The building company you hired can only build houses with sides from their specific set *s*. That means they can build you a square house or a rectangular one but if and only if its length and width belong to the set *s*.

This month, they have a special promotion: they will paint the ceiling of a new house for free...but only if its area is not more than *a*. You want them to do it for free but you also want to be sure that the house will be comfortable and not too small. How many possible house configurations can you create to have the ceiling painted for free given the side lengths offered?

There is a method to how the company decides what lengths of sides to produce. To determine *n* lengths of wall segments to offer, they start with a seed value *s0*, some variables *k*, *b* and *m*, and use the following equation to determine all other side lengths *s[i]*:

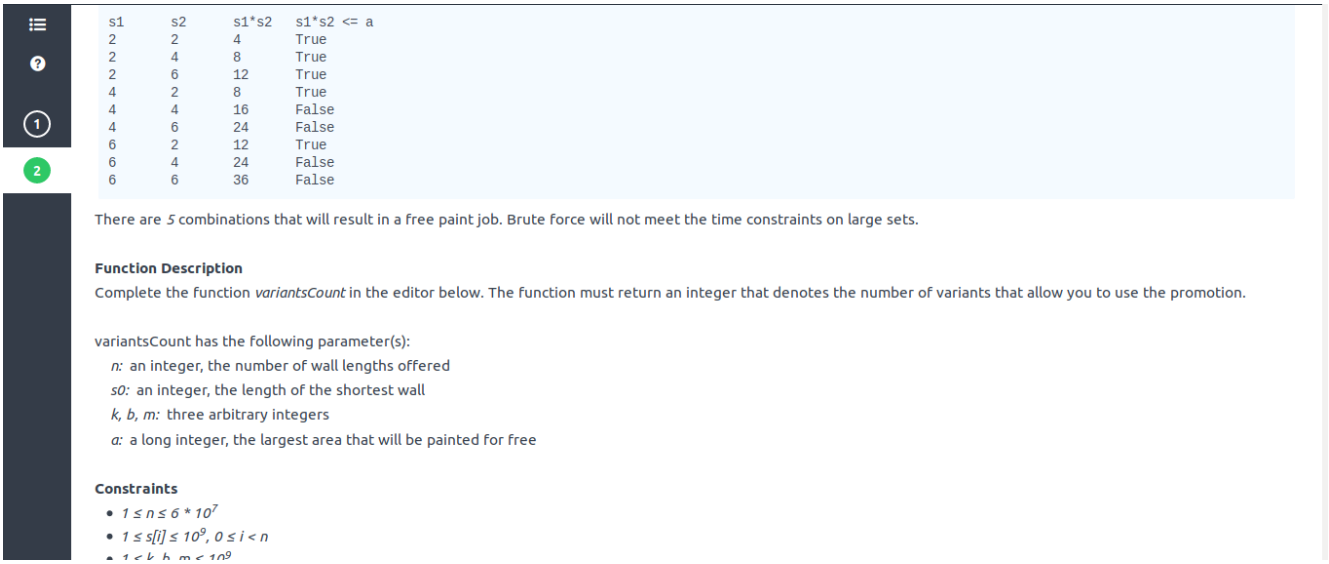
*s[i]=((k*s[i-1]+b) mod m)+1+s[i-1]* for *1 ≤ i < n*

For example, you are given *s[0] = s0 = 2* and they will produce *n = 3* total wall lengths. If *k = 3*, *b = 3* and *m = 2* we have:

```
s       i       calculation     result
[2]     1       ((3*2+3)%2)+1+2 4
[2,4]   2       ((3*4+3)%2)+1+4 6
[2,4,6]
```

Now that we have our set of lengths, we can brute force the solution using the following tests assuming *a = 15*:

```
s = [2, 4, 6]
```



```
s1      s2      s1*s2   s1*s2 <= a
2       2       4       True
2       4       8       True
2       6       12      True
4       2       8       True
4       4       16      False
4       6       24      False
6       2       12      True
6       4       24      False
6       6       36      False
```

There are *5* combinations that will result in a free paint job. Brute force will not meet the time constraints on large sets.

Function Description

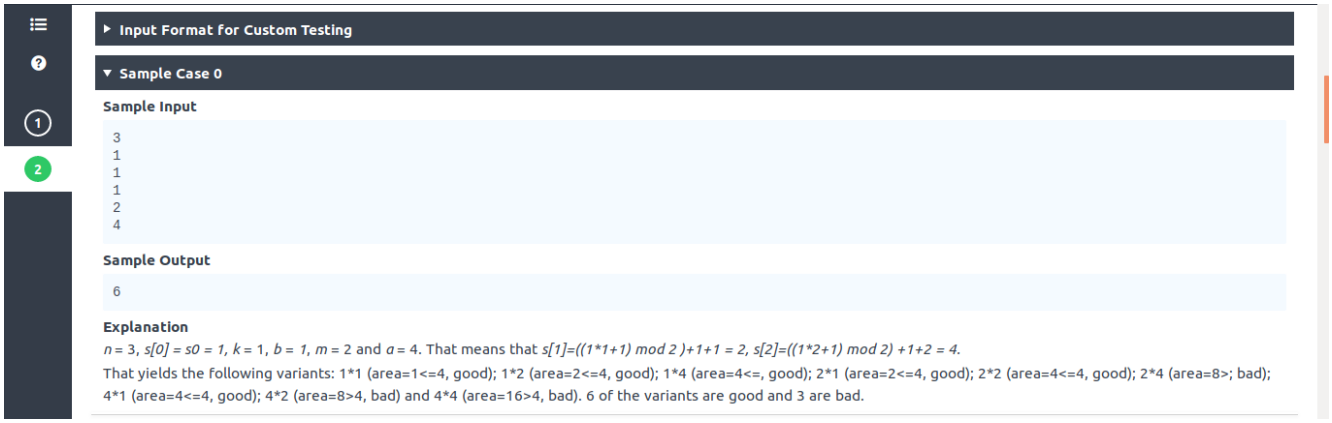
Complete the function *variantsCount* in the editor below. The function must return an integer that denotes the number of variants that allow you to use the promotion.

variantsCount has the following parameter(s):

n: an integer, the number of wall lengths offered
s0: an integer, the length of the shortest wall
k, b, m: three arbitrary integers
a: a long integer, the largest area that will be painted for free

Constraints

- $1 \le n \le 6 * 10^7$
- $1 \le s[i] \le 10^9, 0 \le i < n$
- $1 < k, b, m < 10^9$



**Upper_Bound STL passed 9/11 test cases.sale
**Apply two pointer to pass all test case.

MindTickle

IITG

4 coding questions (90 mins) - Hackerrank
1. https://www.codechef.com/problems/SUBLCM
2. https://www.spoj.com/problems/QUEST5/

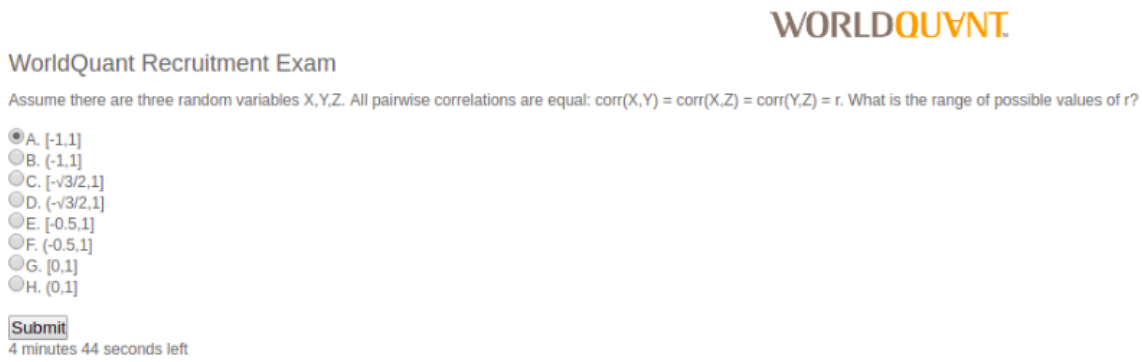
Don't remember other 2 questions. But they were very easy.

Can someone update other two questions ?

WorldQuant

IITB,IITD

Most of the questions were based on distributions, very few of type find the output of a pseudo code.
All questions were to be answered within given time.
Few Questions to get an idea of questions asked :



Flipkart-SDE

IITK, IITB, IITG, IITKGP,IITBHU

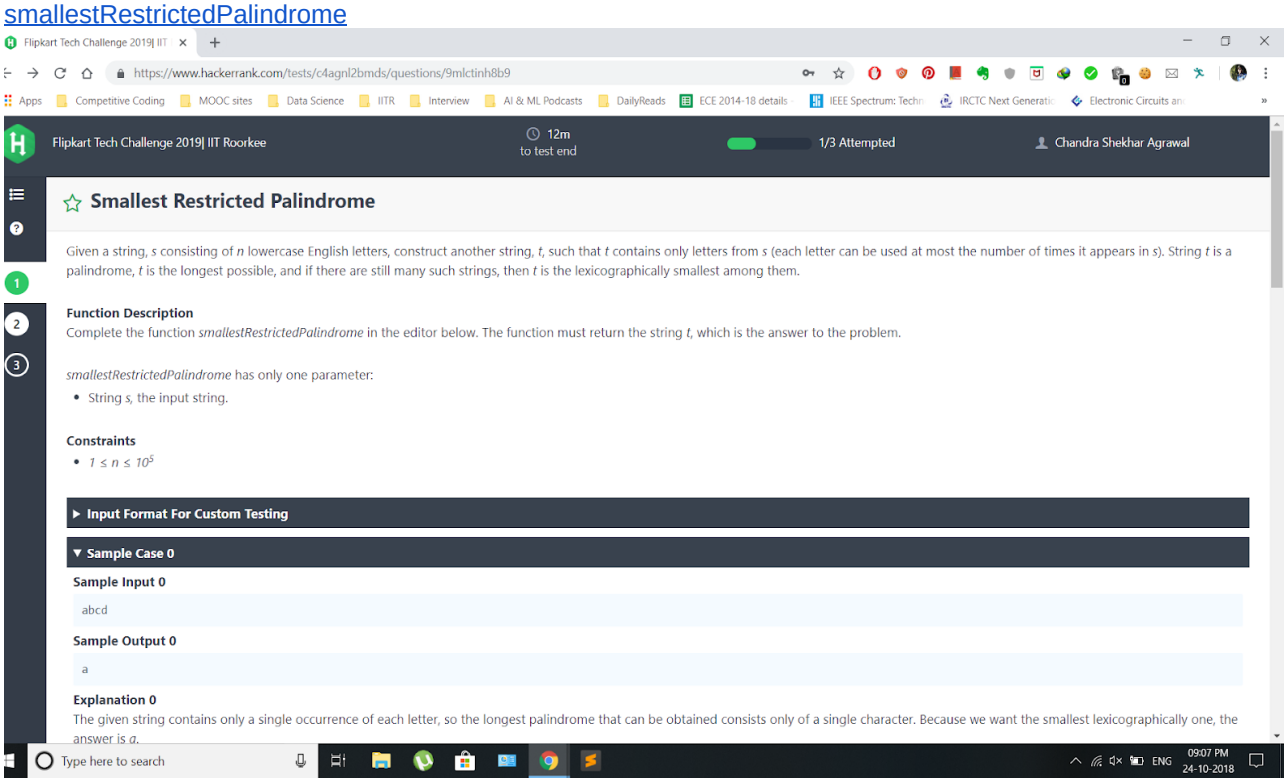
1. maxCoins
2. minRec Area
3. travelingIsFun Another Solution: https://ide.geeksforgeeks.org/JEdRJ8EIze

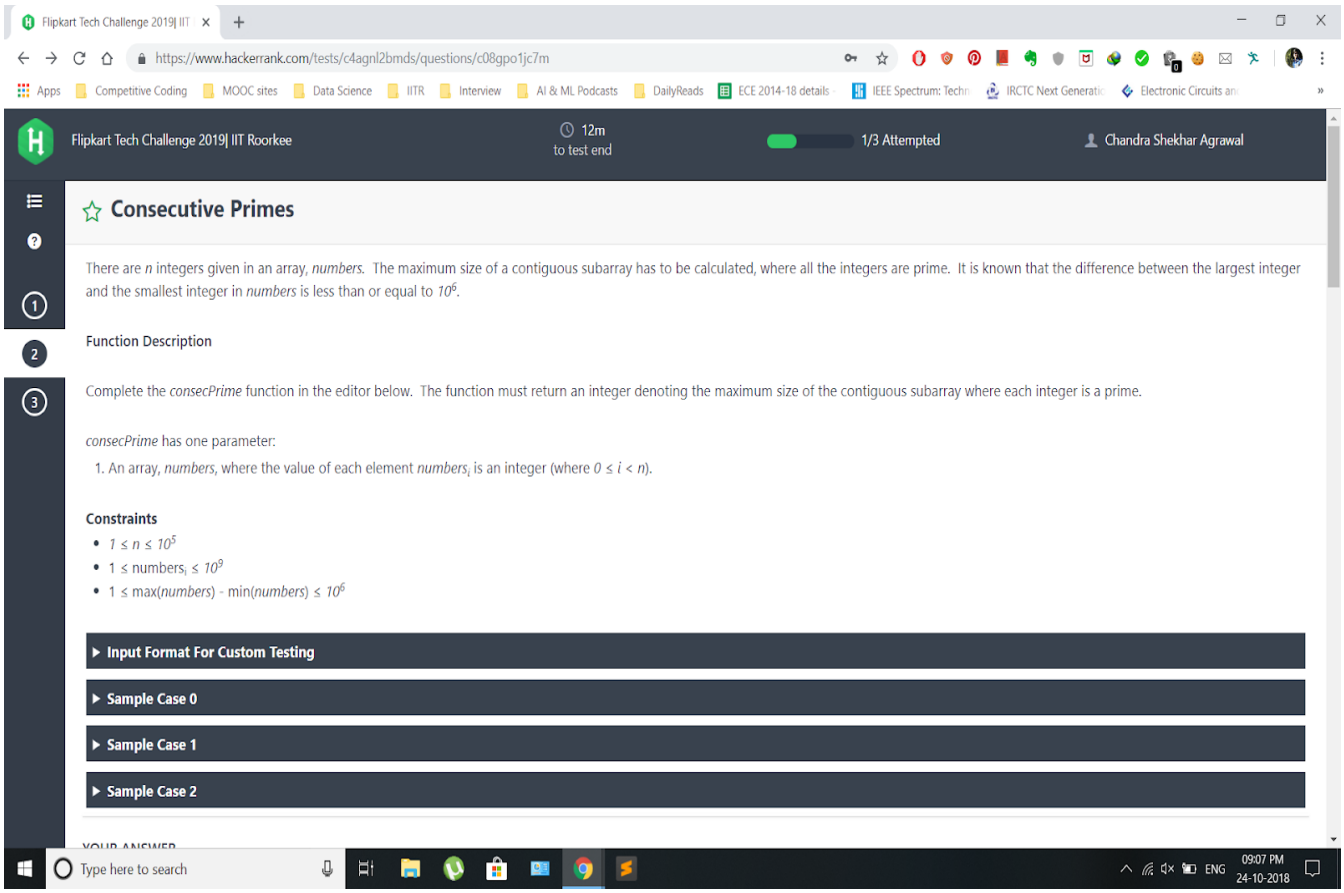
IITH, IITD

1. https://www.geeksforgeeks.org/minimum-steps-reach-target-knight/
2. Time conversion - eg :
31st Jul 2017 ---> 2017-07-31
1st Jul 2017 ---> 2017-07-01
2nd Jul 2017 ---> 2017-07-02

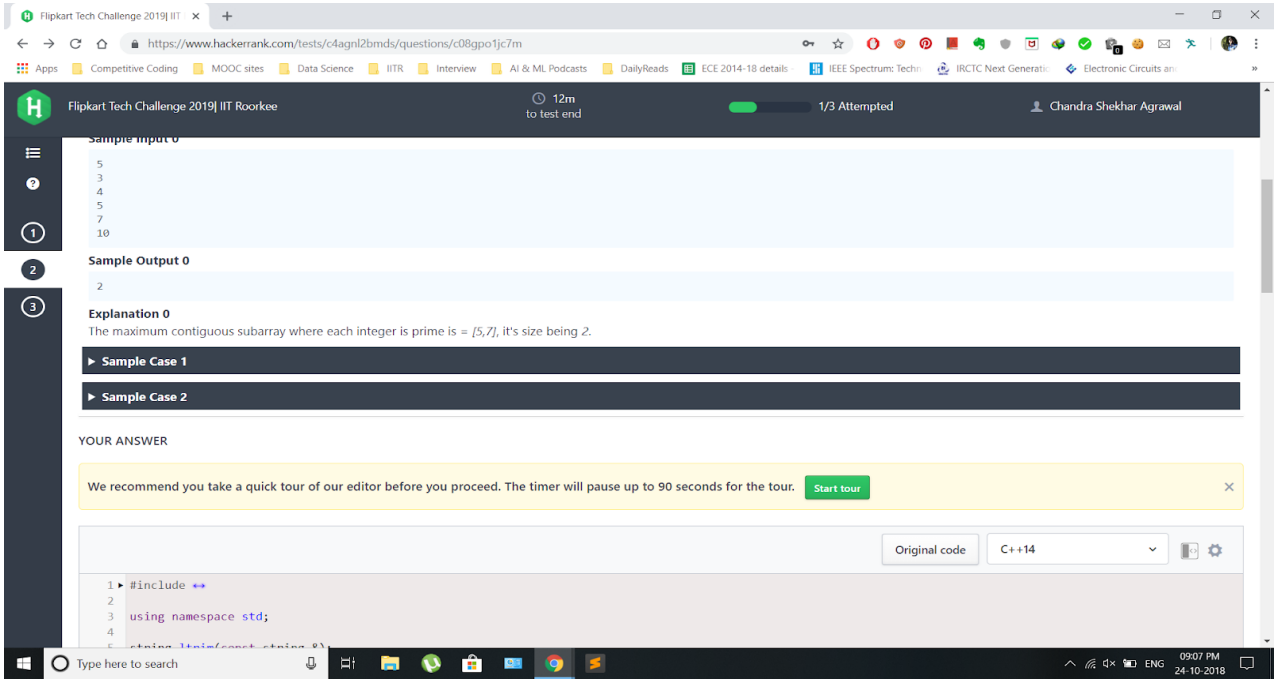
3. Given 3 lists: friend_from, friend_sto, and candies where friend_from[i] is linked to friend_to[i] where weight is candies[i]. Your task is to find maximum connected component with same candy and return maximum product of 2 friends from that connected component.
How this problem can be done using union ? can You please provide the code .
I guess have a modeified disjoint set union where basically where ur greatgreatSupergrandad dad would have the parameters as total candies and max1 and max2 in that component whenever u do union i Guess it helps.
IITR, IITM, IIT-Dhanbad

3 ques, 90 min, hackerrank/
smallestRestrictedPalindrome





(Approach: If we can find whether a given number in the array is prime or not, the question is done. No problems after that. So, the aim is to find all the prime numbers lying b/w the range minelem and maxelem(minelem and maxelem are the minimum and maximum elements of the array.) Find all the prime numbers till 10^6 using normal sieve. After that, in another array(call it primeNos), store the number starting from minelem till maxelem such that primeNos[1]=minelem, primeNos[2]=minelem+1, ……primeNos[maxelem-minelem+1]=maxelem. Now, run a loop on the previously found prime numbers and start cancelling the multiples of those prime numbers in primeNos array by marking them 0. All which will be left after processing all will be your primeNos. Make sure that you start cancelling multiple from somewhere near minelem and not from the very start, i.e near 0. For more information, check out question named Prime Generator on SPOJ.)



Q.No. 3 -> https://imgur.com/a/8UwCXPU
(Solution please??) Solution please??++
Please Upload sample test cases 1 and 2 as well if available
For Q-2 Can we define seive function upto 10^9?or time limit will show? You have to use segmented sieve to pass all tests

IITH (28-Oct-2018)

1. Knight tour problem. Given matrix of size N*N, Source(i,j) and destination(i,j). Find minimum number of steps to visit destination from Source.
https://www.geeksforgeeks.org/minimum-steps-reach-target-knight
(Better use Queue and store pair (vertices) of pairs(count steps) and do do BFS)

2. Date Formatting
Ex: 1st Jan 1992 ---> 1992-01-01
3rd Mar 1980 ---> 1980-03-03
4th July 2010 ---> 2010-07-04
14th July 2010 ---> 2010-07-14

3. Candy Problem. Need to do union-find. Question is almost (98%) similar to Flipkart IITK 3rd question
travelingIsFun https://www.hackerrank.com/contests/hack-it-to-win-it-paypal/challenges/q4-traveling-is-fun
Can you please explain how it can be done using union-find?

Morgan Stanley

IIT BHU

please update(Python available??)

1. Coin change problem. https://www.geeksforgeeks.org/coin-change-dp-7/
2. A variation of https://www.interviewbit.com/problems/capture-regions-on-board/
3. Don't remember the third

IIT G

7 Syntax/Logical error correction coding questions in 20 minutes
+
10 aptitude questions in 20 minutes
+
3 coding questions in 40 minutes
<First two questions were similar to https://leetcode.com/problems/friend-circles/.

1. **Given a binary 2D matrix, you had to convert 0s to 1s, maximizing the conversions when you can convert a group at once. You are supposed to leave a minimum of k groups. Return the number of 0s converted.**
2. **You just needed to copy paste the code from the first and change 2 lines :P**
3. **A simple problem, could be solved using warshall's algorithm or simple dfs, finding the node with longest dfs in a directed graph.**

>

{The constraints were pretty small, brute force solution worked like a charm!}

{**If someone has screenshot or if someone can write the full questions, please do so!**}

IIT KGP : 30th Oct 2018

Platform : Amcat
20 minutes - 10 aptitude (timetaking)
20 minutes - Syntax correction - 7 questions (easy)
60 mins - 3 coding questions

1. Given two circles with their centres co-ordinates and their radii , we need to find the non overlapping area between the circles. But the catch here was people didn't know the function for cos inverse, sine inverse
2. CPP
Refer : inverse trigonometric functions in cpp ...its asin(), I guess
3. Given a 2D matrix of 1s(bright areas) and 0s(dark area, and s) N = Number of dark areas to be removed is given.
Now, we had to find the least zeros left after converting the least N dark connected areas in the matrix.
Ans : Connected Components of the graphs concept
4. Find the minimum of product all the paths from the tree to leaves. (question was not this)
Ans:If we construct the tree, it takes time. So, just maintain an array of parents and perform this multiplication.

Optiver

IITB

1) Online Test : 8 min 80 questions - simple arithmetic questions (+1 correct , -2 incorrect, -2 blank)
2) Offline Round :
    a) Test 1 : 8 min 80 questions - same as above but this time with OMR (+1 correct , -2 incorrect, -2 blank)
    b) Test 2: 30 min 26 questions based on prediction of next term in series (+1 correct , no negative)
    c) Test 3: 20 min 45 questions: Guesstimates (+c correct, -c incorrect, -2 for blank)
        i) Marking: For each question we had to write our confidence level from 1 to 5. So if we write a confidence level 3 in a question then if that question is correct we get +3 else -3.
        ii) Answer format: the nearest power of 10 to the guesstimate
            (1) Eg: population of india = 1.2 billion , ans = 9 (as 1.2 billion is closer to 10^9)
        iii) Questions were like:
            The number of trees on earth?
            Pages in oxford dictionary?
            15!?
            No of cycles in amsterdam?
            No of hair on human head?

FIDELITY

IITG

4 sections:
    1. Verbal
    2. MCQs-Data structures+Networks+Mysql+OOPS
    3. 2 Coding Questions(1 hr- easy)
    4. 2 algorithm questions (given 2 random problem statements, had to write pseudo codes for both) (i)Minimum moves for Knight to reach King whose position is fixed.(BFS).

CODING ROUND-(STL,Python were allowed)
    1. Given 2 strings A and B. Output the count of jumbled words of string A which are substring of string B.
    Input: A= ram, B=cmarma
    Output: 3 rma, mar, arm
    2. Given three students A,B,C. They have to plant N saplings in a playground. They can use only 1,3,7 numbers, starting from A find the last student who sows the seed.(have to use maximum number possible each time).
        a. Input: N=6
        Output: B (A=3 B=3)
Input: N=9
Output: C (A=7 B=1 C=1)

JPMC (SDE)

IIT (BHU)

CTC: 21LPA
2 coding questions on Hackerrank. Time: 65 min
  1.Stock buy and sell with two given conditions:
  -> Sell only after buying the stock(array keys can be considered timestamps)
  -> Sell beforehand and buy it later (just find maxima and minima)
  It was required to return (4) iterators(days) on which you buy and sell in both conditions to maximise profit.
  The same question has been mentioned somewhere in 17-18` doc section)
Can someone elaborate on this question?+2

  2. Given an array and a window of size m. Pick the maximum element out of starting or last m elements if sizeof(arr)>m, else find maximum out of sizeof(arr) elements.The no of elements to be picked was given.
  In case of two same valued maximas, return one with lower position in the array.
  (Use priority queue) https://ide.geeksforgeeks.org/r4w1QC6W7z

I guess using 2 priority queues would be useful,one for starting m elements and the other for last m elements.
Everyone came across same questions. I wanted some more time to solve both =(

IITB

65 mins 2 programming questions, hackerrank platform

1. Given an array and a number K, segment the array into K contiguous subarrays with at least 1 element in each subarray, such that sum of averages of each subarray is maximum. For example- arr=[9,1,2,3,9] and K=3, maximum value = 9+(1+2+3)/3+9 = 20
   Any one plzz suggest solution for ques 1
2. Given a two dimensional array with 1 'R', 1 'E' and rest of them 'O' or 'P'. Goal is to find the number of steps required to go from 'R' to 'E' while remaining on 'O' and avoiding 'P'. It was given that, there is only 1 unique path which exists. Example-
   O R O
   P P O
   E O O
   This 3x3 matrix requires 5 steps- (0,1)->(0,2)->(1,2)->(2,2)->(2,1)->(2,0). Note- array need not be square.

This is not the exact language, but these were the essence of both the questions.

IITKGP

1. Same as IIT BHU Q. 2.
2.

JPMC (Quant/Research)

IIT KGP, IITR, IITK, IITD,IITB

Platform: cocubes

a

Quant:
35 mins
18 MCQs : Puzzles, Probability(expected values, dice, card questions) etc
5 MCQs: JEE Math
7 MCQs: Coding (recursions, time complexity, tree etc)

Coding: (Different Sets)
2 Questions 40mins

1. Given a binary tree containing **n** nodes. The problem is to get the sum of all the leaf nodes which are at minimum level in the binary tree
   https://www.geeksforgeeks.org/sum-leaf-nodes-minimum-level/
2. Create a singly linked list of Leaf nodes from a binary tree
   https://effprog.wordpress.com/2011/04/05/create-a-singly-linked-list-of-leaf-nodes-from-a-binary-tree/
3. Sum of all the numbers that are formed from root to leaf paths
   https://www.geeksforgeeks.org/sum-numbers-formed-root-leaf-paths/
4. AGGRCOW: solution https://www.geeksforgeeks.org/place-k-elements-such-that-minimum-distance-is-maximized/

IITG

MCQ s same as IIT KGP --- Quant and probability was tough and really time consuming.
Coding (2 questions)
1.https://www.geeksforgeeks.org/place-k-elements-such-that-minimum-distance-is-maximized/
2. https://www.geeksforgeeks.org/kth-largest-element-in-bst-when-modification-to-bst-is-not-allowed/
3. https://www.geeksforgeeks.org/find-possible-words-phone-digits/
4. https://www.geeksforgeeks.org/sum-numbers-formed-root-leaf-paths/
5. https://www.geeksforgeeks.org/sum-leaf-nodes-minimum-level/

IIT B

Quant Type same.(Prepare Expectation Value..)
Some questions..

1. Expected number of times a dice to be rolled to get all faces once
2. Expected people to have some given prob of 2 having same birthday etc..

Coding-
1.Given a linked list get the deepest node which is the left child of some node and has the max value.
2. Convert all the leaf nodes in a Tree in the form of a linked list starting from rightmost to leftmost.(Just simple recursion).

IIT KGP

Platform: cocubes
Quant:
30 mins
18 MCQs : Puzzles, Probability(expected values, dice, card questions) etc
5 MCQs: JEE Math
7 MCQs: Coding (recursions, time complexity, tree etc)

Coding: Everyone had different pair of coding questions
2 Questions 40mins

1. Given a binary tree containing **n** nodes. The problem is to get the sum of all the leaf nodes which are at minimum level in the binary tree. https://www.geeksforgeeks.org/sum-leaf-nodes-minimum-level/
2. Create a singly linked list of Leaf nodes from a binary tree
https://effprog.wordpress.com/2011/04/05/create-a-singly-linked-list-of-leaf-nodes-from-a-binary-tree/
3. Given a binary search tree, find all subtrees such that all elements of the subtree are in the given range (l, h)
4. Given a binary tree, find the number of subtrees that are BST's
5. Given a binary tree

For the above tree find the sum of numbers formed (here possible numbers are 124 + 125 + 13 = 262)
6. https://www.geeksforgeeks.org/place-k-elements-such-that-minimum-distance-is-maximized/

Razorpay

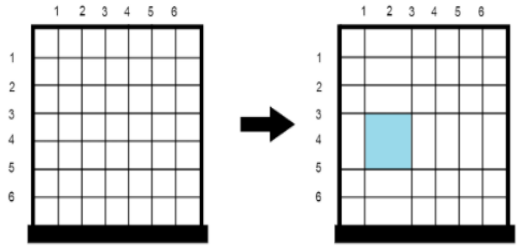
IITR

PrisonBreak

☆ Prison Break

Programmer Sam is planning to escape from prison! The prison's gate consists of horizontal and vertical bars that are spaced one unit apart, so the area of each hole between the bars is *1 × 1*. Sam manages to remove certain bars and make some of these holes bigger. Determine the area of the largest hole in the gate after the bars are removed.

For example, consider the diagram below. The left image depicts the initial prison gate with *n = 6* horizontal and *m = 6* vertical bars, where the area of the biggest hole in the bars is *1 × 1*. The right image depicts that same gate after Sam removes horizontal bar *4* and vertical bar *2*, at which point the area of the biggest hole in the bars becomes *2 × 2 = 4*:



Function Description

Complete the function *prison* in the editor below. The function must return a long integer denoting the *area* of the biggest hole in the prison gate's bars.

prison has the following parameter(s):

n: integer, the number of horizontal bars initially

☆ Consecutive Sum

Given a long integer, find the number of ways to represent it as a sum of two or more consecutive positive integers.

For example, consider the number 21. It can be expressed as the sums of [1, 2, 3, 4, 5, 6], [6, 7, 8] and [10, 11]. There are 3 ways to sum to 21 using consecutive positive integers.

Function Description

Complete the function *consecutive* in the editor below. The function must return an integer denoting the number of ways to represent *num* as a sum of two or more consecutive positive integers.

consecutive has the following parameter(s):

num: the integer to sum to

Constraints

- $1 \le num \le 10^{12}$

▶ **Input Format For Custom Testing**

▼ **Sample Case 0**

Sample Input

```
15
```

Another Set :-
90 min. (3 coding+10MCQ); test was on hackerrank platform.Climb the hill`
Q.No. 1 -> https://www.evernote.com/l/AVH55Vp41glDq4DUhgGDUA5FRBURfYXLsGU/
Solution to Climb the Hill: https://www.geeksforgeeks.org/minimum-incrementdecrement-to-make-array-non-increasing/
Q.No. 2 -> https://www.evernote.com/l/AVGkas-I-L9KCo7GmbZljaQKaq63Gxgf5rM/
Q.No. 3 -> https://www.evernote.com/l/AVEt83J4bORB66Odbv0-OnOP43qrV_XQ8BI/
(https://www.geeksforgeeks.org/count-ways-express-number-sum-consecutive-numbers/)

IITG

Duration : 1.5 hrs Platform- Hackerrank
Coding Section:

1. https://leetcode.com/problems/degree-of-an-array/
2. Find minimum elements of all k size window of an array , and find max element among them.
   Similar problem: https://www.interviewbit.com/problems/sliding-window-maximum
3. Similar to: https://www.geeksforgeeks.org/making-elements-distinct-sorted-array-minimum-increments/

Objective question:
10 objective questions related to Binary tree, N-ary tree, Sql, Probability, Time-complexity

IITM

1.5 hrs; 3 coding + 8 Technical MCQs
1st Coding question was same as IITG 2nd Problem.
Link to other coding questions: https://postimg.cc/gallery/270u1w6mc/

IIT BHU

1.5 hrs; 3 coding + 8 Technical MCQs
1st Coding question = **Q.No. 1 ->** https://www.evernote.com/l/AVH55Vp41glDq4DUhgGDUA5FRBURfYXLsGU/
Solution to Climb the Hill: https://www.geeksforgeeks.org/minimum-incrementdecrement-to-make-array-non-increasing/
Link to other two coding questions: https://postimg.cc/gallery/270u1w6mc/

EXL Private Ltd

CTC: 11.2 lac In-Hand

IITR

(12-10-2018)
CGPA Cutoff- 6.7 (shortlisted about 300 students)
Test on cocubes; 45 minutes- 40 questions
20 Quant, 10 LR/DI, 10 Verbal
LR/DI was a bit trickier than the rest
Verbal was easy could be done in 7 minutes while quant and LR/DI were time consuming so overall paper was lengthy according to time. Paper was quite tough if compared with Pariksha papers/practice.

1. Test Sections
45 min 40 question
Marking Scheme :- +1, -.25
Test is conducted on , one can find some mock papers of cocube available online
Questions division :- 20 quant, 10 LR, 10 English

2. Test Experience
Difficulty level: Avg and above for quant. English and LR were relatively simple
In quant, revise ratio and mixtures properly
Also questions on the sum of factors, no. of the factor of given no. (see formula)

IITK

Position: Consultant 11.2Lakh
45 mins 40 questions on cocubes
10-verbal
10-reasoning
20-quant+DI
Quant is the most time consuming section, topics were similar to standard aptitude topics like cistern-pipe, work-time, probability.., functions

BNY Mellon Technologies/INAUTIX

80k USD for New York and 21LPA in India
Any information on option for pittsburg hiring

IIT(BHU)

Date - 24th September,2018
Profile - Software Engineer
5 coding questions/ 2 Hour test on hackerrank(different sets for everyone)
New set:

1. Cavity Map https://www.hackerrank.com/challenges/cavity-map/problem
2. To find number of possible paths in a matrix of 1's and 0's from top left to bottom right (with condition given that the path doesn't go through any zero
3. Fused nuclear rods https://www.careercup.com/question?id=5721734273564672 C++ code

4. Two operations are possible: ADD- add 1 to number and MULTIPLY- multiply number by 2. Find the minimum number of operations to take number from 0 to k (given) using only above two operations
5. Friend Circles https://www.hackerrank.com/contests/juniper-hxackathon/challenges/friend-circles C++ code

New Set:
1. https://www.geeksforgeeks.org/stack-set-2-infix-to-postfix/ Stack Operation
2. https://github.com/Nehoss/Ascending-Binary-Sorting C++ code
3. https://www.geeksforgeeks.org/count-ways-reach-nth-stair/
4. https://www.hackerrank.com/challenges/travel-in-hackerland/problem [Similar question not exactly same]
5. Generate all possible sub-sequenc a string https://www.geeksforgeeks.org/print-subsequences-string/
6. Maximum points from top left of matrix to bottom right and return back g4g Topcoder

New set:
1. Given two arrays A and B, print the elements that are common in both
2. Convert the given prefix expression to postfix expression.
3. Problem was on disjoint set. Given 3 arrays, A, B , C (A for starting node, B for end node, C for query type). Query type will be either 0(to take union of groups in which A[i] and B[i] fall) and 1 (to print sum of size of group of A[i] and B[i]).
4. Read .json file. Didn't attempt as only option was to use Objective C.
5. huffmanDecode

IITK

Date - 1st October,2018
Multiple sets. Listing them sequentially -

New set:
1. https://github.com/josergc/min-max-product: C++ proposed solution`
2. https://www.geeksforgeeks.org/check-whether-two-strings-are-anagram-of-each-other/
3. https://www.geeksforgeeks.org/program-chocolate-wrapper-puzzle/
4. https://www.geeksforgeeks.org/connected-components-in-an-undirected-graph/
5. https://www.hackerrank.com/challenges/strplay/problem

New set:
1. repeat: Read .json file question (above mentioned by IIT BHU)
2. Given an array of integers, return total number of pairs having sum multiple of 60.
3. Given intervals within range of 1 to n, find the least position having maximum overlap.
4. https://www.geeksforgeeks.org/count-ways-express-number-sum-consecutive-numbers/

New set:
1. https://www.geeksforgeeks.org/find-minimum-difference-pair/ + print all pairs with minimum difference (no duplicates)
2. https://www.geeksforgeeks.org/minimum-number-of-manipulations-required-to-make-two-strings-anagram-without-deletion-of-character/
3. Given 2 numbers *a* and *b,* you have to return 2*x+3*y if solution exists for following equations:
    a. x + y = a
    b. x *xor* y = b
    c. x >= 0 (https://www.geeksforgeeks.org/find-two-numbers-sum-xor/)
4. https://www.geeksforgeeks.org/count-possible-paths-top-left-bottom-right-nxm-matrix/
5. huffmanDecode

New set:
1. repeat
2. repeat: Given an array of integers representing seconds. Find number of pairs whose sum gives some minute (i.e. a + b = multiple of 60) : Example : [20,40,60] -> ans = 1
3. (Medium) Decode the string given formed of {1-10, 11#-26#, (some integer)}. Decode following this scheme.
    a. 1-> a, 2 -> b, ..., 10 -> j
    b. 11# -> k, ..., 26# -> z
    c. 11# (3) -> kkk, (i.e. consecutive letters are represented with their code and followed by parentheses with their occurence)

4. (Hard) repeat: https://www.geeksforgeeks.org/maximum-points-top-left-matrix-bottom-right-return-back/
5. (minimum steps to travel from (0,0) to (x,y) collecting all gold coins. Can move in East-><-West, North-><-South.Hard) Given a matrix and (x,y). Matrix consists of 0,1,2. 0 means non-blocking, 1 means blocked, 2 means gold. Find m

New Set:
1. (Easy) Find the size of the largest connected component given the graph.
2. (Medium) g4g
3. Degree of an array is the maximum frequency of any element. Find the length of the shortest subarray which contains all occurences of the most frequent number (there can be more than one most frequent number).
4. (Hard) Given a matrix and (x,y).Matrix consists of 0,1,2 . 0 means non blocking, 1 means blocked, 2 means gold. Find minimum steps to travel from (0,0) to (x,y) collecting all gold coins.Can move in East-><-West, North-><-South. Number of 2 <= 10 (????????? Solution for Q4 anyone ???????????)
5. (Hard) Find Number of Pairs

IITR

Questions were same as IIT Bhu and IIT K in different sets
5 ques., 2 hrs, hackerrank
Set1: 1. https://imgur.com/a/r614S79
2. (Hard) Given a matrix and (x,y). Matrix consists of 0,1,2. 0 means non-blocking, 1 means blocked, 2 means gold. Find minimum steps to travel from (0,0) to (x,y) collecting all gold coins. Can move in East-><-West, North-><-South.
3.

Set2: 1. Generate all subsequences of a string and return in lexicographic order
2. Prefix to postfix (same as above)
3. Beautiful subarray https://www.geeksforgeeks.org/number-subarrays-m-odd-numbers/
4. Nuclear rod (same as above)
5. Travel from (0,0) to (x,y). Grid has 0, 1, 2. 0- you can pass, 1- blocked, 2 - gold. Shortest path. (same as above)

IITG

Date 27th Oct 2018
New Set:
1- https://github.com/josergc/min-max-product: C++ proposed solution
2-Given a graph, find the minimum of all friend factor of each trio. (trio is a triangle of edges)
What is friend factor : for each trio (3 nodes that are all connected to each other), the friendship factor is defined as the sum of number of nodes that each of the three are connected to, other than each other.
3- https://www.hackerrank.com/contests/hack-it-to-win-it-paypal/challenges/q4-traveling-is-fun/problem
4-Fused nuclear rods https://www.careercup.com/question?id=5721734273564672 (Done using Disjoint Sets Problem similar to Friend Circle Problem - Approach used- Counting of Size of each Component in graph)
5- Beautiful subarray https://www.geeksforgeeks.org/number-subarrays-m-odd-numbers/

Microsoft

Hosting on cocubes platform: STLs allowed

IIITD

Date - 6th July 2018
Profile - Software Engineer
3 questions/ 1.5 Hour test on cocubes
When is the Microsoft test in IITs? Any test before 10th October? Please post the questions immediately. :) +1

Eligibility: B.Tech. CSE, EE, ECE, MSM
IDD CSE, EE, ECE
M.Tech. CSE, EE, ECE (IITR) No CGPA cutoff to apply

1. https://www.geeksforgeeks.org/round-the-given-number-to-nearest-multiple-of-10/ C++ efficient code
2. Similar to https://www.hackerrank.com/challenges/30-binary-numbers/problem C++ proposed code
3. Delete N nodes after M nodes of a linked list C++ code (function linkdelete)
4. Given 2 arrays, find sum of uncommon elements
    a. Sorted arrays: C++ code
    b. Unsorted arrays: C++ code
    c. Unsorted arrays elegant code (uses STL): C++ code with explanation

(There was one more set I will ask my friends to add those & cocube interface was too poor we couldn't debug the codes)

IITG

Date - 10th Oct 2018
IDC profile: 3 questions/ 1 Hour 15 minutes test on cocubes
Languages: C, C++, JAVA, C#
Different sets

1. https://www.geeksforgeeks.org/reorder-a-array-according-to-given-indexes/
2. https://www.geeksforgeeks.org/maximum-sum-such-that-no-two-elements-are-adjacent/
3. https://www.geeksforgeeks.org/arrange-consonants-vowels-nodes-linked-list/
4. https://www.interviewbit.com/problems/sorted-permutation-rank/
5. Finding Minimum-Cost Path in a 2-D Matrix with Right, Down and Diagonal move allowed. Variant: https://www.hackerearth.com/practice/notes/dynamic-programming-problems-involving-grids/
6. https://www.geeksforgeeks.org/lexicographic-rank-of-a-string/ This question was there originally. Deleted by someone.

IITR

Date - 10/10/2018

1. A string is given. Minimum no. of characters to append to the string such that it will become palindrome. Print them
2. A number is given in string form. Manipulate the string to tell the next greater element that can be formed
3. https://www.geeksforgeeks.org/sum-leaf-nodes-minimum-level/
4. Given an array of n elements and an integer k. Group the elements in k. And then sort the array
Ex: [1, 23, 4, 3, 8, 9] and k = 2. So number formed are 123, 43, 89. Now after sorting, it will be 43, 89, 123. Return the array as [4,3,8,9,1,23]. n will always be multiple of k Can someone provide solution for this?+4 https://codeshare.io/2jDxRR
5. https://www.geeksforgeeks.org/maximum-sum-such-that-no-two-elements-are-adjacent/
6. https://www.geeksforgeeks.org/find-distance-between-two-nodes-of-a-binary-tree/

7. Decode the string. Given a character array number is mapped to corresponding alphabet and "_" is mapped to space. If there is "#", after "#" is a number. There will be no "_" and "#" in returned string. Something like that.
Sample Input - 3 2 20_21 # 1 # 2_#11 4 @11
Sample Output - CBT U12 11D@H
Question is not clear...can someone please explain in little more detail..

Please take care of char pointer it waste so much time , cause me one ques (microsoft) (seriously, don't overlook this.)

IITD

1. Print sum of the cousin nodes of a given Binary tree. (Cousin nodes are at same level but of different parents)
2. Given a date and a day pair in the calendar, return the day corresponding to a query date.
3. Given a string, return the minimum no. of characters to append at the end of string such that it becomes a palindrome
4. Given an array of n elements and an integer k. Group the elements in k. And then sort the array
5. https://www.geeksforgeeks.org/find-distance-between-two-nodes-of-a-binary-tree/
6. Delete N nodes after M nodes of a linked list
7. https://www.geeksforgeeks.org/sum-leaf-nodes-minimum-level/
8. Given a number in the form of a string. Find the the next larger number that can be formed with the same set of digits. Print -1 if not possible.

IITM, IIT BHU, IIT Dhanbad

Exactly same set of questions as above, no problem other than the ones mentioned by the other IITs above.

IIT KGP

Most questions same as above

1. Find the no. occurences of the given word (char *) in a char board of size m*n - e.g. no. of occurrences of hello are 2

h	p	m	o	l	l
e	l	l	k	h	e

IITB, IITH

Repeat from above questions
(Many questions need to be solved without using extra memory take care of that in test)

https://ideone.com/laser0/microsoft_2018

Goldman Sachs

IIITD

Date - 6th July 2018
1 Position - Analyst
1 hour test @hackerrank

1 coding question*(20 min)*
count all possible quadrilateral by joining different sides of a quadrilateral. count all possible quadrilateral by joining different sides of a quadrilateral (is it by joining different sides of a quadrilateral or different sides of a regular polygon?)

4 Q's on Computer science basics*(20 min)*

AVL tree, Probability & Stat and addition of two hexadecimal number.

4Q's on Analytical comprehension*(20 min)*

IITR (internship)

Coding:

1. Given strings with (x,y) coordinates , for an input string find the nearest string . two strings are nearest if they have same value at x or y coordinates.
2. Find the smallest number greater than given number and largest number lesser than given number , with same number of set bits as in given number.link
3. Which of the following will be the correct method to swap two numbers in all possible case. Options were exor, product & division, sum and difference: Correct answer - exor

Quant:

1. Find the expected number of events required to get three consecutive sixes on a dice. (E = 258)
2. Same as 1 , given that first two outcomes are two sixes. (E = 216)
3. Two questions on hamiltonian cycles in a graph. Conditions and conclusions.(Could you please recollect and tell they questions, at least the outline)
4. A paragraph on Buffon's Needle - (find the expected number of "crossings" a L-shaped bar , and a ring would do) (The distance between the lines and the diameter of the ring and the two sides of the L shape were given)

IITD

Nov 2, 2018

1. minBin

MCQ Questions

2. A tree was given in the question (containing around 30 nodes) and the location (node no.) of police and the thief was given, the thief will try to avoid the police till the time he can, both police and the thief will select the optimal node always.
Find the time when the thief will get caught. At each section the thief can either jump to the next node or stay at its position.
Approach?

3. We have 128 students, we need to organize minimum number of matches to find the second best student.. The ordering follows transitivity i.e if a beats b, b beats c then a can beat c.

- 4. Code for queue implementation using stacks was given. If we have n insert and m delete operations, then find the range in which the number of push operations(x) and number of pop operations will lie. Eg. options were of this form n+m<=x< 2n and 2m<=y<n+m
https://www.geeksforgeeks.org/data-structures-and-algorithms-set-17/

5. Find the expected number of inversion, for all permutations of elements of the array.
The answer was n(n-1)/4.The options were nc2,nc2/2,nc2/4,2*nc2

Passage on Lambda calculus

Given Lambda Calculus Formulae for True, false, and the definition of a Function, its parameters, arguments etc
6. What will be the lambda calculus formula for and operation?
7. What will be the lambda calculus formula for if x then y ?

Passage on Hamiltonian cycle

8. Questions were based on properties of Hamiltonian Cycle with >=10 vertices.To find the true statement among 4 options. A graph having >= 10 vertices and each vertices having even degree was given.
The options were(others could check and correct)
a.Whether a bipartite graph can be formed from the above graph.
b.Whether a cycle with n edges exists
c. Hamiltonian cycle exists.
d. Don't remember !!!
e. None of these

9. Sufficient condition to have hamiltonian cycle.
   a. All should have even degree
   b. All should have odd degree.
   c. ……..didn't remember……..

Quant Section:

☆ ML Outliers

Which of the following statistics are unaffected by outliers ?

1. Mean
2. Median
3. Standard deviation
4. Inter-quartile range $IQR = CDF^{-1}(0.75) - CDF^{-1}(0.5)$, where CDF refers to cumulative distribution function

Pick one of the choices

- 1 and 4
- 2 and 4
- 2 and 3
- 1 and 3

Clear selection

☆ ML BiasVariance

A model suffering from low bias and high variance could potentially be improved by which of the following methods ?

1. Regularization
2. Increasing number of input features
3. Increasing number of data samples
4. Decreasing the number of input features.

Pick one of the choices

- 1 and 2 only
- 1, 3 and 4 only
- 2 and 4 only
- 1, 2, 3 and 4

Clear selection

☆ Quant Blocks of Same Weather

Imagine that on a given day, the weather can be sunny (probability 0.4), cloudy (probability 0.4) or rainy (probability 0.2). Assume that weather is independent across days. Define blocks of weather to be groups of consecutive days in which the weather is the same. For example, if it rained for eight days, followed by a day of sun and a day of clouds, we'd have three blocks. Across a ten-day period, what's the expected number of blocks of identical weather?

Pick one of the choices

- 106/25
- 169/25
- 115/25
- 185/25
- None of the above

Clear selection

☆ Quant: Area of Rectangle

A random point splits the interval [0,2] in two parts. Those two parts make up a rectangle. What's the approximate value of probability of that rectangle having an area less than 0.5.

Pick one of the choices

- 0.2
- 0.7
- 0.3
- 0.8
- None of the above

Clear selection

☆ Quant Comprehension Probability of Closer to Center Q1

A dart is thrown randomly and hits a dart board. We need to calculate the probability that the dart lands closer to the center than to edge.

Q1) What is the probability if the shape of dart board is circle?

Pick one of the choices

- 1/4
- 1/2
- 1/3
- 1/5
- None of the above

Clear selection

☆ Quant Comprehension Probability of Closer to Center Q2

A dart is thrown randomly and hits a dart board. We need to calculate the probability that the dart lands closer to the center than to edge.

Q2) The probability if the shape of dart board is square can be expressed in the form of $(a*b^{0.5} - c)/d$. What is a+b+c+d ?

Pick one of the choices

- 12
- 13
- 14
- 15
- None of the above

Clear selection

☆ Quant Comprehension Trader Q1

Marcus is a trader who deals in stocks. He is considering investing in a stock which has a 60% correlation with the overall Market returns (Assume an index such as SENSEX). Through his research he expects the overall Market to go up by 10% the next year. He also calculates the DAILY standard deviation of the Stock to be 1%. He also pulls the ANNUAL volatility of the Overall Market from Yahoo Finance and the number is 20%. (Assume a year has 252 days)

Question 1: Given the information what is the expected rise in the Stock Marcus is looking at next year?
(Hint: What is the expected Beta of the linear regression between the stock and the market?)

Pick one of the choices

- 4.8%
- 6.0%
- 5.2%
- 4.0%
- None of the above

Clear selection

☆ Quant Comprehension Trader Q2

Marcus is a trader who deals in stocks. He is considering investing in a stock which has a 60% correlation with the overall Market returns (Assume an index such as SENSEX). Through his research he expects the overall Market to go up by 10% the next year. He also calculates the DAILY standard deviation of the Stock to be 1%. He also pulls the ANNUAL volatility of the Overall Market from Yahoo Finance and the number is 20%.(Assume a year has 252 days)

Question 2: Assuming that the overall Market grows on an average by 10% every year and follows a normal distribution, the probability that the returns of the market will be greater than 30% is closest to?

Pick one of the choices

- 40%
- 30%
- 45%
- 25%
- None of the above

Clear selection

1.Find the 100th element of the series 1,3,4,9,10,12,13,27,28…
The option correct was 981.
2. Find the f(19)=94, and for each x, f(x)+f(x-1)=x^2. Find f(94)%100.Ans 61 how?
3.Weather Question, Probability of sunny is 0.4, rainy is 0.4, and cloudy is 0.2. Given 10 days, find the expected number of contiguous blocks of weather. SSSSRRCCCC is 3 blocks. Explanation?
4.We have a line segment of length 2, given a uniform distribution of choosing a point on the line, find the probability of the rectangle formed by 2 partitions formed by choosing a point having an area less than 0.5(so if x is chosen on the line segment, the l and b are x and 2-x, and area is x(2-x) solution?
5.Which of these are not affected by outliers - mean **mode median** and one other option.
The Options were 1 and 2, 2 and 4 etc etc Median is least affected.
6.If model has low bias and high variance which of the the following options are used to remedy it.

Regularization,Increasing the number of samples, decreasing the number of features,and increasing number of features
7.
8.2 stock questions which were really of probability and normal, and Geometric distribution, and correlation. Seemed Difficult af.
9.Given a circle, and a dart is thrown on the circle, find the probability of dart being closer to centre.
1/4
10.Find the probability if there is a square instead of circle. Integration using Parabola is required.
https://web.calpoly.edu/~sherman1/puzzleoftheday/potw_019soln.pdf

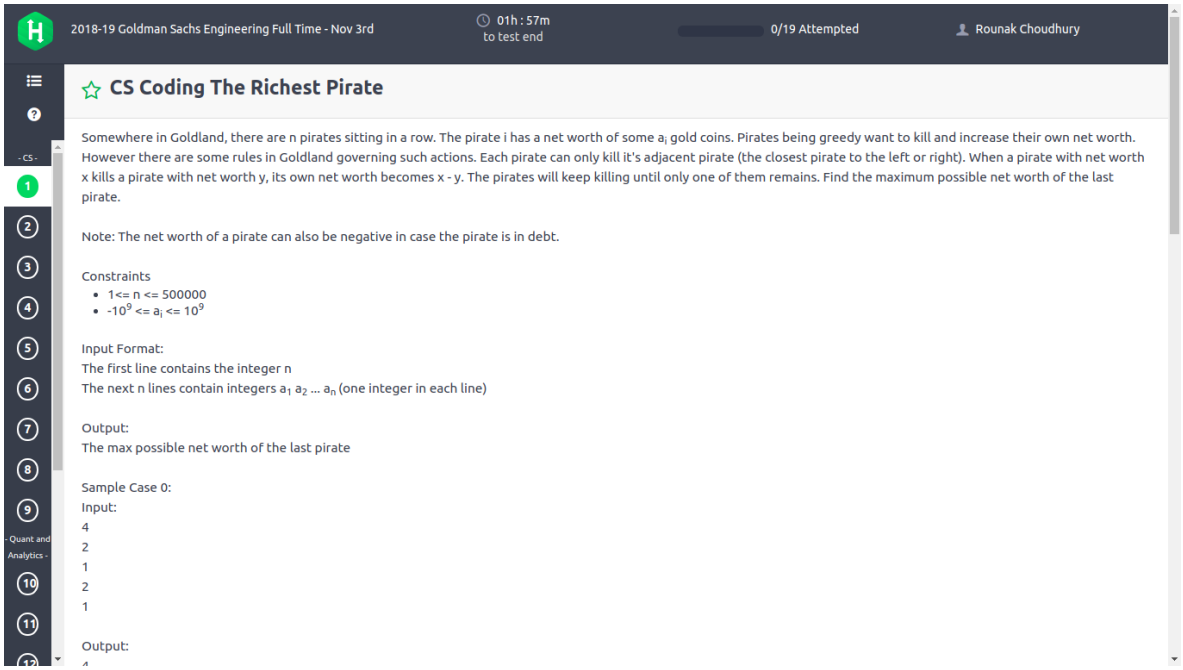
20 questions, 2 hours

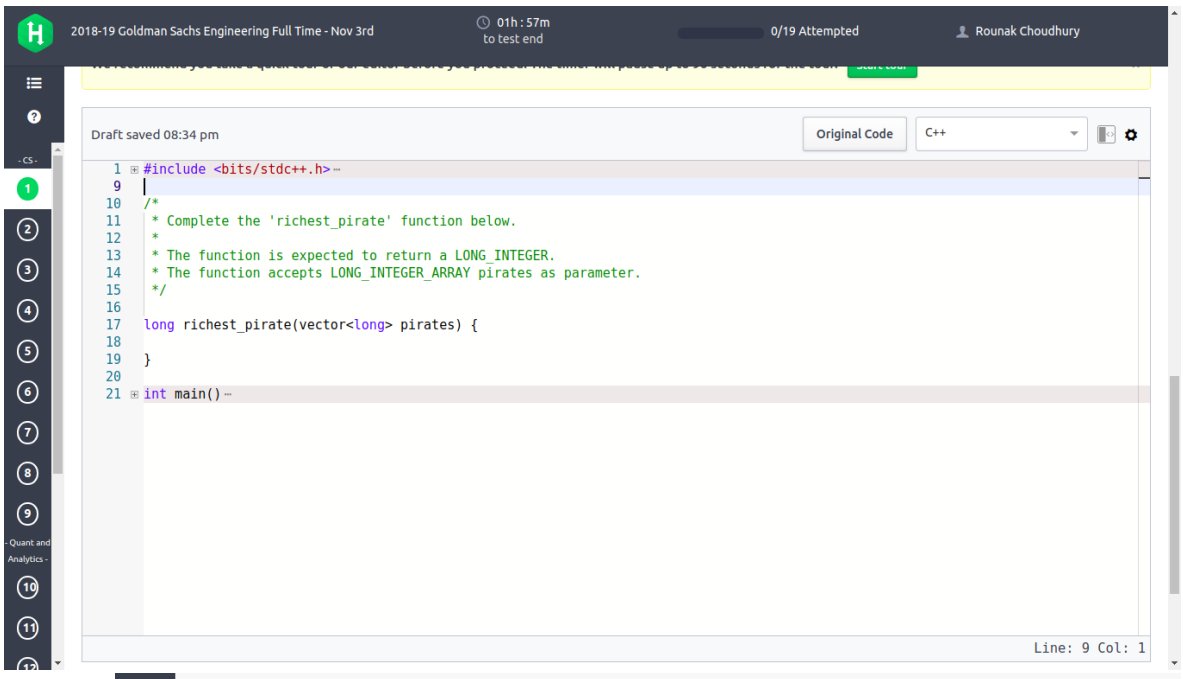
IITM

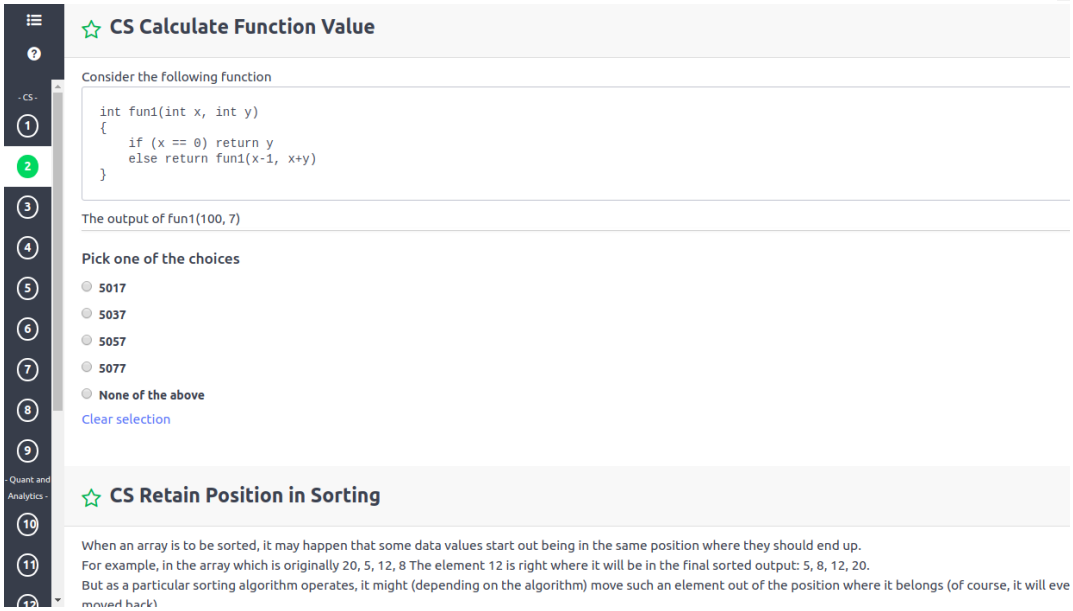
2 Sections 2Hrs.
Computer Science (1 coding question + 8 MCQs)
Quant (10 MCQs)

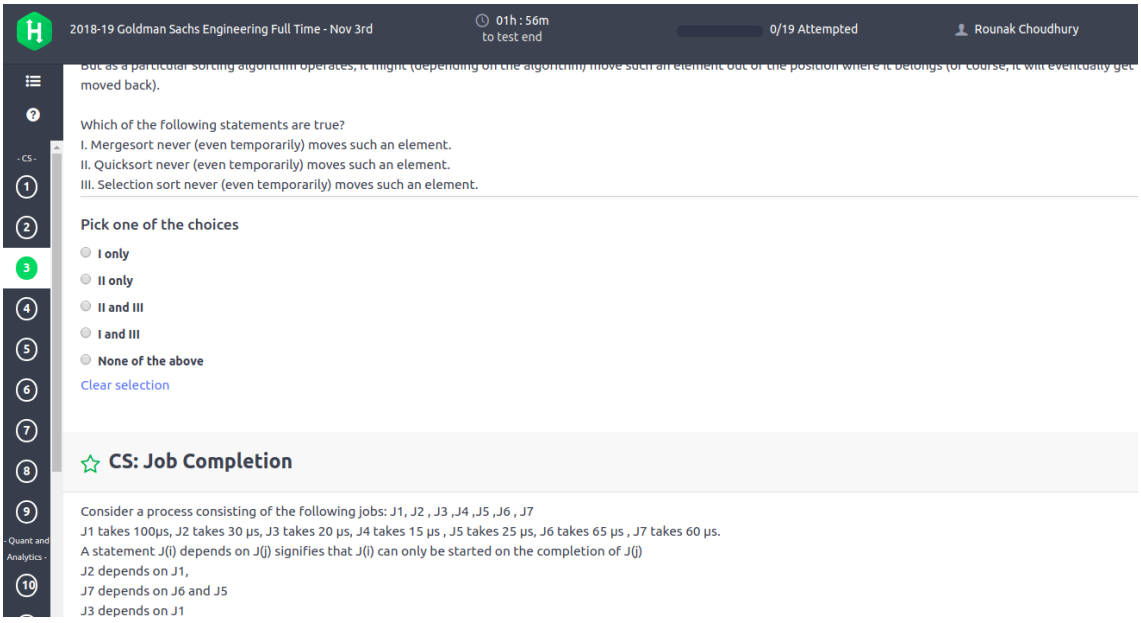
Coding Qutestion: https://postimg.cc/gallery/dslda03o/
Alert: ML questions were there!
Link

(IITB, IITKGP, IITR,IITG,IITBHU)




2018-19 Goldman Sachs Engineering Full Time - Nov 3rd
01h : 57m
to test end
0/19 Attempted
Rounak Choudhury
Draft saved 08:34 pm
Original Code
C++
#include <bits/stdc++.h>
/*
* Complete the 'richest_pirate' function below.
*
* The function is expected to return a LONG_INTEGER.
* The function accepts LONG_INTEGER_ARRAY pirates as parameter.
*/
long richest_pirate(vector<long> pirates) {
}
int main()
Line: 9 Col: 1


CS Calculate Function Value
Consider the following function
int fun1(int x, int y)
{
if (x == 0) return y
else return fun1(x-1, x+y)
}
The output of fun1(100, 7)
Pick one of the choices
5017
5037
5057
5077
None of the above
Clear selection
CS Retain Position in Sorting
When an array is to be sorted, it may happen that some data values start out being in the same position where they should end up.
For example, in the array which is originally 20, 5, 12, 8 The element 12 is right where it will be in the final sorted output: 5, 8, 12, 20.
But as a particular sorting algorithm operates, it might (depending on the algorithm) move such an element out of the position where it belongs (of course, it will eve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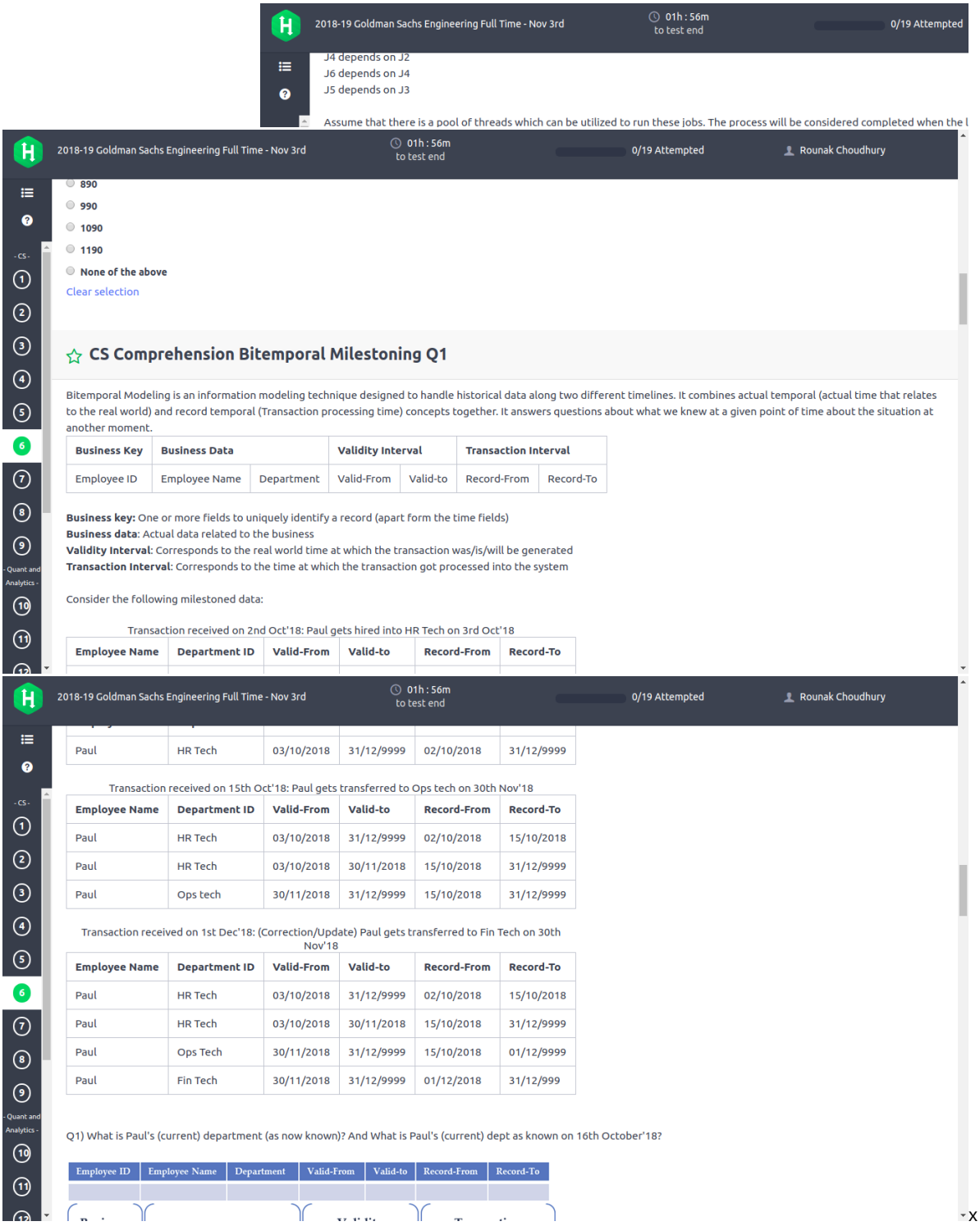
to test end
0/19 Attempted
Rounak Choudhury
moved back).
Which of the following statements are true?
I. Mergesort never (even temporarily) moves such an element.
II. Quicksort never (even temporarily) moves such an element.
III. Selection sort never (even temporarily) moves such an element.
Pick one of the choices
I only
II only
II and III
I and III
None of the above
Clear selection
CS: Job Completion
Consider a process consisting of the following jobs: J1, J2 , J3 ,J4 ,J5 ,J6 , J7
J1 takes 100µs, J2 takes 30 µs, J3 takes 20 µs, J4 takes 15 µs , J5 takes 25 µs, J6 takes 65 µs , J7 takes 60 µs.
A statement J(i) depends on J(j) signifies that J(i) can only be started on the completion of J(j)
J2 depends on J1,
J7 depends on J6 and J5
J3 depends on J1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J4 depends on J2
J6 depends on J4
J5 depends on J3
Assume that there is a pool of threads which can be utilized to run these jobs. The process will be considered completed when the l
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890
990
1090
1190
None of the above
Clear selection
CS Comprehension Bitemporal Milestoning Q1
Bitemporal Modeling is an information modeling technique designed to handle historical data along two different timelines. It combines actual temporal (actual time that relates to the real world) and record temporal (Transaction processing time) concepts together. It answers questions about what we knew at a given point of time about the situation at another moment.
Business Key
Business Data
Validity Interval
Transaction Interval
Employee ID
Employee Name
Department
Valid-From
Valid-to
Record-From
Record-To
Business key: One or more fields to uniquely identify a record (apart form the time fields)
Business data: Actual data related to the business
Validity Interval: Corresponds to the real world time at which the transaction was/is/will be generated
Transaction Interval: Corresponds to the time at which the transaction got processed into the system
Consider the following milestoned data:
Transaction received on 2nd Oct'18: Paul gets hired into HR Tech on 3rd Oct'18
Employee Name
Department ID
Valid-From
Valid-to
Record-From
Record-To
2018-19 Goldman Sachs Engineering Full Time - Nov 3rd
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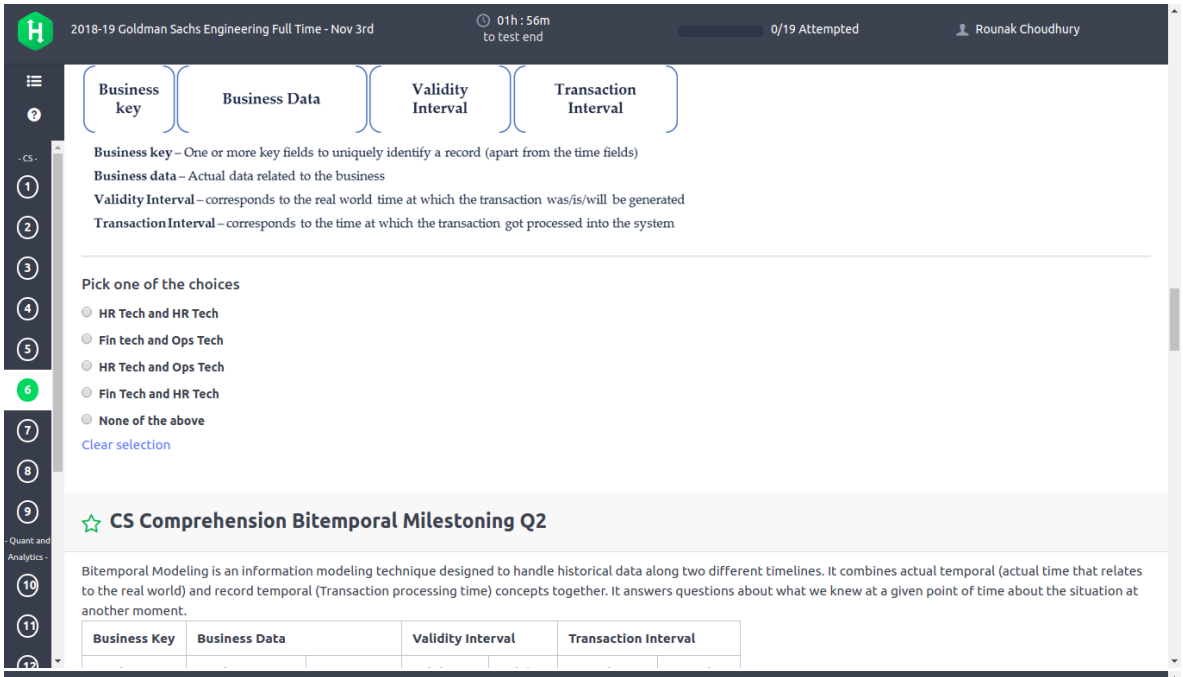
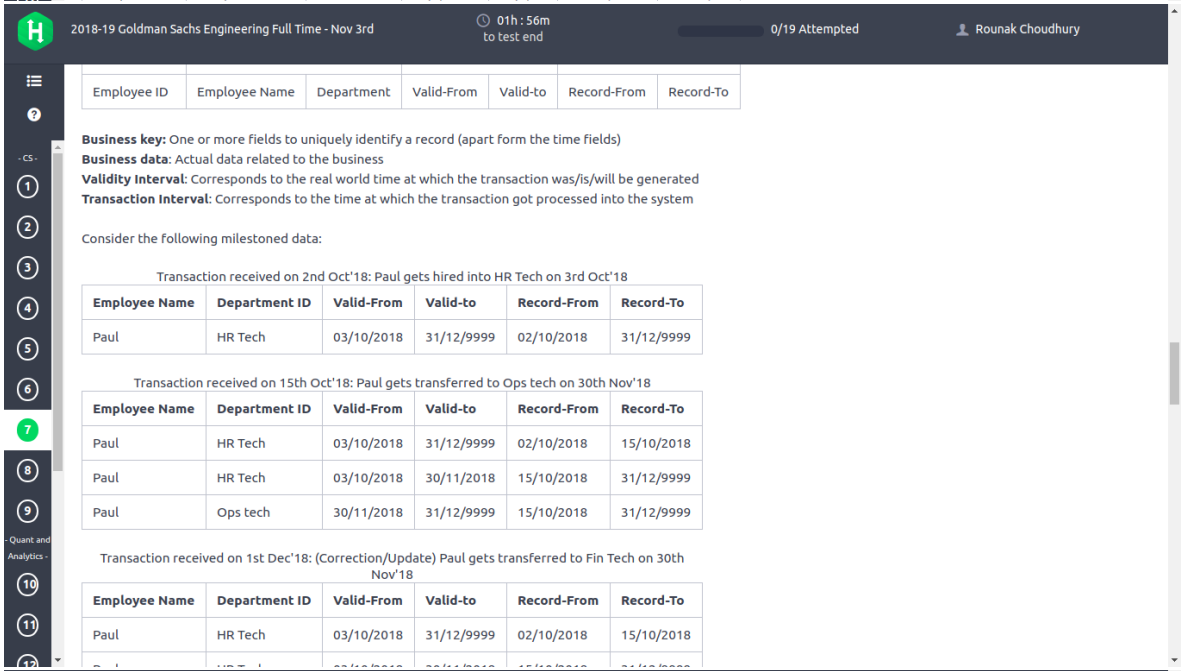
to test end
0/19 Attempted
Rounak Choudhury
Paul
HR Tech
03/10/2018
31/12/9999
02/10/2018
31/12/9999
Transaction received on 15th Oct'18: Paul gets transferred to Ops tech on 30th Nov'18
Paul
HR Tech
03/10/2018
31/12/9999
02/10/2018
15/10/2018
Paul
HR Tech
03/10/2018
30/11/2018
15/10/2018
31/12/9999
Paul
Ops tech
30/11/2018
31/12/9999
15/10/2018
31/12/9999
Transaction received on 1st Dec'18: (Correction/Update) Paul gets transferred to Fin Tech on 30th Nov'18
Paul
HR Tech
03/10/2018
31/12/9999
02/10/2018
15/10/2018
Paul
HR Tech
03/10/2018
30/11/2018
15/10/2018
31/12/9999
Paul
Ops Tech
30/11/2018
31/12/9999
15/10/2018
01/12/9999
Paul
Fin Tech
30/11/2018
31/12/9999
01/12/2018
31/12/999
Q1) What is Paul's (current) department (as now known)? And What is Paul's (current) dept as known on 16th October'18?
Employee ID
Employee Name
Department
Valid-From
Valid-to
Record-From
Record-To



CS Comprehension Bitemporal Milestoning Q2

Bitemporal Modeling is an information modeling technique designed to handle historical data along two different timelines. It combines actual temporal (actual time that relates to the real world) and record temporal (Transaction processing time) concepts together. It answers questions about what we knew at a given point of time about the situation at another moment.

Business Key	Business Data	Validity Interval	Transaction Interval



Employee ID	Employee Name	Department	Valid-From	Valid-to	Record-From	Record-To

Business key: One or more fields to uniquely identify a record (apart form the time fields)
Business data: Actual data related to the business
Validity Interval: Corresponds to the real world time at which the transaction was/is/will be generated
Transaction Interval: Corresponds to the time at which the transaction got processed into the system

Consider the following milestoned data:

Transaction received on 2nd Oct'18: Paul gets hired into HR Tech on 3rd Oct'18

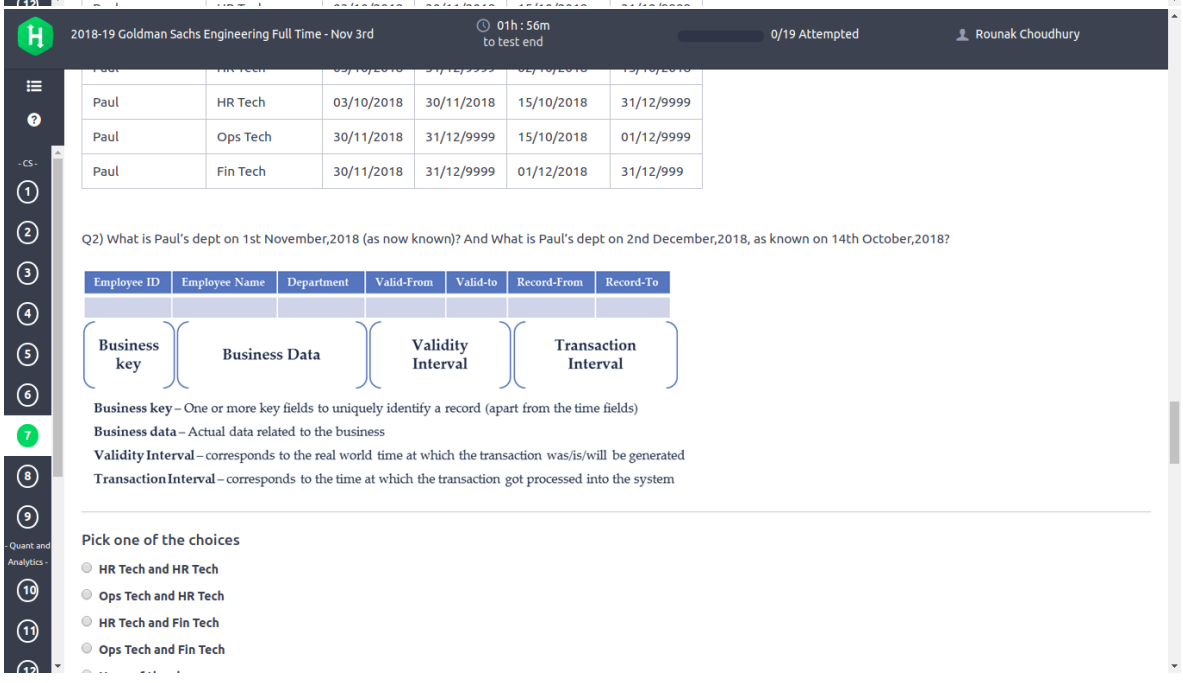
Employee Name	Department ID	Valid-From	Valid-to	Record-From	Record-To
Paul	HR Tech	03/10/2018	31/12/9999	02/10/2018	31/12/9999

Transaction received on 15th Oct'18: Paul gets transferred to Ops tech on 30th Nov'18

Employee Name	Department ID	Valid-From	Valid-to	Record-From	Record-To
Paul	HR Tech	03/10/2018	31/12/9999	02/10/2018	15/10/2018
Paul	HR Tech	03/10/2018	30/11/2018	15/10/2018	31/12/9999
Paul	Ops tech	30/11/2018	31/12/9999	15/10/2018	31/12/9999

Transaction received on 1st Dec'18: (Correction/Update) Paul gets transferred to Fin Tech on 30th Nov'18

Employee Name	Department ID	Valid-From	Valid-to	Record-From	Record-To
Paul	HR Tech	03/10/2018	31/12/9999	02/10/2018	15/10/2018



Paul	HR Tech	03/10/2018	30/11/2018	15/10/2018	31/12/9999	
Paul	Ops Tech	30/11/2018	31/12/9999	15/10/2018	01/12/9999	
Paul	Fin Tech	30/11/2018	31/12/9999	01/12/2018	31/12/999	

Q2) What is Paul's dept on 1st November,2018 (as now known)? And What is Paul's dept on 2nd December,2018, as known on 14th October,2018?

Employee ID	Employee Name	Department	Valid-From	Valid-to	Record-From	Record-To

Business key – One or more key fields to uniquely identify a record (apart from the time fields)
Business data – Actual data related to the business
Validity Interval – corresponds to the real world time at which the transaction was/is/will be generated
Transaction Interval – corresponds to the time at which the transaction got processed into the system

Pick one of the choices

- HR Tech and HR Tech
- Ops Tech and HR Tech
- HR Tech and Fin Tech
- Ops Tech and Fin Tech

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- None of the above

Clear selection

CS Comprehension: Resource Allocation Q1

There are 7 baskets with some resources in each one of them. The baskets are categorized at 2 levels - namely Level 1 and Level 2.
Level 1 has values: A, B and C.
Level 2 has values : A1, A2, B1, B2, C1, C2, C3

Given that each basket has some cost associated with it which is nothing but some percentage of interest on amount of resource kept in that basket.
Ex: If the basket has 100 resources and 15% is the cost associated with it, then you have to pay 15 as the cost.

Also, each basket earns you some revenue, which is again the percentage of interest on amount of resource in some basket.
Ex: If the basket has 100 resources and 20% is the revenue percentage earned, then you earn 20 as the revenue.

Given the minimum resources that need to be maintained in each basket and the current allocation of the resources, you have to optimize the profit earned if each basket has different cost and revenue associated with them.

Input Data:

Basket (Level 2)	A1	A2	B1	B2	C1	C2	C3
Current Allocation	20	60	30	50	60	30	30
Minimum	0	20	10	10	10	20	30
%age Revenue earned	20	30	10	10	20	20	30
%age Cost	0	10	0	5	10	10	10
Basket (Level 1)	A	B	C				
Minimum	30	20	70				

Question 1: Find the new allocation of resources such that the profit earned in maximum. Given that each basket and each category has some minimum resource present constraint

Pick one of the choices

- A1: 0 A2: 190 B1: 10 B2: 10 C1: 10 C2: 30 C3: 30
- A1: 10 A2: 170 B1: 20 B2: 10 C1: 10 C2: 20 C3: 40
- A1: 0 A2: 190 B1: 10 B2: 10 C1: 10 C2: 20 C3: 40
- A1: 0 A2: 190 B1: 10 B2: 10 C1: 20 C2: 20 C3: 20
- None of the above

Clear selection

CS Comprehension: Resource Allocation Q2

There are 7 baskets with some resources in each one of them. The baskets are categorized at 2 levels - namely Level 1 and Level 2.
Level 1 has values: A, B and C.
Level 2 has values : A1, A2, B1, B2, C1, C2, C3

Given that each basket has some cost associated with it which is nothing but some percentage of interest on amount of resource kept in that basket.
Ex: If the basket has 100 resources and 15% is the cost associated with it, then you have to pay 15 as the cost.

Also, each basket earns you some profit, which is again the percentage of interest on amount of resource in some basket.
Ex: If the basket has 100 resources and 20% is the revenue percentage earned, then you earn 20 as the revenue.

Given the minimum resources that need to be maintained in each basket and the current allocation of the resources, you have to optimize the profit earned if each basket has different cost and revenue associated with them.

Input Data 2:

Basket (Level 2)	A1	A2	B1	B2	C1	C2	C3
Current Allocation	20	60	30	50	60	30	30
Minimum	0	20	10	10	10	20	30
%age Revenue earned	20	30	10	10	20	25	30
%age Cost	0	5	5	10	10	10	10
Maximum	50	50	50	50	50	50	50
Basket (Level 1)	A	B	C				
Minimum	30	20	70				

Question 2: Given these are maximum allocation constraints as well. Find the new allocation based on the data given to maximize profit?

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Allocation							
Minimum	0	20	10	10	10	20	30
%age Revenue earned	20	30	10	10	20	25	30
%age Cost	0	5	5	10	10	10	10
Maximum	50	50	50	50	50	50	50
Basket (Level 1)	**A**	**B**	**C**				
Minimum	30	20	70				

Question 2: Given there are maximum allocation constraints as well. Find the new allocation based on the data given to maximize profit?

Pick one of the choices

- **A1: 30 A2: 50 B1: 40 B2: 10 C1: 50 C2: 50 C3: 50**
- **A1: 50 A2: 50 B1: 20 B2: 10 C1: 50 C2: 50 C3: 50**
- **A1: 30 A2: 50 B1: 40 B2: 30 C1: 50 C2: 30 C3: 50**
- **A1: 50 A2: 50 B1: 50 B2: 20 C1: 30 C2: 50 C3: 30**
- **None of the above**

Clear selection

Continue

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☆ Quant Find the Function Value

For any positive integer k, let $f_1(k)$ denote the square of the sum of the digits of k.
For n >1, let $f_n(k) = f_1(f_{n-1}(k))$

Find $f_{1988}(11)$

Pick one of the choices

- **128**
- **169**
- **256**
- **512**
- **None of the above**

Clear selection

☆ Quant Find the Ordered Pairs

For certain ordered pairs (a,b) the system of equations

$$ax + by = 1$$
$$x^2 + y^2 = 50$$

has at least one solution, and each solution is an ordered pair (x,y) of integers. How may such ordered pairs are there?

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Pick one of the choices

- **60**
- **66**
- **72**
- **78**
- **None of the above**

Clear selection

☆ Quant Average time to wait

You enter a metro station in a big hurry, and decide to take the first train that arrives. There are two lines running through this station: one runs every five minutes (line A), the other every three (line B). To be precise, suppose the next arrival of the A train is uniformly distributed on the interval [0, 5], and similarly for the B train on [0, 3]. The two arrivals are independent. The trains run like clockwork: there's no uncertainty other than the next arrival time. For example, given that the next B train arrives at time 0.87, you can be absolutely certain that there will be another at time 3.87. How many minutes will you wait on average until you get on a train?

Pick one of the choices

- **2 mins**
- **1.6 mins**
- **1.2 mins**
- **0.8**
- **None of the above**

Clear selection

2018-19 Goldman Sachs Engineering Full Time - Nov 3rd | 01h : 55m to test end | 0/19 Attempted | Rounak Choudhury

Quant Minimum Value

Find the minimum value of

$$\frac{9x^2\sin^2 x + 4}{x\sin x}$$

where x ranges from 0 to π/2.

Pick one of the choices

- 6
- 9
- 12
- 15
- None of the above

Clear selection

Quant : Random Variable Probabilty

X and Y are two random variables with uniform probability distribution 0 and 1. What is the probability of X*Y < 0.5?

2018-19 Goldman Sachs Engineering Full Time - Nov 3rd | 01h : 55m to test end | 0/19 Attempted | Rounak Choudhury

Pick one of the choices

- 0.5
- 0.75
- 0.85
- 0.9
- None of the above

Clear selection

ML ClassifierB

Suppose you train a classifier and a get a training error of 40% and test error of 30%. Which of the following could potentially improve your classifier's performance ?
1) Adding more data samples to the set
2) Increasing number of features in the data
3) Decreasing the number of features in the data

Pick one of the choices

- 1 only
- 1 and 3
- 2 only
- 1 and 2

Clear selection

2018-19 Goldman Sachs Engineering Full Time - Nov 3rd | 01h : 55m to test end | 0/19 Attempted | Rounak Choudhury

Quant Comprehension Jensen's Inequality Q1

Convex and Concave Functions:
A convex function is a continuous function whose value at the midpoint of every interval in its domain does not exceed the arithmetic mean of its values at the ends of the interval.
More generally, a function $f(x)$ is convex on an interval $[a, b]$ if for any two points x_1 and x_2 in $[a, b]$ and any λ where $0 < \lambda < 1$,

$$f[\lambda x_1 + (1-\lambda)x_2] \le \lambda f(x_1) + (1-\lambda) f(x_2)$$

Similarly if -f(x) is a convex function, f(x) is a concave function.

Jensen's Inequality:
Let F be a convex function of one real variable. Let $x_1, \ldots, x_n \in \mathbb{R}$ and let $a_1, \ldots, a_n \ge 0$ satisfy $a_1 + \cdots + a_n = 1$. Then

$$F(a_1x_1 + \cdots + a_nx_n) \le a_1F(x_1) + \cdots + a_nF(x_n)$$

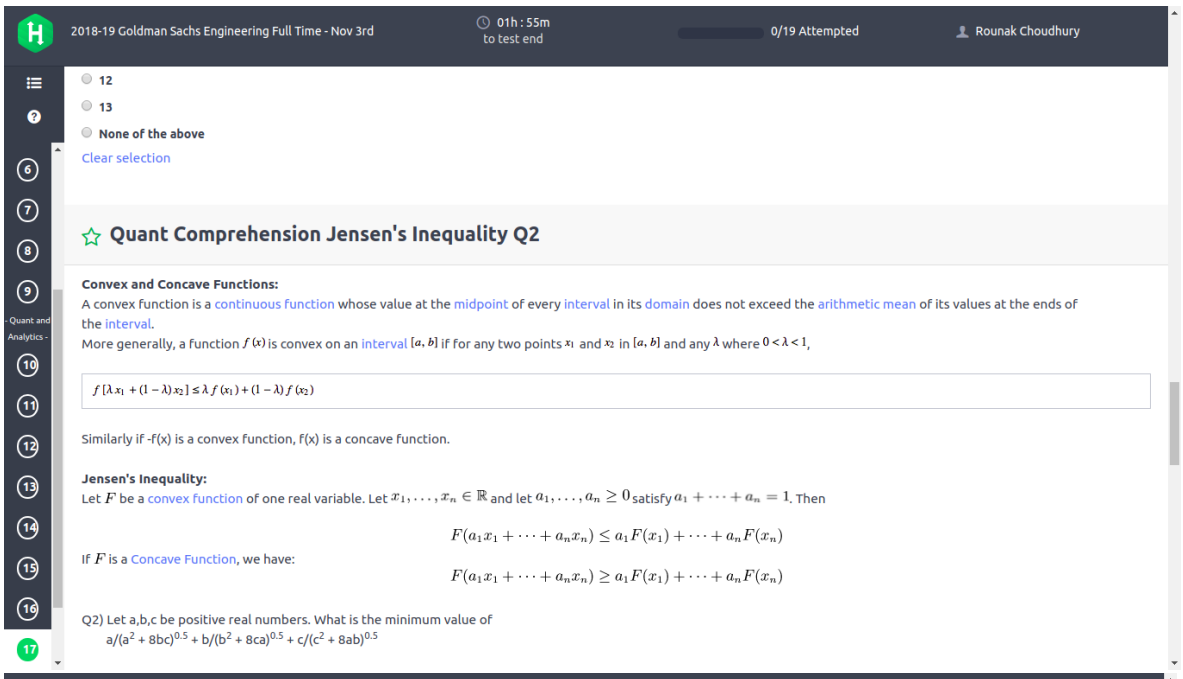
If F is a Concave Function, we have:

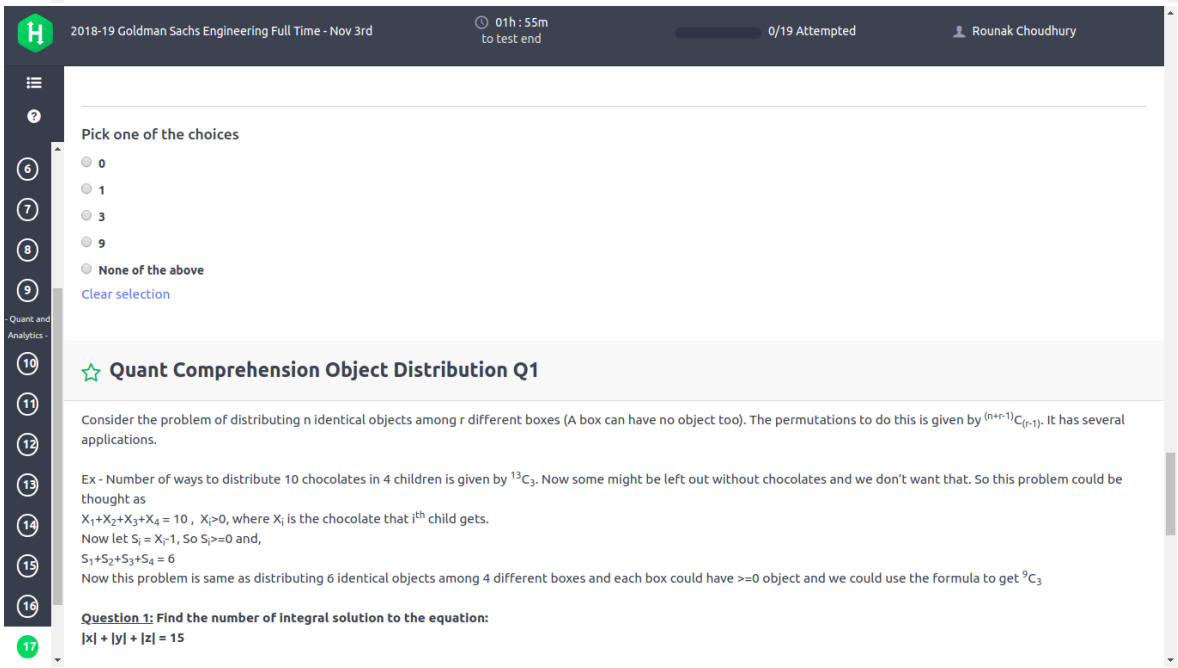
$$F(a_1x_1 + \cdots + a_nx_n) \ge a_1F(x_1) + \cdots + a_nF(x_n)$$

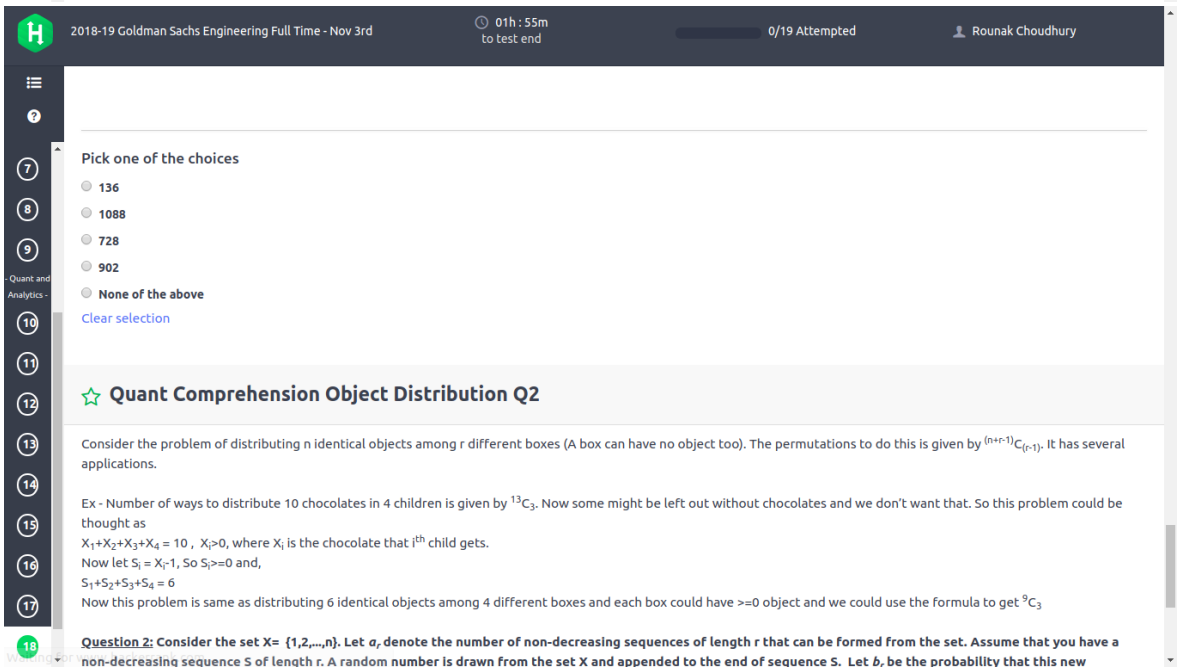
Q1) For any triangle $\triangle ABC$, let the maximum value of sinA + sinB + sinC be expressed in the form of $p*(q)^{0.5}/r$, find p+q+r

Pick one of the choices

- 10
- 11
- 12







https://math.stackexchange.com/questions/990418/maximum-value-of-sin-a-sin-b-sin-c/990423#990423
(answer is 3sqrt(3)/2)

https://ide.geeksforgeeks.org/l8wRDc3gJ8
(Quicksort moves element 50 out temporarily in one of the steps considering array {53, 91, 50, 40, 90, 80, 35})

Ans of 14 question (ML Classifier)?

IIT-D

2 Sections (Coding and Quant)
Coding Section - 1 Coding Question(20 marks), 4 MCQs(10 each), 2 comprehensions each consisting of 2 MCQs(10 marks each MCQ)
Quant - 6 MCQs (10 each), 2 comprehensions, 2 MCQs in each (10 marks each MCQ)
Total time 2 hrs. (you can attempt any question at any time, there is no separate time for any section)

Coding -
1) Given an array of whole numbers, you can remove subset of elements from that array, till all elements are removed.
The elements of any subset should satisfy the condition 2^b1 + 2^b2 + …. + 2^bn = 2^x for some integer x (b1, b2, ….., bn are elements of one subset). What is the minimum number of subsets that need to be removed

Eg. array = 1, 1, 2, 3, 3
Ans. 2
2^1 + 2^1 + 2^2 = 2^3
2^3 + 2^3 = 2^4
Therefore, two subsets need to be removed
n<=10^6
0<=a[i]<=10^6

Ans.If two elements are same, merge them into one and add one to it, keep on doing it till all elements of array are distinct, size of that array will be your ans
Eg. 1, 1, 2, 3, 3
Can be converted to 2, 2, 3, 3
3, 3, 3
4, 3

Ques 2) A graph and a node was given, we need to find the depth of it(distance of farthest node from it)(MCQ)

Q3) 128 players play in a tournament, there strengths are ordered eg. if x beats y and y beats z then x will beat z, what is the number of matches required to find out the second best player

Ans 133

Q4) Expected number of inversions in a permutations of N numbers (i < j) and A[i] > A[j]

Ans. N(N-1)/4

Q5)

Q6)
Q7 and Q8 were a comprehension on lambda calculus
Q9 and Q10 were on hamiltonian cycle

Quant
Q1)
Find out the 100th term in the series 1, 3 , 4, 9, 10, 12, 13, 27, 28 ….

Ans. 981
Ith term is convert i to binary then read that binary notation in base 3
Eg. for i = 5
I in base 2 is 101, converting it to decimal using base 3 is 3*3 + 1 = 10
There is one other visualization of it, the even terms of series are a series of 3*(terms of series) 3*1, 3*3, 3*4, 3*9 …. And odd term is even term+1

Q2)
f(x) + f(x-1) = x^2
f(19) = 94
f(94)%100 = ?

Ans. 61

Q3)
On any day, P(rain) = 0.2, P(sunny) = 0.4, P(some other type of weather) = 0.4, a block is defined as continuous days with same type of weather, expected number of weather blocks in 10 days = ?

Ans. 169/25 (Linearity of Expectation)

Q4)
On a stick [0, 2], a point is randomly chosen and stick is broken there. A rectangle is made by using the two parts of sticks as side length. What is the approx. probability that Area of rectangle < 1/2

Ans 0.3 was nearest among the options
Not verified

Q5) Which among the following are unaffected by outliers
1) mean
2)median
3) …..Can't remember
4) Inter- Quartile range

Ans. 2 and 4 (options were consisting of multiple combinations of 1, 2, 3, 4)

Q6) Something on how to improve model with low bias and high variance

Q7) and Q8) Comprehension on correlation of market with stock

Q9) Probability that randomly chosen point inside a circle is near to center than side
Ans. ¼ (Way too trivial)

Q10) Probability that randomly chosen point inside a square is near to center than side = (a*b^0.5 - c)/d, Find out a+b+c+d
Ans. 14
Regions where point is nearer to center can be expressed as parabolas (by definition of it) , integrate one parabola and multiply by 4

IIT-KGP Nov 3

2 Sections (Coding and Quant)
Coding Section - 1 Coding Question(20 marks), 4 MCQs(10 each), 2 comprehensions each consisting of 2 MCQs(10 marks each MCQ)
Quant - 6 MCQs (10 each), 2 comprehensions, 2 MCQs in each (10 marks each MCQ)
Total time 2 hrs. (you can attempt any question at any time, there is no separate time for any section)

Questions of Quant Section
Q1) For a ordered pair(a,b) ax + by = 1 and x^2 + y^2 = 50 has atleast one solution. Find total number of integer pairs of (x,y) Ans: 72

Q2) find the minimum value of the function in [0,pi/2]:

$$\frac{9x^2 sin^2 x + 4}{xsinx}$$

Ans: 12

Q3) Train accuracy is 40% and test accuracy is 30% for a classifer. Which of the following can be done?
I. Increase the data
II Increase the features
||| Decrease the number of features
Ans - II only

Q4) For a triangle ΔABC, find the minimum value of sinA + sinB + sinC

Q5) Find the min value of

$$\frac{a}{\sqrt{a^2+8bc}}+\frac{b}{\sqrt{b^2+8ca}}+\frac{c}{\sqrt{c^2+8ab}}$$

Ans: 1

Q6) f1(k) = square of the sum of the digits of k. And for n > 1, fn(k) = f1(fn-1(k)). Find the value of f1998(11).
Ans: 169

Q7 X and Y are two random variables with uniform distribution (0,1). Find probability of x*y < 0.5.
Ans - 0.85

What is the answer of 14 (ML Classifier)?
I think its 2 only (Increase the features).
What did you mark?
Both (increase features and data sample)

Qualcomm

(CPI Cutoff?) (Branches Allowed ?)

IIITD

Date - 6th July 2018
Position -
1.5 hour@ HirePro (+3, -1)
CGPA: 6.5 & above

20 Q's/30 min Aptitude, DI and LR
20 Q's/30 min C
C pointers (Around 5 questions), , operator precedence (Around 5 questions), switch cases etc

20 Q's/30 min CSE **Topics**
OS, Architecture, digital logic, semaphores, Algo,

IITM

Date - 6th oct 2018
1.5 hour@ HirePro (+1, -0.25)(yes negative marking was there)
Same as IIITD
After 2 section, we have choice of selecting one section from ML, CS, Communications, Hardware
ML part
Simple questions on linear regression, Neural network(time and space complexity), loss function, some OS questions, LRU page fault count.

Adobe

(CPI Cutoff?) (Branches Allowed ?)

IIIT D

Date - 6th July 2018
Position -
1.5 hours Coding + 1 Hour aptitude(NO Negative Marks) @ Hackerrank

Q1. Sort the characters of a string and print the string
Q2. find the lexicographically smallest string after rotating a string (What is required time complexity??)
Q3. In a directed graph find all pair of node which can be traversed

IIITA

Q2 kadane algo take the substring of temporary string of size same as original string starting from second character (or index 1). What is the question?
Step 4 : Increase the count.https://www.geeksforgeeks.org/adobe-interview-experience-set-55-campus-full-time-mts-profile/
Q3 substring search
s1:
aab s2:a*b o/p 2(ab, aab)
* can be anything null also
Could someone please explain the question and its solution
https://www.geeksforgeeks.org/adobe-interview-experience-set-55-campus-full-time-mts-profile/
Coding round questions from above experience(link) were exactly same at IIITA

PLZ SHARE SOLUTION??

IITKGP

Requested Clarifications: When was the test? Only one coding problem? Aptitude test? -> This question has been asked in internship because for placements adobe is yet to come at kgp.
A square grid(matrix - n x n) is given, with values 0, 1 or -1 in each cell. 0 means there is a path via that square. 1 means there is a diamond in it(and obviously a path via it). -1 means no path, i.e. obstacle. Starting from (0,0) u need to go to (n-1,n-1) and return back again. When going from (0,0) to (n-1,n-1) you can take only right or down and during returning u can only take left or up. The question is to find maximum number of diamonds that can be collected in a round trip.If no path exists return 0(since u collected no diamond) g4g Topcoder

IITM

06/10/18
# of Coding Questions: 3
Time : 90min
Platform: Hackerrank

Ex: given array = 11223
Output: 3
Exp: Remove 11 and then 22. Only 3 is left in the array.
Given array = 21123
output : 3
Exp: remove 11, then array will be 223, now remove 22.

Given array = 21132
Output: 232
Exp: remove 11, then array will be 232. Can't remove further.

Solution: can use linked list and after deletion go back to head or previous node (keep a pointer for that). I got full points using this.
Output for the following? 2121: 2121 , 112213: Is it 13 or just 3?
Can We use Stack instead of LL? yes
Q2.0.

Input 1: bababababa
Output 1: ababa
Input 2: bababababab
Output 2: babab

Solution: take an unordered map(string, int) and put all substring of length 5 in it, sort it , now traverse the map, the first maximum count(frequency) value will correspond to largest frequent substring of length 5. This solution pass all cases, except the one, which was giving timeout. Replace unordered_map with array of length 26^5 to get AC for all cases. How does taking array help? Can anybody please elaborate?

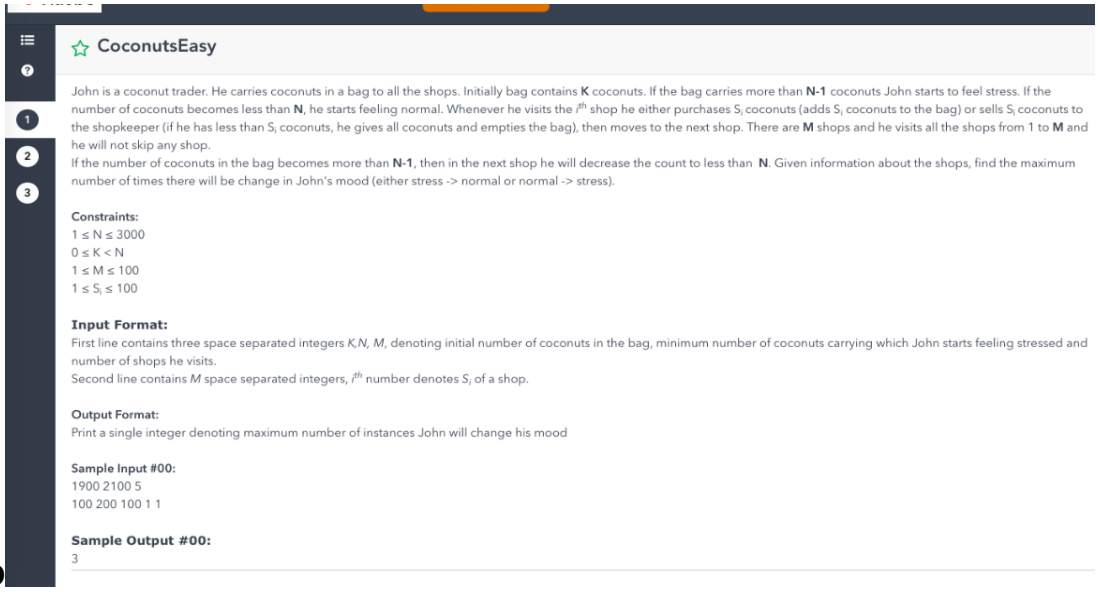
Q3.https://www.hackerrank.com/challenges/challenging-palindromes/problem

Ex: given: 3
ban
3
ana
Output: 5 (because of anana)
Exp: palindromic string S will be an + ana = anana.

Solution: concat s1 , s2 lets say s3 = s1+s2, apply LCS on reverse of(s3)(row) and s3(column) , bottom rightmost value, will be the answer. I did it that way and got full points for that
How this can give the answer? Here subsequences from s1 or s2 may come up in sol but that is not allowed ryt? So what's the problem, that's what is asked. The whole batch used this approach and able to get full marks.!!
In the link that has been mentioned, we have to pick substrings from s1 and s2 and not subsequences. The solution that has been given above is for the latter case.

IITK

Q1. https://www.geeksforgeeks.org/queries-counts-array-elements-values-given-range/
Q2. https://www.geeksforgeeks.org/minimum-sum-absolute-difference-pairs-two-arrays/
Q3. Traverse all node of polygon using diagonals only, initially few diagonals are given, condition of drawing new diagonal is it should intersect any previous diagonal, return no of ways.
Eg in hexagon, {1,4,2} is given, o/p 1. How{2,6,3,5,1}.
Tried to brute force, 7 passed out of 10 hidden, rest TLE.



CoconutsEasy

John is a coconut trader. He carries coconuts in a bag to all the shops. Initially bag contains **K** coconuts. If the bag carries more than **N-1** coconuts John starts to feel stress. If the number of coconuts becomes less than **N**, he starts feeling normal. Whenever he visits the i^{th} shop he either purchases S_i coconuts (adds S_i coconuts to the bag) or sells S_i coconuts to the shopkeeper (if he has less than S_i coconuts, he gives all coconuts and empties the bag), then moves to the next shop. There are **M** shops and he visits all the shops from 1 to **M** and he will not skip any shop.
If the number of coconuts in the bag becomes more than **N-1**, then in the next shop he will decrease the count to less than **N**. Given information about the shops, find the maximum number of times there will be change in John's mood (either stress -> normal or normal -> stress).

Constraints:
$1 \le N \le 3000$
$0 \le K < N$
$1 \le M \le 100$
$1 \le S_i \le 100$

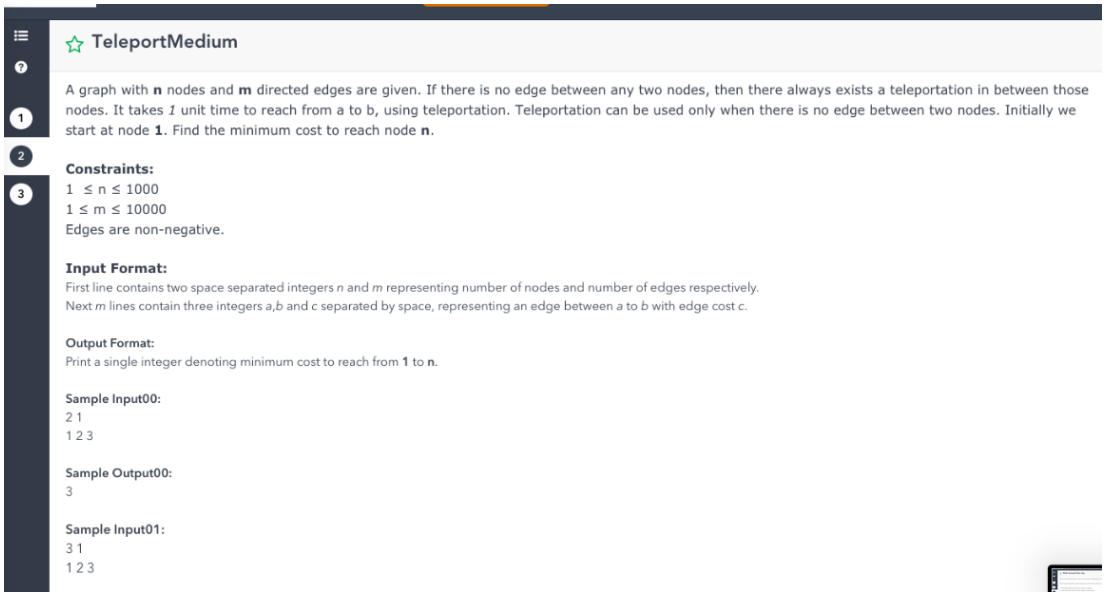
Input Format:
First line contains three space separated integers *K,N, M*, denoting initial number of coconuts in the bag, minimum number of coconuts carrying which John starts feeling stressed and number of shops he visits.
Second line contains *M* space separated integers, i^{th} number denotes S_i of a shop.

Output Format:
Print a single integer denoting maximum number of instances John will change his mood

Sample Input #00:
1900 2100 5
100 200 100 1 1

Sample Output #00:
3

IITD



TeleportMedium

A graph with **n** nodes and **m** directed edges are given. If there is no edge between any two nodes, then there always exists a teleportation in between those nodes. It takes *1* unit time to reach from a to b, using teleportation. Teleportation can be used only when there is no edge between two nodes. Initially we start at node **1**. Find the minimum cost to reach node **n**.

Constraints:
$1 \le n \le 1000$
$1 \le m \le 10000$
Edges are non-negative.

Input Format:
First line contains two space separated integers *n* and *m* representing number of nodes and number of edges respectively.
Next *m* lines contain three integers *a,b* and *c* separated by space, representing an edge between *a* to *b* with edge cost *c*.

Output Format:
Print a single integer denoting minimum cost to reach from **1** to **n**.

Sample Input00:
2 1
1 2 3

Sample Output00:
3

Sample Input01:
3 1
1 2 3

Can there be a greedy solution to Coconuts Easy problem?
Solution Link : http://qa.geeksforgeeks.org/4323/qa.geeksforgeeks.org/4323/finding-maximum-number-of-mood-swings.html?fbclid=IwAR17pY87_Dq2jM934XaSEH3T7jczsKfU5fn3YpqQXH5HrULWjR1k_7c9QWc

Estee

IITD

1. Turnstile
2. https://www.interviewbit.com/problems/knight-on-chess-board/

Bidgely → test done?

Cisco

IITM

Date - 17th September 2018
Role : Software Engineer
Open for : Btech, Dual, Mtech, MS in CSE and EE
Exam Pattern :
1 hour MCQ type exam, based on HackerRank, 50 questions.
Questions covered areas like aptitude (time and work, logical reasoning), probability, OS(scheduling, concepts of paging), questions from Electrical Engineering (3-4), Computer Networks (Most were from subnet masks and host / IP addresses), permutations and combinations, finding output, questions about linked lists (3-4 basic ones).

IITG

Date - 24th Sept 2018
Exam Pattern : Same as IITM
Questions covered areas same as above including Digital Logic design , Counters(Ripple counters , input and output frequency relation in counters), from Programming MCQs few problems are from bitwise operators (Like : “int a = 2 ; int b = 3 ; a ^= b ^= a =^b ; “ what will be the change in values?) ,structures.
3 ants in a triangle. Probability that 2 or 3 of the ants collide ?
https://www.quora.com/If-5-letters-are-posted-for-5-different-addresses-how-many-ways-are-there-for-each-of-the-letters-to-reach-wrong-addresses
Postorder from preorder traversal.
Basic Networking Questions like where does routing takes place ?

Samsung R&D Bangalore

Samsung Software-Competency Test

1) Test Details & Pattern

Write code in C/C++/Java to solve a given problem. Code should compile, run and pass all given test cases.

- Emphasis on working code with efficient Programming Logic, Algorithms, Data structures, Samsung
- NOT dependent on any Platform/API

<table>
<tr><td>Duration</td><td>3 hours</td><td colspan="3"></td></tr>
<tr><td>Allowed Languages</td><td>C, C++, Java</td><td colspan="3">· Candidates proficient in C# or other language can also take the test, by choosing one of C / C++ / Java to write the code as the focus is on Algorithms & Data Structures. (Some language-specific learning/refreshing and practice may be required)</td></tr>
<tr><td>Number of Questions</td><td>One</td><td colspan="3">· The question details the problem, gives constraints, test inputs, and sample outputs</td></tr>
<tr><td rowspan="5">Allowed Functions, Libraries</td><td rowspan="5">Basic memory mgmt, input, output</td><td>Language</td><td>Memory</td><td>Input, Output</td></tr>
<tr><td>C</td><td>malloc, free</td><td>scanf, printf</td></tr>
<tr><td>C++</td><td>new, delete, malloc, free</td><td>cin, cout, scanf, printf</td></tr>
<tr><td>Java</td><td>New (memory freeing is automatic by garbage collector)</td><td>java.util.Scanner, System.out.print, println</td></tr>
<tr><td colspan="3">· Other functions, libraries not allowed</td></tr>
</table>

		· Test taker needs to write any required utility functions
Allowed IDEs	· VS (C/C++) · Eclipse (Java)	· To be pre-installed on the Test PC/Laptop
Criteria for Passing Test	Pass all test-cases	· "Sample test-cases" are given to test locally · Developed program has to: · Pass all "Evaluation test cases" on server (not shared with test-taker) and generate the output in specified format · Meet efficiency criteria given in question (max limit on execution time, heap memory, and stack)

2) Preparation recommended

Refresh/Learn data structures & algorithms

i) e.g., Array, Grid, List, Tree, Graph, Map, String, Search, Sort, Permutations, Combinations, Probability, Traversal, Path finding, Optimization, Dynamic Programming etc.

ii) Some popular external websites for study/practice: geeksforgeeks, hackerrank, codeforces, topcoder, codechef, spoj, project-euler etc.

They have very frustrating software which need to be installed on the day of exam(compatible only with WINDOWS).
In that software, you may face a lot of login issues. Make sure once you login,you stay in it. If you come out, after logging in, that same password doesn't works. (coordinator may give common password to all then)
Note:

1. There is some sample input pop-up from where you need to copy the test case in order to run for your local testing.
2. There is some full screen button somewhere(though I was not able to find it out, very few of us got it)
3. Scrolling up and down is a big pain.
4. Eclipse will be prefered(or save code in Notepad).
5. Don't trust their server, your code may be flushed, if in case you are facing network issue.
6. In case test starts at 9, but due to some issue, you logged in at 9:15, then your 15 mins are gone.(They have some common server timings)

Can we use vector , stack , queue etc from #include<vector>, #include<stack> etc ? In test these worked. ??? (Nope you can't use any of the above asked libraries) what does it mean ??? Was string class allowed in cpp ?(nope you can't use string , only the functions mentioned in above table are allowed) was sort() function allowed? (you will have to implement sort function if required sort() not allowed)

IIT M Solution please?

Role: software engineer and software engineer research
Test was of 3 hour. Only 5 submission allowed(compile as many times you want). 10 test cases to be passed
Date: 24/09/2018. Question was same as that of previous year.
gscs.samsung.com/download/gscs103.zip]
Cycle in directed graph number of vertex(n), number of edge(m). Then in next line m pairs of numbers representing edges of directed graph. Find if there is some cycle. If yes, print cycle in ascending order of vertex numbers involved in the cycle else print 0 (if there are multiple cycles print any one)
Total no. of test cases: 10 None of them had the "No Cycle" graph.Samsung

IIT D

Role: Software Engineer and Software Engineer Research
Date: 28/09/2018
2-coloring in Undirected graph Given an undirected graph, if the graph can be coloured in two colors such that no two adjacent vertices are of same color then print the vertices which belong to the same color (you can print vertices with color 0/1), otherwise print -1.
Input : First line gives number of vertices(V) and edges(E) (e.g. 7 10)
Next line contains E pairs representing edges.

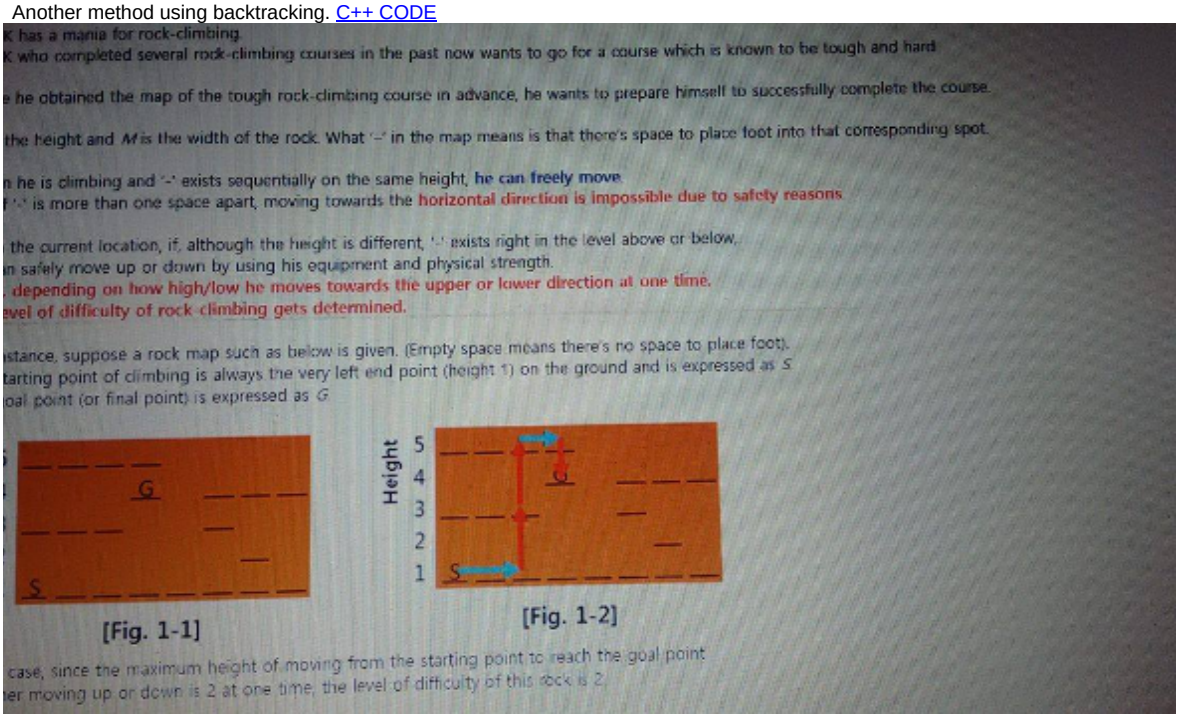
IIT K

Role: software engineer and software engineer research
Date: 09th Oct 2018
Test was of 3 hour. Only 10 submission allowed(compile as many times you want). 50 test cases to be passed
Question: Constraints: N <= 50; M <= 50
Inefficient Solution (passes all test cases): Consider jump of length = 1 to N-1 and for each case check if Destination is reachable. For first jump_length we reach destination return that.

```
Start at bottom {
    For jump_length in 1 to N-1 {
        For all continuous 1's in that row{e
            For (current row - max_length) to (current row + max_length) {
```

Visit node if not visited;

Another method using backtracking. C++ CODE



IITG

Mr. Kim has to deliver refrigerators to N customers. From the office, he is going to visit all the customers and then return to his home. Each location of the office, his home, and the customers is given in the form of integer coordinates (x,y) (0≤x≤100, 0≤y≤100) . The distance between two arbitrary locations (x1, y1) and (x2, y2) is computed by |x1-x2| + |y1-y2|, where |x| denotes the absolute value of x; for instance, |3|=|-3|=3. The locations of the office, his home, and the customers are all distinct. You should plan an optimal way to visit all the N customers and return to his home among all the possibilities.

You are given the locations of the office, Mr. Kim's home, and the customers; the number of the customers is in the range of 5 to 10. Write a program that, starting at the office, finds a (the) shortest path visiting all the customers and returning to his home. Your program only have to report the distance of a (the) shortest path.

Constraints
5≤N≤10. Each location (x,y) is in a bounded grid, 0≤x≤100, 0≤y≤100, and x, y are integers.

Input:
You are given 10 test cases. Each test case consists of two lines; the first line has N, the number of the customers, and the following line enumerates the locations of the office, Mr. Kim's home, and the customers in sequence. Each location consists of the coordinates (x,y), which is represented by 'x y'.

Output:
Output the 10 answers in 10 lines. Each line outputs the distance of a (the) shortest path. Each line looks like '#x answer' where x is the index of a test case. '#x' and 'answer' are separated by a space.

I/O Example :::: Input (20 lines in total. In the first test case, the locations of the office and the home are (0, 0) and (100, 100) respectively, and the locations of the customers are (70, 40), (30, 10), (10, 5), (90, 70), (50, 20).)
5 Starting test case #1
0 0 100 100 70 40 30 10 10 5 90 70 50 20
6 Starting test case #2
88 81 85 80 19 22 31 15 27 29 30 10 20 26 5 14
10 Starting test case #3
39 9 97 61 35 93 62 64 96 39 36 36 9 59 59 96 61 7 64 43 43 58 1 36
Output (10 lines in total)
#1 200
#2 304
#3 366

IITR

Date : 28 Oct' 2018
Role : Software Engineer (Research and Developer) .
Same Question for both.
Test was of 3 hour. Only 10 submission allowed (compile as many times you want). 50 test cases to be passed
Question Link : There is dedicated Samsung software for coding test the question is given below:

There is one spaceship. X and Y co-odinate of source of spaceship and destination spaceship is given. There are N number of warmholes each warmhole has 5 values. First 2 values are starting co-ordinate of warmhole and after that value no. 3 and 4 represents ending co-ordinate of warmhole and last 5th value is represents cost to pass through this warmhole. Now these warmholes are bi-direction.
Now to go from (x1,y1) to (x2,y2) is abs(x1-x2)+abs(y1-y2).
The main problem here is to find minimum distance to reach spaceship from source to destination co-ordinate using any number of warm-hole. It is ok if you wont use any warmhole.

(solution is also in comments in the post link) .
Constraints : 0<=N<=5
All the best!

IITBHU

Signal Amplifier : (see IITK)

IITB

We are given a function f = a*n + b*n*logn + c*n^3 . The function is monotonic, we will be given a, b,c as input and a variable k (value of function at some value of n). We need to find the value of n such that f(n)=k.
0 <= a,b,c <=10^6
0 <= k <= 10^63 - 1

1. The upper bound of n was given
2. They gave code for finding logn
3. Sol: Binary search

IIT Dhanbad

AirplaneGame Question

Samsung Delhi

IITD

Time Limit: 3hrs
Number of Submissions: 10

Solution with problem statement: energyDifference

Initially you have H amount of energy and D distance to travel, you are given two arrays of size 5, each indicating the amount of energy you can utilise and the time it will take to cover the next distance with that energy. For eg.
h(array of energy) = { 4 , 5 , 7 , 12, 2 }
t(corresponding array of time) = {5min20sec, 3min20sec, 2min30sec, 1min0sec, 15min20sec}
You start at 1 and you need to take one of the five energies to move to 2 and so on until you reach D. The task is to find the d minimum time required for given H,D,h and t.

Question reworded: Initially you have H(<4000) amount of energy and D(<1000 km) distance to travel. You may travel with any of the given 5 speeds. **But you may only travel in units of 1 km**. For each km distance travelled, you will spend corresponding amount of energy. E.g. the k;given speed are :

Cost of travelling 1 km:	4	5	2	3	6
Time taken to travel 1 km:	200s	210s	230s	235s	215s

The task is to find minimum time required to cover total D km with remaining H >= 0.

IIT-BHU

Mr. Kim has to deliver refrigerators to N customers. From the office, he is going to visit all the customers and then return to his home. Each location of the office, his home, and the customers is given in the form of integer coordinates (x,y) (0≤x≤100, 0≤y≤100) . The distance between two arbitrary locations (x1, y1) and (x2, y2) is computed by |x1-x2| + |y1-y2|, where |x| denotes the absolute value of x; for instance, |3|=|-3|=3. The locations of the office, his home, and the customers are all distinct. You should plan an optimal way to visit all the N customers and return to his among all the possibilities.

You are given the locations of the office, Mr. Kim's home, and the customers; the number of the customers is in the range of 5 to 10. Write a program that, starting at the office, finds a (the) shortest path visiting all the customers and returning to his home. Your program only have to report the distance of a (the) shortest path.

Constraints
5≤N≤10. Each location (x,y) is in a bounded grid, 0≤x≤100, 0≤y≤100, and x, y are integers.

Input:
You are given 10 test cases. Each test case consists of two lines; the first line has N, the number of the customers, and the following line enumerates the locations of the office, Mr. Kim's home, and the customers in sequence. Each location consists of the coordinates (x,y), which is represented by 'x y'.

Output:
Output the 10 answers in 10 lines. Each line outputs the distance of a (the) shortest path. Each line looks like '#x answer' where x is the index of a test case. '#x' and 'answer' are separated by a space.

I/O Example :::: Input (20 lines in total. In the first test case, the locations of the office and the home are (0, 0) and (100, 100) respectively, and the locations of the customers are (70, 40), (30, 10), (10, 5), (90, 70), (50, 20).)
5 Starting test case #1
0 0 100 100 70 40 30 10 10 5 90 70 50 20
6 Starting test case #2
88 81 85 80 19 22 31 15 27 29 30 10 20 26 5 14
10 Starting test case #3
39 9 97 61 35 93 62 64 96 39 36 36 9 59 59 96 61 7 64 43 43 58 1 36
Output (10 lines in total)
#1 200
#2 304
#3 366

IITK

There was shortlisting. I don't know the criteria but 78 applicants were shortlisted. Total 5 submissions were allowed.
2-coloring of undirected graph (Same as Samsung Bangalore IITD)

IITB

A Doctor travels from a division to other division where divisions are connected like a graph(directed graph) and the edge weights are the probabilities of the doctor going from that division to other connected division but the doctor stays 10mins at each division now there will be given time and had to find the division in which he will be staying by that time and is determined by finding division which has high probability.
Input is number of test cases followed by the number of nodes, edges, time after which we need to find the division in which he will be there, the edges starting point, end point, probability.
Note: If he reaches a point where there are no further nodes then he leaves the lab after 10 mins and the traveling time is not considered and during that 10 min at 10th min he will be in next division, so be careful

IITG

Time Limit: 3 hours
Number of Submissions: 10
Test Cases: 50

There is one spaceship. X and Y co-ordinate of source of spaceship and destination spaceship is given. There are N (0<=N<=5) number of wormholes each wormhole has 5 values. First 2 values are starting co-ordinate of wormhole and after that value no. 3 and 4 represents ending co-ordinate of wormhole and last 5th value is represents cost to pass through this wormhole. Now these wormholes are bi-directional. Now to go from (x1,y1) to (x2,y2) is abs(x1-x2)+abs(y1-y2). The main problem here is to find minimum distance to reach spaceship from source to destination co-ordinate using any number of wormhole. It is ok if you won't use any wormhole.
Link -> https://www.careercup.com/question?id=5677905146281984 (May be useful!) https://ide.geeksforgeeks.org/pC9w4ETP2x

Samsung Noida

IITM

https://www.geeksforgeeks.org/samsung-delhi-interview-experience-set-38-campus/
Solution for the question given below is slightly different. we can just write 4 if conditions for mentioned 4 conditions in question to get score C++ similar code

IIT BHU

Repeat: Signal Amplifier (explained below by IITK)

IITD

We are given a function f = an + blogn + cn^3. The function is monotonic, we will be given a, b,c as input and a variable k (value of function at some value of n). We need to find the value of n such that f(n)=k.

4. The upper bound of n was given
5. They gave code for finding logn
6. Sol: Binary search

IITK

Same as IITD

IITG

Initially you have H amount of energy and D distance to travel, you are given two arrays of size 5, each indicating the amount of energy you can utilise and the time it will take to cover the next distance with that energy. For eg.
h(array of energy) = { 4 , 5 , 7 , 12, 2 }
t(corresponding array of time) = {5min20sec, 3min20sec, 2min30sec, 1min0sec, 15min20sec}
You start at 1 and you need to take one of the five energies to move to 2 and so on until you reach D. The task is to find the d minimum time required for given H,D,h and t.

Question reworded: Initially you have H(<4000) amount of energy and D(<1000 km) distance to travel. You may travel with any of the given 5 speeds. **But you may only travel in units of 1 km**. For each km distance travelled, you will spend corresponding amount of energy. E.g. the k;given speed are :

Cost of travelling 1 km:	4	5	2	3	6
Time taken to travel 1 km:	200s	210s	230s	235s	215s

The task is to find minimum time required to cover total D km with remaining H >= 0.

Samsung Semiconductor(SSIR)

IITK

Signal Amplifier: You have a matrix of 0 and 1 of order N*M and a parameter K is given. You have to perform the operation of flipping any column of matrix exactly K times. Flipping means changing 0 to 1 and 1 to zero. This operation can be performed any number of times on the same column . Using this operation, maximize number of rows filled with all 1. First line is number of test cases, next line is N, M and K, and then N*M matrix follows.

Total 50 test cases had to be passed and maximum allowed submissions were 10

Constraints:
1 <= N <=100
1 <= M <= 20
1 <= K <= M

Sample Input:
2
5 3 3
1 0 0
0 1 0
1 0 0

0 0 1
0 1 0
3 3 2
0 1 1
1 0 0
1 1 0

Sample Output:
0
1

Efficient algorithm

Zendrive

20L base, 27L CTC

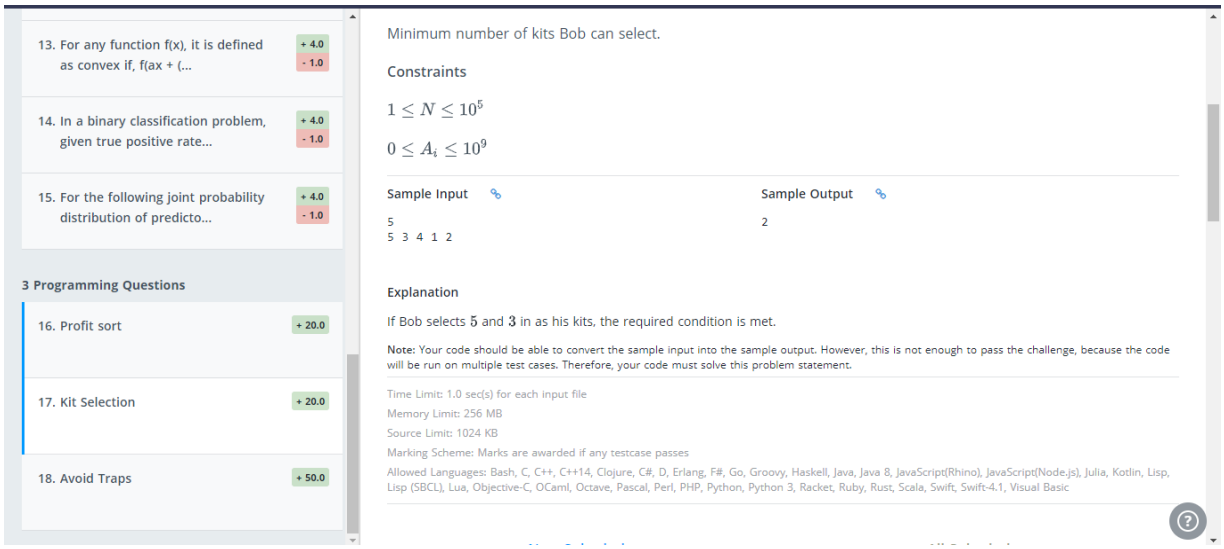
IITD

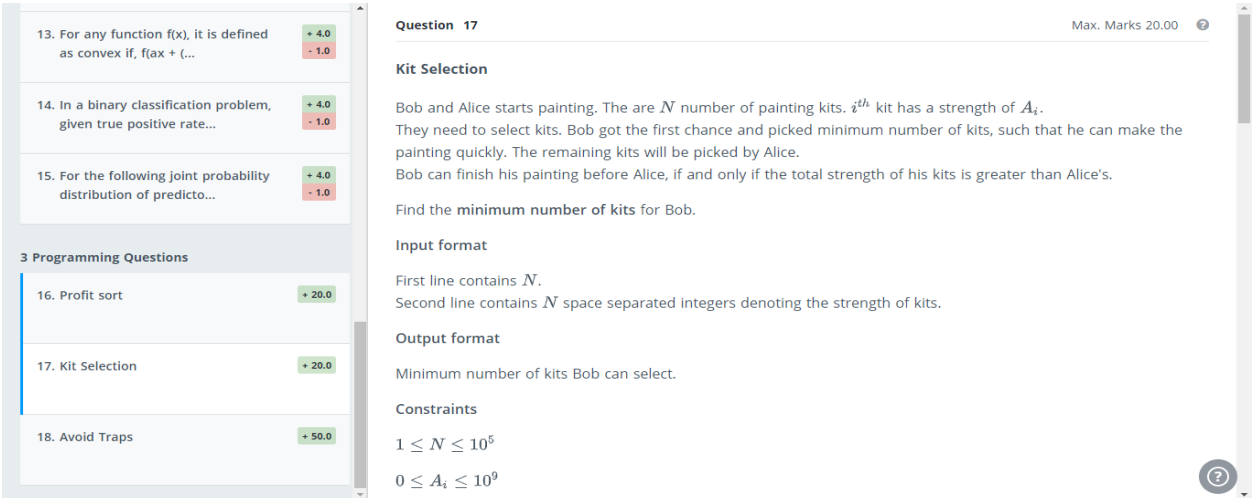
Two profiles opened (cgpa >= 6.5):
1. Associate Data Scientist
2. Software Development Engineer 1

Total 1 hr test with 15 questions for Data Science and 3 simple coding questions for Software development (attempt only one section)
Software Developer Profile-Pe
1. https://imgur.com/Gk7c8rq Solution: Take GCD of array elements
2. https://imgur.com/4jf39Jv Solution: Initially take all a's. Keep changing a->z from the end.. lastly a->{b, c, …, z}
3. https://imgur.com/aAY9m1j https://imgur.com/s0jaNfj

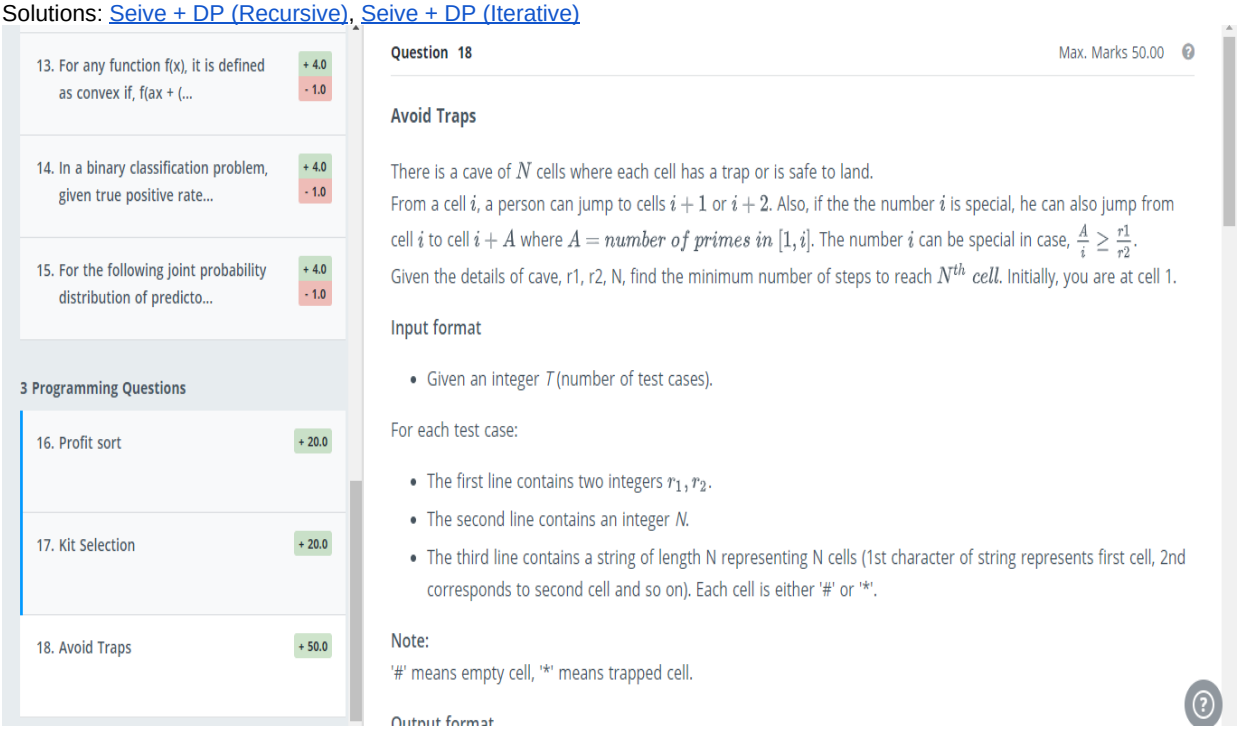
Data Scientist profile- https://imgur.com/Gk7c8rq https://imgur.com/a/YcCZ7nM
15 MCQs (+4,-1)(1 hour), from topics like probability, stats, Apti, and some ML.

IITM





Solutions: Seive + DP (Recursive), Seive + DP (Iterative)



IITG

Exchanges

The time taken by N people to complete a circle is TT_i minutes. Each person starts at the same position and has a gem. Every time a person crosses another person who is running at a different speed, they exchange their gems. People with the same running speed do not exchange gems.

Write a program to determine the number of exchanges that take place after K minutes have passed. Also it is given that the time taken by each person to complete a round is a factor of an integer K.

Input format

- First line: T (number of test cases)
- First line in each test case: Two space-separated integers N and K
- Second line in each test case: N space-separated integers (denoting TT_i)

Output format

For each test case, print the number of exchanges that take place after K minutes.

Constraints

$1 \leq T \leq 1000$
$1 \leq N \leq 1000$
$1 \leq K \leq 10^9$

Sample Input

```
2
3 8
1 2 4
4 24
1 2 3 4
```

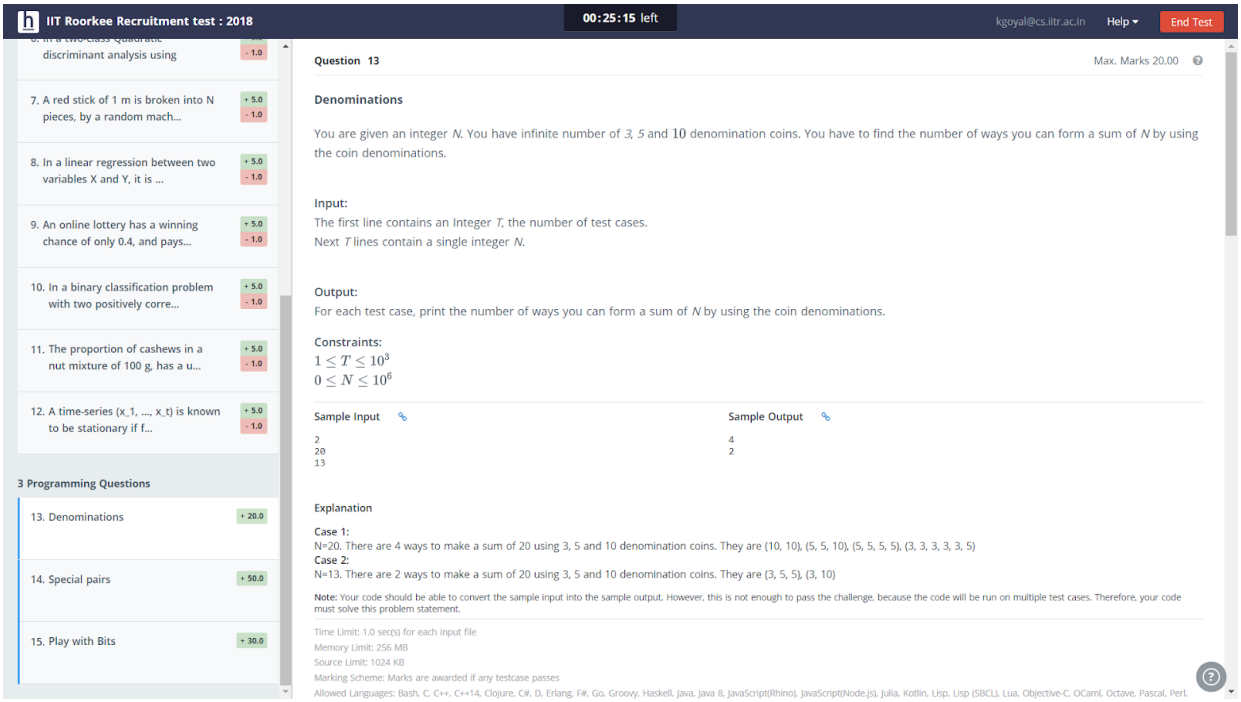
Sample Output

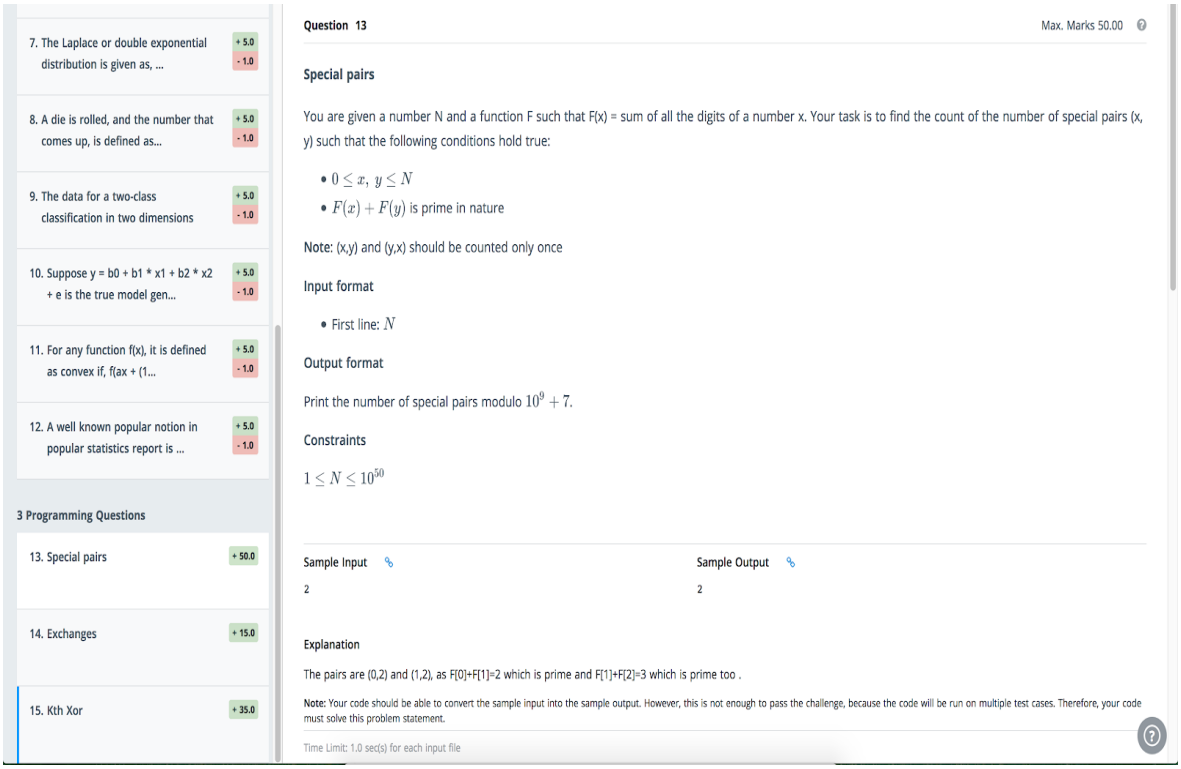
```
12
58
```

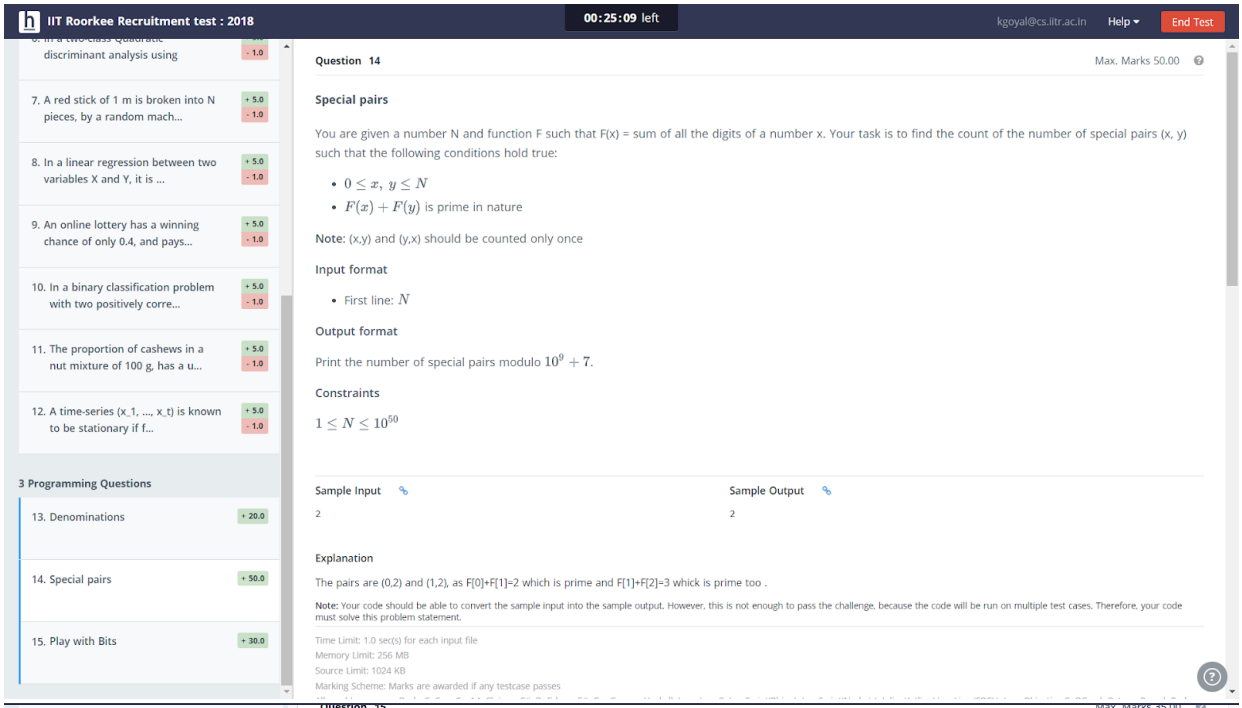
Explanation

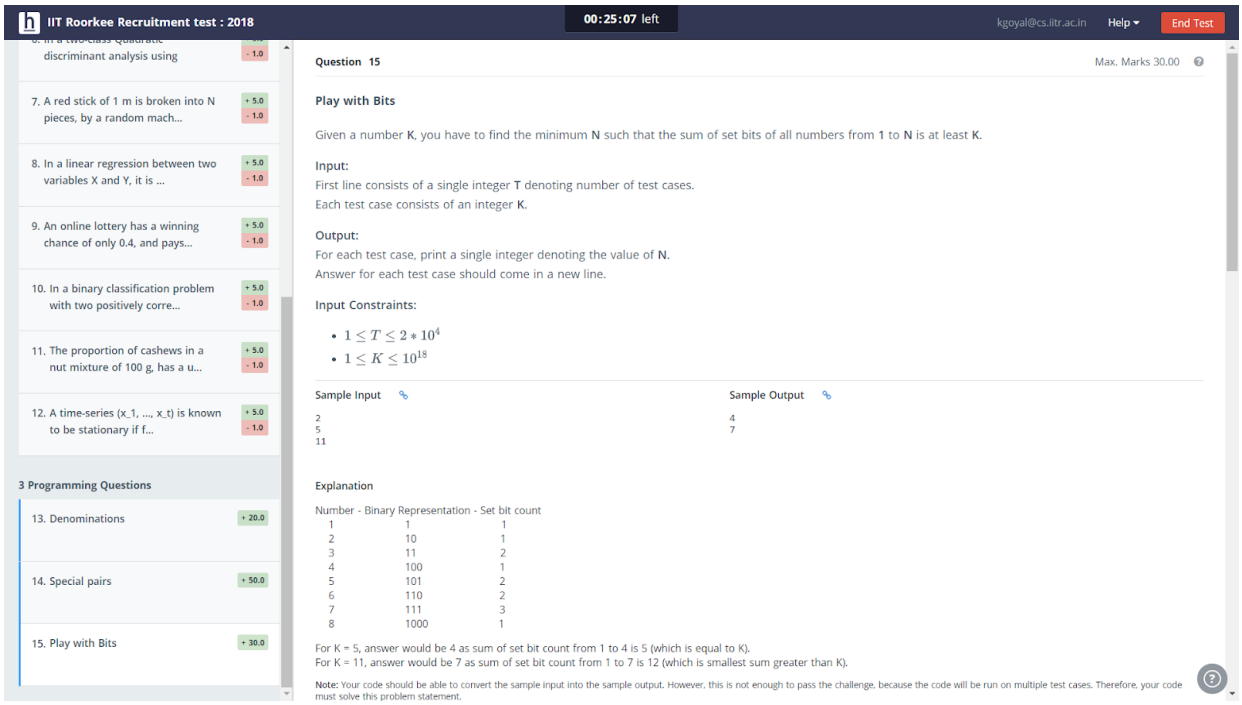
For Test Case 1:

IITR


IIT Roorkee Recruitment test : 2018
00:25:15 left
kgoyal@cs.iitr.ac.in
Help
End Test
discriminant analysis using - 1.0
7. A red stick of 1 m is broken into N pieces, by a random mach... + 5.0 - 1.0
8. In a linear regression between two variables X and Y, it is ... + 5.0 - 1.0
9. An online lottery has a winning chance of only 0.4, and pays... + 5.0 - 1.0
10. In a binary classification problem with two positively corre... + 5.0 - 1.0
11. The proportion of cashews in a nut mixture of 100 g, has a u... + 5.0 - 1.0
12. A time-series (x_1, ..., x_t) is known to be stationary if f... + 5.0 - 1.0
3 Programming Questions
13. Denominations + 20.0
14. Special pairs + 50.0
15. Play with Bits + 30.0
Question 13
Max. Marks 20.00
Denominations
You are given an integer N. You have infinite number of 3, 5 and 10 denomination coins. You have to find the number of ways you can form a sum of N by using the coin denominations.
Input:
The first line contains an Integer T, the number of test cases.
Next T lines contain a single integer N.
Output:
For each test case, print the number of ways you can form a sum of N by using the coin denominations.
Constraints:
$1 \leq T \leq 10^3$
$0 \leq N \leq 10^6$
Sample Input
2
20
13
Sample Output
4
2
Explanation
Case 1:
N=20. There are 4 ways to make a sum of 20 using 3, 5 and 10 denomination coins. They are (10, 10), (5, 5, 10), (5, 5, 5, 5), (3, 3, 3, 3, 3, 5)
Case 2:
N=13. There are 2 ways to make a sum of 20 using 3, 5 and 10 denomination coins. They are (3, 5, 5), (3, 10)
Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.
Time Limit: 1.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB
Marking Scheme: Marks are awarded if any testcase passes
Allowed Languages: Bash, C, C++, C++14, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl


7. The Laplace or double exponential distribution is given as, ... + 5.0 - 1.0
8. A die is rolled, and the number that comes up, is defined as... + 5.0 - 1.0
9. The data for a two-class classification in two dimensions + 5.0 - 1.0
10. Suppose y = b0 + b1 * x1 + b2 * x2 + e is the true model gen... + 5.0 - 1.0
11. For any function f(x), it is defined as convex if, f(ax + (1... + 5.0 - 1.0
12. A well known popular notion in popular statistics report is ... + 5.0 - 1.0
3 Programming Questions
13. Special pairs + 50.0
14. Exchanges + 15.0
15. Kth Xor + 35.0
Question 13
Max. Marks 50.00
Special pairs
You are given a number N and a function F such that F(x) = sum of all the digits of a number x. Your task is to find the count of the number of special pairs (x, y) such that the following conditions hold true:
$0 \leq x, y \leq N$
$F(x) + F(y)$ is prime in nature
Note: (x,y) and (y,x) should be counted only once
Input format
First line: N
Output format
Print the number of special pairs modulo $10^9 + 7$.
Constraints
$1 \leq N \leq 10^{50}$
Sample Input
2
Sample Output
2
Explanation
The pairs are (0,2) and (1,2), as F[0]+F[1]=2 which is prime and F[1]+F[2]=3 which is prime too .
Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.
Time Limit: 1.0 sec(s) for each input file





solution: https://www.geeksforgeeks.org/count-total-set-bits-in-all-numbers-from-1-to-n/

IITB

It was open for M. Tech too

A school-going child collects cards from Star Wars, which has a collection of 10 characters altogether. What is the expected number of cards that he needs to collect to get all 10 characters?

- 20
- 21.75
- 29.29
- 72.32

In a round-robin tournament, each team plays each other once, and collects 3 points for a win. Each team is equally strong, and the probability of a win is 0.5 for either team in a match. what is the chance that the group ends with all team at the same points? (IITB)

- 0%
- 0.25%
- 6.4%
- 10.24%

The nearest neighbor classifier with k classes is used for an n-dimension problem. Which of the following will not render the algorithm performance significantly suspect?

- The variables have wild variations in the variance.
- The variables are highly correlated.
- The variables do not follow the Gaussian distribution.
- Some of the variables are categorical in nature.

The trimmed mean is a simple robust estimator of location that deletes a certain percentage of observations from each end of the data, then computes the mean in the usual way. Which of the following is not true.

- Trimmed mean has lower variance than the sample mean.
- Trimmed mean is more robust than the sample mean.
- Trimmed mean is the unbiased estimator of the population mean.
- Trimmed mean is sensitive to outliers.

In a two-class Quadratic discriminant analysis using Gaussian measurements, the final classification function takes the form (t(x) * A * x + b * x + c > 0), where t(.) denotes the transpose function. Assuming that the two classes have the same covariance matrix, which of the following is true?

- The matrix A is non-singular, positive definite.
- The matrix A = 0, i.e. it is a Linear Discriminant Analysis
- The matrix A can be singular, with both positive and negative eigenvalues.
- The matrix A has all Eigenvalues equal to the eigenvalues of the common covariance matrix.

A printer-manufacturing company proclaims that 'their printer has a 2-year warranty'. Typically that signifies that these printers have a break-down (requiring maintenance) period of twice that time, i.e. 4 years. Assuming that the breakdown time follows an exponential distribution with average repair cost being $200, and a printer typically has a 6 year shelf time, what will be the expected running cost an owner is supposed to bear during its lifetime. (There is no cost if the breakdown happens during the warranty period).

- $300
- Between $200 and $300.
- Less than $200
- More than $300

Question 7 Max. Marks 5.00 Negative Marks: 1.00

In a logistic regression, we model P(Y = 1| x) = b_0 + b_1 X_1 + ... + b_k X_k. After fitting the model, we obtain (b_0, b_1, ..., b_k) estimates. How do we interpret the coefficient b_1 in the model

- Effect of X_1 on P(Y = 1)
- Rate of change in the log-odds-ratio for unit change in X_1
- The rate of change in the log-odds-ratio for a unit change in X_1 at fixed values of the remaining X's
- The rate of change in the odds ratio for unit change in X_1 at the mean value of the remaining X's

Question 9 Max. Marks 5.00 Negative Marks: 1.00

After performing a linear regression for a single response Y against a group of variables X, we observe that the QQ plot of the residuals is inverted S-shaped, i.e. it is below the diagonal line to start with, and goes above the line at the right end. How do we interpret the same?

- The errors are heavy-tailed.
- The model has overdispersion.
- A quadratic regression may give us a better result.
- It is OK, no worries.

Question 8 Max. Marks 5.00 Negative Marks: 1.00

A half-cylindrical pool of length 50 m and maximum depth 5 m is filled with water, to be used for diving. The surface of the pool is rectangular and the cross-section of the pool is a semi-circle of radius 5 m. The prescribed depth for diving being 3 m, what is the probability of a random dive resulting in a depth of more than 3 m?

- 0.6
- **0.8**
- 0.75
- 0.64

Question 10 Max. Marks 5.00 Negative Marks: 1.00

The Kernel density estimator with Kernel K and bandwidth h is written as follows:

g(x) = (1/n) sum K((x - X_j) / h). Which of the following is true?

- It is the density of (X + U) where X has the empirical distribution, and U/h has a density K(.)
- g(x) is an unbiased estimator of the true density f.
- If f = 0 at some domain, then g is also 0 inside the same domain.
- As n gets large, (g - f) tends to 0 at all points.

Question 11 Max. Marks 5.00 Negative Marks: 1.00

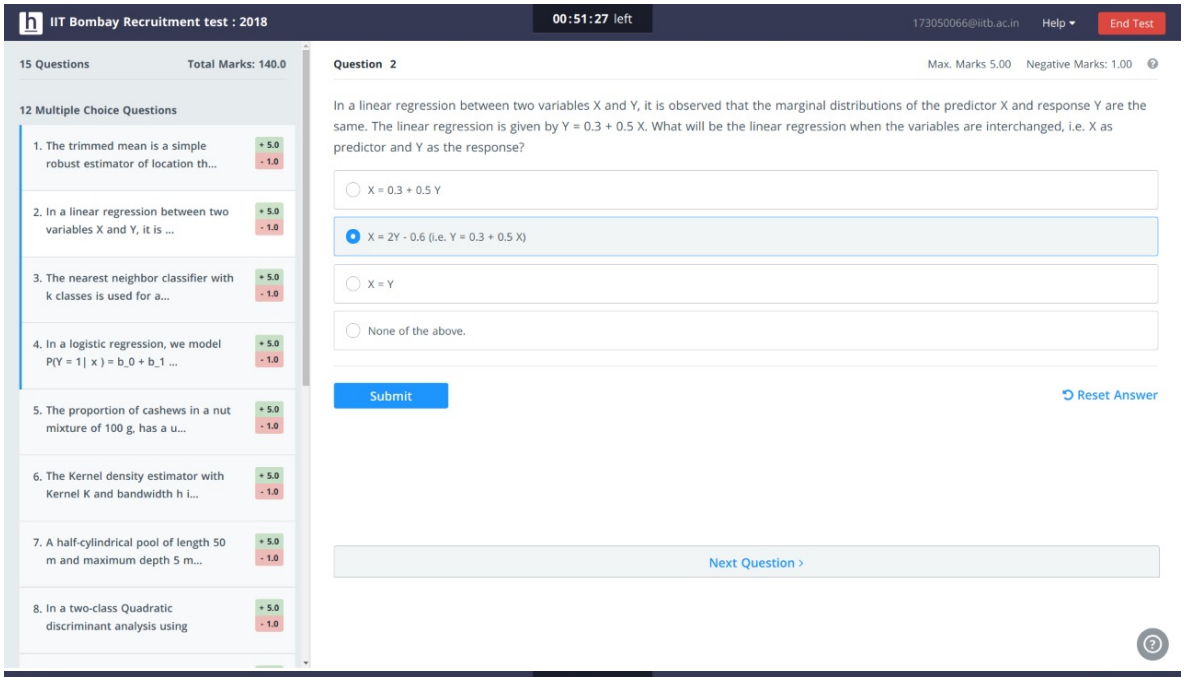
The proportion of cashews in a nut mixture of 100 g, has a uniform distribution between 0 and 1. A seller buys these 100 g mixtures in wholesale, and mixes them together to make 1 kg packets. If someone wants to buy this 1 kg packets, what would be a 95% approximate probability interval for the amount of cashews?

- (435, 565).
- (357, 643).
- (322, 678)
- (412, 588)

Question 12 Max. Marks 5.00 Negative Marks: 1.00

In a linear regression between two variables X and Y, it is observed that the marginal distributions of the predictor X and response Y are the same. The linear regression is given by Y = 0.3 + 0.5 X. What will be the linear regression when the variables are interchanged, i.e. X as predictor and Y as the response?

- X = 0.3 + 0.5 Y
- **X = 2Y - 0.6 (i.e. Y = 0.3 + 0.5 X)**
- X = Y
- None of the above.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173050066@iitb.ac.in
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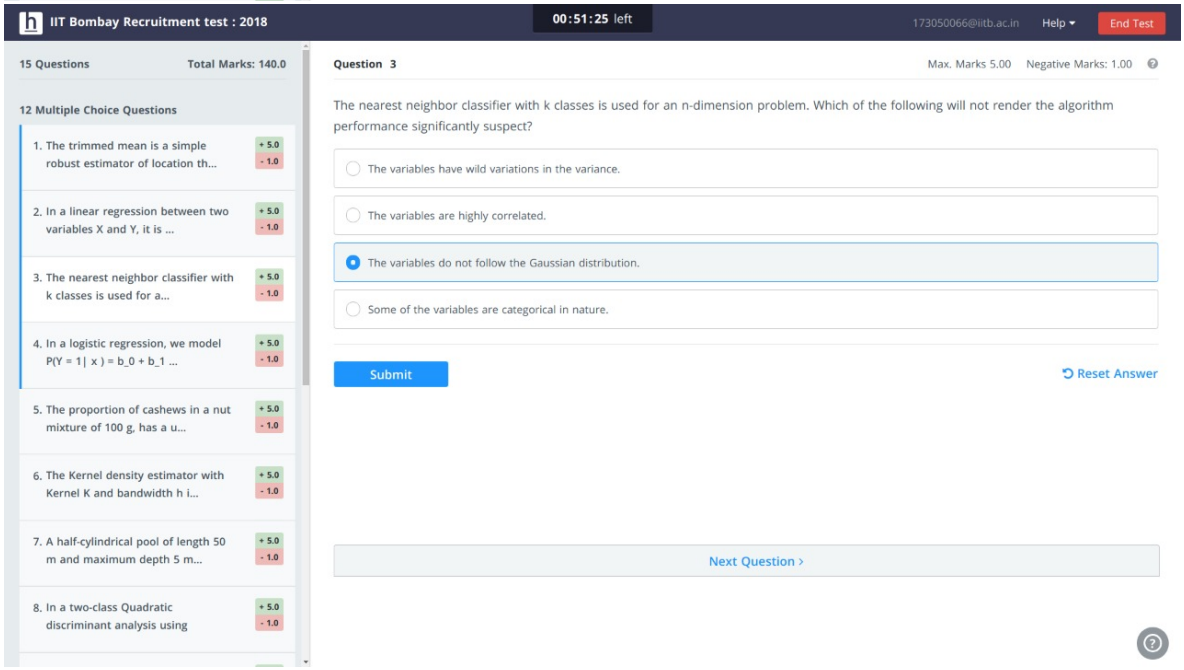
15 Questions
Total Marks: 140.0
12 Multiple Choice Questions
1. The trimmed mean is a simple robust estimator of location th... +5.0 -1.0
2. In a linear regression between two variables X and Y, it is ... +5.0 -1.0
3. The nearest neighbor classifier with k classes is used for a... +5.0 -1.0
4. In a logistic regression, we model P(Y = 1| x) = b_0 + b_1 ... +5.0 -1.0
5. The proportion of cashews in a nut mixture of 100 g, has a u... +5.0 -1.0
6. The Kernel density estimator with Kernel K and bandwidth h i... +5.0 -1.0
7. A half-cylindrical pool of length 50 m and maximum depth 5 m... +5.0 -1.0
8. In a two-class Quadratic discriminant analysis using +5.0 -1.0
Question 2
Max. Marks 5.00 Negative Marks: 1.00
In a linear regression between two variables X and Y, it is observed that the marginal distributions of the predictor X and response Y are the same. The linear regression is given by Y = 0.3 + 0.5 X. What will be the linear regression when the variables are interchanged, i.e. X as predictor and Y as the response?
X = 0.3 + 0.5 Y
X = 2Y - 0.6 (i.e. Y = 0.3 + 0.5 X)
X = Y
None of the above.
Submit
Reset Answer
Next Question ›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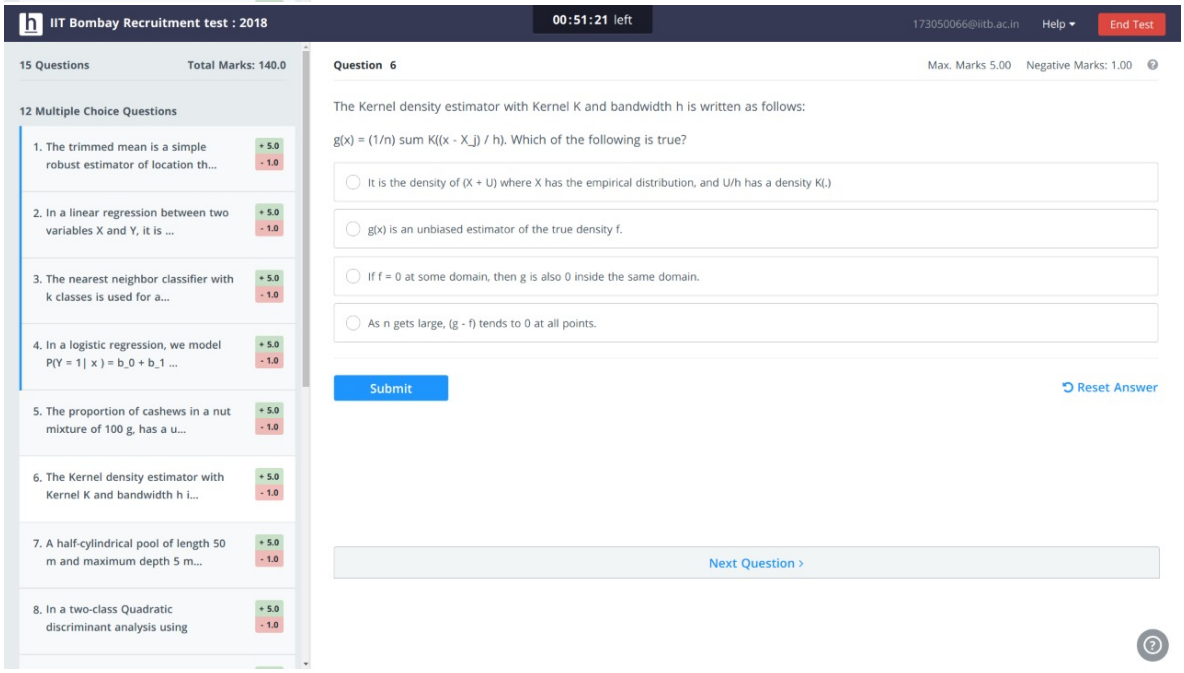
End Test
15 Questions
Total Marks: 140.0
12 Multiple Choice Questions
1. The trimmed mean is a simple robust estimator of location th... +5.0 -1.0
2. In a linear regression between two variables X and Y, it is ... +5.0 -1.0
3. The nearest neighbor classifier with k classes is used for a... +5.0 -1.0
4. In a logistic regression, we model P(Y = 1| x) = b_0 + b_1 ... +5.0 -1.0
5. The proportion of cashews in a nut mixture of 100 g, has a u... +5.0 -1.0
6. The Kernel density estimator with Kernel K and bandwidth h i... +5.0 -1.0
7. A half-cylindrical pool of length 50 m and maximum depth 5 m... +5.0 -1.0
8. In a two-class Quadratic discriminant analysis using +5.0 -1.0
Question 3
Max. Marks 5.00 Negative Marks: 1.00
The nearest neighbor classifier with k classes is used for an n-dimension problem. Which of the following will not render the algorithm performance significantly suspect?
The variables have wild variations in the variance.
The variables are highly correlated.
The variables do not follow the Gaussian distribution.
Some of the variables are categorical in nature.
Submit
Reset Answer
Next Question ›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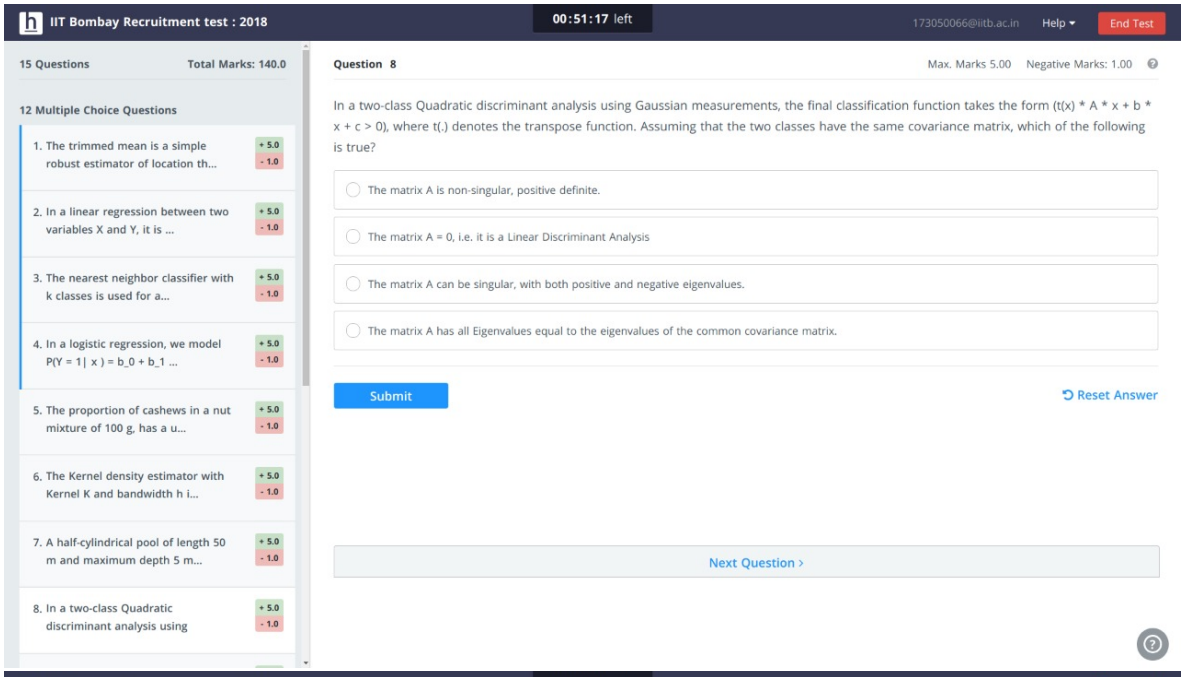
Help
End Test
15 Questions
Total Marks: 140.0
12 Multiple Choice Questions
1. The trimmed mean is a simple robust estimator of location th... +5.0 -1.0
2. In a linear regression between two variables X and Y, it is ... +5.0 -1.0
3. The nearest neighbor classifier with k classes is used for a... +5.0 -1.0
4. In a logistic regression, we model P(Y = 1| x) = b_0 + b_1 ... +5.0 -1.0
5. The proportion of cashews in a nut mixture of 100 g, has a u... +5.0 -1.0
6. The Kernel density estimator with Kernel K and bandwidth h i... +5.0 -1.0
7. A half-cylindrical pool of length 50 m and maximum depth 5 m... +5.0 -1.0
8. In a two-class Quadratic discriminant analysis using +5.0 -1.0
Question 6
Max. Marks 5.00 Negative Marks: 1.00
The Kernel density estimator with Kernel K and bandwidth h is written as follows:
g(x) = (1/n) sum K((x - X_j) / h). Which of the following is true?
It is the density of (X + U) where X has the empirical distribution, and U/h has a density K(.)
g(x) is an unbiased estimator of the true density f.
If f = 0 at some domain, then g is also 0 inside the same domain.
As n gets large, (g - f) tends to 0 at all points.
Submit
Reset Answer
Next Question ›


IIT Bombay Recruitment test : 2018
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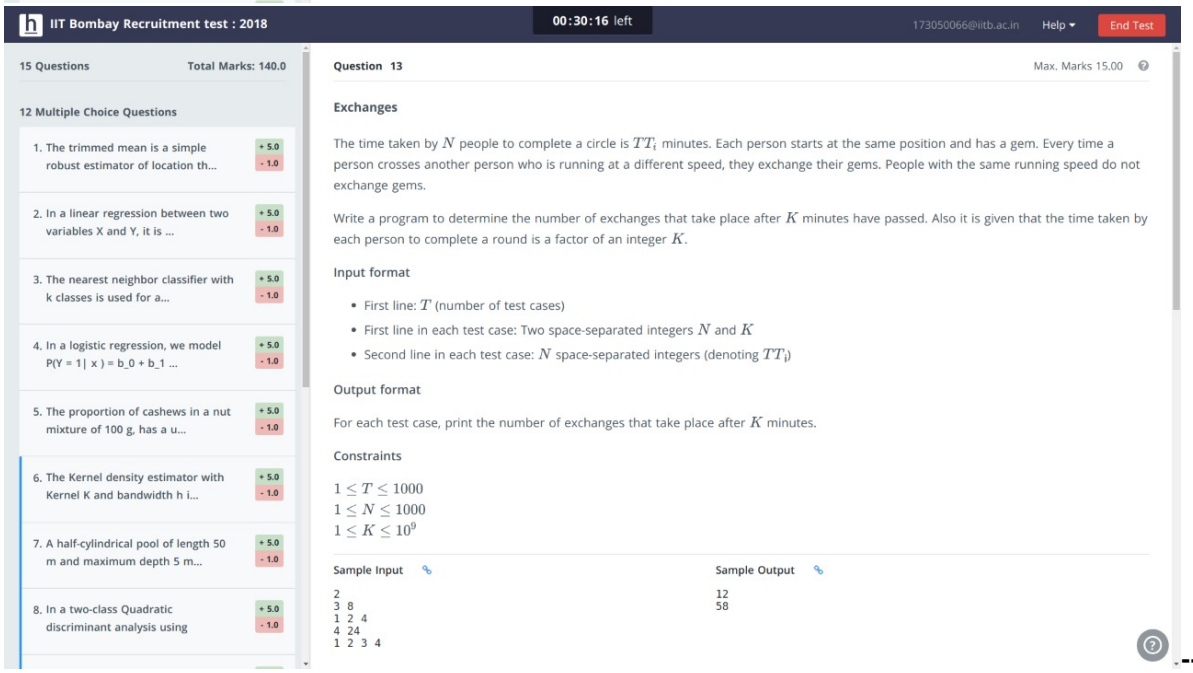
Help
End Test
15 Questions
Total Marks: 140.0
12 Multiple Choice Questions
1. The trimmed mean is a simple robust estimator of location th... +5.0 -1.0
2. In a linear regression between two variables X and Y, it is ... +5.0 -1.0
3. The nearest neighbor classifier with k classes is used for a... +5.0 -1.0
4. In a logistic regression, we model P(Y = 1| x) = b_0 + b_1 ... +5.0 -1.0
5. The proportion of cashews in a nut mixture of 100 g, has a u... +5.0 -1.0
6. The Kernel density estimator with Kernel K and bandwidth h i... +5.0 -1.0
7. A half-cylindrical pool of length 50 m and maximum depth 5 m... +5.0 -1.0
8. In a two-class Quadratic discriminant analysis using +5.0 -1.0
Question 8
Max. Marks 5.00
Negative Marks: 1.00
In a two-class Quadratic discriminant analysis using Gaussian measurements, the final classification function takes the form (t(x) * A * x + b * x + c > 0), where t(.) denotes the transpose function. Assuming that the two classes have the same covariance matrix, which of the following is true?
The matrix A is non-singular, positive definite.
The matrix A = 0, i.e. it is a Linear Discriminant Analysis
The matrix A can be singular, with both positive and negative eigenvalues.
The matrix A has all Eigenvalues equal to the eigenvalues of the common covariance matrix.
Submit
Reset Answer
Next Question ›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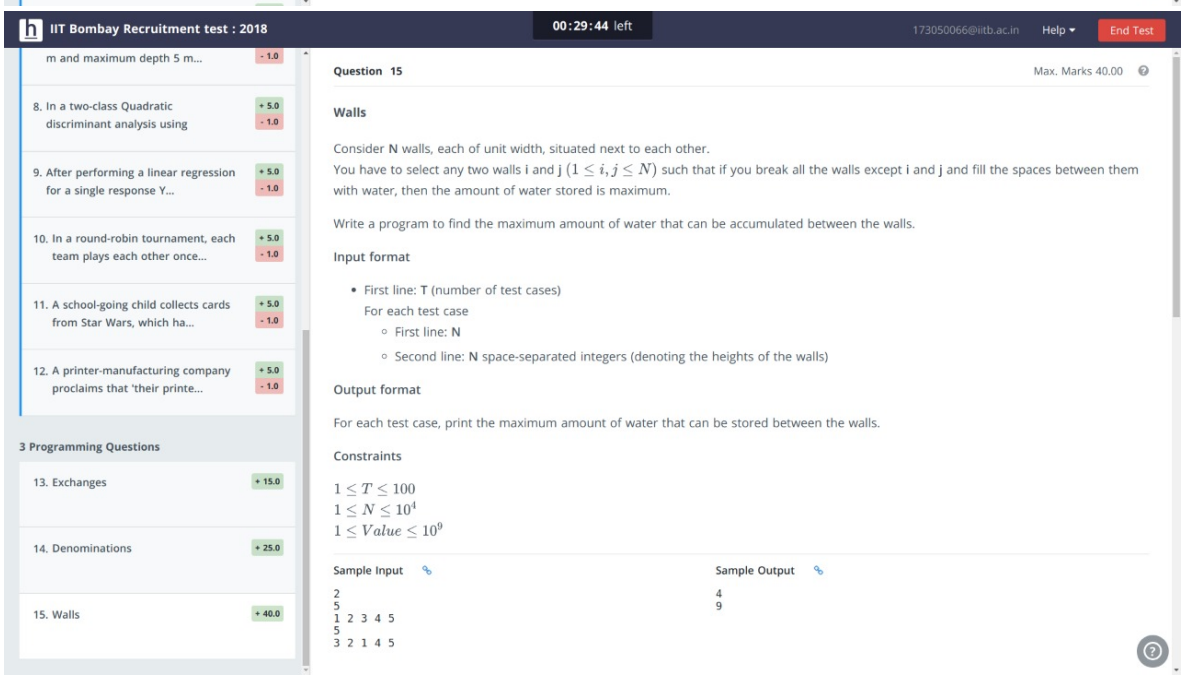
End Test
15 Questions
Total Marks: 140.0
12 Multiple Choice Questions
1. The trimmed mean is a simple robust estimator of location th... +5.0 -1.0
2. In a linear regression between two variables X and Y, it is ... +5.0 -1.0
3. The nearest neighbor classifier with k classes is used for a... +5.0 -1.0
4. In a logistic regression, we model P(Y = 1| x) = b_0 + b_1 ... +5.0 -1.0
5. The proportion of cashews in a nut mixture of 100 g, has a u... +5.0 -1.0
6. The Kernel density estimator with Kernel K and bandwidth h i... +5.0 -1.0
7. A half-cylindrical pool of length 50 m and maximum depth 5 m... +5.0 -1.0
8. In a two-class Quadratic discriminant analysis using +5.0 -1.0
Question 13
Max. Marks 15.00
Exchanges
The time taken by N people to complete a circle is TT_i minutes. Each person starts at the same position and has a gem. Every time a person crosses another person who is running at a different speed, they exchange their gems. People with the same running speed do not exchange gems.
Write a program to determine the number of exchanges that take place after K minutes have passed. Also it is given that the time taken by each person to complete a round is a factor of an integer K.
Input format
First line: T (number of test cases)
First line in each test case: Two space-separated integers N and K
Second line in each test case: N space-separated integers (denoting TT_i)
Output format
For each test case, print the number of exchanges that take place after K minutes.
Constraints
$1 \leq T \leq 1000$
$1 \leq N \leq 1000$
$1 \leq K \leq 10^9$
Sample Input
2
3 8
1 2 4
4 24
1 2 3 4
Sample Output
12
58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Help
End Test
m and maximum depth 5 m... -1.0
8. In a two-class Quadratic discriminant analysis using +5.0 -1.0
9. After performing a linear regression for a single response Y... +5.0 -1.0
10. In a round-robin tournament, each team plays each other once... +5.0 -1.0
11. A school-going child collects cards from Star Wars, which ha... +5.0 -1.0
12. A printer-manufacturing company proclaims that 'their printe... +5.0 -1.0
3 Programming Questions
13. Exchanges +15.0
14. Denominations +25.0
15. Walls +40.0
Question 15
Max. Marks 40.00
Walls
Consider N walls, each of unit width, situated next to each other.
You have to select any two walls i and j $(1 \leq i, j \leq N)$ such that if you break all the walls except i and j and fill the spaces between them with water, then the amount of water stored is maximum.
Write a program to find the maximum amount of water that can be accumulated between the walls.
Input format
First line: T (number of test cases)
For each test case
First line: N
Second line: N space-separated integers (denoting the heights of the walls)
Output format
For each test case, print the maximum amount of water that can be stored between the walls.
Constraints
$1 \leq T \leq 100$
$1 \leq N \leq 10^4$
$1 \leq Value \leq 10^9$
Sample Input
2
5
1 2 3 4 5
5
3 2 1 4 5
Sample Output
4
9

IIT Bombay Recruitment test : 2018 — 00:14:41 left — 173050066@iitb.ac.in — Help — End Test

m and maximum depth 5 m... -1.0

8. In a two-class Quadratic discriminant analysis using +5.0 -1.0

9. After performing a linear regression for a single response Y... +5.0 -1.0

10. In a round-robin tournament, each team plays each other once... +5.0 -1.0

11. A school-going child collects cards from Star Wars, which ha... +5.0 -1.0

12. A printer-manufacturing company proclaims that 'their printe... +5.0 -1.0

3 Programming Questions

13. Exchanges +15.0

14. Denominations +25.0

15. Walls +40.0

Question 15 — Max. Marks 40.00

Walls

Consider **N** walls, each of unit width, situated next to each other.
You have to select any two walls **i** and **j** $(1 \leq i, j \leq N)$ such that if you break all the walls except **i** and **j** and fill the spaces between them with water, then the amount of water stored is maximum.

Write a program to find the maximum amount of water that can be accumulated between the walls.

Input format

- First line: **T** (number of test cases)
  For each test case
  - First line: **N**
  - Second line: **N** space-separated integers (denoting the heights of the walls)

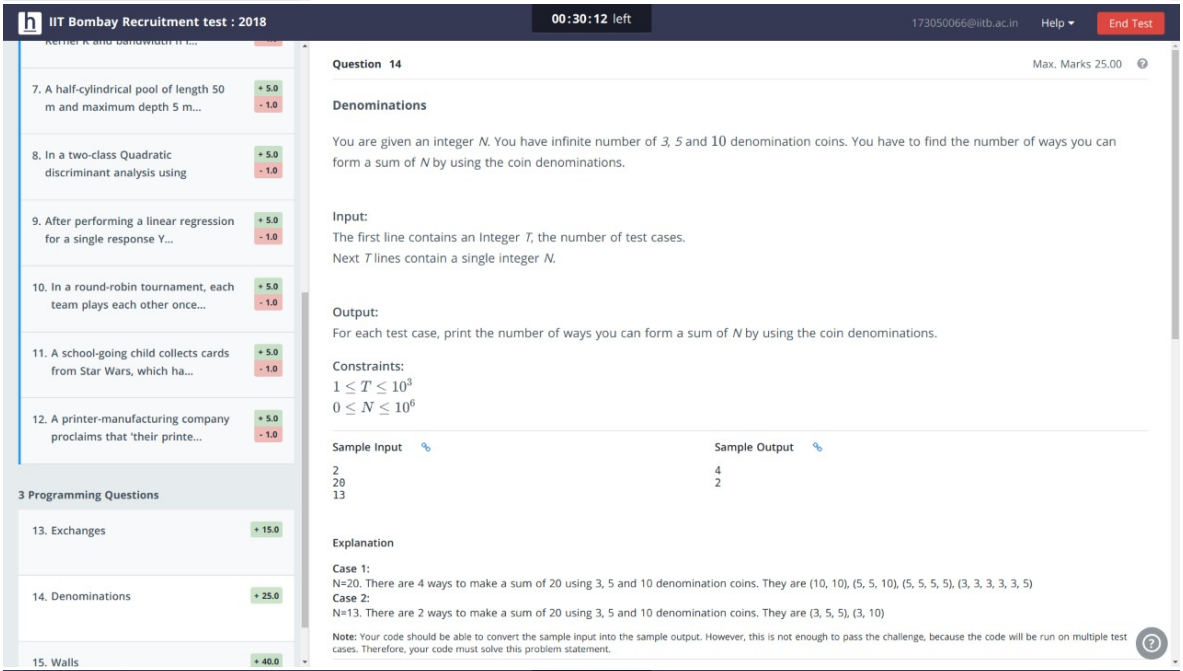
Output format

For each test case, print the maximum amount of water that can be stored between the walls.

Constraints

$1 \leq T \leq 100$
$1 \leq N \leq 10^4$
$1 \leq Value \leq 10^9$

Sample Input	Sample Output
2 5 1 2 3 4 5 5 3 2 1 4 5	4 9



IIT Bombay Recruitment test : 2018 — 00:30:10 left — 173050066@iitb.ac.in — Help — End Test

m and maximum depth 5 m... -1.0

8. In a two-class Quadratic discriminant analysis using +5.0 -1.0

9. After performing a linear regression for a single response Y... +5.0 -1.0

10. In a round-robin tournament, each team plays each other once... +5.0 -1.0

11. A school-going child collects cards from Star Wars, which ha... +5.0 -1.0

12. A printer-manufacturing company proclaims that 'their printe... +5.0 -1.0

3 Programming Questions

13. Exchanges +15.0

14. Denominations +25.0

15. Walls +40.0

Question 15 — Max. Marks 40.00

Walls

Consider **N** walls, each of unit width, situated next to each other.
You have to select any two walls **i** and **j** $(1 \leq i, j \leq N)$ such that if you break all the walls except **i** and **j** and fill the spaces between them with water, then the amount of water stored is maximum.

Write a program to find the maximum amount of water that can be accumulated between the walls.

Input format

- First line: **T** (number of test cases)
  For each test case
  - First line: **N**
  - Second line: **N** space-separated integers (denoting the heights of the walls)

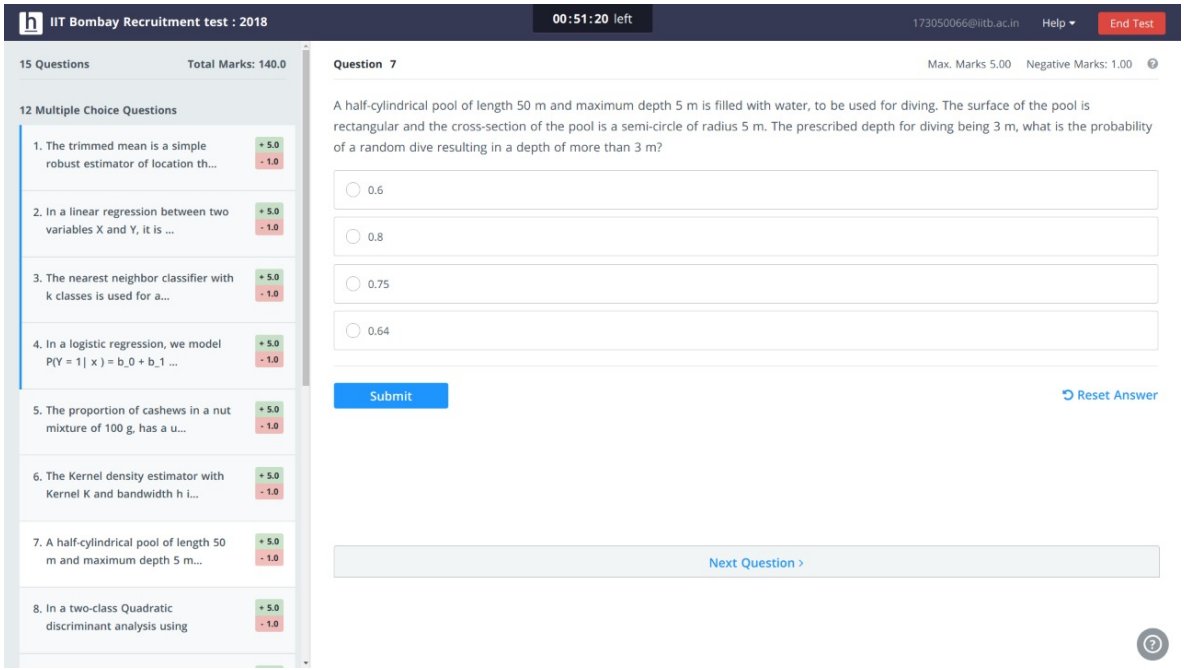
Output format

For each test case, print the maximum amount of water that can be stored between the walls.

Constraints

$1 \leq T \leq 100$
$1 \leq N \leq 10^4$
$1 \leq Value \leq 10^9$

Sample Input	Sample Output
2 5 1 2 3 4 5 5 3 2 1 4 5	4 9


IIT Bombay Recruitment test : 2018
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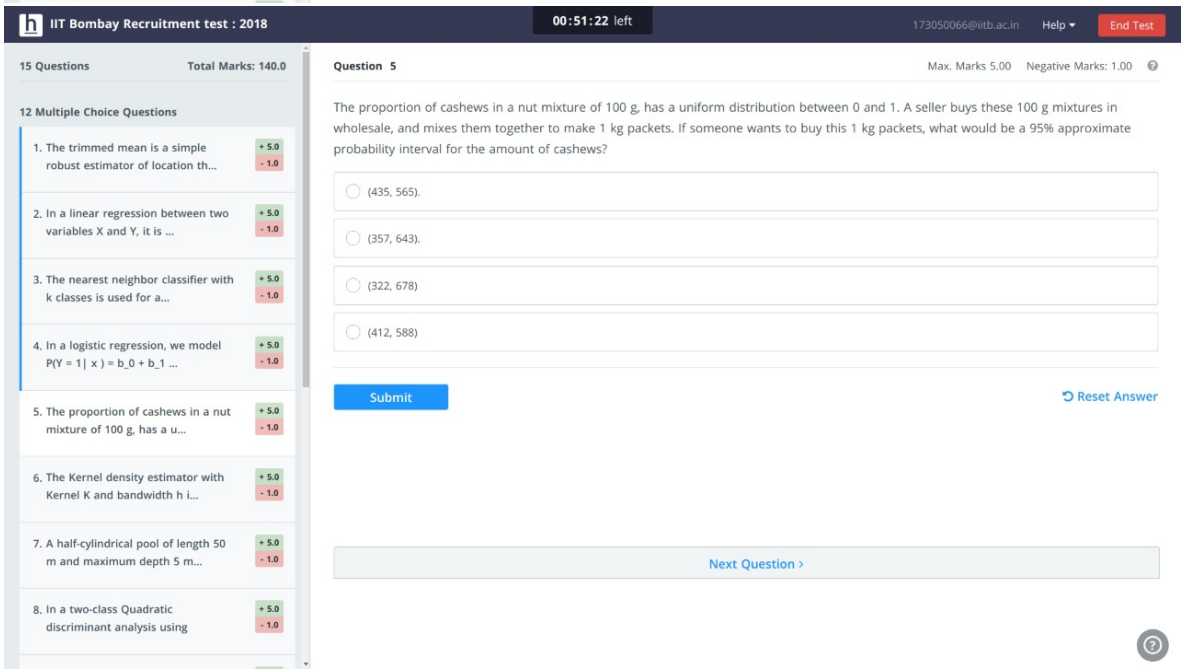
Help
End Test
15 Questions
Total Marks: 140.0
12 Multiple Choice Questions
1. The trimmed mean is a simple robust estimator of location th...
2. In a linear regression between two variables X and Y, it is ...
3. The nearest neighbor classifier with k classes is used for a...
4. In a logistic regression, we model P(Y = 1| x) = b_0 + b_1 ...
5. The proportion of cashews in a nut mixture of 100 g, has a u...
6. The Kernel density estimator with Kernel K and bandwidth h i...
7. A half-cylindrical pool of length 50 m and maximum depth 5 m...
8. In a two-class Quadratic discriminant analysis using
+ 5.0
- 1.0
Question 7
Max. Marks 5.00
Negative Marks: 1.00
A half-cylindrical pool of length 50 m and maximum depth 5 m is filled with water, to be used for diving. The surface of the pool is rectangular and the cross-section of the pool is a semi-circle of radius 5 m. The prescribed depth for diving being 3 m, what is the probability of a random dive resulting in a depth of more than 3 m?
0.6
0.8
0.75
0.64
Submit
Reset Answer
Next Question ›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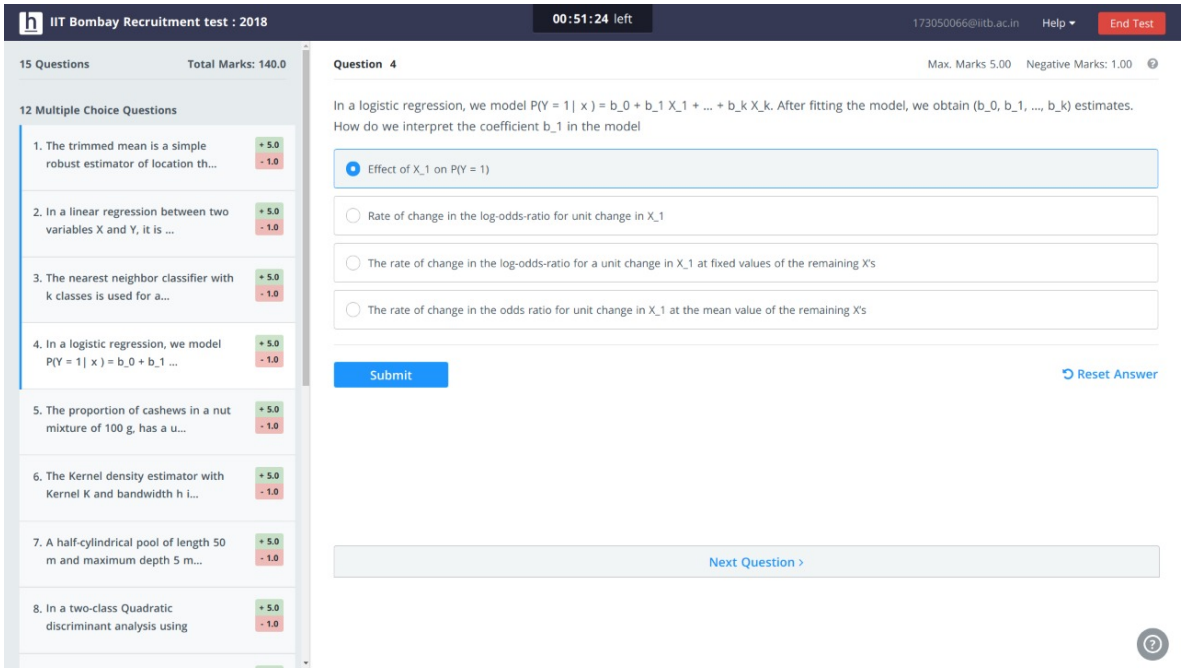
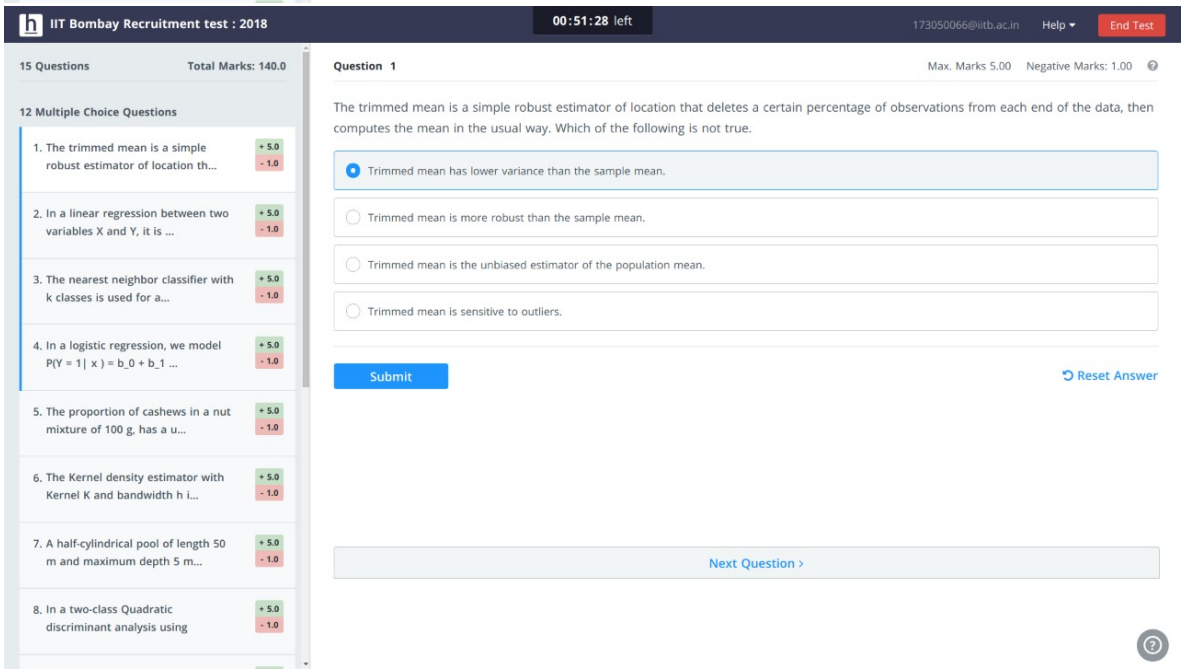
173050066@iitb.ac.in
Help
End Test
15 Questions
Total Marks: 140.0
12 Multiple Choice Questions
1. The trimmed mean is a simple robust estimator of location th...
2. In a linear regression between two variables X and Y, it is ...
3. The nearest neighbor classifier with k classes is used for a...
4. In a logistic regression, we model P(Y = 1| x) = b_0 + b_1 ...
5. The proportion of cashews in a nut mixture of 100 g, has a u...
6. The Kernel density estimator with Kernel K and bandwidth h i...
7. A half-cylindrical pool of length 50 m and maximum depth 5 m...
8. In a two-class Quadratic discriminant analysis using
+ 5.0
- 1.0
Question 5
Max. Marks 5.00
Negative Marks: 1.00
The proportion of cashews in a nut mixture of 100 g, has a uniform distribution between 0 and 1. A seller buys these 100 g mixtures in wholesale, and mixes them together to make 1 kg packets. If someone wants to buy this 1 kg packets, what would be a 95% approximate probability interval for the amount of cashews?
(435, 565).
(357, 643).
(322, 678)
(412, 588)
Submit
Reset Answer
Next Question ›





CITRIX

IITM

(CPI Cutoff?) (Branches Allowed?)
Software Engineer
Date: 25/09/18
2 hours of test, in which you have 50 MCQs(with no negative a), 2 coding questions on Hackerrank Platform

☆ Golden Sets

A set of integers is called golden set if it can be partitioned into two groups such that sum of elements in both the groups is same.

Given an integer, n, find the different number of golden sets that can be created from the first n natural numbers.

Given n=3, the first n natural number set is [1, 2, 3], the total number of golden sets is 1 ([1, 2] [3]).

Function Description

Complete the function countGoldenSets in the editor below. The function should return the number of different golden sets.

countGoldenSets has the following parameter(s):

n: an integer

Constraints

- n: 1 <= n <= 50

▶ **Input Format For Custom Testing**

▼ **Sample Case 0**

Sample Input For Custom Testing

```
3
```

Sample Output

```
1
```

Explanation

The only possible golden set is ([1, 2] [3])

▶ **Sample Case 1**

Coding -> 1. Similar problem with explanation A set of number is called golden set, if it has 2 subsets which equal sum. Ex- for 3 . [[1,2],[3]] -> golden set for 3. Given n , find number of golden set possible using first n natural number

Coding -> 2. It was based on some share markets terms. You have n users , with some number of shares, bidding prices, timestamp. Input will be [user_id, no_of_shares,bidding_prices, timestamp]. You have total shares to be distributed among bidders.
For which -

- User with highest bidding prices will be given shares first.
- If 2 users have same bidding price, then we give 1-1 shares to them iteratively in the order of their timestamp .
- This process continues till all bidders get shares or no more shares are left,whichever happens first.

You have to output the number of users which will not get any share.

Suppose input is:
[1,5,5,0]
[2,7,8,1]
[3,7,5,1]
[4,10,3,3]
Totalshare = 18
Explanation: User2 bidding prices is high , so we give it 7 shares as it wants. Left share = 18-7 = 11.Now user 1 and 3 have same bidding prices, so we give 1 to user 1 , then 1 to user 3(because of timestamp order). Keep on doing till 5 iterations, left share 11-10 = 1 and user1 is done

Now with 1 share left we will give it to user3. So the answer is 4, as user4 didn't get anything

☆ Initial Public Offering

A company registers an IPO on a website *sellshares.com*. All the shares on this website are available for bidding for a particular time frame called the bidding window. At the end of the bidding window an auction logic is used to decide how many of the available shares go to which bidder until all the shares that are available have been allotted, or all the bidders have received the shares they bid for, whichever comes earlier.

The bids arrive from the users in the form of *<user Id, number of shares, bidding price, timestamp>* until the bidding window is closed.

The auction logic assigns shares to the bidders as follows:

1. The bidder with the highest price gets the number of shares they bid for
2. If multiple bidders have bid at the same price, the bidders are assigned shares as follows:
   Each bidder in the same price group gets assigned one share each consecutively, with each bidder being arranged inside the group based on their timestamp. Once a bidder gets the number of shares they bid for, they will be removed from the above iterative process and the process which then continues until all bidders are removed or the shares get exhausted, whichever comes first.

List the user Id's of all users who did not get even one share after the shares have been allocated.

For example, bids come in as *bids = [[1, 5, 5, 0], [2, 7, 8, 1], [3, 7, 5, 1], [4, 10, 3, 3]]*. There are *totalShares = 18* to allocate. The highest price bid is for user Id *2* for *7* shares at a price of *8*, so that user gets *7* shares leaving *11* to allocate to lower prices. Users with Id's *1* and *3* each bid *5* for *5* and *7* shares, with bidder *1* having the earlier timestamp. After *5* iterations, *10* shares have been allocated with *5* shares going to each of these two bidders. Bidder *1* has the full allotment, bidder *3* has *2* more shares to buy and there is *1* share left to allocate. It goes to bidder *3* and all shares have been allotted. Bidder *4* is the only bidder who gets no shares.

Function Description

Complete the function *getUnallottedUsers* in the editor below. The function must return a list of integers, each an Id for those bidders who receive no shares, sorted ascending.

getUnallottedUsers has the following parameter(s):

bids[bids[0],...bids[n-1]]: a 2D array of arrays of integers, *Id, shares, price, timestamp* named *u, sc, bp, ts* going forward

totalShares: an integer, the total shares to allocate

MCQs -> based on Networks(gate level), apti, programming(find output n errors)
Were there MCQs from DBMS or OS ? OS, no DBMS.

IITB

MCQs similar to what is described above.
Coding :- similar to this one :- https://www.hackerrank.com/challenges/largest-permutation/problem
b) partition array into two subsets of size n/2 with the minimum difference.

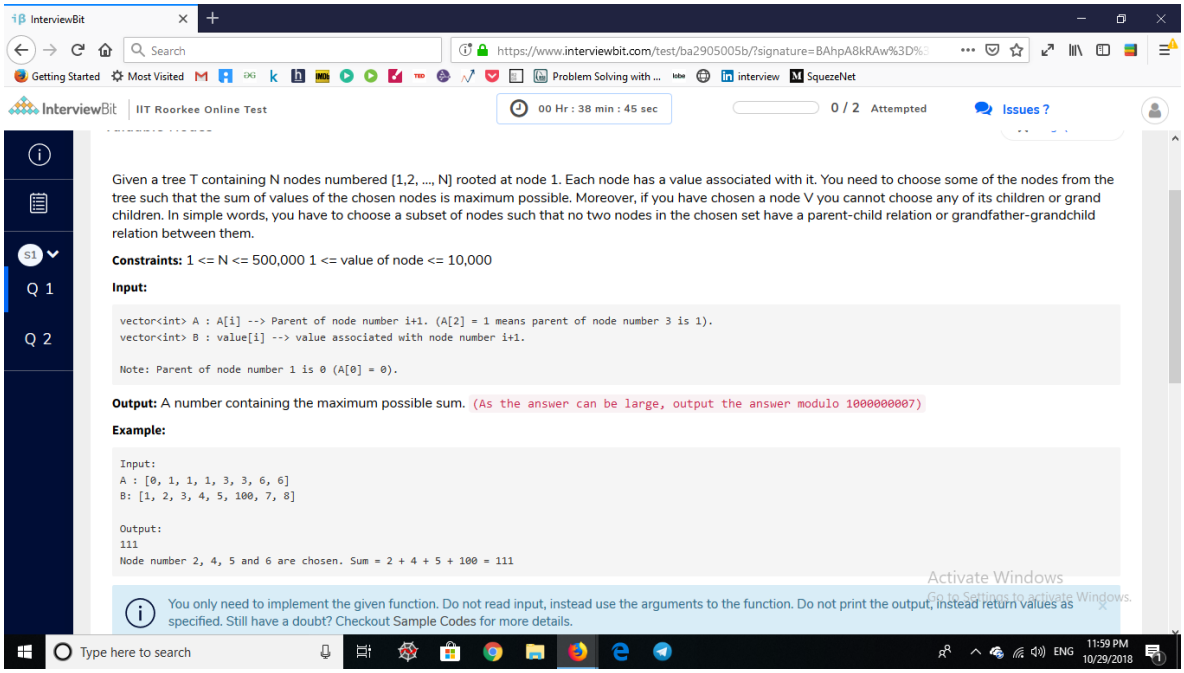
Thoughtspot

IIT BHU

CSE and MnC
date: 25/09/18
CPI: 6.5
Member of Technical Staff
1hr test on interviewbit - Constraints were given

1. [200 pts] http://codeforces.com/contest/493/problem/C Sol-> https://ide.geeksforgeeks.org/oquYq2Ju5m
2. [300 pts] https://codeforces.com/contest/408/problem/D Sol-> https://ide.geeksforgeeks.org/E2DxIFgc2b
3. [500 pts] hackerearth

IIT R



What is the other question asked in Roorkee?

IIT K

1. countDerangementInversions
2.

IITG

1. https://www.hackerearth.com/problem/algorithm/c-14/description/
2.

KLA Tencor

IITM

Date: 25/09/2018
KLA Tencor opened several profiles like Software Engineer, Algorithm Engineer, System Engineer and Application Engineer.
Online test was different for each of the profiles. Students were allowed to write for only one profile as all test were conducted at the same time. However they announced during PPT that those who write for application engineer will be considered for system engineer as well.

Profile: Software Engineer
Open for Masters of CS, EE, Math, and Physics
Platform: Hackerrank
# of programming question: 2
# of apti + technical MCQ: 15
Time given: 75 min
P1: Something related to traversing a tree using adjacency matrix. Finding height of the graph (binary graph). The input is given in 2d vector.
P2: given a matrix with 0 and 1, finding the longest path of 1 in the matrix.. Finding height of the graph (binary graph). The input is given in 2d vector.

Apti + Tech questions were of standard quality. Questions were from Computer Networks, DB, Operating System, Permutation, Combination, seating arrangement etc.
Tip: Time is very less for 2 programs and 15 MCQs. Manage your time properly, start with coding. 15-20min is more than enough for MCQs.

Profile: Algorithm Engineer
Open for Masters of CS, EE, and Physics
Platform: Hackerrank
# of programming question: 2
# of apti MCQ: 15
Time given: 60 min
P1: https://www.geeksforgeeks.org/longest-palindromic-substring-set-2/
P2: Find the strings in the list of string which does not have an anagram.
Aptitude questions were of standard quality. Questions were from Probability, Proportion , etc

All running codes https://ideone.com/laser0/kla

IITK

Date: 8-oct-2018
Same format as in IITM, and same coding questions(Software Engineer).
Profile: Application Developer Engineer
Platform: Hackerrank
# of programming question: 0
# of apti MCQ: 25
Time given: 60 min

IITB

Profile: Algorithm Engineer
Platform: Hackerrank
# of programming question: 2
(Same questions from IITM Algo Engg post)
# of apti MCQ: 11(Time and work, Mixed ratio etc)
Time given: 60 min

Profile: Application Developer Engineer
# of programming question: 0
# of apti MCQ: 25 (10 verbal questions and 15 apti including puzzles like bridge cross, who wins the game first)
Time given: 60 min

Cohesity

IIT D

(CGPA cutoff ??)
CTC: 18L
Date: 27-sep-2018
Platform: Hackerearth (1 hour)
https://imgur.com/gallery/M0RKXgJ
Good luck guys.

IIT BHU

(CGPA cutoff ??)
Date: 7-oct-2018
Platform: Hackerearth (1 hour)

1. https://www.geeksforgeeks.org/find-number-of-islands/
2. StackOverflow HackerRank C++ code

IITK

(8+ CGPA) (34 lakhs in India)

1. https://www.geeksforgeeks.org/maximum-sum-in-circular-array-such-that-no-two-elements-are-adjacent/
2. From 0 make X such that you can add, subtract and double. Cost of adding and subtracting is A whereas cost of doubling is B. Find minimum cost. (35 M)
   I/P - X=4, A=1, B=1
   O/P- 3
   Explanation 0->1->2->4 #each link is of cost 1.
   (Can anyone suggest solution to this one?) I think BFS should do the trick.

IITR

(7.5+ CGPA) (CTC- 18 LPA)
Two questions. 1 question for 50 marks and other for 20 marks.
Platform : Hackerearth (1 hour 30 minutes)d

1. Similar to this question : https://www.interviewbit.com/problems/capture-regions-on-board/ (50 marks)
2. You are given a string s, of length n and you have to insert k commas in between and return the maximum possible substring. (20 marks)
   Anyone has any idea what approach to follow ??
   For eg : s="122", n=3, and k=1
   You can partition it like 12,2 or 1,22. So you have to return max possible substring that is 22.

IITKGP

Two questions. 1 question for 50 marks and other for 20 marks.
Platform : Hackerearth (1 hour 30 minutes)

1. Given a 2D grid, starting point, return minimum distance to reach the boundary of the grid. Some of the cells in the grid have obstacles. (Sol. - DFS/BFS) - 50 marks
2. Same as IITR Q. 2. - 20 marks

Nutanix

IIT Bombay

Both questions were easy, most of my friends did it :)

☆ Shortest cover string

Given an array of strings, the task is to find the length of shortest cover string that will contain each string in array as a substring. It is guaranteed that none of the strings in the input array is a substring of any other string in the array.
Output should be the length of the cover string.

Input format:
1. First line contains N, the number of input strings.
2. Next N lines contain input strings, one on each line.

Constraints:
A) 1 <= N <= 12 where N is the number of input strings
B) 1 <= L <= 20 where L is the length of individual string

Example:

Input:	Explanation:
3 german anger many **Output:** 9	Example on left has 3 words, one on each line. The shortest cover string for the three words is "angermany" hence the output will be 9.

☆ Deadpool vs Bomberman

A weird city has N towers in a straight line. Each tower has a specific height associated with it. Bomberman is standing at the i-th tower and has a bomb with power D.
A bomb with power D is capable of destroying all those towers from index i to N, which have their height divisible by D.

Deadpool wants to protect this weird city, just because he has nothing else to do today. Help him know how many towers will Bomberman be able destroy.

Note : Each query is independent.

Input format :
First line contains N (number of towers in the city) and Q (number of queries).
Next line contains N integers denoting heights of the towers.
Next Q lines contain 2 integers each, i (denoting index of tower at which Bomberman is standing) and D (power of the bomb).
Output Format :
Q lines each denoting the number of towers bomberman destroys in i-th query.

Constraints :
1<= N <= 10^5
1<= Q <= 10^5
1 <= Arr[i] <= 2*10^4
1 <= D <= 2*10^4
1 <= i <=N

Sample Input :
5 3
2 6 9 10 8
2 3
2 2

IIT BHU

1. Easy Adhoc Problem (Don't Remember)
2. https://leetcode.com/problems/cat-and-mouse/ - Nobody was able to solve this in allocated time, also input format was not proper

IIT KGP

☆ Tree of Candies

With Halloween and Christmas around the corner, Harry and Ron have devised a game involving a (binary) tree and the candies they've received.

Here's how it is played:
The tree has N nodes, numbered from 1 to N, with the root being node 1. There is a candy on each node. If a node has only one child, the candy on this node will drop onto the child node. But if a node has more than one child, Harry and Ron can't decide the way that the candy will drop. So they start deleting edges one by one (Harry goes first) until every candy has exactly one way to go. Every candy must be able to reach a leaf node. (A leaf node is a node which has no children.)
In this game both Harry and Ron have a node. When a candy drops onto a player's node, this player gets the candy, and it is removed from the tree. Any candy that doesn't reach either Harry or Ron is given to Harry's owl, Hedwig.

Both of them are *just* trying to maximize their own haul of candy. They are not jealous friends. So if one cannot get a candy for himself, he would like to help increase his friend's haul.
You are given a graph, and you need to determine the number of candies Harry and Ron are able to get when they delete edges optimally for themselves.

Input Format
Line 1 : Two integers : N and Q, the number of the nodes in the tree and the number of queries.
Lines 2..N : line *i*, one integer: the parent of node *i*.
Lines N+1..N+Q : line (N+*i*) , two integers : Harry's node and Ron's node.

Output Format
You must print Q lines. In each line, two integers for each query : Harry's candy count and Ron's candy count.

Sample Input

```
6 1
4
1
1
3
3
```

Lines 2..N : line *i*, one integer: the parent of node *i*.
Lines N+1..N+Q : line (N+*i*) , two integers : Harry's node and Ron's node.

Output Format
You must print Q lines. In each line, two integers for each query : Harry's candy count and Ron's candy count.

Sample Input

```
6 1
4
1
1
3
3
3 6
```

Sample Output

```
2 1
```

Explanation
First, Harry deletes the edge between 1 and 4. Second, Ron deletes the edge between 3 and 5.
Harry removes the candy at node 3 and adds it to his haul. Then the candy at node 1 drops onto node 3 and Harry receives another candy. The candy at node 6 goes to Ron. Two candies from nodes 4 and 2 stay at node 2 and are given to Hedwig.

Constraints
2 ≤ N ≤ 10^5
1 ≤ Q ≤ 2 x 10^5
Harry and Ron can't be on same node.

☆ SIT EAT GO!!

Kaka has recently opened a new restaurant with a unique style. The restaurant is divided into K compartments (numbered from 1 to K) and each compartment can be occupied by at most one customer.
Each customer that visits the restaurant has a strongly preferred compartment p(1 ≤ p ≤ K), and if that compartment is already occupied, then the customer simply leaves. Now obviously, Kaka wants to maximize the total number of customers that dine at his restaurant and so he allows (or disallows) certain customers so as to achieve this task. You are to help him with this.

Given a list of N customers with their arrival time, departure time and the preferred compartment, you need to calculate the maximum number of customers that can dine at the restaurant.

Input

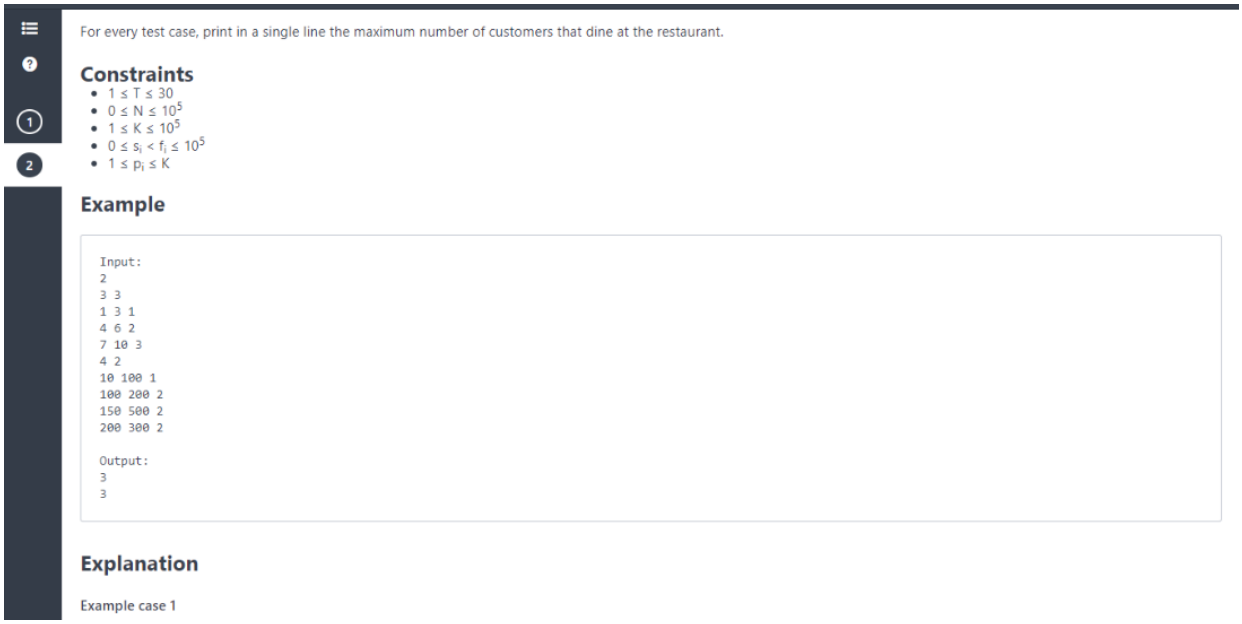
The first line contains an integer T denoting the number of test cases. First line of each test case contains two integers N and K , the number of customers that plan to visit Kaka's restaurant and the number of compartments the restaurant is divided into respectively. Each of the next N lines contains three integers S_i, F_i and P_i , the arrival time, departure time and the strongly preferred compartment of the i^{th} customer respectively.
Note that the i^{th} customer wants to occupy the P_i^{th} compartment from [S_i, F_i) i.e the i^{th} customer leaves just before F_i so that another customer can occupy that compartment from F_i onwards.

Output

For every test case, print in a single line the maximum number of customers that dine at the restaurant.

Constraints

- 1 ≤ T ≤ 30
- 0 ≤ N ≤ 10^5
- 1 ≤ K ≤ 10^5
- 0 ≤ s_i < f_i ≤ 10^5
- 1 ≤ p_i ≤ K



For every test case, print in a single line the maximum number of customers that dine at the restaurant.

Constraints

- $1 \le T \le 30$
- $0 \le N \le 10^5$
- $1 \le K \le 10^5$
- $0 \le s_i < f_i \le 10^5$
- $1 \le p_i \le K$

Example

```
Input:
2
3 3
1 3 1
4 6 2
7 10 3
4 2
10 100 1
100 200 2
150 500 2
200 300 2

Output:
3
3
```

Explanation

Example case 1

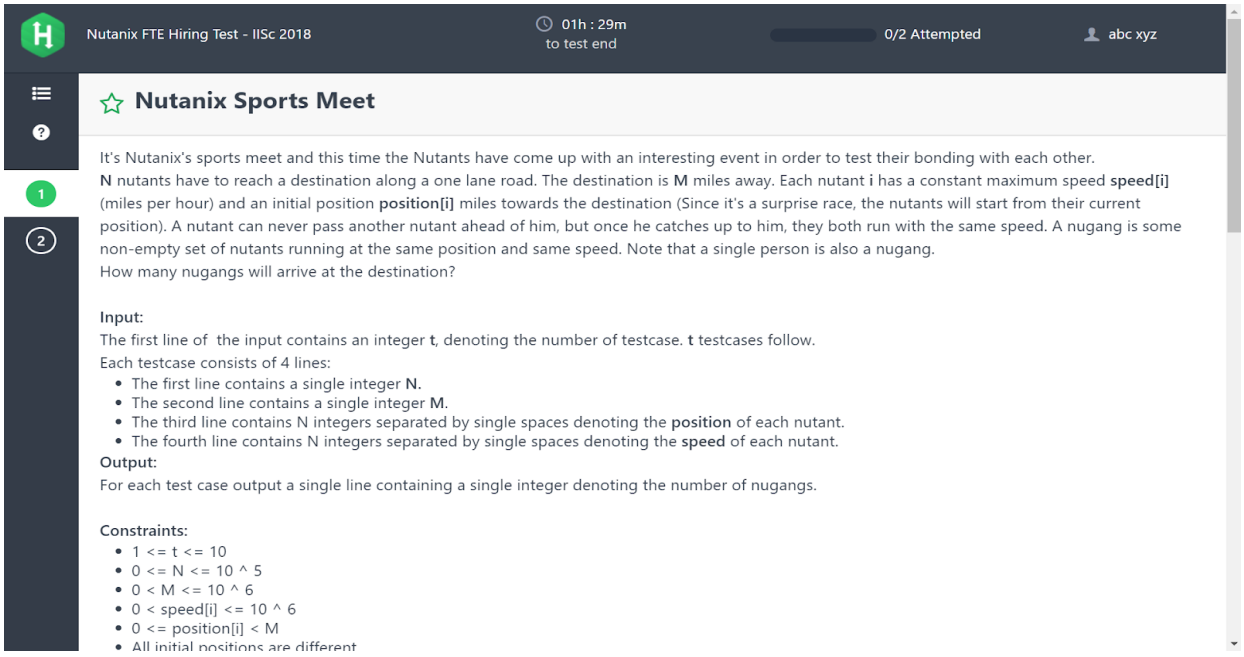
IITK

1. Given two axis-parallel segments denoted by end points (X11, Y11) (X12, Y12) and (X21, Y21) (X22, Y22), you need to check if they span a single connected path (both are connected and degree of each vertex is <= 2).
ie., either they represent a single straight line (vertical or horizontal) or they make an “L” shape.
Number of test cases = 10^5.
Simple condition checks were needed.
2. Given a string of digits (0-9), and an integer K, partition the string into substrings representing numbers bounded by K, such that sum of all partitions is maximized.
0 <= K <= 10^12. Length of string, |S| <= 3000
E.g., S = “2345” and K = 40.
We can partition and sum it as 2+3+4+5 = 14 or 23 + 4 + 5 = 32 or 2 + 34 + 5 = 41, of which 41 is the max possible sum.
You have to print a pair <max sum, ways> (here ways = the number of ways max can be obtained % 10^9+7).
E.g., S = 0000 K= 0, ans is: 0 8

IISc

11 October 2018
Questions: 2
Time: 1.5 Hrs

1. nutanixSportsMeet
2. killingZombies



Nutanix FTE Hiring Test - IISc 2018 | 01h : 29m to test end | 0/2 Attempted | abc xyz

Nutanix Sports Meet

It's Nutanix's sports meet and this time the Nutants have come up with an interesting event in order to test their bonding with each other.
N nutants have to reach a destination along a one lane road. The destination is **M** miles away. Each nutant **i** has a constant maximum speed **speed[i]** (miles per hour) and an initial position **position[i]** miles towards the destination (Since it's a surprise race, the nutants will start from their current position). A nutant can never pass another nutant ahead of him, but once he catches up to him, they both run with the same speed. A nugang is some non-empty set of nutants running at the same position and same speed. Note that a single person is also a nugang.
How many nugangs will arrive at the destination?

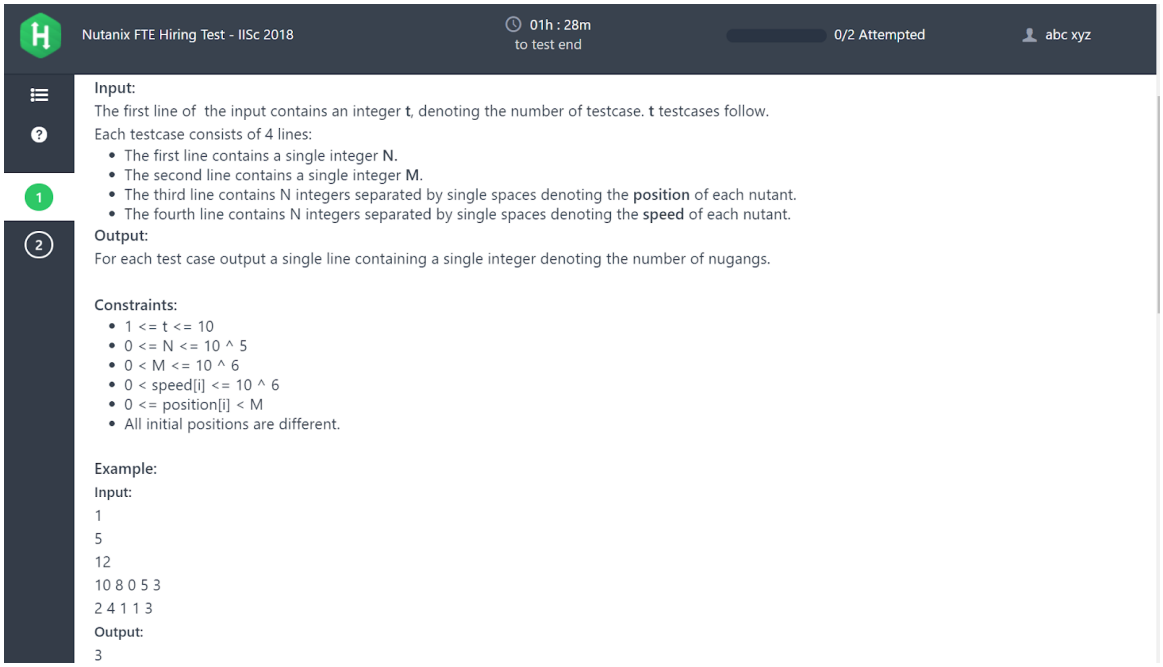
Input:
The first line of the input contains an integer **t**, denoting the number of testcase. **t** testcases follow.
Each testcase consists of 4 lines:

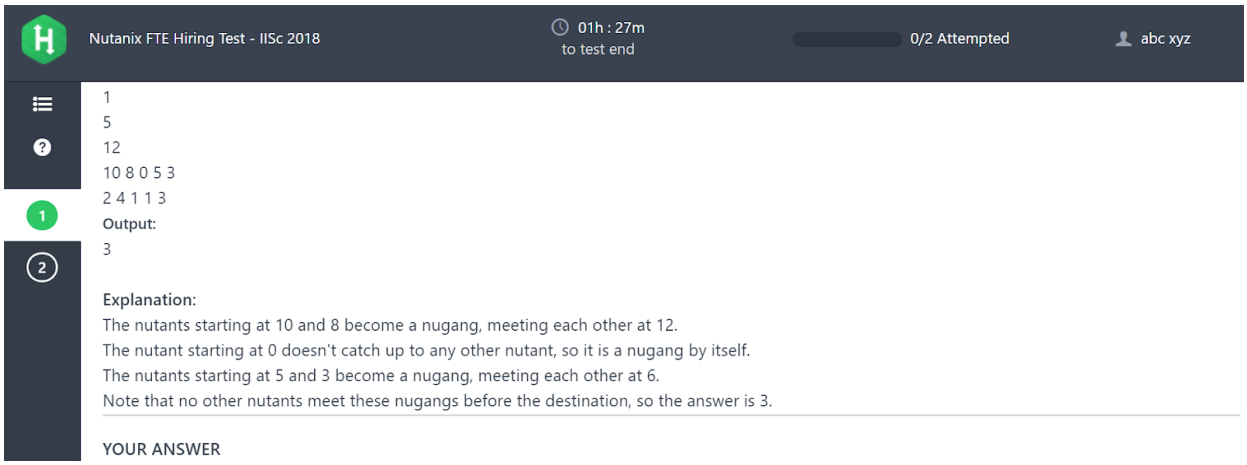
- The first line contains a single integer **N**.
- The second line contains a single integer **M**.
- The third line contains N integers separated by single spaces denoting the **position** of each nutant.
- The fourth line contains N integers separated by single spaces denoting the **speed** of each nutant.

Output:
For each test case output a single line containing a single integer denoting the number of nugangs.

Constraints:

- 1 <= t <= 10
- 0 <= N <= 10 ^ 5
- 0 < M <= 10 ^ 6
- 0 < speed[i] <= 10 ^ 6
- 0 <= position[i] < M
- All initial positions are different

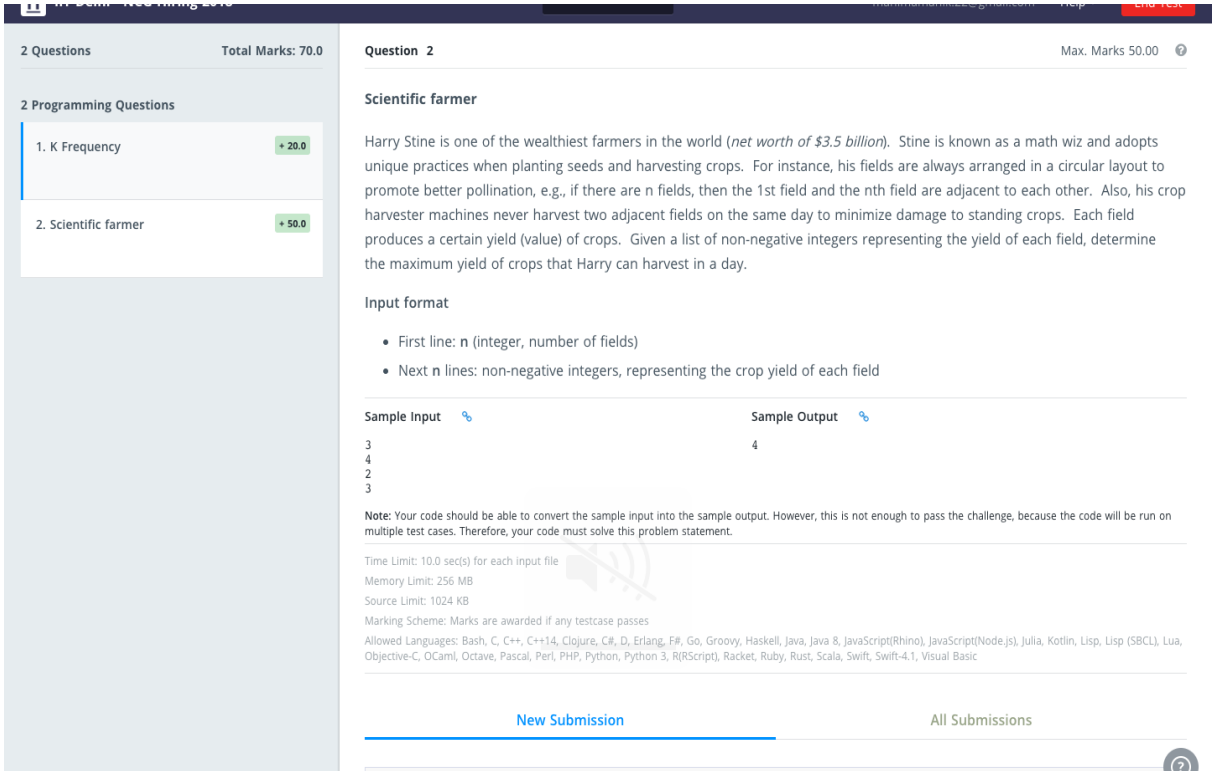




IITD

What are the constraints for 2nd problem?
27 SEPTEMBER 2018
2 coding questions- 1.5 hr- Hackerrank

1. findTheShapeOfTree
2. There are N points on a 2D- grid in the form (x,y). The distance between any two points x1,y1 and x2,y2 is=|x1-x2|+|y1-y2|. We have to traverse all the points starting from any one such that the total distance travelled by you is minimum. But, there are M restrictions, in the form u,v such that you cannot traverse v after covering u.
e.g.:
Input- 5 (N=Number of points)
1,1 2,2 3,3 4,4 5,5 (xy coordinates of these points)
2 (M=number of restrictions)
1 2 (meaning you cannot traverse 2nd point(2,2) after covering 1st(1,1))
4 3 (meaning you cannot traverse 3rd point(3,3) after covering 4th(4,4))
Output- 10
explanation--- > traverse in the order----- 2,2---> 1,1----> 3,3------>4,4------>5,5



Arista

20th Oct

IITK

Platform : Hackerrank, 1hr 30 mins test

Question 3:
Given an n-ary tree with arbitrary number of nodes (but no more than MAX_CHILDS), find the maximum of sum of nodes from root to leaf.
Solution: same logic as binary tree, just expand for n children

Question 2:
Given a routing table at a router, which consists of a IP prefix and next hop information. We have to construct a trie to felicitate a query of an IP address and report the next hop. Example.

```
--------------------
Routing Table
--------------------
prefix        | Next Hop
--------------------
11011        | CCCC
1010        | DDDD
110        | EFEF
0101        | GCGD
```

Query
110101 -> EFEF
001 -> NO OUTPUT
101000 -> DDDD

Question 1:
Given a client-server environment with multiple clients interacting with the server. Each client is identified by a clientID and each message is identified by msgId and has an attribute msgAge. Sever maintains a separate message queue for each client (with size no more than MAX_CLIENT_MSG_SIZE).

To begin the interaction with the server a client has to register with the server with a window size.
register <clientId> <window>
window specifies the number of msg the client can accept from the server.

A new message can be sent to the client specified by clientId as
newmessage <clientId> <msgId> <msgAge>.
When a message for a clientID is received the server can send the message to the clientID if the window of clientID is not consumed. If the window of clientID is consumed then the server can queue the messages, and must maintain the sorted order according to msgId. If a message with same msgID and diffent msgAge comes to the queue, the msg with greater msgAge must be kept in the

queue.

A client can send a query to adjust the window of the client,
adjustWindow <clientId> <window>

Alphonso

CPI Cutoff Or eligible branches?
No Cutoff

IITD

Business and data Analyst profile.(22/9/2018)
Questions for Technologist role? For tech role test is not conducted yet. When is the test?

1 hr test on hackerrank. 26 questions. 24 of them were MCQs [stats, probability, aptitude based] (+1,-1), and two were subjective in which you had to write the pseudo code.
2 subjective questions-

1. Sort a given array without using intermediate(Extra) memory. **(Could you please elaborate how to solve this?)**
What do you mean by intermediate memory?? If someone understands it please answer. You have to do Inplace sorting.
2. Write pseudo code to find the difference between two times given in HH:MM:SS format

IITD

3 sections. First 2 sections consisting of MCQs and subjective type. Lat section of 1 coding question, 2 subjective. Some questions were based on operating systems, networking. Some were implementation specific to python, javascript(Only 3 questions as I remember). Most were based on implementations in C language.

1. C language specific:
    a. LInked list questions(Addition, deletion of nodes based Qs)
    b. fork() function call (predict the output of parent and child process)
    c. “Rdtsc” assembly instruction based:
    Given cpu of 2GHz, what would be the output of the following code snippet. Marks would be awarded only if the answer is justified.

    ```
    a=rdtsc();
    sleep(1);
    b=rdtsc();
    printf(“total cycles = %d”, b-a);
    ```

    Options are.
    i) 2*(10^9)
    ii) greater than 2*(10^9)
    iii) something other

2. OS specific
    a. Deadlock problem. Code snippet given. The verbal explanation is as follows.
    5 processes.5 resources. Last process P4 acquires R0 and R4. Among rest of processes, each process Pi acquires R(i) and R(i+1) resource. Is there any possibility of deadlock? How would you resolve it? Write Pseudo code for resolving the deadlock.

//question :p4 already have r0 and r4 or it wants to acquire
And what about other Pi are they requesting or they already have resources.(please clarify)

    b. Simple problem on non-preemptive shortest job first scheduling

3. Database specific
    Table of records given. Each record consists of {Name, gender}. Unfortunately genders have been interchanged. E.g all males have been shown females and vice-versa. Write a sql query to bring the records to normal form i.e c change all females to males and all males to females.

    One more sql query based on “group by” clause and using aggregation.

4. Networking questions
    Bandwidth at sender and receiver given. Total data to be sent from sender to receiver given. Round trip time given. Window size is given. Estimate the time to send the entire data to receiver.

    One more question on TCP fragmentation.

    One question on what field values change when IP packet traverses from one point to other? (Ans: checksum, TTL, etc.)

5. Automata question
    Find the regular expression for a given finite automata.

6. Compiler question
   What are steps in compilation? 4 options.
   (Ans: syntax -> semantic -> assembler -> linker -> loader)

7. Coding question
   Given a table of tasks, with each task requiring time to execute/perform and profit associated with that task. So,
   Given a deadline, find the maximum profit that can be earned by completing tasks within the deadline.
   (Ans: simple dynamic prog question. Use 2-D array dp[deadline][last task completed] Or dp[index][time] after sorting)

IIT K

PPT: 14th Oct

IITB, IITKGP, IITM

15th Oct
https://imgur.com/a/q9I5w7j (Answers marked might not be correct)

UBS

X : *70.00%* XII : *70.00%*
CGPA : ***7.00*** Course(s) : ***btechidd***
Department(s) : ***cse eee ece mat***

IIT BHU

Platform: Hackerearth
Date: 28/9/2018
Time: 1.5 hours
Section A: 30 MCQ covering Networking, DBMS, basics about finance, aptitude, OOPS (JAVA), english
Section B: programming question
Q1-> Given n cities and the profit earned by visiting that city, calculate maximum profit one can earn provided he can move to city 'j' from 'i' iff 'j' > 'i' and profit that he can earn in city 'j' is multiple of profit earned in city 'i'.
Ex-> P[]={1, 2, 3, 4, 9, 8}, output is 15.

PhonePe

IITM

Date: 1/10/18
Open for all Btech and Dual, along with CSE and EE MTech and MS
Cutoff CGPA > 6
Ctc 23 , base 14

Is python allowed???+1

Time complexity is really important. If you solve using brute-force, expect no more than one test case to pass. Take long long int instead of int. Hosted on doselect.com

1. [50 pts] Given an array and value K, find the max no. of array elements avg which will be less than K
2. [100 pts] Given N: array size, U: number of updates, Q: number of queries. Initially array is filled with 0s. There will be U updates lines consisting I, J, K. You need to update array from index I to J (both index inclusive) with K, i.e if I = 0, J = 3, then perform a[i] += K for i ∈ [0, 3]. Finally there will be Q no. of single number as queries IDX. you need to print what is the content of the IDX in array. If IDX = 1; then print a[IDX]
3. [200 pts] Given acyclic graph, find total no. of ways to traverse the entire graph starting from node 1
   a. Traverse dfs and count number of unvisited nodes in source's adjacency
   b. Multiply its factorial to prodz
   c. Do this recursively C++ code

Please update +2

IITK

Date 29/10/2018

1) 100 marks : Min operation to make the N - > K where K has all even digits. Operations allowed -- +1, -1 to the number
   a) Input 11 output - 3
   b) Input 199 output - 1
   c) Input 2018 output - 2
2) 50 Marks : Input N K Q . N - Number of diff types chocolates . K - Number of chocolate boy eats everyday given he eats only one of each kind . Q - Query for Qth Day . Next N lines contains names of Chocolates in order of preference of eating .Initially all chocolates are in same quantity. Boy decides to eat K chocolates everyday . He eats chocolates which greater in number first . if they are in equal quantity he eats in order of preference.
   a) Input - 4 3 3
      A
      B

      C
      D
   Output - A
      C
      D
   (first day -A B C , Second Day - D A B Third Day- **C D A)**
   Input - 4 1 3
      A
      B
      C
      D
   Output - C

IIT B

3 questions, 180 mins

1.Modified LCS of 2 strings where the common string must have even number of a's and odd number of b's
   (I solved it using dp[x1][y1][f1][f2] where x1,y1 are pos in the 2 strings and f1,f2 is whether we have even a's or odd b's respectively) Got 100% correct -300 points.
2. Number of subarrays in an array whose sum is divisible by k .. each element in array is between -1e5 to 1e5
K is 1e9 ,
use prefix sum and all subset[l,r] which satisfy must have the same mod r and mod l (0 is a special case here)

3. Given N Points in 3D space (xi,yi,zi), we can reach a point (x1,y1,z1) from another point (x2,y2,z2), iff x1=x2 OR y1=y2 OR z1=z2. Find the minimum number of points needed in the given space so that we can reach a point from every other point.
It was a connected component problem seemed easy but all test cases didn't pass

IIT G

3 questions, 90 mins

1. Given an integer N, output the total number of strings possible of length N comprising of only 1s and 0s with at least one pair of consecutive 1s. (50 marks)
Eg. N=3
Ans = 3 (110,011,111)
2. https://www.hackerrank.com/challenges/candies/probl
3. https://www.geeksforgeeks.org/find-length-largest-region-boolean-matrix/

Saavn

IITR

- Test was on interviewbit, 1 hr 3 coding questions
  - https://www.geeksforgeeks.org/coin-change-dp-7/ (expected space complexity was O(n))
  - https://www.interviewbit.com/problems/best-time-to-buy-and-sell-stocks-iii/
  - https://www.interviewbit.com/problems/median-of-array/

Off campus(how to apply?)through interviewbit.com/jobs, might not be there now

- Test was on interviewbit, 1 hr 4 coding questions
  - https://www.interviewbit.com/problems/palindrome-partitioning/
  - Easier version of this problem (only two subarrays)
  - https://www.interviewbit.com/problems/max-sum-path-in-binary-tree/
  - https://www.interviewbit.com/problems/nearest-smaller-element/

Jaguar Landrover (JLR)

{Eligibility=CS,MnC,ECE/EEE,Mech}
CPI cutoff=6.5
Base - 17.86L , CTC - 20.30L Bangalore

IITG

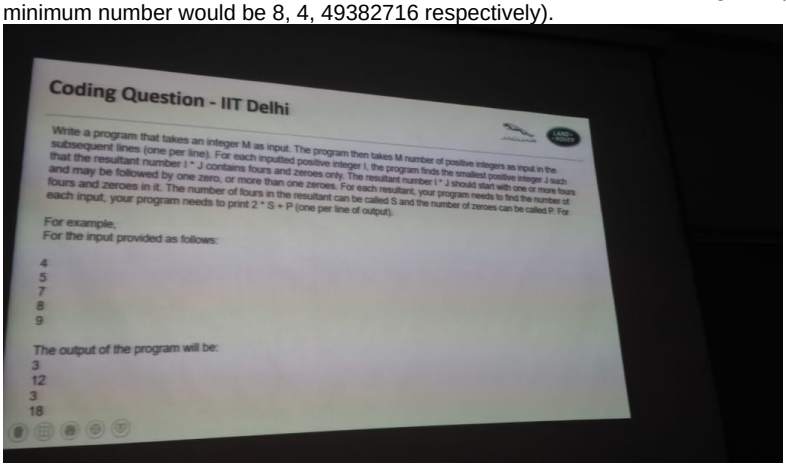
(SOFTWARE profile) 20 minutes aptitude + 45 minutes coding round (on firstnaukri.com)
Only 1 Coding Question -
Given a string, remove isolated vowels from a string, i.e, don't remove it if there are 2 or more continuous vowels together. Both lower and uppercase to be handled.
25 minutes psychometric test consisting of 53 questions.

IITK

Coding question similar to :https://www.geeksforgeeks.org/find-possible-words-phone-digits/
Rest same as IITG

IITD

1. Aptitude 20 questions 20 minutes(easy, time management imp)
2. Coding 1 question 45 minutes: given a natural number 'x' find minimum integer 'j' such that 'x*j' should have digits 4 and 0 only. Then count the number of 4's and 0's and return 2*number of 4+number of 0. Eg for input 5, 1, 9……..output will be: 3, 1, 18(for 5, 1, 9 minimum number would be 8, 4, 49382716 respectively).



Only C, C++ and Java
3. Personality test: 53 questions 25 minutes (ethical and behavioral questions)

IIT KGP (31st Oct)

1. Aptitude 20 questions 20 minutes
2. Coding 1 question 45 minutes (took <10 min)
   Given a 5x5 matrix of integers, print the coordinates of the saddle points. If a number is greater than or equal to all the numbers in that row and is less than or equal to all the numbers in its column then it is considered a saddle point.
3. Psychometric test 54 questions 25 min.

Walmart Labs

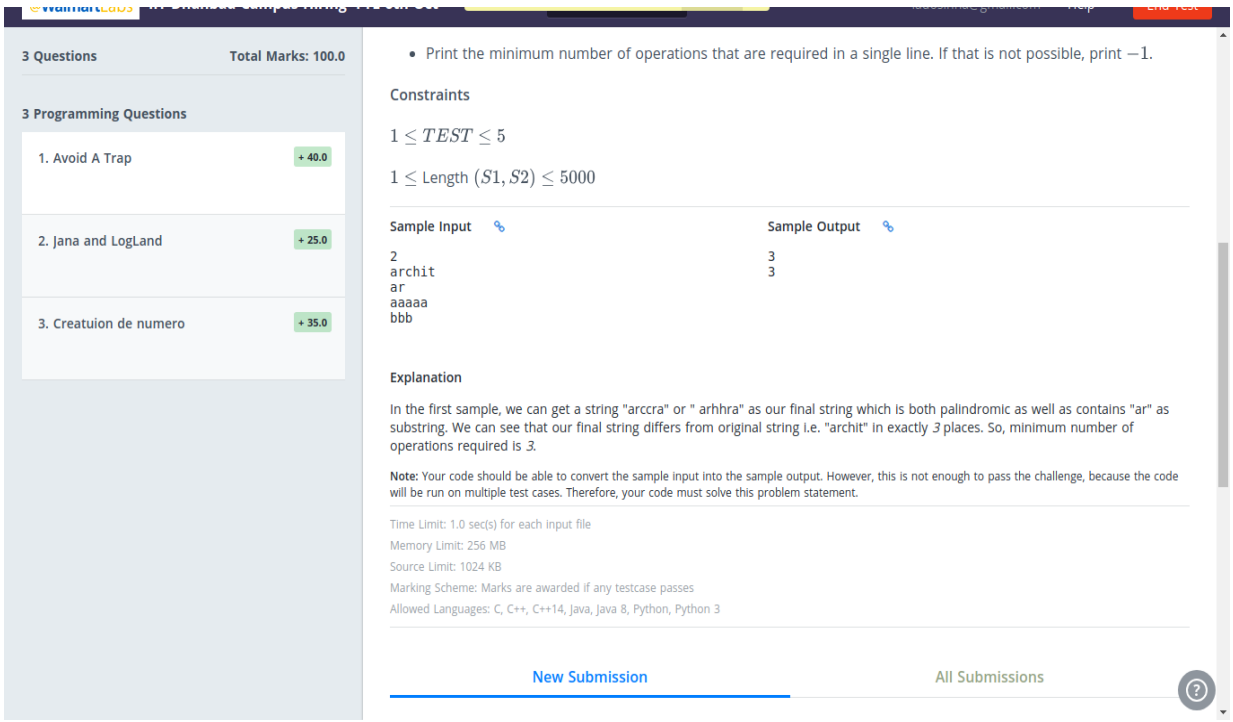
(They generally ask same set of questions)

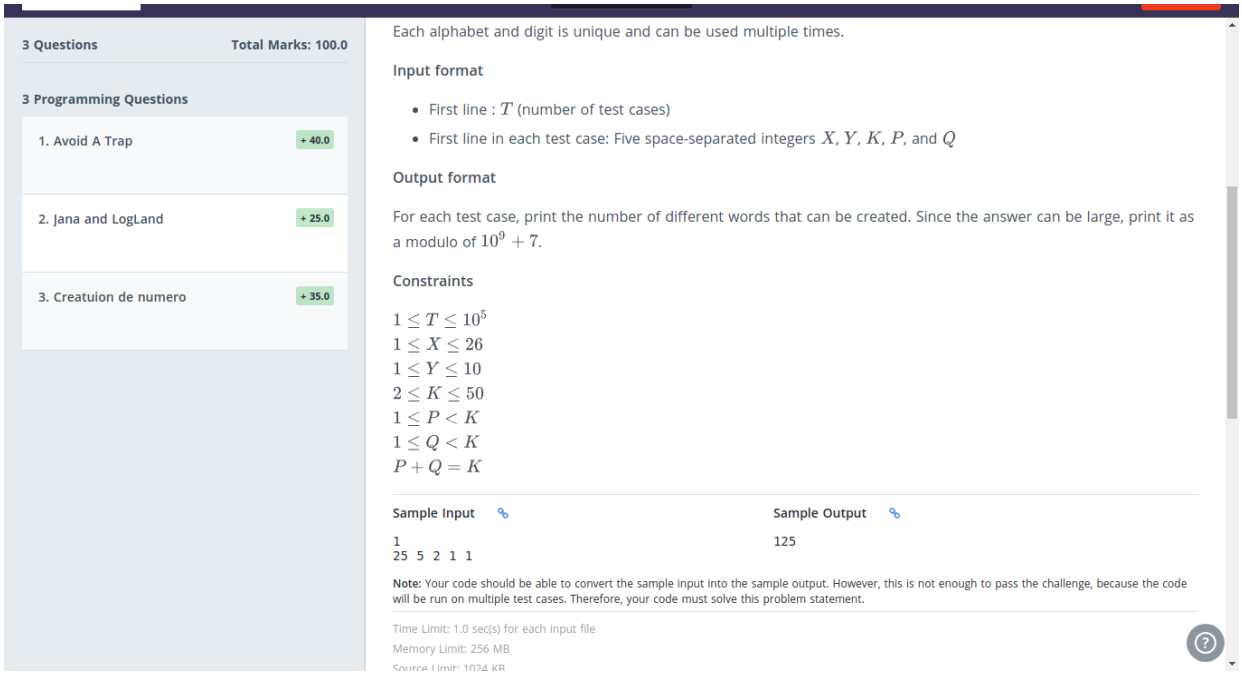
IIT Dhanbad

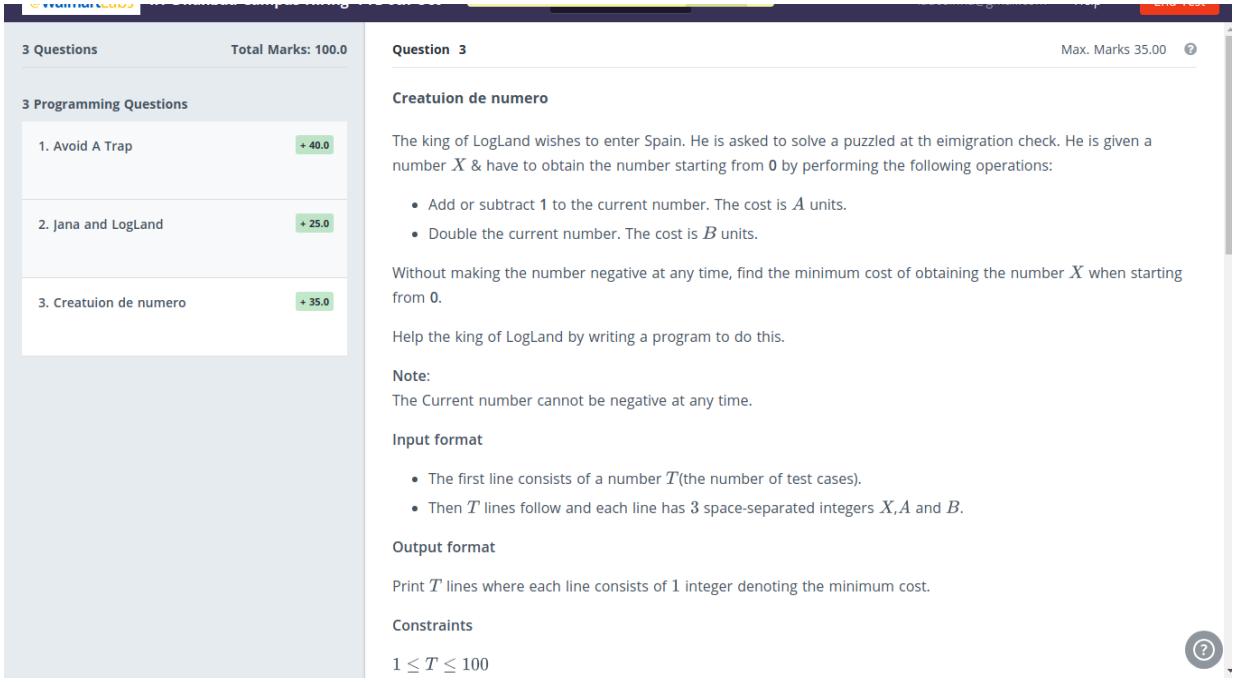
Python also allowed
Time: 90 min

1. Palindrome And Substring
2. minCostAddSubDouble
Alternate Solution : For this question you have to use the MIN HEAP(key will be the cost of the reaching to the point i.e. min_heap<pair<cost,point>>. Now pop the element having minimum cost in the heap and then add the element that can be reached from this point with their respective cost (if they are not visited and cost is less than previous cost -> for this you have to maintain array having current cost of visiting any point). Do this until you reach X.
3. How many K length string can be made if you can use exactly P alphabets from given X alphabets and exactly Q digits from given Y digits. You are given values of K, X, Y, P, Q

DONT DELETE QUESTION PLEASE







3 Questions Total Marks: 100.0

3 Programming Questions

1. Avoid A Trap + 40.0
2. Jana and LogLand + 25.0
3. Creatuion de numero + 35.0

Question 3 Max. Marks 35.00

Creatuion de numero

The king of LogLand wishes to enter Spain. He is asked to solve a puzzled at th eimigration check. He is given a number X & have to obtain the number starting from **0** by performing the following operations:

- Add or subtract **1** to the current number. The cost is A units.
- Double the current number. The cost is B units.

Without making the number negative at any time, find the minimum cost of obtaining the number X when starting from **0**.

Help the king of LogLand by writing a program to do this.

Note:
The Current number cannot be negative at any time.

Input format

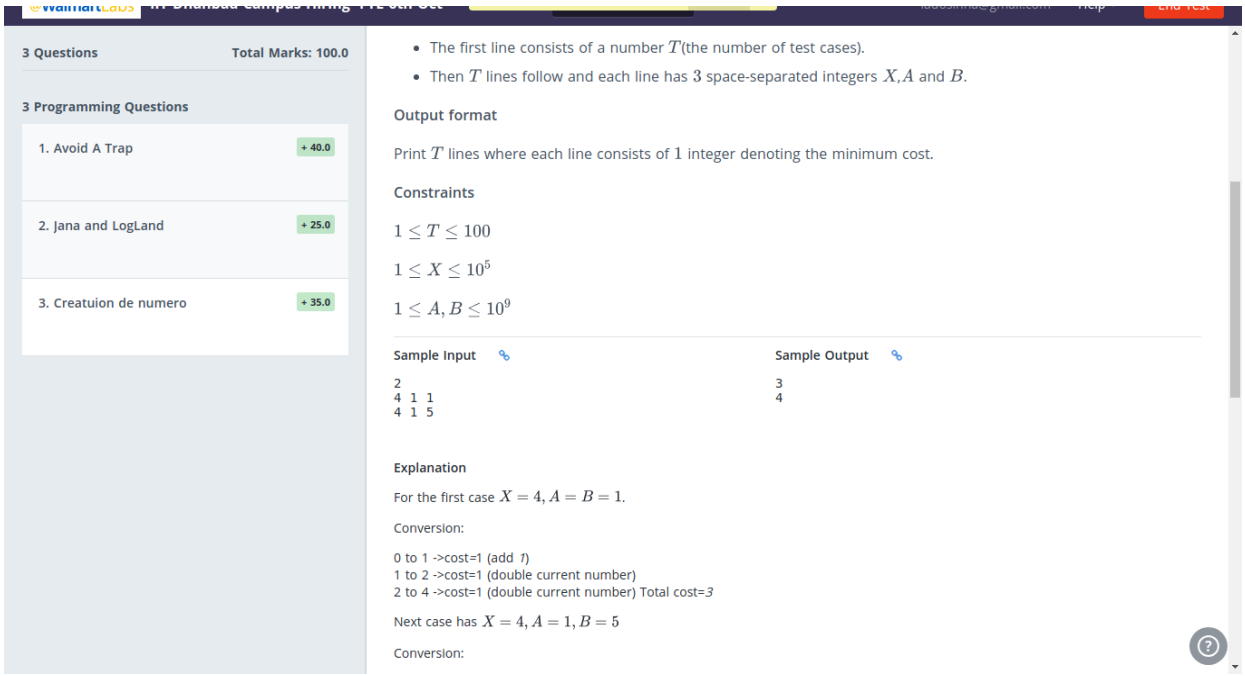
- The first line consists of a number T(the number of test cases).
- Then T lines follow and each line has 3 space-separated integers X, A and B.

Output format

Print T lines where each line consists of 1 integer denoting the minimum cost.

Constraints

$1 \leq T \leq 100$



3 Questions Total Marks: 100.0

3 Programming Questions

1. Avoid A Trap + 40.0
2. Jana and LogLand + 25.0
3. Creatuion de numero + 35.0

- The first line consists of a number T(the number of test cases).
- Then T lines follow and each line has 3 space-separated integers X, A and B.

Output format

Print T lines where each line consists of 1 integer denoting the minimum cost.

Constraints

$1 \leq T \leq 100$

$1 \leq X \leq 10^5$

$1 \leq A, B \leq 10^9$

Sample Input

```
2
4 1 1
4 1 5
```

Sample Output

```
3
4
```

Explanation

For the first case $X = 4, A = B = 1$.

Conversion:

0 to 1 ->cost=1 (add *1*)
1 to 2 ->cost=1 (double current number)
2 to 4 ->cost=1 (double current number) Total cost=*3*

Next case has $X = 4, A = 1, B = 5$

Conversion:

IITG

(17/10/2018)

1) making?
2) Check if the binary representation of provided number is only made of alternate sequence of 1 and 0 or not .
For example : 2 => [10] => yes, 3 =>[11]=>No, 4=>[100]=>No, 5 =>[101]=>yes.
3) minCostOddPrimeSum

3) A array is provided , you have to provide answers of range queries.
There was three type of query (i) calculate the multiplicative sum of given range. (ii) calculate reverse order multiplicative sum in given range. (iii) Updation of an element in the array.
Multiplicative sum = SUM(k*Arr[i]) where 0 < k < =L-R+1 , where i is from L to R
reverse Multiplicative sum = SUM(k*Arr[i]) where 0 < k <= L-R+1 , where i is from R to L
Example : 5 3 // array length , no of queries
1 2 3 4 5 //array
1 1 2 //Q1 (1*1 + 2*2)
2 1 2 //Q2 (2*1 + 1*2)
3 1 2 // Q3 update position 1 value with 2
Output: 5 4 //5 is the o/p Q1,4 is o/p of Q2, Q3 will update the array as [2 2 3 4 5]

Sterlite

IITK

Test was on cocubes platform. 1hr for Verbal, Aptitude and basic quant. 30 mins for technical test.
Technical test was department wise.

For CSE question were mostly on C, synchronization and DBMS.
For EE - Out of 30 questions, at least 10 were from control systems , mostly open loop, closed loop transfer functions. Others were from power systems, 1-2 on BJTs, and 5-6 from signals , unit transfer functions, laplace transform.
For ME- 30 questions, topic asked machine design, manufacturing, Refrigeration, IC Engines, theory of machine, questions were basic but involving formulae. Different people got different sets.
For CHE - 30 questions. Topic asked were Organic Chemistry, Properties of Materials, Polymer Physics, Chemical Process Industries, Chemical Reaction Engineering, Kinetics
For MTH- No technical test

Intel

(**Please update for hardware profile also!**)

IITM

-> (Only for software guys) Coding question Merge two sorted arrays very easy
-> Aptitude 15 mins 10 MCQs
-> Technical sections (Hardware or Software - 45 mins 30 MCQs)
-> Software MCQs on OS Networks Comp arch. (Bit Difficult for elec guys)

IITG

We needed to select one profile among software or hardware at the start of test!
HARDWARE Profile
-> Aptitude 15 mins 10 MCQs
-> Coding MCQ's 15 mins 10 questions
-> Technical Hardware section - 45 mins 30 questions
Topics - JK Flip Flop, Mod-6 gray counter, Number of bits in DAC given load resistance, current taken and voltage applied,
Microwave given characteristic impedance source impedance and length find load, Sampling of cos in time domain,
Min num of Multiplexer to implement function, saturation region of mosfet current vs voltage relation, setup hold time,

Software Profile
{Someone update this!} Multiply a matrix and its transpose.

Intel hardware

IIT KGP

Apti was OK…
Few verilog questions, RC circuits, microcontroller instructions, logic gates , overall easy but need speed to solve

Tesco

IITM

06/10/18
2 coding questions were asked on hackerrank and time limit was 90 min.
Questions were very tough.

Q1. some variant of Knapsack problem. Total money a girl have is N, then total no. of shops given, then bundle quantity of notebook in each store was given as an array. Bundle cost of each bundle quantity was given in another array.Find max no. of notebooks she can purchase in N money.
Ex: 50
2
24 20
20 19
output : 40(We need to return number of notebooks but this is total cost. right?) yes, return total notebook
Exp: she have 50$, from 0th store she purchase 24 notebook bundle for 20, then she repeats the same, to have 24 + 24 = 48 notebooks spending 20+20=40 $.

Q2. huffmanDecode

IIT BHU

Hackerrank, 2 coding questions 90 min
Q1) Consider a normal keypad with alphabets(ex on key 2 it is 'a', 'b', 'c'), and an encoded string, find the number of messages that can be obtained from it.
Ex: "222": 4(possible outcomes: "aaa", "ab", "ba", "c"),
"7777": 8(possible outcomes: "pppp", "ppq", "pqp", "qpp", "qq", "pr", "rp", "s").
Q2) https://www.careercup.com/question?id=5721734273564672

IIT Roorkee

https://www.geeksforgeeks.org/deutsche-bank-interview-experience-on-campus-2018/
2nd question of round 1.

IIT KGP(10/11)

https://www.hackerrank.com/contests/hack-it-to-win-it-paypal/challenges/q4-traveling-is-fun/problem
https://www.geeksforgeeks.org/minimum-steps-reach-target-knight/

ANSYS Software

IIT Guwahati

There were 2 papers:
Paper-1 (16 MCQ from OOP concepts, Operating Systems, Data Structures and Algorithms) [Time 30 minutes] [all were from Geeks Quizzes and almost all OS questions were direct questions asked in GATE exam]

Paper-2 (2 coding questions) [Time 45 minutes] **Written round on paper!**

1. Implement Round Robin Scheduling Algorithm for a number of processes and print the Completion Time, TurnAround Time and Waiting Time of the processes.

2. Given a binary tree, modify it as follows:(Note-we had to clone the binary tree as per given specifications, not just modify)
- The left pointers are kept intact
- The right pointers point to the next right sibling, if there is none to the right, then the right pointer should point to the first node in the next level.

Da Vinci Derivatives

CTC details??

IITD

1st round (Speed Maths)

(OMR sheet) - 25 questions (15min) - mathematics, currency conversion comparison (exchange rates were provided), stock comparison (Basic multiplication and addition)

Johnson Matthey

IITK

45 mins for 45ques, pen paper based, open for Btech, Mtech: Mech,Chemical, No CPI criteria
4 sections: Aptitude, Verbal, Data interpretation, Technical based on Department
For Mech:(Heat Transfer, Manufacturing, Design of Machine, Power plant)

SAP Labs

IITB

All Profiles
-Hackerrank platform (1 hour) 2 coding question. Different sets of question were given to students.
1.
Solution:https://www.careercup.com/question?id=5647083983863808

☆ String Chains

Given an array of words representing your dictionary, you test each word to see if it can be made into another word in the dictionary. This will be done by removing characters one at a time. Each word represents its own first element of its string chain, so start with a string chain length of *1*. Each time you remove a character, increment your string chain by *1*. In order to remove a character, the resulting word must be in your original dictionary. Your goal is to determine the longest string chain achievable for a given dictionary.

For example, given a dictionary *[a, and, an, bear]*, the word *and* could be reduced to *an* and then to *a*. The single character *a* cannot be reduced any further as the null string is not in the dictionary. This would be the longest string chain, having a length *3*. The word *bear* cannot be reduced at all.

Function Description

Complete the function *longestChain* in the editor below. The function must return a single integer representing the length of the longest string chain.

longestChain has the following parameter(s):

words[words[0],...words[n-1]]: an array of strings to test

Constraints

- $1 \le n \le 50000$
- $1 \le |words[i]| \le 60$, where $0 \le i < n$
- Each *words[i]* is composed of lowercase letters in ascii[a-z].

2.

☆ Magical Vowels

We define a *magical subsequence* to be a sequence of letters within a string that contains all five vowels in order: *a, e, i, o, u*. There can be any number of occurrences of each vowel, but they must be in that order. For instance, *aeeiou* is a magical subsequence, but *aeaiouа* is not. The magical subsequences of each string (red) would be *aeeiou* and *aeaiouа* with lengths of 6 and 5 respectively.

Julia has a string, *s*, consisting of one or more of the following letters: *a, e, i, o*, and *u*. She wants to determine the longest magical subsequence in her string.

Function Description

Complete the function *longestSubsequence* in the editor below. The function must return the length of the longest magical subsequence within the input string. If one does not occur in the string, return *0*

longestSubsequence has the following parameter(s):

s: the string to analyze

Constraints

- $5 < |s| < 5 \times 10^5$
- String *s* is composed of English vowels (i.e., *a, e, i, o*, and *u*).

▶ **Input Format for Custom Testing**

▼ **Sample Case 0**

Sample Input 0

```
aeiaaioooaauuaeiou
```

Answer to 2nd question:

```
# define a 0
#define e 1
#define i 2
#define o 3
#define u 4
int longestSubsequence(string s) {

    int size = s.size();
    int dp[5]={0};
    int isa=0, ise=0, isi=0, iso=0, isu=0;

    for(int j=0; j<size; j++)
    {
        if(s[j]=='a')
        {
            dp[a]++;
            isa=1;
        }

        if(s[j]=='e' && isa)
        {
            dp[e]=max(dp[a]+1, dp[e]+1);
            ise=1;
        }
        if(s[j]=='i' && ise)
        {
            dp[i]=max(dp[e]+1, dp[i]+1);
            isi=1;
        }
        if(s[j]=='o' && isi)
        {
            dp[o]=max(dp[i]+1, dp[o]+1);
            iso=1;
        }
        if(s[j]=='u' && iso)
```

```
        {
            dp[u]=max(dp[o]+1 , dp[u]+1);
            isu=1;
        }

    }
    //cout << max(2,2);
    if(isa && ise && isi && iso && isu)
        return dp[u];
    else
        return 0;

}
```

All test cases passed with this O(n) solution.

IITM

All Profiles
-Hackerrank platform (1 hour) 2 coding question
Test was in sets. So people got different questions:

1. https://discuss.codechef.com/questions/134734/most-frequent-substring-problem
2. Given two strings, find the minimum of characters that have to be changed to make them anagrams.
3. Given a string find number of valid substrings. [O(n) solution was expected] Valid strings are of the form:
    a. Followed by any number(0 is also allowed) of lowercase alphabets, digits, or colon
    b. Followed by a forward slash
    c. Followed by at least one lowercase alphabet or digit
    d. Followed by backslash
    e. Followed by at least one lowercase alphabet

    Start with a lower case alphabet
4. https://www.geeksforgeeks.org/check-if-a-givehttps://www.geeksforgeeks.org/check-if-a-given-sequence-of-moves-for-a-robot-is-circular-or-not/n-sequence-of-moves-for-a-robot-is-circular-or-not/
5. https://www.hackerrank.com/contests/hack-it-to-win-it-paypal/challenges/q4-traveling-is-fun
    a. https://github.com/kaushal02/interview-coding-problems/blob/master/travelingIsFun.cpp
    b. https://ide.geeksforgeeks.org/JZINZtJEza
    c. **code c++**

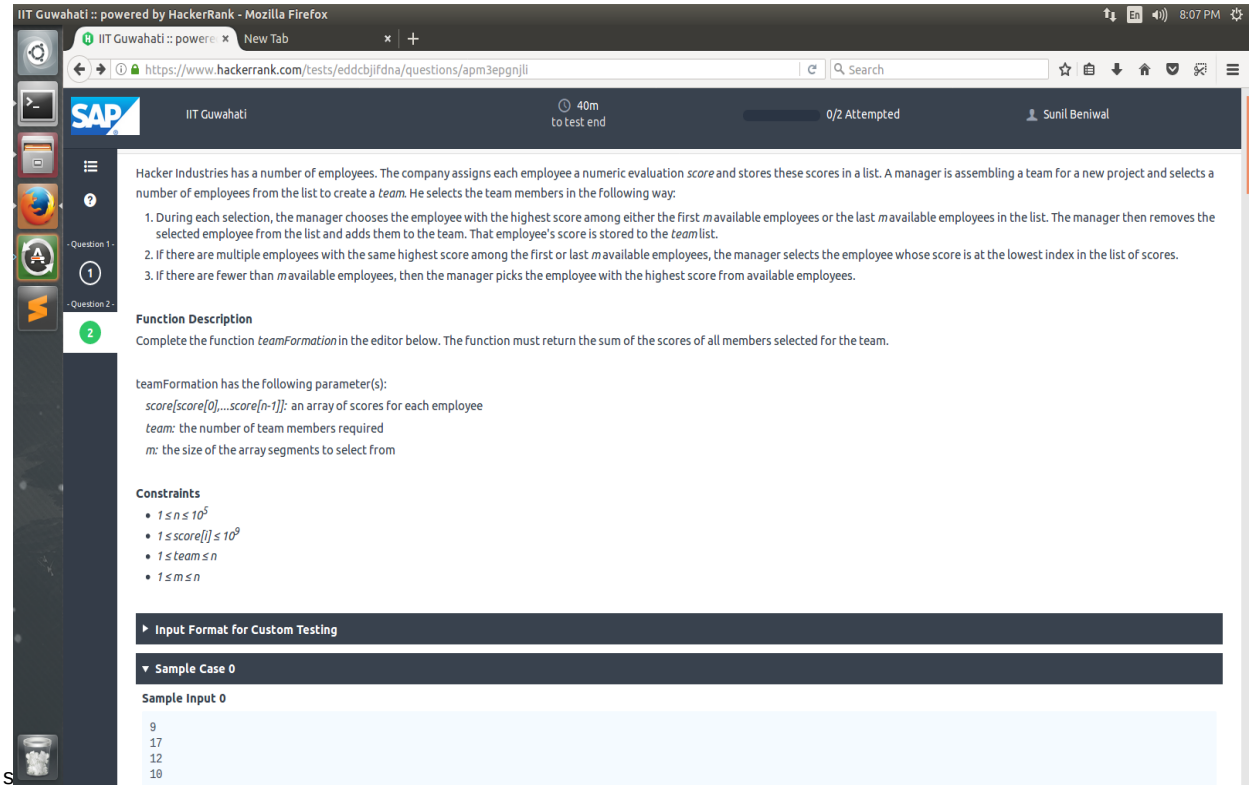
Requested solution for 1 and 3

IITG

All Profiles
Different sets of question were given to students. It was on hackerrank platform, 2 questions 1hr. Python was allowed.

1. https://leetcode.com/problems/cherry-pickup/description/
2. https://www.geeksforgeeks.org/check-if-a-given-array-can-represent-preorder-traversal-of-binary-search-tree/
3. Team Formation:
   Given an array of non negative integers, select x largest numbers from it given the following conditions:
   Choose the numbers in sequence and keep removing them from the array, every time number can only be selected from first or last m elements, in case of conflict choose the one with lower index. In case first and last m elements overlap, choose the largest number of array. Return the total sum of them. C++ code
4. Travelling Salesman problem
5. https://www.careercup.com/question?id=5647083983863808
6. Similar numbers (simple permutation)
7. Closest city given x,y coordinates
8. of cities based on query . Find out the closest city to a given city(in query) such that it has either same x or y coordinate, else return None.
9. Harder lengthy version of
   https://www.hackerrank.com/contests/freedom-fest-coding/challenges/phone-keypad

9. SAP questions on hackerrank google drive link - hea
    1. https://drive.google.com/open?id=1vkAT9IqPARME5C2TVZYhRfViQbpBlnB1 please share the approach +7(solution)
    2. https://drive.google.com/open?id=1qqtFWJGeU0p5cEiulqQbrA8WE2odrMid
10.



IITK

All Profiles

1. Given a graph where nodes can have multiple labelled edges between them. Find the pair with maximum common labelled edges.(There 3rd test case is wrong, is there any one who solved it).+1 I fully solved the question using just the problem statement. So possibly you left some case.
2. You're given a number n. You had to convert the number to all 0's, only operations allowed were:-
    a. Flip last bit.
    b. Flip ith bit only if (i+1)th bit is 1 and (i+2)th to end bits are 0.

E.g- 1000->1001->1011->1010->1110->1111->1101->1100->0100->0101->0111->0110->0010->0011->0001->0000

PS- [Koi solution daal do yaar, Indeed mein bhi aaya tha same question]
Soln - Basically the above question reduces to "Finding the index of given number in list of all gray codes". See from right side - the sequence is 0,1,11,10,110,111… which is exactly the gray code sequence
Is the gray code solution correct? Please confirm Grey Code Solution got accepted.
ANS - Just convert the given no to binary(B1) and then considering this binary representation(B1) as a gray code- just write O(n) solution to convert gray code(B1) to binary(B2)----convert that binary(B2) to decimal(D1) ...that(D1) is your last answer.
PPS - Uber IITG me bhi same aaya tha

3. Count number of Subarrays with product of elements <= k

IITK - Set 2

1 hour test on hackerrank. Python allowed. 2 Questions, different sets
Q1. A 2D array(NxM) filled with 0 and 1. Find the number of paths through the cells containing 1 from (0, 0) to (N-1, M-1).
Q2. Same question as asked in Indeed India Test in IITK(Q3). Find the number of operations to convert a binary number to zero. Each operation consists of changing one bit from 0 to 1 and vice versa. This operation can be carried out at ith bit if an only if (i+1)th bit is 1 and (i+2)th bit onwards is 0. (i is measured from left end)

IIT BHU

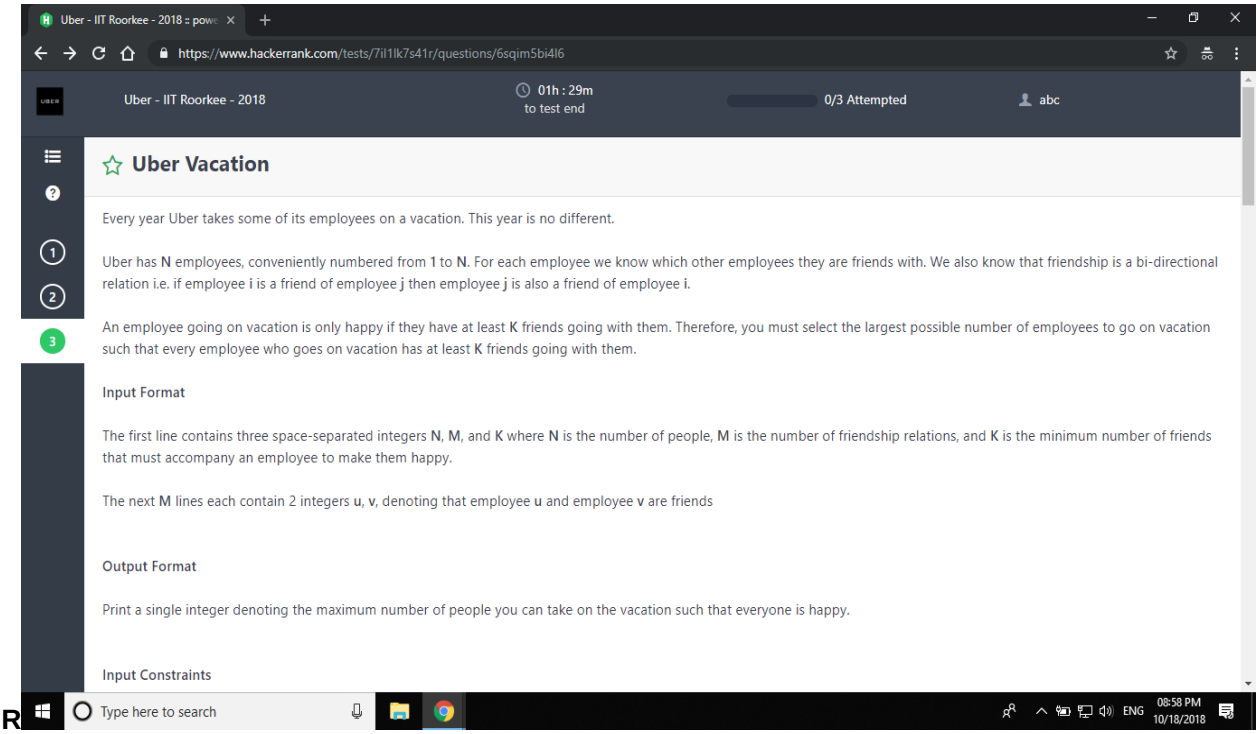
Platform: Hackerrank, 1 hour 2 coding questions
Q1) https://www.geeksforgeeks.org/maximum-points-top-left-matrix-bottom-right-return-back/
Q2) Given a graph, find all the cycles of length 3.
The score of 3 length cycle is defined as the summation of degree of all the vertices taking part in cycle formation. Print the minimum score of such cycles formed.
Limit N=500, E=max(500, N*(N-1)/2), brute force approach is sufficient to pass all test cases
Ex: Nodes: 6
Edges: (1--2), (2--4), (2--5), (4--5), (3--5), (5--6), Output: 3
Expl: For cycle(2--4--5), degree(2)=1 (as 4 and 5 are part of cycle, thus not counted in score calculation), degree(4)=0, degree(5)=2.
Q3) Find the no of distinct substrings of a string. (|s| = 10^5)
Q4) https://www.geeksforgeeks.org/number-subarrays-product-less-k/
Q5)https://www.geeksforgeeks.org/count-possible-paths-top-left-bottom-right-nxm-matrix/

Sandvine

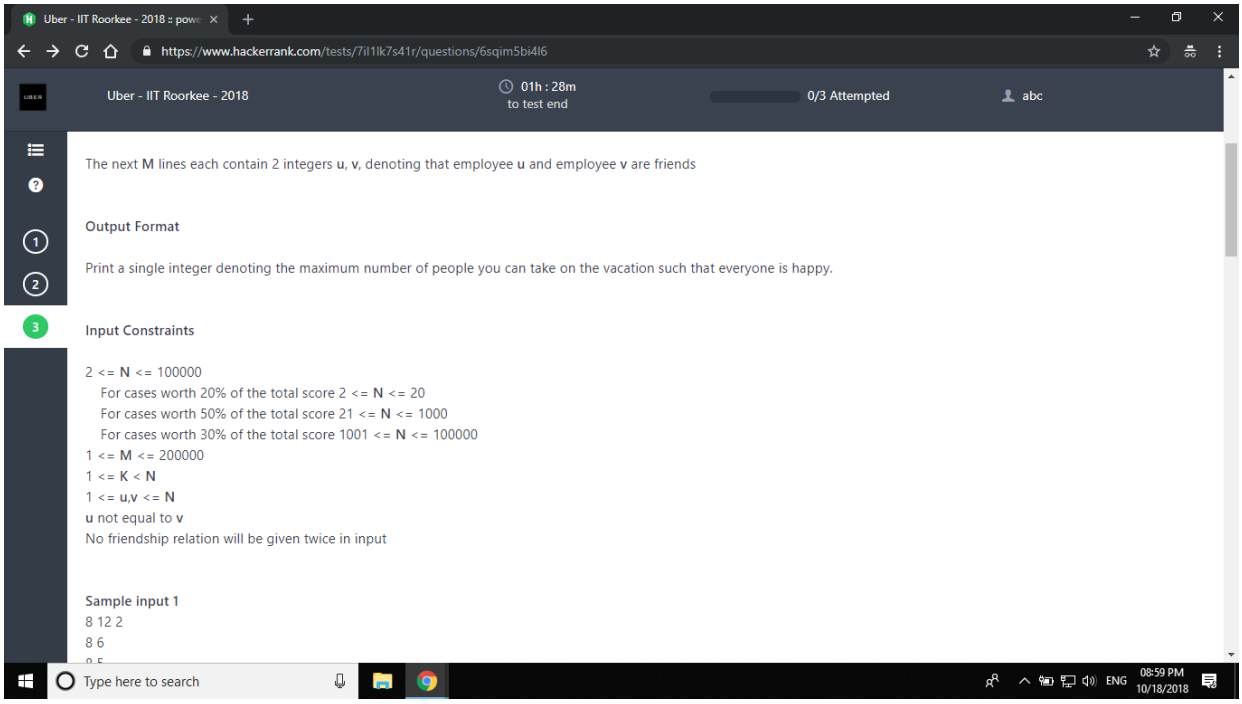
IIT (ISM) Dhanbad

https://www.geeksforgeeks.org/sandvine-interview-experience-for-fte-2018/

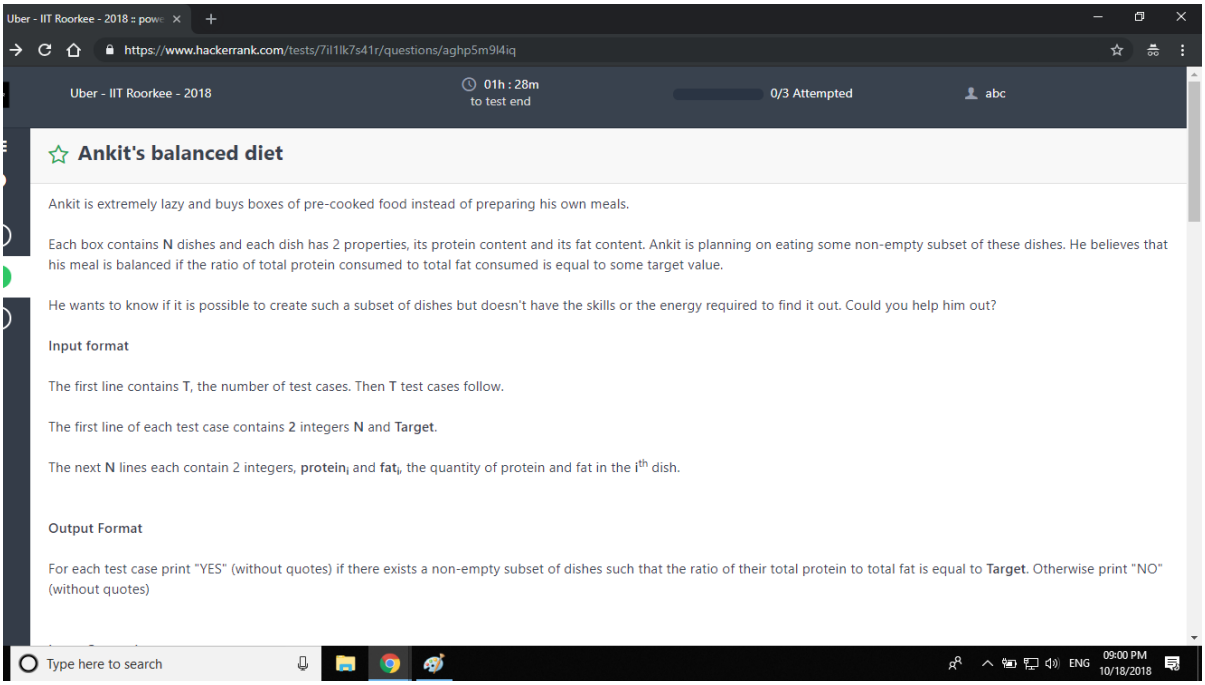
Uber

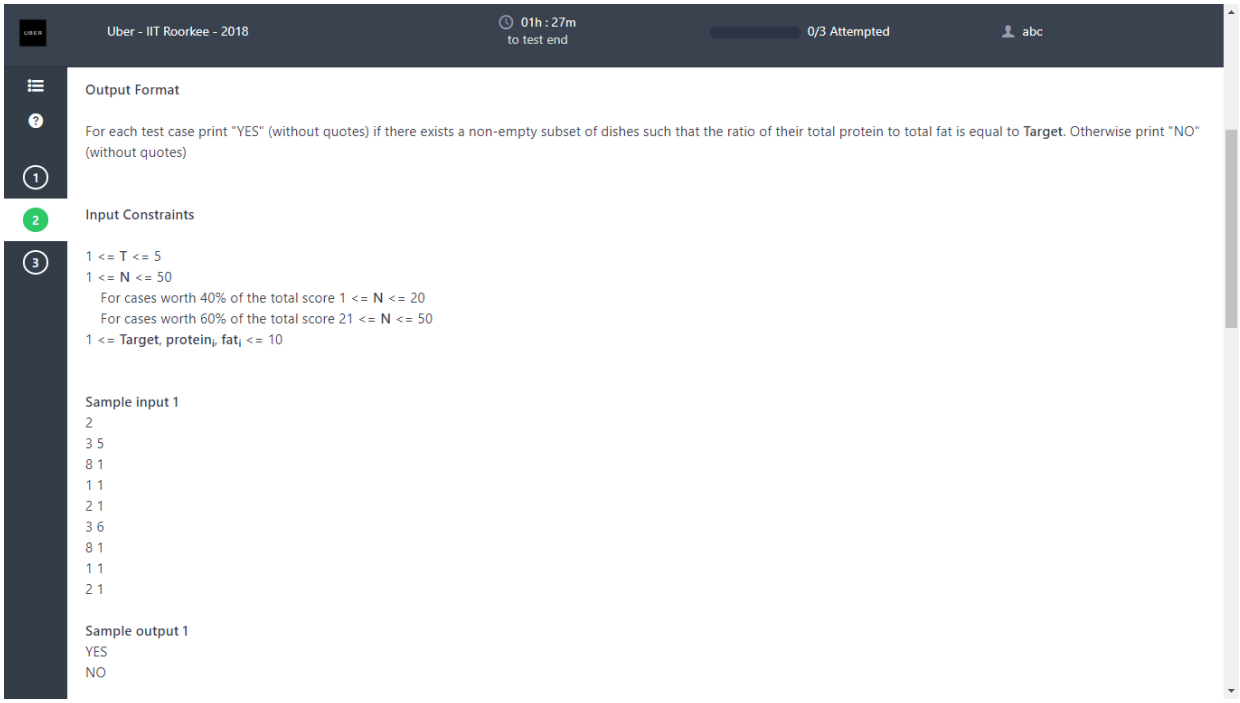


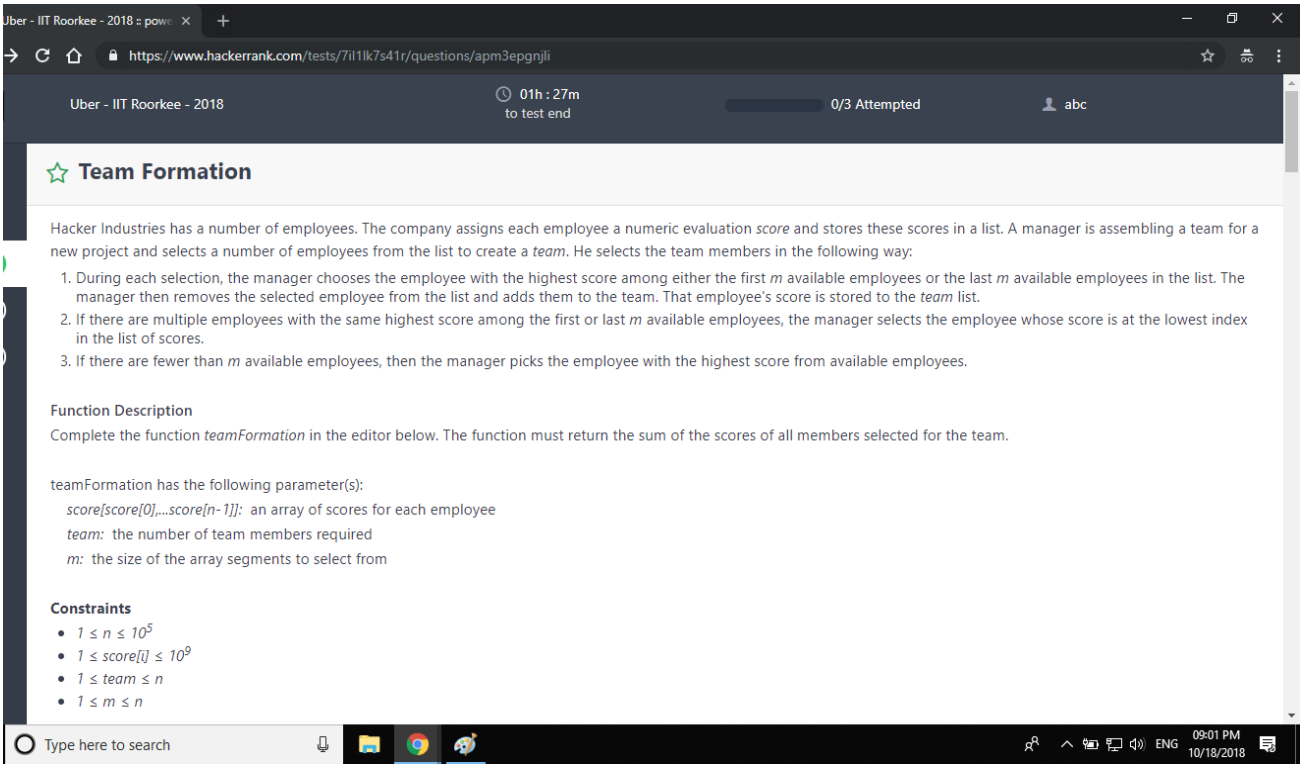
IIT R

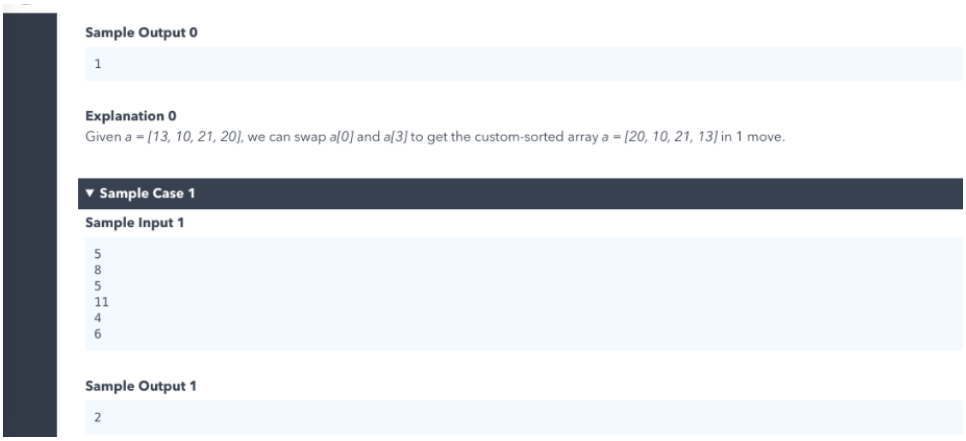


^Someone please give whole sample input
solution: https://www.geeksforgeeks.org/find-k-cores-graph/


Uber - IIT Roorkee - 2018 :: powe
https://www.hackerrank.com/tests/7il1lk7s41r/questions/aghp5m9l4iq
Uber - IIT Roorkee - 2018
01h : 28m
to test end
0/3 Attempted
abc
Ankit's balanced diet
Ankit is extremely lazy and buys boxes of pre-cooked food instead of preparing his own meals.
Each box contains N dishes and each dish has 2 properties, its protein content and its fat content. Ankit is planning on eating some non-empty subset of these dishes. He believes that his meal is balanced if the ratio of total protein consumed to total fat consumed is equal to some target value.
He wants to know if it is possible to create such a subset of dishes but doesn't have the skills or the energy required to find it out. Could you help him out?
Input format
The first line contains T, the number of test cases. Then T test cases follow.
The first line of each test case contains 2 integers N and Target.
The next N lines each contain 2 integers, protein$_i$ and fat$_i$, the quantity of protein and fat in the ith dish.
Output Format
For each test case print "YES" (without quotes) if there exists a non-empty subset of dishes such that the ratio of their total protein to total fat is equal to Target. Otherwise print "NO" (without quotes)
Type here to search
ENG
09:00 PM
10/18/2018


Uber - IIT Roorkee - 2018
01h : 27m
to test end
0/3 Attempted
abc
Output Format
For each test case print "YES" (without quotes) if there exists a non-empty subset of dishes such that the ratio of their total protein to total fat is equal to Target. Otherwise print "NO" (without quotes)
Input Constraints
1 <= T <= 5
1 <= N <= 50
For cases worth 40% of the total score 1 <= N <= 20
For cases worth 60% of the total score 21 <= N <= 50
1 <= Target, protein$_i$, fat$_i$ <= 10
Sample input 1
2
3 5
8 1
1 1
2 1
3 6
8 1
1 1
2 1
Sample output 1
YES
NO


Uber - IIT Roorkee - 2018 :: powe
https://www.hackerrank.com/tests/7il1lk7s41r/questions/apm3epgnjli
Uber - IIT Roorkee - 2018
01h : 27m
to test end
0/3 Attempted
abc
Team Formation
Hacker Industries has a number of employees. The company assigns each employee a numeric evaluation score and stores these scores in a list. A manager is assembling a team for a new project and selects a number of employees from the list to create a team. He selects the team members in the following way:
1. During each selection, the manager chooses the employee with the highest score among either the first m available employees or the last m available employees in the list. The manager then removes the selected employee from the list and adds them to the team. That employee's score is stored to the team list.
2. If there are multiple employees with the same highest score among the first or last m available employees, the manager selects the employee whose score is at the lowest index in the list of scores.
3. If there are fewer than m available employees, then the manager picks the employee with the highest score from available employees.
Function Description
Complete the function teamFormation in the editor below. The function must return the sum of the scores of all members selected for the team.
teamFormation has the following parameter(s):
score[score[0],...score[n-1]]: an array of scores for each employee
team: the number of team members required
m: the size of the array segments to select from
Constraints
1 ≤ n ≤ 10^5
1 ≤ score[i] ≤ 10^9
1 ≤ team ≤ n
1 ≤ m ≤ n
Type here to search
ENG
09:01 PM
10/18/2018



Sample Output 0

```
1
```

Explanation 0

Given *a = [13, 10, 21, 20]*, we can swap *a[0]* and *a[3]* to get the custom-sorted array *a = [20, 10, 21, 13]* in 1 move.

▼ **Sample Case 1**

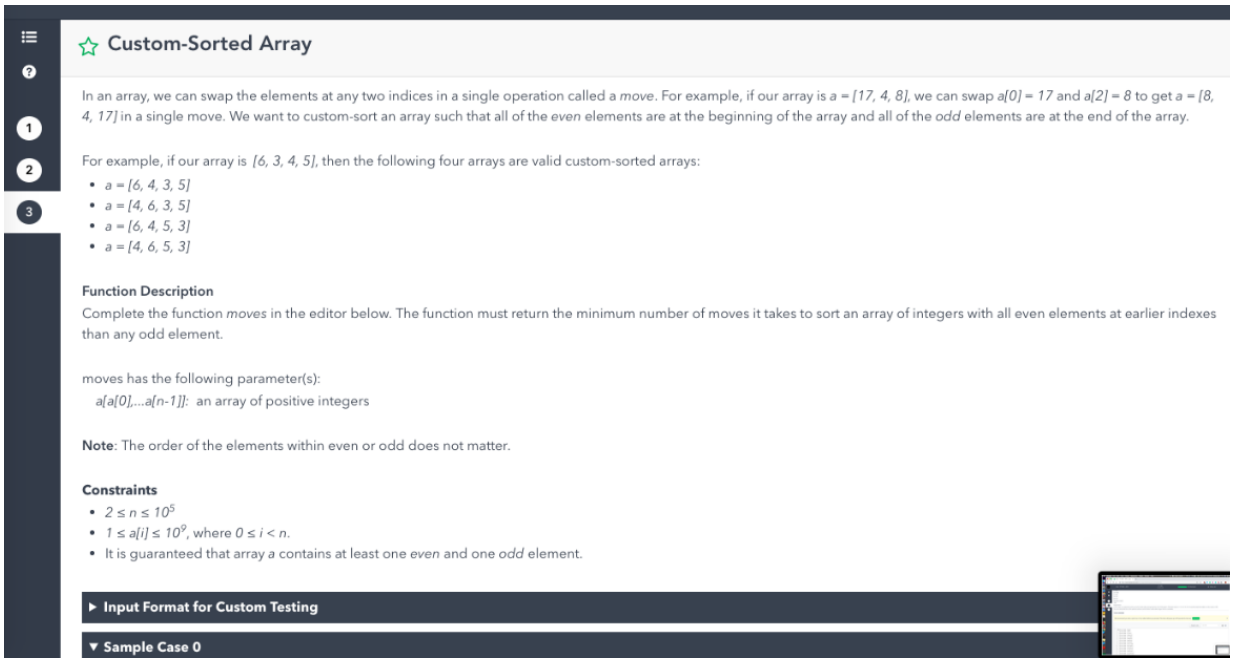
Sample Input 1

```
5
8
5
11
4
6
```

Sample Output 1

```
2
```

IITD



Custom-Sorted Array

In an array, we can swap the elements at any two indices in a single operation called a *move*. For example, if our array is *a = [17, 4, 8]*, we can swap *a[0] = 17* and *a[2] = 8* to get *a = [8, 4, 17]* in a single move. We want to custom-sort an array such that all of the *even* elements are at the beginning of the array and all of the *odd* elements are at the end of the array.

For example, if our array is *[6, 3, 4, 5]*, then the following four arrays are valid custom-sorted arrays:

- *a = [6, 4, 3, 5]*
- *a = [4, 6, 3, 5]*
- *a = [6, 4, 5, 3]*
- *a = [4, 6, 5, 3]*

Function Description

Complete the function *moves* in the editor below. The function must return the minimum number of moves it takes to sort an array of integers with all even elements at earlier indexes than any odd element.

moves has the following parameter(s):
a[a[0],...a[n-1]]: an array of positive integers

Note: The order of the elements within even or odd does not matter.

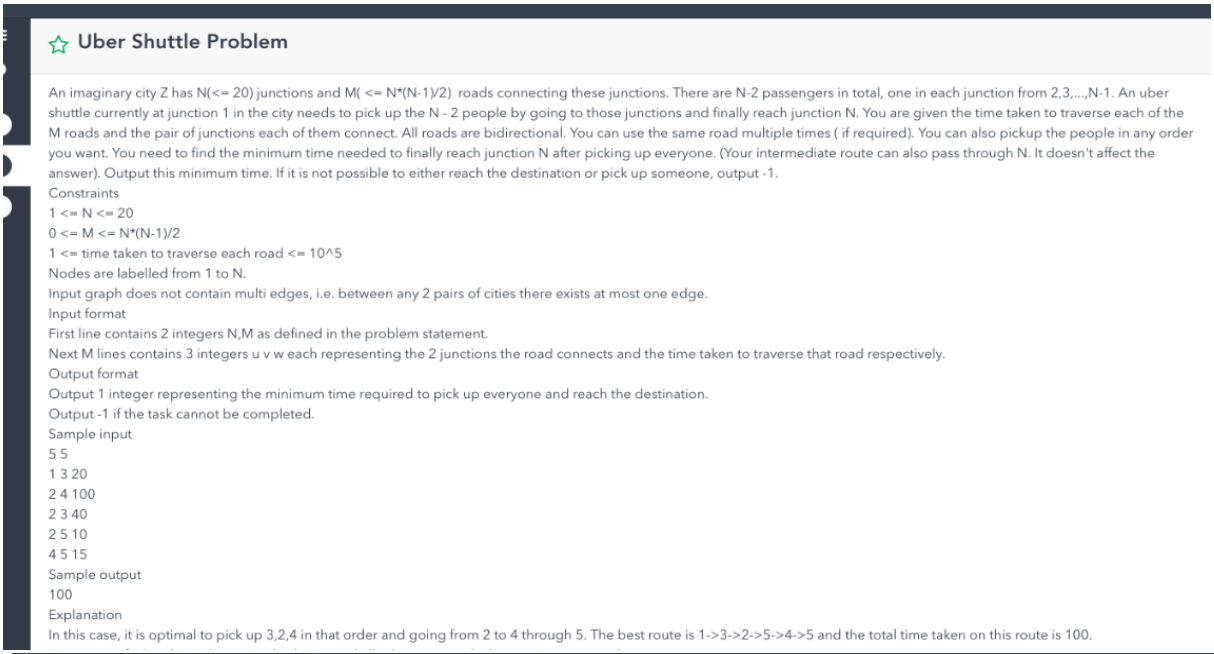
Constraints

- $2 \le n \le 10^5$
- $1 \le a[i] \le 10^9$, where $0 \le i < n$.
- It is guaranteed that array *a* contains at least one *even* and one *odd* element.

▶ **Input Format for Custom Testing**

▼ **Sample Case 0**

Sol for custom array- https://www.geeksforgeeks.org/segregate-even-odd-numbers-set-3/
This doen't give min count https://www.geeksforgeeks.org/segregate-even-odd-set-2/
This gives min count: https://www.geeksforgeeks.org/segregate-even-and-odd-numbers/



Uber Shuttle Problem

An imaginary city Z has N(<= 20) junctions and M(<= N*(N-1)/2) roads connecting these junctions. There are N-2 passengers in total, one in each junction from 2,3,...,N-1. An uber shuttle currently at junction 1 in the city needs to pick up the N - 2 people by going to those junctions and finally reach junction N. You are given the time taken to traverse each of the M roads and the pair of junctions each of them connect. All roads are bidirectional. You can use the same road multiple times (if required). You can also pickup the people in any order you want. You need to find the minimum time needed to finally reach junction N after picking up everyone. (Your intermediate route can also pass through N. It doesn't affect the answer). Output this minimum time. If it is not possible to either reach the destination or pick up someone, output -1.

Constraints

1 <= N <= 20

0 <= M <= N*(N-1)/2

1 <= time taken to traverse each road <= 10^5

Nodes are labelled from 1 to N.

Input graph does not contain multi edges, i.e. between any 2 pairs of cities there exists at most one edge.

Input format

First line contains 2 integers N,M as defined in the problem statement.

Next M lines contains 3 integers u v w each representing the 2 junctions the road connects and the time taken to traverse that road respectively.

Output format

Output 1 integer representing the minimum time required to pick up everyone and reach the destination.

Output -1 if the task cannot be completed.

Sample input

5 5

1 3 20

2 4 100

2 3 40

2 5 10

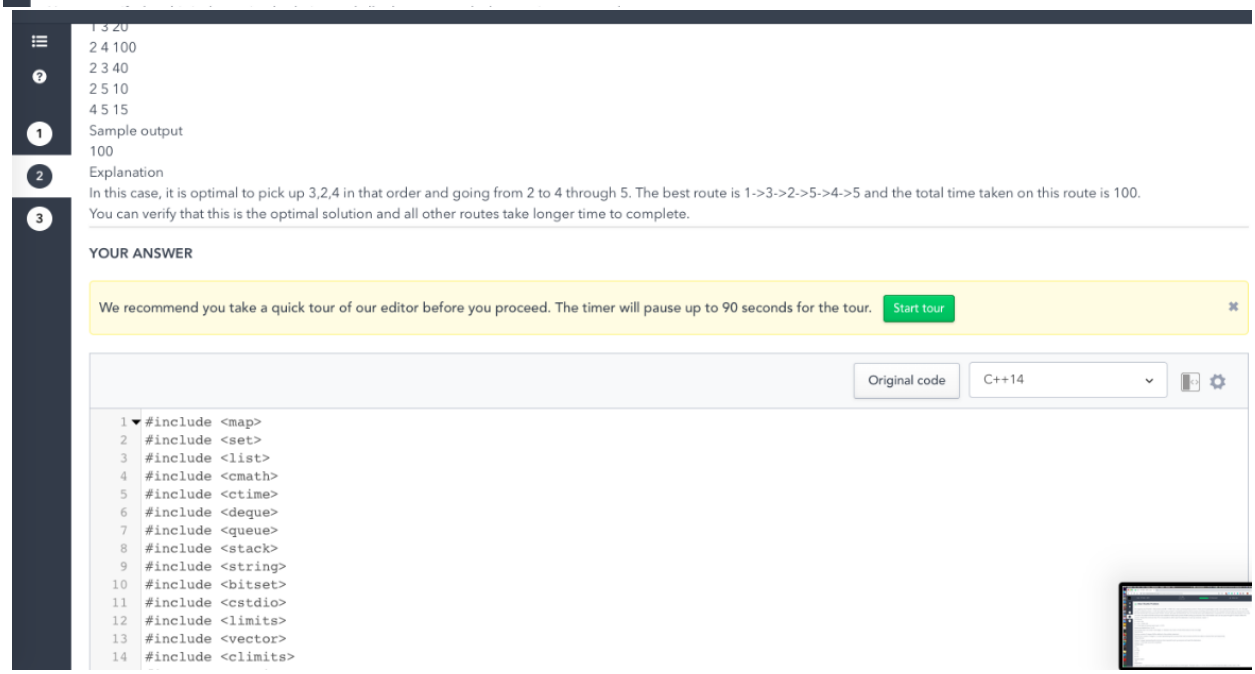
4 5 15

Sample output

100

Explanation

In this case, it is optimal to pick up 3,2,4 in that order and going from 2 to 4 through 5. The best route is 1->3->2->5->4->5 and the total time taken on this route is 100.



1 3 20

2 4 100

2 3 40

2 5 10

4 5 15

Sample output

100

Explanation

In this case, it is optimal to pick up 3,2,4 in that order and going from 2 to 4 through 5. The best route is 1->3->2->5->4->5 and the total time taken on this route is 100.

You can verify that this is the optimal solution and all other routes take longer time to complete.

YOUR ANSWER

We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour. Start tour

Original code C++14

```
#include <map>
#include <set>
#include <list>
#include <cmath>
#include <ctime>
#include <deque>
#include <queue>
#include <stack>
#include <string>
#include <bitset>
#include <cstdio>
#include <limits>
#include <vector>
#include <climits>
```

Will O((2^n)*(n^2)) pass? This will be the order when we apply bitmasking+floyd warshall Can you clarify which problem you're talking about? Uber-shuttle??7++ Solution anyone?

I think this solution will definitely work for this problem.

It must return the number of different possible sequences of getting those points. As the answer could be very large, return the value of result % (10^9 + 7).

Input Format
The locked stub code in your editor reads the following input from stdin and passes it to your function:
The first line contains a single integer X.
The next line contains a single integer Y.

Constraints
0 ≤ X,Y ≤ 10^9

Output Format
The locked code in the editor prints the return value of the function.
Your function must return the number of different possible sequences of getting those points. As the answer could be very large, return the value of result % (10^9 + 7).

Sample Input 1
3
25

Sample Output 1
2925

Explanation 1
There are 2925 different sequences to reach the score (3,25).

Sample Input 2
24
17

Sample Output 2
0

.

Jenny is a big sports fan, especially uberball.

Rules of uberball are following :
- The match is played by 2 teams
- During one round of the game, a team scores a point, and thus increases its score by 1.
- Both team starts with 0 points each.

The game ends when
- One of the teams gets 25 points and another team has < 24 points (strictly less than 24).
- If the score ties at 24:24, the teams continue to play until the absolute difference between the scores is 2.

After the game has ended, the final score is given in the format X:Y, which means the first team has scored X points and the second has scored Y points, can you find the number of different sequences of getting points by teams that leads to this final score?

Complete the function uberball in your editor. It has 2 parameters:
An integer X.
An integer Y.

It must return the number of different possible sequences of getting those points. As the answer could be very large, return the value of result % (10^9 + 7).

Input Format
The locked stub code in your editor reads the following input from stdin and passes it to your function:
The first line contains a single integer X.
The next line contains a single integer Y.

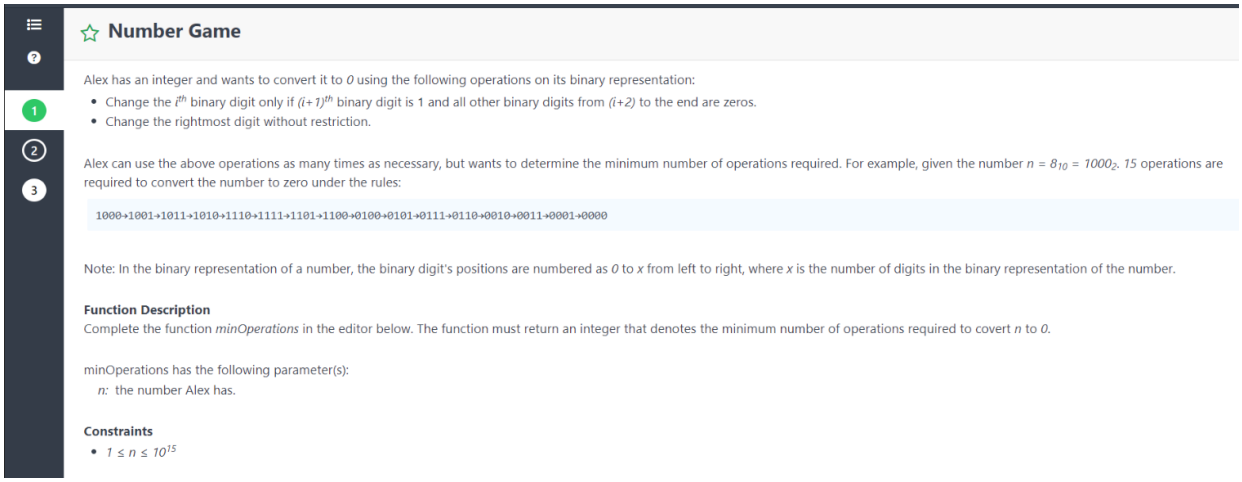
Constraints
0 ≤ X,Y ≤ 10^9

Output Format
The locked code in the editor prints the return value of the function.
Your function must return the number of different possible sequences of getting those points. As the answer could be very large, return the value of result % (10^9 + 7).

Approach for uberball- https://math.stackexchange.com/questions/1293020/calculate-different-sequence-of-scores-in-a-volleyball-match

```
// Also write DP for ncr using memoization
int powerOfTwo(int n) {
     if (not n) return 1;
     int x = powerOfTwo(n / 2);
     x = x * x % MOD;
     return (n % 2 ? x * 2 % MOD : x);
}
int uberball(int x, int y) {
     if (x < y) swap(x, y);
     if (x <= 24) return 0;
     if (x == 25) {
          if (y >= 24) return 0;
          return ncr(y + 24, 24);
     }
     if (y != x - 2) return 0;
     return ncr(48, 24) * powerOfTwo(y - 24);
}
```

IITG



Number Game

Alex has an integer and wants to convert it to *0* using the following operations on its binary representation:

- Change the i^{th} binary digit only if $(i+1)^{th}$ binary digit is 1 and all other binary digits from $(i+2)$ to the end are zeros.
- Change the rightmost digit without restriction.

Alex can use the above operations as many times as necessary, but wants to determine the minimum number of operations required. For example, given the number $n = 8_{10} = 1000_2$. *15* operations are required to convert the number to zero under the rules:

```
1000→1001→1011→1010→1110→1111→1101→1100→0100→0101→0111→0110→0010→0011→0001→0000
```

Note: In the binary representation of a number, the binary digit's positions are numbered as *0* to *x* from left to right, where *x* is the number of digits in the binary representation of the number.

Function Description

Complete the function *minOperations* in the editor below. The function must return an integer that denotes the minimum number of operations required to covert *n* to *0*.

minOperations has the following parameter(s):

n: the number Alex has.

Constraints

- $1 \le n \le 10^{15}$

Soln - Basically the above question reduces to “Finding t all gray codes”. See from right side - the sequence is 0,1,11,10,110,111… which is exactly the gray code sequencehe index of given number in list of
(IITG Junta: if anyone else has the other Qs or sample input of Q1, please put below.)
Q2 ...
Q3 was https://www.geeksforgeeks.org/find-sum-maximum-difference-possible-subset-given-array/

IIT KGP

3 coding questions, 90 mins
1. Task master: Given to you are n tasks, and m number of pairs (a, b) such that a depends on b, a can be executed only after b. If you wish to execute a, and b is not executed yet, a will also not be executed. Return the maximum number of tasks you can complete. DFS.

2. Ash and Gary catch a and g pokemons respectively, until one of them wins. Winning condition is:
Winner has caught at least 25 pokemon. Winner has caught 2 more pokemon than the other. A repeat of last year’s question. Sol:
https://math.stackexchange.com/questions/1293020/calculate-different-sequence-of-scores-in-a-volleyball-match

3. Uber has a retention rate of r. It means if R riders join today, number of riders by m months because of them will be R * r^m. You are given an array of size m, with number of riders joining in that month, and you are given a target C to reach. r is in [0, 2). Return min value of r to complete target. Precision of first 6 digits required.
Ex: If answer is 1.12345600, output must be 1.123456, else if answer is 1.234567, return 1.123457 and so on.
Binary search can be used, but handling precision becomes tricky. C <= 10^9. M <= 10^5

IITB

3 coding questions, 90 mins

1. Travelling is Fun!! Hackerrank
    a. You are given a list of edges in a graph and for each pair of vertices that are connected by an edge, there are two edges between them, one curved edge and one straight edge i.e. the tuple (x, y, w1, w2) means that between vertices x and y, there is a straight edge with weight w1 and a curved edge with weight w2. You are given two vertices a and b and you have to go from a to b through a series of edges such that in the entire path you can use at most 1 curved edge. Your task is to find the shortest path from a to b satisfying the above condition

Mentor Graphics

IITH

Min CGPA: 7.0, EE,CS (B.Tech and M.Tech)
50 min 4-coding questions
3 Sections (Apti, C++ basics, Coding)

1. Number N, number of bits K, rotate number R bits
e.g.: N = 0000 0010 0001 1010, K = 12, R = 3, output = 0000 0100 0100 0011
2. Rotate every pair of linked list
3. https://www.geeksforgeeks.org/add-greater-values-every-node-given-bst/Rotate every pair of linked list
4. Given char array, replace every duplicate char by next non-repeated char e.g.: GeekG ----> GefkH

HarnessIO

IITR

Test was conducted on 9/10/2018.
CPI cutoff: 7.0
10 MCQ's computer science basic
2 functional coding problem

(i) Operations of stack.
Super Stack -
- Push
- Pop
- inc e k(increment last e items by k)

(O(n^2) doesn't pass all cases) Solution: Think it the Given char array, replace every duplicate char by next non-repeated char e.g.: GeekG ----> GefkH way.

(ii) Count the min modification to make two strings anagrams.
https://www.geeksforgeeks.org/minimum-number-of-manipulations-required-to-make-two-strings-anagram-without-deletion-of-character/ Solution: Maintaining simple count array works. Which is almost bruteforce :)

IITG

1) Find minimum elements of all k size window of an array , and find max element among them.
2) Count no of path from (0,0) to (end,end) of a grid. You can go only left and down from any point. There will be obstacles in the matrix . (https://www.interview https://www.interviewbit.com/problems/unique-paths-in-a-grid/bit.com/problems/unique-paths-in-a-grid/)

IITD

Platform: HackerRank. Questions: 10 MCQ + 2 Coding. Time: 1 hour.
1. Mobile number keypad problem. Total different combinations possible from 5556477 etc where 555 is tapping a numeric key in your phone thrice for a letter. For eg if keys mapped to 5 are fgh so 555 can represent fff, fg, gf, h so 4 .
2. Count number of distinct substrings of a string. N ~ O(10^5) so a straight up bruteforce wasn't working (5/10 cases passed.)

Can someone post the solution/idea of Q2

https://www.geeksforgeeks.org/count-distinct-substrings-string-using-suffix-array/

Greenland Investment Management

IIT K

Date: 10/10/18
Pen paper based 1 hour, 3 sections: first one focused on writing programs/functions: printing Fibonacci numbers using recursion, reversing a string using memory efficient method, detecting loop in a linked list.
Second one focussed on SQL
Third one was from Prob and Stats and stock prices
1) Given positive correlations between A and B and B and C, does it imply positive correlation between A and C
2) Finding monthly volatility given the annual volatility rate=2*(3)^0.5.
3) If Annual Volatility of Stock is given to be 2*(3)^0.5 then what is the probability that the stock closes above Rs102 after a month's end. (Price of the Stock=Rs100)

Juniper Networks

IIT K

CPI Criteria- 7.5; Date- 10/10/18
There were 10 Aptitude, 20 Technical and 3 coding questions.
For Technical questions practice memory allocation in C and pointers. Some of them were on networks. A few were on simple algorithms. Practice OS well if you want to do good in this section. There were some hard questions from OS.

1 question I remember from this section. Given 4 data structure you have to tell which is sufficient to store given IP address.
Aptitude questions were normal but time consuming.
Q1- You are given a string of length 24 consisting of 1's and 0's. First 8 chars represent Red component, next 8 Green and last 8 represents Blue component of a color.
You are given RGB values of 5 natural colors(as integers and fixed). You have to return closest color. Here closeness is defined as euclidean distance between colors.
For e.g- White = (255, 255, 255); Black = (0, 0, 0); Red = (255, 0, 0); Input = 000000001111111100000001
Here for this input RGB components are (0, 255, 1);
Distance with White = 359.918
Distance with Black = 255.1
Distance with Red = 359.919
So this is closest to Black, hence output is "Black"
Q2- This was related to N queens problem. You are given column number of queens in each row. You have maximum number of times a queen can be attacked. Here is modified version of this problem:- https://www.hackerrank.com/challenges/queens-attack-2/problem
Instead of obstacles there were other queens and you had to find number of times this queen can be attacked by another queens and then maximum of it. There was a catch e.g- If 3 queens are in diagonals(say (1,1) (2,2) & (3,3)) then this will be counted as 1 attack for (3,3).[**This is what I think as all tests were not passing, so it's my guess why**]
Q3- You are given a library of n words(say w[0].....w[n-1]), length of each word is maximum 60. You have to choose a word and you can delete one letter from this string and if this results in string from this set then continue doing so and return the max number of steps this can continue. Solvable in O(n*60)
E.g- dictionary = {"abc", "bc", "b", "bde", "a"}
Then answer will be 3 as "abc"->"bc"->"b"

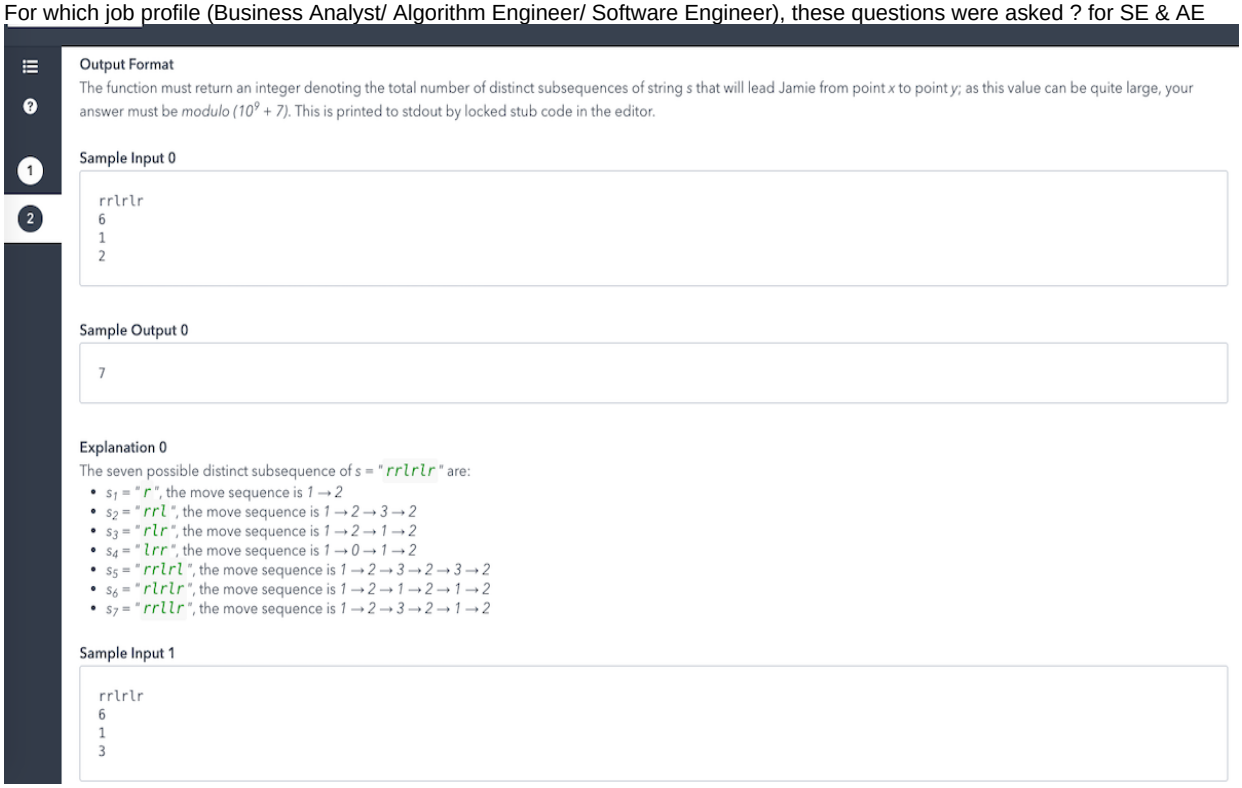
Rivigo

please add questions for Business Analyst profile also

IITD

2 coding question - 1hr 15min

For which job profile (Business Analyst/ Algorithm Engineer/ Software Engineer), these questions were asked ? for SE & AE



Output Format

The function must return an integer denoting the total number of distinct subsequences of string *s* that will lead Jamie from point *x* to point *y*; as this value can be quite large, your answer must be *modulo* $(10^9 + 7)$. This is printed to stdout by locked stub code in the editor.

Sample Input 0

```
rrlrlr
6
1
2
```

Sample Output 0

```
7
```

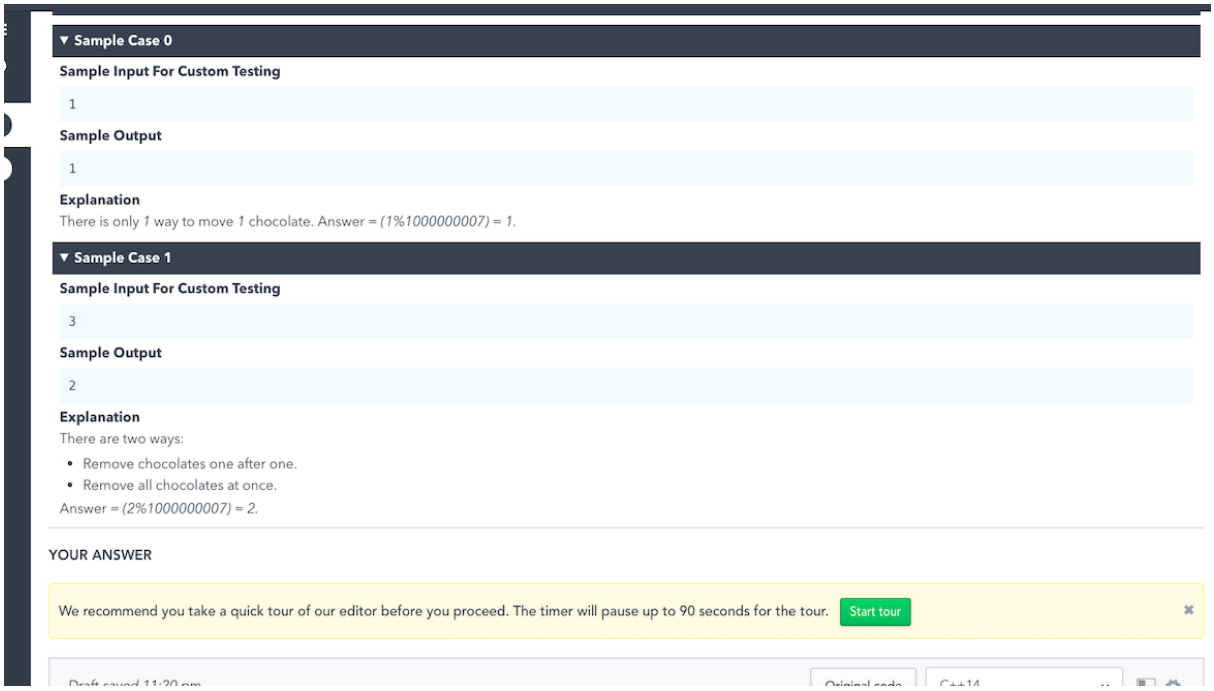
Explanation 0

The seven possible distinct subsequence of s = "rrlrlr" are:

- s_1 = "r", the move sequence is $1 \rightarrow 2$
- s_2 = "rrl", the move sequence is $1 \rightarrow 2 \rightarrow 3 \rightarrow 2$
- s_3 = "rlr", the move sequence is $1 \rightarrow 2 \rightarrow 1 \rightarrow 2$
- s_4 = "lrr", the move sequence is $1 \rightarrow 0 \rightarrow 1 \rightarrow 2$
- s_5 = "rrlrl", the move sequence is $1 \rightarrow 2 \rightarrow 3 \rightarrow 2 \rightarrow 3 \rightarrow 2$
- s_6 = "rlrlr", the move sequence is $1 \rightarrow 2 \rightarrow 1 \rightarrow 2 \rightarrow 1 \rightarrow 2$
- s_7 = "rrllr", the move sequence is $1 \rightarrow 2 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 2$

Sample Input 1

```
rrlrlr
6
1
3
```



IITG

2 coding questions 1:20 hrs
CPI cutoff = 6.5
Solve all dp from LeetCode

1. https://www.geeksforgeeks.org/minimum-steps-reach-target-knight/
2. https://leetcode.com/problems/cherry-pickup/description/

IITK

2 Coding 75 min

1. Gray Code
2. Turnstile

Quadeye

IITD

1 hr pen-paper test.
Two profiles: **System Engineer and Quant**
3 sections of paper:
1st(both profile): 30q, Gate level C programs, OS related it, general probability e.g find expected values, use bayes theorem etc. This section has to be done by all
2nd(For quant profile): 7q, Main Quant section. Don't know much.
3rd(For system engineer profile): 7q, C and OS, diff between deadlock and livelock, what is switching & routing, Determine No. Of vtble & vptr of given classes, predict output of given C program, related to Preprocessor manipulation etc,
Good luck

IITK

60 min Pen Paper test
section A: Quant 30 most of them single correct choice

section B: Strategy role 7 subjective
section C: Engineer role 7 subjective
Very less time to complete. Do take your watches with you. Try to do your section B or C fully

Section A

1. Given rv's X and Y in (0,1) find the probability that X + 3Y lies in [1,3] {½, ⅔, ¾, ⅖}
2. Minimum integer value of v where x⩽y⩽z⩽w⩽v has median 25 and mean 30 {1, 14, 25, 37, 38}
3. How many minimum comparisons to get second largest number out of an array of 32 numbers {18, 32, 64, 76}
4. What is the expected number of rolls to get two consecutive 5s? {36, 42, 56, 112}
5. Plot $x^{1/x}$.
6. Write a method to return n^{th} fibonacci number
7. Write a method to return the number of trailing zeroes in n!
8. person A rolls twice and the sum of the numbers on top is 4, similarly for person B the sum is 11. What is the probability that B has higher sum?
9. In Bag A there are Black, Blue marbles. One is chosen randomly and put in Bag B that already Black and Blues marbles. What is the probability that a Black one comes out of one is now chosen at random from Bag B?
10. A lily leaf in your pond grows to twice its area every day and the pond gets full in 33 days. If you start with 8 lily leafs in the beginning, in how many days does the pond gets full? {15, 18, 25, 30}
11. Number of cuts to completely divide 6x8 chocolate bar into 1x1 units.

Section B

1. If there are 100 rods and you bend them so that all 200 ends are indistinguishable and now you keep choosing 2 random ends and gluing them together (a) what is the expected number of loops formed? (b) what is the probability that a single big loop is formed? http://brainstellar.com/puzzles/207
2. If a postman puts letter 1 to 100 randomly in 100 envelopes numbered 1 to 100, what is the expected number of letters that are put in the correct envelope?
3. If X & Y are uniformly distributed pdf then find the cdf of X+Y.
4. What is the expected number of cards that need to be turned over in a regular 52-card deck in order to see the first ace? http://brainstellar.com/puzzles/209

Section C

1. Semaphore s = 2, there is a shared variable x = 0 initially, process X, Y use wait P, do x++, signal V, while processes Z, W do wait P, do x-=2, signal V. Give a possible scenario where the final value of x is (a) -3 (b) 2
2. What is the final output?

```
int main() {
        try {
          int *p = NULL;
             *p = 5;
             printf("%d\n", *p);
     } catch {
             printf("pointer was NULL");
     }
     return 0;
   }
```

3. Print the output:

```
int main() {
        u_int8 arr[] = {45, 16, 7, 231, 45, 8, 7, 231};
        u_int32* a = (u_int32 *)arr;
        printf("%d\n", a[0] - a[1]);
     return 0;
   }
```

4. Algorithm to find if two strings are anagrams
5. Objective: Get only 5 objects of a particular class. Write Pseudocode
6. Difference between IPC and RPC
7. Write a method to determine whether your system is operating in little endian or big endian

IITB

Date : 13/10/18
Duration: 1 hr pen paper
Open for: CS , EE Btech
Roles : Quant Strategist & System Engineer

Question paper same as above for IITD & IITK.
section A: Quant 30 most of them single correct choice
section B: Strategy role 7 subjective
section C: Engineer role 7 subjective
Checkout the probability puzzles from brainstellar.com . Some questions in section A & B were directly from here.

Indeed India

IITK

3 coding problems on Hackerrank platform - 90 minutes

1. Turnstile
2. Total different combinations possible from 5556477 etc where 555 is tapping a numeric key in your phone thrice for a letter. For eg if keys mapped to 5 are fgh so 555 can represent fff, fg, gf, h so 4
3. Converting gray code to binary

IITD

3 coding problems on Hackerrank platform - 90 minutes

1. Given a nxn square matrix containing integer values. You have to find the value of largest k (size of a smaller sub square) such that all subsquares of that size has sum < R. for eg. you can first try with k=1 if all the sub square of size of 1 has sum < R then you can proceed to k=2 and so on. (Even after using dp to store sums and using binary search for k was giving TLE on 2 test cases out of 14).

….2. Given a array, you have to increment the values such that all the elements become unique. Find the smallest sum you can get by incrementing the numbers.
Eg: arr[]= {1,2,2,3,4} you can increment the value of 2 to 5, final arr is {1,2,3,4,5} and the output will be sum of the final array = 15

3. https://stackoverflow.com/questions/44554450/sub-sequence-of-vowels

Oracle

IITR

Date - 14th October, 2018
Profile:- Application Engineer and Server Technology (Test was same)
1st Test
MCQ-3 section-Total 7 sub-sections,time allotted as per sub-section, 87 min test, Roughly around 60 questions. (AVL Trees, Trees, BST, DBMS- 25 questions around) (20 questions- Aptitude)
2nd Test
2 Coding Ques in 1 hr
Were there questions from OS? ?? yes there were many hard que from os
23154
Someone please add an example of the Bletchley Park problem??(+2)

A device that forwards data packet from one network to another is called a

Bletchley Park and the Enigma

Problem Statement:

At the height of World War II, in the early 1940s, British mathematicians, led by Dr Alan Turing developed an astonishing code breaker called Enigma at Bletchley Park. Enigma could easily catch and breakdown the messages being sent from and to the Axis powers. The next step was to track down the traitors, the people in civility who were secretly revolting against the crown, and sending crucial war information through radio channels, to the enemies.

In those days, the radio transmission overseas had a simple flaw. It had to be acknowledged within a standard time period **D** or it would be rendered futile. So the enemies and the traitors would both need to respond to one other's message within the given time duration for correct acknowledgement of information. Dr Turing was tasked to encode a simple algorithm within Enigma. Let's say a British **X** sends one radio message to a German **Y** at time **T1** and **Y** sends a radio message to **X** at **T2** such that **0<T2-T1<=D** then X and Y are co-conspirators. Enigma had access to all the radio transmission done overseas. Lets say if you time travelled to Bletchley Park, London at the said time, could you help Dr Turing develop an algorithm for the same ?

Input format:

The first line of the input contains two integers **N and D ($1 \le N, D \le 1000$)**. **N** is the number of radio transmissions recorded in Enigma and **D** is the maximum time difference.

The next **N** lines contain the transmissions log. The **i**-th line contains one line of the radio transmission record formatted as "X_i Y_i T_i", which means that person X_i sent a message to person Y_i at time T_i **($1 \le i \le n$)**. X_i and Y_i are non-empty strings at most 20 characters long, consisting of lowercase letters

Fun Jump

Problem Statement:

Stuart is funny and he likes to jump a lot. There are **N** boxes in a line numbered **1** to **N**. Each box has a value **A[i]>i** which represents that from box **i** Stuart can jump to any box till **i+A[i]** and **A[N]=0**.

P[i][j] is the minimum number of jumps needed to reach from box **i** to box **j**.

X[i] is the sum of **P[i][j]** such that **i<=j<=N**.

Find the sum of **X[i]** for **1<=i<=N**.

Input Format:

The first line of the input contains a single integer **N (2 ≤ N ≤ 100 000)** — the number of boxes.

The second line contains **N** integer **A[i] (i < A[i] <= N)**, the **i**-th of them means that at the **i**-th box Stuart may jump to each box from **i + 1** to **i+A[i]** inclusive.

Output Format:

One line, that is the sum of **X[i]** (defined above).

Sample Input 1:

```
3
3 3 3
```

Sample Output 1:

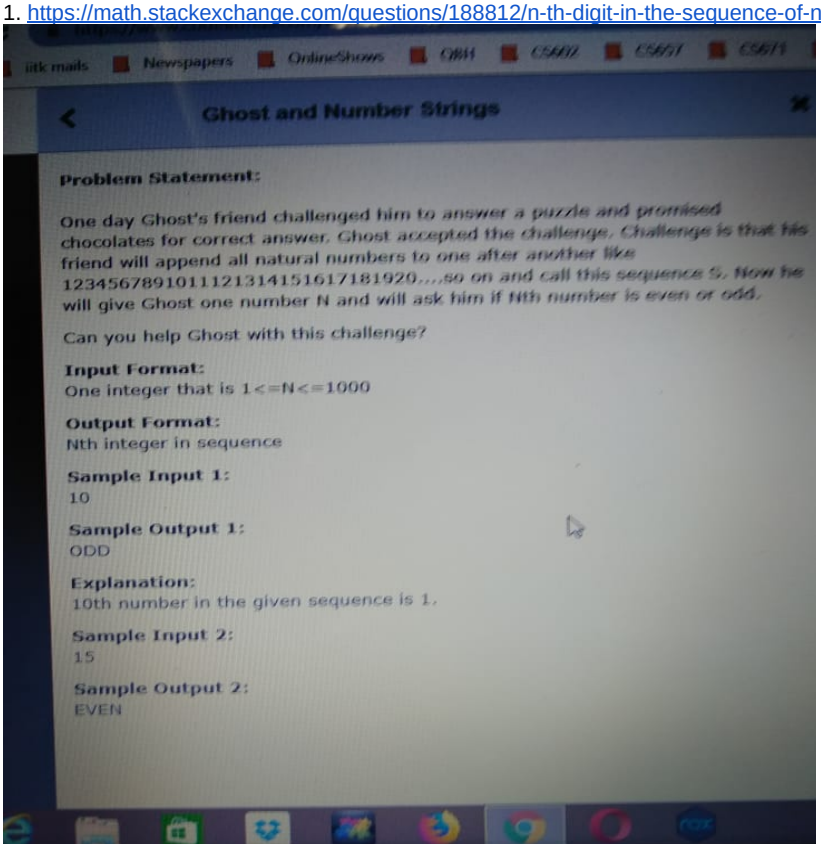
```
3
```

Can anyone suggest solution to the above problem?

IIT K

Cut-off was 7.0 GPA
Aptitude/technical questions :- many different sections based mainly on AVL and BST trees,OS,DBMS,flow charts, maths etc.
Coding:

1. https://math.stackexchange.com/questions/188812/n-th-digit-in-the-sequence-of-natural-numbers constratins 1<=N<=1000.



2. Graph based question, find the least cost path under certain constraints. The test cases were really simple, I just found the min in the array and boom, it passed all the hidden once though I know it was wrong and got a counter case

IITB

There were 2 tests.

Troops of Mahishmati

Problem Statement:

The great kingdom of Mahishmati is under attack from the Kalikeyas, the ferocious tribe of savages. Katappa, the commander of the Mahishmati army is a veteran of wars, but he needs a well trained army behind him to make Mahishmati victorius. The problem is, major chunk of the army has already gone away with the princes Mahendra and Bhallal for their world tour. Katappa needs to rebuild his army and recruit some young blood.

Katappa makes a plan. He creates **N** battalions of soldiers and started training each battalion and adding soldiers to the battalions each day. But one day, he realizes the times of war are really close and he doesn't have the strength in the battalions as he expected. There are **M** days left in the war, and the strength of the I^{th} battalion (number of soldiers in the battalion) is A_i (**1<=I<=N**) at present. On each of the remaining **M** days, Katappa can overwork and recruit one soldier each for **W** contiguous battalions. He can do the recruitment process only once per day. Also because he wants consistent distribution across his troops, he cannot recruit in one battalion for more than **K** days.

The aim of Katappa is, to make the strength of the smallest battalion to be as large as possible in the end. Can you help him find out what is the maximum strength of the smallest battalion ?

Input Format:

The first line contains space-separated integers **N**, **M**, **W** and **K** ($1 \le W \le N \le 10^5$; $1 \le K <= M \le 10^5$). The second line contains space-separated integers $A_1, A_2, ..., An$ ($1 \le A_i \le 10^9$).

Output Format:

Print a single integer — the maximum final strength of the smallest battalion.

Output Format:

Print a single integer — the maximum final strength of the smallest battalion.

Sample Input 1:

```
6 2 3 1
2 2 2 2 1 1
```

Sample Output 1:

```
2
```

Sample Input 2:

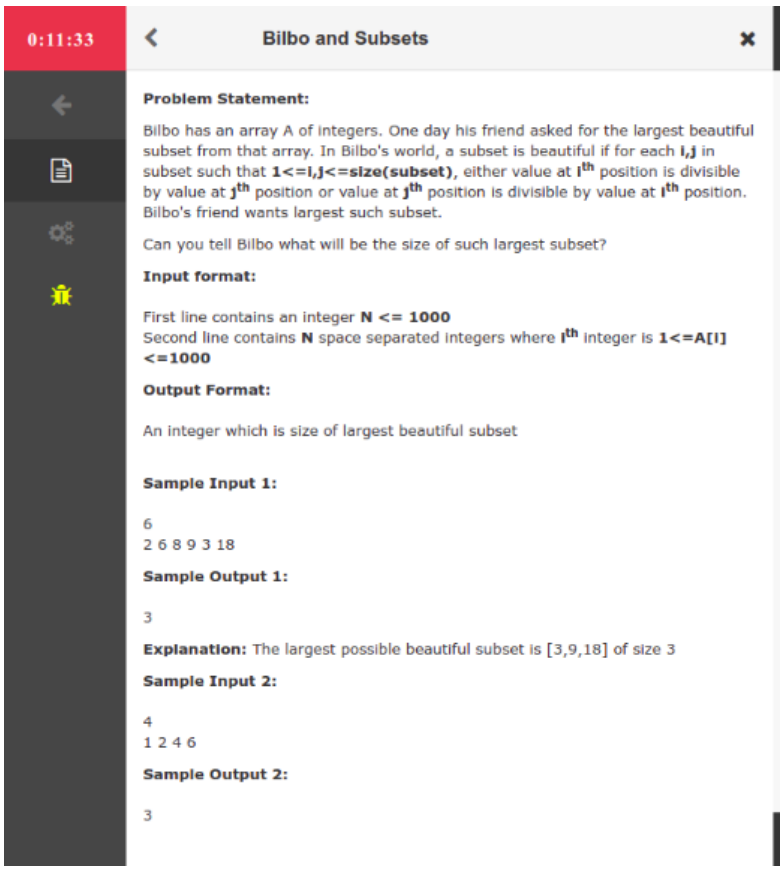
```
2 5 1 2
5 8
```

Sample Output 2:

```
7
```

Explanation 2:

Katappa has **M=5** days but since **W=1** he can only recruit into one battalion at a time and he can increase one battalion for at most **K=2** days. He can recruit into first battalion for **2** days and then second battalion for **2** days. Thus first battalion's strength will become **7** in the end.



0:11:33

Bilbo and Subsets

Problem Statement:

Bilbo has an array A of integers. One day his friend asked for the largest beautiful subset from that array. In Bilbo's world, a subset is beautiful if for each **i,j** in subset such that **1<=i,j<=size(subset)**, either value at i^{th} position is divisible by value at j^{th} position or value at j^{th} position is divisible by value at i^{th} position. Bilbo's friend wants largest such subset.

Can you tell Bilbo what will be the size of such largest subset?

Input format:

First line contains an integer **N <= 1000**
Second line contains **N** space separated integers where i^{th} integer is **1<=A[i] <=1000**

Output Format:

An integer which is size of largest beautiful subset

Sample Input 1:

6
2 6 8 9 3 18

Sample Output 1:

3

Explanation: The largest possible beautiful subset is [3,9,18] of size 3

Sample Input 2:

4
1 2 4 6

Sample Output 2:

3

Fractal Analytics

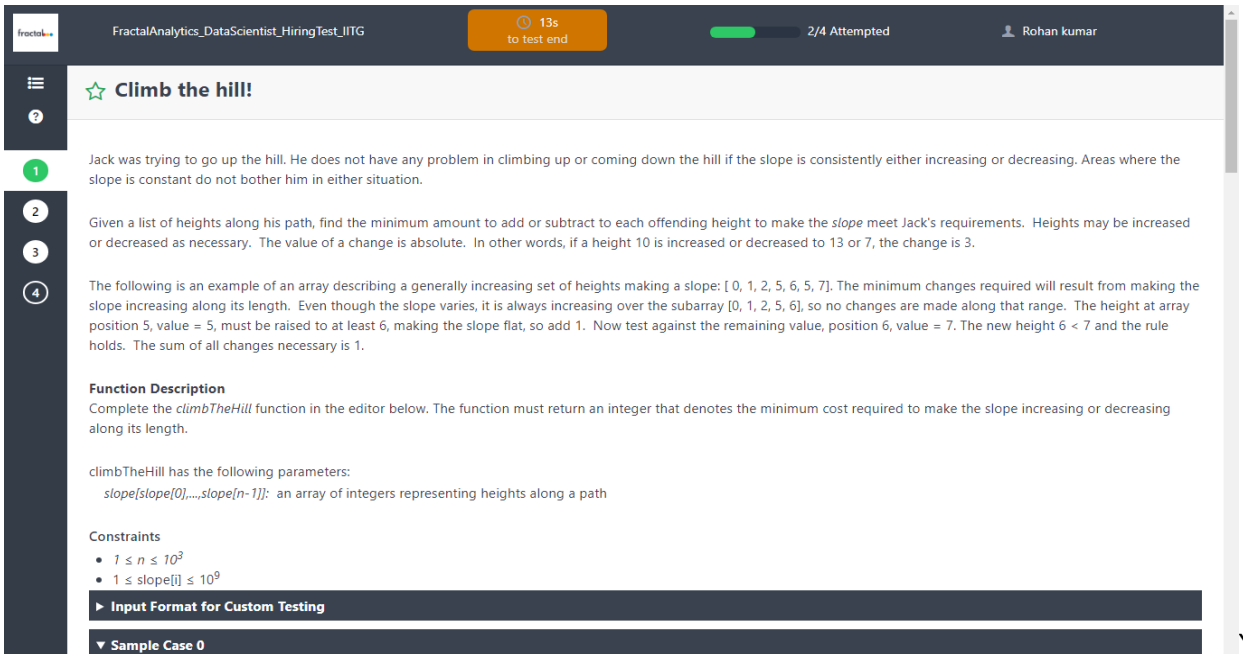
IITK

Date - 13th October,2018
Profile - Data Scientist
4 coding questions/ 1:15 Hour test on hackerrank

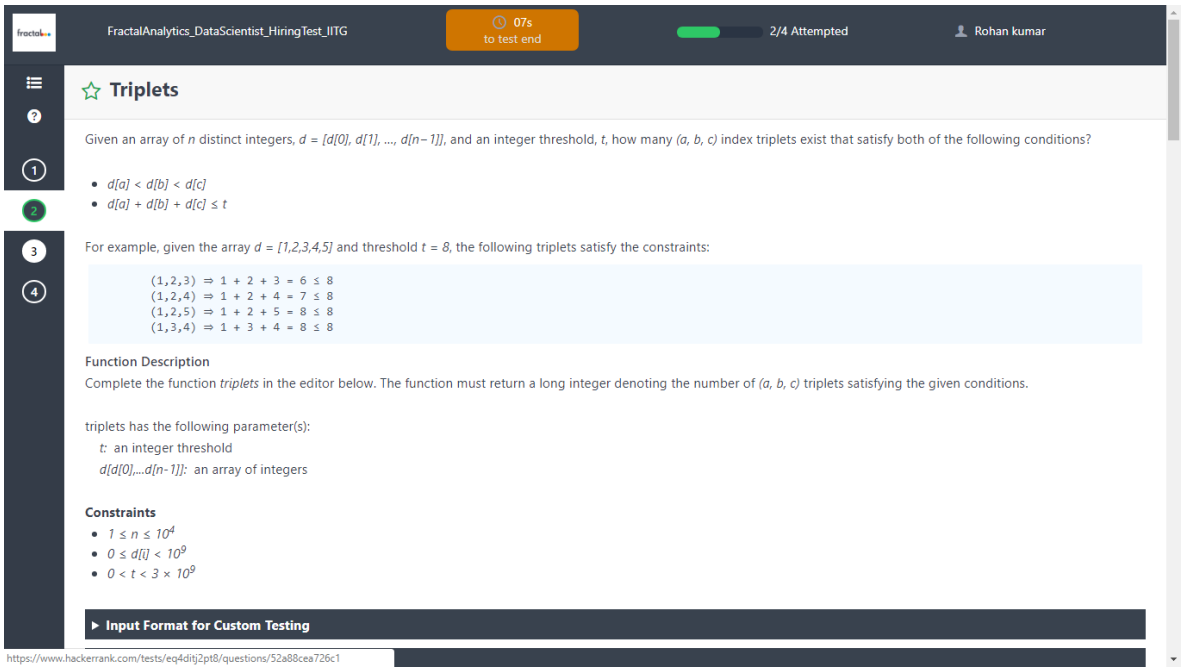
1. superStack
2. https://www.geeksforgeeks.org/check-destination-reachable-source-two-movements-allowed/ 1 <= x1, y1, x2, y2 <= 1000
3. Minimum Operation on the string so as no consecutive letters are same. (Operations : Select any char an8d replace it with any another) e.g.: Boook -> Boxok (expected output: 1)
4. circularSubstring

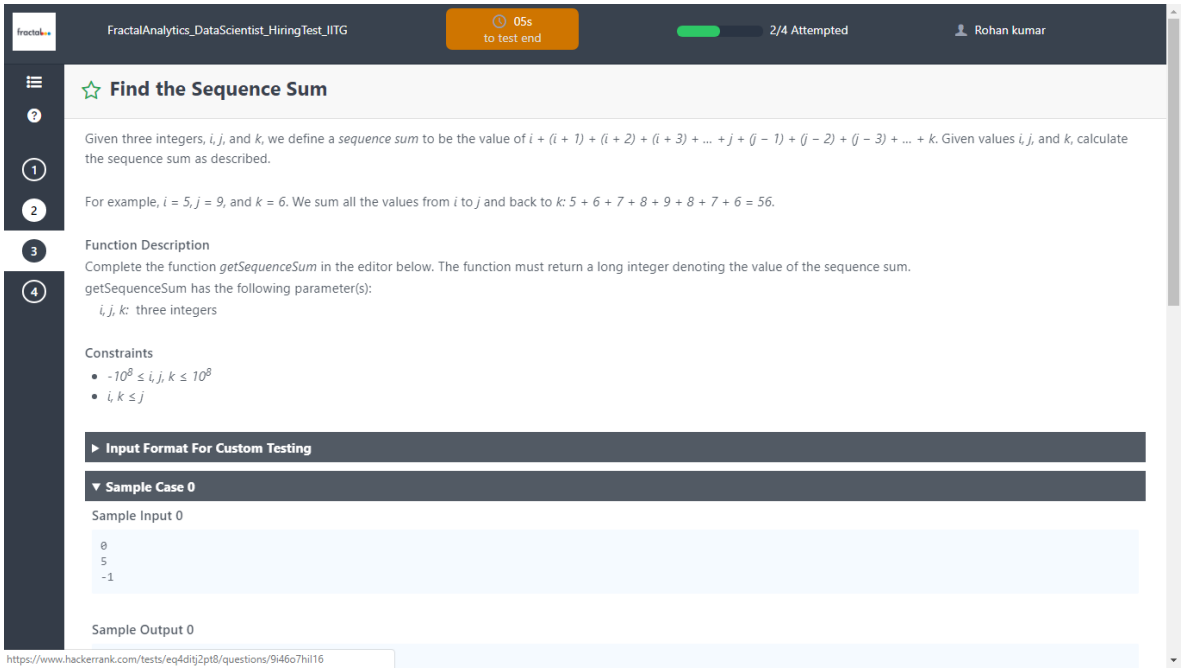
IIT G

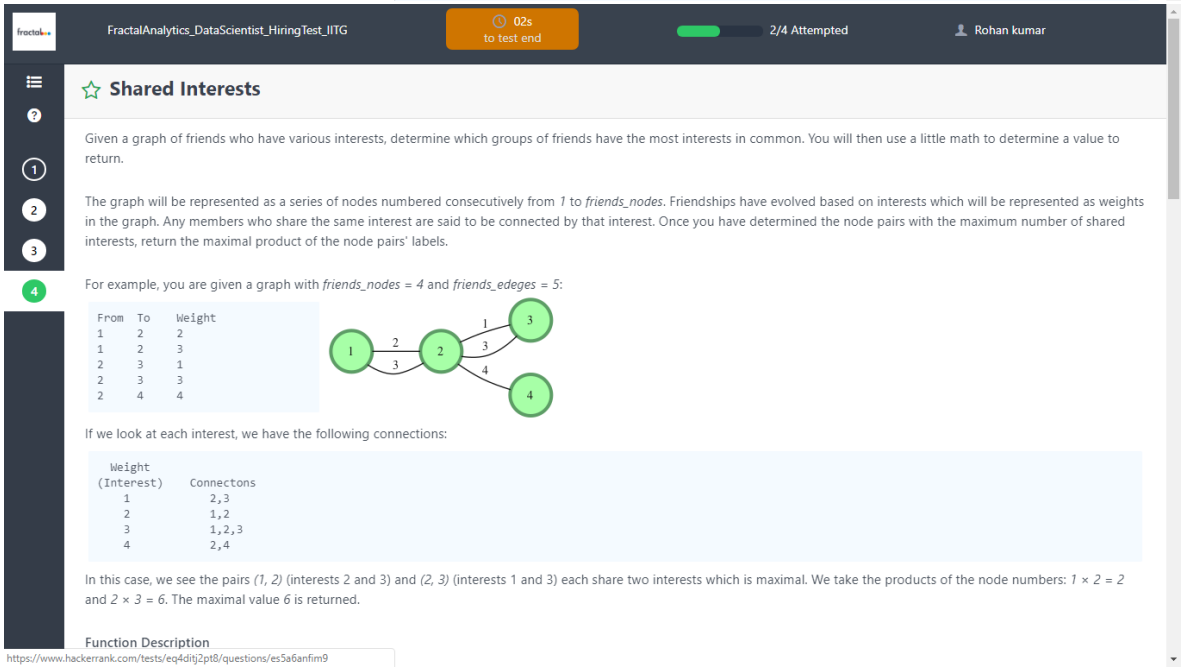
https://www.geeksforgeeks.org/minimum-incrementdecrement-to-make-array-non-increasing/


FractalAnalytics_DataScientist_HiringTest_IITG
13s
to test end
2/4 Attempted
Rohan kumar
Climb the hill!
Jack was trying to go up the hill. He does not have any problem in climbing up or coming down the hill if the slope is consistently either increasing or decreasing. Areas where the slope is constant do not bother him in either situation.
Given a list of heights along his path, find the minimum amount to add or subtract to each offending height to make the slope meet Jack's requirements. Heights may be increased or decreased as necessary. The value of a change is absolute. In other words, if a height 10 is increased or decreased to 13 or 7, the change is 3.
The following is an example of an array describing a generally increasing set of heights making a slope: [0, 1, 2, 5, 6, 5, 7]. The minimum changes required will result from making the slope increasing along its length. Even though the slope varies, it is always increasing over the subarray [0, 1, 2, 5, 6], so no changes are made along that range. The height at array position 5, value = 5, must be raised to at least 6, making the slope flat, so add 1. Now test against the remaining value, position 6, value = 7. The new height 6 < 7 and the rule holds. The sum of all changes necessary is 1.
Function Description
Complete the climbTheHill function in the editor below. The function must return an integer that denotes the minimum cost required to make the slope increasing or decreasing along its length.
climbTheHill has the following parameters:
slope[slope[0],...,slope[n-1]]: an array of integers representing heights along a path
Constraints
1 ≤ n ≤ 10^3
1 ≤ slope[i] ≤ 10^9
Input Format for Custom Testing
Sample Case 0

You


FractalAnalytics_DataScientist_HiringTest_IITG
07s
to test end
2/4 Attempted
Rohan kumar
Triplets
Given an array of n distinct integers, d = [d[0], d[1], ..., d[n−1]], and an integer threshold, t, how many (a, b, c) index triplets exist that satisfy both of the following conditions?
d[a] < d[b] < d[c]
d[a] + d[b] + d[c] ≤ t
For example, given the array d = [1,2,3,4,5] and threshold t = 8, the following triplets satisfy the constraints:
(1,2,3) ⇒ 1 + 2 + 3 = 6 ≤ 8
(1,2,4) ⇒ 1 + 2 + 4 = 7 ≤ 8
(1,2,5) ⇒ 1 + 2 + 5 = 8 ≤ 8
(1,3,4) ⇒ 1 + 3 + 4 = 8 ≤ 8
Function Description
Complete the function triplets in the editor below. The function must return a long integer denoting the number of (a, b, c) triplets satisfying the given conditions.
triplets has the following parameter(s):
t: an integer threshold
d[d[0],...d[n-1]]: an array of integers
Constraints
1 ≤ n ≤ 10^4
0 ≤ d[i] < 10^9
0 < t < 3 × 10^9
Input Format for Custom Testing
https://www.hackerrank.com/tests/eq4ditj2pt8/questions/52a88cea726c1





Sprinklr

(Is it open for Mtech CS ?)

IITK

Date - 14th October,2018
Profile - Product Engineer & Platform Software Engineer
3 coding questions / 1:45 Hour test on hackerearth

Codes provided by default in all the 3 questions can be completely removed. I was overwhelmed by the code for Q1 and I wrote complete new code from scratch and passed all cases.

Q1(150 marks) - Given a tree with N nodes and values assigned with them, root R, n-1 edges. You had to perform Q queries, queries can be of 2 types: (i) update i k: add k to the value ith node (ii) sum i: Report sum of subtree rooted at i.m
Constraints: N <= 10^5 ; k <= 10^7 No need to implement Segment Tree :(n^2 algo passes all cases)

Q2(50 marks)- You are given a function f(i) = f(i-1) * ($A*i^9$ + (B*i! + 1)*i^i + C*(i^(i^i))). Where A = a*m, B = A*(b+c), C = 5*B + ($A*\log_{10}(b*c)$)
Input:- n, m, a, b, c
Output:- f(n)%m
Solution- In case (n >= m) it's divisible by m so return 0;
In case(n < m) the problem boils down to (n^n * (n-1)^(n-1) * ….. * 1^1)%m as A, B and C are divisible by m.

Q3(100 marks)- You are given an array (length <= 10^5) of 0's and 1's. Is it possible to split array into 3 parts such that decimal value of all 3 parts is same? If possible, return the decimal value else return -1.
Solution - Count number of 1s. If 0, return 0. If not divisible by 3, return -1. Else divide by 3 and find the value: if you iterate from the back of given array, you can figure out the number of trailing zeros in the last split, say tz. Now you know the required number of 1s in each split and the number of trailing zeros as soon as you hit the last 1 of any split while scanning from left to right. Store the splits in vectors and remove leading zeros and compare - v1 != v2 or v2 != v3 then return -1. Else you already have the vector and you can report the desired value.

IITR

28th Oct-2018
Profile - Product Engineer & Platform Software Engineer
(4 coding question and 45 MCQ (mostly from OS) | 2 hour test)
1. Given a matrix where 0- blank, 1-plant, 2-source. Find the shortest distance from source to any of the boundary edges. You can traverse through 0 in any of the four directions(left, right, up, down).

2. Find the count of all the submatrices of a matrix of size mxn, such that the sum of the elements of the submatrices is divisible by given number P.

3. Given 3 fruit f1, f2 and f3. Energy per unit of these three fruits is 2, 3 and 5 respectively. Given cnt1, cnt2, cnt3 amount of these fruits and cost per unit of fruits f1, f2 and f3 is cost1, cost2 and cost3. Find the minimum cost such that the total energy gained after buying these fruits is S.
Example: count:[2, 2, 1]
cost [5, 5, 20] & S = 10
Ans: 20 if you buy 2 f1 and 2 f2.

4. There are N nodes. Each node has exactly 1 directed edge. You have to return the node from which maximum elements can be traversed.
For eg : N=3 and A[]={3,3,1}
So there is a directed edge from node 1 to node 3, from node 2 to node 3 and from node 3 to node 1;
So if we start from node 2 we can traverse all the elements.
Output : Return 2
(there was some problem in synchronising array indexes with given code. It's better if you delete whole code and write your own)

IIT KGP

28 MCQs of varying marks(2 / 4/ 6), 3 coding questions (1 of 100, 2 of 50), 314 marks, 90 mins

MCQ's based on C++, OS, COA, and some based on storage (don't recall ever seeing something like that in DBMS or any other subject)

100 marks coding question: Given an array of size N. Q queries given L, R, X (L, R 1-indexed),
Return the maximum between indices(both inclusive) L and R which have X set bits in binary representation. Ex: A = [1, 2, 3, 4, 5] Q = 1, => [3, 5, 2] => 3, 4, 5 fall in L, R. 3 & 5 have 2 set bits, maximum of which is 5. Return 5. Segment tree/ BIT implementation.
Solution:https://ide.geeksforgeeks.org/ZmGxP0pHsn

50 marks: Given infinite number of 3, 5, 10 denomination coins, how many ways can you generate a sum of x?
Sol: https://www.geeksforgeeks.org/count-number-ways-reach-given-score-game/

50 marks question: Given an array, choose two contiguous non-overlapping arrays, such that all elements are strictly increasing. Return the maximum length possible for this combination.
Ex: 7 1 2 4 6 5 3 8 9 10 => ans: 7 (Choose 1 2 4 6 & 8 9 10) I

IITG

Date: 4 Nov. 2018
(4 coding question and 45 MCQ (mostly from OS, Linux and Networks) | 2 hour test)

Q1) Given an array with non-negative elements and an integer K, find maximum sum of lengths of non-overlapping (contiguous)subarrays which have K as their maximum.

Q2) (Same as in KGP) 100 marks coding question: Given an array of size N. Q queries given L, R, X (L, R 1-indexed), Return the maximum number between indices(both inclusive) L and R which have X set bits in binary representation.
Ex: A = [1, 2, 3, 4, 5] Q = 1, => [3, 5, 2] => 3, 4, 5 fall in L, R. 3 & 5 have 2 set bits, maximum of which is 5. Return 5.
Segment tree/ BIT implementation. Solution:https://ide.geeksforgeeks.org/ZmGxP0pHsn

Q3) (Same as in IITR) 50 Marks: Given 3 fruit f1, f2 and f3. Energy per unit of these three fruits is 2, 3 and 5 respectively. Given cnt1, cnt2, cnt3 amount of these fruits and cost per unit of fruits f1, f2 and f3 is cost1, cost2 and cost3. Find the minimum cost such that the total energy gained after buying these fruits is S.
Example: count: [2, 2, 1]
cost [5, 5, 20] & S = 10
Ans: 20 if you buy 2 f1 and 2 f2.
Solution: Make an array containing cnt1 times 2, cnt2 times 3 and cnt3 times 5 as its elements. Now find the minimum cost subsequence which sums to S.
Use cost_i instead of count in this approach: https://www.geeksforgeeks.org/maximum-size-subset-given-sum/

Q4) Given a number X, following two operations with different costs can be performed on it
1. at Cost A: X → X-1 or X → X+1
2. at Cost B: X → X/2
Find minimum cost to reach this number X starting from 0.
Soln: (greedy) Start from X,
If X is 0, answer is 0.-
if X is even then one can reach X/2 in min(A*X/2, B) cost. answer will be min(A*X/2, B) + func(X/2).
If X is odd then make it even using A cost. answer will be A + min(func(X+1), func(X-1))
We are reaching to 0 in minimum **number** of operations. And at each operation the option with minimum **cost** is taken.
This solution is giving runtime error because there is no limit for x+1, Can someome please post another sol ?
- The solution above is correct, please check your implementation. X+1 will become (X+1)/2 in the next step. So convergence is guaranteed.

BFS should work

IIT-BHU

Same as IIT-G

NetApp

IITG

te - 13th October 2018
Profile - Software Developer
2 coding questions/45 mins on their own platform
30 MCQ questions/30 mins on their own platform
Coding question 1: Given an array of size n where each the ith index has the value i, count the number of subsequences whose product is even.You are given a grid of size m*n, where there are 3 types of values: 'X' invalid, '0' can be visited and '1' can be visited. You are stationed at (0,0) facing right. What is the maximum number of 1's that you can visit?
The condition is that you can do only two types of movements, either you can move one step to the direction you are faced, or you can move down and reverse your face.

Coding question 2:

The MCQ questions were based on OS, Networking concepts and General Aptitude.

IITK

Set 1:
Coding q1: GIven a number n, 1<=n<=10^18. Find all divisors of n. For each divisor d, count numbers less than d and co-prime to d (basically euler totient function, phi), and sum up these counts.
Ex. for n = 4, divisors are 1,2,4. phi(1) =1, phi(2) = 1, phi(4) = 2. So answer is 1+1+2 = 4

Set 2:
Coding q1: Repeated coding question 1 IITG. {even product subsequence}
Coding q2: Given a binary array find the longest non decreasing subsequence and return the product of number of zeros and ones.

APPDYNAMICS

IIT-G

Time: 90 minutes
Platform: Hackerrank
Total 15 questions , 12 mcqs and 3 coding :- Coding questions are relatively easy.
Mcqs are based on data structures (easy)..
* on XOR linked list
* on recursion tail
* on B-Trees
* on stack uses
* probability
* Aptitude
1) you will be given value of k and you need to find the value of n for which ;
n*(n+1) = 2*k; if integer value of n is not possible take the floor of n. The values are big so you need to use long or long long . I just simplified and given the main part of the question the actual question building was quite different.
2) Given an array you have to find the degree of divisibility of the array which is the max of divisibility of all elements then just multiply degree with 10^5 which was termed as **strength**. Then 2 terms were given no. of instructions and time for each instruction just calculate the total time by multiplying and if this value is greater than the strength return 1 else return 0.
- very easy problem
3) Have to construct a k-ary tree and then the from the given node have to traverse and return the number of nodes containing prime values.

Please update 2 more questions +102

IIT D

Questions: https://imgur.com/a/PIXIxR8
Go, slay them. Good luck.

IITK

1. https://www.careercup.com/question?id=5721734273564672

2. Simple Ad-hoc question. Hardest part was to understand the question itself.
Key-value pairs were given as strings, and if a key appears once again, then you need to update the value of that key every time. And return the values in the order in which their keys appeared first.

3. Undirected unweighted graph was given. We need to return nodes in increasing order of the distance from a given source. Simply apply BFS to find distances of all nodes, sort nodes according to distances and return.

4. MCQs based on trees, B-trees, time complexity, sql queries, etc. (Simple GATE level)

IIT R

1. Simple ad hoc math question. (Bruteforce)
2. No of co primes with a number in a given range (Bruteforce)
3. Similar to rod cutting but no DP. (Bruteforce)

a - The electro-mechanical cipher machine was developed to protect communication in the mid-20th century. Following the principles of the Enigma, a modified Enigma ne is developed having *rotorCount* rotors labeled from *1* to *rotorCount*. Each rotor has a value that can be set between *minRotorValue* and *maxRotorValue*, inclusive. To make achine work, the values set in the 2^{nd} through rotorCountth rotors should have a greatest common divisor with rotor *1* of *1*. In other words, they should be set to a number that rime with the setting of rotor *1*. The R & D department of the corporation building the system has employed you to calculate the number of possible configurations in which tors can be set.

ample, assume you have *rotorCount = 3* rotors and a range of *minRotorValue = 2* and *maxRotorValue = 4*. Our permutations are *(2, 3, 3), (3, 2, 2), (3, 2, 4), (3, 4, 2), (3, 4, 4) and)*. All of the other permutations are invalid due to the greatest common denominator constraint, so there are *6* valid configurations. To further demonstrate the reasoning, of the invalid permutations are *(2, 3, 2), (2, 3, 4), (2, 2, 2)*.

on Description

lete the function *calculateTotalRotorConfiguration* in the editor below. The function must return an integer denoting the number of valid settings under the given constraints. number of valid settings may be quite large, return this value modulo *1000000007* or $(10^9 + 7)$.

ateTotalRotorConfiguration has the following parameter(s):

rCount: an integer

RotorValue: an integer

RotorValue: an integer

raints

≤ *rotorCount* ≤ 100

≤ *minRotorValue, maxRotorValue* ≤ 10^5

☆ Find the Sequence Sum

Given three integers, *i, j,* and *k,* we define a *sequence sum* to be the value of $i + (i + 1) + (i + 2) + (i + 3) + ... + j + (j - 1) + (j - 2) + (j - 3) + ... + k$. Given values *i, j,* and *k,* calculate the sequence sum as described.

For example, $i = 5$, $j = 9$, and $k = 6$. We sum all the values from *i* to *j* and back to *k*: $5 + 6 + 7 + 8 + 9 + 8 + 7 + 6 = 56$.

Function Description

Complete the function *getSequenceSum* in the editor below. The function must return a long integer denoting the value of the sequence sum.

getSequenceSum has the following parameter(s):

i, j, k: three integers

Constraints

- $-10^8 \le i, j, k \le 10^8$
- $i, k \le j$

Cutting Metal Surplus

wner of a metal rod factory has a surplus of rods of arbitrary lengths. A local contractor offers to buy any of the factory's surplus as long as all the rods have the same exact er length, referred to as *saleLength*. The factory owner can increase the number of sellable rods by cutting each rod zero or more times, but each cut has a cost denoted by *erCut*. After all cuts have been made, any leftover rods having a length other than *saleLength* must be discarded for no profit. The factory owner's total profit for the sale is ated as:

$$totalProfit = totalUniformRods \times saleLength \times salePrice - totalCuts \times costPerCut$$

totalUniformRods is the number of sellable rods, *salePrice* is the per-rod price that the contractor agrees to pay, and *totalCuts* is the total number of times the rods needed to t.

ample, the owner has three rods, *lengths = [30, 59, 110]*. The *costPerCut = 1* and the *salePrice = 10* per unit length. The following are tests based on lengths that are factors of e length of the shortest bar. Factors of other lengths might also be tested, but this will demonstrate the methodology.

```
                Cuts
            --------------------
gth  Rod    Extra   Regular Total   Pieces
-------------------------------------------
    30      0       0       0       1
    59      1       0       1       1
    110     1       2       3       3
    Revenue = (10*5*30)-(1*4) = 1496
    30      0       1       1       2
    59      1       2       3       3
    110     1       6       7       7
    Revenue = (10*12*15)-(1*11) = 1789
    30      0       2       2       3
    59      1       4       5       5
```

KGP

1.5 hr test

Hackerrank platform
12 MCQs + 3 coding questions
- Given an array(element 1 or -1) of size n you have to return minimum integer k such that sum_of_elements(0 to k)>sum_of_element(k+1 to n-1)
- https://www.geeksforgeeks.org/roll-characters-string/
Same question O(n) solution(easy)
- https://drive.google.com/file/d/1vkAT9IqPARME5C2TVZYhRfViQbpBlnB1/view
Dp solution of table size 2*n please share the approach +6(solution)
MCQs based on B-trees, general aptitude, binary trees, BST, data structures, algo, find C given no. of internal and leaf nodes in a full C-ary tree, Linear Probing in Hash tables

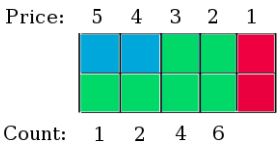
B

1.5 hr test
Hackerrank platform
12 MCQs + 3 coding questions
1) https://practice.geeksforgeeks.org/problems/ticket-sellers/0

☆ Ticket Resellers

There is a row of ticket resellers outside of a hockey game. Ticket prices are variable and based on the number of tickets a reseller has: one unit price for each ticket in hand. For example, a reseller has *3* tickets to sell. The first would be priced at *3*, the second at *2* and the last at *1*. To maximize their profits, they decide to pool their tickets and offer the highest priced ones first.

For example, there are two resellers with *a = [3, 5]* tickets to sell. They have buyers for six of them. Maximum profit is made by selling *1* for *5*, *1* for *4*, and *2* each at *3* and *2*. This leaves each reseller with a single ticket, and their income is *5 + 4 + 2*3 + 2*2 = 19*.



Maximizing profit from pooled ticket sales. Green represents tickets sold, red squares are tickets retained. Blue squares are empty.

Function Description
Complete the function *maximumAmount* in the editor below. The function must return the maximum revenue achievable as a long integer.

maximumAmount has the following parameter(s):
a[a[0],...a[n-1]]: an array of integers representing tickets available per reseller
k: a long integer, the number of tickets to be sold

2) https://www.hackerrank.com/challenges/string-similarity/problem

☆ Username Disparity

Given two usernames, the degree of similarity is defined as the length of the longest prefix common to both strings. In this challenge, you will be given a string. You must break the string to create ever shorter suffixes, then determine the similarity of the suffix to the original string. Do this for each suffix length from the length of the string to 0, and cumulate the results.

As an example, consider the string 'ababa'. Compare all suffixes to the original string.

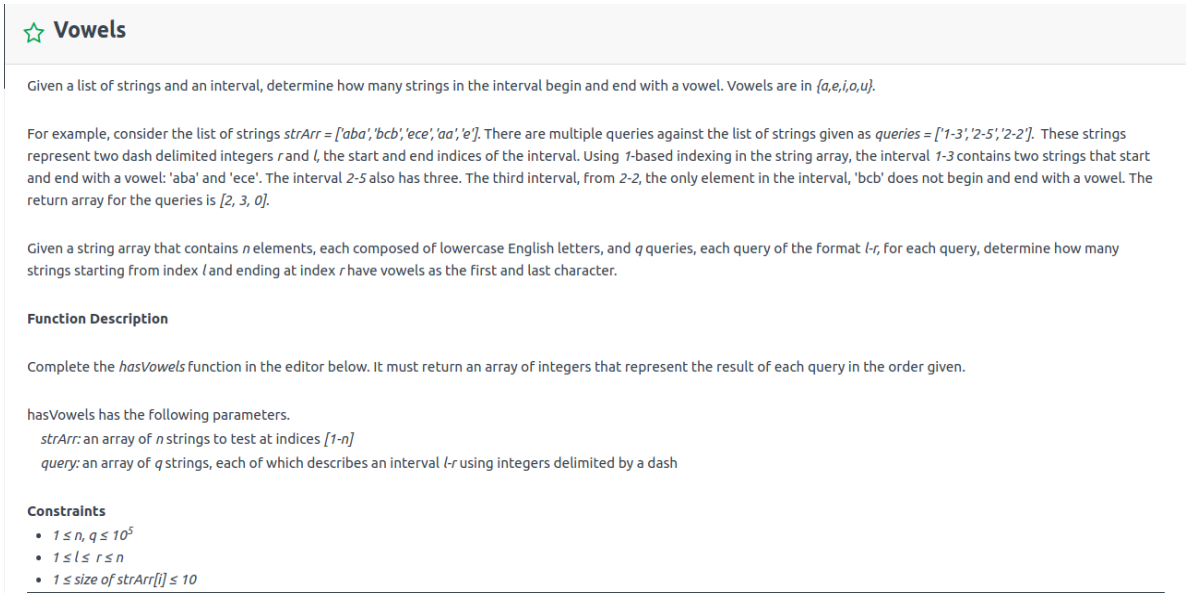
Discard	Suffix	Similarity	Length
''	'ababa'	'ababa'	5
'a'	'baba'	''	0
'ab'	'aba'	'aba'	3
'aba'	'ba'	''	0
'abab'	'a'	'a'	1
'ababa'	''	''	0

So our sum is 5 + 0 + 3 + 0 + 1 + 0 = 9

Function Description
Complete the function *usernameDisparity* in the editor below. The function must return an integer array of the sums of the similarities for each test case.

usernameDisparity has the following parameter(s):
inputs[inputs[0],...inputs[n-1]]: an array of username strings to process

3) Given a list of strings and an interval find how many strings in interval begin and end in vowel
Eg: input list of string -> oru,abc,ace,eyu,dghu,uo & interval = (2,4)
Then output = 2 (because in 2-4 , string 3 and 4 start and end in vowel)



☆ Vowels

Given a list of strings and an interval, determine how many strings in the interval begin and end with a vowel. Vowels are in *{a,e,i,o,u}*.

For example, consider the list of strings *strArr = ['aba', 'bcb', 'ece', 'aa', 'e']*. There are multiple queries against the list of strings given as *queries = ['1-3', '2-5', '2-2']*. These strings represent two dash delimited integers *r* and *l*, the start and end indices of the interval. Using *1*-based indexing in the string array, the interval *1-3* contains two strings that start and end with a vowel: 'aba' and 'ece'. The interval *2-5* also has three. The third interval, from *2-2*, the only element in the interval, 'bcb' does not begin and end with a vowel. The return array for the queries is *[2, 3, 0]*.

Given a string array that contains *n* elements, each composed of lowercase English letters, and *q* queries, each query of the format *l-r*, for each query, determine how many strings starting from index *l* and ending at index *r* have vowels as the first and last character.

Function Description

Complete the *hasVowels* function in the editor below. It must return an array of integers that represent the result of each query in the order given.

hasVowels has the following parameters.

strArr: an array of *n* strings to test at indices *[1-n]*

query: an array of *q* strings, each of which describes an interval *l-r* using integers delimited by a dash

Constraints

- $1 \le n, q \le 10^5$
- $1 \le l \le r \le n$
- *1 ≤ size of strArr[i] ≤ 10*

FORTANIX

2 Questions in 45 minutes on co-cubes

IITK

Date: 14/10/18
1) https://www.geeksforgeeks.org/given-an-array-arr-find-the-maximum-j-i-such-that-arrj-arri/
2) https://www.geeksforgeeks.org/wildcard-pattern-matching/
(1 DP question and 1 other question afaik)
SET 2
1)https://www.geeksforgeeks.org/maximum-product-of-4-adjacent-elements-in-matrix/
2)https://www.geeksforgeeks.org/wildcard-pattern-matching/

SET 3
1)https://www.geeksforgeeks.org/transform-one-string-to-another-using-minimum-number-of-given-operation/
2)https://www.geeksforgeeks.org/write-c-code-to-determine-if-two-trees-are-identical/

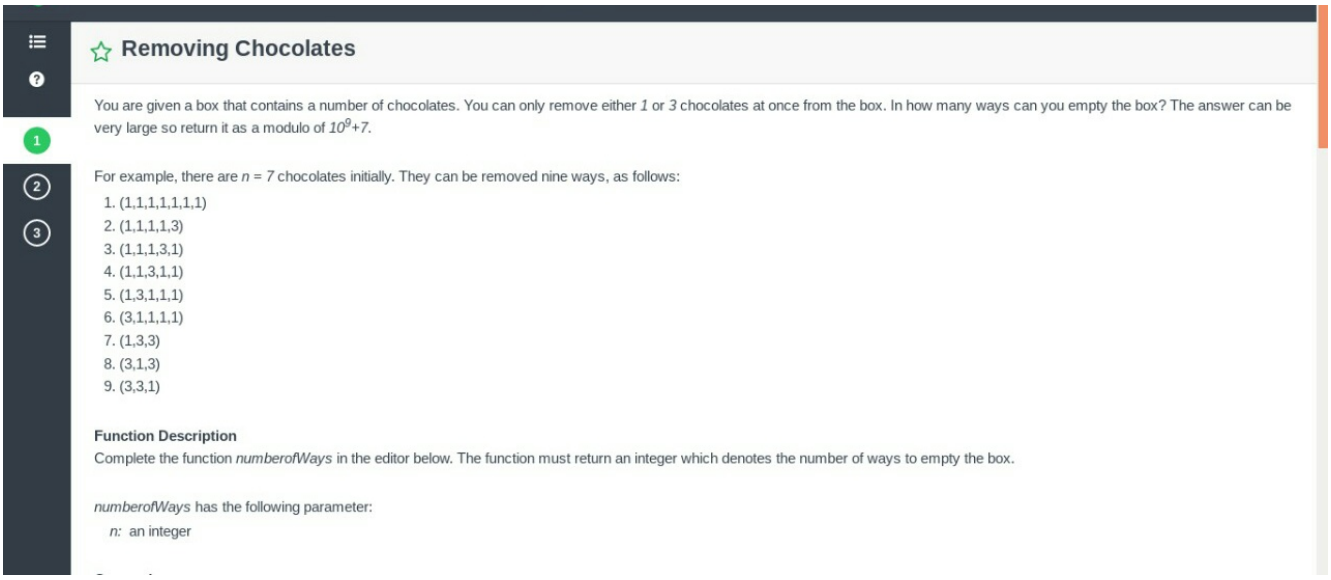
SHUTTL

IITK

Software engineer:
14 questions (10 multiple choice + 4 coding) on HackerRank
Business Analyst:
60 MCQ in 60 min. (type is same as of Pariksha but bit tougher than that)
Important - Time management

Euler

IITH

1. 

Removing Chocolates

You are given a box that contains a number of chocolates. You can only remove either *1* or *3* chocolates at once from the box. In how many ways can you empty the box? The answer can be very large so return it as a modulo of 10^9+7.

For example, there are *n = 7* chocolates initially. They can be removed nine ways, as follows:

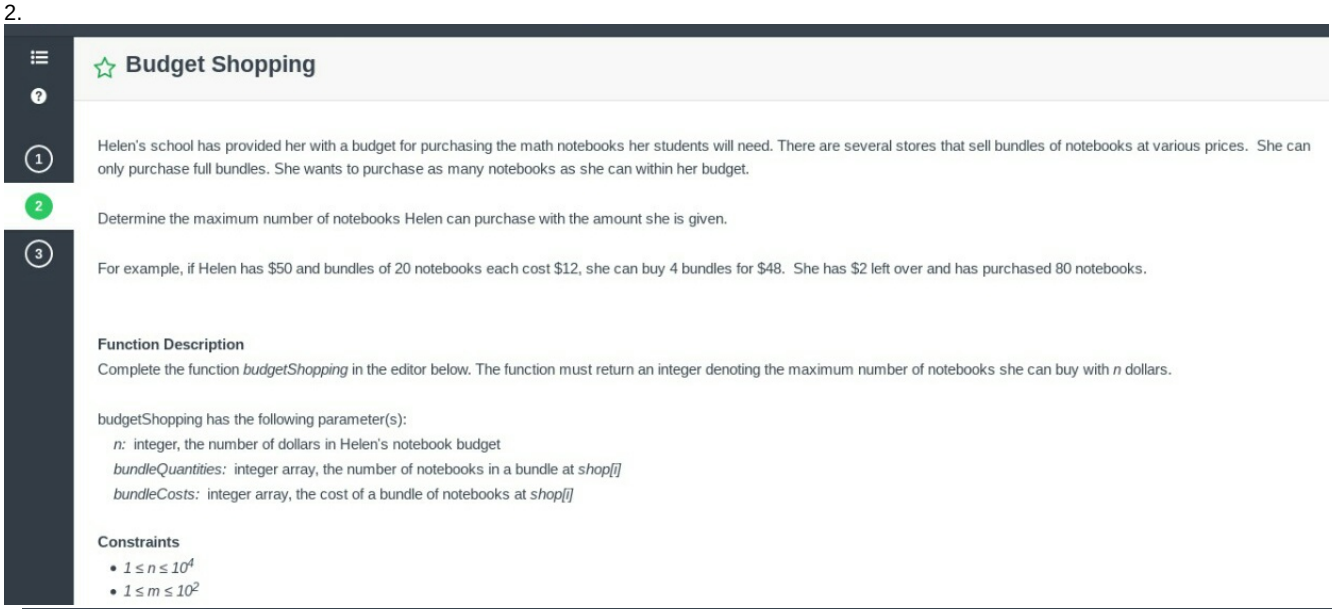
1. (1,1,1,1,1,1,1)
2. (1,1,1,1,3)
3. (1,1,1,3,1)
4. (1,1,3,1,1)
5. (1,3,1,1,1)
6. (3,1,1,1,1)
7. (1,3,3)
8. (3,1,3)
9. (3,3,1)

Function Description

Complete the function *numberofWays* in the editor below. The function must return an integer which denotes the number of ways to empty the box.

numberofWays has the following parameter:

n: an integer

2. 

Budget Shopping

Helen's school has provided her with a budget for purchasing the math notebooks her students will need. There are several stores that sell bundles of notebooks at various prices. She can only purchase full bundles. She wants to purchase as many notebooks as she can within her budget.

Determine the maximum number of notebooks Helen can purchase with the amount she is given.

For example, if Helen has $50 and bundles of 20 notebooks each cost $12, she can buy 4 bundles for $48. She has $2 left over and has purchased 80 notebooks.

Function Description

Complete the function *budgetShopping* in the editor below. The function must return an integer denoting the maximum number of notebooks she can buy with *n* dollars.

budgetShopping has the following parameter(s):

n: integer, the number of dollars in Helen's notebook budget

bundleQuantities: integer array, the number of notebooks in a bundle at *shop[i]*

bundleCosts: integer array, the cost of a bundle of notebooks at *shop[i]*

Constraints

- $1 \le n \le 10^4$
- $1 \le m \le 10^2$

3. 

- $1 \le bundleQuantities[i] \le 20$
- $1 \le bundleCosts[i] \le 200$

▸ Input Format For Custom Testing

▾ Sample Case 0

Sample Input

```
50
2
20
19
2
24
20
```

Sample Output

```
40
```

Explanation

Helen has *n = 50* dollars to purchase notebooks from the *m = 2* stores described by *bundleQuantities = [20, 19]* and *bundleCosts = [24, 20]*. She makes the following purchases:

- One bundle of *20* notebooks from shop *0* at a cost of *24* dollars and has $n = 50 - 24 = 26$ dollars left.
- One bundle of *20* notebooks from shop *0* at a cost of *24* dollars and has *26 - 24 = 2* dollars left.

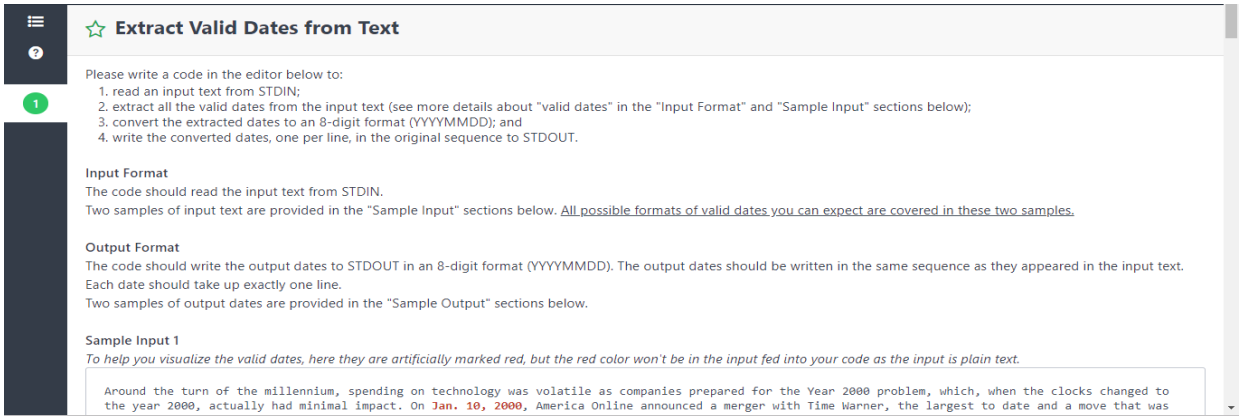
Helen can't afford any more notebooks, so we return *20 + 20 = 40*.

3. Gold Mine problem. Collect maximum gold coin and return back to (0,0).

Trexquant

IITK, IITM, IITB, IITD

Platform - Hackerrank
(Python allowed)



☆ **Extract Valid Dates from Text**

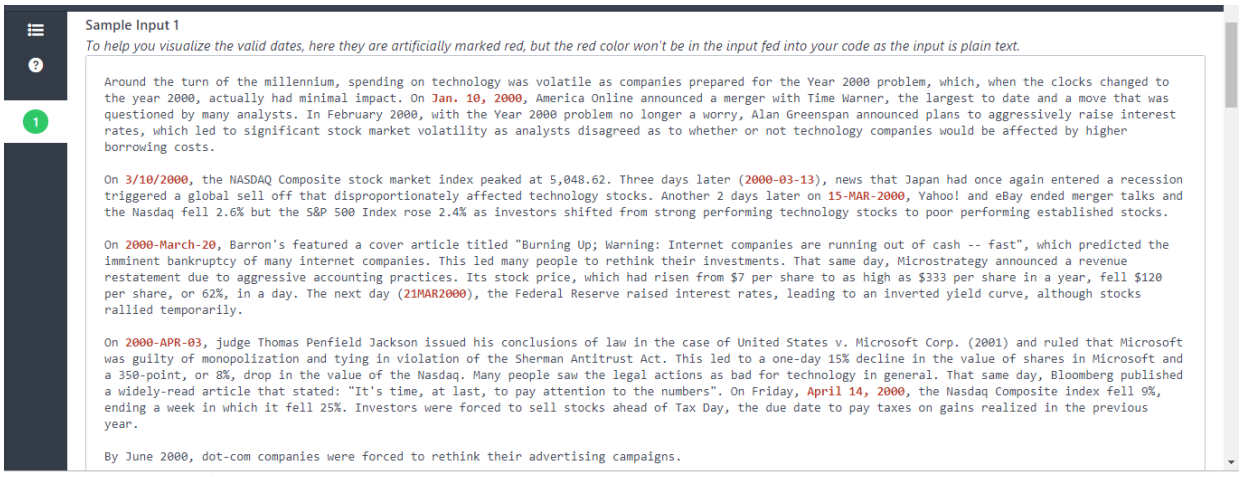
Please write a code in the editor below to:
1. read an input text from STDIN;
2. extract all the valid dates from the input text (see more details about "valid dates" in the "Input Format" and "Sample Input" sections below);
3. convert the extracted dates to an 8-digit format (YYYYMMDD); and
4. write the converted dates, one per line, in the original sequence to STDOUT.

Input Format
The code should read the input text from STDIN.
Two samples of input text are provided in the "Sample Input" sections below. All possible formats of valid dates you can expect are covered in these two samples.

Output Format
The code should write the output dates to STDOUT in an 8-digit format (YYYYMMDD). The output dates should be written in the same sequence as they appeared in the input text.
Each date should take up exactly one line.
Two samples of output dates are provided in the "Sample Output" sections below.

Sample Input 1
To help you visualize the valid dates, here they are artificially marked red, but the red color won't be in the input fed into your code as the input is plain text.

```
Around the turn of the millennium, spending on technology was volatile as companies prepared for the Year 2000 problem, which, when the clocks changed to
the year 2000, actually had minimal impact. On Jan. 10, 2000, America Online announced a merger with Time Warner, the largest to date and a move that was
```



Sample Input 1
To help you visualize the valid dates, here they are artificially marked red, but the red color won't be in the input fed into your code as the input is plain text.

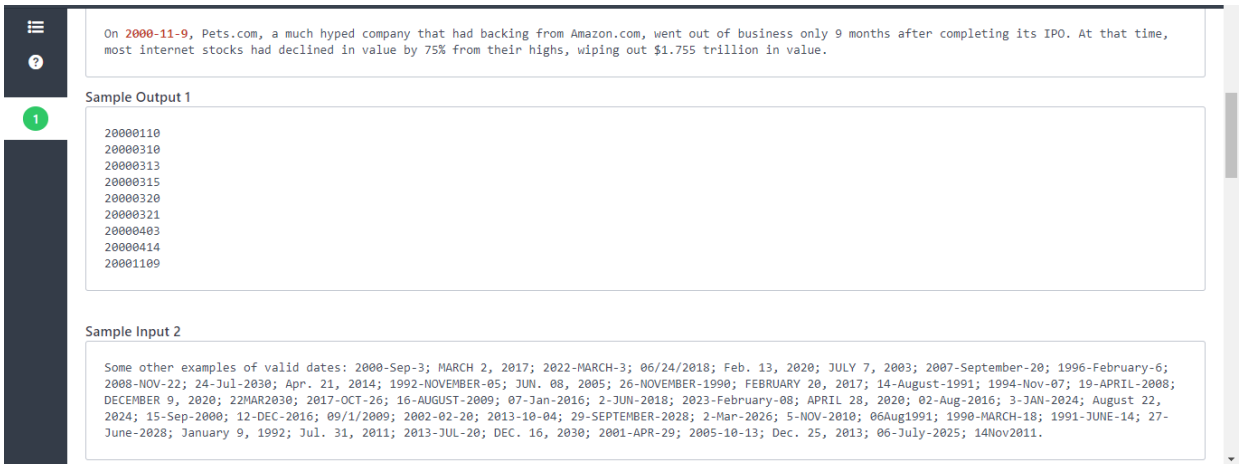
```
Around the turn of the millennium, spending on technology was volatile as companies prepared for the Year 2000 problem, which, when the clocks changed to
the year 2000, actually had minimal impact. On Jan. 10, 2000, America Online announced a merger with Time Warner, the largest to date and a move that was
questioned by many analysts. In February 2000, with the Year 2000 problem no longer a worry, Alan Greenspan announced plans to aggressively raise interest
rates, which led to significant stock market volatility as analysts disagreed as to whether or not technology companies would be affected by higher
borrowing costs.

On 3/10/2000, the NASDAQ Composite stock market index peaked at 5,048.62. Three days later (2000-03-13), news that Japan had once again entered a recession
triggered a global sell off that disproportionately affected technology stocks. Another 2 days later on 15-MAR-2000, Yahoo! and eBay ended merger talks and
the Nasdaq fell 2.6% but the S&P 500 Index rose 2.4% as investors shifted from strong performing technology stocks to poor performing established stocks.

On 2000-March-20, Barron's featured a cover article titled "Burning Up; Warning: Internet companies are running out of cash -- fast", which predicted the
imminent bankruptcy of many internet companies. This led many people to rethink their investments. That same day, Microstrategy announced a revenue
restatement due to aggressive accounting practices. Its stock price, which had risen from $7 per share to as high as $333 per share in a year, fell $120
per share, or 62%, in a day. The next day (21MAR2000), the Federal Reserve raised interest rates, leading to an inverted yield curve, although stocks
rallied temporarily.

On 2000-APR-03, judge Thomas Penfield Jackson issued his conclusions of law in the case of United States v. Microsoft Corp. (2001) and ruled that Microsoft
was guilty of monopolization and tying in violation of the Sherman Antitrust Act. This led to a one-day 15% decline in the value of shares in Microsoft and
a 350-point, or 8%, drop in the value of the Nasdaq. Many people saw the legal actions as bad for technology in general. That same day, Bloomberg published
a widely-read article that stated: "It's time, at last, to pay attention to the numbers". On Friday, April 14, 2000, the Nasdaq Composite index fell 9%,
ending a week in which it fell 25%. Investors were forced to sell stocks ahead of Tax Day, the due date to pay taxes on gains realized in the previous
year.

By June 2000, dot-com companies were forced to rethink their advertising campaigns.
```



```
On 2000-11-9, Pets.com, a much hyped company that had backing from Amazon.com, went out of business only 9 months after completing its IPO. At that time,
most internet stocks had declined in value by 75% from their highs, wiping out $1.755 trillion in value.
```

Sample Output 1

```
20000110
20000310
20000313
20000315
20000320
20000321
20000403
20000414
20001109
```

Sample Input 2

```
Some other examples of valid dates: 2000-Sep-3; MARCH 2, 2017; 2022-MARCH-3; 06/24/2018; Feb. 13, 2020; JULY 7, 2003; 2007-September-20; 1996-February-6;
2008-NOV-22; 24-Jul-2030; Apr. 21, 2014; 1992-NOVEMBER-05; JUN. 08, 2005; 26-NOVEMBER-1990; FEBRUARY 20, 2017; 14-August-1991; 1994-Nov-07; 19-APRIL-2008;
DECEMBER 9, 2020; 22MAR2030; 2017-OCT-26; 16-AUGUST-2009; 07-Jan-2016; 2-JUN-2018; 2023-February-08; APRIL 28, 2020; 02-Aug-2016; 3-JAN-2024; August 22,
2024; 15-Sep-2000; 12-DEC-2016; 09/1/2009; 2002-02-20; 2013-10-04; 29-SEPTEMBER-2028; 2-Mar-2026; 5-NOV-2010; 06Aug1991; 1990-MARCH-18; 1991-JUNE-14; 27-
June-2028; January 9, 1992; Jul. 31, 2011; 2013-JUL-20; DEC. 16, 2030; 2001-APR-29; 2005-10-13; Dec. 25, 2013; 06-July-2025; 14Nov2011.
```

Squarepoint Capital

IITD

2 MCQ + 4 Coding + 1 approx. solution type
Time - 1.5 hrs
Platform - HackerRank
Languages allowed - C,C++,Python (No Java)

MCQs were on basic Data Structures and OOPS.
Almost all of the coding ques. were of Dynamic Programming

1. https://www.geeksforgeeks.org/coin-change-dp-7/
2. https://leetcode.com/discuss/interview-question/124943/dynamic-programming/125712
3. https://leetcode.com/problems/count-binary-substrings/solution/
4. https://www.geeksforgeeks.org/longest-palindromic-subsequence-dp-12/

Credit Suisse

IITK

Risk Management profile

Open for Mtech, Dual all depts., CTC – 14.7 Lakh pa
1 hour-20 question, hosted on Hackerearth. CPI cutoff around 8
Question based on Prob and Stats, Linear Algebra, limits, calculus, series with more focus on prob and stats
Some of question asked:

- ydx+dy(x-y^2)=0, then some derivative question asked about the equation after solving it.
- Integral of dx/(x^2017-x) with some limits
- lim(t->x) (f(x)*t^2-f(t)*x^2)/(t-x), question was to find function satisfying relation with some initial value
- x^2+2x+6=0, if r is root of this eqn, value of (r+2)(r+3)(r+4)(r+5)
- lim(x->0) (x^2*sin(1/x)+2x)/((1+x)^(1/x)-e)
- Power of 3 in multiplication of first 100 odd numbers

IITKGP

Exactly same questions as IITD

IIT B

Exactly same as IITD

PUBLICIS SAPIENT

IIT BHU

20 aptitude question, 2 programming (20 mins for aptitude, 90 mins for programming)

1. Number to string conversion- eg. 1253 gives ABEC.
2. https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/ same question with different language.

IITR

Same pattern as in BHU followed by an audio video test on hirepro platform.
Programming Questions-
1.Find the sum of elements of given array and print the 8-bit binary representation of the sum.If sum overflows(i.e. sum>255) then print the 8 least significant bits.
2. Easy Greedy Problem. Please specify the question if possible?

IITG

Same pattern as in BHU and Roorkee. Programming Questions were same as Roorkee.

IITB

Hire pro platform(75 minutes)
Two Coding question asked:-

1. Same as coin change problem
2. A number is given, we have to swap two digit to get the highest even number.
   Example:- 54671---> swap digit 6 and 1 → 54176

IITM

1. Two arrays given, One represents Set A and other represents Set B. Print set difference A-B. (original order of set A elements to be preserved)
   a. Ex : A = [5, 2, 8, 0, 4, 6, 3] and B=[1, 2, 3 ,4], print [5, 8, 0, 6].
2. Array of numbers given. Rearrange them so that the largest element is at the center, second largest to the left of max, third largest to the right of max, fourth largest to the left of second max and so on.
   a. Ex : [56, 34, 87, 13, 77, 99] should print 13, 56, 87, 99, 77, 34

IIT Kgp

Sapient

Sun, Oct 28

Group: Coding | Section: Language Coding 1

Write a program to find out the nearest palindromic number (absolute difference is min) for a given number *n*. If there are two equi-distant palindromes, print the higher palindrome.

Note: A palindromic number is a number that remains the same when its digits are reversed eg. 4884

Read the input from STDIN and write the output to STDOUT.
You should not write arbitrary strings while reading the input or while printing as these contribute to the standard output.

Input Format:
The input will be an integer *n*.

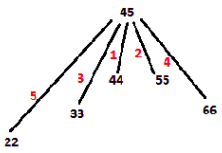
Output Format:
The output contains the nearest palindrome number for the given number *n*.

Constraints:
The input *n* should be a long integer number within the range of 0 to 2^{31}.

Sample Input:
45

Sample Output:
44

Explanation:
The nearest palindrome number of 45 is 44 as explained below.



45 - 44 = 1 (1st)
55 - 45 = 10 (2nd)
45 - 33 = 12 (3rd)
66 - 45 = 21 (4th)
45 - 22 = 23 (5th)

Group: Coding | Section: Language Coding 2 21 / 22

Q : 21 | Mark:10

Max is on a quest to collect gold coins. He has come across a series of open crates which are filled with gold coins of varying quantities. He is free to collect the coins from any crate, however as soon as he collects the coins from one crate, the crates before and after that particular crate vanish, which means he can no longer collect the coins in both those crates. Obviously, Max wants to collect as many gold coins as possible.

Given a series of crates and the gold coins inside them, write a program to help Max collect the maximum number of gold coins.

You must read the input from STDIN (standard input) and write the output to STDOUT (standard output).
Do not print any arbitrary strings while reading the input or printing the output as those would contribute to STDOUT.

Input:
The first line of input consists of an integer N, the number of crates.
The second line of input consists of N numbers representing the number of gold coins in each crate.

Output:
The output should consist of the maximum number of gold coins that can be collected by Max.

Constraints:
I) The number of crates *N*, $0 < N \leq 10^4$.
II) Number of gold coins in each crate *C*, $0 \leq C \leq 10^9$.

Sample Input1:
5
1 2 3 4 5

Sample Output1:
9

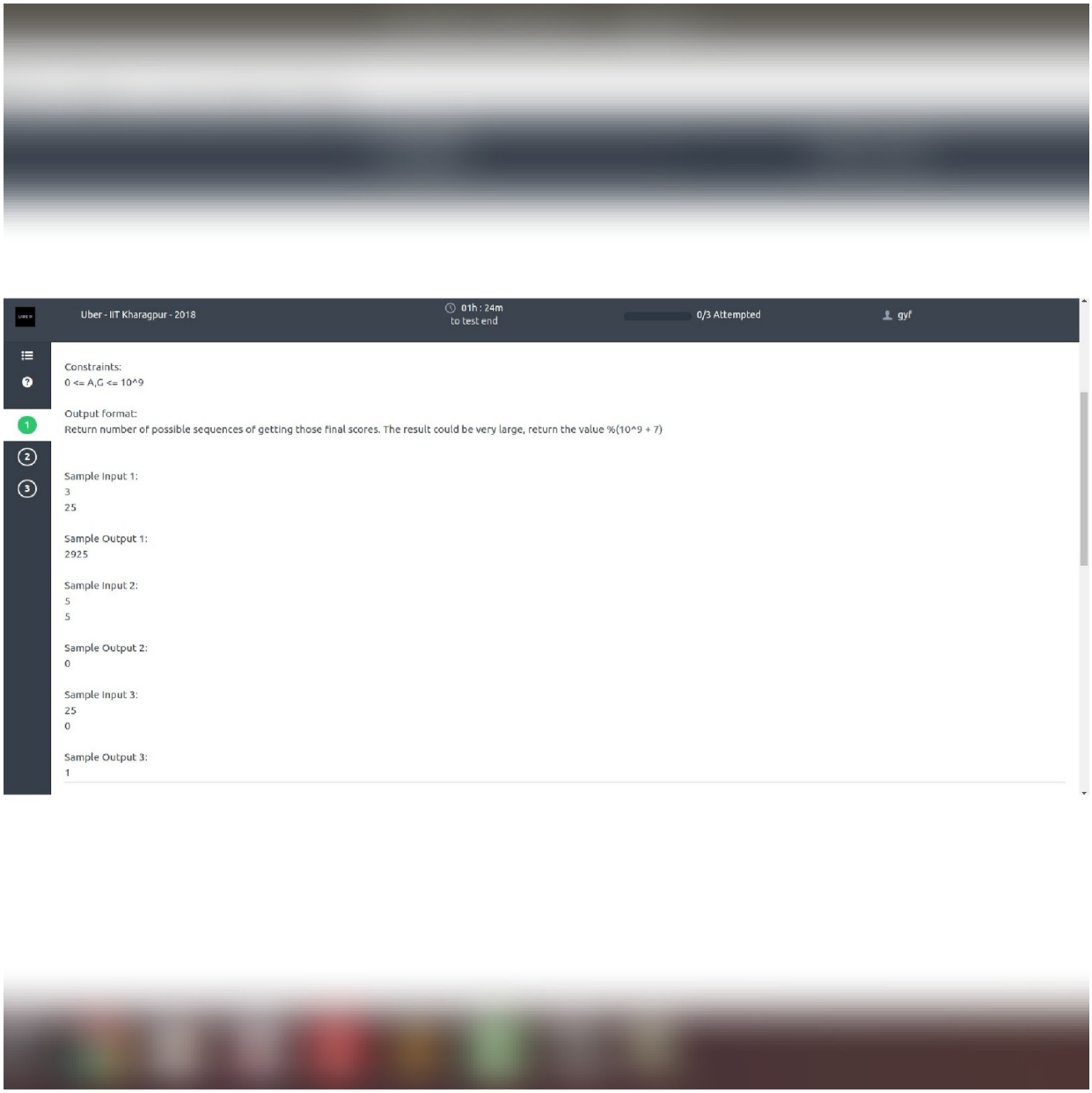
Explanation:
5 - Represents number of crates
1 2 3 4 5 - Represents the gold coins inside each crate. The first crate has 1, the second has 2 and so on.

If Max collects gold coins from 1st, 3rd and 5th crates, he will get 9 gold coins (1+3+5) which is the maximum number of gold coins he can collect. Other 4 possible ways in which he can collect gold coins is, from 2nd and 4th crates, i.e. (2+4=6), from 2nd and 5th crates, i.e. (2+5=7), from 1st and 4th crates, i.e. (1+4=5) & from 1st and 5th crates, i.e. (1+5=6). He cannot obtain more than 9 gold coins in any other case.

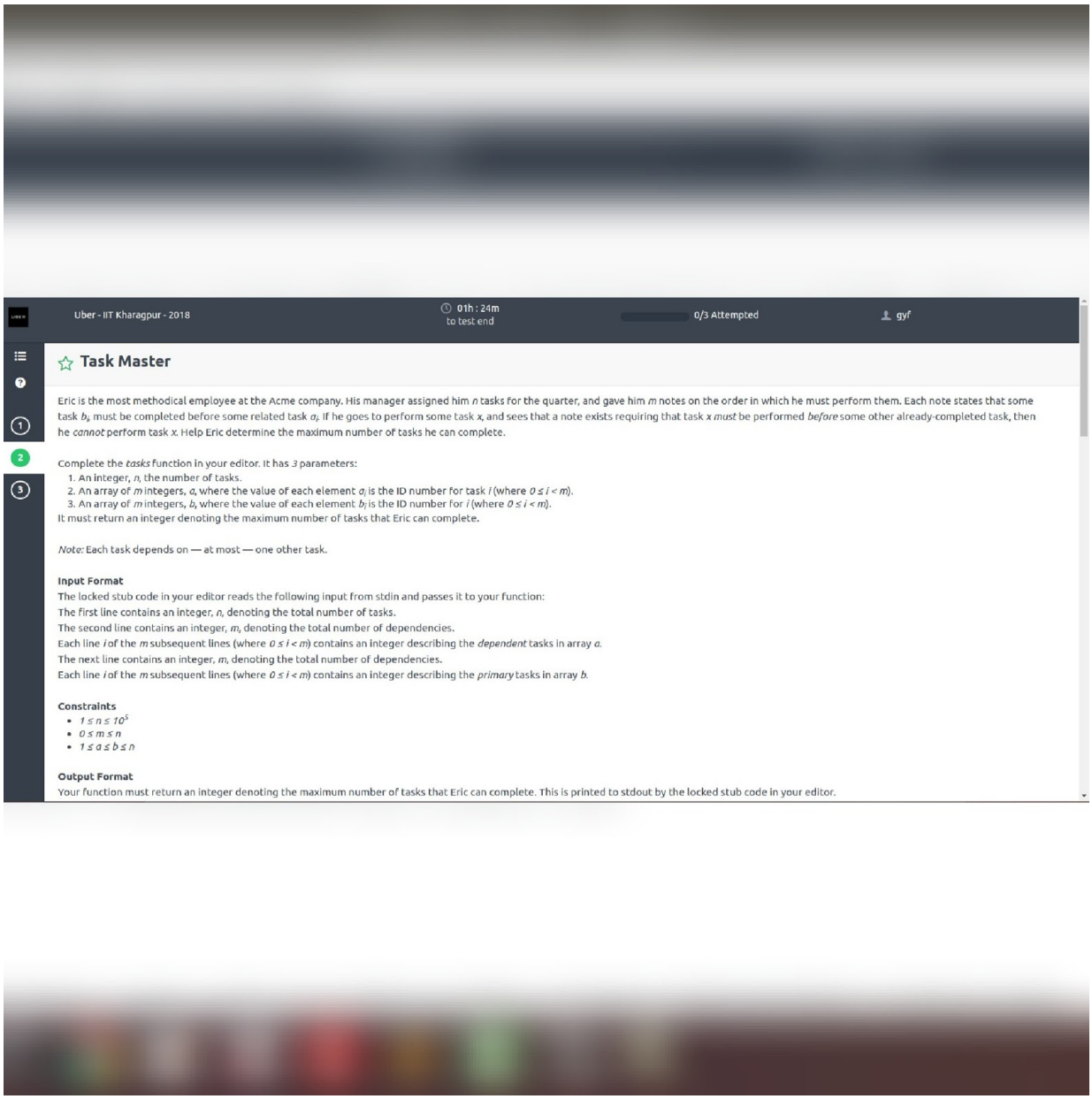
Therefore the output would be 9, the maximum he can collect.

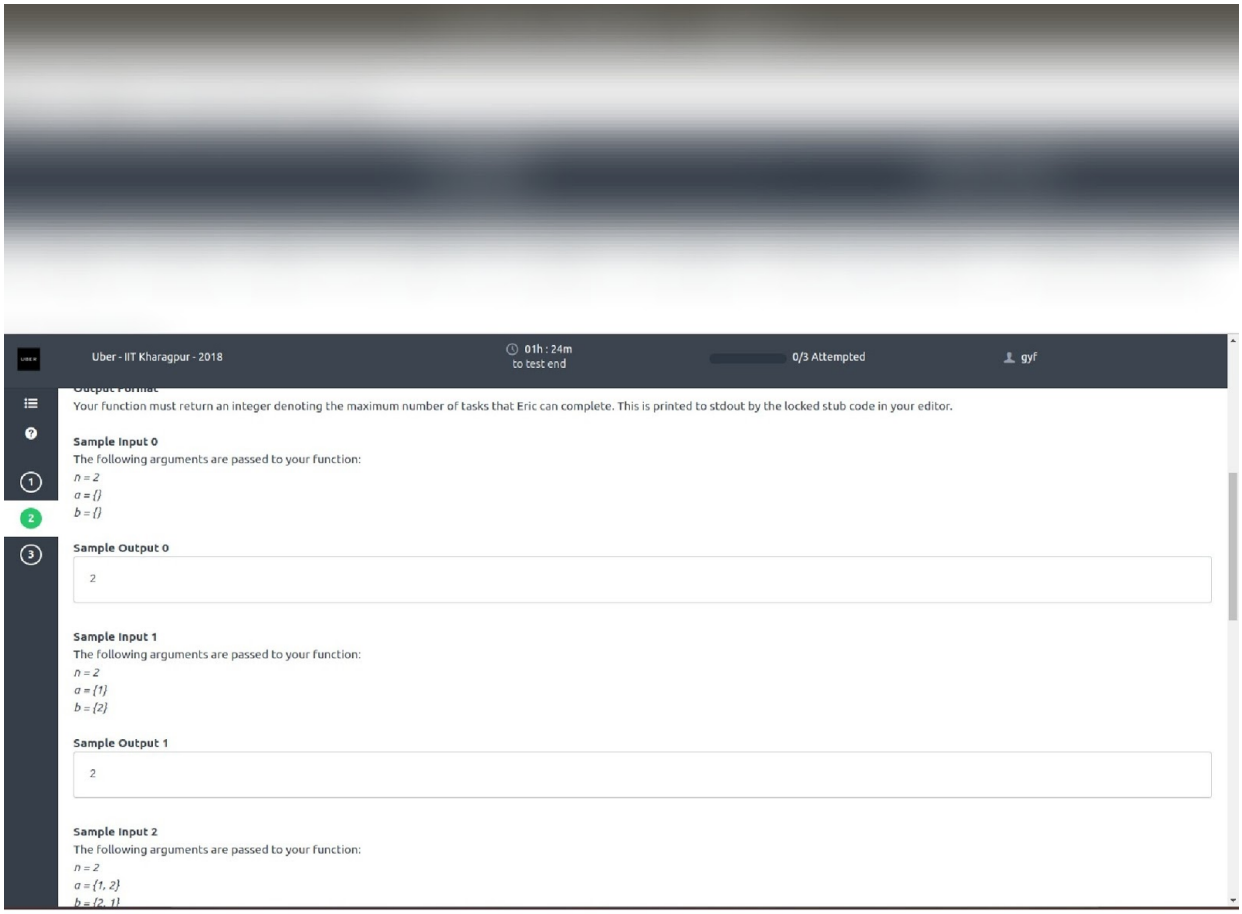
UBER

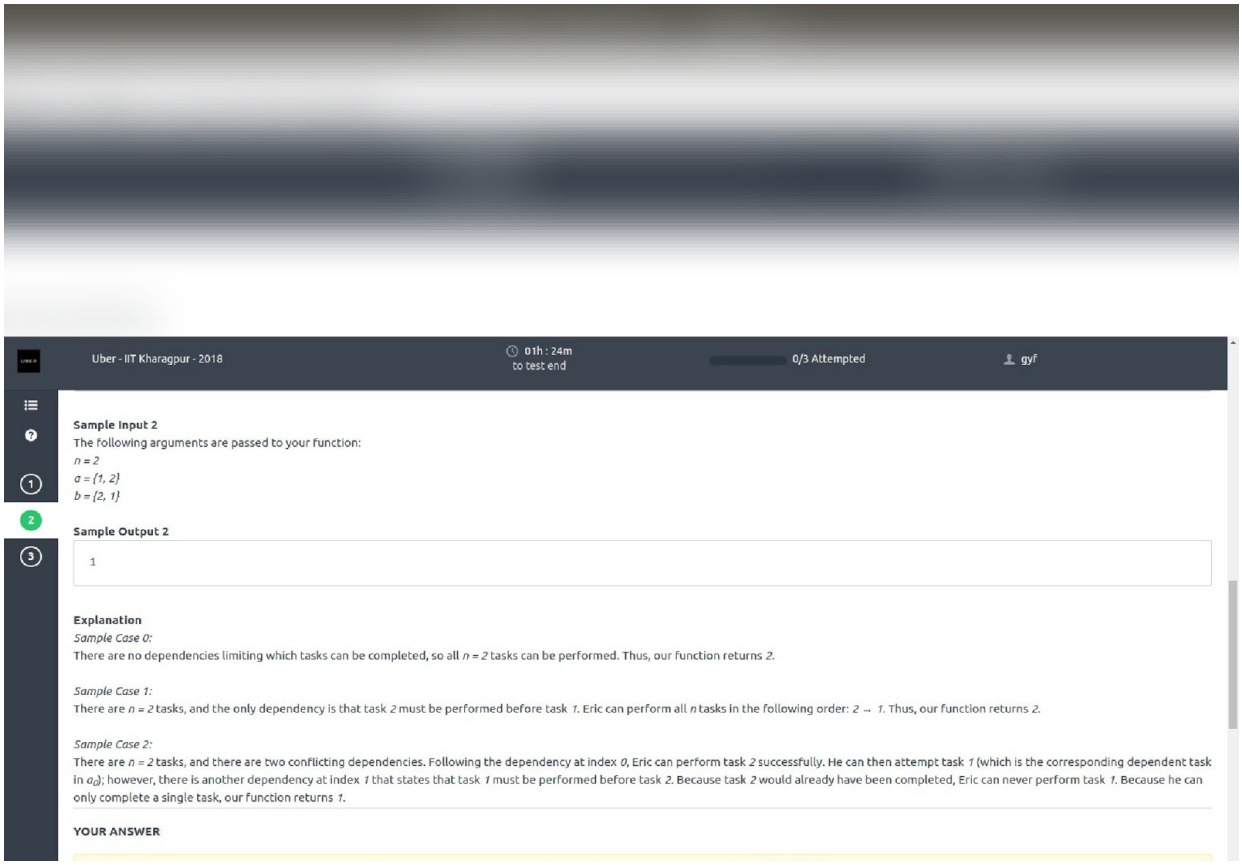
IIT-KGP

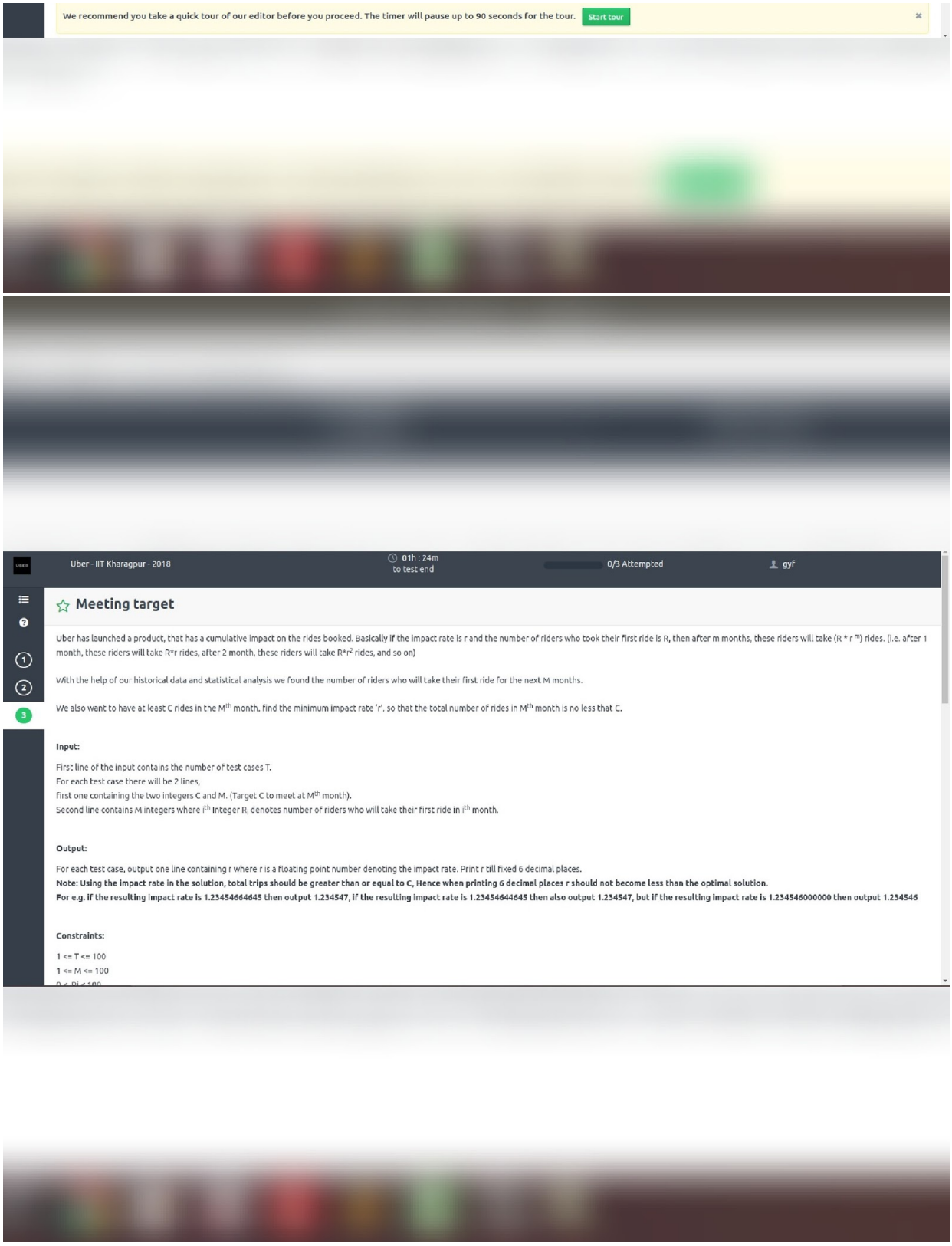


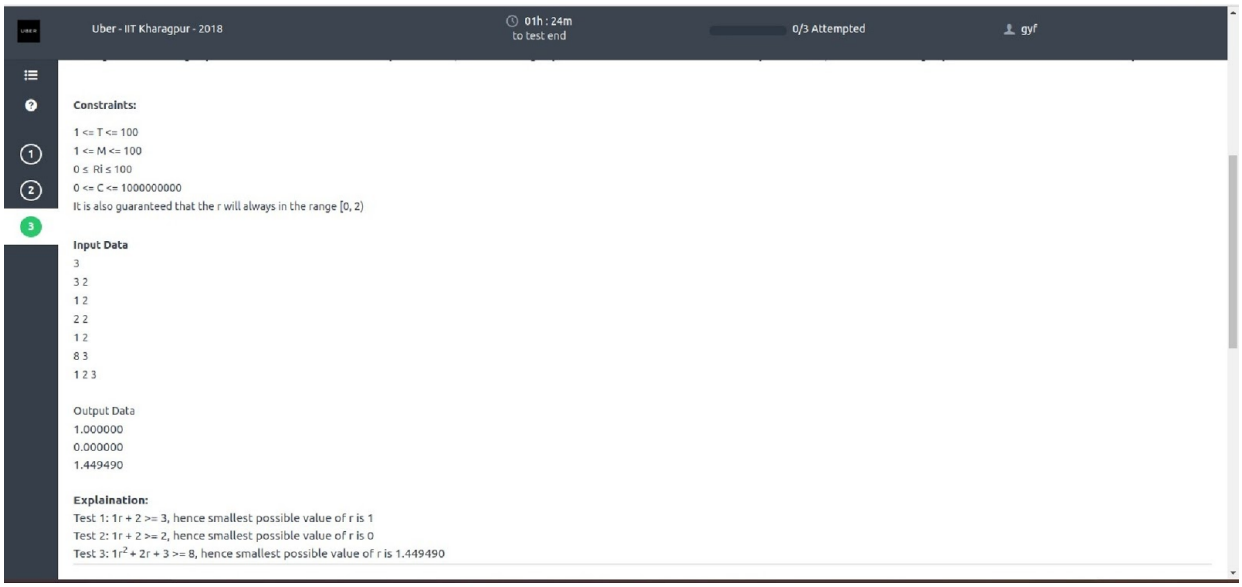
Solution: https://math.stackexchange.com/questions/1293020/calculate-diffOpp-KPHB-JNTU,kukatpally, Hyderabaderent-sequence-of-scores-in-a-volleyball-match

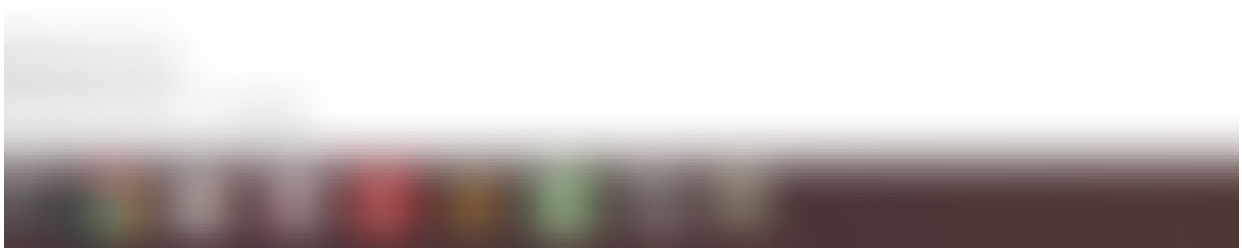

Uber - IIT Kharagpur - 2018
01h : 24m
to test end
0/3 Attempted
gyf
Task Master
Eric is the most methodical employee at the Acme company. His manager assigned him n tasks for the quarter, and gave him m notes on the order in which he must perform them. Each note states that some task b_i must be completed before some related task a_i. If he goes to perform some task x, and sees that a note exists requiring that task x must be performed before some other already-completed task, then he cannot perform task x. Help Eric determine the maximum number of tasks he can complete.
Complete the tasks function in your editor. It has 3 parameters:
1. An integer, n, the number of tasks.
2. An array of m integers, a, where the value of each element a_i is the ID number for task i (where $0 \le i < m$).
3. An array of m integers, b, where the value of each element b_i is the ID number for i (where $0 \le i < m$).
It must return an integer denoting the maximum number of tasks that Eric can complete.
Note: Each task depends on — at most — one other task.
Input Format
The locked stub code in your editor reads the following input from stdin and passes it to your function:
The first line contains an integer, n, denoting the total number of tasks.
The second line contains an integer, m, denoting the total number of dependencies.
Each line i of the m subsequent lines (where $0 \le i < m$) contains an integer describing the dependent tasks in array a.
The next line contains an integer, m, denoting the total number of dependencies.
Each line i of the m subsequent lines (where $0 \le i < m$) contains an integer describing the primary tasks in array b.
Constraints
$1 \le n \le 10^5$
$0 \le m \le n$
$1 \le a \le b \le n$
Output Format
Your function must return an integer denoting the maximum number of tasks that Eric can complete. This is printed to stdout by the locked stub code in your editor.


Uber - IIT Kharagpur - 2018
01h : 24m
to test end
0/3 Attempted
gyf
Your function must return an integer denoting the maximum number of tasks that Eric can complete. This is printed to stdout by the locked stub code in your editor.
Sample Input 0
The following arguments are passed to your function:
n = 2
a = {}
b = {}
Sample Output 0
2
Sample Input 1
The following arguments are passed to your function:
n = 2
a = {1}
b = {2}
Sample Output 1
2
Sample Input 2
The following arguments are passed to your function:
n = 2
a = {1, 2}


Uber - IIT Kharagpur - 2018
01h : 24m
to test end
0/3 Attempted
gyf
Sample Input 2
The following arguments are passed to your function:
n = 2
a = {1, 2}
b = {2, 1}
Sample Output 2
1
Explanation
Sample Case 0:
There are no dependencies limiting which tasks can be completed, so all n = 2 tasks can be performed. Thus, our function returns 2.
Sample Case 1:
There are n = 2 tasks, and the only dependency is that task 2 must be performed before task 1. Eric can perform all n tasks in the following order: 2 → 1. Thus, our function returns 2.
Sample Case 2:
There are n = 2 tasks, and there are two conflicting dependencies. Following the dependency at index 0, Eric can perform task 2 successfully. He can then attempt task 1 (which is the corresponding dependent task in a0); however, there is another dependency at index 1 that states that task 1 must be performed before task 2. Because task 2 would already have been completed, Eric can never perform task 1. Because he can only complete a single task, our function returns 1.
YOUR ANSWER


We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.
Start tour
Uber - IIT Kharagpur - 2018
01h : 24m
to test end
0/3 Attempted
gyf
Meeting target
Uber has launched a product, that has a cumulative impact on the rides booked. Basically if the impact rate is r and the number of riders who took their first ride is R, then after m months, these riders will take (R * r m) rides. (i.e. after 1 month, these riders will take R*r rides, after 2 month, these riders will take R*r2 rides, and so on)
With the help of our historical data and statistical analysis we found the number of riders who will take their first ride for the next M months.
We also want to have at least C rides in the Mth month, find the minimum impact rate 'r', so that the total number of rides in Mth month is no less that C.
Input:
First line of the input contains the number of test cases T.
For each test case there will be 2 lines,
first one containing the two integers C and M. (Target C to meet at Mth month).
Second line contains M integers where ith integer Ri denotes number of riders who will take their first ride in ith month.
Output:
For each test case, output one line containing r where r is a floating point number denoting the impact rate. Print r till fixed 6 decimal places.
Note: Using the impact rate in the solution, total trips should be greater than or equal to C, Hence when printing 6 decimal places r should not become less than the optimal solution.
For e.g. if the resulting impact rate is 1.23454664645 then output 1.234547, if the resulting impact rate is 1.23454644645 then also output 1.234547, but if the resulting impact rate is 1.234546000000 then output 1.234546
Constraints:
1 <= T <= 100
1 <= M <= 100





Rakuten

IITB

Test was on Codility platform.
Each student got different question

01

1 Task English

A non-empty array A consisting of N non-negative integers is given. Its *binarian* is defined as:

binarian(A)=pow2(A[0]) + pow2(A[1]) + ... + pow2(A[N−1])
pow2(K) $=2^K$

For example, the binarian of array A such that:

```
A[0] = 1
A[1] = 5
A[2] = 4
```

equals 50:

binarian(A)=pow2(A[0]) + pow2(A[1]) + pow2(A[2])
=pow2(1) + pow2(5) + pow2(4)
=2 + 32 + 16
=50

Write a function:

```
int solution(vector<int> &A);
```

that, given an array A consisting of N non-negative integers, returns the length of the shortest array that has the same binarian as array A.

For example, given array A such that:

```
A[0] = 1
A[1] = 0
A[2] = 2
A[3] = 0
A[4] = 0
A[5] = 2
```

the function should return 3 because:

- the binarian of A is 13,
- array B such that `B[0] = 3`, `B[1] = 2` and `B[2] = 0` also has a binarian of 13,
- there is no shorter array with a binarian of 13.

Write an **efficient** algorithm for the following assumptions:

- N is an integer within the range [1..100,000];
- each element of array A is an integer within the range [0..10,000].


```
[ 1, 0 , 2, 0 , 0, 2]
```

Custom test cases 1/10

IIT D guys please add Rakuten questions. Mercari

Is python allowed????

orIITB, IITD

01

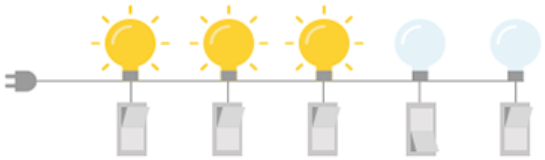
1 Task

2

Write a function `solution` that, given an array A of N different integers from 1 to N, returns the number of moments for which every turned on bulb shines.

Examples:

1. Given A=[2, 1, 3, 5, 4], the function should return 3.



- At the 0th moment only the 2nd bulb is turned on, but it does not shine because the previous one is not on.
- At the 1st moment two bulbs are turned on (1st and 2nd) and both of them shine.
- At the 2nd moment three bulbs are turned on (1st, 2nd and 3rd) and all of them shine.
- At the 3rd moment four bulbs are turned on (1st, 2nd, 3rd and 5th), but the 5th bulb does not shine because the previous one is not turned on.
- At the 4th moment five bulbs are turned on (1st, 2nd, 3rd, 4th and 5th) and all five of them shine.

There are three moments (1st, 2nd and 4th) when every turned on bulb shines.

2. Given A=[2, 3, 4, 1, 5], the function should return 2 (at the 3rd and 4th moment every turned on bulb shines).

3. Given A=[1, 3, 4, 2, 5], the function should return 3 (at the 0th, 3rd and 4th moment every turned on bulb shines).

Write an **efficient** algorithm for the following assumptions:

- N is an integer within the range [1..100,000];
- the elements of A are all distinct;
- each element of array A is an integer within the range [1..N].

[2,1,3,5,4] X

Custom test cases 1/10 +

Task

There are N points located on a line, numbered from 0 to N−1, whose coordinates are given in an array A. For each I (0 < I < N) the coordinate of point number I on the line is A[I]. The coordinates of points do not have to be distinct.

For a given integer M, a subset of these points is said to be *M-aligned* if the distance between any two points within the subset is divisible by M. Your task is to find the size of the largest M-aligned subset of the given set of N points.

For example, consider integer M = 3 and array A such that:

```
A[0] = -3
A[1] = -2
A[2] = 1
A[3] = 0
A[4] = 8
A[5] = 7
A[6] = 1
```

A subset containing the points numbered 1, 2, 5 and 6, having coordinates −2, 1, 7 and 1, respectively, is an example of a 3-aligned subset, since:

- the distance between points numbered 1 and 2 is **abs**(A[1] − A[2]) = 3,
- the distances from point number 5 to points numbered 1 and 2 are 9 and 6, respectively,
- the distances from point number 6 to points numbered 1, 2 and 5 are 3, 0 and 6, respectively,

and these distances are all divisible by M = 3. The size of this subset is 4 and there is no larger 3-aligned subset.

Write a function:

```
class Solution { public int solution(int[] A, int M); }
```

that, given an array A consisting of N integers and an integer M, returns the size of the largest M-aligned subset.

For example, given M = 3 and A = [−3, −2, 1, 0, 8, 7, 1], the function should return 4, as explained above.

Given M = 8 and A = [7, 1, 11, 8, 4, 10], the function should return 1, since one can create a subset consisting of exactly one (arbitrary) point. Note that this is the largest 8-aligned subset since any given pair of points has a distance not divisible by 8.

Custom test cases 0/10 +

IIT Kgp

01

Task

Two integers A and B are given. We are interested in positions at which the decimal representation of A occurs as a substring in the decimal representation of B (counting from 0). For example:

- 53 occurs in 1953786 at position 2.
- 78 occurs in 195378678 at positions 4 and 7.
- 57 does not occur in 153786.

Decimal representations are assumed to be big-endian and without leading zeros (the only exception being the number 0, whose decimal representation is "0").

Write a function

```
class Solution { public int solution(int A, int B); }
```

that, given two integers A and B, returns the leftmost position at which A occurs in B. The function should return −1 if A does not occur in B.

For example, given A = 53 and B = 1953786, the function should return 2, as explained above.

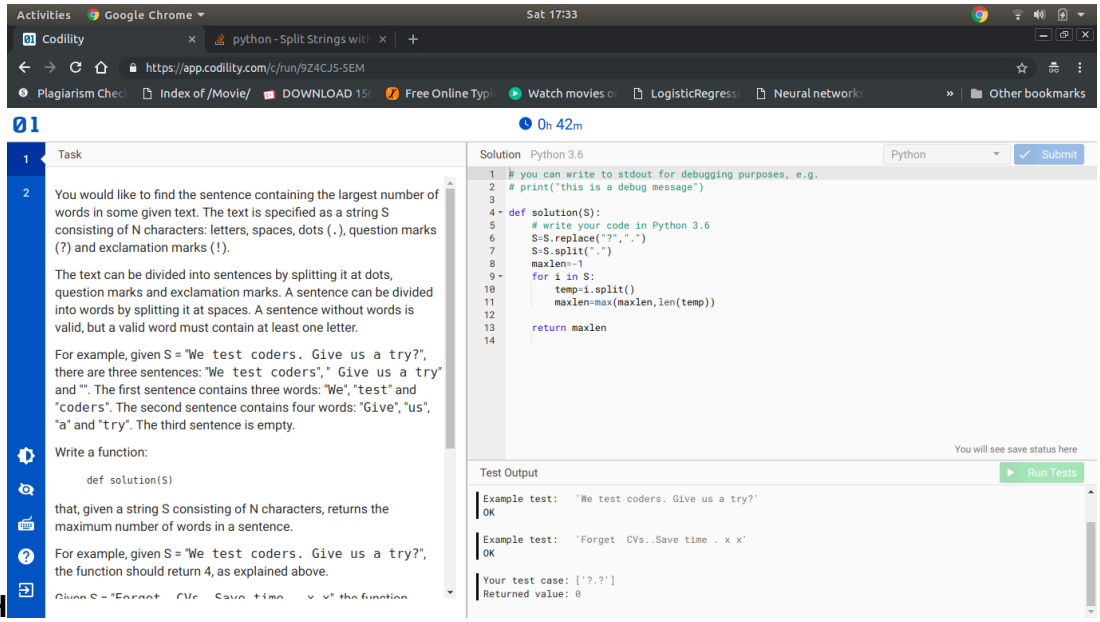
Assume that:

- A and B are integers within the range [0..999,999,999].

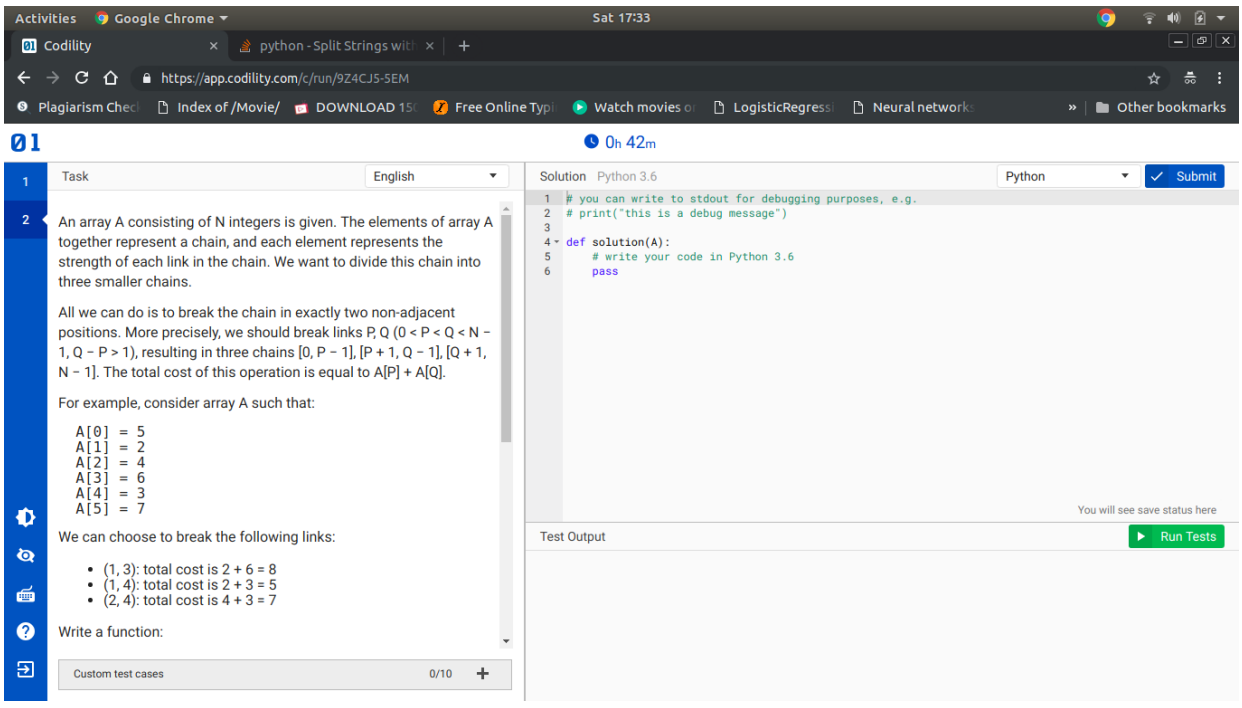
In your solution, focus on **correctness**. The performance of your solution will not be the focus of the

assessment.

Custom test cases 0/10 +

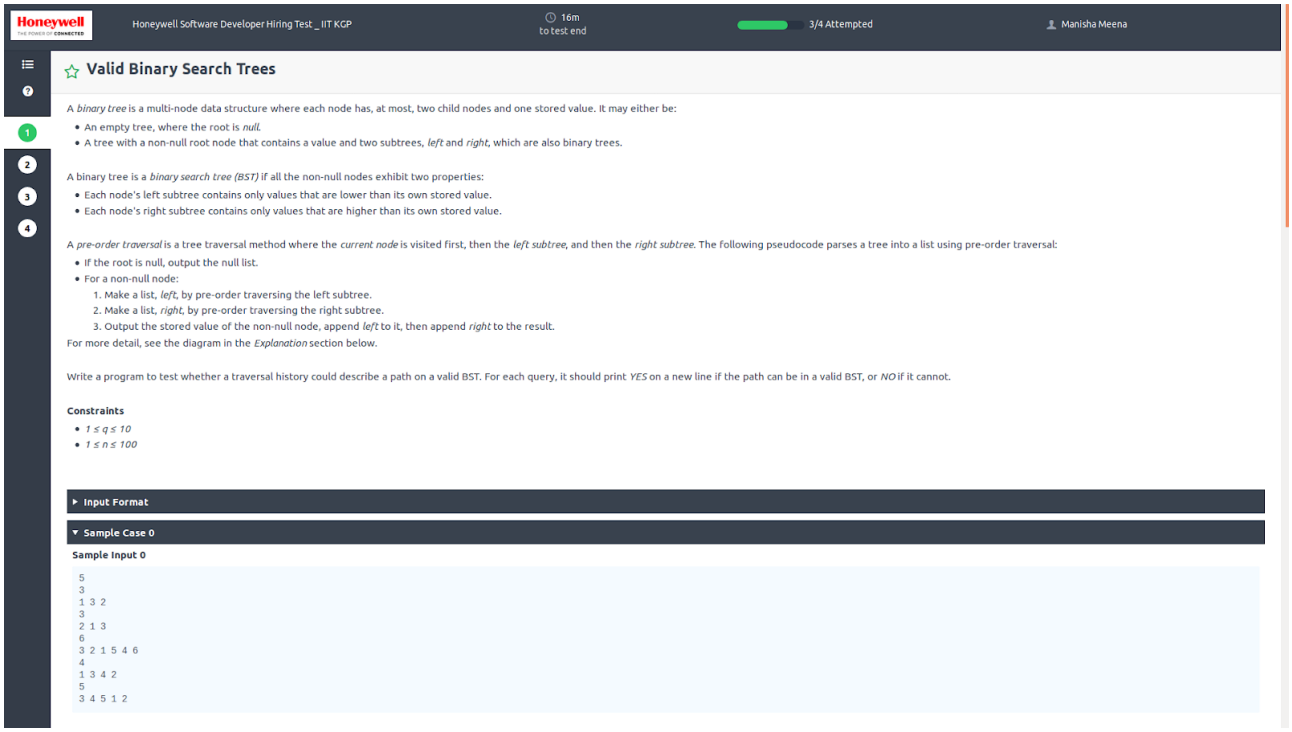


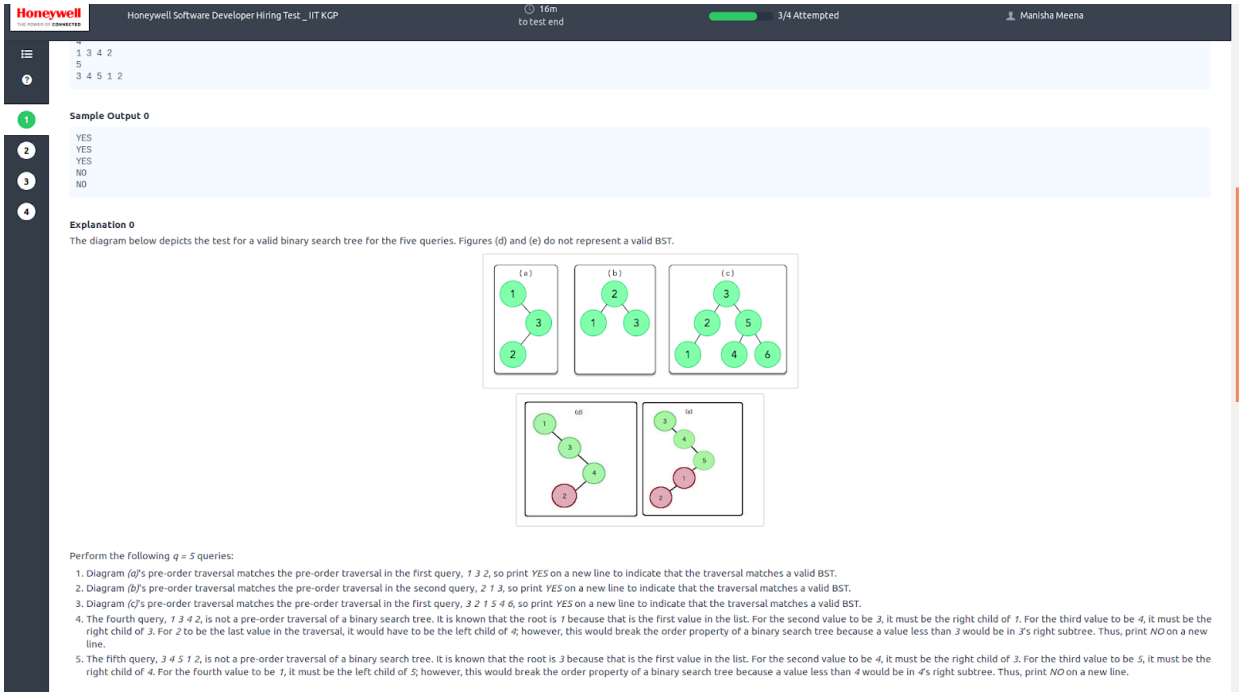
IITH



Honeywell

IITKGP, IITK, IITG, IITH,IIT BHU





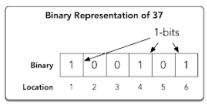
Honeywell Software Developer Hiring Test _ IIT KGP | 16m to test end | 3/4 Attempted | Manisha Meena

Counting Bits

Given an integer, *n*, determine the following:

1. How many *1*-bits are in its binary representation?
2. The number *n*'s binary representation has *k* significant bits indexed from *1* to *k*. What are the respective positions of each *1*-bit, in ascending order?

For example, the diagram below depicts this information for *n = 37*:



In the binary representation of *37*, there are three *1*-bits located at the respective 1^{st}, 4^{th}, and 6^{th} positions.

Function Description

Complete the function *getOneBits* in the editor below. The function must return a *results* array with the number of *1*'s stored at *results[0]* followed by the positions of all *1*'s in its binary representation in ascending order. No zeros precede the first *1* in the binary representation of the number. Positions are calculated beginning at 1.

getOneBits has the following parameter(s):

n: an integer

Constraints

- $1 < n < 10^9$

▸ Input Format for Custom Testing

▾ Sample Case 0

Sample Input

```
161
```

Sample Output

```
3
1
3
8
```

Honeywell Software Developer Hiring Test _ IIT KGP | 16m to test end | 3/4 Attempted | Manisha Meena

Function Description

Complete the function *getOneBits* in the editor below. The function must return a *results* array with the number of *1*'s stored at *results[0]* followed by the positions of all *1*'s in its binary representation in ascending order. No zeros precede the first *1* in the binary representation of the number. Positions are calculated beginning at 1.

getOneBits has the following parameter(s):

n: an integer

Constraints

- $1 < n < 10^9$

▸ Input Format for Custom Testing

▾ Sample Case 0

Sample Input

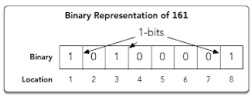
```
161
```

Sample Output

```
3
1
3
8
```

Explanation

The integer $n = (161)_{10}$ converts to $(10100001)_2$:

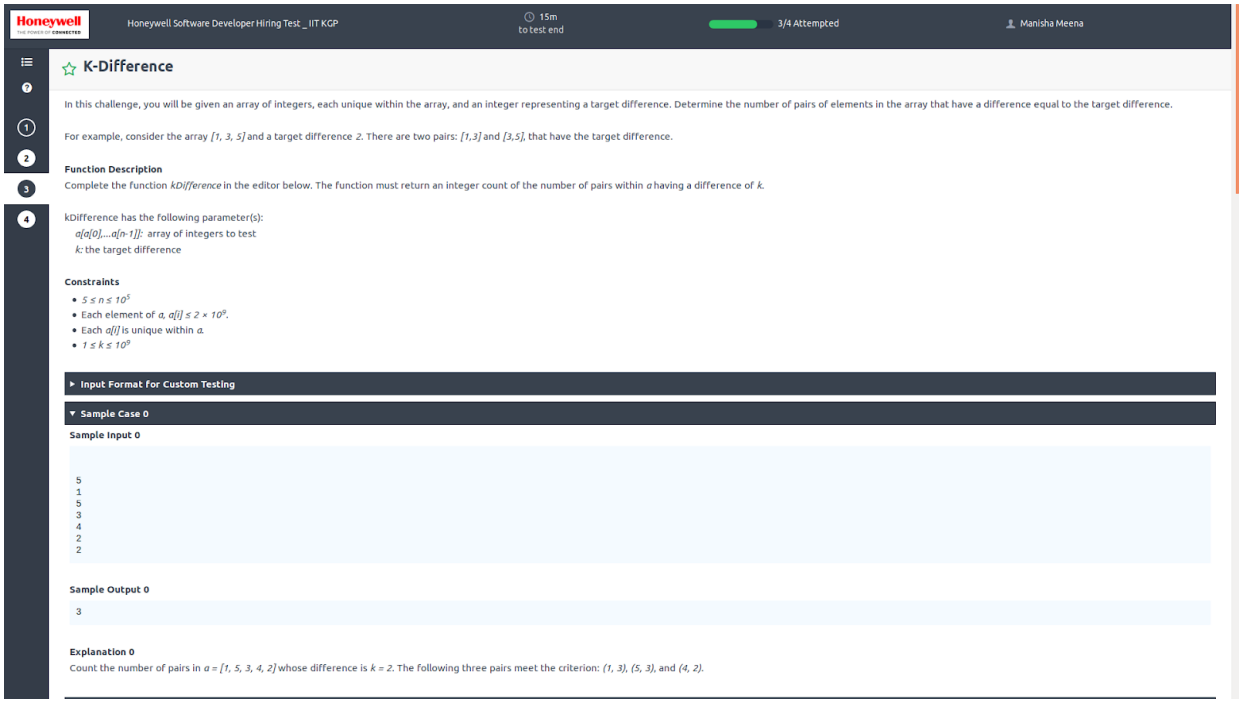


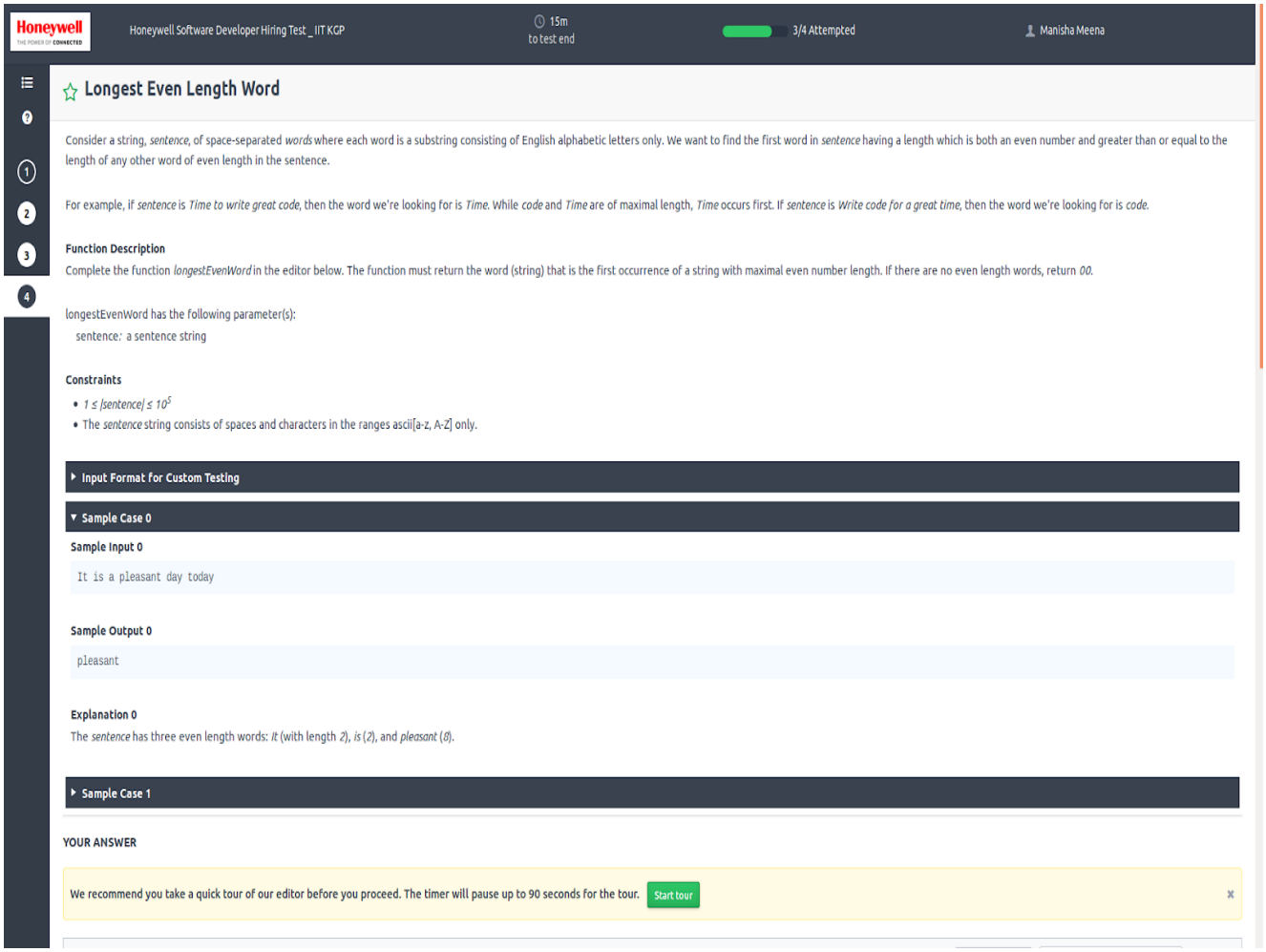
In the binary representation of *161*, there are three *1*-bits located at the respective 1^{st}, 3^{rd}, and 8^{th} positions.

Because there are three *1*-bits, we want our return array to be *3 + 1 = 4* units in length. We then store *3*, the *1*'s count, in the first index followed by the respective locations of the *1*-bits. Return the array *[3, 1, 3, 8]* as our answer.

YOUR ANSWER

We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour. Start tour



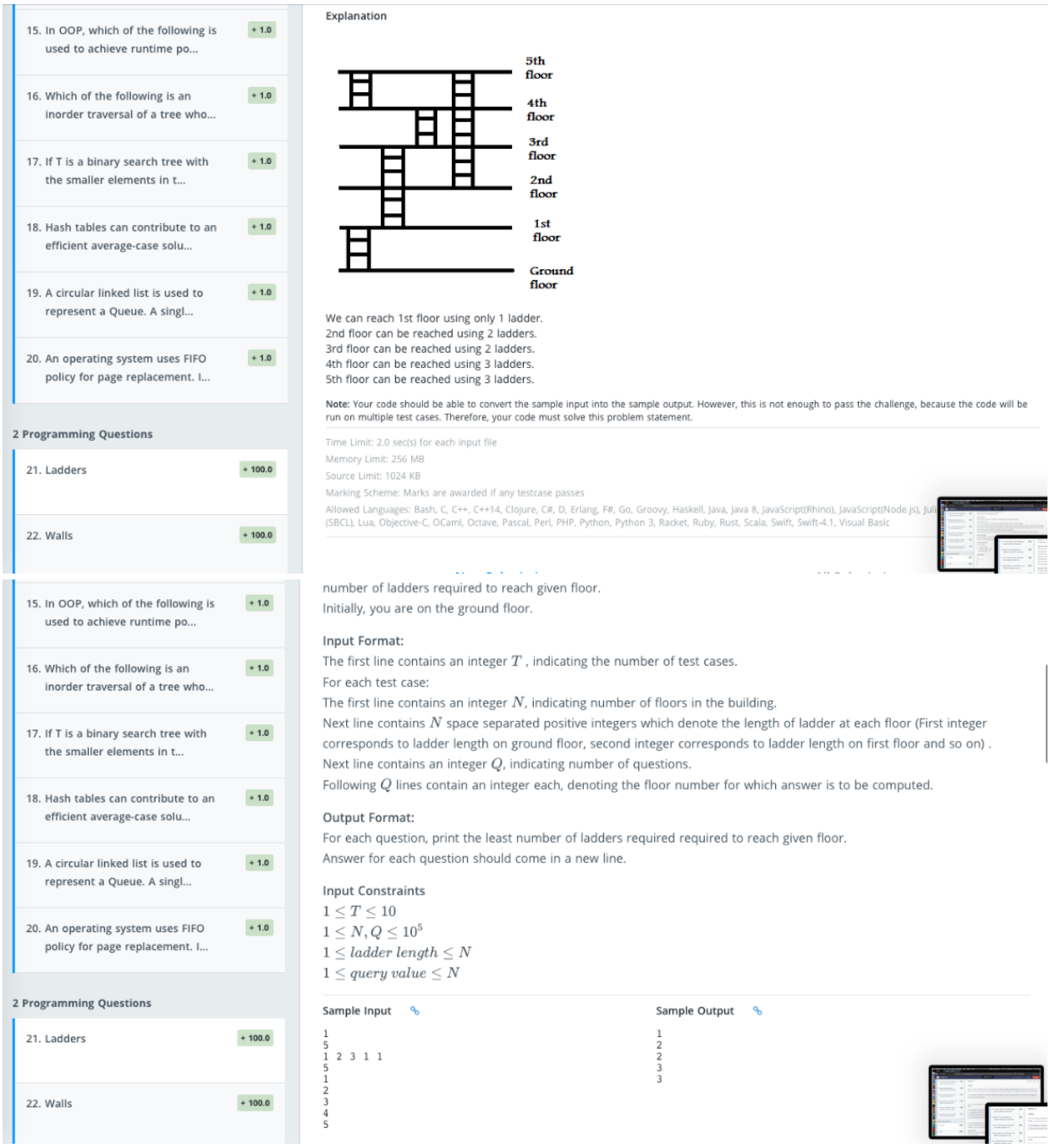


IITH

Exactly same questions as above

Amazon

IITD



Please upload walls problem

Can anyone please share the code of both the questions
Can anyone please upload ans of 2nd

IIT BHU

Same coding ques as IIT D. 20 MCQ with .25 negative marking.
In first question for each query you have to return the minimum ladders you have to take to reach a given floor starting from ground floor. Each floor is guaranteed to have a ladder.

Please tell what the second question was.

Does greedy solution Works ?

IIT KGP

300 marks test, 1.5 hr on hackerearth (2 coding questions - 200 marks, 20 MCQ - 100 marks)
https://www.geeksforgeeks.org/minimum-number-platforms-required-railwaybus-station/ (Same question - 100 marks)

https://www.geeksforgeeks.org/count-integral-points-inside-a-triangle/ (For a polygon instead of a triangle - 100 marks)

20 MCQ (5 marks each) - OOPS(4-5), Networks(5-6), OS(3-4), Data Structures (5), Algorithms (2-3)

Running code https://ideone.com/laser0/amazon

Tower Research

IITD

Cut off - 7.00
Resume Shortlisting - Yes
29/10/18. Three sections:

1. 35 Ques, 30 min, Basic quant: Basic calculation and probability questions
2. 20 Ques, 25 min, Advanced quant (not really, similar topics to basic quant)
3. 2 coding questions, 35 min (different for everyone)
    a. Given a chameleon which can change colour from 0-9 and given 2 integers N, M and 10x10 matrix of graph, find least number of steps to go from N to M. (Basic bfs, I guess) BFS Works for this.
    b. Given a string of “passwords”, find distinct passwords. Two passwords, a, b are similar if for swapping any ith and jth index of a, such that (i+j)%2==0, a becomes b. Eg abcd==cdab. (+a <> c, b <> d) Solution: https://ideone.com/obetto

IITK

Three sections:

1. Basic mathematics: 30 questions, 30 min
2. Quant and probability: 20 questions, 25 min
3. Programming ability: 2 questions, 35 min
    a. You have to distribute n candies to K children: 1,2,3...K. Start from child 1, give 1 candy, then 2, then 3 and so on. Return the number of candies each child has. Ex:
        Consider n = 10, k= 2: child1 gets 1, child2 gets 2, child1 gets 3, and so on.
        Output: child1->4 child2->6

    b. N people standing in a queue. Three different events occur.
        Event 1: transaction complete, first person leaves the queue.
        Event 2: some person x leaves the queue, x is specified along.
        Event 3: print the position of a person x,specified along.

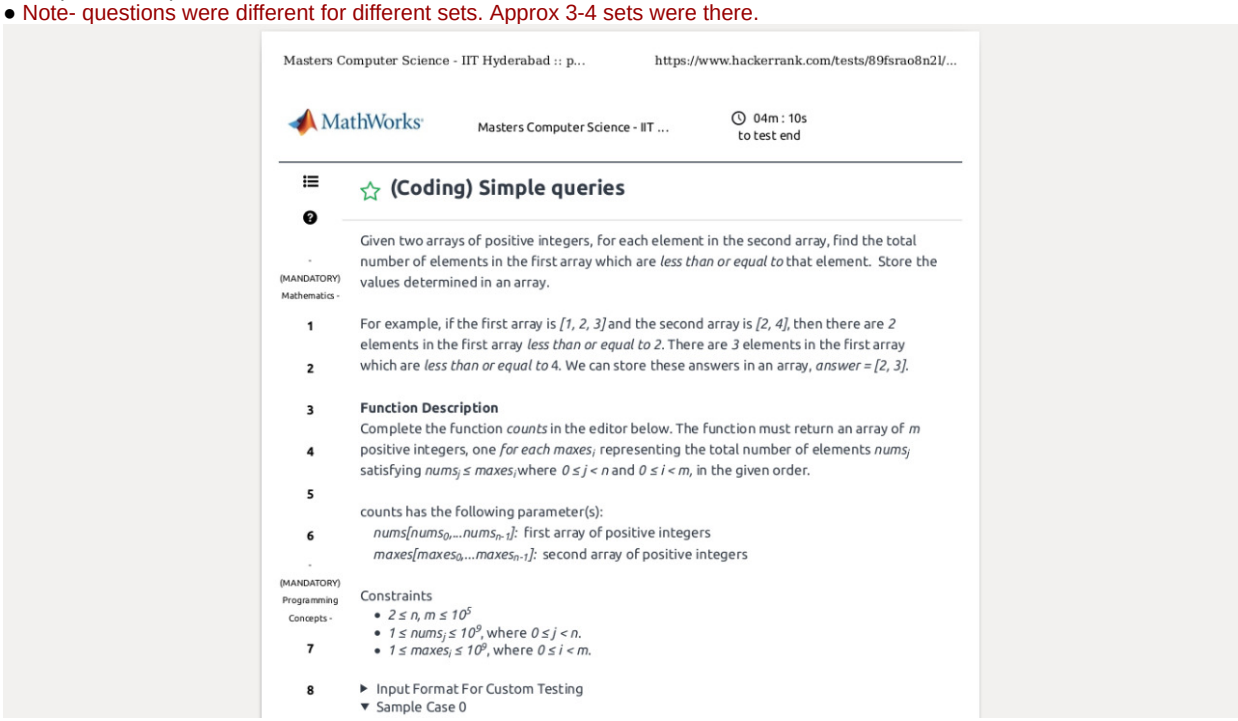
PS. Test was on mettl. So, brace yourselves :p. And yes, that finding out different substrings was also asked to some peeps in IIT Kanpur. So, it is possible you might end up on these questions.

Mathworks

IIT Hyderabad

- 2 coding questions- choose any 2 languages from c/c++/java.
- Bonus section for python (8 questions)
- Technical questions on c/c++/python (solve questions for any 2).

- Simple Maths question.
- Note- questions were different for different sets. Approx 3-4 sets were there.



Masters Computer Science - IIT Hyderabad :: p... https://www.hackerrank.com/tests/89fsrao8n21/...

MathWorks Masters Computer Science - IIT ... 04m : 10s to test end

☆ (Coding) Simple queries

(MANDATORY) Mathematics -

Given two arrays of positive integers, for each element in the second array, find the total number of elements in the first array which are *less than or equal to* that element. Store the values determined in an array.

For example, if the first array is *[1, 2, 3]* and the second array is *[2, 4]*, then there are *2* elements in the first array *less than or equal to 2*. There are *3* elements in the first array which are *less than or equal to* 4. We can store these answers in an array, *answer = [2, 3]*.

Function Description

Complete the function *counts* in the editor below. The function must return an array of *m* positive integers, one *for each* $maxes_i$ representing the total number of elements $nums_j$ satisfying $nums_j \le maxes_i$ where $0 \le j < n$ and $0 \le i < m$, in the given order.

counts has the following parameter(s):

- $nums[nums_0,...nums_{n-1}]$: first array of positive integers
- $maxes[maxes_0,...maxes_{n-1}]$: second array of positive integers

(MANDATORY) Programming Concepts -

Constraints

- $2 \le n, m \le 10^5$
- $1 \le nums_j \le 10^9$, where $0 \le j < n$.
- $1 \le maxes_i \le 10^9$, where $0 \le i < m$.

▶ Input Format For Custom Testing

▼ Sample Case 0

- $1 \le nums_j \le 10^9$, where $0 \le j < n$.
- $1 \le maxes_i \le 10^9$, where $0 \le i < m$.

▶ Input Format For Custom Testing

▼ Sample Case 0

Sample Input 0

```
4
1
4
2
4
2
3
5
```

Sample Output 0

```
2
```


We are given $n = 4$, $nums = [1, 4, 2, 4]$, $m = 2$, and $maxes = [3, 5]$.

1. For $maxes_0 = 3$, we have 2 elements in $nums$ ($nums_0 = 1$ and $nums_2 = 2$) that are $\le maxes_0$.
2. For $maxes_1 = 5$, we have 4 elements in $nums$ ($nums_0 = 1$, $nums_1 = 4$, $nums_2 = 2$, and $nums_3 = 4$) that are $\le maxes_1$.

Thus, the function returns the array $[2, 4]$ as the answer.

☆ (Coding) Distinct Pairs

In this challenge, you will be given an array of integers and a target value. Determine the number of *distinct* pairs of elements in the array that sum to the target value. Two pairs (a, b) and (c, d) are considered to be distinct if and only if the values in sorted order do not match, i.e., (1, 9) and (9, 1) are indistinct but (1, 9) and (9, 2) are distinct.

For instance, given the array [1, 2, 3, 6, 7, 8, 9, 1], and a target value of 10, the seven pairs (1,9), (2,8), (3,7), (8, 2), (9, 1), (9, 1), and (1, 9) all sum to 10 and only three distinct pairs: (1, 9), (2, 8), and (3, 7).

Function Description

Complete the function *numberOfPairs* in the editor below. The function must return an integer, the total number of *distinct* pairs of elements in the array that sum to the target value.

numberOfPairs has the following parameter(s):

a[a_0...a_{n-1}]: an array of integers to select pairs from

k: target integer value to sum to

Constraints

- $1 \le n \le 5 \times 10^5$
- $0 \le a_i \le 10^9$
- $0 \le k \le 5 \times 10^9$

▶ Input Format for Custom Testing

▼ Sample Case 0

Sample Input 0

```
6
1
3
46
1
3
9
47
```


Explanation 0

$a = [1, 3, 46, 1, 3, 9]$, $k = 47$

There are 4 pairs of unique elements where $a_i + a_j = k$:

1. $(a_0 = 1, a_2 = 46)$
2. $(a_2 = 46, a_0 = 1)$
3. $(a_2 = 46, a_3 = 1)$
4. $(a_3 = 1, a_2 = 46)$

In the list above, all four pairs contain the same values. We only have *1 distinct* pair, *(1, 46)*.

▶ Sample Case 1

IITG

Same pattern as IITH
Coding questions:

1. (repeated by SAP Labs) Team Formation:
   Given an array of non negative integers, select x largest numbers from it given the following conditions:
   Choose the numbers in sequence and keep removing them from the array, every time number can only be selected from first or last m elements, in case of conflict choose the one with lower index. In case first and last m elements overlap, choose the largest number of array. Return the total sum of them. C++ code
2. Find maximum difference Aj - Ai s.t. j > i and A[j]>A[i]

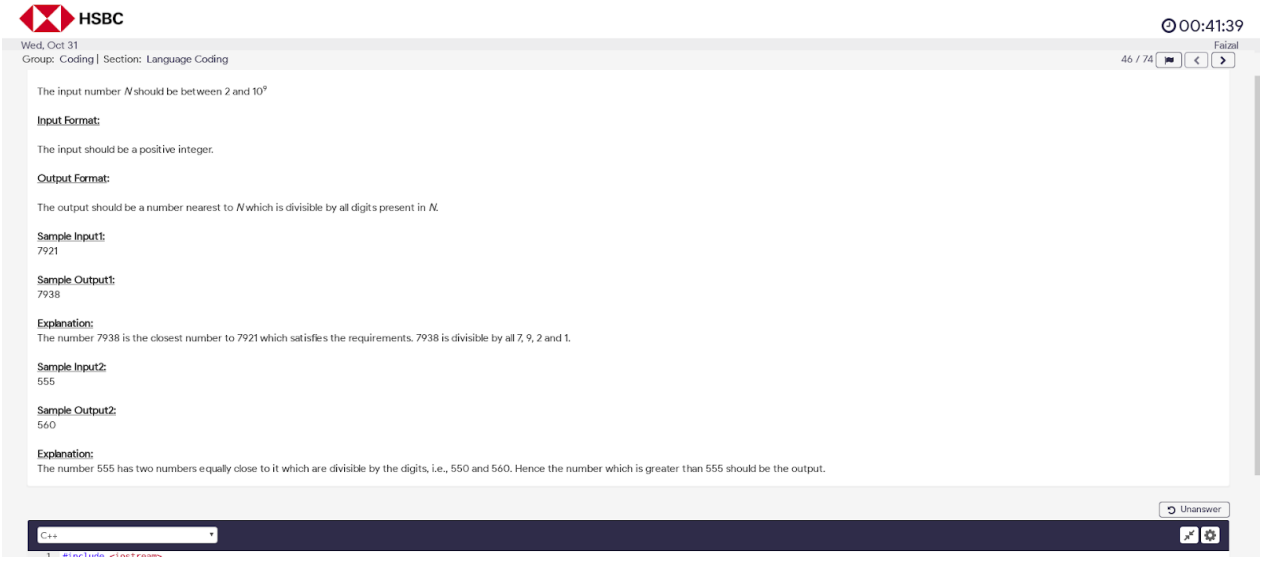
IITR

Same pattern as mentioned above

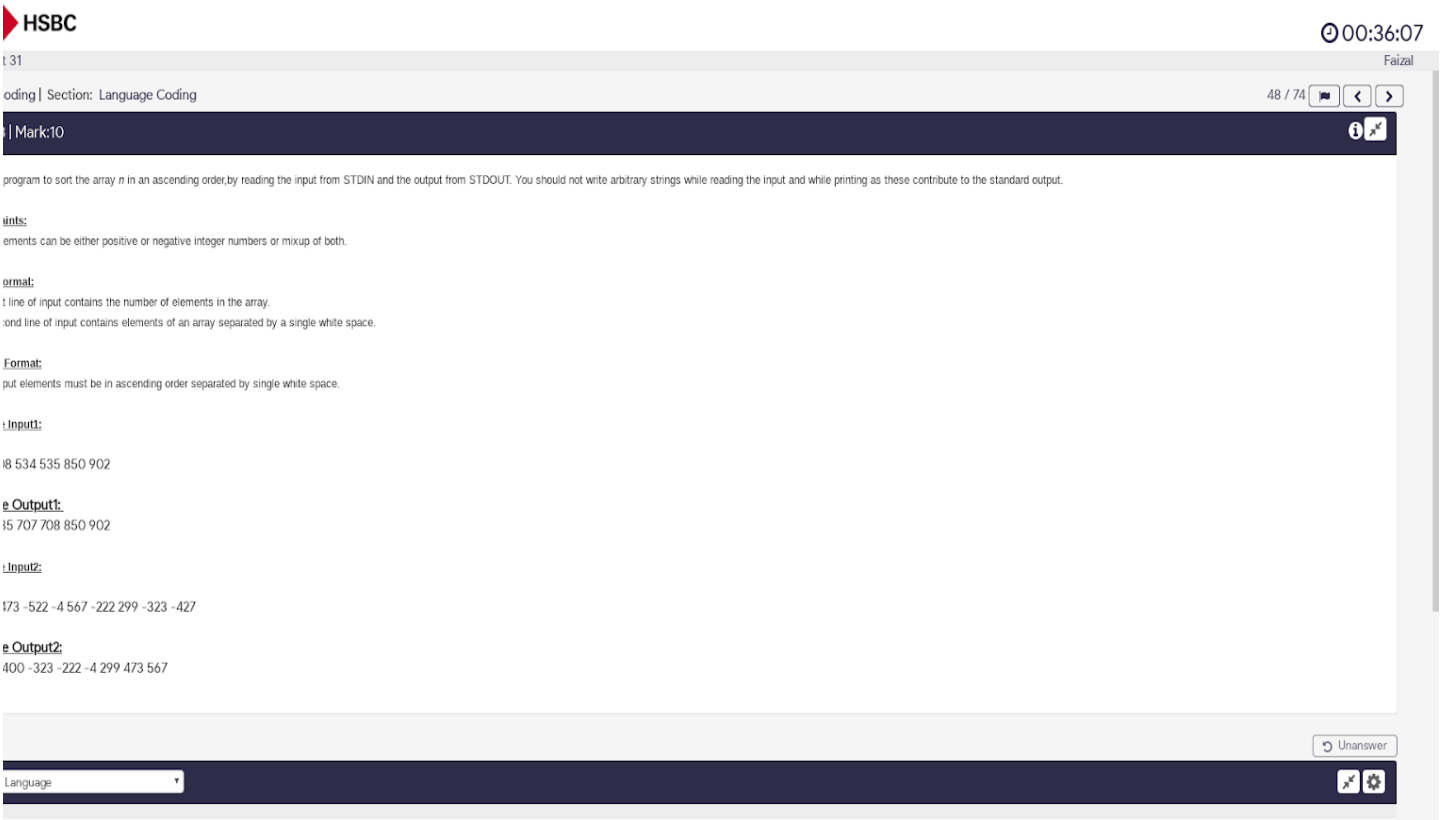
HSBC GM (Analyst)

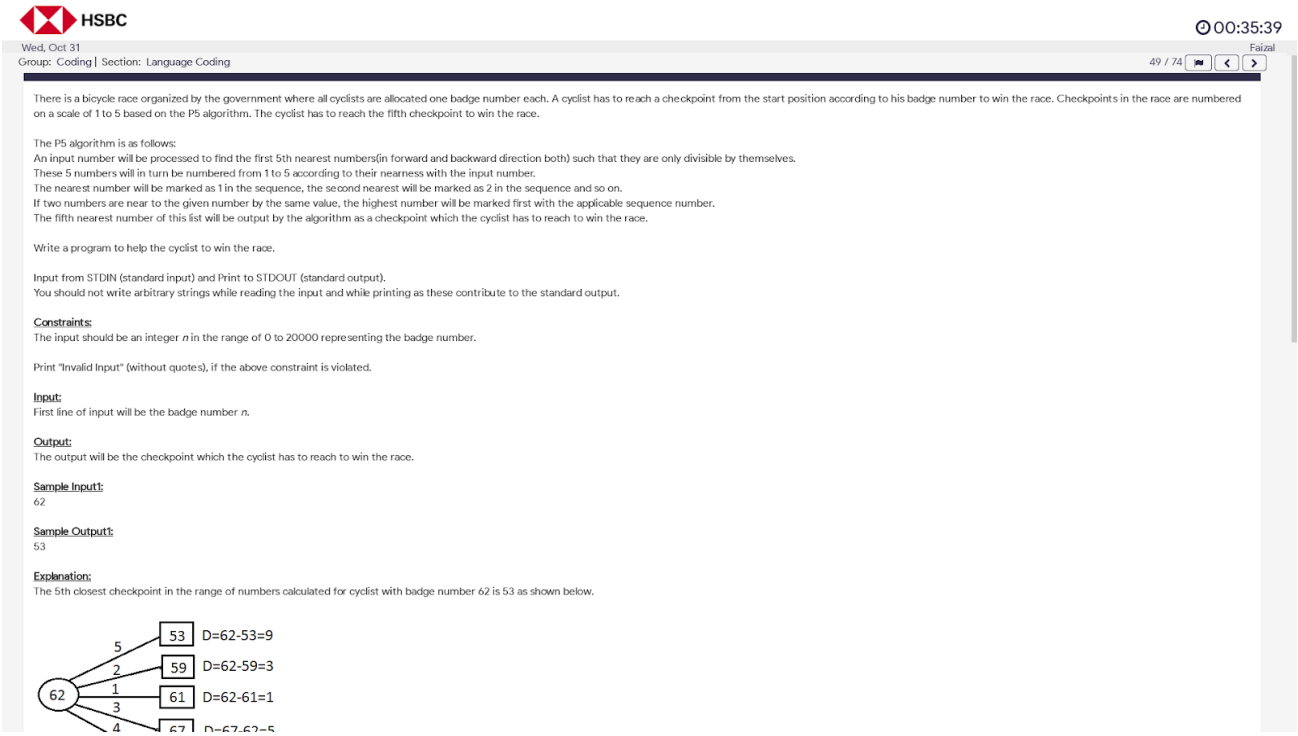
IITK

Cutoff around 7 CGPA, Btech and Dual
5 sections in approx 2 hours
15-Reasoning
15-Engg Mathematics (Fourier, Laplace transforms were mostly asked in IITR and some ques of differential equations(Level was difficult for students who were not remembering 1st year maths course))
15-Probability Distributions (Tests were asked)(T-test, Z-test, Chi squared test in IITR)
4-Coding questions: C++,Java, python, STL allowed
25-Quantitative aptitude (Speed maths-10 min 25 ques in IITR)
Time was an issue especially in aptitude section, level was above pariksha tests. Can't switch across sections
Coding questions as follows:



https://leetcode.com/problems/remove-k-digits/




HSBC

00:35:39

Wed, Oct 31 Faizal

Group: Coding | Section: Language Coding 49 / 74

There is a bicycle race organized by the government where all cyclists are allocated one badge number each. A cyclist has to reach a checkpoint from the start position according to his badge number to win the race. Checkpoints in the race are numbered on a scale of 1 to 5 based on the P5 algorithm. The cyclist has to reach the fifth checkpoint to win the race.

The P5 algorithm is as follows:
An input number will be processed to find the first 5th nearest numbers(in forward and backward direction both) such that they are only divisible by themselves.
These 5 numbers will in turn be numbered from 1 to 5 according to their nearness with the input number.
The nearest number will be marked as 1 in the sequence, the second nearest will be marked as 2 in the sequence and so on.
If two numbers are near to the given number by the same value, the highest number will be marked first with the applicable sequence number.
The fifth nearest number of this list will be output by the algorithm as a checkpoint which the cyclist has to reach to win the race.

Write a program to help the cyclist to win the race.

Input from STDIN (standard input) and Print to STDOUT (standard output).
You should not write arbitrary strings while reading the input and while printing as these contribute to the standard output.

Constraints:
The input should be an integer *n* in the range of 0 to 20000 representing the badge number.

Print "Invalid Input" (without quotes), if the above constraint is violated.

Input:
First line of input will be the badge number *n*.

Output:
The output will be the checkpoint which the cyclist has to reach to win the race.

Sample Input1:
62

Sample Output1:
53

Explanation:
The 5th closest checkpoint in the range of numbers calculated for cyclist with badge number 62 is 53 as shown below.

Indus Insights

Cpi cutoff? Reply: None

IITR

29th November. Pen paper test (No knowledge of coding required)

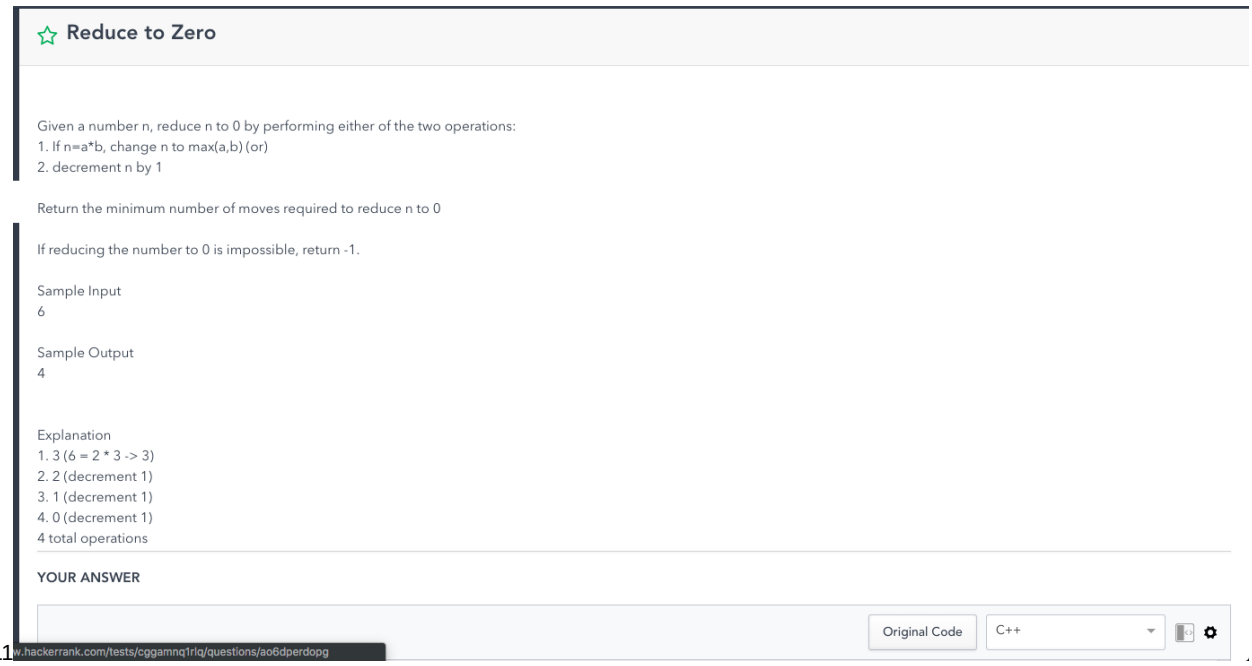
Scoring +1 and -1 lkjadgfla
1st Part- Section 1: Probability based MCQs
Section 2: Data interpretation (easy af, moreover, calculator was allowed for the whole test)
Section 3: Critical reasoning
2nd part- Guesstimate on pen paper- Fuel sale in INR in a petrol pump in Delhi/Mumbai in a week

Salesforce

IIT Delhi time?

31st Oct
Please provide sol ?
https://ide.geeksforgeeks.org/JX4QXaWu5j
This sol is giving wrong ans for 12.it is giving 5 output while correct is 4.1->12=4*3.2->4=2*2.3->2-1.4->1-1=0.so total 4 operation

-
3. https://www.geeksforgeeks.org/count-possible-decodings-given-digit-sequence/

1311 

IITB (4/11*)

3 questions in 1 hour, HackerRank

1. Minimum number of moves for a knight on chessboard to reach from a given source to a given destination.
2. Array of product prices given. Each product is discounted by the first element to its right which is <= to it. If not present, discount is 0.
3. Lottery tickets numbered 1 to n. Value is sum of digits of the number. Find the no. of tickets whose sum is maximum. n<10^4. Directly scan 1 to n and store counts. Passed all cases.

IITM

1. Some simple definition of class and function problem.We have to complete three classes dog,cow and donkey by completing certain functions (based on the concepts of Inheritance and Abstract Classes)

2. Binary Tree question. To find level of the tree - Species exist as different indices in an array. The value in the index of a species in an array points to the index of its predator. -1 value indicates it has nfo predator and is at top of the food chain. Find minimum number of ways to group species together across food chains (multiple food chain trees arise from one such array) such that no species in one group eat each other. Essentially boPreOrder given for a tree, we have to print YES or NO if it could be the preorder of a valid BST.
https://www.geeksforgeeks.org/check-if-a-given-array-can-represent-preorder-traversal-of-binary-search-tree/

IITR - please add(+1)

1. Given two strings A and B, B is a string consisting words of A only.
Return the missing words are not present in B but are present in A.
Ex - +
A: I love programming.
B: love
Output-
I
Programming.

IITH

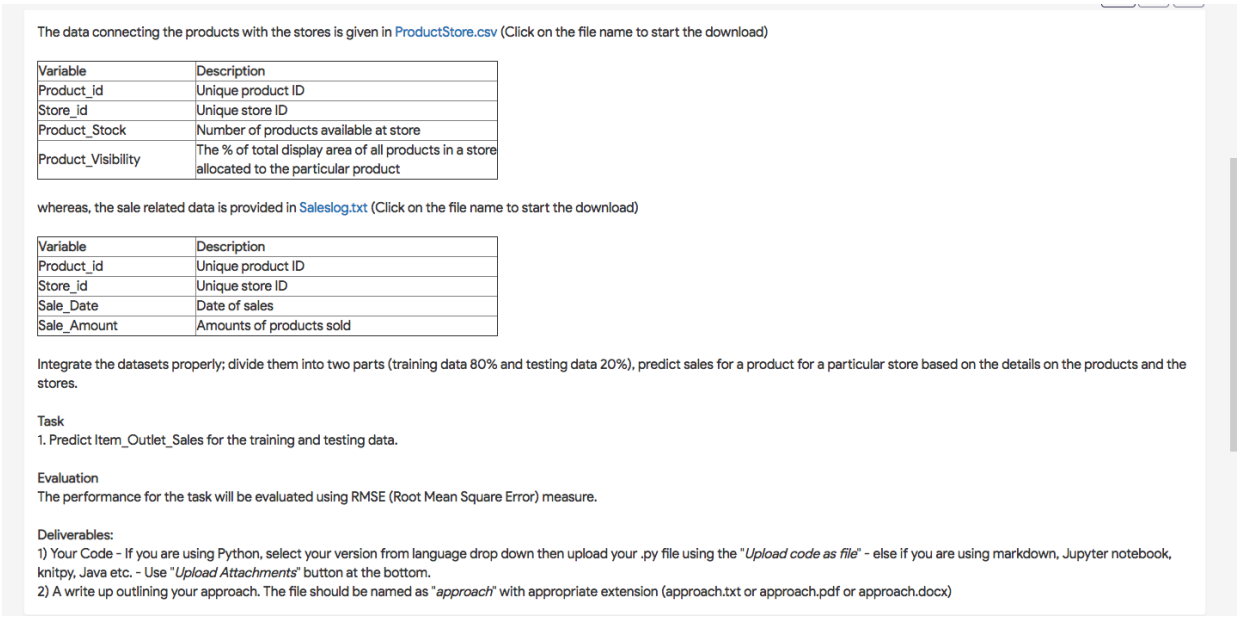
1. Candy problem asked in Flipkart.
2. Collect maximum coin in a matrix (with obstacle) and return back. https://www.geeksforgeeks.org/maximum-points-top-left-matrix-bottom-right-return-back/
3. Given two integers, l, r and k, find the maximal value of a xor b, where and satisfy the following condition:
l <= a <= b <= r and a xor b <= k
Same question except condition a xor b <= k. https://www.hackerrank.com/challenges/maximizing-xor/problem

Sapient Data Scientist

(Mention package please :))

IIT Delhi (03/11/2018)

35mins(Apti+DS+coding
), 85mins(below)



The data connecting the products with the stores is given in ProductStore.csv (Click on the file name to start the download)

Variable	Description
Product_id	Unique product ID
Store_id	Unique store ID
Product_Stock	Number of products available at store
Product_Visibility	The % of total display area of all products in a store allocated to the particular product

whereas, the sale related data is provided in Saleslog.txt (Click on the file name to start the download)

Variable	Description
Product_id	Unique product ID
Store_id	Unique store ID
Sale_Date	Date of sales
Sale_Amount	Amounts of products sold

Integrate the datasets properly; divide them into two parts (training data 80% and testing data 20%), predict sales for a product for a particular store based on the details on the products and the stores.

Task
1. Predict Item_Outlet_Sales for the training and testing data.

Evaluation
The performance for the task will be evaluated using RMSE (Root Mean Square Error) measure.

Deliverables:
1) Your Code - If you are using Python, select your version from language drop down then upload your .py file using the "*Upload code as file*" - else if you are using markdown, Jupyter notebook, knitpy, Java etc. - Use "*Upload Attachments*" button at the bottom.
2) A write up outlining your approach. The file should be named as "*approach*" with appropriate extension (approach.txt or approach.pdf or approach.docx)

HeadOut

IIT Dhanbad: 30th Oct 2018

q1.https://www.geeksforgeeks.org/smallest-window-contains-characters-string/

Platform: Hackerearth
Test duration: 90 minutes.
Questions: 3 coding questions (100 marks each).

1. Given an array of numbers and a list queries, find the number of factors of the product of the numbers in the range, for each query.

   n=5
   arr={1,2,3,4,5}
   Query: 1 3

Output should be 4
Explanation: the product of numbers between 1 to 3 (1-based indexing) is 1*2*3=6
Factors of 6=1,2,3,6. Therefore the answer will be 4.

Constraints:
1<=T<=10000
1<=N<=10000
1<=A[i]<=1000
(Can someone suggest solution to this one? Also, what is 'T' in constraints, shouldn't it be 'Q'?)

```
A = list(map(int, input().rstrip().split()))

prod = 1
for i in range(0,3):
    prod = prod*A[i]

factors = []
for i in range(1, int(prod**0.5)+1):
    if(prod%i == 0):
        factors.append(i)
        factors.append(prod//i)
print(len(sorted(factors)))
```

2. Given a number N tell if its possible to convert it into a fibonacci number by rearranging the digits of N.
Constraints: 1<=N<=10^15.

Solution: Similar to finding anagrams of a string.
Can you please elaborate your solution ?
https://ide.geeksforgeeks.org/sYgPZBen5t Wrong solution

3. Given a string of lowercase english alphabets find the minimum length of a substring containing maximum number of distinct characters.

Constraints: 1<=|S|<=10^5.
Solution: https://www.geeksforgeeks.org/length-smallest-sub-string-consisting-maximum-distinct-characters/

IIT Kanpur-please add

IIT BHU - same 1 and 2 of IIT DHN,3rd not remember.

Rubrik

IIT Kanpur

1. Array A = {1} was to be modified indefinitely (3 steps were given on how to modify), it was queried to print A[i] for any i (0 <= i <= 10^5). After simulating the modification steps for 3-4 steps, it was very easy to see that the answer for any n was, **f(n) = 2^n**.
2. Given **N** coins, one of them weighs lesser than all other. Given a physical balance which can weigh two sets, one on each side. What is the minimum number of times one has to use the balance to find the lighter coin.

Here also, recurrence was tricky but ultimately boiled down to $ceil(log_3 N)$
3. Implement a file system with following commands CREATE, READ, EDIT, SIZE, EXIT. question was long to implement but there weren't any trick involved. You had to implement everything as per the description given.

IITM

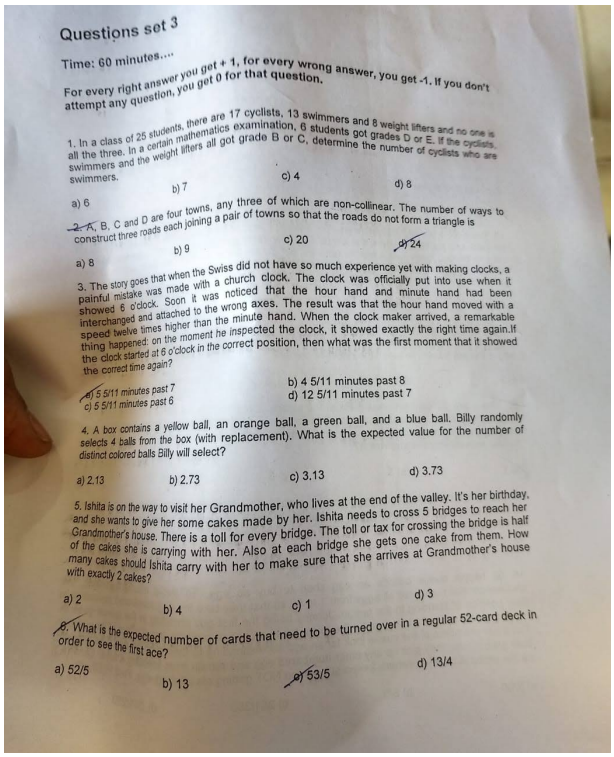
Same questions as in IIT Kanpur above.

Blackrock

Cpi cutoff?

IITKGP

1 hr pen and paper based test, 20 questions
Related to probability, mathematical aptitude, few puzzles, some logical reasoning
There were 4 sets.



Questions set 3

Time: 60 minutes....

For every right answer you get + 1, for every wrong answer, you get -1. If you don't attempt any question, you get 0 for that question.

1. In a class of 25 students, there are 17 cyclists, 13 swimmers and 8 weight lifters and no one is all the three. In a certain mathematics examination, 6 students got grades D or E. If the cyclists, swimmers and the weight lifters all got grade B or C, determine the number of cyclists who are swimmers.

a) 6 b) 7 c) 4 d) 8

2. A, B, C and D are four towns, any three of which are non-collinear. The number of ways to construct three roads each joining a pair of towns so that the roads do not form a triangle is

a) 8 b) 9 c) 20 d) 24

3. The story goes that when the Swiss did not have so much experience yet with making clocks, a painful mistake was made with a church clock. The clock was officially put into use when it showed 6 o'clock. Soon it was noticed that the hour hand and minute hand had been interchanged and attached to the wrong axes. The result was that the hour hand moved with a speed twelve times higher than the minute hand. When the clock maker arrived, a remarkable thing happened: on the moment he inspected the clock, it showed exactly the right time again.If the clock started at 6 o'clock in the correct position, then what was the first moment that it showed the correct time again?

a) 5 5/11 minutes past 7 b) 4 5/11 minutes past 8
c) 5 5/11 minutes past 6 d) 12 5/11 minutes past 7

4. A box contains a yellow ball, an orange ball, a green ball, and a blue ball. Billy randomly selects 4 balls from the box (with replacement). What is the expected value for the number of distinct colored balls Billy will select?

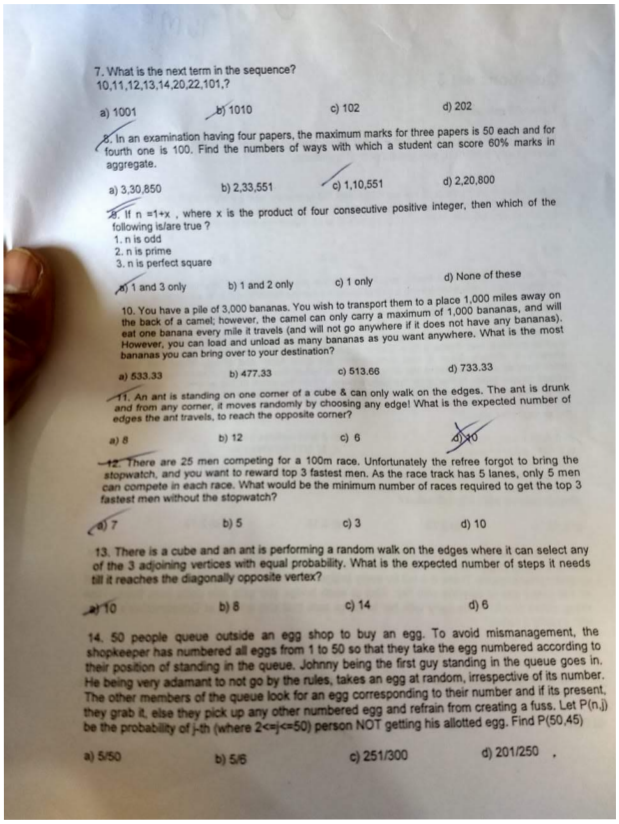
a) 2.13 b) 2.73 c) 3.13 d) 3.73

5. Ishita is on the way to visit her Grandmother, who lives at the end of the valley. It's her birthday, and she wants to give her some cakes made by her. Ishita needs to cross 5 bridges to reach her Grandmother's house. There is a toll for every bridge. The toll or tax for crossing the bridge is half of the cakes she is carrying with her. Also at each bridge she gets one cake from them. How many cakes should Ishita carry with her to make sure that she arrives at Grandmother's house with exactly 2 cakes?

a) 2 b) 4 c) 1 d) 3

6. What is the expected number of cards that need to be turned over in a regular 52-card deck in order to see the first ace?

a) 52/5 b) 13 c) 53/5 d) 13/4



7. What is the next term in the sequence?
10,11,12,13,14,20,22,101,?

a) 1001 b) 1010 c) 102 d) 202

8. In an examination having four papers, the maximum marks for three papers is 50 each and for fourth one is 100. Find the numbers of ways with which a student can score 60% marks in aggregate.

a) 3,30,850 b) 2,33,551 c) 1,10,551 d) 2,20,800

9. If n =1+x , where x is the product of four consecutive positive integer, then which of the following is/are true ?
1. n is odd
2. n is prime
3. n is perfect square

a) 1 and 3 only b) 1 and 2 only c) 1 only d) None of these

10. You have a pile of 3,000 bananas. You wish to transport them to a place 1,000 miles away on the back of a camel; however, the camel can only carry a maximum of 1,000 bananas, and will eat one banana every mile it travels (and will not go anywhere if it does not have any bananas). However, you can load and unload as many bananas as you want anywhere. What is the most bananas you can bring over to your destination?

a) 533.33 b) 477.33 c) 513.66 d) 733.33

11. An ant is standing on one corner of a cube & can only walk on the edges. The ant is drunk and from any corner, it moves randomly by choosing any edge! What is the expected number of edges the ant travels, to reach the opposite corner?

a) 8 b) 12 c) 6 d) 10

12. There are 25 men competing for a 100m race. Unfortunately the refree forgot to bring the stopwatch, and you want to reward top 3 fastest men. As the race track has 5 lanes, only 5 men can compete in each race. What would be the minimum number of races required to get the top 3 fastest men without the stopwatch?

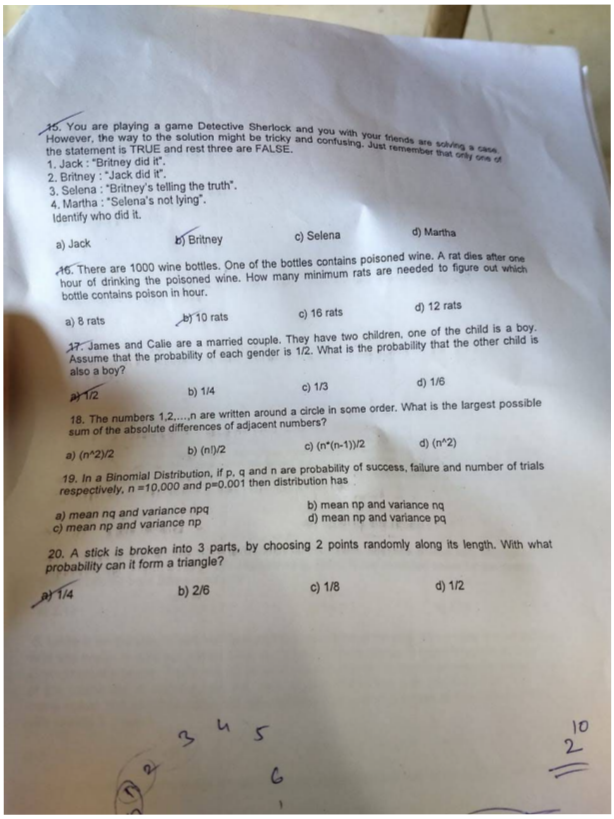
a) 7 b) 5 c) 3 d) 10

13. There is a cube and an ant is performing a random walk on the edges where it can select any of the 3 adjoining vertices with equal probability. What is the expected number of steps it needs till it reaches the diagonally opposite vertex?

a) 10 b) 8 c) 14 d) 6

14. 50 people queue outside an egg shop to buy an egg. To avoid mismanagement, the shopkeeper has numbered all eggs from 1 to 50 so that they take the egg numbered according to their position of standing in the queue. Johnny being the first guy standing in the queue goes in. He being very adamant to not go by the rules, takes an egg at random, irrespective of its number. The other members of the queue look for an egg corresponding to their number and if its present, they grab it, else they pick up any other numbered egg and refrain from creating a fuss. Let P(n,j) be the probability of j-th (where 2<=j<=50) person NOT getting his allotted egg. Find P(50,45)

a) 5/50 b) 5/6 c) 251/300 d) 201/250



15. You are playing a game Detective Sherlock and you with your friends are solving a case. However, the way to the solution might be tricky and confusing. Just remember that only one of the statement is TRUE and rest three are FALSE.
1. Jack : "Britney did it".
2. Britney : "Jack did it".
3. Selena : "Britney's telling the truth".
4. Martha : "Selena's not lying".
Identify who did it.

a) Jack b) Britney c) Selena d) Martha

16. There are 1000 wine bottles. One of the bottles contains poisoned wine. A rat dies after one hour of drinking the poisoned wine. How many minimum rats are needed to figure out which bottle contains poison in hour.

a) 8 rats b) 10 rats c) 16 rats d) 12 rats

17. James and Calie are a married couple. They have two children, one of the child is a boy. Assume that the probability of each gender is 1/2. What is the probability that the other child is also a boy?

a) 1/2 b) 1/4 c) 1/3 d) 1/6

18. The numbers 1,2,...,n are written around a circle in some order. What is the largest possible sum of the absolute differences of adjacent numbers?

a) (n^2)/2 b) (n!)/2 c) (n*(n-1))/2 d) (n^2)

19. In a Binomial Distribution, if p, q and n are probability of success, failure and number of trials respectively, n =10,000 and p=0.001 then distribution has

a) mean nq and variance npq b) mean np and variance nq
c) mean np and variance np d) mean np and variance pq

20. A stick is broken into 3 parts, by choosing 2 points randomly along its length. With what probability can it form a triangle?

a) 1/4 b) 2/6 c) 1/8 d) 1/2

IITK

All branches eligible, no cpi cutoff, pen paper based. 30 (Reasoning + Verbal + Quant) questions asked,+3,-1

Apple

IITB

3 Coding Questions:- Platform Hackerrank

1. Questions similar to Shortest Path from node 1 to node 2.(BFS will do)
2. Given vector of strings. Take a string from vector, Remove one character at a time if that new string exists in already in given vector then increment the counter.
Ex:- input={a,b,ba,bad,bdca

For ‘a’-> if remove character string will be null so count=0
For ‘ba’-> if remove ‘a’ then left string is ‘b’ and ‘b’ exists so count++ similarly if we remove ‘b’ from ‘ba’ then left string is ‘a’ and ‘a’ exists so count++. So total count for ‘ba’ is 2.
Similarly For ‘bda’ possible strings are { ‘ba’,’b’,’a’ } count=3
For bdca--{‘b’,’a’,’ba’} count =3

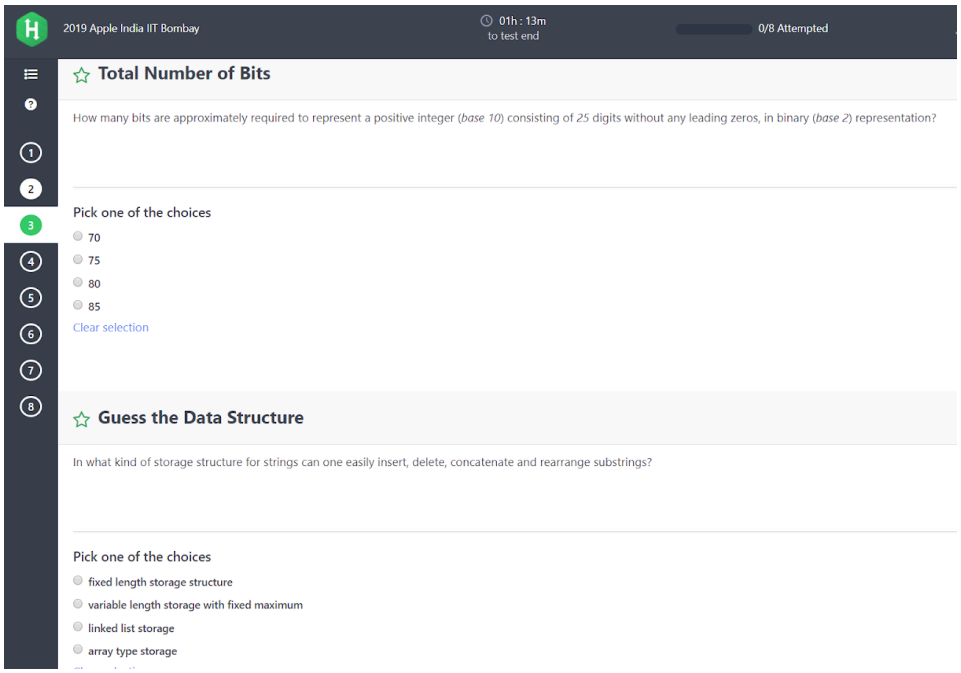
And I guess they asked for max count

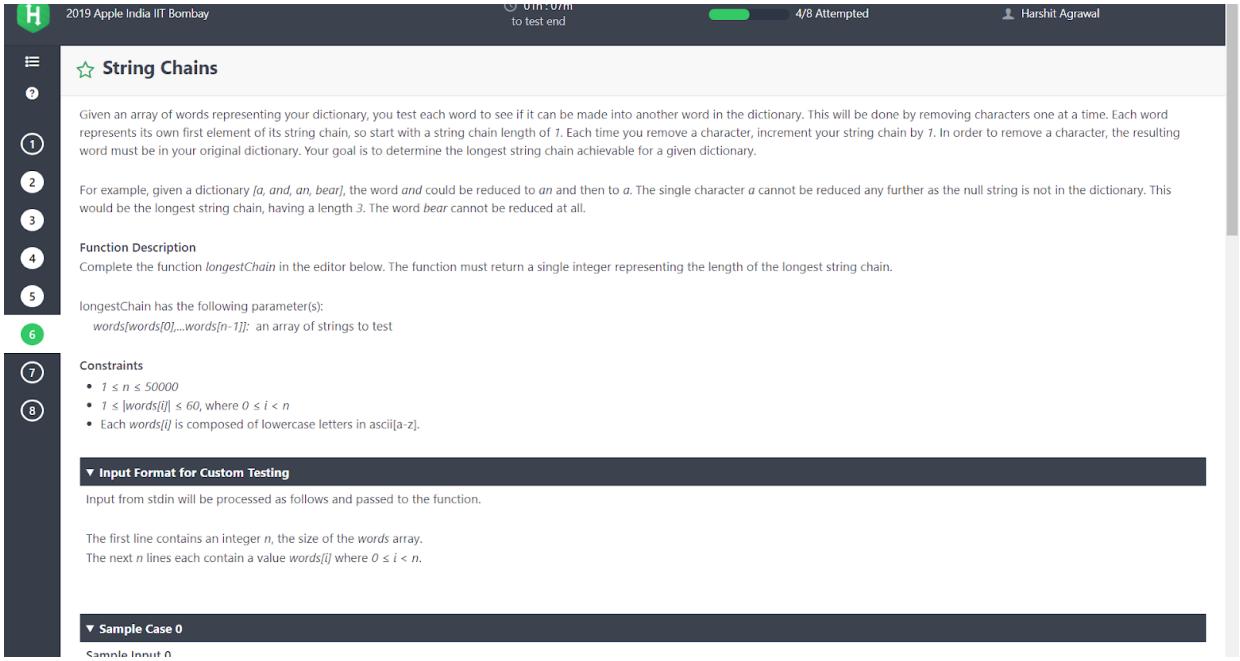
3.

Given array of size n , where n is number of questions in Exam. You and your friend is solving the questions from exam. You will solve first K questions and your friend will solve the rest.
If v[i]==1 is you will get 1 mark otherwise -1. Now you have to find min k where your score is greater than your friends score.
Example:- V={1,0,0,1,0}
Output :- 0
Explanation:- If you don’t solve any question then your score will be 0 and your friends score will be ‘-1’ (2 correct & 3 incorrect)

IITB

(Had they shortlisted candidates for the interview? If so, how many?) Cpi criteria >=7.5
Yes, they have shortlisted 33 students for the interview.





String Chains

Given an array of words representing your dictionary, you test each word to see if it can be made into another word in the dictionary. This will be done by removing characters one at a time. Each word represents its own first element of its string chain, so start with a string chain length of *1*. Each time you remove a character, increment your string chain by *1*. In order to remove a character, the resulting word must be in your original dictionary. Your goal is to determine the longest string chain achievable for a given dictionary.

For example, given a dictionary *[a, and, an, bear]*, the word *and* could be reduced to *an* and then to *a*. The single character *a* cannot be reduced any further as the null string is not in the dictionary. This would be the longest string chain, having a length *3*. The word *bear* cannot be reduced at all.

Function Description

Complete the function *longestChain* in the editor below. The function must return a single integer representing the length of the longest string chain.

longestChain has the following parameter(s):

words[words[0],...words[n-1]]: an array of strings to test

Constraints

- $1 \le n \le 50000$
- $1 \le |words[i]| \le 60$, where $0 \le i < n$
- Each *words[i]* is composed of lowercase letters in ascii[a-z].

▼ Input Format for Custom Testing

Input from stdin will be processed as follows and passed to the function.

The first line contains an integer *n*, the size of the *words* array.
The next *n* lines each contain a value *words[i]* where $0 \le i < n$.

▼ Sample Case 0

Sample Input 0

```
6
a
b
ba
bca
bda
bdca
```

Sample Output 0

```
4
```

Explanation 0

Sample Case 1: words = {"a", "b", "ba", "bca", "bda", "bdca"}

Because *"a"* and *"b"* are single-character words, we cannot remove any characters from them as that would result in the empty string, so the length for both of these string chains is *1*.

The word *"ba"* can create two different string chains each with a length of *2*: *("ba" → "a"* and *"ba" → "b")*. This means our current longest string chain is *2*.

The word *"bca"* can create two different string chains of length *3*: *("bca" → "ba" → "a"* and *"bca" → "ba" → "b")*. This means our current longest string chain is now *3*.

The word *"bda"* can create two different string chains of length *3*: *("bda" → "ba" → "a"* and *"bda" → "ba" → "b")*. At this point, our current longest string chain is still *3*.

The word *"bdca"* can create four different string chains of length: *4 ("bdca" → "bda" → "ba" → "a", "bdca" → "bda" → "ba" → "b", "bdca" → "bca" → "ba" → "a"*, and *"bdca" → "bca" → "ba" → "b")*. This means our current longest string chain is now *4*.

The longest string chain is *4*.

YOUR ANSWER

We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour. Start tour

Original code | Python 3

```
#!/bin/python3

import math
import os
import random
import re
import sys


#
# Complete the 'longestChain' function below.
#
# The function is expected to return an INTEGER.
# The function accepts STRING_ARRAY words as parameter.
#

def longestChain(words):
    # Write your code here


if __name__ == '__main__':
```

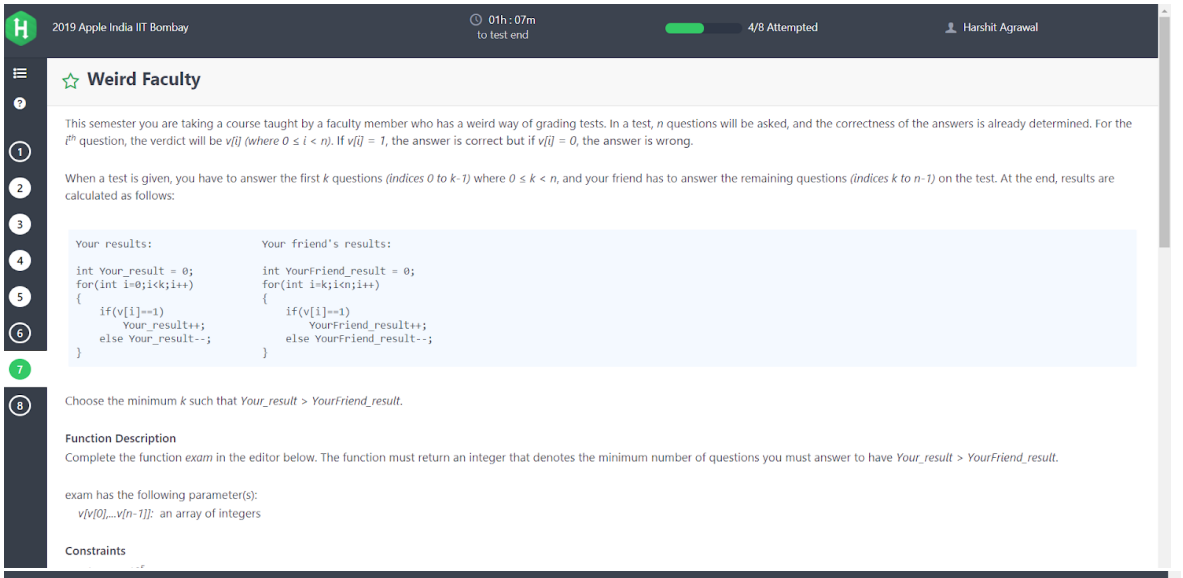
Line: 13 Col: 1

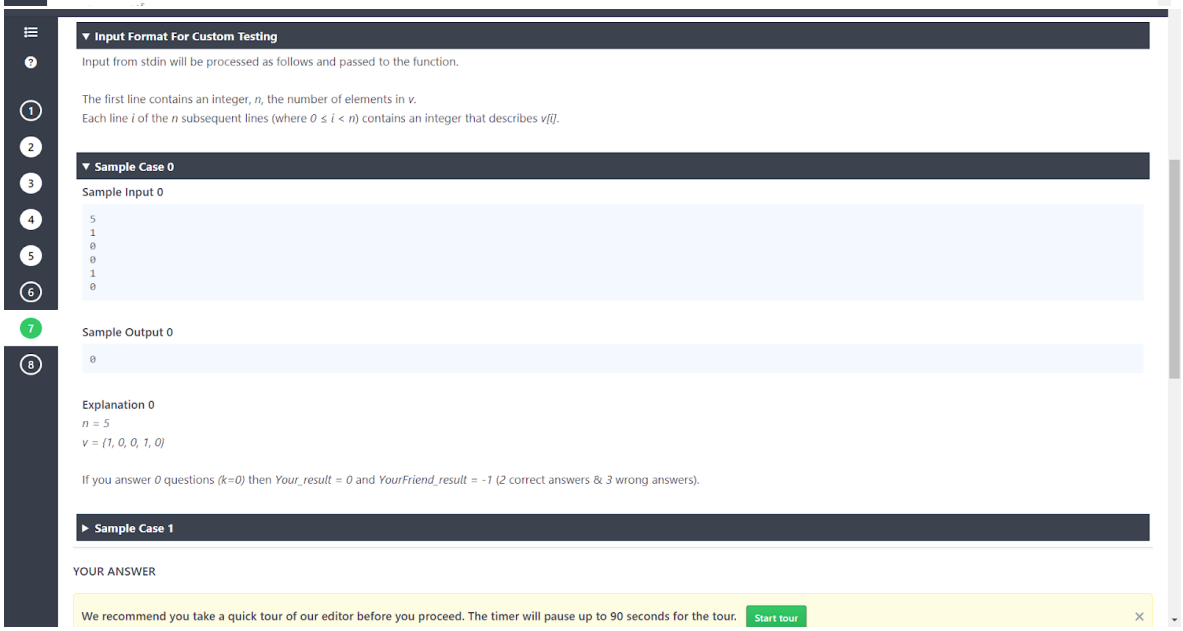
Test against custom input

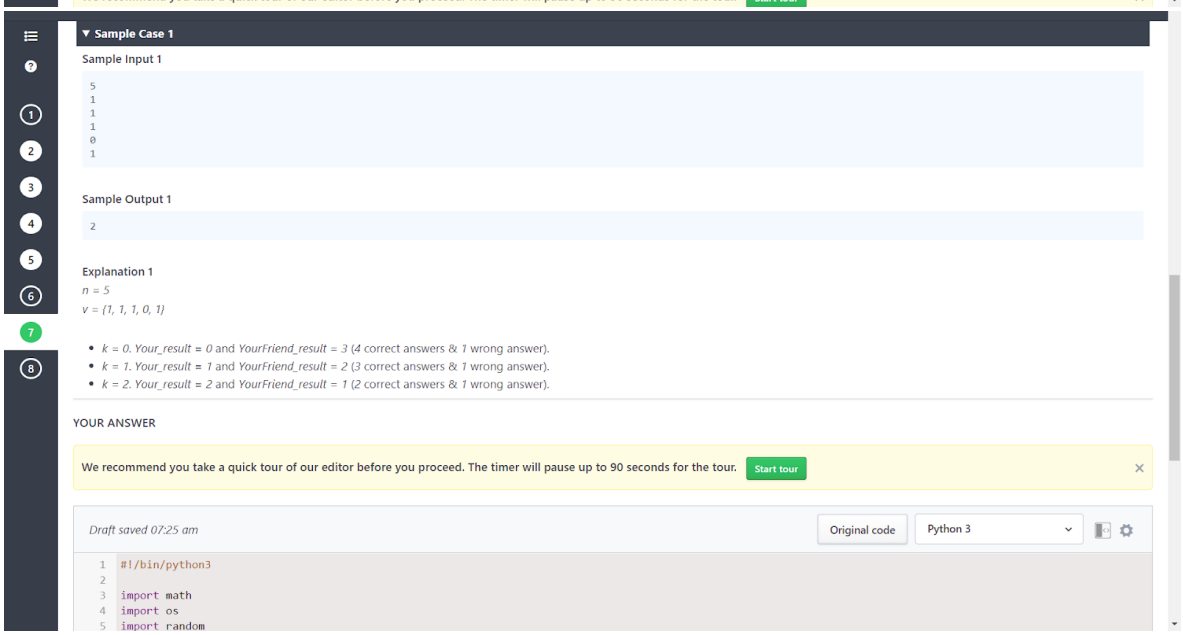
Run Code | Submit code & Continue

(You can submit any number of times)

Download sample test cases *The input/output files have Unix line endings. Do not use Notepad to edit them on windows.*


2019 Apple India IIT Bombay
01h : 07m
to test end
4/8 Attempted
Harshit Agrawal
Weird Faculty
This semester you are taking a course taught by a faculty member who has a weird way of grading tests. In a test, n questions will be asked, and the correctness of the answers is already determined. For the i^th question, the verdict will be v[i] (where 0 ≤ i < n). If v[i] = 1, the answer is correct but if v[i] = 0, the answer is wrong.
When a test is given, you have to answer the first k questions (indices 0 to k-1) where 0 ≤ k < n, and your friend has to answer the remaining questions (indices k to n-1) on the test. At the end, results are calculated as follows:
Your results:
int Your_result = 0;
for(int i=0;i<k;i++)
{
if(v[i]==1)
Your_result++;
else Your_result--;
}
Your friend's results:
int YourFriend_result = 0;
for(int i=k;i<n;i++)
{
if(v[i]==1)
YourFriend_result++;
else YourFriend_result--;
}
Choose the minimum k such that Your_result > YourFriend_result.
Function Description
Complete the function exam in the editor below. The function must return an integer that denotes the minimum number of questions you must answer to have Your_result > YourFriend_result.
exam has the following parameter(s):
v[v[0],...v[n-1]]: an array of integers
Constraints


Input Format For Custom Testing
Input from stdin will be processed as follows and passed to the function.
The first line contains an integer, n, the number of elements in v.
Each line i of the n subsequent lines (where 0 ≤ i < n) contains an integer that describes v[i].
Sample Case 0
Sample Input 0
5
1
0
0
1
0
Sample Output 0
0
Explanation 0
n = 5
v = {1, 0, 0, 1, 0}
If you answer 0 questions (k=0) then Your_result = 0 and YourFriend_result = -1 (2 correct answers & 3 wrong answers).
Sample Case 1
YOUR ANSWER
We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.
Start tour


Sample Case 1
Sample Input 1
5
1
1
1
0
1
Sample Output 1
2
Explanation 1
n = 5
v = {1, 1, 1, 0, 1}
k = 0. Your_result = 0 and YourFriend_result = 3 (4 correct answers & 1 wrong answer).
k = 1. Your_result = 1 and YourFriend_result = 2 (3 correct answers & 1 wrong answer).
k = 2. Your_result = 2 and YourFriend_result = 1 (2 correct answers & 1 wrong answer).
YOUR ANSWER
We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.
Start tour
Draft saved 07:25 am
Original code
Python 3
#!/bin/python3
import math
import os
import random

```python
#!/bin/python3

import math
import os
import random
import re
import sys


#
# Complete the 'exam' function below.
#
# The function is expected to return an INTEGER.
# The function accepts INTEGER_ARRAY v as parameter.
#

def exam(v):
    # Write your code here


if __name__ == '__main__':
```

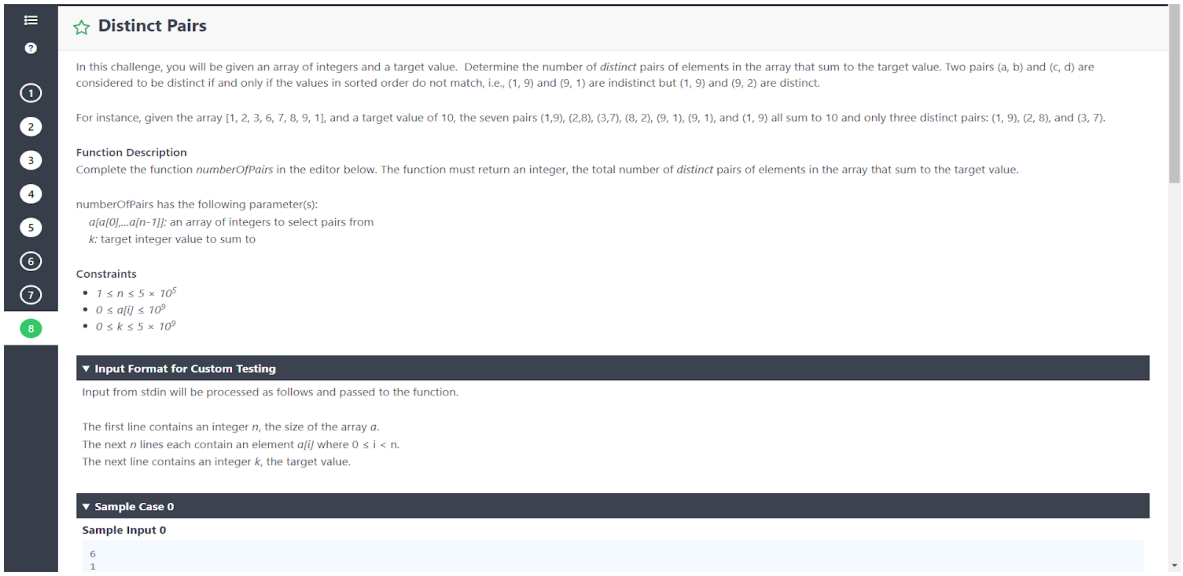
Line: 13 Col: 1

Test against custom input

Run Code | Submit code & Continue

(You can submit any number of times)

Download sample test cases *The input/output files have Unix line endings. Do not use Notepad to edit them on windows.*



Distinct Pairs

In this challenge, you will be given an array of integers and a target value. Determine the number of *distinct* pairs of elements in the array that sum to the target value. Two pairs (a, b) and (c, d) are considered to be distinct if and only if the values in sorted order do not match, i.e., (1, 9) and (9, 1) are indistinct but (1, 9) and (9, 2) are distinct.

For instance, given the array [1, 2, 3, 6, 7, 8, 9, 1], and a target value of 10, the seven pairs (1,9), (2,8), (3,7), (8, 2), (9, 1), (9, 1), and (1, 9) all sum to 10 and only three distinct pairs: (1, 9), (2, 8), and (3, 7).

Function Description

Complete the function *numberOfPairs* in the editor below. The function must return an integer, the total number of *distinct* pairs of elements in the array that sum to the target value.

numberOfPairs has the following parameter(s):

a[a[0],...a[n-1]]: an array of integers to select pairs from
k: target integer value to sum to

Constraints

- $1 \le n \le 5 \times 10^5$
- $0 \le a[i] \le 10^9$
- $0 \le k \le 5 \times 10^9$

▼ Input Format for Custom Testing

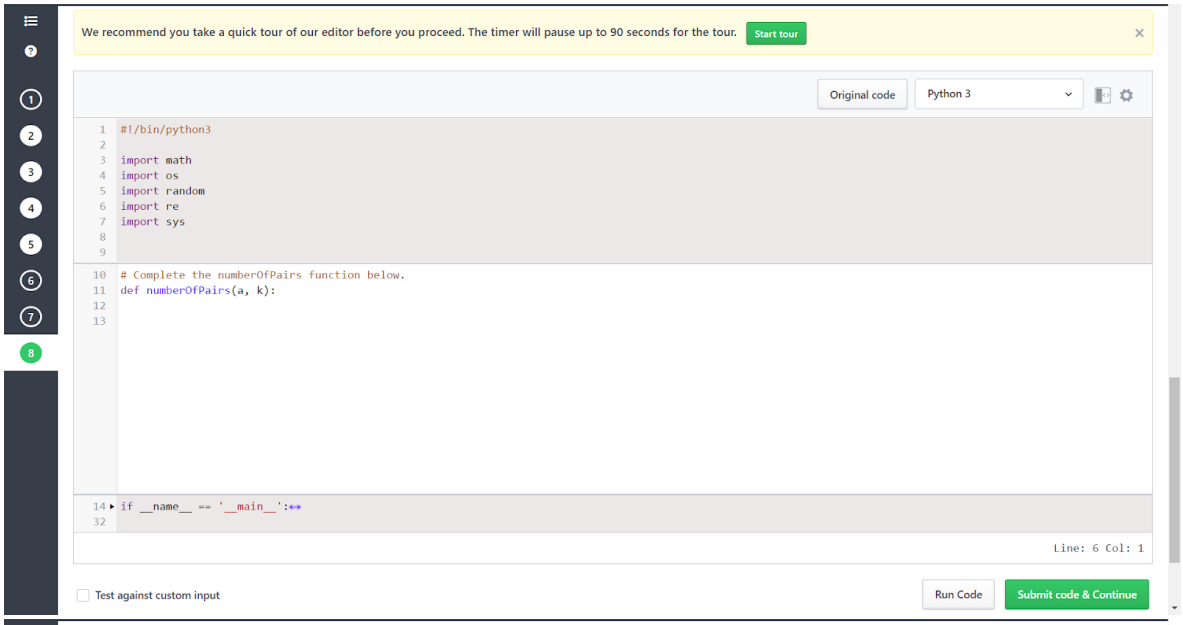
Input from stdin will be processed as follows and passed to the function.

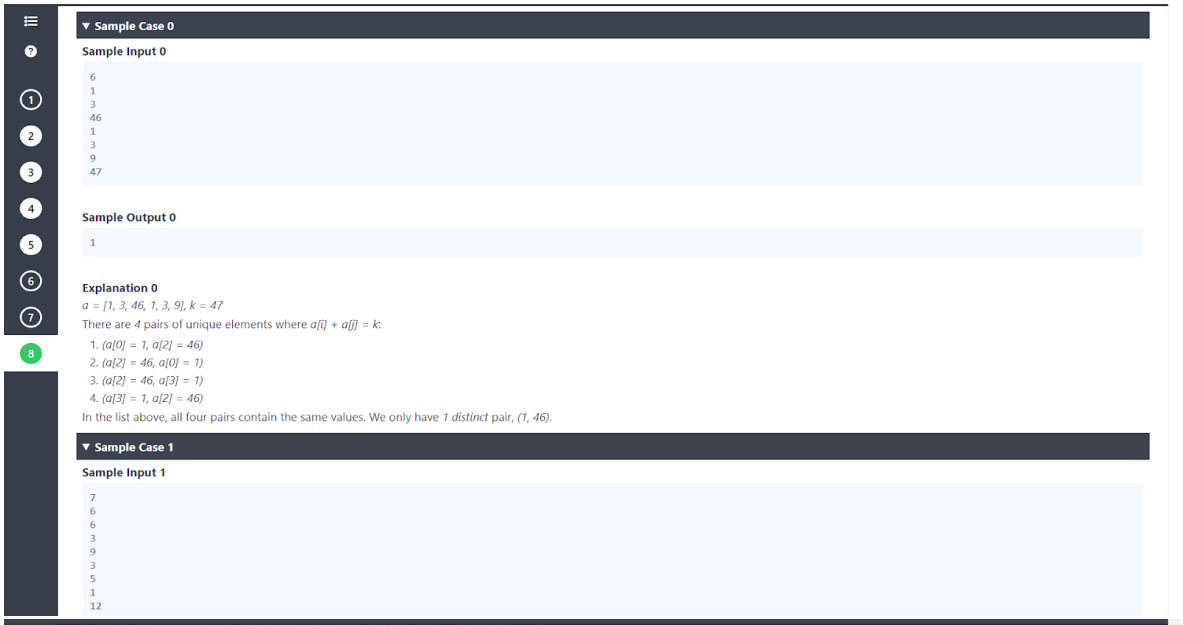
The first line contains an integer *n*, the size of the array *a*.
The next *n* lines each contain an element *a[i]* where $0 \le i < n$.
The next line contains an integer *k*, the target value.

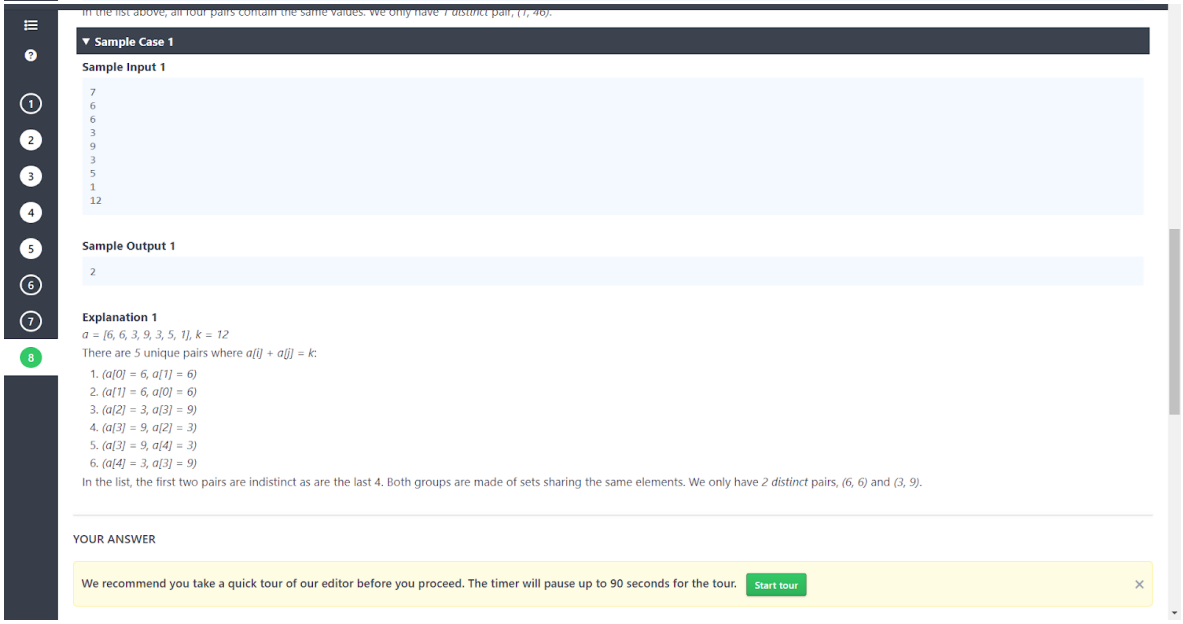
▼ Sample Case 0

Sample Input 0

```
6
1
```


We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.
Start tour
Original code
Python 3
#!/bin/python3
import math
import os
import random
import re
import sys
# Complete the numberOfPairs function below.
def numberOfPairs(a, k):
if __name__ == '__main__':
Line: 6 Col: 1
Test against custom input
Run Code
Submit code & Continue

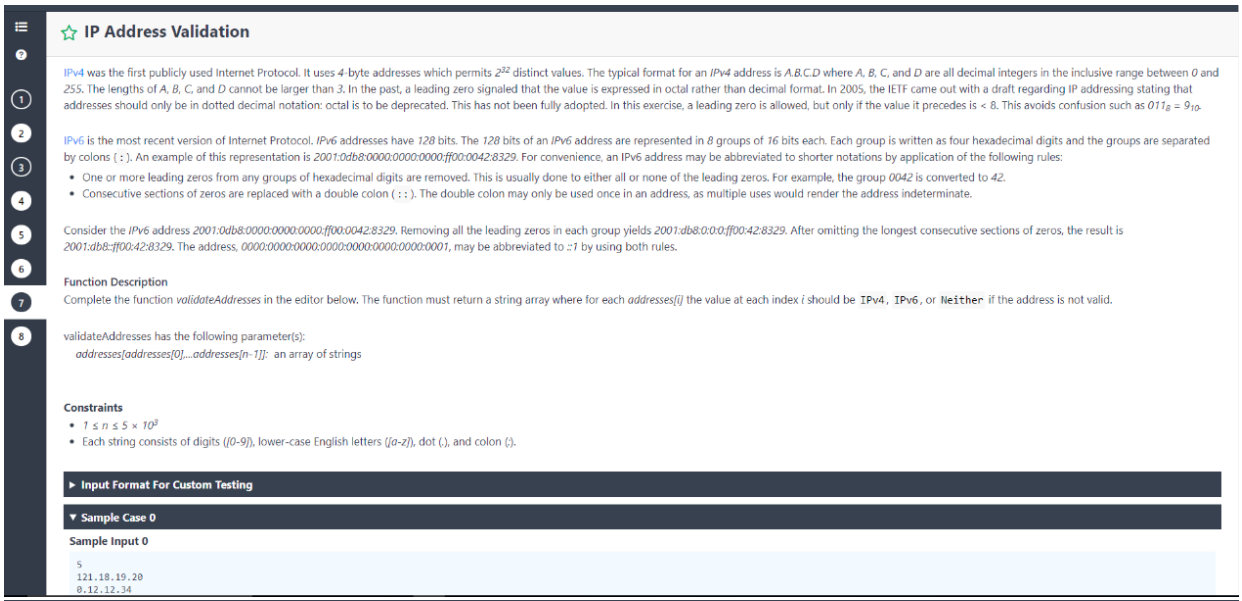

Sample Case 0
Sample Input 0
6
1
3
46
1
3
9
47
Sample Output 0
1
Explanation 0
a = [1, 3, 46, 1, 3, 9], k = 47
There are 4 pairs of unique elements where a[i] + a[j] = k:
1. (a[0] = 1, a[2] = 46)
2. (a[2] = 46, a[0] = 1)
3. (a[2] = 46, a[3] = 1)
4. (a[3] = 1, a[2] = 46)
In the list above, all four pairs contain the same values. We only have 1 distinct pair, (1, 46).
Sample Case 1
Sample Input 1
7
6
6
3
9
3
5
1
12


Sample Case 1
Sample Input 1
7
6
6
3
9
3
5
1
12
Sample Output 1
2
Explanation 1
a = [6, 6, 3, 9, 3, 5, 1], k = 12
There are 5 unique pairs where a[i] + a[j] = k:
1. (a[0] = 6, a[1] = 6)
2. (a[1] = 6, a[0] = 6)
3. (a[2] = 3, a[3] = 9)
4. (a[3] = 9, a[2] = 3)
5. (a[3] = 9, a[4] = 3)
6. (a[4] = 3, a[3] = 9)
In the list, the first two pairs are indistinct as are the last 4. Both groups are made of sets sharing the same elements. We only have 2 distinct pairs, (6, 6) and (3, 9).
YOUR ANSWER
We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.
Start tour

IITM

Same questions as in above screenshots by IITB.

IITD



IP Address Validation

IPv4 was the first publicly used Internet Protocol. It uses 4-byte addresses which permits 2^{32} distinct values. The typical format for an *IPv4* address is *A.B.C.D* where *A*, *B*, *C*, and *D* are all decimal integers in the inclusive range between *0* and *255*. The lengths of *A*, *B*, *C*, and *D* cannot be larger than *3*. In the past, a leading zero signaled that the value is expressed in octal rather than decimal format. In 2005, the IETF came out with a draft regarding IP addressing stating that addresses should only be in dotted decimal notation: octal is to be deprecated. This has not been fully adopted. In this exercise, a leading zero is allowed, but only if the value it precedes is < 8. This avoids confusion such as $011_8 = 9_{10}$.

IPv6 is the most recent version of Internet Protocol. *IPv6* addresses have *128* bits. The *128* bits of an *IPv6* address are represented in *8* groups of *16* bits each. Each group is written as four hexadecimal digits and the groups are separated by colons (:). An example of this representation is *2001:0db8:0000:0000:0000:ff00:0042:8329*. For convenience, an IPv6 address may be abbreviated to shorter notations by application of the following rules:

- One or more leading zeros from any groups of hexadecimal digits are removed. This is usually done to either all or none of the leading zeros. For example, the group *0042* is converted to *42*.
- Consecutive sections of zeros are replaced with a double colon (: :). The double colon may only be used once in an address, as multiple uses would render the address indeterminate.

Consider the *IPv6* address *2001:0db8:0000:0000:0000:ff00:0042:8329*. Removing all the leading zeros in each group yields *2001:db8:0:0:0:ff00:42:8329*. After omitting the longest consecutive sections of zeros, the result is *2001:db8::ff00:42:8329*. The address, *0000:0000:0000:0000:0000:0000:0000:0001*, may be abbreviated to *::1* by using both rules.

Function Description

Complete the function *validateAddresses* in the editor below. The function must return a string array where for each *addresses[i]* the value at each index *i* should be `IPv4`, `IPv6`, or `Neither` if the address is not valid.

validateAddresses has the following parameter(s):

addresses[addresses[0],...addresses[n-1]]: an array of strings

Constraints

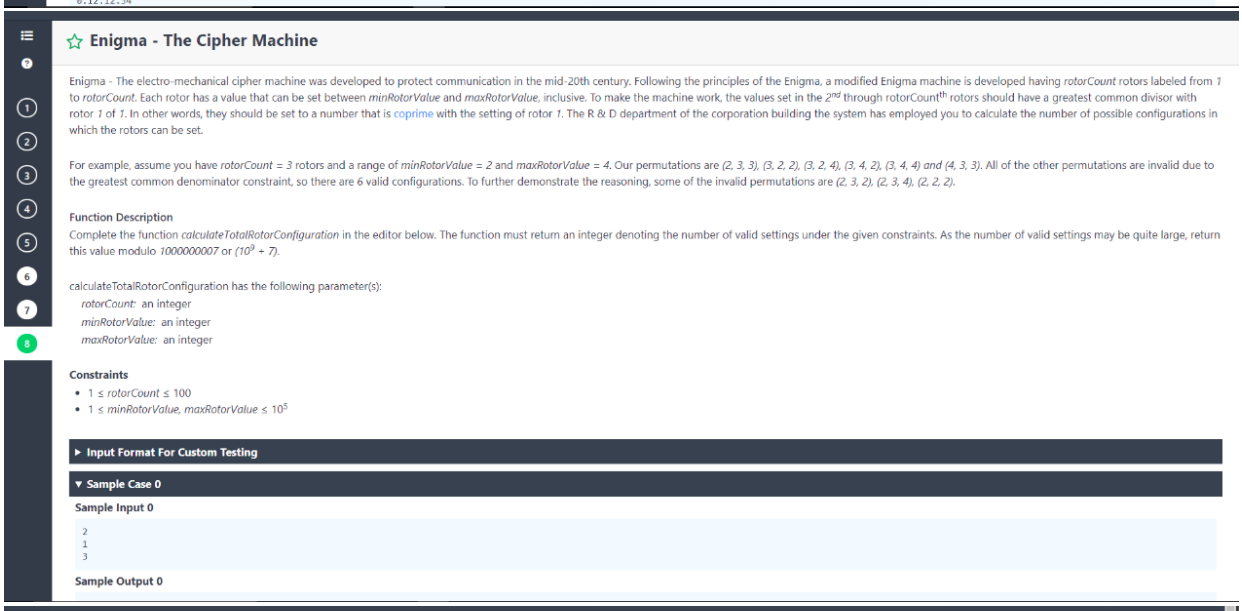
- $1 \le n \le 5 \times 10^3$
- Each string consists of digits (*[0-9]*), lower-case English letters (*[a-z]*), dot (.), and colon (:).

▸ Input Format For Custom Testing

▾ Sample Case 0

Sample Input 0

```
5
121.18.19.20
0.12.12.34
```



Enigma - The Cipher Machine

Enigma - The electro-mechanical cipher machine was developed to protect communication in the mid-20th century. Following the principles of the Enigma, a modified Enigma machine is developed having *rotorCount* rotors labeled from *1* to *rotorCount*. Each rotor has a value that can be set between *minRotorValue* and *maxRotorValue*, inclusive. To make the machine work, the values set in the 2^{nd} through rotorCountth rotors should have a greatest common divisor with rotor *1* of *1*. In other words, they should be set to a number that is coprime with the setting of rotor *1*. The R & D department of the corporation building the system has employed you to calculate the number of possible configurations in which the rotors can be set.

For example, assume you have *rotorCount = 3* rotors and a range of *minRotorValue = 2* and *maxRotorValue = 4*. Our permutations are *(2, 3, 3), (3, 2, 2), (3, 2, 4), (3, 4, 2), (3, 4, 4) and (4, 3, 3)*. All of the other permutations are invalid due to the greatest common denominator constraint, so there are 6 valid configurations. To further demonstrate the reasoning, some of the invalid permutations are *(2, 3, 2), (2, 3, 4), (2, 2, 2)*.

Function Description

Complete the function *calculateTotalRotorConfiguration* in the editor below. The function must return an integer denoting the number of valid settings under the given constraints. As the number of valid settings may be quite large, return this value modulo *1000000007* or $(10^9 + 7)$.

calculateTotalRotorConfiguration has the following parameter(s):

rotorCount: an integer
minRotorValue: an integer
maxRotorValue: an integer

Constraints

- $1 \le rotorCount \le 100$
- $1 \le minRotorValue, maxRotorValue \le 10^5$

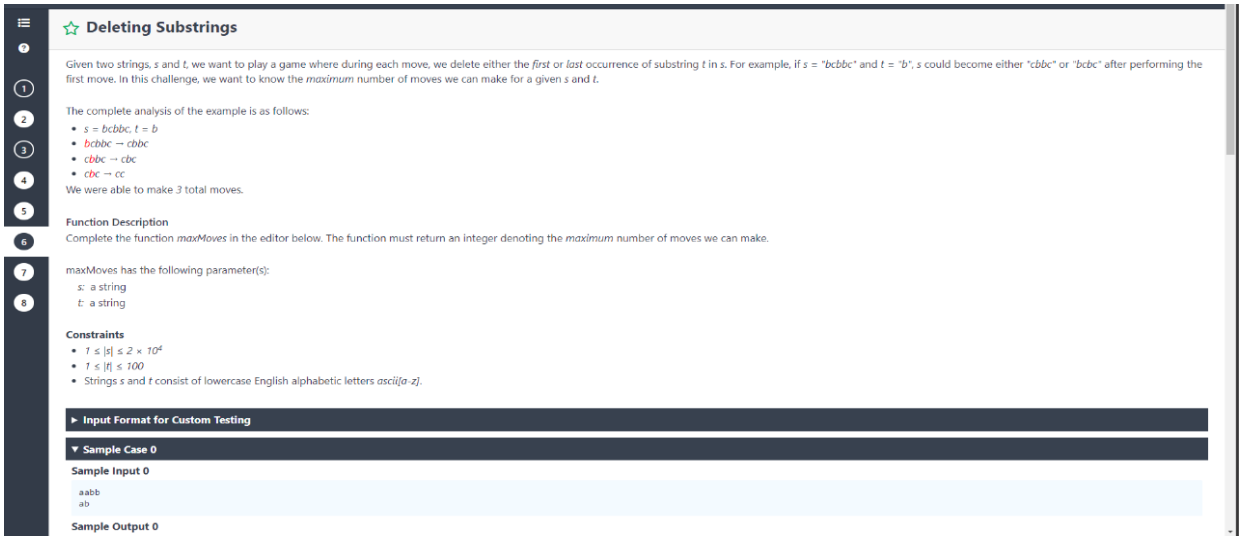
▸ Input Format For Custom Testing

▾ Sample Case 0

Sample Input 0

```
2
1
3
```

Sample Output 0



Deleting Substrings

Given two strings, *s* and *t*, we want to play a game where during each move, we delete either the *first* or *last* occurrence of substring *t* in *s*. For example, if *s = "bcbbc"* and *t = "b"*, *s* could become either *"cbbc"* or *"bcbc"* after performing the first move. In this challenge, we want to know the *maximum* number of moves we can make for a given *s* and *t*.

The complete analysis of the example is as follows:

- *s = bcbbc, t = b*
- *bcbbc → cbbc*
- *cbbc → cbc*
- *cbc → cc*

We were able to make *3* total moves.

Function Description

Complete the function *maxMoves* in the editor below. The function must return an integer denoting the *maximum* number of moves we can make.

maxMoves has the following parameter(s):

s: a string
t: a string

Constraints

- $1 \le |s| \le 2 \times 10^4$
- $1 \le |t| \le 100$
- Strings *s* and *t* consist of lowercase English alphabetic letters *ascii[a-z]*.

▸ Input Format for Custom Testing

▾ Sample Case 0

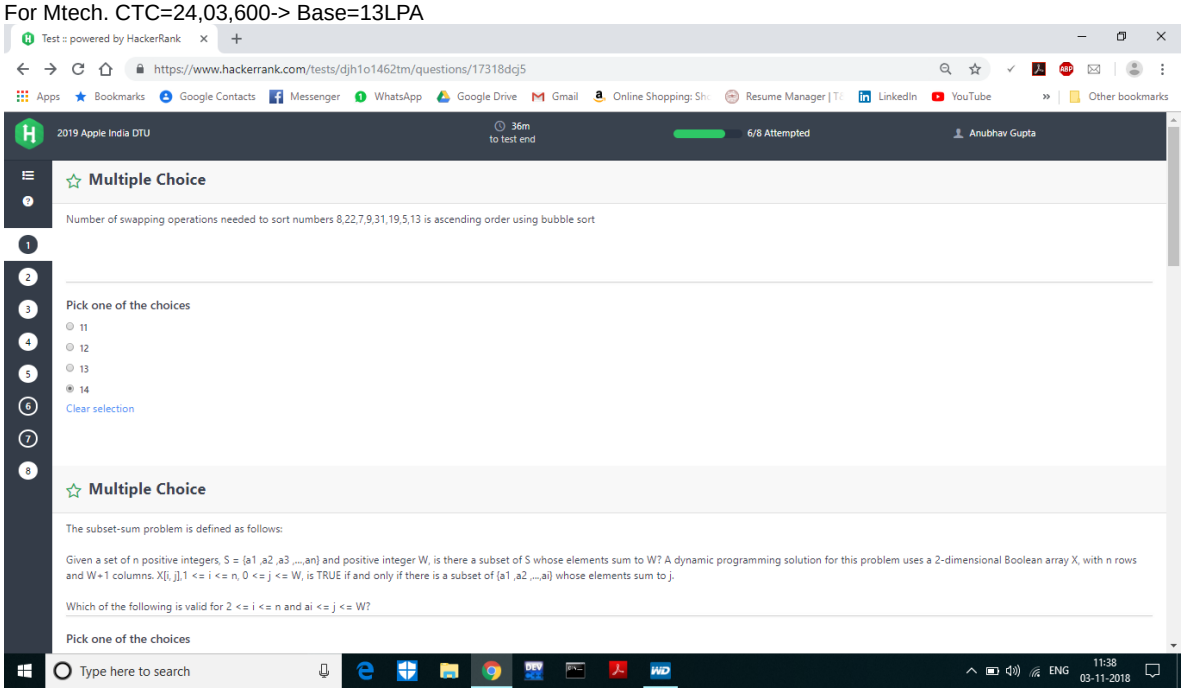
Sample Input 0

```
aabb
ab
```

Sample Output 0

DTU

No CPI criteria 0 Cutoff For Software Engineer Profile
For Btech. CTC=22,91,200-> Base=13LPA;
For Mtech. CTC=24,03,600-> Base=13LPA



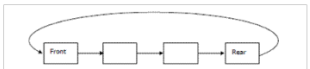
Test :: powered by HackerRank

https://www.hackerrank.com/tests/djh1o1462tm/questions/a3lmic9d

2019 Apple India DTU | 36m to test end | 6/8 Attempted | Anubhav Gupta

Queue using Circular Linked List

We implement a queue using a circular linked list, where *Front* is the pointer to the front node and *Rear* is the pointer to the rear node:



Queue using Circular Linked List

What is the minimum number of additional pointers required to implement constant time, i.e., O(1), *enqueue* and *dequeue* operation?

Pick one of the choices

- 0
- 1
- 2
- 3
- As many as the total number of nodes in the circular linked list.

Clear selection

Multiple Choice

Which of the following are true about a doubly linked list ?

Type here to search | ENG | 11:38 03-11-2018

Test :: powered by HackerRank

https://www.hackerrank.com/tests/djh1o1462tm/questions/4fd2ede5328f8

2019 Apple India DTU | 36m to test end | 6/8 Attempted | Anubhav Gupta

Clear selection

Multiple Choice

Which of the following are true about a doubly linked list ?

1. it may be either linear or circular
2. it must contain a header node
3. it will occupy same memory space as that of linear linked list, both having same number of nodes

Pick one of the choices

- only 1
- 2 and 3
- 1, 2 and 3
- 1 and 3

Clear selection

Multiple Choice

Given the following code, what is the most likely result:

```
import java.util.*;
public class Compares
```

Type here to search | ENG | 11:38 03-11-2018

Test :: powered by HackerRank

https://www.hackerrank.com/tests/djh1o1462tm/questions/88pjd8ph

2019 Apple India DTU | 36m to test end | 6/8 Attempted | Anubhav Gupta

Multiple Choice

Given the following code, what is the most likely result:

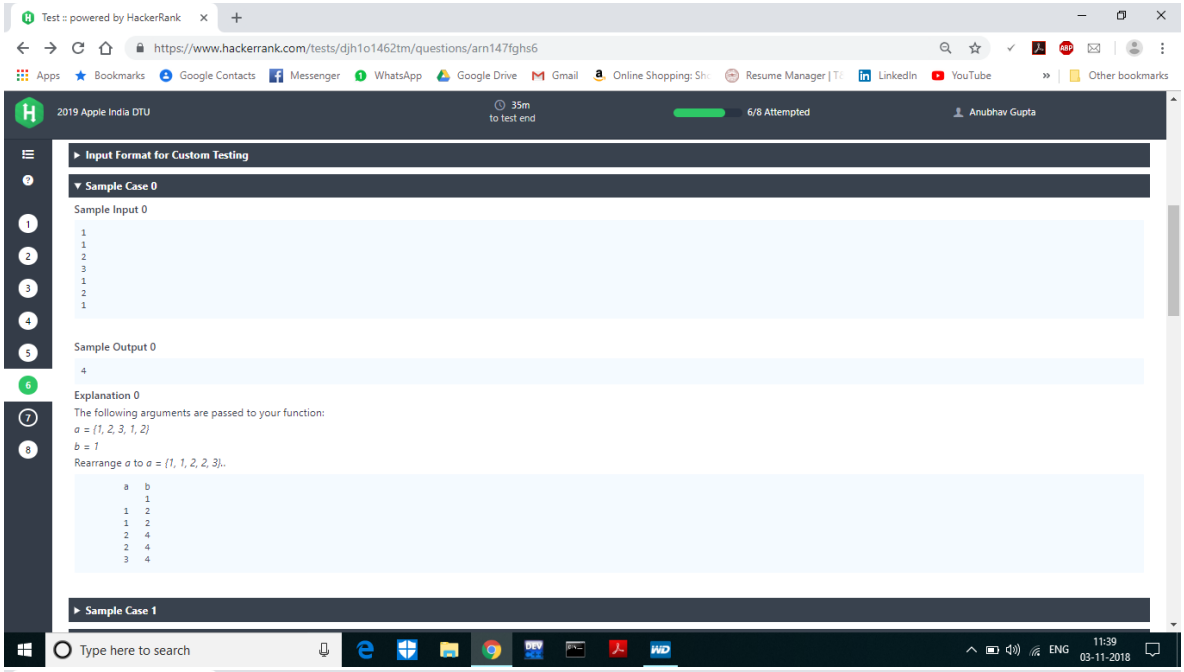
```
import java.util.*;
public class Compares
{
    public static void main( String args[])
    {
        String[] cities = {"Bangalore","Pune","San Francisco","New York City"};
        MySort ms = new MySort();
        Arrays.sort(cities, ms);
        System.out.println(Arrays.binarySearch(cities, "New York City"));
    }
    static class MySort implements Comparator
    {
        public int compare( String a, String b)
        {
            return b.compareTo(a);
        }
    }
}
```

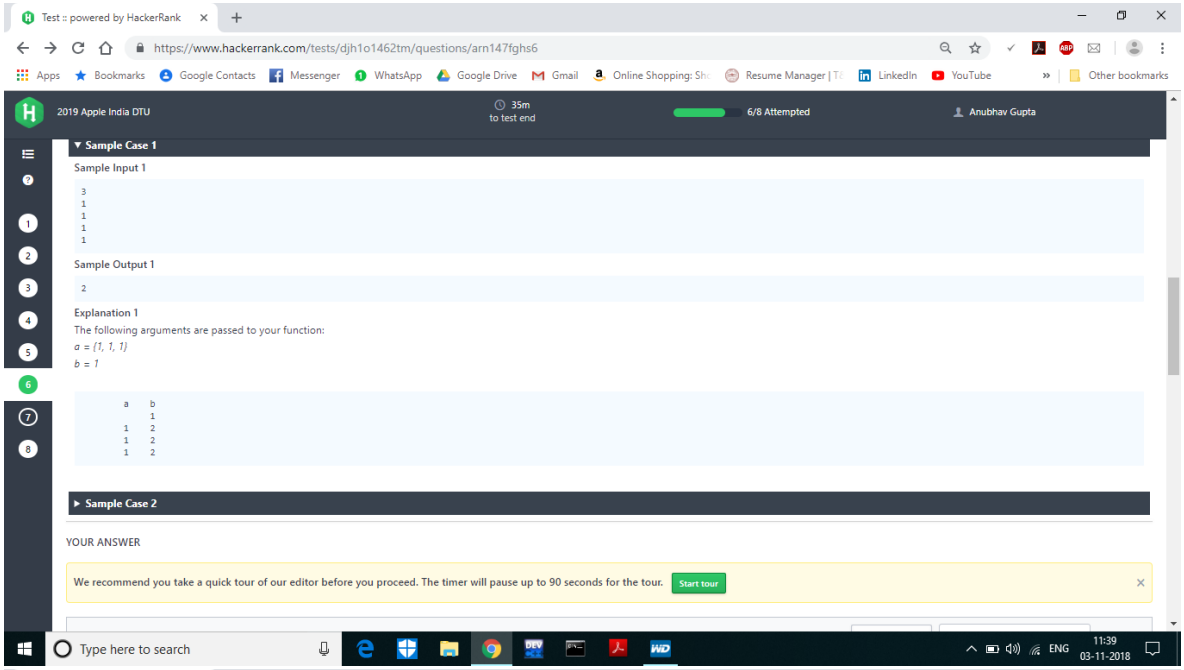
Pick one of the choices

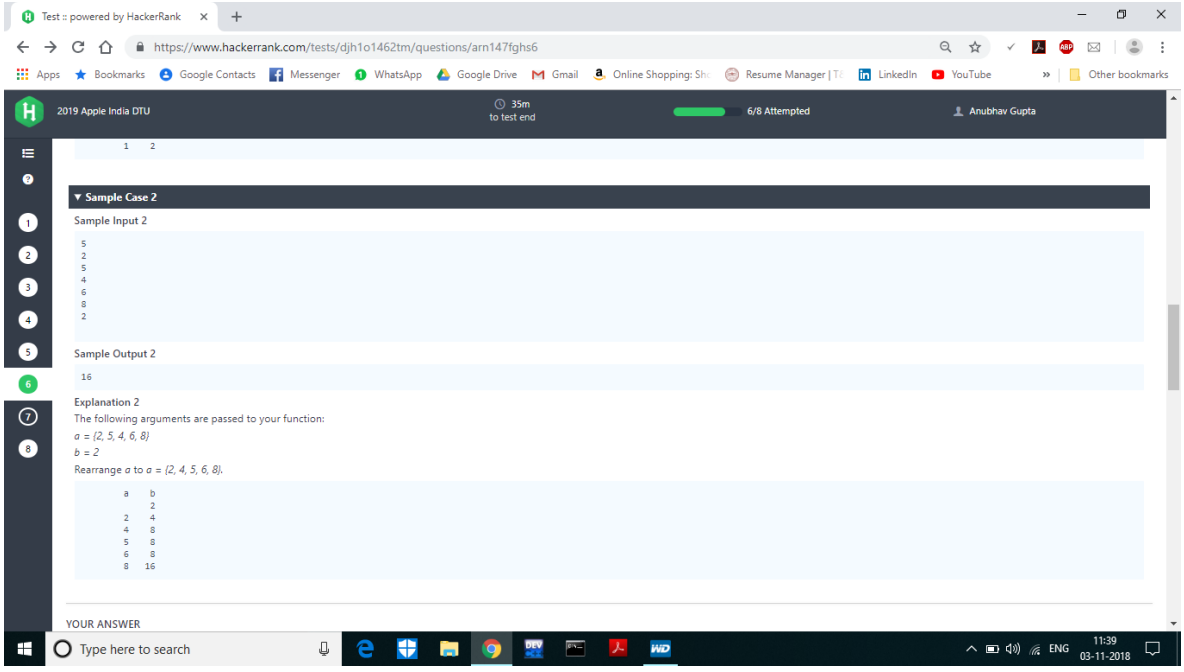
- -1
- 1
- 2
- Compilation fails

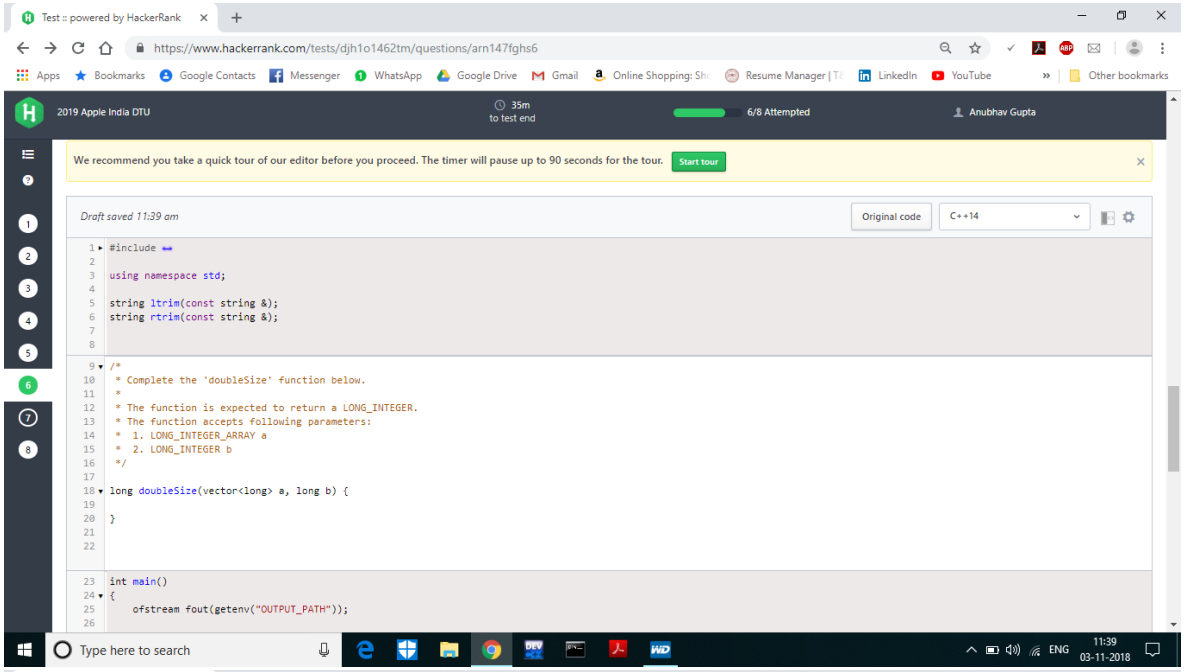
Clear selection

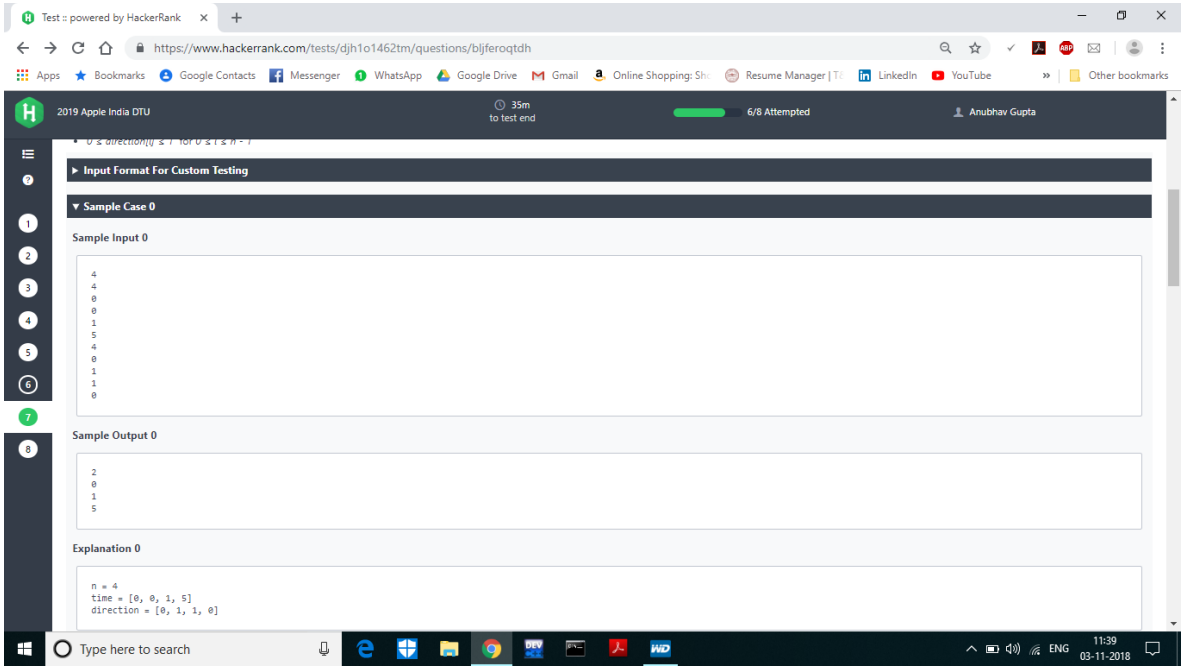
Type here to search | ENG | 11:38 03-11-2018

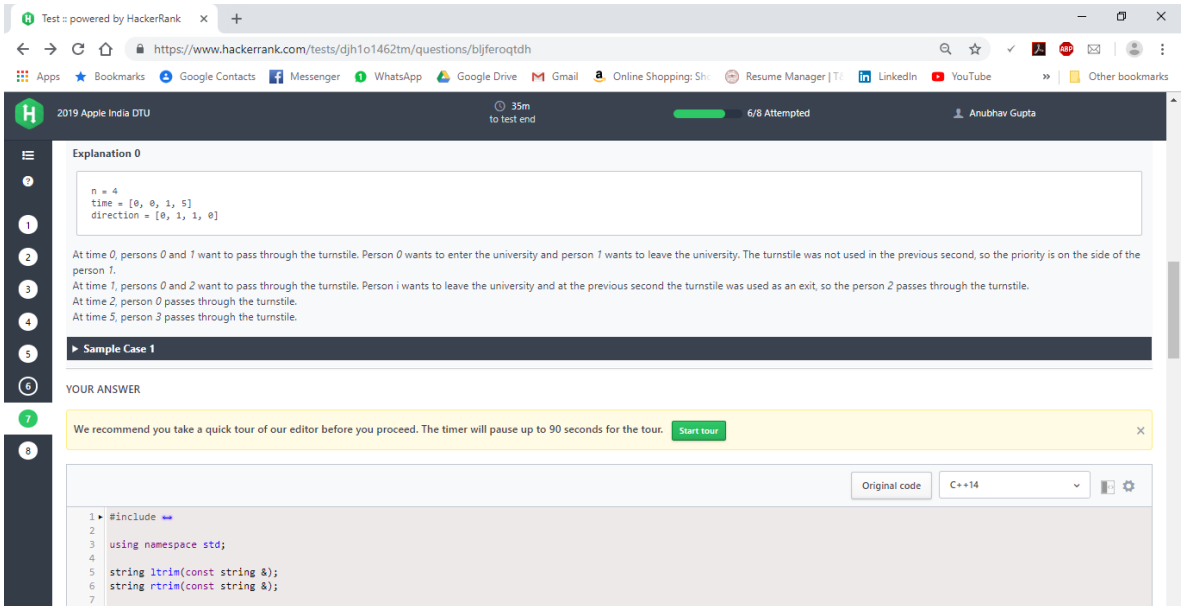

Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/arn147fghs6
2019 Apple India DTU
35m to test end
6/8 Attempted
Anubhav Gupta
Input Format for Custom Testing
Sample Case 0
Sample Input 0
1
1
2
3
1
2
1
Sample Output 0
4
Explanation 0
The following arguments are passed to your function:
a = {1, 2, 3, 1, 2}
b = 1
Rearrange a to a = {1, 1, 2, 2, 3}..
a b
1
1 2
1 2
2 4
2 4
3 4
Sample Case 1
Type here to search
ENG
11:39
03-11-2018

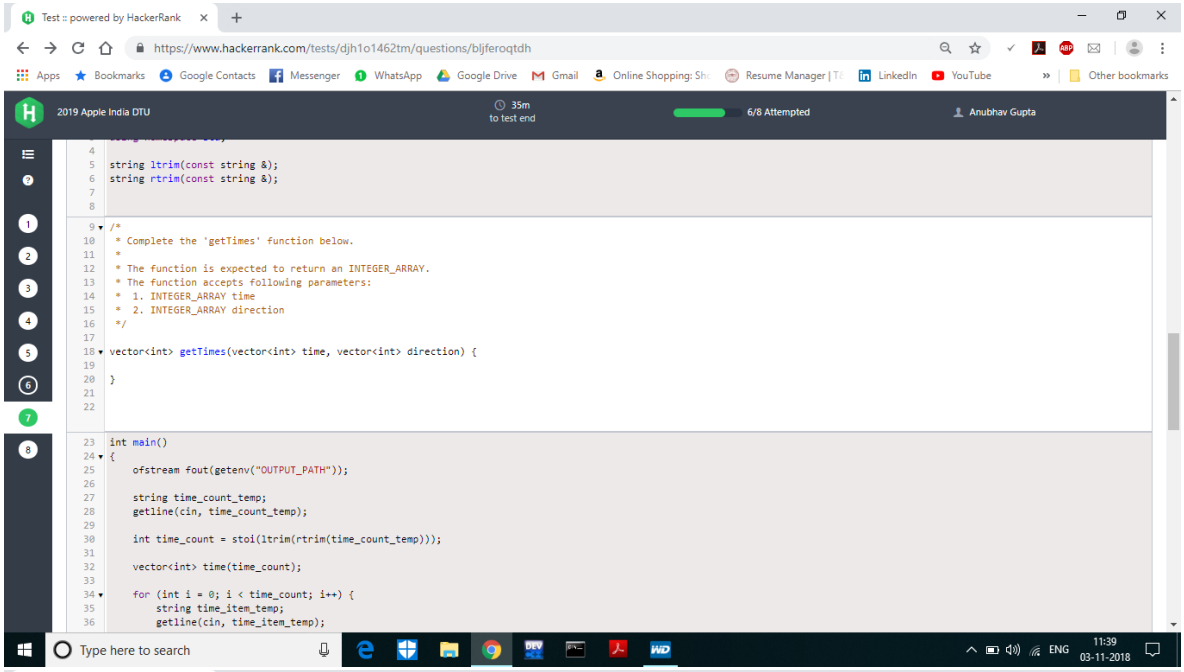

Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/arn147fghs6
2019 Apple India DTU
35m to test end
6/8 Attempted
Anubhav Gupta
Sample Case 1
Sample Input 1
3
1
1
1
1
Sample Output 1
2
Explanation 1
The following arguments are passed to your function:
a = {1, 1, 1}
b = 1
a b
1
1 2
1 2
1 2
Sample Case 2
YOUR ANSWER
We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.
Start tour
Type here to search
ENG
11:39
03-11-2018

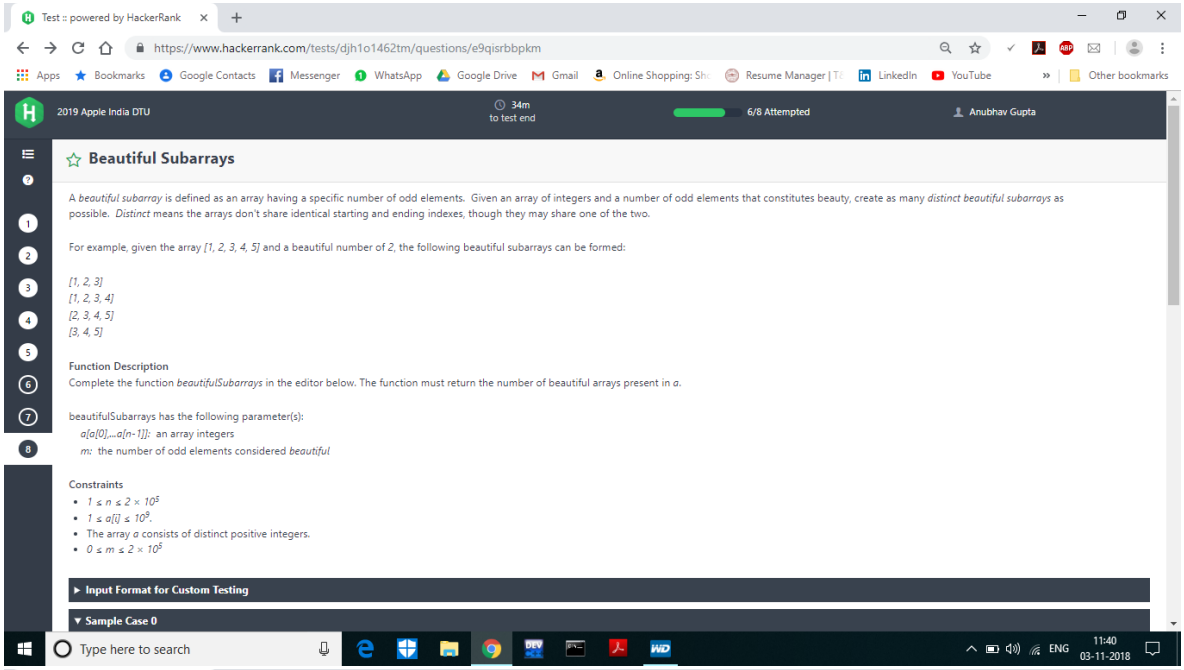

Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/arn147fghs6
2019 Apple India DTU
35m to test end
6/8 Attempted
Anubhav Gupta
1 2
Sample Case 2
Sample Input 2
5
2
5
4
6
8
2
Sample Output 2
16
Explanation 2
The following arguments are passed to your function:
a = {2, 5, 4, 6, 8}
b = 2
Rearrange a to a = {2, 4, 5, 6, 8}.
a b
2
2 4
4 8
5 8
6 8
8 16
YOUR ANSWER
Type here to search
ENG
11:39
03-11-2018

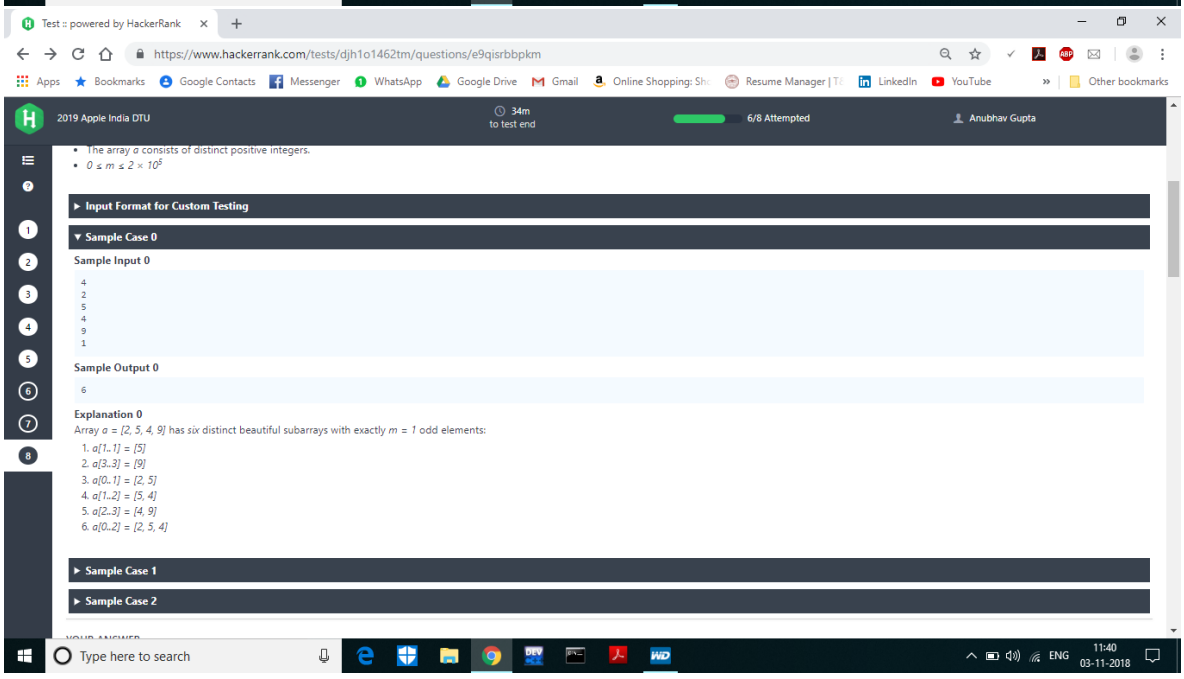

Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/arn147fghs6
2019 Apple India DTU
35m to test end
6/8 Attempted
Anubhav Gupta
We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.
Start tour
Draft saved 11:39 am
Original code
C++14
#include
using namespace std;
string ltrim(const string &);
string rtrim(const string &);
/*
* Complete the 'doubleSize' function below.
*
* The function is expected to return a LONG_INTEGER.
* The function accepts following parameters:
* 1. LONG_INTEGER_ARRAY a
* 2. LONG_INTEGER b
*/
long doubleSize(vector<long> a, long b) {
}
int main()
{
ofstream fout(getenv("OUTPUT_PATH"));
Type here to search
ENG
11:39
03-11-2018

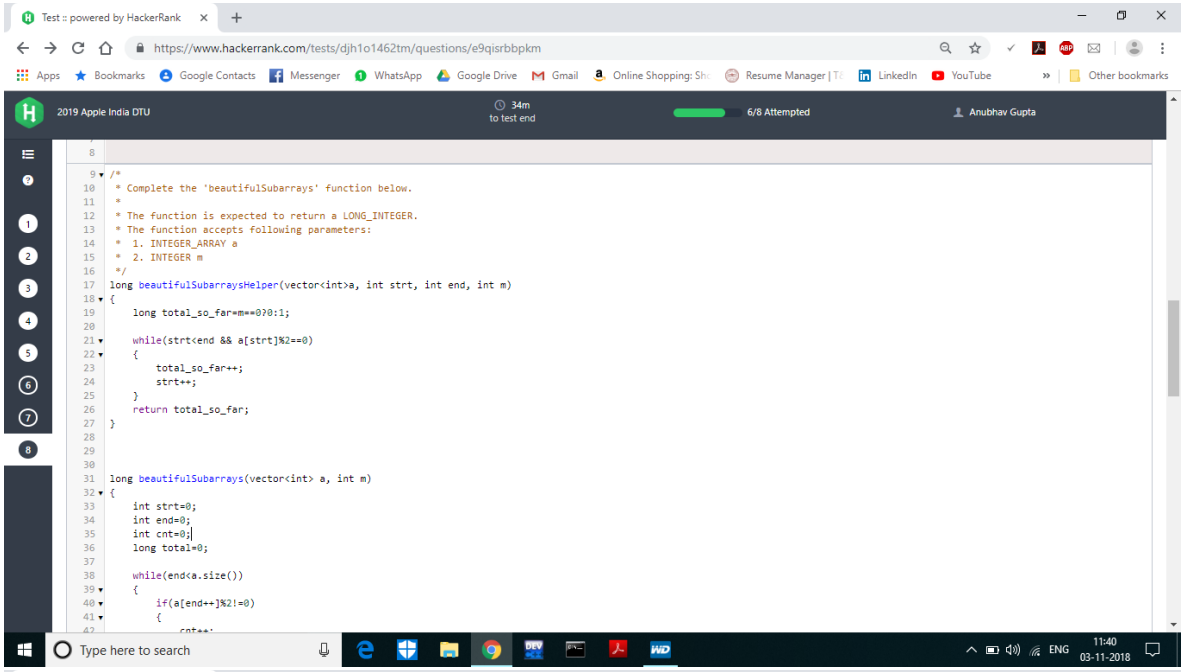

Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/bljferoqtdh
2019 Apple India DTU
35m to test end
6/8 Attempted
Anubhav Gupta
Input Format For Custom Testing
Sample Case 0
Sample Input 0
4
4
0
0
1
5
4
0
1
1
0
Sample Output 0
2
0
1
5
Explanation 0
n = 4
time = [0, 0, 1, 5]
direction = [0, 1, 1, 0]
Type here to search
ENG
11:39
03-11-2018

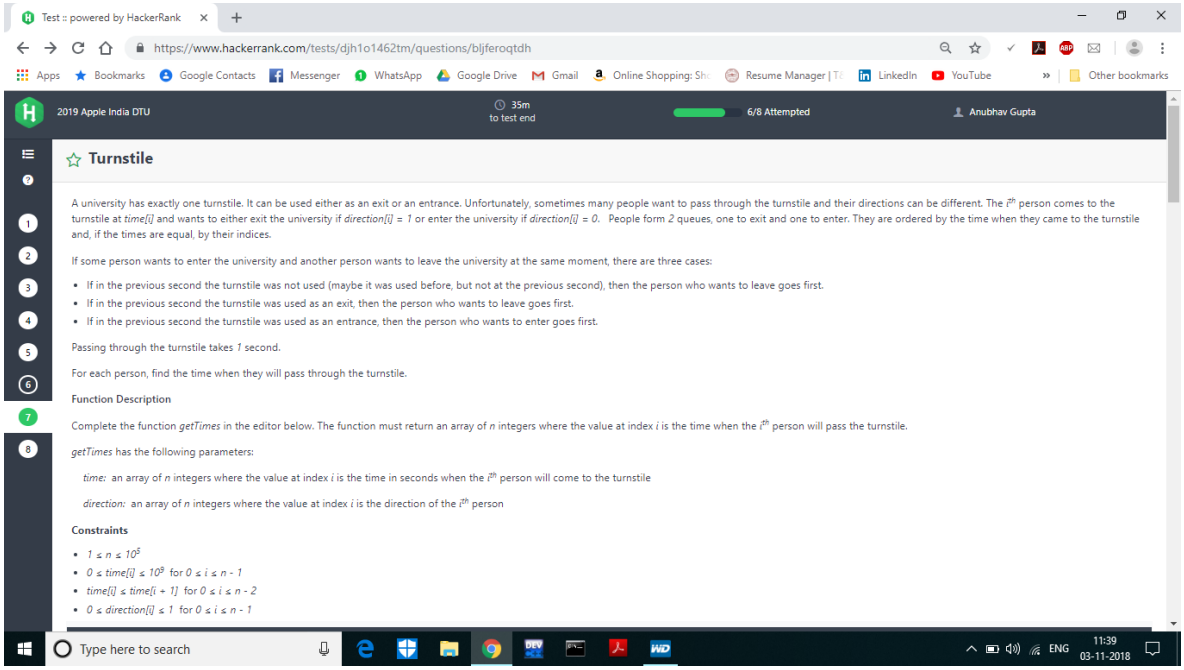

Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/bljferoqtdh
2019 Apple India DTU
35m to test end
6/8 Attempted
Anubhav Gupta
Explanation 0
n = 4
time = [0, 0, 1, 5]
direction = [0, 1, 1, 0]
At time 0, persons 0 and 1 want to pass through the turnstile. Person 0 wants to enter the university and person 1 wants to leave the university. The turnstile was not used in the previous second, so the priority is on the side of the person 1.
At time 1, persons 0 and 2 want to pass through the turnstile. Person i wants to leave the university and at the previous second the turnstile was used as an exit, so the person 2 passes through the turnstile.
At time 2, person 0 passes through the turnstile.
At time 5, person 3 passes through the turnstile.
Sample Case 1
YOUR ANSWER
We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.
Start tour
Original code
C++14
#include
using namespace std;
string ltrim(const string &);
string rtrim(const string &);


Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/bljferoqtdh
2019 Apple India DTU
35m to test end
6/8 Attempted
Anubhav Gupta
string ltrim(const string &);
string rtrim(const string &);
/*
* Complete the 'getTimes' function below.
*
* The function is expected to return an INTEGER_ARRAY.
* The function accepts following parameters:
* 1. INTEGER_ARRAY time
* 2. INTEGER_ARRAY direction
*/
vector<int> getTimes(vector<int> time, vector<int> direction) {
}
int main()
{
ofstream fout(getenv("OUTPUT_PATH"));
string time_count_temp;
getline(cin, time_count_temp);
int time_count = stoi(ltrim(rtrim(time_count_temp)));
vector<int> time(time_count);
for (int i = 0; i < time_count; i++) {
string time_item_temp;
getline(cin, time_item_temp);
Type here to search
ENG
11:39
03-11-2018


Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/e9qisrbbpkm
2019 Apple India DTU
34m to test end
6/8 Attempted
Anubhav Gupta
Beautiful Subarrays
A beautiful subarray is defined as an array having a specific number of odd elements. Given an array of integers and a number of odd elements that constitutes beauty, create as many distinct beautiful subarrays as possible. Distinct means the arrays don't share identical starting and ending indexes, though they may share one of the two.
For example, given the array [1, 2, 3, 4, 5] and a beautiful number of 2, the following beautiful subarrays can be formed:
[1, 2, 3]
[1, 2, 3, 4]
[2, 3, 4, 5]
[3, 4, 5]
Function Description
Complete the function beautifulSubarrays in the editor below. The function must return the number of beautiful arrays present in a.
beautifulSubarrays has the following parameter(s):
a[a[0],...a[n-1]]: an array integers
m: the number of odd elements considered beautiful
Constraints
1 ≤ n ≤ 2 × 10^5
1 ≤ a[i] ≤ 10^9.
The array a consists of distinct positive integers.
0 ≤ m ≤ 2 × 10^5
Input Format for Custom Testing
Sample Case 0
Type here to search
ENG
11:40
03-11-2018


Test :: powered by HackerRank
https://www.hackerrank.com/tests/djh1o1462tm/questions/e9qisrbbpkm
2019 Apple India DTU
34m to test end
6/8 Attempted
Anubhav Gupta
The array a consists of distinct positive integers.
0 ≤ m ≤ 2 × 10^5
Input Format for Custom Testing
Sample Case 0
Sample Input 0
4
2
5
4
9
1
Sample Output 0
6
Explanation 0
Array a = [2, 5, 4, 9] has six distinct beautiful subarrays with exactly m = 1 odd elements:
1. a[1..1] = [5]
2. a[3..3] = [9]
3. a[0..1] = [2, 5]
4. a[1..2] = [5, 4]
5. a[2..3] = [4, 9]
6. a[0..2] = [2, 5, 4]
Sample Case 1
Sample Case 2
Type here to search
ENG
11:40
03-11-2018





One Plus

IIT Bombay :(Open for most Departments)

Gross: 2500000.00 INR
No CPI cut off.

Job description:
2.Strong C/C++/JAVA programming skills
3.Passion for programming and knowledge
4.A good team player with communication skills and a sense of responsible
5.Ability to learn new things quickly and has creative ideas

Advanced Skills (Good to Have):
1. Experiences of Android development.
2. Knowledge of network protocols or wireless protocols, like HTTP, TCP/IP, Bluetooth, Wi-Fi, 3GPP/3GPP2, etc. ?
3. Knowledge of 3A (Auto Focus, Auto White Balance, Auto Exposure) algorithms and ISP (Image Signal Processing) tuning
4. Good sense of photography and videography
5. Understanding on CPU architecture and SoC system architecture
6. Understanding on Linux Kernel programming or device driver.

Test on hackerearth. 2hr 30 mins exam (full screen mode compulsory)
Total marks: 248
30 Mcqs, questions were asked on C, C++, Java, Android, image(camera)
NO Negative marking.
Each question had marks ranging from +2 to +6.

Question examples:
C: “what would be the output of the code” type of questions.
C++: Same as C
Java: asked the output of the code, one nested class initialization question.
Android: Output of code, and asked about default processes.
Image: “when we take photos with camera facing the sun, the photos are underexposed. How to fix that ?” and there was one or two more such question.

2 Coding question:
Languages available: C, C++, Java and Bash only.
Q1. Something similar to https://www.geeksforgeeks.org/number-subarrays-sum-less-k/ 50 marks
Q2. **I forgot. Someone please fill this up. 150 marks**

1. Given an array of length n, for each length 1<=L<=n, find the number of substrings of the array whose sum is <= given k.
2. Partition an array into m parts. What is the minimum of the maximum of sums of each partition? n<10^5, ai<10^4 or 5
O(n^2) solutions will not work

Texas Instruments

IITKGP - 27/10/2018

- Open for BTech, Dual, MTech, two profiles (Analog and Digital) Only ECE and EE
- Analog - Questions on RC Ckts., MOSFET, loop gain, poles, amplifiers, gain, Opamp (No question related to BJT) - 20 ques, 40 mins
- Digital - Questions on DRAM, MUX, Logic, CMOS gates, minimum no. of gates - 20ques, 40 mins
- Aptitude - Maths, ratios, verbal, LR, DI - 30 ques, 40 mins

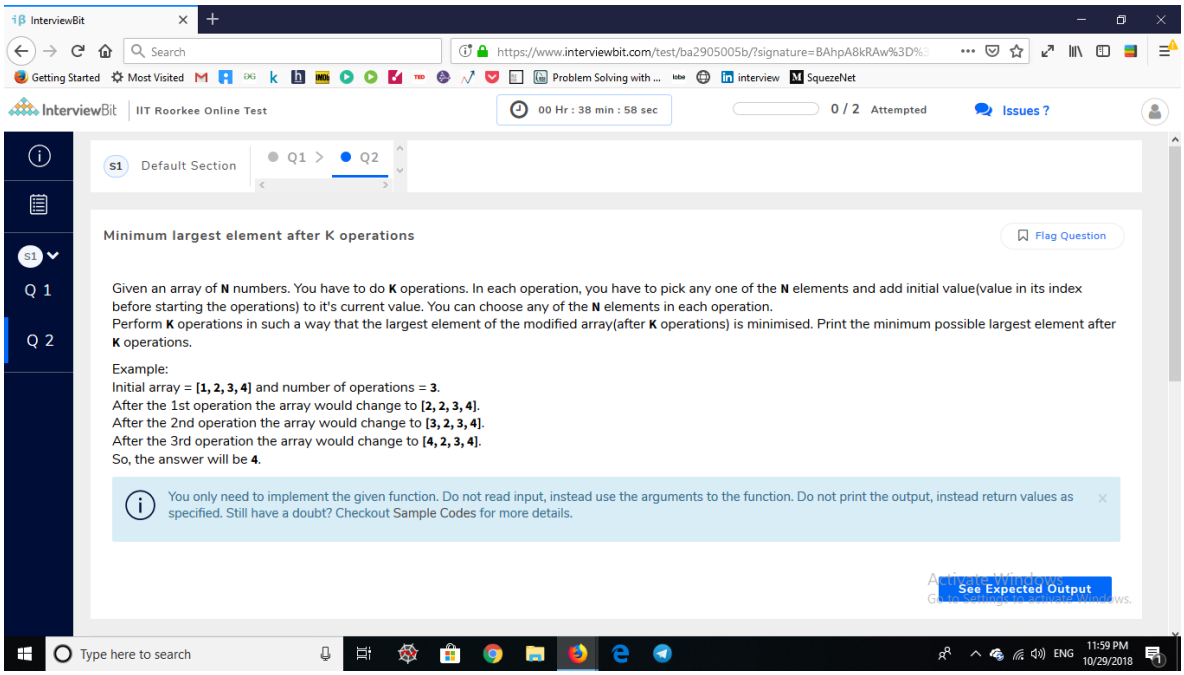
FUTURE FIRST

IITK

2 sections in around 45 mins
First one focussed on speed, 40 question were asked on speed math in around 7 mins. For example: 24^2+46^2, summing/subtracting decimal numbers, multiplication Options were given in that??
Second section was based on aptitude, around 40 question were asked consisting of 1 marks and 2 marks questions, negative marking was present.
One section was independent in terms of time from other one.

ThoughtSpot

IITR (Oct 29)



(I guess this can be solved using binary search on answer. Please confirm or suggest new solution.)
Use priority_queue it will take O((n+k)logn) time. For O(n) take the max element, find the sum of diff b/w all the elements and max element. If sum>k, return max else return max+ceil(sum-k)/n

Continuum

IIT Bombay:

Online exam, can take the exam from anywhere.

7 sections:

1. Simple Quant (Blank space and not mcq questions)
2. Logical reasoning. (Seating arrangement in a round table) (Blank space and not mcq questions)
3. Questions on SQL (mcq and multiple correct answer)
4. Questions on JAVA (mcq and multiple correct answer)
5. One coding question. (They asked in C/C++/Java but accepted all languages)
6. Two puzzles. -> 100 door puzzle and a slight variation of the same
7. Something on DNS, processes, threads etc

Yahoo Japan

IITB

All programming languages available.
3 programming question. Questions were easy, time was the major concern.
Each question has a separate timer, something like 10 min, 15 min and 25 min respectively for each question.

Q1. https://www.geeksforgeeks.org/reverse-words-in-a-given-string/

Q2. Can't remember exact question:
Print the k minimum costs.

Sample input:
2
10 1 10
10 2 10

10 3 10

25
4 5 6 8

Output:
10 1 10
10 2 10

Explanation:
2 = k
Add all the values in each row and that is your cost.
10+1+10 = 21
10+2+10 = 22
10+3+10 = 23
25 = 25
4+5+6+8 = 23

Print the k(= 2) minimum costs as given in input. There might be blank lines while taking input. That should be handled.

Q3. https://www.geeksforgeeks.org/0-1-knapsack-problem-dp-10/

FORD (Analyst)

IITK

45 question in 1hour on hirepro
For Dual degree- CSE,EE,ME
Aptitude questions, data interpretation+reasoning and verbal question were asked

Myntra

IIT Kanpur

// add the elements which are divisible by k itself
// i.e., the elements whose sum = 0

1. Given an array of duplicates, make it contain unique elements,
2. a duplicate number can only be replaced by some number greater than it. Example {1, 3, 3, 3} will be {1, 3, 4, 5} ($O(n^2)$ solution worked) https://stackoverflow.com/questions/38384537/minimum-unique-array-sum
3. 0-1 knapsack with loose constraints.
4. (Infinite knapsack)
Similar to this:
http://www.geeksforgeeks.org/unbounded-knapsack-repetition-items-allowed/
Solution :- http://ide.geeksforgeeks.org/q3p
pm7
5. Count number of subarrays with sum divisible by a given K. O(n) solution was needed. (prefix sum array)
Sol : https://ide.geeksforgeeks.org/DnEmmphZv3
6. Rectangular grid of 10X10, from (x, y) either go to (x+1, y) “move - H” or (x, y+1) w“move - V”, from (0, 0) list the lexicographically k^{th} smallest string of moves, which ends on (a, b)
(Preprocessing for all i, j and storing strings in sorted order worked)
7. An extension to “given an array A, for each A[i], finding the closest number smaller than or equal to A[i] on the right and return the discount the number by the number found in the right. Return the discounted sum and the indices of array elements which were not discounted. https://stackoverflow.com/questions/9493853/given-an-array-find-out-the-next-smaller-element-for-each-element
(Stack based implementation worked)(SOLUTION anyone ? please provide sol+1
8. Given an int array, construct a tree by partitioning the array, cost of constructing leaf of the tree is 0, cost for each internal node is product of max leaf on left and right subtrees. Minimize the overall cost.
Constraints were 0<= array size <= 50, 1<=A[i] <= 3000. (A memoised DP will work.)
Cost of tree solution : https://ide.geeksforgeeks.org/P0EdjVieZa?fbclid=IwAR2zCI9-S1_6EZvNd9jrlCJ4rq7qEnOMVDyyI8oCIbdqXH1J5lvWxY00CSg

IIT BHU

EXACTLY Same as IIT K

IITG

EXACTLY Same as IIT K

Zomato

IITG

(2 Coding and MCQs) 1hr

1. https://www.interviewbit.com/problems/anti-diagonals/
2. https://www.interviewbit.com/problems/largest-number/

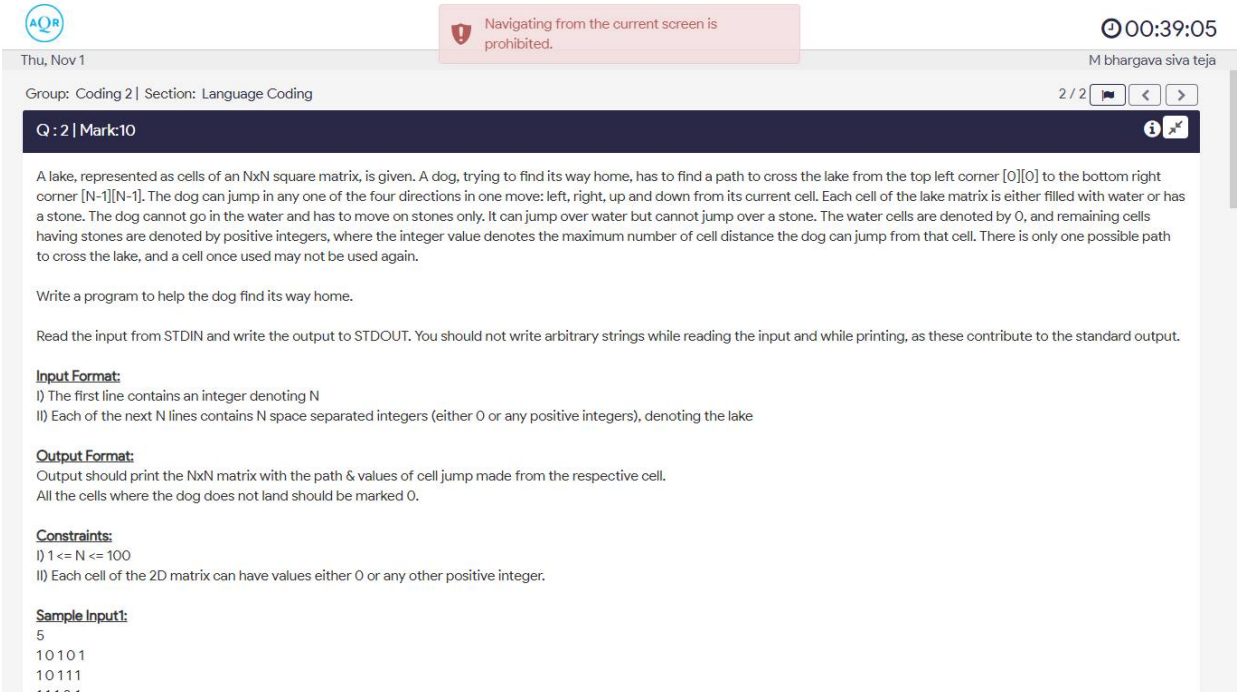
IITD

1. https://leetcode.com/problems/rotate-image/description/
2. https://www.hackerrank.com/challenges/maxsubarray/problem

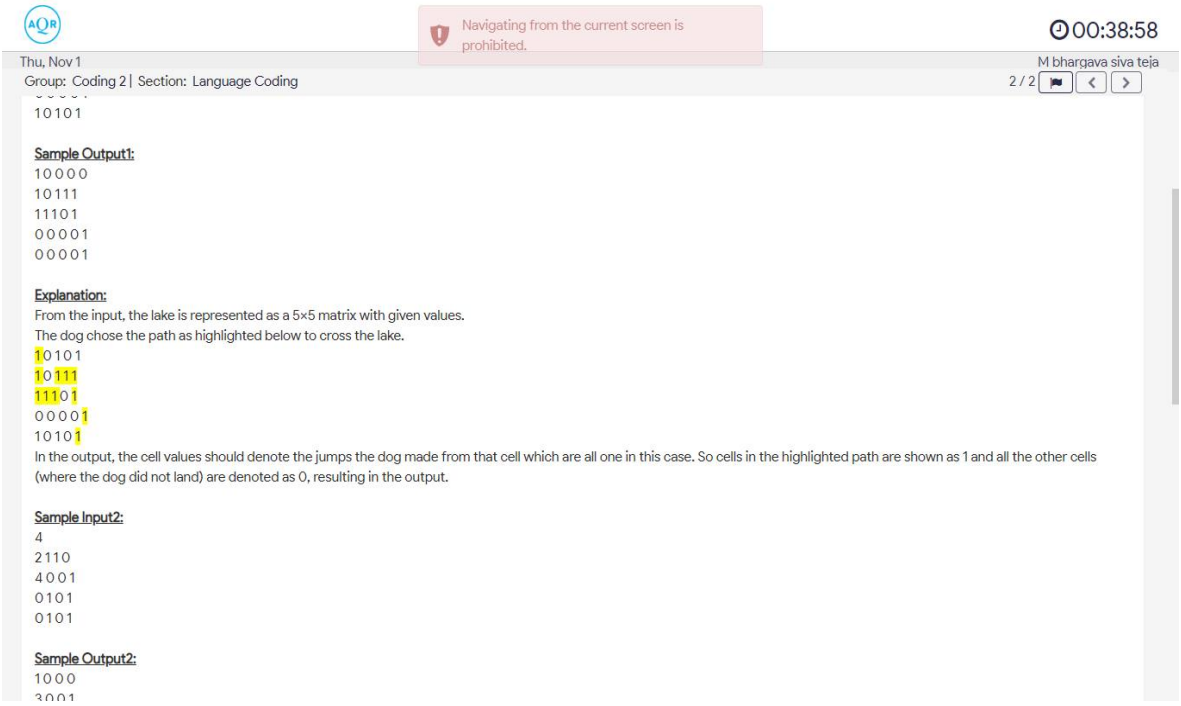
AQR

IITR

Can someone pls provide the solution ?
Using Backtracking- Dog and Lake Solution



to



1 0 0 0
3 0 0 1
0 0 0 1
0 0 0 1

IITH

1)Given a string containing alternating char and single digit int, print a string after following these rules:

Eg.If the string is **a3f5g7b2**, print **aaa119bb119fffff119ggggggg**

a)Take lcm of the maximum single digit int and sum of all numbers. (lcm of 17,7=119)
b)Print the char, no of times = the number beside it.(a 3 times, f 5 times, ….)
c)Also print the lcm aft d)Print the chars in alphabetical order.
e)Don't print the lcm after the last char

2)https://leetcode.com/problems/word-search/description/

Veritas

IIT BHU

1.Knapsack problem with unlimited supply of each element.
2. Some predator question in which basically u were given few n-ary trees from them find maximum height of all the trees.

ExxonMobil

IITKGP

Test conducted at Morning 8AM on 10/11/2018, via Cocubes platform

Aptitude : 25
2 Parts :- Aptitude and Technical Questions on Reading Comprehension and Grammar.
Technical : Different set for different departments.
Chemical Dept : All Questions from Thermodynamics and Kinetics. Like T-s curve, various processes, finding Ea, role of catalyst, saturated steam expansion etc.(30 questions in 30 min.)

Tiger Analytics

IITK

16 question in 1 hour- 8 aptitude, 8-programming based question in which output was to be predicted.
Write the commands on paper which appear on instruction page before starting test, they will be used for programming based question

Optum(UHG)

IITK

2 parts on cocubes, 1st part consisting of logical reasoning-20 ques and 10 ques aptitude
2nd part: 2 simple coding questions(rotating an array containing odd elements about middle element, calculating overall discount from consecutive discounts)

American Express

IITK

20 question in 35 minutes

Sum and number of factors, trigonometric relations, figure pattern(3-4 ques), age based problem, information sufficiency questions (like is statement 1 sufficient to answer this question, both statement 1 and 2 are required, et
c)3-4 questions,
angle of elevation, perfect number, remainder theorem, blood relations, critical reasoning bases ques
IITR (Same as IITK)

Clustr (Profile , College ??)

60 questions on cocubes (Time ??)
20 Verbal
20 Logical
20 Aptitude

Xilinx

IITB

5/11, 1 hour, pen and paper
10 aptitude questions, quite easy
10 software MCQs - 1 or 2 output of code, stable sort, no. of edges in complete graph etc.
10 hardware MCQs - ring counter, finding max. frequency from diagram with flip flop delays, gate delays etc., expression represented by NAND gates etc.

Visa

IITKGP

4 questions, 1 hr 30 min on hackerrank
1. Find number of ways of selecting a team of 3 people from m men and w women, the team should have at least 1 man and 1 woman
   Sol - m*w*(w-1)/2+w*m*(m-1)/2 if m!=0 and w!=0
2. Coin change for an amount n, coin denomination values are from 1 to k
3. Roll a string - A lowercase alphabet string is given and an array is given. arr[i] means the characters from 0 and arr[i]-1 are incremented by one (‘z’ becomes ‘a’, ‘a’ becomes ’b’) Return the final string after performing all operations in the arr.
4. Given 3 arrays f1, f2, candies. f1[i] and f2[i] are friends who love to eat candies[i]. Thus there will be groups of friends who love a particular candy. (Same person can like multiple candies). Find the largest friend group who like the same candy and return the maximum of f1*f2 among all such groups, f1 and f2 are friends who like same candy.
Sol - Construct m graphs if there are m candies. Each graph has n friends. Find the largest connected component(s) in all graphs. Let us say there are 3 such components of length 6. Return max(f1*f2) among all 3 groups.

Codenation

IITKGP

3 questions, 30 minutes test on hackerrank

1. A manager wants to hire employees. An employee accepts offer iff at least k of his friends accept the offer. Whom should he offer the job such that maximum employees will accept the offer.
2. Given a m*n grid and k queries. Print the query[i]-th element in the spiral traversal of the grid.
3. Given a graph and a target. Also given an array that shows the boundary nodes in the graph. Find nearest boundary point reachable from the target.

Queries / Requests

Please post questions for HSBC GM profile.
Any idea about dynamic technology lab test????????? Please reply

Someone has deleted amazon question please restore it.

Please add questions asked in Mathworks? +1 - Updated for IITH

Deutsche Bank, Worldquant visited any IIT? Yes in IITB (31st oct.)
Yes DB in IIT Dhanbad(31st oct.)

IIT D, IIT M people- Do we need to solve coding questions for data science profile too??????? Yes

Any update about Goldman Sachs Bangalore Office Test dates for IITs? Nov 3 IITR, Nov 2 IITD

Can there be a google form for submitting questions this doc be made view only? People are questions.

HSBC CPI cutoff any IITs?HSBC GM (Analyst): IITK - open to all, no cutoff

Specific source of quant questions quadeye? 50 CP, Brainstellar

Tesco Visited any college?IITB

Somebody having any information on test of juniper networks ? Yes, Test was conducted on 10th Oct @ IITK

Please add JP Chase (Quantitative Research Profile or software profile) questions if visited by any IITs/NITs or questions for Quant Research profile by any other company as well.+4+1+1+2+1
sach
Could people also post the probability and data science questions as well in this sheet ? For Goldman Sachs, Zendrive etc ? Screenshots of Data Science and Quant questions would be of much help ! +12

Did IBM Research visit any college? Please update the dates and questions +4

IITD people please add NUTANIX QUESTIONS ?? And what was CG cutoff ? questions added. cg cutoff was 7.5, Only open for CSE? Open to all

Is Analog Devices coming for recruitments in any college? Yes IITM IITB

Is Rivigo Services (Algorithm Engineer) Open for Electrical Engineering students as well? No

Did Myntra visited any college? Visiting IIT R on 14th OCT, Postponed now

NIT people, please add the details in the doc as the placements are already going on/done at your campuses

HAVE COMPANIES STARTED COMING FOR MECH ENGG ??

Nagarro questions IIIT DELHI?

AQR conducted test in any college?+1 test on 1stNov IITR

Selection process of GEP

What is the selection procedure for minds.ai?

What questions were asked in minds.ai test?

Microsoft and flipkart question IIIT Bangalore ??
SAP Labs conducted test in any IIT? IITM IITG

Nutanix conducted test in any IIT? yes,IIT Delhi
PLZ UPDATE SAP LABS QUESTIONS, updated
What kind of problems does zendrive asks in tests?? +100000
Data science profile - 15 MCQ
Software developer profile - 3 coding question
https://stackoverflow.com/questions/49284510/generate-string-equals-to-given-sum-within-given-character
Solution

More questions posted above

HAS AQR VISITED ANY IITs?

Arista Network had been to any College ? Yes,(IITM) | (IITK) Test is also scheduled on 20th October.

Please update questions for Arista

Versa Network conducted test in any college (IIT,NIT,IIIT) ?(Yes, IITM)

Anyone from IIITD, please update the Qualcomm questions

Please update intel questions if it visited any IITs/NITs. +1 (Yes, IITM,updated)

Has Fractal Analytics visited any IIT/NITs? Finalized interviews in iitk -- Shortlist done .. Yes

Did Uber visit any IIT/ IIIT/ NIT ? If so please add questions. Or has anyone so far given the offcampus uber second round? Just mention that it was off campus and add questions. Visited IITD, added questions above

Did Rivigo visit any campus? Can you add relevant questions or details ? Check above (IITD)

Tower Research visited any college?? Please add questions? +6

NIT GUYS PLEASE ADD THE QUESTIONS ASKED BY TESCO

Please update Samsung Semiconductor questions if it visited any IITs/NITs. IITK.
IITM
https://www.google.co.in/amp/s/www.geeksforgeeks.org/samsung-interview-experience-set-28-campus/amp/

Anyone have intel last year questions? or if it visited any IIT this year then this year questions ? Last year there was no test. Only resume shortlist

Did Super Highway Lab (Shuttl) came for software engineer role anywhere? IITK

Did DE Shaw visit any college yet? Please update the questions asked.+100

Any update about APM role of flipkart? Anybody shortlisted????????????? When will result declare? Declared for IITR, IITD and IITB(6).

Update about dynamic technology labs ?? Pattern of the test?
Please add Sapients test Questions +1

Please update the flipkart questions ?? +1+1+1

Is IBM Research coming to any college ??
Did Fidelity visit any college yet? Please update the questions asked.
in IITG 14/10.

Did fortanix take any test in any IIT as of yet ? iitk

Has Oracle visited any of the colleges? IITR 14th Oct, IITB 17th oct

IIT Delhi Plz add APPDYNAMICS and APT Portfolio +10u

Is Rubrik visiting any IIT? IITM,IITB,IITD,IITK

Can somebody give an update on the questions asked in HSBC trainee Software Engineering test??? IIT BHU???+1

Do they allow python in SAP labs(Data Science profile) coding test and what about fractal analytics(Data Science) ?

Did Walmart visit any other campus other than ISM?

What is flow traders second test after speed math?Any Idea about behavioural fit?

Which all companies released shortlists???

Please Add Indeed India --- IITK people!! Added one with solution :)

Does anybody know about Flow trader’s HR interview format? Did they ask anything particular in Finance like arbitrage??? Yes, standard HR questions. Did anyone get a call after the HR interview ?Nope. They said they will communicate within a week.

Anyone got any results ?

Have Graviton visited any IIT ?

Did credit suisse visit any IIT? Please add if yes

Sites/Resources to practice quant section for Goldman Sachs/Zendrive/JPMC please?

Please update IBM Questions.

Mind-Tickle in any IITs ? Yes, IITG questions added

Paypal in any campus?Yes, IIT Kgp

Payu in any campus?

Indus insights in any campus?IITR - 29th Nov

Did Apple visit any IIT yet? Please update questions if yes!

Please update PhonePe questions
Please update Finmechanics IITD

Axis bank-Manager in any campus?

Blackrock in any campus?

Please add Zomato (Manager profile) questions- IITR,IITD

Mastercard in any campus?

ExxonMobil in any campus?

ZOMATO SDE Questions, anyone?