

Guidelines:

- Mention your college name
- Mention CPI Cutoff and eligible discipline, please apply red color highlights
- While typing, use Ctrl + Enter to go to new page
- PLEASE KEEP COMPANIES ON SEPARATE PAGES
- Enable outline for Company Shortcut
- Page edit history will be maintained in History Page
 - why has the edit history link disappeared?
- Please don't remove questions, some people are frequently deleting screenshots/questions.
 - someone removed motorq 3rd question and also solution link to another company's question which company?
- If possible, mention whether the company is open for M.Tech. or not
- Green
 - For External Links
 - And Answers to any questions
- Red
 - For CPI and Discipline Cutoffs
- Orange
 - For Very Important details
- Pink
 - For Important details
- Cyan
 - For a Question
- 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.

KINDLY ENTER COMPANY HERE, ONLY IF ANY INFO IS ADDED IN DOC
(Anyone who solved the question completely is requested to share the solution and/or approach)

Company GRID

Queries, Request, and Grievances Section

Enter a Tag [Q], [R], or [G]

- [Q] Have any of the following companies visited any campus?

Question (company)	Answer	Details
Oski Tech		
Salesforce	Oct 29 @ IIT ISM Nov 9 @ IIT R Nov 9 @ IITKGP	
JP Morgan	Oct 12 @ IITG	SDE test
Morgan Stanley	Oct 12 @ IIT BHU Nov 5 @ IIT ISM	SDE Test
APM (Challenge results date?)		
Jio		
Swiggy		
Jaguar Land Rover (for SW & Core Mech)		
Sprinklr India		
Worldwide	IITD	

		Oct 31 @IITR
		NOV 7 @IITGN
		Will visit IIIT Allahabad
		Oct 23 @ IIT KGP
		anixNov 2 @ IITB
		Oct 9 @ IIT& Visited IITB
EXL Service	Oct 1 8 @IIT BHU	
BAJAJ AUTO(ELECTRICAL)		
Oneplus	Nov 2 @IITB	SW Test
American Express	IITD	
Nutanix	@IITBcan @IIT ISM	- 6 Months Intern
Gartner	?	
ABinBev	IIT KGP 10thNov	Questions link https://docdro.id/OYK5J6H
MTX Group		https

- [R] Please add following company(ies) details
 - Please delete after adding the company details in the document

Company	Details Required	Want Response from
Razorpay	questions	@ IITK
Policybazaar	CTC Breakup	

Microsoft	questions	@ BITS @ NIT Kurukshetra @ NIT Trichy @ IIIT Bangalore @ IIIT Delhi @ NIT Wgl
Uber	questions	@ NIT Wlg
Salesforce	questions	@ IIT ISM
Amazon	MCQsn	@ IIT ISM
Atlassian		
Swiggy (also not there in last yr doc)	questions	+1+1@ IIIT Allahabad
Qualcomm (Sw. Engg)	questions	+1+1+1+1+1+ 1@ IIT Delhi
Jio	questions	
VMWare		
FRT		
Oracle	Coding questions	
Salesforce	Coding questions	@ NIT Wgl @ All NIT @ IIT ISM
Softbank	Coding questions	
CISCO	questions	@ IIIT BNGLR
Futures First	questions	@ IIT BBS @ IIT ISM
L&T	questions	
TATA	questions	
ECC	questions	

Make My Trip	questions	@ NIT Wgl @ NIT Surathkal
Citibank (Technical Programmer Analyst)	Online test questions	@ IITKgp
OLA (APM)	Selection Process	
sprinklr	Questions needed	
EXL Service	Questions needed	
Fractal tAnalytics	Questions link: https://docdro.id/EsvrFGp	10th Nov IITKGP
MasterCard AI	Questions needed +1	
Irage Capital	Please add the questions	
Sumo Logic	Please add the questions	
Mavenir Systems	Questions needed +1+1+1+1+1	@ IITD @ NITTTrichy @ IISC
Barclays	QuestionFphopepes needed	
Siemens PLM Software		@IITKGP

Someone deleted zauba questions please add them back +1+1+1+1+1+1+10

- [G] @NIT
 - PLEASE ALSO MENTION YOUR COLLEGE NAME ALONG WITH THE QUESTION SET
- (IIT guys have written their college name)
- [G] @ IIT
 - [IITK] Please tell the placement scenario in your campus? The count of companies at IITK is quite low compared to last year.

- [IITD] WHOEVER UPLOADS ZIP FILES FROM IITD THEY ALL ARE CORRUPTED.
PLEASE SHARE SCREEN SHOTS(BY INSERTING IMAGE IN THIS DOC) OR
DESCRIBE THEM IN TEXT
- [Q] Has Flipkart shared it APM ppt challenge in any college?
 - yes in IITG, IITBHU, IITR, IITK, IITB, IITM, IITKGP, IITD,

Has Fractal Analytics visited any campus?? Link to the questions' PDF added above

Can someone add **coding questions** asked in **Data Analyst profile in Zilingo?**

Zilingo

ZILINGO QUESTIONS please ! only IIT BHU and IIT G have added. IIT R has test today.

Please

ZESTMONEY add more questions please!

What is the CPI cutoff for Amazon? (None in IITD, IITKGP)

What is the CPI cutoff for Flipkart? (None in IITD, IITKGP)

What is the CPI cutoff for Microsoft(SDE / DS)? 7.0(in IITK)

What is the CPI cutoff for Worldquant? 8.5(IITM)

Has Flipkart visited any college? IITK, IITG, IITB, IIT BHU, IITR,IITKGP everywhere with APM profile - visited IIT BHU, IIT KGP with APM, SDE, Analyst

MNIT guys please add OYO Rooms Business Analyst questions ? (*What is BA ??)

What is the CPI cutoff Samsung R&D Delhi? - 7.0

Upload Honeywell questions if they came anywhere yet.

job sequencing problem 2. leetcode 741 cherry pickup 3. Is this a tree?. IIT-H IIT-K

Has dwell visited any college?

Any information about dunzo test? They asked 3 coding question in IITK in one hour

What were the sections in the test of Goldman Sachs?+1

add some more questions asked by Goldman Sachs.

What is CPI cutoff for FlowTraders? And, also can someone describe test+interview process followed by FlowTraders? test patterns,etc 1st round questions are in the doc, 2nd round is easy fast math (75 questions in 10 mins) {min 60% cutoff}, 3rd round is IQ round (venn diagram,LR, etc) (68 questions in 30 minutes)

Please add Atlassian Questions.+1+1

Has Publicis Sapient visited any college? If yes, please add the questions. Yes, it has visited NIT Warangal. But those guys don't post the questions. If anyone has a friend from NIT Warangal ask

them

Inversions in an array

Did cohesity opened for M.tech in IIT Delhi and what were the branches it was open for? No, only for dual degree and BTech

Did Visa come any place and opened for M.Tech? Earlier didn't open for mtech but opened on 12/10/19 for CS, in IITK. It is open for Mtech students in IITG

Someone please add the questions asked by VMWare(2018).

Please add Microsoft questions. There are only 3 questions till now!

Has Accenture(JPN) visited any campus till now? Please add rquestion asap. questions please +1

Has Cure Fit visited any campus? Please add questions Questions please! @IITG one easy greedy question, second also easy graph question could

be solved easily by doing a modified bfs Which profile??? Can anyone tell the specific questions!

Has Dynamic Technology Lab visited any campus? Shortlisted only 6 for test in IITK in one profile and 7 in another..so very hard and tough shortlisting process even for giving the test

Has jiosaavn and SPL labs visited any campus till now? Please add questions.

Please add Questions of HSBC. IIT H?? Screening Test Question same as given on [Link](#).

If Mercedes Benz, Qualcomm visited any IIT plz add the questions Its gonna visit IIT Kanpur

If MATHWORKS visited any IIT plz add the questions yes, IITK, MATHWORKS has visited IIT kgp/questions added, probably they are going to ask from the previous years only as most of the questions and pattern were repeated

IITK AND IITKGP Guys do Mathworks coding question were same for all core electrical and CS ..? YEAH mostly similar

as Meesho visited any campus for SDE? please add questions if visited.

Has Flipkart released its dates for APM case study or released the names of selected students after APM deck? Not in IITG. Declared in IITKGP IITK

If UIDAI and GSTN visited any campus, pls add questions. Only MCQs were asked related to Reasoning and CS concepts.

Is Quadeye scheduled in any IIT? YES IITB IITK

Test in IITD is scheduled on Oct 16th. Test in IITB on 2nd Nov

What branches was cogoport open for in IIT KANPUR?? CSE,EE,MTH(Btech,Mtech,Dual)

IIT MADRAS guys update CodeNation question if they visited. Not yet

Has Oracle visited any other campus other than IITG? IITD IITB IITH

Eligibility of Plutus Research Capital and cpi cutoff? CSE (B.Tech) EE(B.Tech and Dual Degree); no cpi cutoff

Why was Accenture Japan test got cancelled, IITG guys?? server issue from accenture side

Did Trexquant visit any college ?? Yes IITB IITK ---Please add questions dont remember the 3 coding questions exactly but can be easily done using Python. one question especially asks to do in python. All rest MCQ's were of same kind where one headline/situation was given and was asked whether the stock price of the company affected as per the headline will go up or down

Is Python Allowed for Microsoft Online Test?

HAS PHONEPE VISITED ANY CAMPUS YET? URGENT ASAP? Yes, IITR and NSIT. When will Phonepe visit your college ? test is scheduled in iitk.

Is INDEED visiting any campus this year? If not visiting then write "No" Not IITD as of now, "No" IITBHU,

PLEASE ADD ENPHASE ENERGY QUESTIONS IITK ELECTRICAL GUYS

Please add Oracle company screenshots
mastercard+1+1+1+1+1+1+1

Please add Trexquant questions +3

Trexquant test CGPA cutoff? IITK, IIT Delhi.? (No cutoff for IITM)

Did Goldman Sachs visit any IIT? If not what are the tentative dates? +1 IITD visited and will be visiting IIT-B; test on 1st Nov; IITKGP- test on 1st Nov; IITM-test on 1st Nov; IIT(ISM) test on 1st Nov.

Did Salesforce visit any IIT? If not what are the tentative dates? in iitr 9th nov
IITKgp guys please add Intel Questions. +1for hardware

IIT G Guys please add SocGen MCQ Screenshots.+1

Has Sprinklr asked MCQ related to OS / DBMS / Networks in any college? Not in IITK(asked three coding q) Not in IITR also

has SAP labs visited any college? please add questions ?? +3 ->iitk

IIT BHU guys please add Societe Generale Questions.?+1

Did MasterCard(AI) visited any IIT ?if not what are tentative dates? Yes it visited IIT R today. Someone please update questions asap.

Did Cairn India visited any IIT?

Can someone add Udaan.com questions for finance and supply chain roles?

Did Schlumberger Software visited any IIT ? please add questions??+1 IITR

(very easy ques. 1.) find the lexicographically smallest substring $|s| \leq 100$ 2.) {

Array with 'w' and 'b' given, if you see three consecutive w's pop middle w, same for b. Store count of w pops and b pops if(b> w) return "BOB" else wendy. Mcqs also easy. String search time complexity, inorderer traversal time complexity, l = k+1,

}

Please add EXL SERVICE questions @IIT BHU if test has been conducted

Has these companies visited any campus? And any idea if they are hiring this year or not:

1. Lucideus
2. IBM IRL — Yes (Visiting IITD on 9th November) Please add the coding questions asap
3. Fortanix
4. Myntra - Coming to IITM, can anyone upload the solution of Load balancing problem.
5. Paytm
6. PayU
7. PhonePe -- Yes (IITM, iitr, IITKgp, IITG, IITR)
8. Thoughtspot
9. Apple -- Yes(Visiting IITKgp on 14th Nov) Please add questions

BOUNCE: What was the resume shortlisting criteria? Branch? Cgp? IIT BHU GUYS Pls Respond

IITK,IITG guys please add Vmware questions Screenshot ?

What was the duration of MotorQ coding exam ?

Has Barclays visited any campus? Someone please share the coding questions asked.. Platform?

What is the CTC offered by Squarepoint Capital?

Somebody deleted TRELL questions please add again. Added back
Someone deleted zauba questions please add themplease

“Sprinklr” questions r not at all opening plz delete and reupload asap.

MICROSOFT

Only 3 questions from Microsoft. Microsoft visits almost all colleges, come on guys add more questions/. PLSSS

One Queue Based Question. Just queue and dequeue the elements and compute a function when the given condition reaches.

Minimum adjacent swap required to make a string palindrome.

(solution<https://stackoverflow.com/questions/6031939/finding-maximum-for-every-window-of-size-k-in-an-array>

<https://www.codechef.com/problems/ENCD23>

[Codechef Solution Link](#) / Don't follow this solution, it gives incorrect answer for "ntlin", refer to the code on stackoverflow)

Find the minimum distance between a given 2D point and a set of 2D pos (had to round it off).

IITD

SDE Profile: Conducted on mettl platform. 1.5 hrs for 3 coding questions.

Same ad-hoc question as above. Queue approach passed all the test cases.

Same as above.

Same as above except for maximum instead of minimum. Brute force approach passed all the test cases. Can you please elaborate 3rd question with an example ?

Link to the questions: <https://imqr.com/a/DmOhB0y4>

(python users hint: user round(num,6) to round num to 6 decimal places

(Both the codes in the images were accepted)

DS Profile: Conducted on mettl platform.

62 MCQs in 60 minutes. No negative marking. Questions based on concepts in classical ML, recommender systems, NLP, etc.

IITH

SAME

fAmazon

1. String Parsing Question. ([URLify](#))

2. Infix to Postfix

3. Postfix Evaluate

Infix evaluation (using 2 stacks)

4. Alien Dictionary

5. Sort numbers when rank of each number in decimal system is changed. ([Could anyone please elaborate the question or give some link of this question on some website](#)) as per my understanding when each number is mapped to another number for eg. 1 has rank

4, 2 has 9, etc and then you have to sort the modified number system.

6. Inversions in array.

7. Longest Common Subsequence.

8. Longest increasing Subsequence

9. <https://www.geeksforgeeks.org/dice-throw-dp-30/>

10. Longest decreasing subsequence.

11. MEAN, MEDIAN, MODE OF AN ARRAY .

12 You are given a String S made of lowercase English Alphabets. Find the length of smallest substring with maximum number of distinct characters.

$1 \leq |S| \leq 10^5$, where $|S|$ denotes the length of the String.

<https://www.geeksforgeeks.org/length-smallest-sub-string-consisting-maximum-distinct-characters/>

13. <https://www.geeksforgeeks.org/count-possible-decodings-given-digit-sequence/>

14. Replace every element with the smallest element on the right side

15 Right, Left, Top, Bottom view of the tree.

[please mention the platform ?](#)

****Can anyone know what was “Walls” problem last year in IIT Delhi? Please write if anyone knows.

IITG

2 coding question from the pool of questions. (90 mins total for both section) [Were all these questions given and we had to select and do any two?](#) [You get two questions from the pool](#)

28 mcq - all of them focused on selecting the correct output of a C/C++ program out of 4 options

Coding:(Platform mettl) Do add [using namespace std](#) if you want to print something in console.

Dice Throw: <https://www.geeksforgeeks.org/dice-throw-dp-30/>

Longest palindromic subsequence: Please don't erase the questions

Number of inversion in a array: <https://www.geeksforgeeks.org/counting-inversions/>

Count Derangements:

<https://www.geeksforgeeks.org/count-derangements-permutation-such-that-no-element-appears-in-its-original-position/>

Evaluate Postfix :

<https://www.geeksforgeeks.org/stack-set-4-evaluation-postfix-expression/> Was it single digit version or multidigit version with space as given on the gfg. It has two version ?

Same question as in the link: <https://codeforces.com/problemset/problem/245/B>

Nth number of a GP: Return answer upto 3 decimal places

Largest sum contiguous array:

<https://www.geeksforgeeks.org/largest-sum-contiguous-subarray/>

Mean, Mode, Median:

<https://www.geeksforgeeks.org/program-for-mean-and-median-of-an-unsorted-array/>

Euler's Totient Function: <https://www.geeksforgeeks.org/eulers-totient-function/>

Given a, b and c coefficients of a quadratic equation, find the roots of the equation(assume roots to be real)

Longest Increasing subsequence:

<https://www.geeksforgeekwios.org/longest-increasing-subsequence-dp-3/>

Infix to Postfix expression

IITD

2 coding question from the pool of questions. The pool questions were same as mentioned above.

28 MCQ mainly asking output of C/C++ program. (Tip - Use the IDE provided for coding to get the nt issues if they occur and don't lose calm. Was it fullscreen mode? output of asked MCQ question, if you change the language from any other to C/C++, the whole code for that coding question will be lost.).

Sharing my experience:

1. Even though #include <bits/stdc++.h> was getting added, using map or unordered_map was giving error. So, my advice is not to use it. Also, you need to add using namespace std; yourselves.

2. Mettl platform is not good as hacker rank so be prepared for environment issues

3. [Amazon_IITD_9](#) (Don't delete this link)

4. Check apples question from the link as its not there in above pool. Apple question is not clear in the above link. can anyone give some test cases or explain? As per my understanding we can take out the mean of the apples takes O(n) and then for the baskets that has apples more than the mean (only they are to be moved in baskets with apples less than mean) you can count the sum of extra apples. e.g A = {1,2,4,6,7} mean is 4 apples so the basket of our interest is 4th and 5th and apples to be moved are (6-4)+(7-4) = 5 apples(Desired Answer) Someone correct me if I am wrong.

5. For mean, median and mode question, my nlogn approach (along with a few friends who got the same question) to find the median did not get accepted. It may be the case I made some serious blunder, hence request someone from IITD to acknowledge this question if your test cases passed for this question and also to share the code. Can we do it using multiset takes O(n) ? Was there a space complexity issue? I sorted the array (nlogn) and found mean, median and mode, 1 test case gave TLE, rest all passed (Python).

(Same , im pretty sure my solution is correct (only default case passed).What can we do now?**))**

Were you getting TLE ?

Please see this link for O(N) solution to find median

<https://www.geeksforgeeks.org/kth-smallestlargest-element-unsorted-array-set-2-expected-linear-time/>

I think it could be solved in O(n) using $\text{median} = \text{mean} - ((\text{mean} - \text{mode})/3)$ formula, which is relation between them. Mode can be calculated in O(n) using hashing. Correct, if I am wrong? It's not always true. It works only when the data is normally distributed. Consider the case when arr={1,1,2,2,2} and calculate the mean, median and mode by yourself and check.

IIT(ISM) DHANBAD

Same set of coding questions and mcqs as above, no difference. Mode median question can be done in O(nlogn) . See how to convert string to char array dynamically from gfg, bcoz every string function you have to return dynamically in char array form only. so practice it. Mettl platform is not good as other. Some STL were not working. map /unordered_map were working fine

IITB

Mettl platform

Same MCQ set as above

Same Coding questions as above

IIT KGP (24/10)

Same mcq set as above.

Coding questions:

- 1) Dice throw
- 2) Given an arr, arrange it so that the sum of absolute differences of adjacent elements is minimum
(sol: just sort the arr)
- 3) Inversions count in array (n^2 sol accepted)
- 4) Given coefficients ,find the roots (repeated from above).
- 5) A linear equation is given in the form of a string for eg “12+13+x=8”. Find x.
- 6) Internet address. (codeforce p
- 7) roblem 245 b).

TIP: mettl(platform of test. It keeps track of tab switch)(test is open in new tab) but you can keep it in small screen so that you can see things in the below tab you can even scroll things in the below tab; keep solutions of pool questions in a tab below the test tab

IIT KGP(16/10)

open for almost all

2 questions from a pool of questions. Mostly repeat from previous year.

total 37 question including 2 coding questions. there are many sets of questions. I don't know all.

one part from mixing of OS, DBMS, networking.

three parts from c, c++, java respectively. You have to attend any two out of three sections.-

there is a bonus section for python

In my set:

code 1:

team formation from previous year.

Given an array of non negative integers, select 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. [solution here](#)

[another solution here](#)

Can this be done using two priority queues of pairs sorted in custom order?

code 2:

You are given a string of only small character and an integer k. And you are given an array of value (0/1) for every character. 0 means normal and 1 means special. k denotes how many normal characters at most you can use in your longest substring.

ex:

string=abcde, k=1;

charValue: abcdefghijklmnopqrstuvwxyz

10101111111111111111111111111111

then longest substring would be abc or cde. so answer will be 3.

explanation: "abc" one normal char is 'b'. so you can not include 'd' anymore, because k=1. same apply in "cde".

** you have to do two different coding question in two different languages.

** there are still many questions. in another set, I heard, “simple query” was there from previous year.

Code 2:

There was another question named DIAMOND MINE which has been asked previously.

Diamond Mine is your new favorite game. Its map is represented as a square matrix. The board is filled with cells, and each cell will have an initial value as follows:

- A value ≥ 0 represents a *path*.
- A value of 1 represents a *diamond*.
- A value of -1 represents an *obstruction*.

The basic rules for playing *Diamond Mine* are as follows:

- The player starts at $(0, 0)$ and moves to $(n-1, n-1)$, by moving right (\rightarrow) or down (\downarrow) through valid path cells.
- After reaching $(n-1, n-1)$, the player must travel back to $(0, 0)$ by moving left (\leftarrow) or up (\uparrow) through valid path cells.
- When passing through a path cell containing a diamond, the diamond is picked up. Once picked up, the cell becomes an empty path cell.
- If there is no valid path between $(0, 0)$ and $(n-1, n-1)$, then no diamonds can be collected.
- The ultimate goal is to collect as many diamonds as you can.

For example, consider the following grid:

0	1
-1	0

Start at the top left corner. Move right one, collecting a diamond. Move down one to the goal. Cell $(1, 0)$ is blocked, so we can only return on the path we took initially. All paths have been explored, and 1 diamond was collected.

Solution_approach - I tried using recursion approach, the answer was correct BUT it was showing TLE on most of the cases

there were 15 test cases and I passed 3 using recursion.

you have to use dynamic programming.

This is same to LEETCODE 741 cherry pickup, here is the [link](#)

Code.4: 2 sum

Code.5 : roll a string. rotate characters of a string for an array of queries. eg if query is 4 and string is “kharagpur” then output should be “libsagpur”

Code.6: Distinct pairs forming a target sum in an array (repeat of prev. year)

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 $0 \leq i < n$). If $v[i] = 1$, the answer is correct but if $v[i] = 0$, the answer is wrong.

Unable to process request. (test state changed?)

Click continue to refresh state.

Continue

When a test is given, you have to answer the first k questions (*indices 0 to $k-1$* where $0 \leq k \leq n$), 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:          Your friend's results:  
  
int Your_result = 0;    int YourFriend_result = 0;  
for(int i=0;i<k;i++)   for(int i=k;i<n;i++)  
{  
    if(v[i]==1)        if(v[i]==1)  
        Your_result++;  YourFriend_result++;  
    else Your_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 $Your_result > YourFriend_result$.

Code7:

(30)

- Java
- [Choose TWO sections of C/C++/Java]
-
- 25
- 26
- 27
- 28
- 29
- MANDATO Coding Challenge -
- 30

exam has the following parameter(s):

$v[v[0], \dots v[n-1]]$: an array of integers

Constraints

- $1 \leq n \leq 10^5$
- $v[i] \in \{0, 1\}$ (where $0 \leq i < n$)

Unable to process request. (test state changed?)

Click continue to refresh state.

Continue

► Input Format For Custom Testing

▼ Sample Case 0

Sample Input 0

```
5
1
0
0
1
0
```

Sample Output 0

```
0
0
0
1
0
```

Sample Output 0

```
0
```

Unable to process request. (test state changed?)

Click continue to refresh state.

Continue

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).

IIT Kharagpur

Time - 90 mins

Department- Open for all

Profile- CS Bachelors, Embedded,Control,VLSI,Signal Processing

Platform-hackerrank

No of Questions-36 (including 2 coding questions rest all MCQs)

6 questions -Aptitude/probability, 6- c language, 6- c++,6- OS, 5-java(choice),5 python (bonus)

language allowed(c/c++,java)

write codes in any two different language

Game Winner

Given a string *colors*, where each character is either white or black, Wendy and Bob play a game to manipulate this string as follows:

- They perform moves alternatively in turns and Wendy makes the first move.
- In a single move, Wendy can remove from the string any white character that has exactly 2 white neighbors.
- Similarly, in a single move, Bob can remove from string any black character that has exactly 2 *black* neighbors.
- When a character is removed, the strings shrink itself, so if a character *Y* had neighbors *X* and *Z* on its left and right respectively before the move, after the move is made, *X* and *Z* become each other's neighbors.
- The first player who cannot perform a move loses the game.

For example, if the *colors* string is *wwwbb*, with the first move Wendy will change it to *wbb*, and Bob can no longer perform a move.

Determine who has a winning strategy assuming that both Wendy and Bob play optimally.

Function Description

Complete the function *gameWinner* in the editor below. The function has to return a single string denoting the winner of the game. It has to be "wendy" if Wendy has a winning strategy and "bob" otherwise.

gameWinner has the following parameter(s):

colors: The given input string, where *colors_i* denotes the color of the *ith* character in the string and is either 'w' or 'b' which represents white or black respectively.

Constraints

- colors*, is either 'w' or 'b'.
- 1 ≤ size of *colors* ≤ 10⁶

▶ Input Format Format for Custom Testing
▶ Sample Case 0

YOUR 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[a₀...a_{n-1}]*: an array of integers to select pairs from
- k*: target integer value to sum to

Constraints

- 1 ≤ n ≤ 5 × 10⁵
- 0 ≤ a_i ≤ 10⁹
- 0 ≤ k ≤ 5 × 10⁹

▶ Input Format for Custom Testing
▶ Sample Case 0
Sample Input 0

```
6
1
3
46
1
3
9
47
```

Documents are being uploaded to a compliance system for analysis using a chunking mechanism as below.

- Each document is divided into equal sized packets.
- Documents are then uploaded as 'chunks' of packets. A chunk is defined as a contiguous collection of 2^n packets, where n is any integer ≥ 0 .
- The document is divided into such chunks and uploaded one randomly chosen chunk at a time until the entire document has been uploaded.

There is one such document that has already been partially uploaded. An integer $uploaded$ denotes the number of already uploaded chunks. Determine the minimum number of chunks that are yet to be uploaded.

For example, given a document with 5 packets and chunk from indices (1-2) has already been uploaded. The remaining 3 packets are uploaded in 2 chunks, one with length $2^0 = 1$, and one with length $2^1 = 2$.

Function Description

Complete the `minimumChunksRequired` function in the editor below. The function must return an integer denoting the minimum number of chunks that need to be uploaded.

`minimumChunksRequired` has the following parameter(s):

`totalPackets`: An integer, the number of packets in the document.

`uploadedChunks`: A 2D integer array, where each element describes the start and end packet numbers of the uploaded chunks.

Constraints

- $1 \leq totalPackets < 10^{18}$
- $0 \leq uploaded < 10^5$
- The uploaded chunks do not overlap and $1 \leq$ starting packet \leq ending packet $\leq totalPackets$

► **Input Format For Custom Testing**

► **Sample Case 0**

► **Sample Case 1**

Code 8

IIT Kanpur

There were different questions for different sets (2 coding questions per set).

MathWorks IIT Kanpur - Masters - Computer Science - 2019-20 04m:21s
to test end 36/45 Attempted Riya James

Array Subsets

Given an integer array, the values of the array need to be separated into two subsets A and B whose intersection is null and whose union is the entire array. The sum of values in set A must be strictly greater than the sum of values in set B, and the number of elements in set A must be minimal. Return the values in set A in increasing order. If there are multiple sets that are possible solutions, return that set that has maximum total sum of all its elements.

For example, given $arr = [3, 7, 5, 6, 2]$, the divisions with the minimal 2 elements in subset A are $[3, 7]$ and $[6, 7]$. Of the two candidates, $[6, 7]$ sums to the higher amount.

Function Description

Complete the `subsetA` function in the editor below. The function must return an integer array denoting the subset A.

subsetA has the following parameter(s):
`arr`: an integer array

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq arr[i] \leq 10^5$ (where $0 \leq i < n$)

Input Format For Custom Testing

Sample Case 0

Sample Input For Custom Testing

```
6
5
3
2
4
1
2
```

Sample Output

```
4
5
```

Explanation

There are $n = 6$ elements in $arr = [5, 3, 2, 4, 1, 2]$. If subset A is $[4, 5]$, the sum of values, 9, is greater than the sum of the rest of the values.

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](#)

Diamond mine (previously asked)

Roll a string

<https://www.geeksforgeeks.org/roll-characters-string/>

Weird Faculty

Team selection

IIT BOMBAY

Same as above

OS Scheduler: Publishing house has to print and bind **N** books, **X** printing machines are given with different printing time and **Y** binding machines, each binding machine takes **K** time. Find minimum time.

Graph with red-black nodes: each node has value 0 or 1(red or black). And cost of each edge is given, find minimum cost from source to destination such that $\text{abs}(\text{count(red)} - \text{count(black)}) \leq K$.

IITD

2 Questions, 1.5 hr

Role: Member of Technical Staff

Open for M.Tech

<https://imgur.com/a/kPqGHf>

IITK, IITM

Que 2.

Nutanix Hiring_IIT Kanpur 07m to test end 2/2 Attempted Sanket Bodele

★ Incremental Paths

Incremental Paths

Thor has caught Loki and put him in Jail. However knowing Loki, who always tries to escape, Thor wants to be proactive, and wants to see all possible paths through which Loki can escape. Thor needs your help to find all the paths.

The universe is made of P planets. Each planet has a power value P_w from (1 to K). Planets are connected by magical pathways. Loki always takes an Incremental Path. An Incremental Path is a path consisting of magical pathways, if a pathway from P_1 to P_2 is part of the path, and $P_w(P_1) = p$, then $P_w(P_2) = p$ or $p + 1$. In other words Loki can go from one planet to another if the Power difference between the planets is 0 or 1.

Loki being a god, has a special power. If he is on a planet with a certain power he can move instantly to any planet connected to it with the same power. Hence all planets connected to a planet who have the same power do not constitute a new path. Two paths are considered the same if for any P_1 that belongs to Path1 and any P_2 that belongs to Path2, if $P_w(P_1) = P_w(P_2)$, and P_1 is instantly reachable from P_2 . The goal is to find the total number of distinct incremental paths in the universe that start with power 1 and end with power K

For example:

In the above example, there are 4 unique incremental paths.

- 1) 1->3->6->8
- 2) 1->4->5->7->8
- 3) 2->5->4->6->8
- 4) 2->5->7->8

Note: 1->4->6->8 is not different from path 1 because planets 3 and 4 are connected.

THOUGHTSPOT

Build BST from sorted LL.
Snakes and Ladder game..
Max length valid palindrome
substring?)

//what does it mean ? (longest palindromic

GOLDMAN SACHS

What is the probability of getting consecutive 6,6 before consecutive 6,5{Please verify answer: 1/2}[I am also getting 1/2] can any one write solution for these

Derive an Fexlion for the expected number of steps an ant makes to travel from one vertex to diametrically opposite vertex of an N dimensional object(eg - N=3 is cube).
The ant is free to move at any path each time from a vertex.

Is the question correct? Is there a condition on number of steps(hope it is in 'n' steps) ans: $(n! / n^n)$? else isn't the answer 1 ..?

Answer is 10(N=3) assume some variable and do recursion
(<https://math.stackexchange.com/questions/28179/logic-question-ant-walking-a-cube>)

Prove that for a given ring, there exists at least two diametrically opposite points, which will have the same temperature (temperature is continuous along the ring).
(how does the temperature is varying.... please write the solution)

What is expected no. of throw to get consecutive 6 different numbers on a dice.d no. ,
(SOLUTION REQUIRED)

Also, many questions were on the higher level concept of "Expectation". So do study the same.

Leetcode problem: [Product of array except self](#)

Q.1) [https://www.geeksforgeeks.org/longest-monotonically-increasing-subsequence-size-n-log-n/\(n^2 passed only 3/10 hidden test cases\)](https://www.geeksforgeeks.org/longest-monotonically-increasing-subsequence-size-n-log-n/(n^2 passed only 3/10 hidden test cases))
<https://www.geeksforgeeks.org/minimum-number-deletions-make-sorted-sequence/>

Q.2.) $1/x + 1/y = 1/360$. Number of solutions for x and y, x and y are natural numbers (ans = 105 (i think so))

Q.3)

IIT Bombay

Q1:Four points are chosen uniformly at random on the surface of a sphere. What is the probability that the center of the sphere lies inside the tetrahedron whose vertices are at the four points?

(<https://www.quora.com/Four-points-are-chosen-uniformly-at-random-on-the-surface-of-a-sphere-What-is-the-probability-that-the-center-of-the-sphere-lies-inside-the-tetrahedron-whose-vertices-are-at-the-four-points>)

Q2: If the integers m and n are chosen at random between 1 and 100, then the probability that a number of the form $7m+7n$ is divisible by 5 is A. $\frac{1}{4}$ B. $\frac{1}{7}$ C. $\frac{1}{8}$ D. $\frac{1}{49}$

(<https://www.quora.com/Four-points-are-chosen-uniformly-at-random-on-the-surface-of-a-sphere-What-is-the-probability-that-the-center-of-the-sphere-lies-inside-the-tetrahedron-whose-vertices-are-at-the-four-points>)

IIIT Hyderabad (ADD THIS IN main doc)

Coding :3 coding question (2 + 1(advanced))

1.Total fused bulbs

Given a string of 0 and 1 (0 indicates bulb is off , 1 indicated bulb is on) . Given range of indices : Add 1 to the indices. Print the number of values which are greater than equal to a given number d(No of toggle required to fuse the bulb).

Return number of fused bulbs(Value=1 is considered toggled once)

Ex:

S: 010011

Q: [1,3] , [3,5], [0,2]

d:2

Final string: 132222

Return val: 5

Solution : Use range query (Brute force was also working)

2. Permutation of string

Given an array of N numbers with M distinct no . Find minimum no. of numbers such that on permuting those in any order , digit with same value come together.

Ex: 1 3 1 5 6

Choosing indices 0 and 1 or 1 and 2 makes all the one's together

So ans: 2 (two indices are chosen)

3. Digit Sum (Advanced) (based on Digit DP)

Given a lowerlimit and upperlimit (Values on coupon).

A coupon containing the sumofdigits= S will win the lottery. Find S in such a way that max no of people win the lottery.

In short return the count of sum (S) that is repeating max no of times. And the ways to choose that count.

Ex: LL:1 UP:5

array:[1,2,3,4,5]

Sumof digits: [1,2,3,4,5]

Count:1

No of ways to choose that count :5 (max count =1 for 5)

Ex: LL:1 UP: 10

Array [1,2,3,4,5,6,7,8,9,10]

Sumofdigits: [1,2,3,4,5,6,7,8,9,1]

Count: 2 (sum=1 is repeating 2 times)

No of ways to choose :1

Constraints : $1 \leq \text{lowerlimit} < \text{upperlimit} \leq 10^{18}$

<https://www.geeksforgeeks.org/digit-dp-introduction/>

Other:

1. 3-4 questions were from previous asked questions rest were different. Questions were from OS, Expectation and probability.

2.: If the integers m and n are chosen at random between 1 and 100, then the probability that a number of the form $7^m + 7^n$ is divisible by 5 is A.1/4 B.1/7 C.1/8 D.1/49

CISCO

(Software Consulting Engineer)

1)Digital Electronics+aptitude+3 finance questions+networking+os+basic puzzles. (Every section had cutoff).

2)one programming question: Confusing one,had to play with `cin.getline()`, `cin.ignore()` and many terms to read and output strings in different lines.

Total 26 questions, 25 mcqs and 1 coding. Coding was also of 1 mark. Give more time to mcqs. 1 hour time was given. Platform:HR

Can somebody tell the exact programming question?

IITK

MCQ were from Operating system, networking, logic gates, digital electronics, aptitude, basic C Programming, computer organization. 60 Min 27 Questions

Operating System(around 3-4 questions):

Processes with their arrival and run time was given and one has to find lowest average turnaround time among round first represent ids and second is the time taken for each process id. Return top k ids robin, FCFS, SJF scheduling policy
One was related to deadlock

Coding Question (There were two questions):

Longest distinct characters substring
Given two array, with maximum time. If two processes take same time, then pick most recent process-id.f

Aptitude(around 4-5 questions):

One was using $AM \geq GM$, This section was simple
Family relation question
maximum distance between any two points in a cube

Logic Gates

POS was given and one has to find equivalent SOP

Networking(1-2 questions):

This was based on the definition of different transmission modes: simplex, half duplex and full duplex.
One specific question related to VMWare configuration (can't recall exact Q: 'what is VMWare consolidated backup?' there were options provided)

IITR

Coding,Networking,OS exactly same questions as IITK

Can someone post the screenshots of the MCQs? +1

FLOW TRADERS

IITG

Profile: Graduate Trader.

Coding: only in python.

Problem One: Tennis Game

Tennis players A and B have probabilities of $a = 0.6$ and $b = 0.4$ respectively to win a point. The current score is 30:30, what is the probability that tennis player A wins this game?

The games are scored as per normal tennis rules starting at "love" (or zero) and go up to 40. From love, the first point is 15, then 30, then 40, then the game point, which wins the game. One of the players has to win by two points. Say your opponent wins the point after you are up 40–30, the score would then be tied, and you would announce: "40-all", otherwise known as "deuce". Now you continue to play until one of you has a two-point advantage and wins the game.

You need to submit both python file and image of your work inside a zipped file

You'll receive -1 for all wrong submissions so make your submissions judiciously

Problem Two: Elevators

There are n elevators moving independently of each other in a building of 100 floors. The elevators move continuously through floors 1, 2, . . . , 100, 99, . . . , 2, 1, 2, . . . , except that they stop on a floor on which the button has been pressed. Assume that time spent loading and unloading passengers is very small compared to the travelling time. Suppose you reside on floor 92, answer the following questions accordingly:

What is the probability that the first elevator arriving on your floor moves up?

Suppose the lifts move at the rate of 20 floors per minute, what is the expected time it takes to reach floor 1 from floor 92, assuming you take the first lift that arrives on your floor. Compute your answer in seconds and just give the integral part. So if your answer is 123.67, return 123

We'd recommend that you try to solve this for small values of n and then figure out the general logic

You'll receive -1 for all wrong submissions so make your submissions judiciously

Problem Three: Logicians with Hats

Thirty-one logicians came from different countries to participate in the Annual International Conference on Logic. After greeting all 31 participants, the main organiser remarked that it would be necessary to run a special test to check whether all participants were indeed logicians as they claimed to be. He explained kindly that in the past there had been cases where some non-logicians tried to get into the conference, and he would not allow that to happen again. He further explained the basis of the test: he said that each participant would get a dot of some colour that he would place on each participant's forehead. Each participant would be allowed to look around (thus everyone would see the dots of all other participants except his own), but no communication of any sort would be allowed. After a while, the organiser would ring a bell and if any participant had deduced the colour of his or her dot, they should leave the room. The organiser would ring a bell as many times as necessary. As the organiser knows the colour of all of the dots, he also knows when each participant should leave the room (if the participant is a logician). This was the essence of the test.

At this stage, the organiser asked the participants whether there were any questions. One participant raised his hand and asked whether it was possible to pass the test - i.e., to correctly

guess the colour of his dot. The organiser replied that he had selected the colours of all the dots in such a way that every participant should be able to deduce the colour of his/ her dot.

As this was the only question from the crowd, the test started. The organiser placed the colour dots on the foreheads of all of the participants and waited for a while so that everyone had a chance to look around. After a few minutes, he rang the bell for the first time. At this moment, four participants left the room. When he rang the bell for the second time, all the participants with red dots left the room. When he rang the bell for the third time, no one moved. When he rang the bell for the fourth time, at least one participant left. Soon afterwards, he rang the bell again, the participant who asked the only question before the commencement of the test left together with his sister and some other participants - he and his sister had dots of different colours. At this stage, there were still some participants left in the room. Assuming that all the participants were true logicians (so everyone was leaving the room at the right time), how many times did the organiser ring the bell?

You'll receive -1 for all wrong submissions so make your submissions judiciously

ITRON

IITM

1.Aptitude 35 questions

2.3 coding questions

<https://www.geeksforgeeks.org/find-two-numbers-sum-xor/>

<https://www.geeksforgeeks.org/perfect-number/>

Given N lists, each list has P strings find if count of unique strings is greater than K.

INFERENCE LABS

IITM

2 coding questions

Array Journey

★ Array Journey

You are standing at the start of an array of integers. You want to move to the end of the array, collecting as many points as possible along the way. Each step can cover a maximum number of elements. Each time you land on an element, its value is added to your score. What is the maximum score achievable?

For example, you are at position 0 of the array $path = [10, 2, -10, 5, 20]$. Your maximum step can cover $k=2$ elements. Your score starts at 10, the value at index 0. Your first step could land you on elements valued 2 or -10. You choose to land on 2 to achieve the higher score, now $10+2=12$. Next you choose between landing on -10 or 5. You choose 5 for a score of $12+5=17$. You make one final move to your goal and your total score is $17+20=37$.

Function Description

Complete the function *journey* in the editor below. The function must return a long integer denoting your maximum attainable score.

journey has the following parameter(s):

path[*path*[0]...*path*[*n*-1]]: an array of integers
k: an integer, the maximum step length

Constraints

- $1 \leq n \leq 10^5$
- $0 \leq |path[i]| \leq 10^5$, where $0 \leq i < n$ and $|x|$ denotes absolute value of x .
- $1 \leq k \leq n$

▶ **Input Format for Custom Testing**

Activate Windows

Go to Settings to activate Windows.

▼ **Sample Case 0**

The Jungle Book

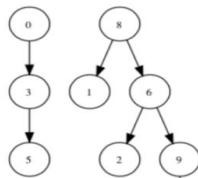
★ The Jungle Book

There are a number of animal species in the jungle. Each species has one or more predators that may be direct or indirect. Species X is said to be a predator of species Y if at least one of the following is true:

- Species X is a direct predator of species Y .
- If species X is a direct predator of species Z , and Z is a direct predator of Y , then species X is an indirect predator of species Y . Indirect predation is transitive through any number of levels.

Each species has a maximum of 1 direct predator. No two species will ever be mutual predators, and no species is a predator of itself. Your task is to determine the minimum number of groups that must be formed so that no species is grouped with its predators, direct or indirect.

As an example, consider an array where each position represents a species and each element represents a predator of that species or -1 if there are none. The array is $a=[-1, 8, 6, 0, 7, 3, 8, 9, -1, 6]$ and we'll use zero indexing. Generate the graph of predation. All labels are the indices within array a :



Activate Windows
Go to Settings to activate Windows.

From the graph, we can determine possible grouping:

[0,8]
[3,1,6]
[5,2,9]
[7]
[4]

We need a minimum of 5 groups to satisfy all conditions.

Function Description

Complete the function *minimumGroups* in the editor below. The function must return the minimum number of groups formed given the rule that none of the species will associate with its predators.

minimumGroups has the following parameter(s):

predators[*predators*[0]...*predators*[*n*-1]]: an array of integers where *predator*[*i*] represents the direct predator of the *ith* species or -1 if there is none.

Constraints

- $1 \leq n \leq 10^3$
- $-1 \leq predators[i] < n$
- $predators[i] \neq i$

▶ **Input Format for Custom Testing**

Activate Windows

Go to Settings to activate Windows.

▼ **Sample Case 0**

<http://prochal.com/2019/06/the-jungle-book/>

PLEASE ADD THE PROBLEM DESCRIPTION FOR "ARRAY 4

HONEYWELL

IITH

1) Activity Selection Problem :- Arrival, duration arrays of companies given.
Need to schedule such that number of meetings are maximised-----

<https://www.geeksforgeeks.org/activity-selection-problem-greedy-algo-1/>

2) Dynamic Programming :- N*N matrix of (-1,0,1) given. -1 represents blockade, 1 represents a diamond and 0 is for empty route. A traveller goes from (0,0) to (n-1,n-1) and returns to (0,0). Need to output the maximum no of diamonds collected (a diamond can only be collected once)

<https://www.geeksforgeeks.org/maximum-points-top-left-matrix-bottom-right-return-back/>

3) Tree based question:- given edges in (parent,child) form. Return Lexicographically least Preorder traversal.

[sol 3](#)

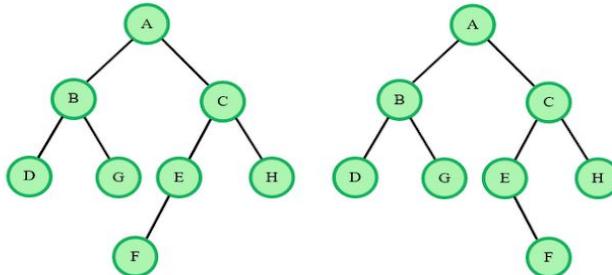
★ Is this a tree?

- 1
- 2
- 3

A binary tree is represented as a sequence of parent-child pairs, for example:

```
(A,B) (A,C) (B,G) (C,H) (E,F) (B,D) (C,E)
```

A tree with those edges may be illustrated in many ways. Here are two:



The following is a recursive definition for the S-expression of a tree:

```
S-exp(node) = ( node->val (S-exp(node->first_child))(S-exp(node->second_child))), if node != NULL = "", node == NULL
```

where, first_child->val < second_child->val (first_child->val is lexicographically smaller than second_child->val)

This tree can be represented in an S-expression in multiple ways. The lexicographically smallest way of expressing it is as follows:

This tree can be represented in an S-expression in multiple ways. The lexicographically smallest way of expressing it is as follows:

```
(A(B(D)(G))(C(E(F))(H)))
```

Translate the node-pair representation into its lexicographically smallest S-expression or report any errors that do not conform to the definition of a binary tree.

The list of errors with their codes is as follows:

Error Code	Type of error
E1	More than 2 children
E2	Duplicate Edges
E3	Cycle present (node is direct descendant of more than one node)
E4	Multiple roots
E5	Any other error

Function Description

Complete the function `sExpression` in the editor below. The function must return either the lexicographically lowest S-expression or the lexicographically lowest error code as a string.

`sExpression` has the following parameter(s):

`nodes`: a string of space-separated parenthetical elements, each of which contains the names of two connected nodes separated by a comma

Constraints:

1. All node names are single characters in the range `ascii[A-Z]`
2. The maximum node count is 26.
3. There is no specific order to the input (parent, child) pairs.

IITKGP

For software profile (no CGPA cutoff, open to all depts and all courses):

<https://imgur.com/a/x8xbOuD>

IIT Delhi

Same as above

WORLD QUANT

IITD

Is there any cg cutoff? 8.5

40 questions, timed test with each question having its own time. Three questions were the same as that in last year's doc.

Apart from them:

<https://brainstellar.com/puzzles/1018>

<https://math.stackexchange.com/questions/2455709/possible-dimensions-of-the-intersection-of-three-vector-subspaces>

A stock increases in its value by 5% or decreases by 5% in a day with equal probability. Expected value after 60 days

is it's answer is =0?? It will be the same as the initial price of the stock

r_1 =distance of a point from center, r_2 =distance of point from circumference. $r=\min\{r_1,r_2\}$. Median of r . (**solution : (r by root 8)** ???

A question on definition of exponential decay.x

<https://math.stackexchange.com/questions/1839496/expected-number-of-tosses-to-get-3-consecutive-heads>

$z^3 - 2z - 5 = 0$ has roots a,b,c. Cubic equation with roots a^2, b^2, c^2 with leading coefficient 1.

Volume of tetrahedron inside a cuboid, such that 4 vertices have no common edges. (Do with box product)

Some questions on code outputs

Samsung R&D, Bangalore

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, NOT dependent on any Platform/API

Duration	3 hours			
Allowed Languages	C, C++, Java	<ul style="list-style-type: none">· 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)		
Number of Questions	One	<ul style="list-style-type: none">· The question details the problem, gives constraints, test inputs, and sample outputs		
Allowed Functions, Libraries	Basic memory mgmt, input, output	Language	Memory	Input, Output
		C	malloc, free	scanf, printf
		C++	new, delete, malloc, free	cin, cout, scanf, printf
		Java	New (memory freeing is automatic by garbage collector)	java.util.Scanner, System.out.print, println

		<ul style="list-style-type: none"> · Other functions, libraries not allowed · Test taker needs to write any required utility functions
Allowed IDEs	<ul style="list-style-type: none"> · VS (C/C++) · Eclipse (Java) 	<ul style="list-style-type: none"> · To be pre-installed on the Test PC/Laptop
Criteria for Passing Test	Pass all test-cases	<ul style="list-style-type: none"> · “Sample test-cases” are given to test locally · Developed program has to: <ul style="list-style-type: none"> · 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

a) 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.

IIT B

1 Question , 3 Hours

IITD

Role: Software Developer(open only for M.Tech) - CGPA Criteria: 6.5

Was it open for IDD branches?

Software Engineer Research(open for B.Tech as well as M.Tech) - CGPA criteria: 8.5

Date: 18/09/2019

Platform: Their software

Test was of 3 hour. **Only 10 submission allowed**(compile as many times you want), **50 test cases to be passed**

Problem: (same as last year's IITK problem)

Constraints:-

1<=N<=50, 1<=M<=50

Note: You can't use anything else than cin, cout(stdin,stdout), new, delete from STL in c++ as mentioned in the above instructions (you can't use vector, priority_queue and all)

Solution 1: I used dijkstra kind of shortest path algorithm, looped over to find min at each step(as you can't use STL's priority_queue(heap)), solution's complexity - O(N^2 * M^2) **What should we find in this question ?**

NOTE: don't use pure DFS kind of backtracking method because there was time constraint also. I used BFS with a matrix which stored minimum jump to a point and it passed all the test cases.

I still did not understand the question. Can someone please explain the question ?

Can somebody explain how this question can be

Mr. K has a mania for rock-climbing.

Mr. K who completed several rock-climbing courses in the past now wants to go for a course which is known to be tough and hard.

Since he obtained the map of the tough rock-climbing course in advance, he wants to prepare himself to successfully complete the course.

N is the height and M is the width of the rock. What '-' in the map means is that there's space to place foot into that corresponding spot.

When he is climbing and '-' exists sequentially on the same height, he can freely move.

But if '--' is more than one space apart, moving towards the horizontal direction is impossible due to safety reasons.

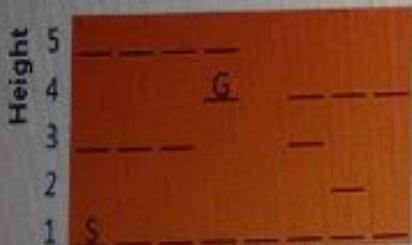
From the current location, if, although the height is different, '--' exists right in the level above or below, he can safely move up or down by using his equipment and physical strength.

Here, depending on how high/low he moves towards the upper or lower direction at one time, the level of difficulty of rock climbing gets determined.

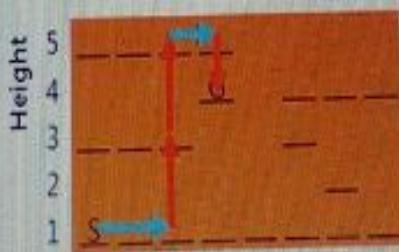
For instance, suppose a rock map such as below is given. (Empty space means there's no space to place foot).

The starting point of climbing is always the very left end point (height 1) on the ground and is expressed as S .

The goal point (or final point) is expressed as G .



[Fig. 1-1]



[Fig. 1-2]

In this case, since the maximum height of moving from the starting point to reach the goal point by either moving up or down is 2 at one time, the level of difficulty of this rock is 2.

done using dfs/bfs? + 1

Y2Phq9Y (Please let me know if the solution is correct)(In input, denote goal state by G)

Note: Their IDE sucks. Install Visual Studio 2013 Version Only their versions don't work) for C++ Or Eclipse IDE for Java.

IITG

same question as IITD. Same rock climbing question.

They even gave solution approach with question, which worked perfectly.

can you please explain what was the solution approach?

NIT Agartala

Q) There is a source (S) and destination (D) and a spacecraft has to go from S to D. There are N number of wormholes in between

which has following properties:

Each wormhole has an entry and an exit.

Each wormhole is bi-directional i.e. one can enter and exit from any of the ends.

The time to cross the wormhole is given and the spacecraft may or may not use the wormhole to reach D.

The time taken to travel outside wormhole between two points (x_1, y_1) and (x_2, y_2) is given by a formula $|x_1 - x_2| + |y_1 - y_2|$ where, (x_1, y_1) and (x_2, y_2) are the coordinates of two points.

The coordinates of S and D are given and we have to find the minimum time to reach D from S.

Note: It's not mandatory to consider all the wormholes

Example : source=(0,0), destination(100,100), wormholes=3

coordinates are:

(1,2),(120,120) Cost = 5

(4,5),(120,100) Cost = 21

(6,8),(150,180) Cost = 23

Sample output=48

Explanation:

Cost from (0,0) to (1,2) is 3

Cost of wormhole 1 is 5

Cost from (120,120) to (100,100) is 40

So, total 48 Someone please provide the solution with explanation . [Wormhole Question asked in SRI Delhi](#)

IITR

CGPA>=8.5 required

<https://discuss.codechef.com/t/samsung-question-geeksforgeeks/17092> Repeated

NOTE: You can't use stl queue for bfs, have to implement it by yourself.

IITK

CGPA >= 8.5

Same Question which came in IITR just above. Repeated.

All questions asked by any samsung campus are all repeated and from a set of 10-11 fixed questions(almost all brute force types). See previously asked questions for the last 2 years and you'll find them all. All the best !!! @Shubham, do you have solution for [Wormhole Question](#) which is frequently asked in Samsung ? <https://ide.geeksforgeeks.org/pC9w4ETP2x> This solution was posted in last year's doc(Bruteforce but should work i guess) . Thanks @Shubham. Can we use BFS from every road and find the farthest rare element and update the answer if it is less. Is there any better solution than this for [\(problem form IITR and IITK\).](https://discuss.codechef.com/t/samsung-question-geeksforgeeks/17092)

AppDynamics

IITD

GATE MCQs + Aptitude repeated same as that of 2018 asked in IITD:

<https://imgur.com/a/PIXIxR8>

What is the answer of grape crushing problem from the above link - 12,,ie, None

I'm getting 18

Code 1: Same as the previous year's 3rd question on vowels in the link above.

[can vowels be done simply by using prefix sums after counting all strings starting and ending with vowels?](#)

//YES

Code 2:

<https://leetcode.com/discuss/interview-question/363036/twitter-qa-2019-activate-fountain>

Code3:

What is Code 3?

// Does anybody knows how to solve this Q.3?? please provide the solution below, it would be of great help. Which Qn3 are you talking about? Digit Sum question ..Can you plz explain the question. I'm not able to find it

// Dictionary which keeps a count of all the unique character.

IITK

MCQs: not too hard data structure problems, complexity analysis, probability (basic) and a few others

Coding: a simple array manipulation question

a very simple class implementation to test OOP concepts and Java language (it was Java-specific, couldn't use other language)

knapsack problem with a different cover story (buying and selling shares)

IITR

Eligibility:

UG JEE 0 ALL

PG M.Tech. - CSE, EE, ECE

CGPA Criterion:

UG B.Tech. - CSE, EE, ECE (CGPA>7) IMSc. - MSM (CGPA>7) IDD - CSE, EE, ECE (CGPA>7) + Other Non-Circuital Branches (CGP A>8)

PG M.Tech. - CSE, EE, ECE (CGPA>7)

MCQs: Total 12 MCQ questions ,some of them were same as asked in IITD, 3 questions from SQL.

Code1: given height and positions of walls. Mud is filled in the region between two consecutive walls, such that height of mud is at max 1 greater than its adjacent height (of wall/mud). Find max height of mud that can be placed

Eg: pos: 1, 6, 10

height: 1, 3, 3.

mud placed: 1 -> 1, 2 -> 2, 3 -> 3, 4 -> 4, 5 -> 4, 6 -> 3, 7 -> 4, 8 -> 5, 9 -> 4, 10 -> 3

Bold ones are walls, normal ones are height of mud at their respective positions

ans = 5;

Code2: array of length n, sliding window of size x, get minimum value in all the windows and finally return the maximum. $x \leq n \leq 1000000$

Code3: Angry animals

IIT KGP

(CGPA Cutoff: For circuital branches (7+), for all other depts (8+)) [12 MCQs + 3 Coding]

Most MCQs same as IIT D (<https://imgur.com/a/PIXIxR8>)

Other MCQs were on B-Trees, simple math problem on simple interest-compound interest

Coding:w

Sliding Window Minimum Maximum (Same as IITR)

Mud Wall Question (Same as IITR)

Almost Sorted Array - find minimum nos. That must be deleted so that array is almost sorted. (An array is almost sorted if it can be sorted by deleting at most 1 element.) Eg 2,1,5,4,6 So answer is 1. As if we delete 1 or 4 we get almost sorted array. Can be solved using nlogn version of LIS

Cohesity

Was Cohesity opened for any other branch apart from CSE??

Ans: No, just CSE.

IITD

CPI: 7

Role: Member of technical staff

Two coding questions. Code1 of 50 marks and Code2 of 100.

Code 1: Very similar to minimum window substring

<https://leetcode.com/problems/minimum-window-substring/>

Here T was “AGCT”

Code 2: Given two equal sized arrays A and B. Also given an array S containing tuples (index1,index2).

Tuples in S can be used to swap elements of A at indexes index1,index2. Tuples can be used any number of times.

The task was to find the minimum hamming distance between A and B.

Hamming distance is total number of locations where $A[i] \neq B[i]$

Solution: Make an undirected graph where edges are pairs (index1, index2). Find connected components in this. Minimize hamming distance for each connected component of indexes greedily.

Proof: 1. No pair of elements in separate connected components can be swapped.

2. Every pair of elements in the same connected component can be swapped.
(There exists a sequence.)

** could you please elaborate more about the solution? I can not understand “Minimize hamming distance for each connected component of indices greedily” Reply: Lets say one of the connected component is composed of indices: 0-3-4-8 and the corresponding elements in A are: 10, 24, 90, 29 and in B are: 10, 10, 24, 90. Now, note that you can obtain any possible permutation of elements in a connected components, so, find out how many of B's elements in this component exist in

A' component (you can use ‘map’). In this case answer is 3.

IITK

Role : Research Engineer

CTC : 57 Lakhs

CPI : 8.5 (Only 25-30 people were shortlisted for the test. All had CPI above 8.5)

2 Questions : Hackerearth Platform

Duration : 70 mins

Ques 1 (100 Marks):

A 0-1 matrix of width w and height h was given. 0 means black and 1 means white. Picture it like a bar code. If the whole column is filled with 1 then it's a white strip on a bar code. if n consecutive columns are filled with 0, then it will represent a black strip of width n. Now the matrix is not perfect(some columns are not completely white or completely black ie they have some irregularities). Cost of switching a single 0 with 1 or vice versa is 1;

You are given x and y where x is the minimum width a strip in the barcode must have and y is the max width. You have to find the minimum cost required to convert the original imperfect matrix into a valid barcode matrix satisfying constraints on x and y ie each strip's width is between [x,y]. Very few people were able to do this. Brute force backtracking will not work(% test cases passed though).**(Solution Approach?) Constraints?**

Ques 2 (70 Marks):

Dependency graph was given. Topological sort order was expected in the output. Only constraint was that if 2 tasks are independent and can be done at a certain point(ie all dependencies are satisfied) then the one lexicographically smaller should be done first.

IITR

Role: Research Engineer

CTC: 57 Lakhs

CPI: 8 and above

2 problems: Hackerearth

Duration: 60 mins

Q1: 70 marks

N students are standing in a row. i th student has height H_i . A student X can see a student Y in front of him only if all students between X & Y have height less than H_x . Find the number of possible pairs (X, Y)

Sol: Can be solved using stack

Q2: 100 marks

A car with fuel C is placed at origin on number line. It cost 1 unit fuel to move 1 unit of distance. The car has to reach a destination at a distance D from the origin. There are N fuel stations placed at positions X_i and it costs R_i to use the i th fuel station. At a fuel station the car can either ignore and continue or replace the original fuel with capacity C_i . Find the minimum cost needed to reach the destination.

Sol: can be solved with dp and segment tree. Start from end. For every i, if the car replaces the fuel with capacity C_i , find the maximum fuel station it can reach(using binary search) let it be j. $dp[i] = r[i] + \min(dp[x])$ for x in range $i+1$ to j . This min can be calculated using segment tree and $dp[i]$ is updated in the tree.

Samsung Research Institute Delhi

IITD

[Wormhole Question](#) repeated. Please post the code for this question. It is repeated in all colleges. Posted previous year's soln under samsung r&d bangalore IITK section

IITK

<https://www.geeksforgeeks.org/samsung-interview-experience-set-28-campus-coding-question/>

IITG

1 coding question, 3hr. Other details already mentioned in doc.

Graph Cycle : <https://drive..com/file>

[/d/1ftOziYTPrsIKIQwSdKrZsOuZYITEDXZy/view?usp=sharing](#)

(Same question was asked in SRI Noida also in IITG)

Arista Networks

IIT Jammu

Question 1

CGPA CutOff 8.0, Discipline: Computer Science and Engineering

In an IP network, for every outgoing link, there is a limit to the length of the packet that can be transmitted out of that link. This is known as **Maximum Transmission Unit (MTU)** for a given link. When a packet whose length is greater than MTU has to be transmitted out of such link, the packet needs to be split into smaller units such that the length of each such fragmented packet is less than or equal to the MTU.

Your task is to write the code to gather the fragmented packets and construct one defragmented packet and return a pointer to the defragmented packet.

The rules for fragmentation are follows:

- Every fragmented packet header has a field called FO (Fragment Offset). This indicates the byte sequence number in the original un-fragmented packet that is carried over as the first byte sequence in this fragmented packet.
- Every fragmented packet header has a field called MF (More fragments). A value of 1 here indicates that this is NOT the last fragment.
- Every fragmented packet header has a field called length. This represents the length of the fragmented packet

Description on the expected input and output:

Input:

```
<NumFragments>
<FragmentedPktHeader1,Payload1>
<FragmentedPktHeader2,Payload2>
<FragmentedPktHeader3,Payload3>
<FragmentedPktHeader4,Payload4>
```

Note: You don't need to parse the input. The main function will parse the input and pass the fragment to you through recvPkt() function.

The sequence of the fragmented packets need NOT be in the order the packets were fragmented. In other words, the fragments can arrive out-of-order.

Output:

Pointer to the defragmented packet.

Question 2

★ Find the path to the branch sales offices!

ABC is a large corporation with its head quarters in Bangalore. It has sales offices in many cities around India. A, G, M and V are the sales engineers working in headquarters and every quarter they need to visit one of the 4 randomly chosen branch sales offices. The branch offices are connected by several intermediate cities and the network of these roads is given as input. You can assume that there is only one way to reach a particular city in a network including the branch offices and there are no loops in the network. You need to come up with the path leading to each of the 4 branch cities that are chosen.

For the ease of programming, city names are represented by integer numbers starting from integer 1. You need to output the result_t structure which contains the path to each of the branch cities.

Sample Input:

```
3,5,6,8  
8  
1,2  
1,3  
2,4  
4,5  
4,7  
5,6  
7,8  
7,9
```

Explanation of input:

City 3,5,6,8 are branch cities to be visited. All 4 sales folks always start with City #1.

8 edges/paths in this network and the following pairs of cities are directly connected. <city1,city2>,<city1,city3>,<city2,city4>,<city4,city5>,<city4,city7>,<city5,city6>,<city7,city8>,<city8,city9>

You should populate the 'result_t' structure as your answer. The paths in this case will be (1,3), (1,2,4,5), (1,2,4,5,6) and (1,2,4,7,8).

YOUR ANSWER

Question 3

★ Candy Crush

This is a one dimensional variant of the popular game Candy Crush. The rules of the game are summarized below.

- You will be given a linked-list where each node stores a candy. Candies are available in different flavors - MANGO, ORANGE, PAAN, COFFEE, CHOCOLATE and MINT
- Each flavor has a "weight" associated with it. For example, MANGO has a weight of 2. This means if there are 2 or more consecutive MANGO flavored candies in the list, they need to be "crushed". Crushing a candy means deleting the node from the linked list. The weights of the flavors are in the table below:

Candy flavor	Weight
MANGO	2
ORANGE	3
PAAN	4
COFFEE	5
CHOCOLATE	5
MINT	6

Example:

If the linked list looks like this -

MANGO MANGO PAAN PAAN ORANGE ORANGE ORANGE ORANGE PAAN PAAN COFFEE

The list should look like this after crushing -

COFFEE

Notes:

1. There are two consecutive MANGOes at the head and weight of MANGO is 2. So, the first two mangoes are crushed. The resulting list after this operation is - PAAN PAAN ORANGE ORANGE ORANGE PAAN PAAN COFFEE
2. The two PAANS are skipped because the weight of PAAN is 4.
3. Next, there are 4 consecutive ORANGEs, which is \geq the weight of ORANGE (3). Hence, all 4 ORANGEs are crushed. The resulting list after this operation is - PAAN PAAN PAAN COFFEE
4. Now, there are 4 PAANS which are consecutive, so they are crushed next. Weight of PAAN is 4.
5. COFFEE is the only remaining candy.
6. The nodes in the linked list must be processed from head to tail (left to right in above example) and the candies must be crushed in the same order, i.e. crush the candies closer to head before you crush ones further down the list.

INPUT: Length of the linked list followed by candy flavors -

11

MANGO MANGO PAAN PAAN ORANGE ORANGE ORANGE ORANGE PAAN PAAN COFFEE

OUTPUT: The list after crushing the candies -

COFFEE

If the list is empty, the below string is printed -

<empty list>

Length of the input linked list \leq 250,000.

YOUR ANSWER

Oyo Rooms

IIT Jammu

Question 1medi

Activities Google Chrome ▾ Sat 15:14
G cambridge english bec-G ✎ iB InterviewBit +
← → C H 🔒 interviewbit.com/test/83ea529360/?signature=BAhpA6cyBw%3D%3D-7a08b7a30c14c5ed5899e12cfb116dd26b2a09cf#problem_1
Media.net - IIT Kanpur Online Coding Test 2019-20 00 Hr : 25 min : 38 sec 1 / 3 Attempted End Test Issues Flag Ques

Biggest square

You are given a **matrix A** of **R** rows and **C** columns. Each cell of the matrix is colored either black or white. A black cell is denoted by **1** and a white cell is denoted by **0**.

You are given **Q** queries. In each query, you will be given a **coordinate of a cell (X, Y)** and an integer **K**. Here **X** denotes the row number and **Y** denotes the column number.

For each query, you are required to tell the maximum possible area of a square that has **(X, Y)** as a center and contains at most **K** black cells.

Note:

1. For a square to have center at (x, y) , it must have odd length.
2. Rows are numbered from top to bottom and columns are numbered from left to right.

Input Format

The first argument is a matrix A.
The second argument is an integer array B denoting the values of X for the coordinates of each query.
The third argument is an integer array C denoting the values of Y for the coordinates of each query.
The fourth argument is an integer array D denoting the values of K for each query.

Output Format

Return an array of size Q having answers for each query.

Constraints

https://www.interviewbit.com/test/83ea529360/?signature=BAhpA6cyBw%3D%3D-7a08b7a30c14c5ed5899e12cfb116dd26b2a09cf#problem_1

Max Rectangle in Binary Matrix:

<https://www.erviewbit.com/problems/max-rectangle-in-binary-matrix/>

Media.net

IIT Kanpur

Sat 15:14

Activities Google Chrome ▾

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interviewbit.com/test/83ea529360/?signature=BAhpA6cyBw%3D%3D~7a08b7a30c14c5ed5899e12cfb116dd26b2a09cf#/problem_2

00 Hr : 25 min : 43 sec 1 / 3 Attempted End Test Issues ?

InterviewBit Media.net - IIT Kanpur Online Coding Test 2019-20

Maximum Subtree

Flag Question

You are given a tree of **A** nodes having **A-1** edges. Each node is numbered from **1** to **A** where **1** is the root of the tree.

You are given **Q** queries. In each query, you will be given a **unique** integer **j**. You are required to remove the **jth** numbered edge from the tree.

This operation will divide a tree into two different trees.

For each query, once you perform the remove operation, you are asked to tell the maximum size among all the sizes of the trees present till that query.

Note:

- Once an edge is removed, it will be considered removed for all the further queries.
- It is guaranteed that each edge will be pointing to exactly two different nodes of the tree.
- Edges are numbered from **1** to **A-1**. Please read the input format for more clarification.

Input Format

```
The first argument is an integer A denoting the number of nodes.  
The second and third arguments are the integer arrays B and C where for each i (0 <= i < A-1), i denotes the (i+1)th edge and B[i] and C[i] are the nodes connected by it.  
The fourth argument is an integer array D of distinct elements where D[i] denotes the number of the edge to be removed for the ith query.
```

Output Format

```
Return an array of answers for each query.
```

Constraints

```
0 <= A <= 1000  
0 <= Q <= 1000  
0 <= B[i] <= A  
0 <= C[i] <= A  
0 <= D[i] <= A-1  
B[i] != C[i]
```

Activities Google Chrome ▾ Sat 15:14

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interviewbit.com/test/83ea529360/?signature=BAhpA6cyBw%3D%3D-7a08b7a30c14c5ed5899e12cfb116dd26b2a09cf#/problem_3

Media.net - IIT Kanpur Online Coding Test 2019-20 00 Hr : 25 min : 49 sec 1 / 3 Attempted End Test Issues ?

InterviewBit

Minimum cost to visit the museum

Shadowland is a beautiful city with **N** museums which are connected with bidirectional roads. The city can be represented as a graph with **N** nodes representing museums and **M** edges representing roads.

There is a cost of traveling each road in order to move from the front of one museum to that of the other. However, there is an additional cost one has to pay if and only if he decides to enter the museum. The cost of entering the museums need not be the same.

For each museum **i**, Abhishek wants to know the minimum total amount he has to pay if he starts his journey from the front of the **ith** museum and enters any one museum.

Note:

1. Abhishek may or may not enter the same museum he is starting from.
2. The graph may or may not be fully connected.
3. There may be multiple roads between the same pair of museums as well.
4. There may be roads which connect the museum to itself.
5. While traveling the roads he will not enter any museum that he encounters on his way till he finally enters the museum such that the total cost of his journey is minimized.

Given an array of integers **A** of size **N** for which **A[i]** represents the cost of entering the **ith** museum. And three more integer arrays **B**, **C** and **D**. **B[i]**, **C[i]** and **D[i]** represents the **ith** road i.e. there is an edge from **B[i]** to **C[i]** with edge weight **D[i]**.

Find and return the integer array in which the **ith** element represents the minimum cost Abhishek has to pay in order to visit any museum if he is standing in front of the **ith** museum.

Input Format

The first argument given is the integer array **A**.
The second argument given is the integer array **B**.
The third argument given is the integer array **C**.

IITG

Added under Directi as both companies are the same.

Directi

IIT Gandhinagar

You are given a matrix A of R rows and C columns. Each cell of the matrix is colored either black or white. A black cell is denoted by 1 and a white cell is denoted by 0.

You are given Q queries. In each query, you will be given a coordinate of a cell (X, Y) and an integer K. Here X denotes the row number and Y denotes the column number.

For each query, you are required to tell the maximum possible area of a square that has (X, Y) as a center and contains at most K black cells.

Note:

1. For a square to have center at (x, y), it must have odd length.
2. Rows are numbered from top to bottom and columns are numbered from left to right.

Input Format

The first argument is a matrix A.
The second argument is an integer array B denoting the values of X for the coordinates of each query.
The third argument is an integer array C denoting the values of Y for the coordinates of each query.
The fourth argument is an integer array D denoting the values of K for each query.

Output Format

Return an array of size Q having answers for each query.

Constraints

$1 \leq R, C \leq 3000$
 $1 \leq X \leq R$
 $1 \leq Y \leq C$
 $1 \leq K \leq R * C$
 $1 \leq Q \leq 5 * 10^5$
 $A[i][j] = 0 \text{ or } 1$

For Example

Input 1:
A = [[1, 0, 1], [0, 1, 0], [1, 0, 1]]
B = [1, 2, 1]
C = [1, 2, 1]
D = [1, 2, 1]

can someone share the solution for the above question (question 1)? (Use binary Search over length of submatrix with prefix sum preprocessing to get the number of 1's in a submatrix - Pseudo Code??)

How to solve question 1??

can somebody put question 2 also? and 3 as well?+1

<https://ide.geeksforgeeks.org/WE`XYc1JoZI> someone please verify the solution

please share solution for above question???(+1)

IITG

3 coding question:

<https://drive.google.com/file/d/1po3hPwX0NUm84dlwsAfCn002YImR6nO1/view?usp=sharing>

This is the first question. It's also there in above link.

You are given a **matrix A** of **R** rows and **C** columns. Each cell of the matrix is colored either black or white.
A black cell is denoted by **1** and a white cell is denoted by **0**.

You are given **Q** queries. In each query, you will be given a **coordinate of a cell (X, Y)** and an integer **K**.
Here **X** denotes the row number and **Y** denotes the column number.

For each query, you are required to tell the maximum possible area of a square that has **(X, Y)** as a center and contains at most **K** black cells.

Note:

1. For a square to have center at (x, y) , it must have odd length.
2. Rows are numbered from top to bottom and columns are numbered from left to right.

Input Format

The first argument is a matrix A.
The second argument is an integer array B denoting the values of X for the coordinates of each query.
The third argument is an integer array C denoting the values of Y for the coordinates of each query.
The fourth argument is an integer array D denoting the values of K for each query.

Output Format

Return an array of size Q having answers for each query.

Constraints

```
1 <= R, C <= 3000
1 <= X <= R
1 <= Y <= C
1 <= K <= R * C
1 <= Q <= 5 * 10^5
A[i][j] = 0 or 1
```

For Example

Input 1:
n = 4 c = 7

IIT H

All coding questions were same as above.

Edge Verve

IIT BHU @ 29/09/2019

Hackerrank, STL Allowed, 1 Section, 3 hrs, 3 coding questions. Each question had 15 test cases.

Q1 - Scatter Palindrome : Given a string, find the no. of substrings which can be rearranged into a palindrome.

Brute Force solution accepted. For all possible substrings, check if odd occurring characters are not more than one b/w the start and end index.

Solution Approach explained on [StackOverflow](#)

Q2 - Colouring the Blocks : Given n boxes and the costs for colouring each of them with 3 colours (say R,G,B) find minimum total cost to colour all boxes such that no two adjacent boxes of same colour.

DP solution accepted. Populate DP table with minimum possible costs for each choosing a colour till that index. 2^n (bruteforce) also accepted

```
public int minCost(int[][] costs) {
    if(costs==null||costs.length==0)
        return 0;

    for(int i=1; i<costs.length; i++){
        costs[i][0] += Math.min(costs[i-1][1], costs[i-1][2]);
        costs[i][1] += Math.min(costs[i-1][0], costs[i-1][2]);
        costs[i][2] += Math.min(costs[i-1][0], costs[i-1][1]);
    }

    int m = costs.length-1;
    return Math.min(Math.min(costs[m][0], costs[m][1]), costs[m][2]);
}
```

Q3 - Arbitrary Shopping : Find the length of the longest sub-array such that sum of elements does not exceed 'k'.

Two Pointer solution accepted. For each index, add the element to your current sum, and decrement from beginning index 'l' so that the sum fits in 'k' units of money.

{ O(n) with sliding window approach} , {O(nlogn) with current sum + binary search} : both worked.

1h 41m left

ALL

1. Scatter-Palindrome

A palindrome is a string which reads the same forward and backwards, for example, *tacocat* and *mom*. A string is a scatter-palindrome if its letters can be rearranged to form a palindrome. Given a string, determine how many of its substrings are scatter-palindromes. A substring is a contiguous range of characters within the string.

For example, given a string *aabb*, the scatter-palindromes are *a*, *aa*, *aab*, *aabb*, *a*, *abb*, *b*, *bb*, *b*. There are 9 substrings that are scatter-palindromes.

Write a program that takes input in the below given format and prints output in the below given format.

Constraints

- $1 \leq \text{size of string} \leq 1000$
- all characters of string $\in \text{ascii}[a-z]$

► Input Format For Custom Testing
► Sample Case 0
► Sample Case 1

```
1 #include <map>
2 #include <set>
3 #include <list>
4 #include <cmath>
5 #include <ctime>
6 #include <deque>
7 #include <queue>
8 #include <stack>
9 #include <iostream>
10 #include <bitset>
11 #include <cstdio>
12 #include <limits>
13 #include <vector>
14 #include <climits>
15 #include <cstring>
16 #include <cstdlib>
17 #include <fstream>
18 #include <numeric>
19 #include <iostream>
20 #include <iostream>
21 #include <algorithm>
22 #include <unordered_map>
23
24 using namespace std;
25 int main() {
26     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
27     return 0;
28 }
```

Test Results Custom Input

Run Submit Code

Line: 1 Col: 1

Advice - Don't worry about complexity, just solve it by bruteforce.

<https://drive.google.com/file/d/18kHmOj8HQ8uA7BqQZ3GQ6eVZ4afn2Fm/view>

1h 41m left

are *a*, *aa*, *abb*, *aabb*, *b*, *bb*, *b*. There are 9 substrings that are scatter-palindromes.

ALL

Write a program that takes input in the below given format and prints output in the below given format.

Constraints

- $1 \leq \text{size of string} \leq 1000$
- all characters of string $\in \text{ascii}[a-z]$

▼ Input Format For Custom Testing
One line containing a string
▼ Sample Case 0
Sample Input For Custom Testing
abc

Sample Output
3

Explanation
The substrings that are scatter-palindromes of the string abc are:

- *a*
- *b*
- *c*

▼ Sample Case 1
Sample Input For Custom Testing
brrrgg

Sample Output

```
1 #include <map>
2 #include <set>
3 #include <list>
4 #include <cmath>
5 #include <ctime>
6 #include <deque>
7 #include <queue>
8 #include <stack>
9 #include <string>
10 #include <bitset>
11 #include <cstdio>
12 #include <limits>
13 #include <vector>
14 #include <climits>
15 #include <cstring>
16 #include <cstdlib>
17 #include <fstream>
18 #include <numeric>
19 #include <iostream>
20 #include <iomanip>
21 #include <algorithm>
22 #include <unordered_map>
23
24 using namespace std;
25 int main() {
26     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
27     return 0;
28 }
```

Line: 1 Col: 1

Test Results **Custom Input**

Run **Submit Code**

1h 41m left

ALL

2. Coloring the blocks

There are n blocks placed in a row. Each block must be covered with one of the three colors available, but no two adjacent blocks can be the same color. The cost of coloring each block varies and is given in an array. Given the cost of using each color on each block, determine the minimum cost to color all of the blocks.

Example

```
cost = [[1, 2, 3],  
        [1, 2, 3],  
        [3, 3, 1]]
```

For the first block, the cheapest color is the first color which costs 1. For the second block, colors cost the same but color 1 cannot be used because it matches the first block. Instead, choose color 2. For the third block, it can be color 1 or color 3. The cheaper is color 3 at 1 unit. The total cost to color the blocks is $1 + 2 + 1 = 4$.

Write a program that takes input in the below given format and prints output in the below given format.

Constraints

- $1 \leq n \leq 100$
- $0 \leq \text{cost}[i][j] \leq 100$

▼ Input Format For Custom Testing

The first line contains an integer, n , the size of the cost array. Each line i of the n subsequent lines (where $0 \leq i < n$) contains three space-separated integers that denote the cost of each color, $\text{cost}[i][j]$ (where $1 \leq j \leq 3$).

▼ Sample Case 0

Sample Input For Custom Testing

```
1  
#include <bits/stdc++.h>  
using namespace std;  
int main() {  
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */  
    int n;  
  
    return 0;  
}
```

Test Results

Custom Input

Run

Submit Code

Line: 1 Col: 1

1h 41m left

block. Instead, choose color 2. For the third block, it can be color 7 or color 3. The cheaper is color 3 at 1 unit. The total cost to color the blocks is $1 + 2 + 1 = 4$.

ALL
Write a program that takes input in the below given format and prints output in the below given format.

Constraints

1
• $1 \leq n \leq 100$
• $0 \leq \text{cost}[i][j] \leq 100$

2
▼ Input Format For Custom Testing
The first line contains an integer, n , the size of the cost array.
Each line i of the n subsequent lines (where $0 \leq i < n$) contains three space-separated integers that denote the cost of each color, $\text{cost}[i][j]$ (where $1 \leq j \leq 3$).
▼ Sample Case 0
Sample Input For Custom Testing

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

Sample Output

```
3
```

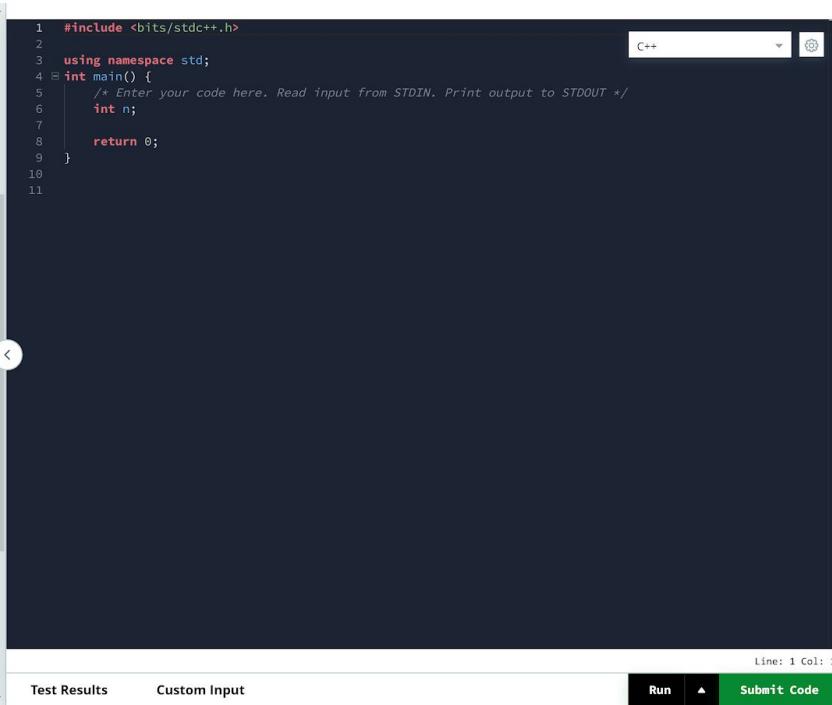
Explanation
Choose the cheapest color for each block: color 1 for block 0, color 3 for block 1 and color 2 for block 2.
▼ Sample Case 1
Sample Input For Custom Testing

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

C++ Line: 1 Col: 1

Test Results Custom Input

Run ▲ Submit Code



1h 41m left

ALL

3. Arbitrary Shopping

An avid shopper goes to a clothing store and picks any arbitrary outfit. Later the shopper buys all consecutive outfits picked up, as long as there is the money to pay for them up to the n^{th} outfit. For example, after first selecting outfit i , the shopper will continue to outfit $i+1, i+2$ and so on until there is not enough money for another outfit. Determine the maximum number of outfits the shopper can buy.

For example, assume the outfit's prices are $\text{outfits} = [2, 3, 5, 1, 2, 1]$, and the money available, $\text{money} = 5$. There are three subarrays of prices that sum to less than or equal to money : $[2, 3], [5], [1, 1, 2, 1]$. The longest of these, that is, the maximum number of outfits that can be bought, is 4.

Write a program that takes input in the below given format and prints output in the below given format.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq \text{outfits}[i] \leq 100$
- $1 \leq \text{money} \leq 10^6$

► Input Format For Custom Testing
▼ Sample Case 0
Sample Input For Custom Testing

```

3
10
10
10
10

```

► Test Results
Custom Input

Run ▲ Submit Code

```

1 #include <bits/stdc++.h>
2
3
4 using namespace std;
5 int main() {
6     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
7     int n;
8     cin>>n;
9     int outfit[n];
10    for(int i=0;i<n;i++){
11        cin>>outfit[i];
12    }
13    int k;
14    cin>>k;
15    map <int,int> m;
16    int sum=0;
17    int flag=0;
18    int ans=0;
19
20    m[0]=-1;
21    for(int i=0;i<n;i++){
22        sum=sum+outfit[i];
23
24        if(m.find(sum-k)!=m.end()){
25            ans=max(ans,i-(m[sum-k]));
26            flag=1;
27        }
28
29        m[sum]=i;
30    }
31    if(flag==0) cout<<0;
32    else cout<<ans;
33    return 0;
34
35
36

```

Line: 1 Col: 1

1h 41m left

ALL

► Input Format For Custom Testing
▼ Sample Case 0
Sample Input For Custom Testing

```

3
10
10
10
5

```

► Sample Output

```

0

```

Explanation
There are 3 outfits each costing 10. With $\text{money} = 5$, there is not enough money to buy any of the outfits.
▼ Sample Case 1
Sample Input For Custom Testing

```

3
5
10
10
5

```

► Sample Output

```

1

```

Explanation
There are 3 outfits costing 5, 10 and 10 respectively. With $\text{money} = 5$ only the first outfit can be bought.

► Test Results
Custom Input

Run ▲ Submit Code

```

1 #include <bits/stdc++.h>
2
3
4 using namespace std;
5 int main() {
6     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
7     int n;
8     cin>>n;
9     int outfit[n];
10    for(int i=0;i<n;i++){
11        cin>>outfit[i];
12    }
13    int k;
14    cin>>k;
15    map <int,int> m;
16    int sum=0;
17    int flag=0;
18    int ans=0;
19
20    m[0]=-1;
21    for(int i=0;i<n;i++){
22        sum=sum+outfit[i];
23
24        if(m.find(sum-k)!=m.end()){
25            ans=max(ans,i-(m[sum-k]));
26            flag=1;
27        }
28
29        m[sum]=i;
30    }
31    if(flag==0) cout<<0;
32    else cout<<ans;
33    return 0;
34
35
36

```

Line: 1 Col: 1

Hexagon Capability Centre India

IIT Kanpur (30/9/2019) :

Aptitude Test

Total 50 Questions : 50 Min

3 section:

Quantitative Aptitude : 20
Logical Reasoning and data interpretation: 15
Verbal Ability:15

Reference : CAT book + pariksha type question asked

Clumio Technologies India LLP

IIT Kanpur - 3/10/2019

(Member of Technical Staff) (M. Tech allowed)

2 coding questions. Duration: 70 minutes

Platform: Hackerrank

Count all substrings of a string such that the substring contains all the vowels and it doesn't contain any character apart from a vowel.

<https://www.geeksforgeeks.org/count-substrings-that-contain-all-vowels-set-2/>

Given a list of cities along with their x and y coordinates for a grid, for each query city, find its nearest city such that the city has the same x or y coordinate

One Logical Reasoning section

One Business Analysis Section(Data was given and using it we had to make inferences)

These 3 sections were allotted 60 minutes

One Coding section(60 minutes)

IIT Roorkee - 20/10/2019

2 coding question: Duration 60 mins

Platform: Hackerrank

Given N cars placed at some positions on a number line. Find the minimum length of shed such that at least K cars are under it. $K \leq N \leq 1e5$

Find the maximum size of sub matrix such that all sub matrices of that size have sum less than a given maxSum. $N \leq 1550$

Sol: Binary Search on the size, $N^2\log N$;

IITG

3 coding question: Duration 1 hr

Mtech open

0

Questions: <https://drive.google.com/open?id=1Ho-FosWiTivBh2dYzA3V2c4RzDUSiAGq>

Deskera

(MTECH CS WAS ALLOWED??) YES

(IIT Kanpur)(03/10/2019)

total of b 18 questions (5 aptitude+5logical+5 technical+3 coding questions) which platform???
hackerrank?? platform was techgig

3 coding question based on string

1.<https://www.geeksforgeeks.org/longest-palindrome-substring-set-1/>

2.<https://www.geeksforgeeks.org/recursively-remove-adjacent-duplicates-given-string/>

//what should be the output of mississipie for 2nd question?(because on gfg its quite unclear) mpie
Shouldnt it be mipie??

3.<https://www.geeksforgeeks.org/length-of-the-longest-substring-without-repeating-characters/>

/

IIT D (19/10/2019)

Same question as above.

Wells Fargo

IIT-Bombay (26th October 2019)

Program Associate Profile: 2 Coding

Travelling is Fun :

<https://www.hackerrank.com/contests/hack-it-to-win-it-paypal/challenges/q4-traveling-is-fun/problem>

Minimum Loss (It's variant actually) :

<https://www.hackerrank.com/challenges/minimum-loss/problem>

IIT-Madras (3rd October 2019)

Program Associate Profile: 10 Questions - 8 Aptitude + 2 Coding

Solution to Angry Animals?

Can someone explain the input format for part 2?

Can SOMEONE PLEASE EXPLAIN HOW TO SOLVE ANGRY ANIMALS?? (+3)

Solution Angry Animals

first line is the number of animals. followed by the size of array 'a' then accordingly the number follows. Then these are followed by the size of array 'b' then the number follows

Check the link below for input format explanation (Complete question for part 2)

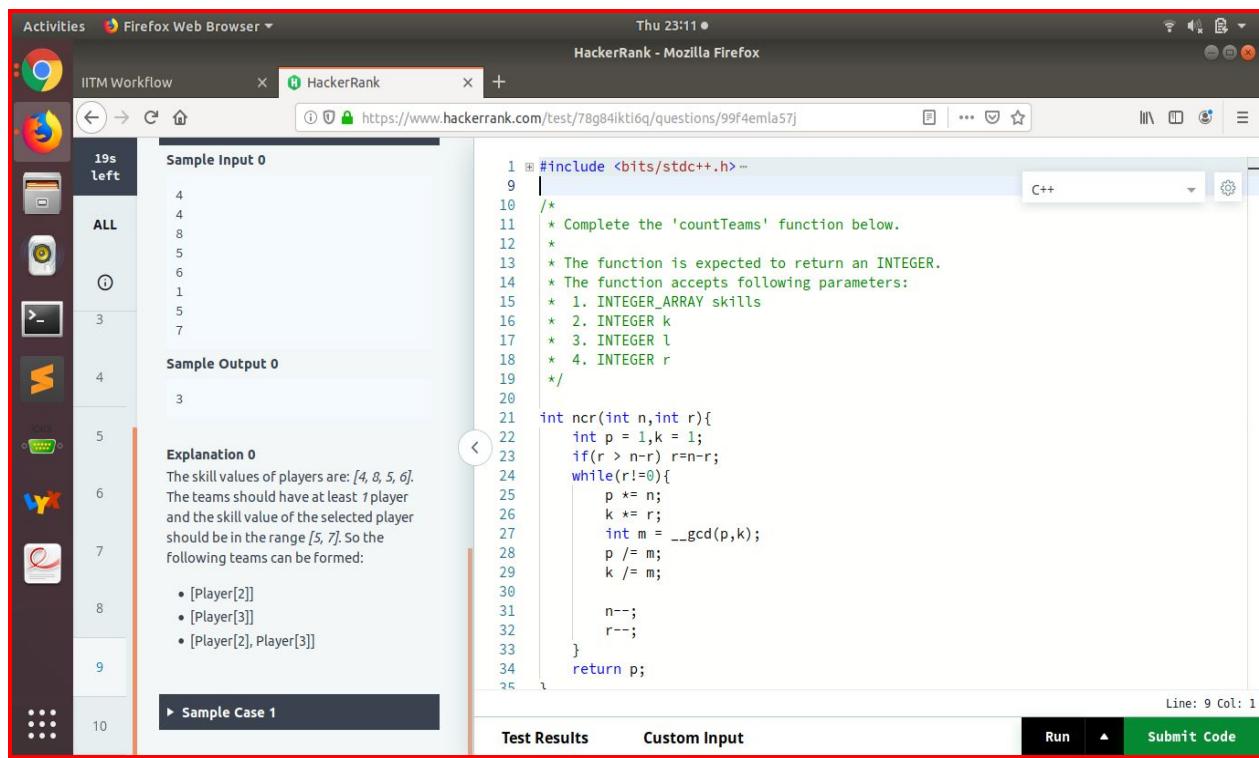
Can someone please elaborate what type of aptitude questions were asked

What were the aptitude questions ??? Anyone? Did aptitude contains verbal ability questions?+1,+1,+1,+1

What was the test duration?

Someone earlier deleted the screenshot having angry animals questions. Please refrain yourselves from doing such things.

3



The screenshot shows a Linux desktop environment with a taskbar on the left containing various application icons. A Firefox browser window is open, displaying a HackerRank problem. The problem title is "Sample Input 0". The input is:

```
4
4
8
5
5
6
1
5
7
```

The problem asks to complete the "countTeams" function. The function signature is:

```
int ncr(int n,int r){
```

The function body uses a loop to calculate the result. The code ends with a return statement:

```
    int p = 1,k = 1;
    if(r > n-r) r=n-r;
    while(r!=0){
        p *= n;
        k *= r;
        int m = __gcd(p,k);
        p /= m;
        k /= m;
        n--;
        r--;
    }
    return p;
```

Below the code editor, there are tabs for "Test Results" and "Custom Input", and buttons for "Run" and "Submit Code". The status bar at the bottom right shows "Line: 9 Col: 1".

The screenshot shows a Firefox browser window with the HackerRank website open. The challenge is titled 'angryAnimals'. The code editor contains the following C++ code:

```

1 #include <bits/stdc++.h>
9
10 /*
11 * Complete the 'angryAnimals' function below.
12 *
13 * The function is expected to return a LONG_INTEGER.
14 * The function accepts following parameters:
15 * 1. INTEGER n
16 * 2. INTEGER_ARRAY a
17 * 3. INTEGER_ARRAY b
18 */
19
20 long angryAnimals(int n, vector<int> a, vector<int> b) {
21     int m = a.size();
22     vector<vector<int>> adj(n);
23     vector<int> val(n);
24     for(int i=0; i<m; i++){
25         adj[b[i]-1].push_back(a[i]-1);
26         adj[a[i]-1].push_back(b[i]-1);
27     }
28     for(int i=0; i<n; i++){
29         if(adj[i].size() == 0) val[i] = 1;
30         else{
31             auto it = upper_bound(adj[i].begin(),adj[i].end(),i);
32             if(it != adj[i].end()) val[i] = *it - 1;
33             else if(i != n-1) val[i] = n-i;
34             else val[i] = 1;
35         }
36     }
37 }

```

The browser's status bar indicates 'Thu 23:11'.

Please put other questions as well

IITG (10th Oct 19) What profile?

This was an aptitude test. (120 minutes) Hosted on amcat (**what were the level of these questions ???/types???)**)

One Verbal reasoning section(Comprehension, sentence correction)

2 Questions from a pool of questions(please add more)

Locate number of substring occurrences in a string(Ex.

Timlikestoeatfoodandtimlovesgames, Tim) Ans. 2(Exp: occurrences are in bold.

Note - the substring is case insensitive)

Question was reduced to finding length of longest cycle in graph...**Directed or undirected graph???** and what were constraints?

Given (x,y) coordinates of two circles and their radii, find area of intersection

<https://www.geeksforgeeks.org/find-minimum-number-of-merge-operations-to-make-an-array-palindrome/> instead of count, we had to return the palindrome array

Technical test

Total 57 people were shortlisted from the aptitude test.

7 questions - 1 hour test

You have to write answer along with the complete explanation required for that problem.

First two questions were standard puzzles from interview bit.

Then 2 questions where you have to check for cases and solve equations.

1 sequence series problem.

1 problem on verbal reasoning. (It was not like normal easy ones you will find on the internet.)

Last problem was a linear programming problem.

1st problem -

<https://medium.com/i-math/a-king-1000-bottles-of-wine-10-prisoners-and-a-drop-of-poison-2dd1959a8dd2>

IIT ROORKEE

Platform: Amcat (shitty platform)

4 sections

Logical reasoning

-

Verbal & comprehension

| 60 min.

Business Analysis

-

Coding round :- 60 min 2 ques;

:find the value of $(S^n \% 10)^m \% 1000000007$;

<https://www.geeksforgeeks.org/modular-exponentiation-power-in-modular-arithmetic/>

2: Implement shortest first job scheduling algo.

3. Same as IIT G Question : Locate number of substring occurrences in a string(Ex.

Timlikestoeatfoodandtimlovesgames, Tim) Ans. 2(Exp: occurrences are in bold. Note - the substring is case insensitive) (::will upload few screenshots also)

<https://www.geeksforgeeks.org/program-for-shortest-job-first-or-sjf-cpu-scheduling-set-1-non-preemptive/>

4. find the largest square palindromic submatrix of a given mxn matrix. a matrix will be palindromic if $A[i][j] = A[n+1-i][n+1-j]$, i&j are 1 based index. Note: While printing space seperated elements or ans for test cases in seperate line do not print last space or last newline. Today, I couldn't pass both of my qns due to this :(

IIT Kharagpur

Open to all circuit branches and from non circuit only 8.5+ CGPA

BookMyShow

IIT Hyderabad

BookMyShow Campus Hiring Challenge - IIT Hyderabad

36m to test end

Shortest Substring

Given a string comprised of lowercase letters in the range $\text{ascii}[a-z]$, determine the length of the smallest substring that contains all of the letters present in the string.

Example:
Given the string $s = dabbcabcd$, the list of all characters in the string is $\{a, b, c, d\}$. Two of the substrings that contain all letters are $dabc$ and $abcd$. The shortest substring containing all the letters is 4 characters long, $abcd$.

Function Description
Complete the function `shortestSubstring` in the editor below. The function must return the length of the shortest substring that contains all of the characters within s .

`shortestSubstring` has the following parameter:
 s : a string

Constraints

- $1 \leq \text{size of } s \leq 10^5$
- $s[i] \in \text{ascii}[a-z]$

Input Format For Custom Testing

Sample Case 0

Sample Input For Custom Testing
bab

Sample Output
2

Explanation
"ba" is a substring that contains all the characters in s .

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](#)

BookMyShow Campus Hiring Challenge - IIT Hyderabad

36m to test end

Meetup Schedule

The founder of a new startup company is looking for investors and needs to meet with as many of them as possible. Given a number of investors' schedules, determine the maximum number of meetings the founder can have. Each potential investor provides a window of days they are available. The founder can only have one meeting per day.

The schedules are given in the form of two lists of integers, *arrival* and *departure*. The list *arrival* contains integers that represent the first day an investor is available, and the list *departure* shows the last days they are available, both inclusive.

Example:
 $\text{arrival} = [1, 2, 3, 3, 1]$
 $\text{departure} = [2, 2, 3, 4, 4]$
The period each of the 5 investors is available is summarized as $[1, 2]$, $[2, 2]$, $[3, 3]$, $[3, 4]$ and $[3, 4]$. The graphic below shows a possible schedule that accommodates meetings with 4 investors. Scheduled meetings in green and blocked days are in red.

Investors	1-4	1-3		
	1-3	1-2		
	1-1			
	1-0			
Days	1	2	3	4

Function Description
Complete the function `countMeetings` in the editor below. The function must return an integer that represents the maximum number of meetings possible.

`countMeetings` has the following parameters:

- $\text{arrival}[\text{arrival}[0]\dots\text{arrival}[n-1]]$: an array of integers where the value of each element $\text{arrival}[i]$ is the first day the i^{th} investor is available to meet.
- $\text{departure}[\text{departure}[0]\dots\text{departure}[n-1]]$: an array of integers where the value of each element $\text{departure}[i]$ is the last day the i^{th} investor is available to meet.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq \text{arrival}[i], \text{departure}[i] \leq 10^5$ (where $0 \leq i < n$)
- $\text{arrival}[i] \leq \text{departure}[i]$ (where $0 \leq i < n$)

Input Format For Custom Testing

Sample Case 0

Sample Input For Custom Testing

Zendrive

IITG (SDE PROFILE) (salary 20-27 CPI 6.5)

Test was of 1 hour

3 questions

I don't have ss if someone has plz add

Q1. You are given N points on a positive number line. You have to put them in different jars. Each jar can have at most C points and difference b/w any two points in a jar cannot exceed K.

Find minimum number of jars required. (20 MARKS)

Approach;

```
func(int a[],int k,int c){  
    int n=a.size();  
    sort(a,a+n);  
    int i=0;  
    int start=0;  
    int c;  
    while(i<n){  
        start=i;  
        c++;  
        while(i<n && A[i]-A[start]<=K && i-start+1<=C){  
            i++;  
        }  
    }  
    return c;  
}
```

Q2:(50 MARKS)

You are given an array. You are allowed to square exactly 1 element of array. Find max subarray sum after you square an element.

Approach :

For every index find max subarray sum with subarray starting at that index. Call this array start

For every index find max subarray sum with subarray ending at that index. Call this array end

Note: if element is negative, set start[i]=0; end[i]=0;

Compute start and end using start[i]=max(0,arr[i]+start[i+1]);

end[i]=max(0,arr[i]+end[i-1]);

for(all i){

val=A[i]*A[i];

ans=max(ans, val + start[i+1] + end[i-1]);

}

This approach can be optimized to O(1) space complexity. However the above solution has no issue.

Q3:(30 MARKS)

You are given a 2D grid. each cell contains either a 0 or 1. 0 means the cell is empty 1 means there is a tower on that cell. Each tower has height 1. Find max water you can store in the grid.

Water can be stored in empty cell if they are surrounded by tower on all sides. If a empty cell is connected to edge of grid then water will flow out

Input

0110

1011

1001

1110

Output:

3

Solution :

Simple dfs question.

Move along the edge of the grid. If there is a 0 apply dfs converting all 0's seen to 1.

finally count all 0 in the grid.

Can be solved using bfs too. Convert the edge dots to some other symbol,

IITK

1hr. 3 coding ques. Platform- Hackerearth

Q1. There are n butterflies and k colors. You have to color the butterflies, but you cant color two adjacent butterflies with the same color. There is also a special color(it could be one of the k colors or a different color). There is no coloring restriction while using the special color. You have to output the number of ways mod($1e9+7$) of coloring the n butterflies....**solution anyone?**

Q2. You have an array of size n. The elements of array look like {0,k,2*k,4*k,8*k...} There are Q queries. In each query you will be given a number S. For each query you have to output the largest P \leq S such that P is obtained from sum of some of the elements of the array(not necessarily contiguous and each element of the array can be used only once to determine the sum)

Q3. You are given an infinite 2D grid. There are two points on this grid source and dest. From each point in the grid, you can move to any of the 4 adjacent points at a cost of 1 point. There are also N tunnels. The information of start and endpoints of tunnels is given to you. Moving through the tunnel costs you k points(fixed for every tunnel). Output the minimum cost for going from source to dest....**solution anyone?**

IITD

<https://imgur.com/a/ZcPuA5P>

CITRIX

IIT Guwahati

2 hours test

40 MCQS , 2 coding

MCQs consists of Aptitude,OS,Networks,C++, OOPS

MCQ Questions : <https://imgur.com/a/4W8vTeQ>

Coding1:

<https://www.geeksforgeeks.org/sliding-window-maximum-maximum-of-all-subarrays-of-size-k/>

Coding 2:<https://leetcode.com/problems/special-binary-string/>

IIT BHU

HackerRank | STL Allowed | 2 Sections | Total 120m | Section Inter-switching Allowed | All Students Same Questions

Same Format as IIT-G | Around 5 MCQs repeated from IIT-G

Section A : Coding

Q1 - Scatter Palindrome : Given a vector of strings, for each string, find the no. of substrings in it which can be rearranged into a palindrome.

> $O(26^*n^*(\text{number of strings in input}))$ solution accepted for most students.

> Same question appeared in Edgeverve, IIT BHU - Only difference being in Citrix there could be as much as a 100 strings in input.

> Note: map and unordered_map were giving TLE in some cases. Use array to pass all test cases.

> [Weird time limits] 100 queries*1000 word length [$100*1000*1000=10^8$]

> *Solution Approach* explained on [StackOverflow](#)

Q2 - Triple Dijkstra : Calculate minimum distance to be travelled for going from place 1 (first index) to x, then x to y, then y to n (last index).

> Given an undirected graph, and its edges (with weights). A child has to run some errands at two nodes X and Y (in that order), and then reach school. Nodes are numbered from 1 to N. Find the shortest path such that child reaches X, then Y, and finally School. Always starts from node 1, and school is always at node N. X and Y will be greater than 1 and less than N and will be given as parameters. Any node can be visited any number of times.

(Constraint - 10^5)

> Write Djikstra function - d(source_node, dest_node) and call it three times.

> The answer will be $d(1, X) + d(X, Y) + d(Y, N)$

> Remove all debug codes present or you might get TLE

Section B : MCQs

> 40 MCQs

> Around 20 on C++ and C Program Output, OOPS, Syntax [Level: Hard]

> Around 5 on Operating Systems (Process Scheduling and Memory Management mainly) [Level: Easy/Medium]

> Around 5 on Networking (IP Addressing & Subnets and OSI/TCP Facts mainly) Ex, Given an IP find no. of total subnets. [Level: Easy]

> Around 10 on Aptitude (Mixtures, Probability, Reasoning) Ex, Probability of getting a sum of 18 in 4-dice simultaneous throw? Ans. 5/81 [Level: Easy]

> **VERY IMPORTANT** : Section inter-switching was Allowed [at least in IIT BHU], but copying code from C++ MCQs was restricted by HackerRank. So you should write the code of C++ MCQs using pen-paper, then debug the same in compiler of Section A and get the output!

IIT R

Section B:

> 40 MCQs

> similar pattern as above; 3-4 questions were same from IITG

Section A:

Q1: Pappu wants to buy fiction books. He has n comic books and m coins. He can trade 1 comic book and x coins for 1 fiction book i.e. 1 comic book + x coins = 1 fiction book. You will get y coins if you sell 1 comic book. So, given n,m,x,y determine the maximum amount of fiction books pappu can buy. I did this Qn using binary search, some did by making direct formula and some did by bruteforce in $O(n)$ Limits were 10^9

CITRIX IIT Roorkee FTE 2020 **10s to test end** **H** Aditya Soni

Barter Market

At a barter market, goods can be exchanged with one another or can be exchanged for currency. Alex is attending one such barter market and has n comic books and a total of m coins. Alex wants to own as many fiction books as possible. The following will help achieve the same:

- Trade any comic book by paying x coins to get one fiction book, i.e $1 \text{ comic book} + x \text{ coins} = 1 \text{ fiction book}$.
- Any comic book can be sold for a price of y coins.
- Alex cannot sell any fiction books.

Help find the maximum number of fiction books Alex can have in the end, and output the same.

Example

```
comicBooks = 10
coins = 10
coinsNeeded = 1
coinsOffered = 1
```

It takes 1 comic book plus $\text{coinsNeeded} = 1$ coin to purchase a fiction book. Alex can trade 10 comic books + 10 coins to get 10 fiction books. No comic books need to be sold.

Function Description

Complete the `barterMarket` function in the editor below. The function must return an integer denoting the maximum number of fiction books Alex can have in the end.

barterMarket has 4 parameters:

- `comicBooks`: An integer denoting the number of comic books.
- `coins`: An integer denoting the original number of coins.
- `coinsNeeded`: An integer denoting the number of coins Alex needs to pay along with a comic book to get a fiction book.
- `coinsOffered`: An integer denoting the number of coins Alex gets on selling one comic book.

Constraints

Q2: You have n computers and you want to form k groups such that the all previous groups formed have less computers. You've to determine the number of ways we can form groups. for eg. n=5,k=3 you can form grp in 2 ways {1,1,3} and {1,2,2}. This could be done by dp[i][j][prev] i.e dividing i computers in j grp where previous group has prev computers.

CITRIX IIT Roorkee FTE 2020 **12s to test end** **H** Aditya Soni

SGIPC

Special Group with Interest in Programming Contests (SGIPC) is an association which encourages people to program and solve problems. Many people have joined SGIPC to develop their knowledge of programming and algorithms. One day SGIPC arranged a programming contest with k computers which were positioned in a row. There are n members that participate in the contest. These n people must be divided into k groups to participate in the contest. The groups must be formed such that no group will have fewer member(s) than the previously formed group. Determine the number of ways the participants can form groups.

For example, assume there are $n = 8$ members and $k = 4$ computers available. The 5 ways to form groups of 4 members are as follows: [1, 1, 1, 5], [1, 1, 2, 4], [1, 1, 3, 3], [1, 2, 2, 3], [2, 2, 2, 2].

Function Description

Complete the function `answerQuery` in the editor below. The function must return a long integer that denotes the number of ways that n participants can be divided into k groups satisfying the condition mentioned above.

answerQuery has the following parameters:

- `n`: an integer that denotes the number of participants
- `k`: an integer that denotes the number of computers available

Constraints

- $1 \leq n, k \leq 200$

Input Format For Custom Testing

Sample Case 0

Sample Input For Custom Testing

```
7
3
```

Sample Output

IIT Kanpur

Did they allow C++ ? And the profile they offered was data scientist? Yes, C++ was allowed. The profile was Software Development Engineer.

1 hour, 3 coding questions:

Q1: Given a string S composed of lowercase letters, you are allowed to reverse any substring of S at most once. Find out how many different strings can you generate. Eg. For 'aatt' : one can make 'atat' (reversing S[1]..S[2]), 'ttaa' (reversing whole string), etc.

Q2: Given a string of lowercase letters, output the compressed form of the string. Compressed form of a string 'aabcccdde' is : a3bc2d2e.

Q3: Given a string S of lowercase letters, find out the size of smallest possible substring of S which contains all the distinct letters of S at least once.

Walmart Labs

IIT Guwahati

CPI cut-off 6.5 Open for all branches

Was this open to all branches or just circuit branches? Ans. All B.Tech, All M.Tech, All M.Sc, MSR with C.P.I. 6.5 and above

Were there MCQs from OS, DBMS, Networks as well? Ans. No, only the topics mentioned down here.

Link to Questions: <https://imgur.com/a/Z7h58m0>

There were 23 MCQ questions and no coding questions to be done in one hour. Questions were based on

Unix commands like cal, command to sort files in decreasing order, etc,
Unix VI editor modes

Cloud computing questions (based on Amazon cloud (Question-Name architecture in which a single instance of a software application serves multiple customers? Ans. Multi-Tenancy))-

OOPS questions based on Java(Derived Class, Integer Class, valueOf function), C++, ASP. (Basic)

Logical Reasoning Questions & basic maths questions (For example: on the interest rate).

Different pseudocodes were given and were asked to tell the algorithm name. (Codes were of Bellman-Ford, Floyd Warshall, Bubble Sort, and Knapsack).

IIT Dhanbad

<https://www.geeksforgeeks.org/length-smallest-sub-string-consisting-maximum-distinct-characters/>

The Test was conducted on 14/10/2019. It was an hour-long test which consisted of 10 MCQs and 1 coding question. The MCQs were based on general aptitude, OOPs, one question from cloud computing and one question from networks. Make sure you practice a few questions of masking an IP address.

The coding question was:

<https://www.geeksforgeeks.org/length-smallest-sub-string-consisting-maximum-distinct-characters/>

IIT BHU

Same format as ISM

MCQs - Kubernetes (1 qstn), Cloud computing (2-3 qstn), Simple and compound interest, Android dev (1 question), Spring Security framework (1 qstn), etc.

Coding question - Given a binary string find the length of maximum subsequence (NOT substring) which matches the regex $0^*1^*0^*1^*$

Eg input - 0101000, output - 6 (011000)

Eg input - 0101 output - 4 (0101)

Constraint - Length of string = $N < 10^5$

For test case 1, Where is 1 in the output ? Shouldn't the output be 01010 because 01000 does not match the regex $0^*1^*0^*1^*$ * can be an empty sequence. Both subsequences are correct and will result in 5 length.

Why the answer is not 6 for first test case? 011000?? index 0,1,3,4,5,6??

Can someone verify the answer please for above test case.

Yes it should be 6, not 5. I made those examples myself and didn't pay much attention. The answer should be 6.

Correct me If I am wrong, is this question same as Longest Common subsequence Problem ? IDK how it could be related to LCS (not sure), here solution will form a 4^*N DP table and the complexity of DP solution will be $O(n)$. We need to maintain 4 states here.

So, the second string for LCS would be 0101, (I mean just remove *s in second string and apply the LCS pattern ? @Rahul Kumar please confirm See my above comment. Idk if your logic of relating it to LCS is correct or not :/

What does regex $0^*1^*0^*1^*$ mean ?[Regular Expression \(google it\)](#)

In 011000, 0 should precede 1 second time according to $0^*1^*0^*1$ which is not happening. I am missing something ? Can you explain how 011000 is the answer? 011000 can be formed with the regex $0^*1^*0^*1^*$ by omitting the last 1. I think you missed the last star after 1.

IIT Kanpur

Profile: Data Scientist

M. Tech Allowed

Time: 1 hour

10 MCQ based on verbal ability and probability

1 program

There is an infinite array. $A[0]=0$, $A[i]=A[i-1] \text{ xor } i$

There are a number of queries having L, R

For each query, find the XOR of the elements between L and R(inclusive)

Constraints: $1 \leq L, R \leq 10^{15}$

$1 \leq Q \leq 10^5$

AQR Capital Management

IITG

There were 2 coding questions, which had to be solved in 75 minutes. (Level - Easy/Medium)

1st Question - Given list of edges in a graph, you have to keep on storing the maximum size of all the connected components in the graph. So, suppose there are 4 nodes. And edges are $[[1,2],[3,4],[2,3]]$.

You have to return :- 2 2 4. (Can someone explain how did this come as a output)(Explanation: On the first iteration, graph has one edge i.e. 1-2 and so the output is 2. On the second iteration, graph has 2 edges 1-2 and 3-4 (But they are disconnected!), so the largest length of connected component still remains 2 so output is again 2. On the third iteration, graph has 3 edges and becomes 1-2-3-4, so the largest length of connected component becomes 4 now, so output is 4. Hope it helps) Was it a

Directed Graph or undirected??? Undirected

Solution - Union Find with path compression and a size array will work fine.

Constraints were pretty loose, so I think brute force DFS should even work. I used DFS, it passed all test cases.

2nd question - Given a list of points which basically represent polygons, you have to return all those polygons which are mirror images of each other. Both X-axis and Y-axis act as mirrors.

Solution - Did this using brute force. You have to store the points in a 2D Vector. Then sort all those vectors (A custom compare function needs to be written here), and then keep on comparing.

9/12 test cases passed. I might have missed some corner cases, it was not TLE for sure.

(Please upload any better solution).

Alternate: I created a function for checking if two polygons are mirror image of each other(having two parameters which are the coordinates of the two polygons). After comparing the size of the vectors, push points of a polygon with y-coordinate negated(doing it for checking mirror image w.r.t x-axis, same can be done for y-axis). Then check whether all points of the other polygon are present in the set and it passed all the cases.

WHAT IS the MAXIMUM LENGTH OF LIST??? --- 500 points

Test Platform?? Ans. HirePro: <https://www.hirepro.in/>

IITH

Q1. Rock Paper Scissor Game//cud u give some link for this?

It's a usual game. Here the player's move [rock, paper or scissors is given as input in a string]. have to compute the number of matches totally played to come to a winner. and the players in Quarters, Semi and Winner.

Example 2 players.

input:

2

R RPS

S SPR

finals: 1,2

winner: 1

output:

1,2

1

Q2. Given position of knight and queen, find min num of cells travelled to reach queen from knight.//were we allowed to move the queen?

NO, you can't move the Queen. NOTE: Here cells travelled is not same as moves made. Consider as no. of cells for a knight to move from position (x,y) to (p,q)

Motorq

Question 1

Max. Marks 100.00 

Profit maximization

You are travelling to different villages in a state to make some profit. Villages are numbered 1 to N. In each village, you gain some profit P_i . From a village i , you can only move to a village j if and only if $i < j$ and the profit gain from village j is a multiple of the profit gain from village i .

You are required to determine the maximum profit you can gain while travelling. You could start at any of the villages.

Input format

- First line: A single integer N denoting the total number of villages
- Second line: N space-separated integers, each denoting the profit gain P_i from village i

Output format

Print the maximum profit you can gain.

Constraints

$$1 \leq N \leq 10^3$$

$$0 \leq P_i \leq 10^5$$

Sample Input 

6
1 2 3 4 9 8

Sample Output 

15

Explanation

The maximum profit 15 can be achieved by going to villages (1, 2, 4, 6) with profit gain (1, 2, 4, 8).

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 there are multiple test cases. Therefore, your code must solve this problem statement.



Substrings and Distinct Characters

You are given a substring S of lowercase English alphabets. Let X_i be the number of substrings of S having at least i ($1 \leq i \leq 26$) distinct characters. Find X_i for all i ($1 \leq i \leq 26$).

Input format

For each test case

- First line: An integer N representing the length of the string S .
 - Second line: String S

Output format

Your output should contain a single line containing 26 space-separated integers. The i^{th} integer is the number of substrings of S having atleast i distinct characters.

Constraints

$$1 \leq N \leq 5 * 10^5$$

Sample Input

3
abc

Sample Output

6 3 1 0

Explanation

Subarrays with atleast 1 distinct characters: $\{a, b, c, ab, bc, abc\} = 6$

Subarrays with atleast 2 distinct characters: $\{ab, bc, abc\} = 3$

Subarrays with atleast 3 distinct characters: $\{abc\} = 1$

Rest all of them are 0 since the entire string contains only 3 distinct characters.



The screenshot shows a web-based programming competition interface. At the top, there's a header with the CITRIX logo, the text "IIT Guwahati FTE 2020", a timer "01h:59m to test end", and a user icon "iit". On the left, a vertical sidebar lists numbered steps from 1 to 14, with step 1 highlighted in green. Step 1 is labeled "Coding". Below the sidebar, the main content area has a title "Good Binary Strings" with a star icon. It contains several sections of text and bullet points explaining the problem requirements and constraints.

We define the following:

- A *binary string* is a string consisting only of 0's and/or 1's. For example, 01011, 1111, and 00 are all binary strings.
- The *prefix* of a string is any substring of the string that includes the beginning of the string. For example, the prefixes of 11010 are 1, 11, 110, 1101, and 11010.

We consider a non-empty binary string to be *good* if the following two conditions are true:

1. The number of 0's is equal to the number of 1's.
2. For every prefix of the binary string, the number of 1's should not be less than the number of 0's.

For example, 11010 is not good because it doesn't have an equal number of 0's and 1's, but 110100 is good because it satisfies both of the above conditions.

A good string can contain multiple good substrings. If two consecutive substrings are good, then we can *swap* the substrings as long as the resulting string is still a good string. Given a good binary string, *binString*, perform zero or more swap operations on its consecutive good substrings such that the resulting string is as *lexicographically large* as possible. Two substrings are considered to be consecutive if the last character of the first substring occurs exactly one index before the first character of the second substring.

For example, if we look at the good binary string *binString* = 1010111000, we see two good binary substrings, 1010 and 111000 among others. If we swap these two substrings we get a larger value: 1110001010. This is the largest possible good substring that can be formed.

Function Description

Complete the function *largestGood* in the editor below. The function must return a string denoting the lexicographically largest possible good string that can be formed by performing zero or more swap operations on consecutive good substrings of *binString*.

largestGood has the following parameter(s):

binString: a string

Constraints

- Each character of *binString* ∈ {01}.
- $1 \leq |\text{binString}| \leq 50$
- *binString* is a good string.

Can someone share the solution or approach for question 2 substring and distinct characters above?

Any pseudo code??

<https://ideone.com/RPufgK>

basically in above code I calculated for len = 1 to 26 distinct characters number of substrings possible, and to calculate the number of substrings in O(n) I used the approach mentioned in this link solution [leetcode](#), so overall complexity is O(n).

Cogoport

CPI cutoff: 7.5

Which branches it was open for?

IITK

M. Tech. allowed (Software Development Engineer)

There were different sets of questions for different students. Please add more questions.

The test consisted of 3 sections

Behavioral: This test was without any time limit. In the first page, we had to select those behaviour which people expect from us. Eg cleanliness, punctuality. In the next page, we had to select those behaviour which defines us. We cannot go to the first page while answering the second page.

Logical reasoning and aptitude: Duration: 12min. This test consisted of 50 questions of logical reasoning, patterns, aptitude. We had to answer quickly within 12 minutes and there were only a few questions from quantitative aptitude so it was better to leave them.

Programming: Duration: 2 hours. Platform: Hackerearth.

Question 1: Given an array of size N and Q queries, where each query consists of two integers L and R, representing left and right indices in the array, tell whether all the integers present within these two ranges are present even number of times or not. Brute force will not work here

For each prefix if we store XOR , then by checking if prefix XOR is 0 or not gives the answer. But what if array contain 0??.

Hi there, for the case of zero you can make a similar prefix array of number of zeroes then counting the number of zeroes in a range is trivial.

-> The solution with xor is incorrect as it is possible for 3 numbers to have xor = 0 e.g. $1^2^3 = 0$. no xor wil work

Will segment tree work?? This can be solved by MO's algorithm

I DON'T THINK YOU NEED TO IMPLEMENT MO'S algoPREFIX METHOD IS SUFFICIENT TO PASS THE TEST CASES.

<https://www.geeksforgeeks.org/queries-to-check-whether-all-the-elements-in-the-given-index-range-occur-even-number-of-times/>

The above link has the same error - $1^2^3 = 0$. How will you take care of this?

Can anyone who solved all test cases confirm if XOR solution was working??

Question 2: Given an array of size N and Q queries, where each query consists of three integers L and R and K, return the K-step sum within the range L and R. For example for the array [1, 2, 3, 4, 5, 6, 7], if a query is L=2, R=6 and K=2, then the numbers 1, 3, 5, 7 are a part of the 2 step sequence and among these, only 3 and 5 lie within the range(array indexing starting from 1). So the required sum = 8.

SOL: MAKE A MATRIX(N*N) WITH A PREFIX SUM OF CORRESPONDING ROW WITH K JUMPS. SO FOR A GIVEN QUERY "K" = THAT WILL BE YOUR ROW AND JUST TAKE (prefix[k][R] - prefix[k][L-1]).

E.G. K=2 prefix[2] = 1 1 4 4 9 9 16 || ANS = (9-1) = 8

IITH - ALL THE BEST

Please provide constraints for n,q and k for both problems??+1

IITM

Different people had different questions. I wanted to share a question that i got in programming test.
Another question i didn't give a try.

Question: Given a string S, find the longest palindromic prefix substring. $1 \leq \text{len}(S) \leq 100000$

Input1: ababa

Output 1: 1 1 3 3 5

Explanation 1:

```
prefix = a || max palindrome length=1 || palindromic string=a  
prefix = ab || max palindrome length=1 || palindromic string=a or b  
prefix = aba || max palindrome length=3 || palindromic string=aba  
prefix = abab || max palindrome length=3 || palindromic string=aba  
prefix = ababa || max palindrome length=5 || palindromic string=ababa
```

Input2: aaba

Output2: 1 2 2 3

Explanation2:

```
prefix = a || max palindrome length=1 || palindromic string=a  
prefix = aa || max palindrome length=2 || palindromic string=aa  
prefix = aab || max palindrome length=2 || palindromic string=aa  
prefix = aaba || max palindrome length=3 || palindromic string=aba
```

Brute force $O(N^3)$ will fail !!!

O(N^3) Solution:

```
#include <iostream>  
#include<bits/stdc++.h>  
using namespace std;  
  
int pal(string s){  
    string t=s;reverse(t.begin(),t.end());  
    if(s==t) return 1;  
    return 0;  
}  
  
int main() {  
    //code  
    string s="asabbasarr";  
    map<int,int> m;  
    vector<int> res(s.length(),0);  
    for(int i=0;i<s.length()-1;i++){
```

```

string temp="";
for (int j=i+1;j<s.length();j++){
    temp+=s[j];
    if(pal(temp)) {
        if(m.find(j)!=m.end()) { if(temp.length()>m[j]) m[j]=temp.length(); }
        else m[j]=temp.length();
    }
}
int mx=1;
for(int i=0;i<s.length();i++){
    if(m.find(i) !=m.end() && m[i]>mx) res[i]=m[i];
    else res[i]=mx;
    if(mx<res[i])mx=res[i];
}
for(auto it:res) cout<<it<<" ";cout<<endl;
return 0;
}

```

Output: 1 1 3 3 3 4

6 8 8 8

Linear Solution: <https://www.akalin.com/longest-palindrome-linear-time>

All the best !!!

IITH

(cg 7.5 , allowed all branches)

Test was conducted on hackerearth. Everyone got different set of questions

Given an array A(A[i]<10^9) of size N(<10^5) and Q range queries(<10^5).

x L R (array values are to be manipulated based on x and within range L and R).

can you specify the manipulation

Given integer array of length N, which contains values between 1 to M, and Q range queries.

for each query [L,R], output element which occurs more than (R-L+1)/2 times in range A[L...R] if such element exist.

1 <= N <= 3*10^5

1 <= M <= 10^5

1 <= Q <= 10^5

Given an array of N integers, you choose elements one by one from array (choose in any order, each elem can be chosen at max once)

You need to achieve target T.

Constrain: After selecting some numbers suppose you have currently value P, and next chosen element is X.

new Value will be $P - \text{floor}(P/100) + X$

Find minimum steps, required to achieve target T.

$1 \leq N \leq 10^5$

$1 \leq T \leq 10^5$

Unspecified words

There are N words in a dictionary such that each word has a length M and consists only of lowercase English letters, i.e. ('a', 'b' ... 'z'). There are Q queries in which you are given a query word of length M with some unspecified letters represented by the symbol '?' .

Write a program to count the number of words in the dictionary which have the same letters in all the specified positions.

Input format

- First line: Two space separated integers N and M
- Next N lines: One word
- Next line: Q
- Next Q lines: Query word

Output format

For each query, print the number of words in the dictionary which have the same letters in all the specified positions.

Constraints

$$1 \leq N \leq 5 * 10^4$$

$$1 \leq M \leq 7$$

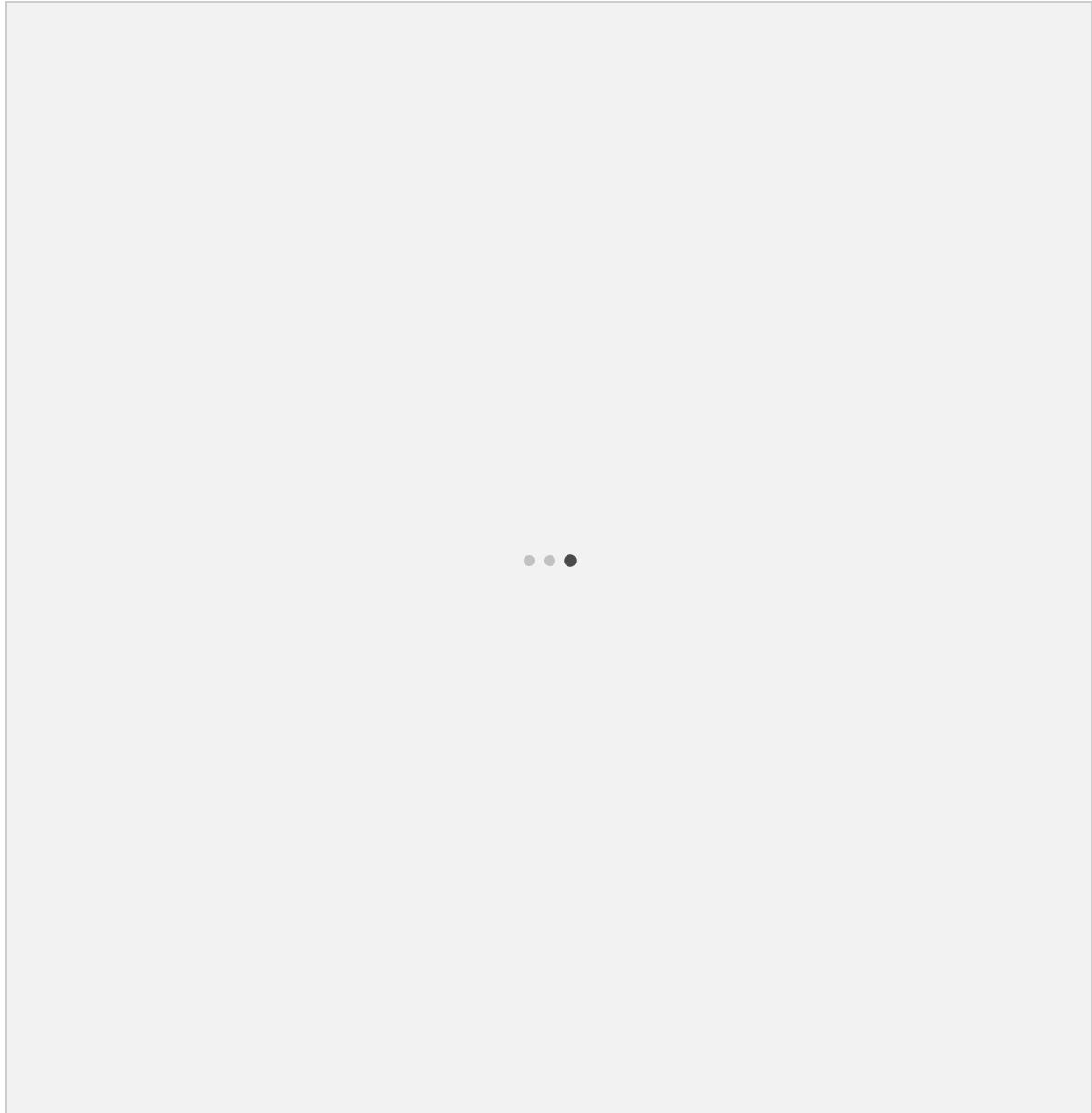
$$1 \leq Q \leq 10^5$$





IIT R

Test was conducted on hackerearth. Everyone got different set of questions



Substrings v/s distinct substrings

The following parameters are defined for a string S of length L :

1. TDS - The sum of the number of distinct characters in all the distinct substrings of S
2. TS - The sum of the number of distinct characters in all the substrings of S

Write a program to find the absolute difference between TDS and TS.

Input format

- First line: S

Output format

Print the absolute difference between TDS and TS.

Constraints

$$1 \leq L \leq 500000$$

Sample Input 

aabb

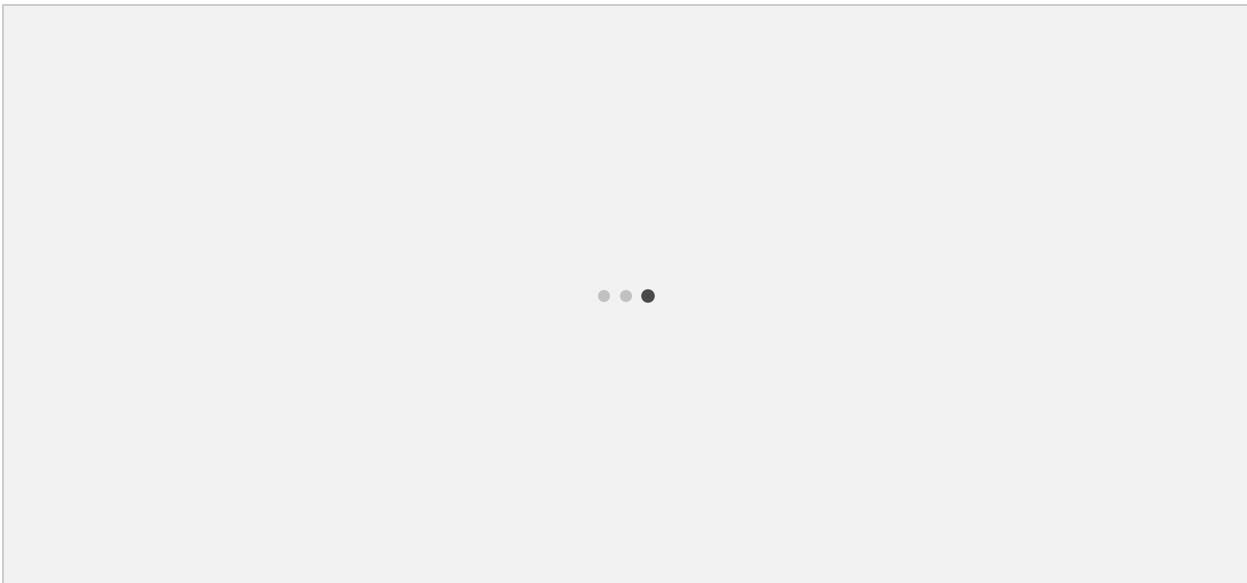
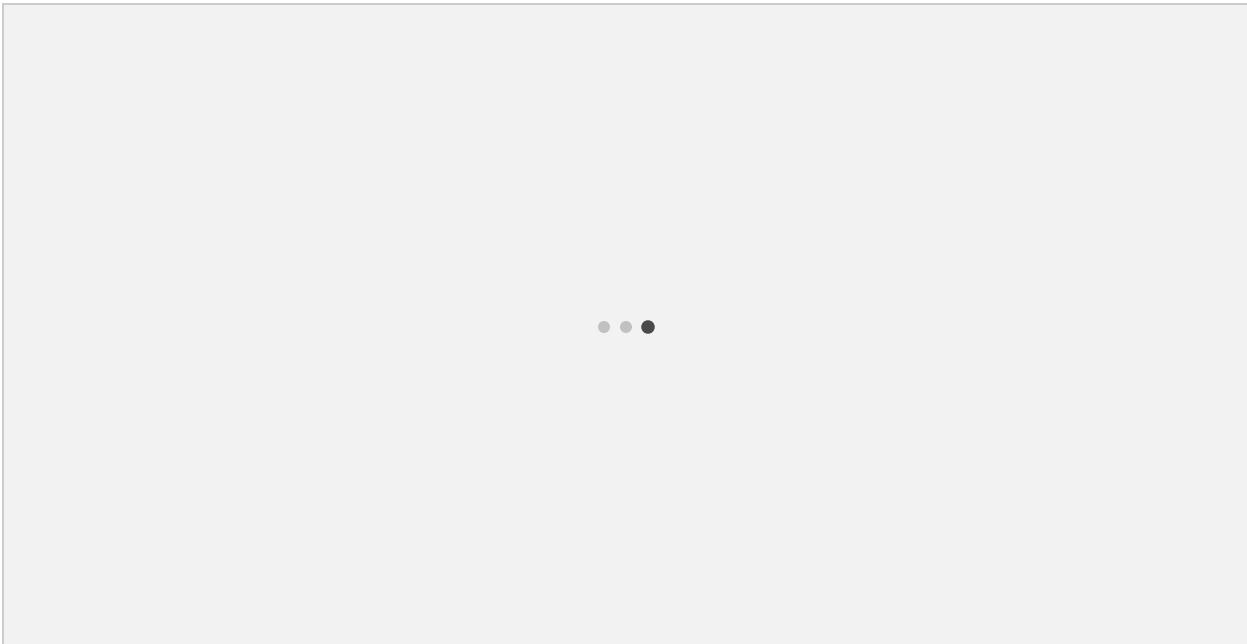
Sample Output 

2

Explanation

Set of all sub-strings of "aabb" = {a,a,b,b,aa,ab,bb,aab,abb,aabb}
TS = 1 + 1 + 1 + 1 + 1 + 2 + 1 + 2 + 2 + 2 = 14

Set of distinct sub-strings of "aabb" = {a,b,aa,ab,bb,aab,abb,aabb}
TDS = 1 + 1 + 1 + 2 + 1 + 2 + 2 + 2 = 12



Do we have to use Segment Tree for Prime Coins questions. I got this question in an Internship exam and using the Sieve of Eratosthenes gave me TLE. So, please confirm.

Yes Sieve + Segment Tree is the probable solution.

Solution for question 1 [code](#). It took 999951479.5799993 s on my dicky machine for the test case N=100 and k=100. If someone has a more optimized solution please keep your approach limited to you.

NetApp

IIT Guwahati

3 coding question in 45 min.(M.Tech CSE,EE,ECE ONLY)

30 MCQs in 30 min.

Coding:

Given a number represented in binary as a string(length <=100). Return 1 if divisible by 6 else return 0.

Given infinite coins, and 3 pockets, we have to put the coins in 3 pockets, such that the sum of all coins is in the range [X,Y] inclusive. Find number of ways to put the coins.

Input will be range X,Y

Input: [4,5] [X=4, Y=5]

Output: 9 (3+6)

total coins = 4. Number of ways = 3

{1,1,2} {1,2,1} {2,1,1}

total coins = 5. No of ways = 6

{1,1,3} {1,3,1} {3,1,1} {1,2,2} {2,1,2} {2,2,1}

<https://www.geeksforgeeks.org/connect-n-ropes-minimum-cost/>

MCQ topics: OS, Network, Aptitude, CPP output

//Please add MCQ questions if possible.

For question 1, if the last bit is 0, the number is divisible by 2, if the number of non-zero bits in even positions - number of bits in odd positions is a multiple of 3, the number is a multiple of 3. Refer here:

<https://web.archive.org/web/20171029092543/http://www.answermysearches.com/how-to-tell-if-a-binary-number-is-divisible-by-three/70/>

If the above two conditions are satisfied, the number is divisible by 6.

Solution for 2nd Question:- (Please correct if wrong)(what's the approach of choosing p and temp?, I hope it's clear now)

```
int main()
{
    int x,y;
    cin>>x>>y;
    long ans=0;
    for(int i=x;i<=y;i++)
    {
        int p=i-1;
        ans += p*(p-1)/2;
        // cout<<temp<< " ";
        ans+=temp;
    }
}
```

```
}

cout<<ans<<endl;
return 0;
}

// I think we have to sum up nC2 for all n from X-1 to Y-1 (Stars and Bars approach). If we solve this,
for every n, we need to add to our ans n*(n-1)/2. //I have updated above. Now, it should be easily
understandable.
```

SAP LABS

IITD

<https://imgur.com/a/oT654TX>

IITB

2 Questions 60 minutes , Different Sets

Few questions repeated from above

- 1) Weighted Job Scheduling
- 2) N Children with hi heights $1 \leq i \leq n$ are given , a region of a student is defined as maximum length of contiguous array including student himself in which his height is maximum among all. Find sum of region of all students ($O(n)$ solution was required , use deque)

Sprinklr

IITG

3 coding questions, 90 minutes

Total marks: 325(150 + 75 + 100)

Q2.[75 pts]

65 points were being given for the brute force. Could be done easily using stack.

Q 3.[100 pts]

Hi

Approach: Only remove bars from the end points. Create another array for storing the differences between consecutive

elements(will be of size n-1). Now the p
(Use deque with window size of n-k

i.e the number of bars to keep)

Q1.[150 pts] Question boiled down to that a graph is given, where value at each node is number of nodes that are reachable from it. We have to remove exactly 3 edges such that total sum of values of all nodes is maximized. Print the maximum score possible.

Are we given an array denoting the number of nodes reachable from that node? That's it? edges were not given?

We were given graph in form of edges as pair of vertices.

Constraints $n \leq 100000$; no. of vertices

$m \leq 100000$; no. of edges

Was graph directed or undirected ?

Directed or else all the nodes will be reachable from every other node.

Can anyone plz share the approach?? Not getting any idea+1

Was it mentioned that the graph doesn't contain any loops or cycles?

Was anyone able to solve it?

was $O(n^2)$ time complexity working?

The graph must be undirected or the problem is unsolvable. Verified from icpc world finalists. (??)

How to solve even if it undirected?

Can be solved using dfs in $O(n)$

IITM

Same as IITG

IITB

Same as IITG

IITD

12th october

<https://owncloud.iitd.ac.in/nextcloud/index.php/s/sN36Q9k5iEEEA2>

IIT D the rar file is corrupt

Code for bar graph question:

<https://gist.github.com/chrchllkhangar1/20b8247e7af116de66f546487982a42>

3 coding questions, 90 minutes

2 questions “string game” and “bar graph” exactly same as from IITG (refer main doc)

3rd question:

5

Q3(150 marks)- You are given an array (length $\leq 10^5$) 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.

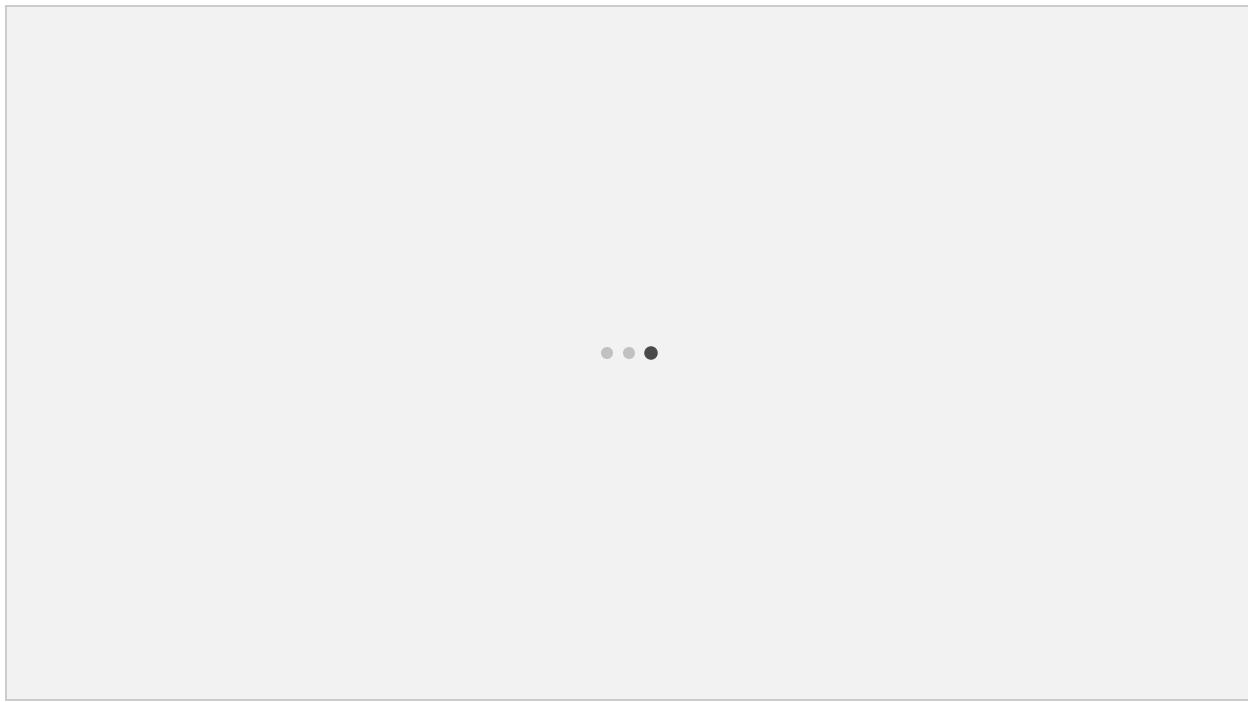
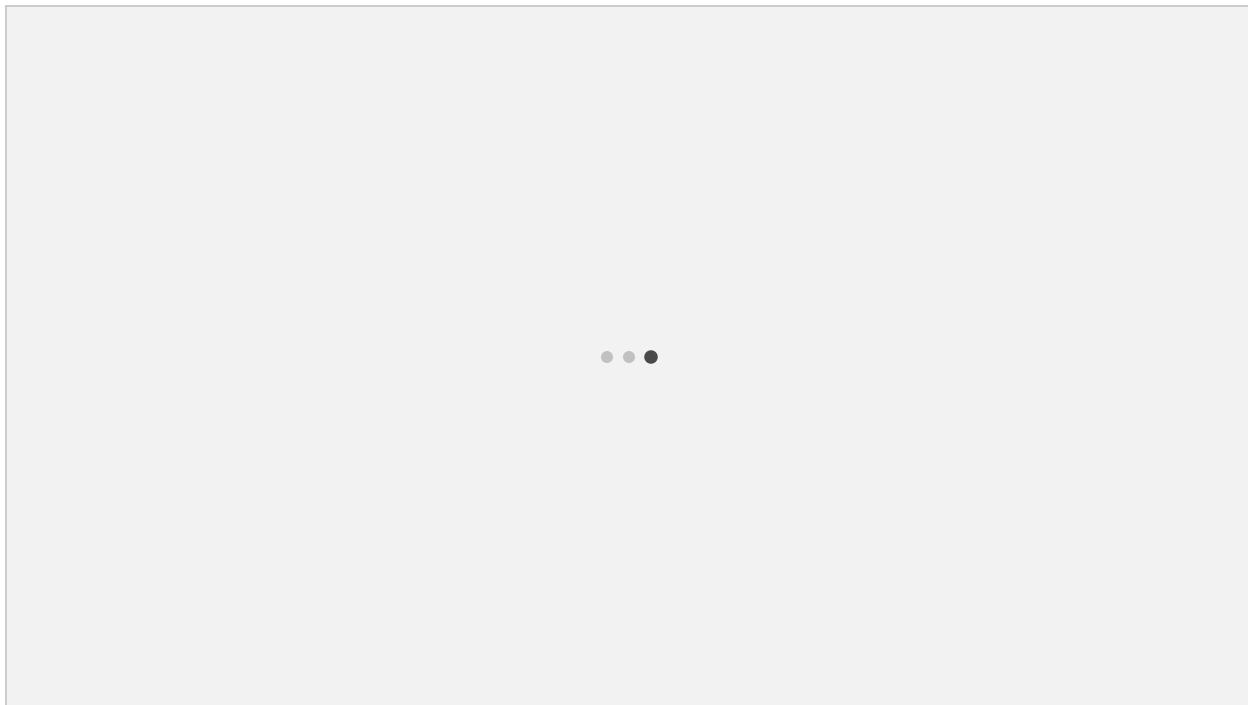
(please add the code if possible)

IITK

Same as IITRsap labs

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Axis Bank

IITG

CV shortlisting (selected 100 candidates for test)

Aptitude Test - 4 assessment on shl site-

- i) Round 1 - Verbal reasoning- English passage and comprehension based(a statement about passage given and options were true, false or cannot say)
- ii) Round 2 - Figure completion and identification
- iii) Round 3 - Data Interpretation (little different and difficult compared to Pariksha)
- iv) Round 4- Psychometric test - simple questions on yourself

What was the profile and CTC offered ? **12.99 Ipa and Manager (BIU)**

Juniper

IITK

Time: 2 Hours, Platform: Hackerrank

3 Coding Questions and MCQs (mostly on aptitude and C code output):

Q1 Given an array A consisting of 'n' flask requirements and 'm' type of flasks where each flask comes with multiple capacities. Eg requirement array A=[2, 3, 6, 8, 10] and 2 flasks: [[3, 8, 12] , [4, 7]]. Here 1st flask comes in 3 capacities and 2nd flask comes in 2 capacities. You can choose only one type of flask to satisfy all the requirements in array A. Eg if you choose 1st flask then you have : '3' capacity flask for requirement 2 and 3, '8' capacity for 6 and 8 and 12 capacity for 10, so net wastage = $3 - 2 + 3 - 3 + 8 - 6 + 8 - 8 + 12 - 10 = 4$. You can not choose flask 2 in this case because it does not have any capacity to satisfy requirement '10'. Return the type of flask with minimum possible wastage. // provide constraints for n and m.

Q2 You are given an array A of size n which can have duplicate elements. You can remove at max 'm' elements from this array and the resulting array should have minimum possible distinct elements. Eg A = [1 2 1 1 2 3] and m=2 so one can remove '2' and '3' and resulting array will have only 2 ('1' and '2') distinct elements.

Q3 You are given an array A and 'q' queries where each query consist of two integers 'low' and 'high'. You have to return the number of elements in array A that lie in [low, high] range for each query.

Publicis Sapient

IITH (SDE)

Time : 1hr 15 min Platform : Hacker rank

Total number of questions: 2 coding

Q1. Given string s, positive integer k, and a string char_value which is of length 26 and denotes whether the letter is special or not. special -> '1'

normal -> '0'. Find the maximum length of the substring which has at most k normal characters.

example of char_value 10101111111111111111111111111111 This denotes b and d are normal characters as 0 is in 2nd and 4th position.

Similar to: (<https://www.geeksforgeeks.org/largest-substring-with-same-characters/>) {IITH people, please verify!} can be done by sliding window?

Q2. Given integer array. Return the array in highest, smallest, second highest, second smallest, third highest, third smallest..... order.

Array contains both positive as well as negative numbers.

(<https://practice.geeksforgeeks.org/problems/-rearrange-array-alternately/0/>)

IITK (SDE)

Platform : Hacker rank

(languages allowed : c,c++,python and others)

Q1. Sort array on the basis of number of 1's in its binary representation.

[1,2,3,4] -> [1,2,4,3]

Q2. Given 2 strings 's' and 't', check if 't' divides 's' : "abxabx" divides "abxabxabxabx", but doesn't divides "abxabxabx"

if it divides, return length of smallest substring that divides both 's' and 't' , len(abx)=3 in this case

IITG (SDE)

Given a vector of strings operation ides and vector of int x, return a vector of int such that it consists product of max element and min element after performing each operation. operations vector consists of string 'push' and 'pop'. Can you provide an example test case??

<https://leetcode.com/problems/beautiful-arrangement/>

<https://drive.google.com/file/d/1FWpV221DyiLB9YjRI5e192hmjfNCefAD/view> (ML)

IITR (ASDE-II)

Platform : Hackerrank

Time : 75 min

Questions : 2 Coding

Same as EdgeVerve Question 3 Arbitrary Shopping asked in IIT BHU

Easy Two pointer question. Given scores of two teams in a football match, you had to find the count of matches where Team A scored less than or equal to every match of Team B. Return the array.

For Ex -

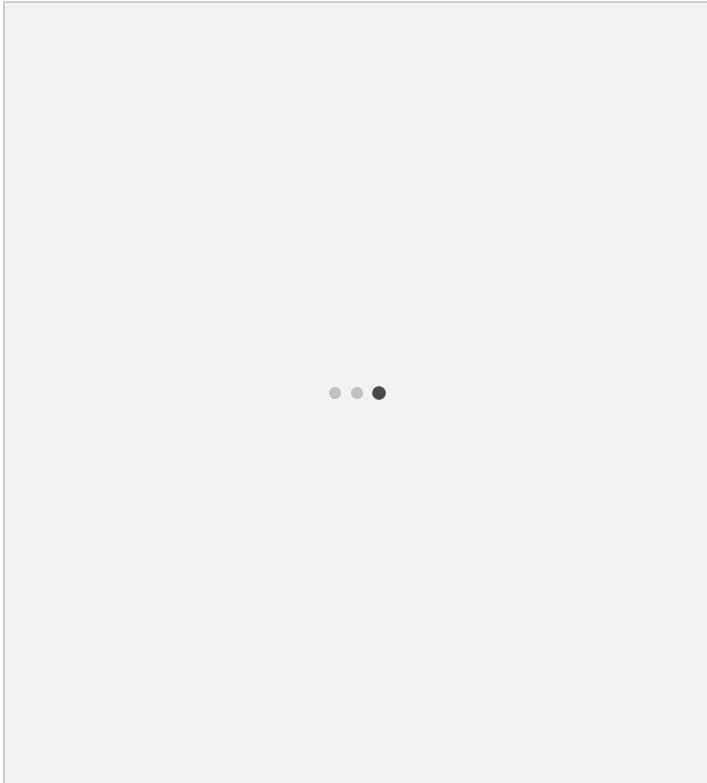
Team A = [2,3]

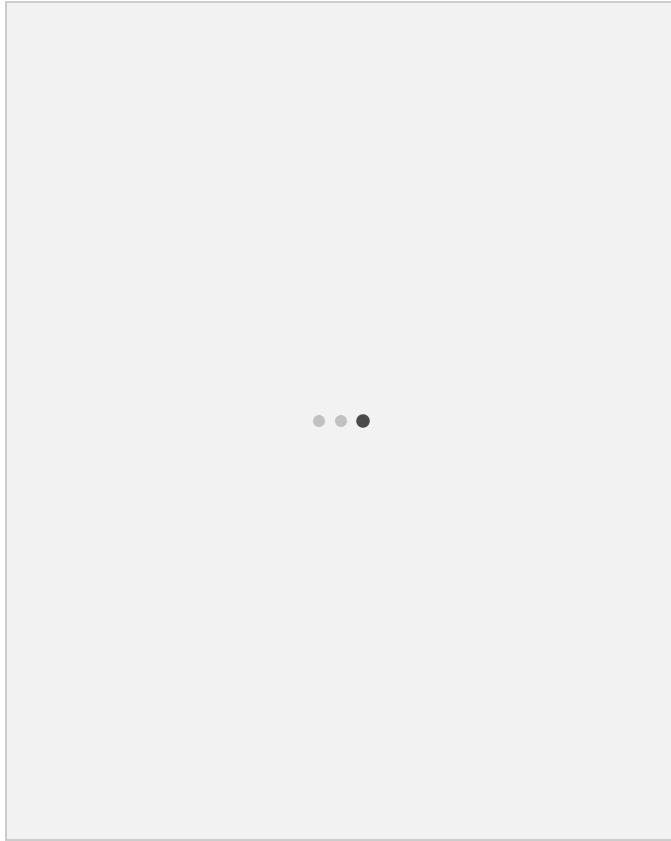
Team B = [1, 2, 3]

Return [0, 1, 2]

IITD (SDE)

<https://www.geeksforgeeks.org/maximum-size-sub-matrix-with-all-1s-in-a-binary-matrix/>





Zauba

IITG

Pen paper test;

Write system design of any of the one below systems: (what feature requirements were needed for system design ?)

- Uber**
- Google Drive/ Dropbox**
- PUBG**
- Facebook**
- Air Bnb**
- Google Adsense**
- Google Maps**
- Kafka**

IITM

same as in IITG

IIT BHU

same as in IITG + Swiggy/Competitive Coding Platform/Netflix/Github etc

IIT R

Same as in IITG + gmail/message queue

ExaWizards

IITK(which profile?)

Time: 60min 2 questions

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Q2. <https://leetcode.com/problems/word-search-ii/>

There was a small modification in the test, you can move diagonally also.

Q1. Floyd warshall's

algorithm(<https://www.techiedelight.com/pairs-shortest-paths-floyd-warshall-algorithm/>)

Given a list of airline tickets, each with a departure city, destination city, and price, find the minimum cost of traveling from a city to another, using at most K tickets. Your algorithm must be efficient.

The input is given via standard input.

The 1st line is the departure city.

The 2nd line is the destination city.

The 3rd line is the maximum number of tickets used for the flight, K.

The 4th line is the number of airline tickets given, N.

The 5th to 4+Nth lines give each ticket's departure city, destination city, and price (comma-separated).

The output shall be given in 2 lines. The 1st line is the cost of the entire flight. The 2nd line is a comma-separated list of the cities, in order, in the path of the flight. If the flight is impossible, output "ERROR" instead.

Example Input :

Munich

Rome

2

4

Madrid,Rome,300

Rome,Munich,150

Munich,Madrid,200

Munich,Rome,600

Expected Output

500 Munich,Madrid,Rome

Solution: It can also be done using the bellman ford algorithm. Just replace V-1 by K in standard bellman ford algorithm

IITH

Exactly the same questions of IITK. 75min. STL and numpy allowed. M.Tech allowed.

IITD

Exactly same as above.

IITR

Same as IITK.

HSBC

IITG

Platform : Cocubes, Eligible branches: All

2 questions, 30 mins test, STL not allowed ([STL was working in my case...](#))

Questions are easy and basic like-

1.find the number of superior element(element bigger than all right of it) in an array.

input =1,5,7,9,2 output= 2 (i.e 9,2)

2.

2D Array Sort

Given 2 numbers (num, m); find the number closest to num divisible by m; if there are two such numbers, return the largest one.

e.g (67,8) -> 64 (two nearest numbers divisible by 8 : 64,72)

Factorial of a large number, return as a string

find the sum of even and odd position digits of a number and return odd sum when an even number comes in a dice and even sum when

you get odd number in dice.

IITH

Same as IITG,STL not allowed.

Samsung Semiconductor

IITD

Someone had deleted questions. Please avoid such foolish behaviour.

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) ($0 \leq x \leq 100$, $0 \leq y \leq 100$). The distance between two arbitrary

locations (x_1, y_1) and (x_2, y_2) is computed by $|x_1-x_2| + |y_1-y_2|$, 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

$5 \leq N \leq 10$. Each location (x,y) is in a bounded grid, $0 \leq x \leq 100$, $0 \leq y \leq 100$, 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 custom memory allocation on heap.

ers 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

One coding question. Time given: 3hrs. Maximum Submissions allowed: 5.

Que: Given an undirected connected graph. Color the vertices of the graph with two colors, such that adjacent vertices have different colors. Return the

number of vertices colored with 0. If coloring is not possible, return -1.

Solution: Color the first vertex with 0. Now perform BFS traversal on the graph starting from first vertex. Color the adjacent vertices with different color,

If the vertex is already visited, check if it has a different color.

Note: Stack memory was very less, so do all

[1. May be Time complexity was not an issue, I implemented it in an awful way, still passed all 10 test cases.

2. While coding in the environment, you can use notepad to keep temporary backup of your code.]

STANDARD CHARTERED

IITR

Include 5 rounds:-

Link provided by them for practice <https://www.trytalentq.com/> . Test includes same pattern.

Strength Test which is not an elimination round

Logical Reasoning test which is an elimination round. 12 question of logical apti. to fill pattern in matrix. CUTOFF : 40 percentile

Numerical round :- includes verbal and data interpretation (elimination round) (can attempt only those who cleared logical round).

Coding round (in future).

3 sections :

(1st : 15 MCQ Questions where code was given and have to predict the outcome,,15 ques in 20 mins - speed needed

2nd: 1 SQL query question, lots of table given and have to write a query, 15 mins

3rd : Coding round: 1 easy question link :

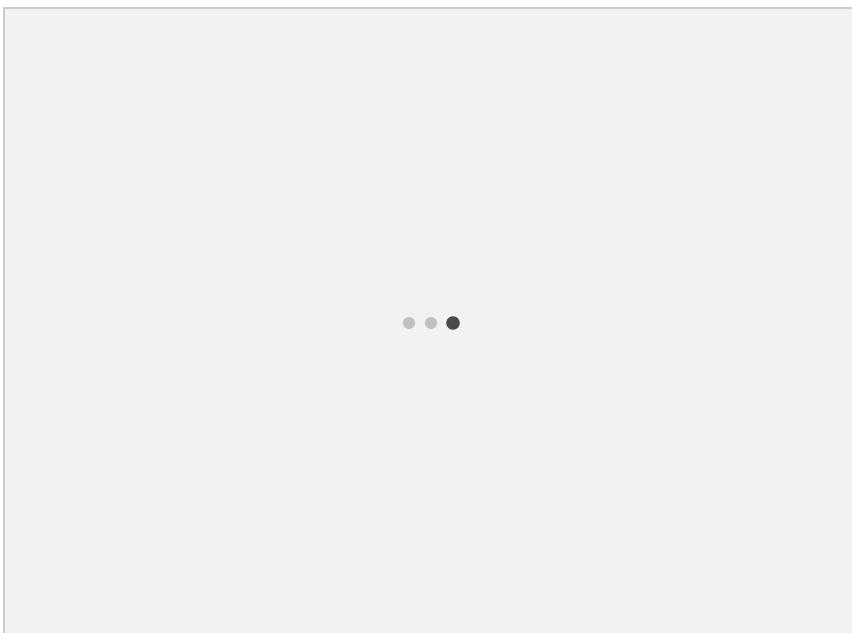
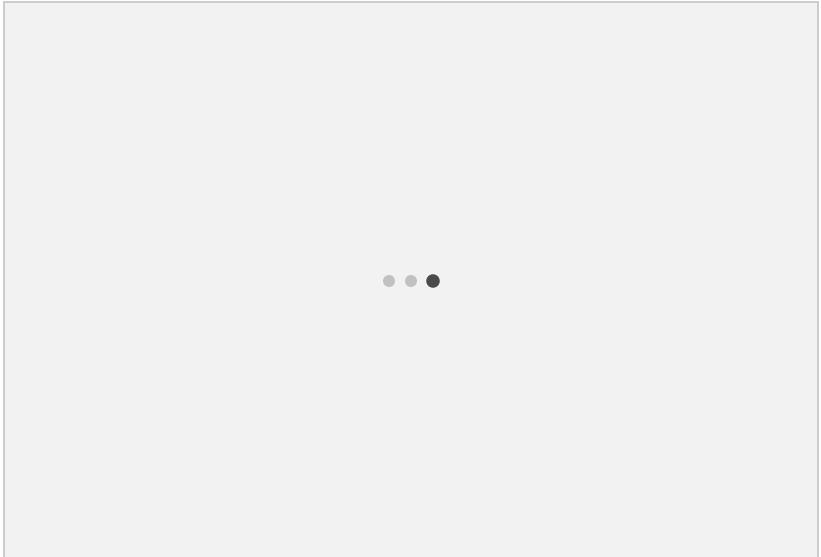
<https://www.geeksforgeeks.org/remove-characters-from-the-first-string-which-are-present-in-the-second-string/>)

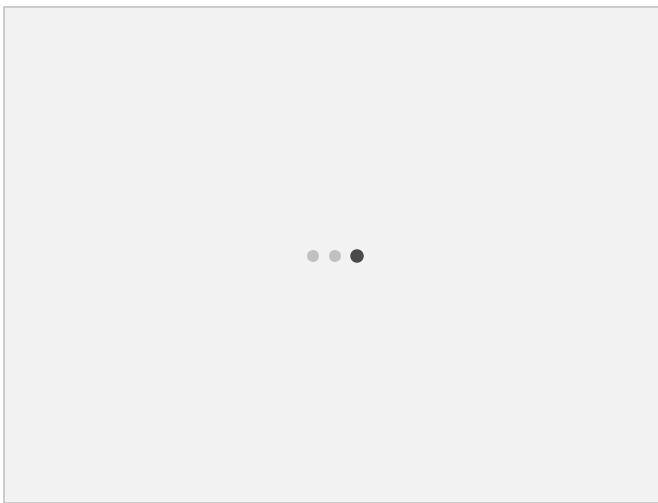
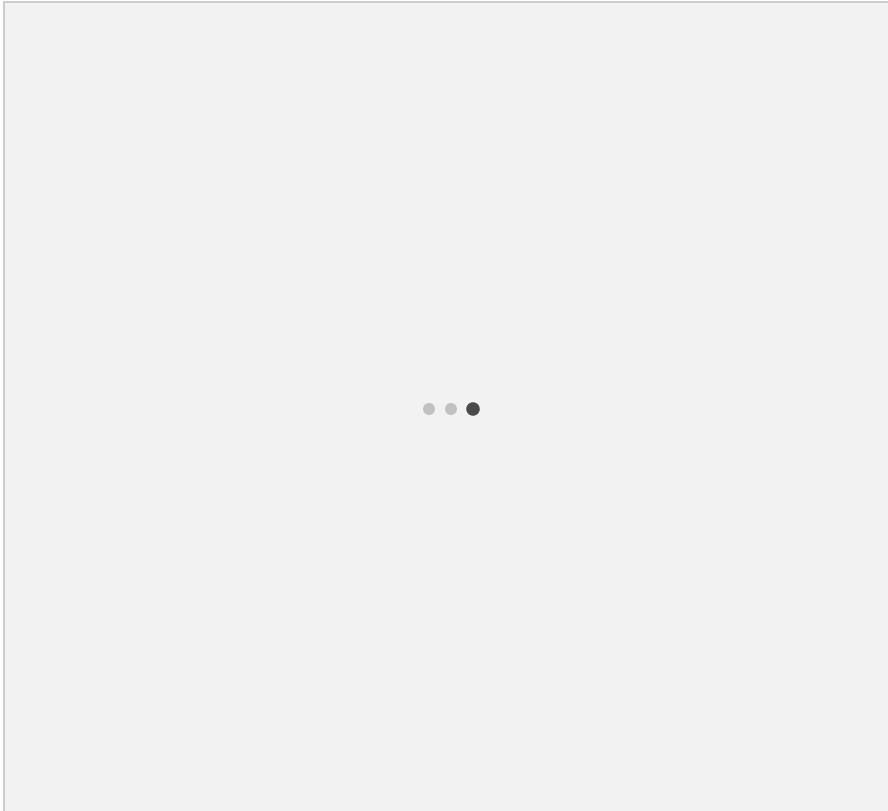
GD and then PI (in future).

Adding few screenshots of the questions asked !

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IIT BHU

Same pattern as IITR

Looks like the pattern (type of pattern) for everyone was same but the boxes values and question mark was different.

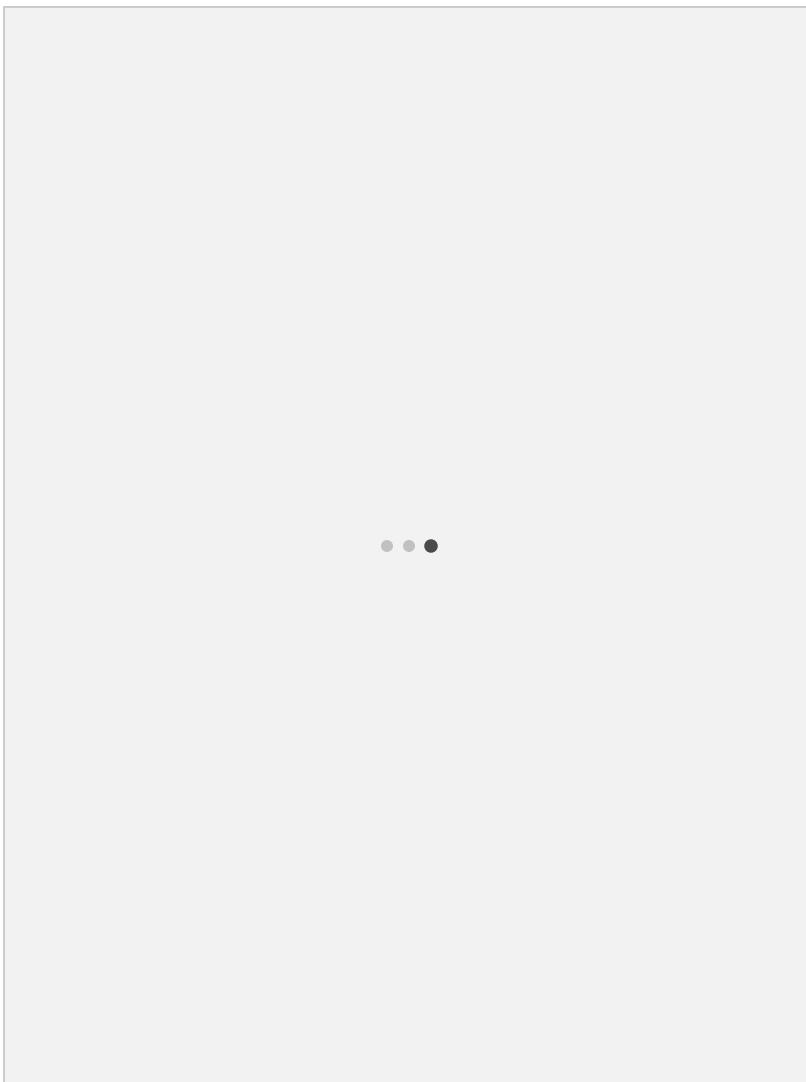
Logical Round - <https://photos.app.goo.gl/h1LJX2anH9vWCh2t8>

Numerical Round - <https://photos.app.goo.gl/RZU9htLPnx3Rrs4J7>

Advice - There's no webcam or any monitoring going on, so give your tests in groups preferably one after another to increase chances of same questions. There are some different sets of data values but overall the questions remain similar and multiple people will easily get the same set, just look out which ppl among the group get the same question set

Advice2 - Judging by the percentile score we received in email, there was heavy negative marking although not mentioned anywhere. So play safe, as these are just elimination rounds, just do 5-6 questions correctly to stay above 50 percentile instead of marking random answers.

the percentile distribution was like this - (7-8 randomly chosen = 20 percentile), (5 correct, 1-2 random = 60+ percentile), (9 correct, 3 skipped, i.e, no negative = 85 percentile)



Eligibility ??

Silverleaf Capital Services PVT LTD

(High-Frequency Trading Analyst)

IITK, IITD

(M. Tech Allowed)

Pen and Paper based Test. 2 hours(was extended by 30 minutes)

Please someone update the CPI criteria 7(IITD)

Although Minimum CGPA criteria in JNF was mentioned 7 but upon resume shortlist they considered 8 or above.

(I don't know for sure whether above criteria (resume shortlisting on 8 or above) was valid for btech or not? (IITD))

The test consisted of 7 questions, where some questions had different parts. The test was mainly based on probability and statistics. There were marks for writing the approach as well. 2 marks were allotted for free if we wrote 'Don't consider this answer' beside a question :D

A game in which there is a probability of .9 for neither winning nor losing, a probability of .09 for winning 10 dollars and a probability of .01 for winning 50 dollars. An individual pays 50 dollars at the beginning of the game and keeps on playing until he loses all his money. Find the probability that he can play at least 13 games.

Monty Hall Problem. Extension to Monty Hall problem- Suppose there is a probability of p1, p2 and p3 to have a car in door 1, 2 or 3 respectively. We choose door 1. The host opens door 3 and asks us if we would like to switch to door 2. In which condition will it be better to switch to door 2?

There are N ropes kept in a box. Everytime, 2 free ends of any rope(s) are picked and tied until there are no free ends left. Find the expected number of loops.

Solution on brainstellar

If the maximum number of an array is found by storing the current max value of in a variable, while scanning the array from left to right, find the expected number of updates in the variable assuming that all elements of the array are distinct.

There are n buildings placed on integral positions on an integer line. m towers have to be placed on that integer line at integral positions. Write a pseudocode to find the minimum sum of distances from each building with its nearest tower.

Team A and B have a game of 7 rounds and the team winning the majority of the matches in the series wins the series. A t-shirt manufacturer manufactures t-shirts of team A and will have a profit of 80 million dollars if team A wins the series by selling the t-shirts of team A. If team A loses, then the manufacturer neither gains nor loses anything.

The manufacturer also bids on the outcome of a series (not on the individual game). Show that it is possible to bid in a way such that he takes a minimum amount irrespective of the outcome of the game. How can this minimum amount be maximized?

The manufacturer bids the same amount separately on individual games. Show that there is a minimum amount that the manufacturer can always win. How can this minimum amount be maximized?

The manufacturer is allowed to bid different amounts on different games. Show that there is a minimum amount that the manufacturer can win. How can this minimum amount be maximized?

There is a game in which an individual chooses a real number in [1,2] called a strike 'k'. The host generates a number X between [1,2]. In order to play this game, we pay a certain amount of premium at the beginning of the game. if $X > k$, we earn $X - k$, else we don't earn anything.

We strongly believe that X is a uniform distribution in [1,2]. What is the maximum premium that we would like to pay?

This time, the settlement value is $1/X$ instead of X. (I don't remember this word and didn't understand its meaning). This time what is the max premium that we would like to pay?

The host thinks that it is better to choose our strike from a range of options. So we get some options like [1, 1.5, 2](I don't remember the options). After playing so many games, we strongly believe that the host thinks that $1/X$ is a normal distribution between [0.5,1]. We need to choose a strike. If the host wants, he can deny playing the game after knowing the strike. What is the max penalty that we can pay. (Please someone verify part c, I think I am mixing up strike and penalty)

Samsung R&D Noida

IITG

1 coding question, 3hr. Other

details already mentioned in doc.

Graph Cycle :

<https://drive.google.com/file/d/1ftOziYTPrsIKIQwSdKrZsOuZYITEDXZy/view?usp=sharing>

IIT BHU @ 10/10/2019

Samsung Noida (SRIN) conducted the test on SC Software | STL Not Allowed | 1 Section | 180 min | 1 coding question | 50 test cases

Only those who pass all 50 cases pass the test generally.

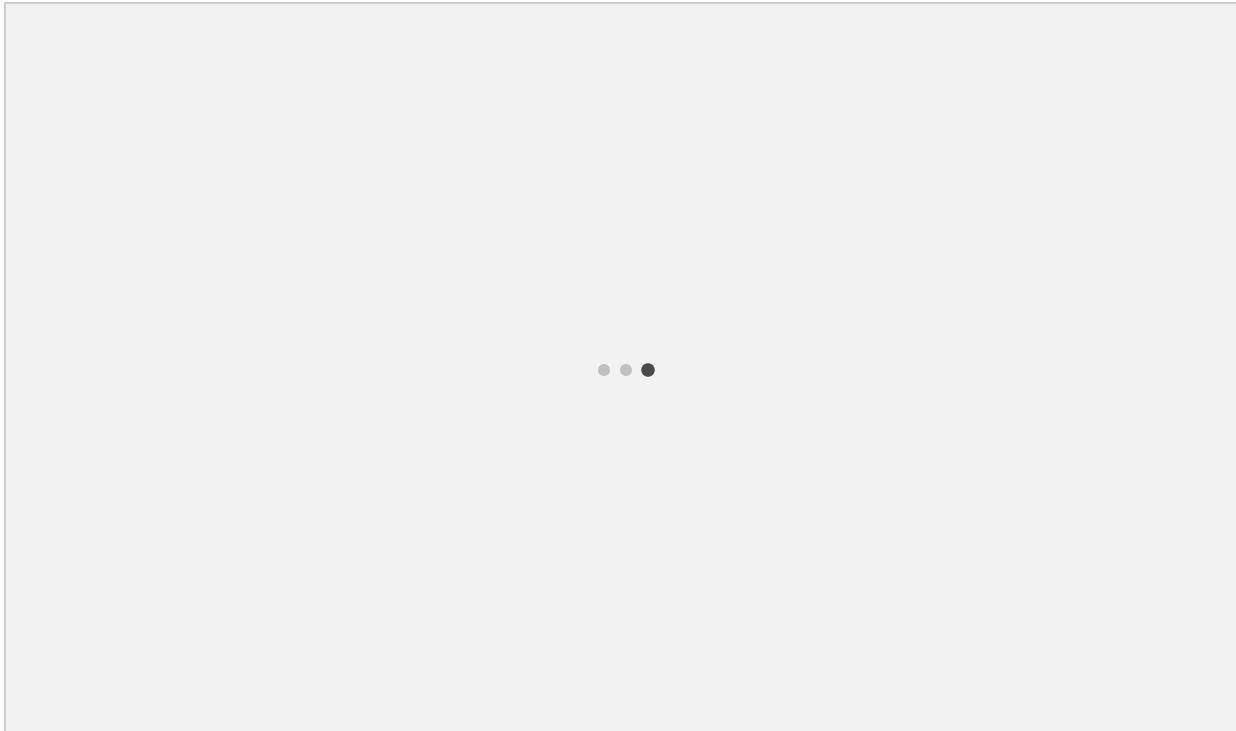
Q1 - Rock Climbing : Given a map of Rock Climbing for Mr. K, you need to tell the biggest jump (or difficulty) that he needs to make in his attempt to reach Goal.

Problem Statement : Mr. K wants to climb a rock from a starting point to the destination point. Given a map of the rock mountain which N = height, M = width. In the map, character '-' is the possible foot place spot (where he can climb). He can freely move up/down at vertical spots which '-' exists sequentially. It's impossible to move horizontally in case '-' is not consecutive in the same height level. The maximum height of moving from the starting point to the destination point is the level of difficulty of rock climbing . The total distance of movement is not important. There is more than one path from the starting point to the destination point.

Output: The minimum level of difficulty of all rock climbing paths level.

Hint: Start with difficulty level 0 and then keep increasing it one by one.

Problem Image :



Solution Code : [Code for Rock Climbing Level-By-Level](#)

Did this code pass all the 50 Test Cases? Shouldn't the level be initialized to 0 because if S and G are at the same level, answer should be 0.

Updated to start from zero ✓ Thanks

IITKGP

3 hours. 1 question. Airplane Game collect max coins.

Test cancelled. :P

<https://imgur.com/a/i5vVEDn>

IITR

Marathon

Mr. Choi has to do a marathon of D distance. He can run at 5 different paces, each pace will have its time consumed per km and its energy consumption. He can only run till he had energy left. Find the minimum time required for choi to complete marathon if he has H energy.

INPUT :

Input order :

Total test cases

Total Energy(10) Total Dist(5)

Next 5 lines - input for 5 different paces in min,sec and energy order

eg.

Total_energy Total_distance

Min(pace1) sec(pace1) engery_consumption(pace1)

Min(pace2) sec(pace2) engery_consumption(pace2)

Min(pace3) sec(pace3) engery_consumption(pace3)

Min(pace4) sec(pace4) engery_consumption(pace4)

Min(pace5) sec(pace5) engery_consumption(pace5)

Zomato

IIT G

Platform : Interviewbit, Test Duration : 1 hour, 8MCQs, 3 Coding question

MCQ: Q 4 of <https://www.geeksforgeeks.org/practice-problems-on-hashing/>

5 jobs given, find average delay using P. Shortest processing time scheduling (i don't remember P full form)

given a code-- is it runtime polymorphism, compile time polymorphism or both, and is it abstraction

Coding Questions:

<https://www.interviewbit.com/problems/anagrams/>

<https://leetcode.com/problems/best-time-to-buy-and-sell-stock-with-transaction-fee/>

Given an array A of length N, A[i] stores price of petrol on ith day. Tank can fill upto B litre. 1litre petrol is spent in each day's commute. If a person commutes for N days, give the minimum amount in which he can manage the N litres of petrol.

Provide constraints for B and N and A[i]

IIT BHU

Zomato conducted test on Interviewbit | STL Allowed | 2 Sections | Total 60m | Section Inter-switching Allowed | All questions same for All

Section 1 : Objective

8 Multiple Choice Questions : DS, Algo, OOPs, OS, Run-time vs Compile-time Polymorphism, Constructor & Destructor, Capitalize function in JAVA

Two Integer/Decimal Answer type : Waiting time in SRTF Numerical, Insertion Sequences in Hashing Numerical [GFG](#)

Section 2 : Coding

Q1 - Find the lexicographically smallest achievable string, given a string of digits 0 to 9, and two numbers 'r' and 'a', and you can perform two operations on the string infinite no. of times:

Addition - Change character s[i] to (s[i]+a)%10 for all odd indexes

Rotation - Right rotate the string by r places <https://ideone.com/vnnrUW> (Soln)

Solution : Brute-force-based Solution [Someone Please post the solution link for this question too](#)

Q2. From Leetcode. Find the decoded string given the rule is: k[encoded_string], where the encoded_string inside the square brackets is being repeated exactly k times. Note that k is guaranteed to be a positive integer.

s = "3[a]2[bc]", return "aaabcbc"

s = "3[a2[c]]", return "accaccacc"

s = "2[abc]3[cd]ef", return "abcabccdcdef"

Solution : Stack-based Solution [Leetcode](#)

Q3. From Leetcode. Find the h-Index of a scientist given the no. of citations of each of his research papers. A scientist has h-Index h if h of her N papers have at least h citations each, and the other N – h papers have no more than h citations each.

Solution : Sorting-based Solution [Leetcode](#)

How to complete 3 coding questions and 8 MCQs in 1 hour ? Ridiculous

Why the answer for test case [1,2,3,4] is 2 as the problem suggests that there are h papers having at least h citations each. If 2 is the answer then the number of papers having atleast h citations is 3 how come WTF? if you take 3 citations then [2,3,4] set will have 2 as a citation which fails the criteria of atleast 3,

But how is 2 justified if 2 is the answer then we must have exactly 2 papers with citations atleast 2.

Ans: If we take 2 as citation then {3,4} satisfy the condition, also (n-h)

which in this case is also 2, so the remaining 2 elements {1,2} satisfy the condition where maximum h index is 2 which is not more than 2.

If we take 2 as citation then {2,3,4} satisfy the condition right , then the exactly h condition is not satisfied??

IIT Roorkee

Same as IIT BHU (Exactly Same)

Use this link to look at the questions: <https://imgur.com/gallery/GoDG8L7>

Adobe

IITKG

Given an array, Just remove adjacent pairs of duplicate elements and return number of remaining elements.

Eg. A=[1,1,2,2,3] so answer is 1

If A=[1,1,2,2,1,3] so answer is 2. (3rd one will

if A=[1,2,2,1,3,3] so answer is 0.

Can be easily solved using Deque, Stack or brute force. Any of these passed all test cases.

2) Given a string s. Return substring of length 5 which occurs maximum times. If several of them exists, then you know what to do.

Yes, return the lexicographically smallest one. $5 \leq N \leq 10^6$.

Eg. s= "bbbbbaaaaabbabababa. So answer is "ababa".

Eg. s="heisagoodboy" So answer is "agood".

Everyone got 11/12 cases passed and 1 TLE. (dont know why)

3) Given 2 strings, s1 and s2. Find a string s which is a concatenation of subsequence of s1 and subsequence of s2 and is longest possible palindrome and return its length.

Eg. s1 = ban, s2=ana. So answer is 5 ('anana').

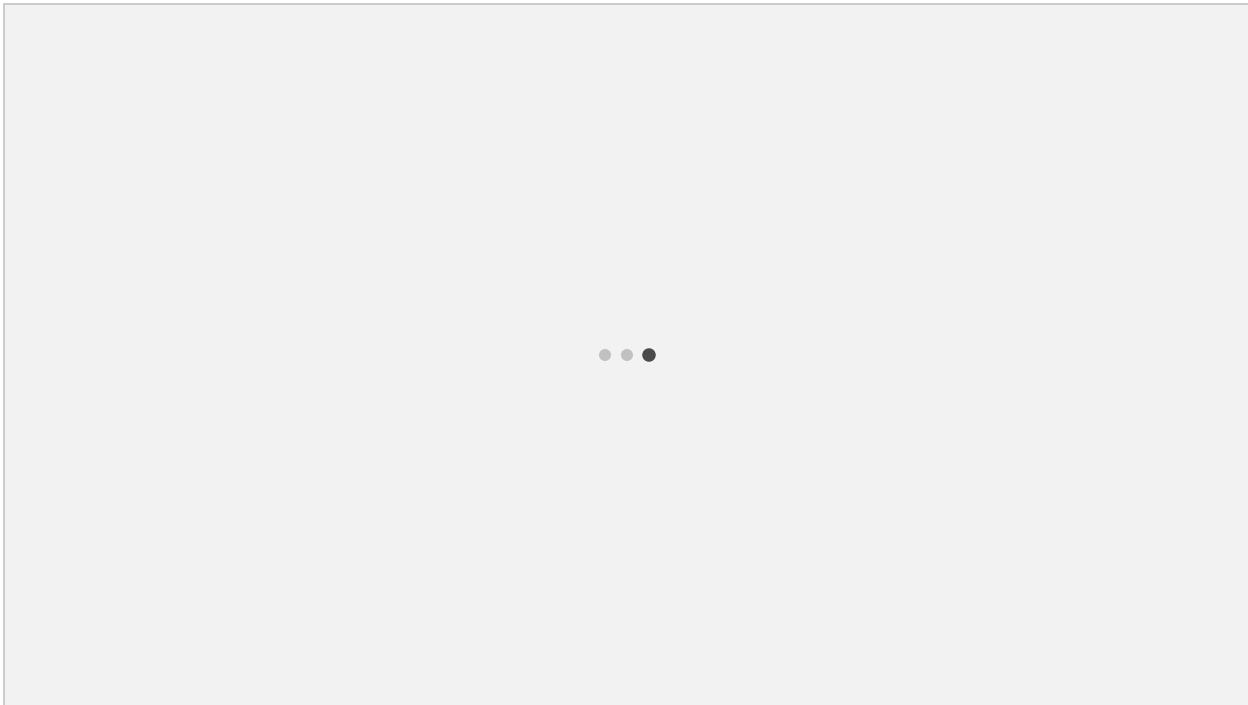
Eg. s1 = abc, s2=abc. So answer is 3 ('aba')

Soln:- Concat s1 and s2. Let s=s1+s2. t=reverse of s. Apply LCS on s and t, which is the answer. All test cases passed.

IIT G

Platform: Hackerrank, Test Duration: 1.5 hr, 3 Coding questions

Given an undirected graph with n vertices. Edges were between i and $(i+1) \% n$ for $0 \leq i < n$. We had to find the optimal maximum distance between any pair of vertices.



Soln: Apply Floyd-Warshall Algorithm and find max distance among all pairs. Did Floyd Warshall Algo pass all the test cases ?

Don't apply Floyd Warshall It takes N^3 . Can be Done in N^2 . Did pass all the cases though. how can we solve it in N^2 ? please elaborate approach

• • •

<https://www.interviewbit.com/problems/intersecting-chords-in-a-circle/>

Although there was a story involved, it asked to apply shortest path from a given source s and then shortest path from all nodes to a destination d. Weight was associated with each edge. We had to find the minimumExplanation 1:

If points are numbered 1 to 2 in clockwise direction, then different ways to draw chords are:

{(1-2)} only.

So, we return 1.m of max time to reach from source -> any node -> destination.



Soln: Apply dijkstra from source to all the nodes and then from destination to all the nodes with edges reversed(which will be equivalent to

finding distance from all nodes to the destination). Answer will be the maximum of (distance of source to node) + (distance of node to destination)

IITD

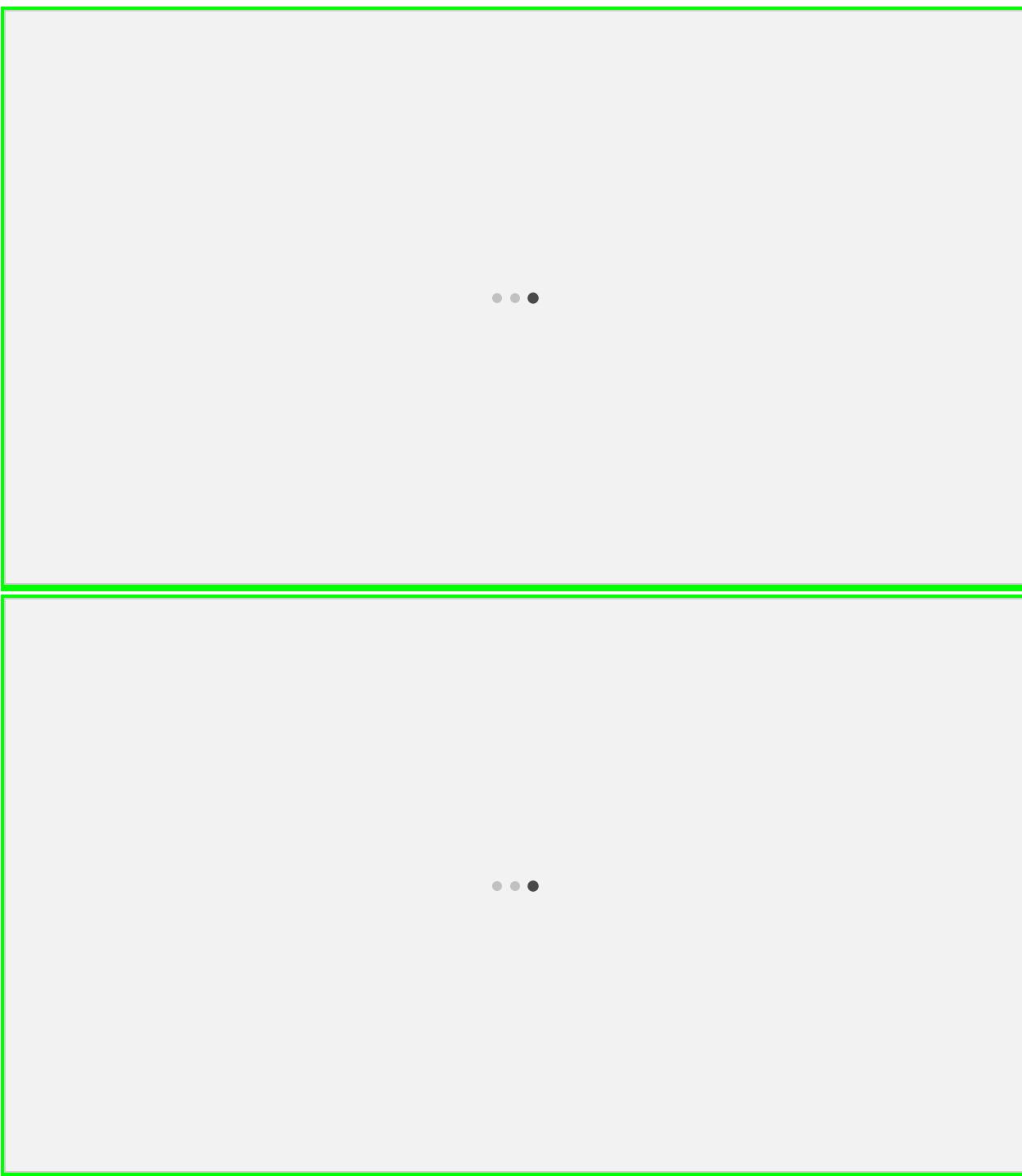
Find questions at the link below:

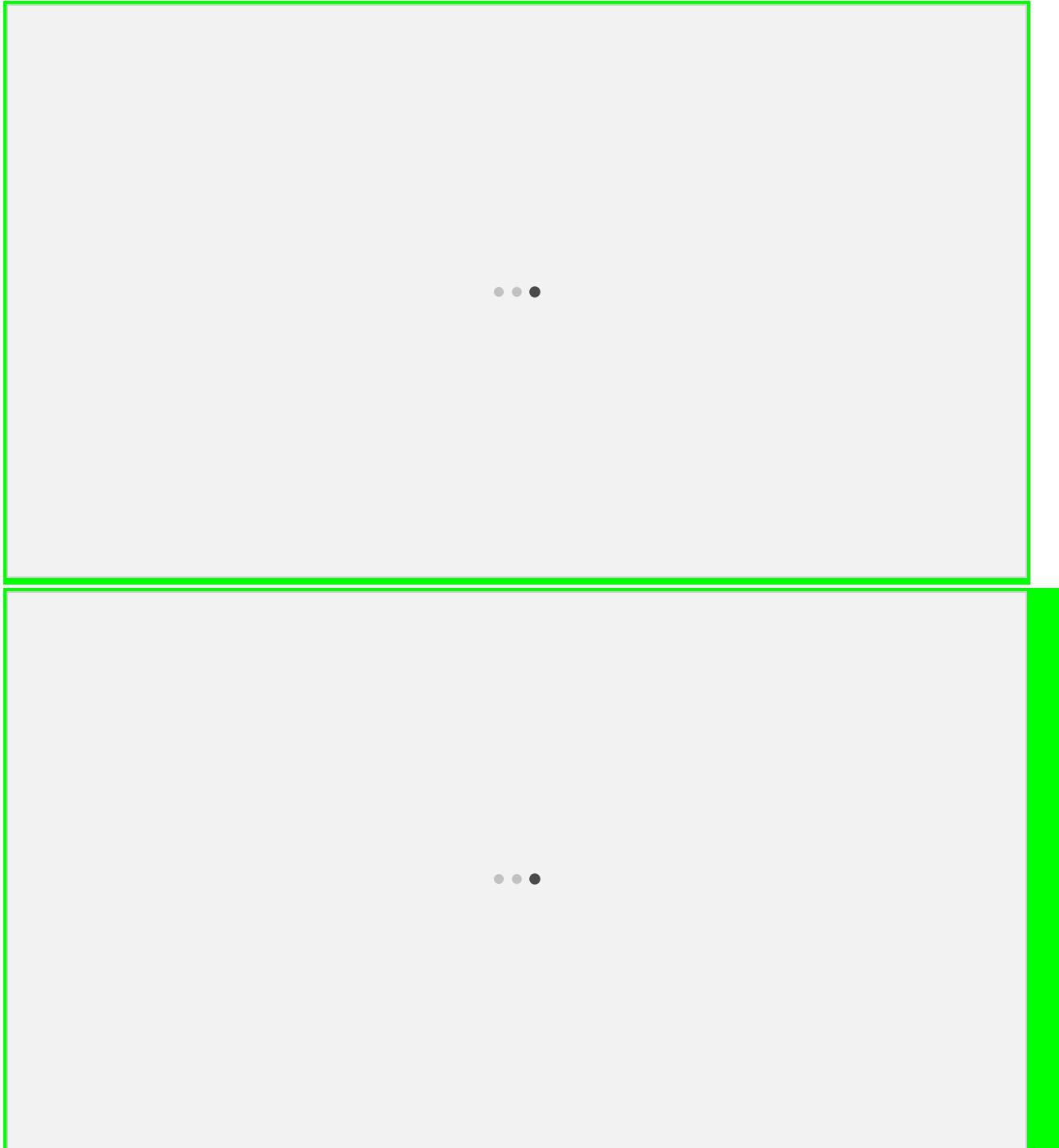
<https://owncloud.iitd.ac.in/nextcloud/index.php/s/WfHeLASyEQS9pNG>

Error while opening the .rar file

Unzipped file question added as image:

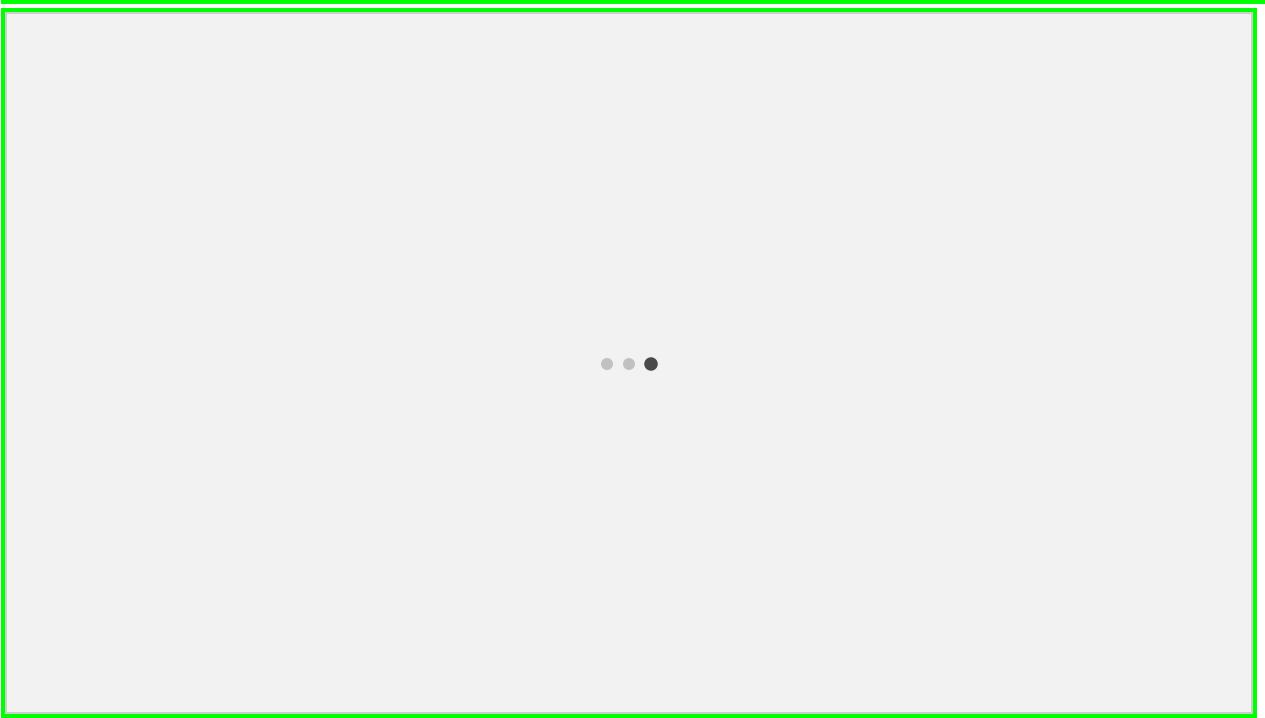
1st question ?





dist[V][V], i, j, k;

int







Was it graph one ? Reply asap - IITR has test today

IITR

<https://www.geeksforgeeks.org/0-interview-experience-set-55-campus-full-time-mts-profile/>

all three questions were exactly same

question 3) 12 test cases , with brute force($O(n^2)$) 10-11 can be passed, all 12 passed using Z algorithm($O(n)$).can anyone tell how to implement Z algo in this question.

If s_2 is aa^*b , Use Z algorithm once for $aa+\$+s_1$, and once for $b+\$+s_2$. Then from z array see which b's are occurring after aa just keep adding the count.

IITB

3 Questions were asked

- 1) There are n garbage bags with weights in range $0 \leq w_i \leq 3$, w_i is float value e.g 1.5, 0.4 types. In one move , a man can carry garbage bags in such a way that at a time he can carry upto 3 units of total weight. Find minimum number of moves required to clear all of the bags. Constraints $1 \leq n \leq 10^5$ (Greedy approach)
- 2) Roughly question boiled down to finding shortest path between 2 nodes in graph with edges having same edge (BFS clears all test cases).
- 3) A string can have only 3 characters viz a,b and c. Find number of strings for a given length N such that no 2 adjacent characters have same value. Constraint : $1 \leq n \leq 10^9$ (Use Fast Exponentiation for evaluating $3 \cdot 2^{n-1}$)

Bizongo

IIT BHU

Which profile ? Designation - Software Engineer-I

Platform - AMCAT

Round 1 [60 minutes] - 60 MCQ, 20 English + 20 Reasoning/Aptitude + 20 Quant

Round 2 (45 minutes) - 2 coding questions. No constraints mentioned, mostly bruteforce was getting accepted

Everyone got different questions. Some questions which i know are -

Find if two binary trees are identical

Subset sum (return 1 if any subset sums to a given sum, else return 0)

Given a regex type of string with symbols *, +, etc. return whether another string can be formed/matched with this regex

Given a linked list, reverse left half and right half independently. If odd length, middle element should remain as it is.

Eg Input = 1 -> 2 -> 3 -> 4 -> 5 -> 6

Output = 3 -> 2 -> 1 -> 6 -> 5 -> 4

Maximum consecutive number of '1' in given binary string.

Knapsack with repetition allowed.

Alphonso

IITG (Technologist Profile)

3 coding and 10 mcq; 1.5 hr for coding and 0.5hr for mcq. total 2hr test.

Coding: <https://drive.google.com/file/d/15kVIAfOawcKDcXqr7VWAf9ocFTFHB6B/view?usp=sharing>

MCQs: Related to DS, Algo, OS, DBMS

Solution to Building offices?

IITD (Technologist Profile)

3 coding and 10 MCQ. (SQL Query was also asked)

Same questions as IITG

MCQ: <https://owncloud.iitd.ac.in/nextcloud/index.php/s/K5nmre7g9LxXWef>

Building Offices Question Approach: It reduces to finding the number of connected subgraphs with k vertices in an undirected graph. Total number of subgraphs with k vertices will be nCk . Check whether each of these subgraph is connected using BFS/DFS. Time complexity of the same would be $O(nCk * O(V+E))$. Any better approach than this one?

Similar problem: <https://www.codechef.com/COOK62/problems/SUBGRAPH/>

I request someone with accepted solution or with maximum test cases passed to share their approach.

IITK (Technologist Profile)

3 coding and 10 (MCQ + subjective)

Same questions as IITG

Jaguar Land Rover

IIT Delhi (Software Profile)

Section 1: 20 aptitude questions to be done in 40 minutes

Section 2: Coding (80 minutes, 3 questions)

a. Spiral Matrix(25 marks)

b. Coin Change(50 marks)

c. To find the number of paths in a matrix given some constraints (100 marks)

You start at the top left corner and the corner accessible to you depends upon the number stored in that place in

the grid. If :

Number 1 then you can only go right

Number 2 then you can only go down

Number 3 then you can in both right and down direction

The question had two parts:

Tell the total number of paths from top left corner to bottom right corner and the maximum sum path (defined by adding the grid's number, if the path taken was 3-2-1-1-2 the the path sum will be 9 and you had to print the maximum sum of all the paths possible)

IIT Hyderabad (3 profiles: Software, Power Electronics, Mechanical)

Platform: Firstnaukri.com (Total code should be written from scratch(including int main())), STL allowed.

PE profile

Section 1: Aptitude 20 ques in 40 mins, no negative marking

Section 2: Technical 20 ques in 40 mins, no negative marking

Section 3: Coding 3 ques in 80 mins

a. N eggs K floor building find minimum attempt to break.(100 marks)

b. t(50 marks)

Given a 2D matrix which contains either 1 or 2 or 3. which represent

1->can move right;

2->can move down;

3->can move in both directions;

You are at the top left corner and need to reach bottom right corner.

Find total no.of possible paths. And also term adventure is defined as the sum of all the values in the path. You need to maximize the adventure and return “total no.of paths%1e9+7 and adventure”.

c. Roman Numeral to integer(1 to 3999). (25 marks)

// Mech had same pattern, software had apti+coding only.

//what were the constraint for N and K in egg drop puzzle(Q.a)?? N < 40, K < 50

//Technical MCQs were from which topics??IIT H Guys please

reply?<https://www.geeksforgeeks.org/m-coloring-problem-backtracking-5/>

//CAN SOMEONE PLEASE TELL THE TOPICS OF TECHNICAL QUESTIONS FOR PE PROFILE
- PLEASE HELP

IIT Roorkee

((3 profiles: Software, Power Electronics, Mechanical)

Platform: Firstnaukri.com (Total code should be written from scratch(including int main())), STL allowed.

Section 1: Aptitude 20 ques in 40 mins, no negative marking

Section 3: Coding 2 ques in 80 mins

Given a base.

Calculate the largest number(in base 10) less than 1500000 which is a factorion number in base b.

e.g. base=11, 26 is a factorion because 26 in base 11 is 24 and $2! + 4! = 26$.

Does anyone have solution of this question?? give answer??+1

Similar to hotel

scheduling(IB:<https://www.interviewbit.com/problems/hotel-bookings-possible/>)

IIT KANPUR (3 profiles: Software, Power Electronics, Mechanical)

Were allowed to choose any two of the above profiles for the test

Platform: Firstnaukri.com (C,C++,Python,Java allowed)

Mechanical Profile or Mechanical and Software Profile: Common test for both

Section 1: Aptitude: 20 questions 40 minutes no negative marking

Section 2: Technical: 20 questions 40 minutes no negative marking (Questions were from solid mechanics, basics of design (Von-Mises and Tresca criterion), IC engines,etc)

Section 3: Coding: 2 questions 80 minutes

Given a year, find out whether it is a leap year or not.

Given an array of N elements. Print 1 if the array can be broken into K

non-empty sub-arrays **subsets?+1** such that sum of each sub-array should be same otherwise print 0.

e.g. array = {1,2,4,5,6} and K=3

Output : 1

It can be broken into K non-empty sub-array with same sum i.e. {1,5} {2,4} {6}

Will backtracking solution pass? No, Constraints were $1 \leq n, k, a[i] \leq 100$

contiguous

In the second question is it subset or subarray, please clarify?+2

<https://www.geeksforgeeks.org/number-of-ways-to-divide-an-array-into-k-equal-sum-sub-arrays/>

This gfg link involves COUNTING the ways, Here the question is WHETHER it can be broken into subarrays. Which one came in the test?

IIT GUWAHATI (3 profiles: Software, Power Electronics, Mechanical)

Software Profile:

Section 1: Aptitude - 20 MCQs in 40 minutes(Each MCQ had different weightage from 2 - 5 marks, no negative marking)

Section 2: Coding - 2 questions in 80 minutes

<https://www.geeksforgeeks.org/check-string-substring-another/>(50 marks)

<https://www.geeksforgeeks.org/m-coloring-problem-backtracking-5/>(100 marks)

//CAN SOMEONE PLEASE TELL THE TOPICS OF TECHNICAL QUESTIONS FOR PE PROFILE
- PLEASE HELP

MosFET, Control System(Check if given system is stable), Converters, Transformers

IIT (BHU) @ 20-10-2019

Jaguar LR conducted test on FirstNaukri | STL Allowed | 2 Sections | 40m+80m | Section Inter-switching Not Allowed - Sequential Sections | Coding questions same for All

Section 1 : Objective

40 MCQs majorly on Aptitude, Quant, Probability, Reasoning.

Sequential questions : Going back to previous question not allowed.

All students had different sets.

Section 2 : Coding

Q1 - Given a stream of integers, find the first positive integer that does not appear in the stream. The length of the stream would NOT be given.

Solution : Set-based solution [GFG IDE](#)

Solution : Vector-based solution [GFG IDE](#)

Q2 - Given the edges of an undirected graph and a number 'm', determine if the graph can be coloured with at most 'm' colours such that no two adjacent nodes are coloured same.

Solution : Backtracking-based solution [GFG](#)

IIT MADRAS (3 profiles: Software, Power Electronics, Mechanical)

coding:

given 3 numbers 4,5,6 and their occurrence x,y and z respectively. (50 marks)

EX: input : x = 1, y= 1,z=1 (x,y,z are no of times the number at most occurs)

then output should be

4+5+6+45+54+65+56+64+46+456+546+465+564+645+654 = 3675

given an array of length n, and it is divided into k subsets such that no subset has a duplicate element. find the number of ways in which array can be divided into k subsets. (100 marks)

ex: array = {1, 2, 2} k =1

{ { 1, 2 },2 } is valid and {1,{2,2 }} not valid so output is 1

Publicis Sapient (Data Science Profile)

IITG

20 MCQS : DBMS, Algo, ML, Probability Distribution

MCQs: {(Find 2nd, 3rd and 4th quartile of a series of numbers), (Joint Prob Density), (Time series effect of non-stationary on ARIMA), (How to reduce underfitting), (Batch size given, training size, epochs given, find execution time), ...}

1 coding (in Python only)

2 ML out of which only 1 need to be done.(were using libraries like numpy, pandas sklearn allowed?)

Yes

Was use of the Internet allowed for the ML section?

coding + ML Link:

<https://drive.google.com/file/d/1FWpV221DyiLB9YjRI5e192hmjfNCefAD/view?usp=sharing>

Was tab switching allowed?

IIT BHU

pattern same as IITG (Time 1.5 hrs)

coding(Python only) - Given a string return a special sort of the string. Special sort of the string is defined as - take the lexicographically smallest letter as first letter of your answer then lexicographically second smallest and so on. when you cannot find any the come back in the same order find the lexicographically second largest (of remaining) and then third largest and so on repeat the same steps while all the letters are not included in your final answer .Can anyone clarify the Qn...I couldn't understand

eg:- ababyz

ans:- abyzba

Explanation of above example:-

step 0:-ansString="" ,givenString="ababyz"

step 1:-ansString="a"(lexicographically smallest remaining in the givenString) , givenString="babyz"

step 3:- ansString="ab"(b being lexicographically smallest after a) , givenString="abyz"

step 4:-ansString ="aby" , givenString="abz"

step 5:-ansString="abyz",givenString="ab"

step 6:-ansString="abyzb"(b being lexicographically largest after z),givenString="a"

step 7:-ansString="abyzba",givenString=""

return ansString

eg:- abbabb

ans:-ababbb

2 simple ML questions were there out of which one has to be attempted

one was simple linear regression (don't remember the other one)

use of numpy , Pandas , and sklearn allowed.

Any idea about second question of ML?

IIT Roorkee

same pattern as IITG (1.5 hours)

20 MCQ : SQL (Use of LPAD Function, Difference between UNIQUE, DISTINCT AND DIFFERENT Functions), Probability (Calculate MLE, and a question on Normal distribution,), Algos (Lasso ,Ridge, elastic net) (ex : if the training data is 10GB and your computer ram is 4GB , how will you train ?, ex: if features are too many and highly correlated, which algo you will you use ?)

Coding 1 question(PYTHON) : Concatenate 3 string in lexically increasing order

2 ML Question : Q1 :

<https://www.chegg.com/homework-help/questions-and-answers/given-humidity-data-days-spanning-startdate-enddate-inclusive-predict-hourly-humidity-data-q34232880>

JPMC (SDE)

what was the platform? HACKERRANK

IITG

1HR

Q1. Given a 2D matrix. of n rows and columns. Each cell(pixel) has a value from 0-255. The first n/3 rows represent colour red, next n/3 rows colour green and then n/3 row represent blue.

You have to output a single 1-d array containing 8bit binary value for each pixel.

Example: 1 2 3

```
4 5 6  
7 8 9  
10 11 12  
13 14 15  
16 17 18
```

Here first 2 rows represent Red, THEN GREEN THEN BLUE

output= [1,7,13,2,8,14,3,9,15,4,10,16 and so on]

Not in output you have to give binary representation for each number for example for 1: 00000001 for 7:00000111

This just boils down to converting a decimal to binary right ?

Q2:

Given a list of transaction

GOOGL BUY 500 784

GOOGL SELL 200 540

AMZN SELL 300 200

Each row represents a transaction. The first column tells company name, second column tells type {BUY,SELL} Third column quantity of stock to buy or sell and fourth column tells the price.

You have to execute the transactions.

A BUY transaction can only be matched with SELL transaction of the same company and vice versa if price of BUY \geq price of SELL

if there are multiple SELL transaction for BUY then choose the SELL transactions having minimum price.

if there are multiple BUY transactions for SELL then choose the BUY transactions having maximum price.

You need to find number of shares which were left after completing all transactions

GOOGL BUY 500 784

GOOGL SELL 200 540

GOOGL SELL 200 550

AMZN SELL 300 200

Here For GOOGL 1st transaction will be matched with 2nd.(not third)

after this

GOOGL BUY 300 784

GOOGL SELL 200 550

AMZN SELL 300 200

Now again match

GOOGL BUY 100 784

AMZN SELL 300 200

So ans is $300+100= 400$

Approach: for every company make a min heap and a max heap.

insert all sell transaction in min heap and all buy transaction in max heap.

while (both heap not empty){

```
s=pop min heap
b=pop max heap
if(s.price> b.price){
    break;
}
q= min(s.quantity, b.quantity)
s.quantity -= q
b.quantity -=q
if quantity is 0
    discard
min_heap.push(a)
max_heap.push(b)
}
```

IITR

Same Problems as in IITG

someone with screenshot of questions????

IIT KGP

2 questions in 1 hr

[Link to answer](#)

Preparing Question Papers

You have been asked to conduct a contest and need to prepare the questions for the same.

You have been provided with a set of problems 'c' where the estimated difficulty level of the i^{th} problem is represented as an integer c_i .

For example -

$c = [10, 20, 30]$ - Here is an array of c problems.

The difficulty of the first problem c_0 is 10 , second c_1 is 20 and so on.

Now , you need to prepare a problem set for the contest, using problems from the given array.

A problem set for the contest must consist of **at least two** problems. The total difficulty of the problems for the contest must be **at least l** and **at most r** . Also, the difference between the difficulty level of the easiest and the hardest of the chosen problems must be **at least x** .

Find the number of ways to choose a problem set for the contest that adhere to the above conditions.

Complete the function **getPossibleNumberofSets** in the editor below. The function must return an integer representing all possible valid sets .

getPossibleNumberofSets has the following parameter(s) along with the constraints:

l : an integer representing the minimum difficulty level required in a problem set - $1 \leq l$

r : an integer representing the maximum difficulty level required in a problem set - $1 \leq l \leq r \leq 10^9$

x : an integer representing the least difference allowed between the maximum and minimum difficulty level in a problem set - $1 \leq x \leq 10^6$

c : an integer array containing the difficulty level of problems - $1 \leq c \leq 15$

Output

Return the number of ways to choose a suitable problem set for the contest.

Examples

Examples**Input**

```
5  
6  
1  
3  
1  
2  
3
```

Output

```
2
```

Explanation

Here -
l - 5
r - 6
x - 1
c - [1,2,3]

The two valid subsets are -
{1,2,3} - Sum = 6 , Difference between highest and lowest difficulty is 2.
{2,3} - Sum = 5 , Difference between highest and lowest difficulty is 1.

Input

```
40  
50
```

```
10  
4  
10  
20  
30  
25
```

Output

```
2
```

Explanation

Here -
l - 40
r - 50
x - 10
c - [10,20,30,25]

The two valid subsets are -
{ 10 , 20 , 30 } - Sum = 60 , Difference between highest and lowest difficulty is 20.
{ 20 .30 } - Sum = 50 , Difference between highest and lowest difficulty is 10.

Input

```
25  
35  
10  
5  
10  
10  
20  
20
```

The screenshot shows a code editor interface. At the top, there's a yellow banner with the text "We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour." with a "Start tour" button and a close button. Below this, a modal window titled "Test finished" contains the message "Thank you for taking the test. You have used up the allotted time for this test. You will now be redirected to a feedback page where you can leave a message for us about your experience." with a "Proceed" button. To the left of the modal, there's a sidebar with the text "Unable to save draft." and a code snippet:

```
1 #include <bits/stdc++.h>~  
9  
10 // Complete the getPossibleNumberofSets function  
11 int getPossibleNumberofSets(int  
12  
13  
14 }  
15  
16 int main() ~
```

VISA

Platform and eligibility criteria? Hacker rank

IITK

Q1. Activity selection problem(start time and duration given. At any time only one activity can be done. Select the most number of activities.)

Q2. You are given two strings s and t. $|s| \geq |t|$ You need to determine whether t can be concatenated multiple times to obtain s. Also if this is possible to do then you need to output the smallest string x such that both s and t can be obtained from x by some number of concatenations.

Sol. Can be done using KMP

Q3 You are given three types of moves of the form './' '../' 'x/'. These moves represent folder transitions. You are given a sequence of such moves. You need to output the minimum steps you need to take from the last location to reach the root.

Q4 You are given two numbers a and b. Determine the sum s for which maximum numbers between a and b (inclusive) have their sum of digits equal to s and also the number of times this sum s occurs.

Brute force won't pass. $a,b \leq 1e18$

solution for Q4 = <https://ide.geeksforgeeks.org/O3XN7ByK7J>(Digit DP)// can you please tell how to pass the input

IITG

Mtech allowed

Same as IITK

IIT KGP

Q.1 Array subset. Given an array, find a minimal subset of it such that the sum of its numbers is greater than the sum of number in the remaining subarray. Easy Question

Q.2 Shopping Budget. Arrays of prices of jeans, skirts, shoes, etc were given, and the budget. Have to figure out no. of ways in which we can buy all the items in given budget. Eg. a=[1,2,3] b=[2,3] c=[4] d=[1,2,3] (Brute force did not pass 4/12 test cases) (Can be done using 4 sum. 2 loops for first 2 arrays and 3rd loop for rest 2 arrays. Passed all test cases.)

Is this similar to Subset sum problem Yes

Q3. Dodge the Ball. (Hard level question)///can someone tell what the problem was about? (cant be done in 1.5 hours)

Q4. Question on string where you had to first apply regex and then count number of allowed substrings. (very lengthy also string size was 10^5)

CURE . FIT

WHICH PROFILE???:- SDE, IITD-Data science, App developer, Front end developer, SDE

IITK

1hr. Platform- Hackerearth. 2 coding questions

Q1. You have an array of size n, consisting of three types of characters 'a', 'b', 'c'. You need to count all the triplets of the form (p,q,r) where p is some index of 'a', q is some index of 'b', r is some index of 'c' such that $(p \cdot r) = q \cdot q$. Indexing in array starts from 1.

Note: $O(n^2)$ will only fetch 60/100

Solution to Question 1, anyone? Urgently required, we have a test at 8??? Did this question appear again in your exam ?No

$O(n)$ was required or $O(n \log n)$ will also do?

Will $n^{1.5}$ work?

This can be done in $O(n \log(n) \cdot \log(n))$how?? cure

pls if anyone has the answer post it

Compute by sieve. It will run in $O(n \log(n) \cdot \log(n))$.. can you please elaborate on your approach?

My Approach : (Correct me If I am wrong)

take three arrays : ar1,ar2,ar3

push all indices of 'a' in ar1

push all indices of 'b' in ar2

push all indices of 'c' in ar3

Note that ar1,ar2,ar3 will be sorted since we are traversing the string from left to right.

For every element in ar2, we will see if there exists an element in ar1 and ar3 such that $p^*r = q^*q$ using two pointers approach.

Time Complexity : $O(N^2)$

You can improve it to $O(N * \sqrt{N})$ by finding the divisors for q..i think we need to find divisors of q^2 ?...that will eventually be $O(n^2)$

Q2. A graph of n vertices is given. A source vertex s is given. You need to find the shortest path from starting from source s visiting all the other n-1 vertices and ending back at s.

$1 \leq n \leq 12$

Solution: dp with bitmask

Solution: backtracking passes all case

is the graph is undirected or directed ?.

Is it allowed to visit nodes multiple times??

Shouldn't the answer always be $2*(n-1)$ in case the graph is undirected ;)

??? Any link to solutions for question 2

I think it is similar to this one: <https://leetcode.com/problems/shortest-path-visiting-all-nodes/>

Isn't it TSP? Yes, It is, Yes

But in TSP every node is connected to every other node and you can visit a node once in the cycle.

Is this valid in this question?

Or the question is something like the above leetcode link?

IITR

1). A series of n bulbs are in a line out of which at least $k+1$ are fused. A man buys a set of bulbs containing k red bulbs and a multicolour bulbs along with some white bulbs. He has to replace the fused with k red, 1 multicolor and others with new white bulbs. How can he minimise the distance between the farthest red bulb and multicolour bulb. A string of 0 and 1 is given, where 0 denotes fused and 1 denotes working.

Input: n=7 k=2

1110100

Output: 2

Any solutions to this questions ??? ??

Any concept please highlight it here????? using sliding window, if a window contain k+1 diffused bulb, explore around its median position

2). A cat named Minerva is playing a game in the coordinate plane. She starts at (1,1) and can move by either doubling one of x, y or subtracting the greater one from the smaller { (4,1)->(3,1)}. You're given a point (x, y). Will she be able to reach the point? Output YES or NO.

0<= x,y<=3000000000 Is this limit correct?? YES

input: (3,4)

Output: YES

Explanation: (1,1)->(2,1)->(4,1)->(3,1)->(3,2)->(3,4)

Please add solution to this question. Can be solved using Euclid's Algorithm

Can you explain more IITD

• • •

• • •

Societe Generale

IITG

*****If someone has photos or remembers more questions please add them*****

Platform: HirePro

4 sections(Each section had a separate timer):

Logical reasoning and Aptitude - MCQs

English(Sentence correction and comprehension) - MCQs

Computer Science(DS, OOPs, Testing, Algorithms. Some topics I remember: Heap Sort, Black and white box testing, hashing, linked list as queue, types of testing etc.) - MCQs

Coding(2 questions - 40 minutes, had to write code from scratch, STL was allowed: int main(), i/p and o/p as STDIN, STDOUT):

Given a 2D matrix first you had to make it a square matrix by adding 1's. Then you need to find the sum of all diagonal elements of this square matrix which occur exactly K times as off diagonal elements(i.e. not in the main diagonal).

Example:

3 2

5 4 5 2 3 1

1

Answer: 5

Input format:

First two elements tell size of 2D matrix (m, n).

Next $m \times n$ numbers are the respective elements.

Last line has a single number which is the value of K.

Answer Explanation: First we make the matrix a square matrix as follows by filling the rest of the matrix with 1's:

5 4 5

2 3 1

1 1 1

Now, the diagonal elements are 5, 3 and 1. Since the value of K is 1, and 5, 3 and 1 occur 1, 0, 3 time(s) respectively as off diagonal elements, we only add 5 to our answer. Hence, the answer is 5.

sol: <https://ide.geeksforgeeks.org/nBkWI5FIX> (correct me if I'm wrong)

Initially all the doors are locked and each door needs a different key to be opened. Sarah has all the required keys to open any of the door. Find the minimum number of doors, Sarah needs to unlock to rescue Bob and Alice out of the building. Note: You cannot cross walls. Once you open a door, you don't need to open it again i.e. you only need to unlock a door once and you can cross it as many times as you want.

Provide constraints on size of matrix.

Q1. Is the source given ?
The boundary of the matrix has doors or empty paths marked through which you can enter.

Q2.(MORE Info on this)?

IITD

Platform - HirePro

4 sections, details same as above.

Coding 2 questions - (40 mins)

Q1. Given a stream of integers, insert it into a BST and find the path to the node at the maximum depth.

Q2. Given a matrix of size $n \times n$, and an element x . If the row and column containing x is r and c . If $r + c$ is odd the print the sum of all odd elements of the matrix else print the sum of even elements of the matrix.

Morgan Stanley

IIT BHU @ 12/10/2019

AspiringMinds AMCAT | STL Allowed | 3 Sections | 20m+20m+60m | Section Inter-switching Not Allowed - Sequential Sections | Section-C same for All

Section A : Debugging - 20m

7 questions with codes given in the compiler

Each had to be debugged so that they produce the right desired output

Total 7 Questions : Three points as input (structs of x and y coordinates), the code should return boolean if they can be sides of a Right Triangle. 2) Three numbers as input, the code should return an int as the product of the two larger numbers of the three. 3) A number as input, the code should void print a particular pattern (Like two * in line 1, four * in line 2, so on till line n, the error in given code was improper 'for' loop).

Section B : Aptitude - 20m

10 questions on Aptitude - Mixture of two liquids, Percentage, Time & Work, Probability etc.

8 were easy. 2 were difficult, had to infer from data given in Pie Chart / Bar Graph / Sales Table and calculate. Given two arrays, you need to count sum of n_1 and n_2 where n_1 = no. of elements in the first array that don't appear in second and n_2 = no. of elements in the second array that don't appear in first.

Section C : Coding - 60m

Problem 1 : Find no. of Uncommon Elements in Two Sales Lists. 13 Test Cases out of which 11 Hidden.

Solution Approach : Make two sets to store elements from array1 and array2 and initialise answer as $\text{len1}+\text{len2}$. Iterate for elements of array2 in set1 and array1 in set2 and accordingly decrease the answer.

The approach worked fine with all test cases, but more space-optimized solution can be used.

Problem 2 : Based on Topological Sort.

<https://leetcode.com/problems/course-schedule-ii/>

Someone please update the complete problem statement

Solution Approach : Kahn's Algorithm for Topological Sort [GFG](#)

Problem 3 : Advanced Knapsack Problem. Given 'n' products and their parameters : cost, wastage, and profit. Using each product at most once find maximum profit if maximum allowable cost 'maxc' and maximum allowable wastage 'maxw' are given.

Approach : m-dimensional Knapsack Problem [Wikipedia](#)

Someone please update the solution+1

No one was able to pass all test cases using proper knapsack method. Some bogus method which involved sorting and selecting the product greedily passed all test cases.

IIT Kharagpur

Open to all circuital (8+ CG) and non circuital (8.5+CG)

IITB

Amcat (Chutiya Platform)

Make sure if you are using `vector<pair<int,int>>` , write it as '`vector< pair<int,int> >`' cause it was parsing '`>`' as right shift.

Same pattern as IIT BHU

Coding Questions :

- 1) There are n cabs and n user locations. Distance between cab and location is evaluated by doing absolute difference of both. Any cab can be assigned to any user location at most once. Waiting time is evaluated by finding maximum distance between cab and user location in particular assignment of cab to user. Find minimum waiting time (Sort both arrays and find max difference)
- 2) There are N processes with each having b_i as processing time and there are m processors. We are also provided a digit d , $0 \leq d \leq 8$. Scheduler prioritize scheduling of the process in such a way that when we convert the burst time of a process in octal base, no of digits d in octal equivalent is max i.e for example if burst times are 1,2,10,16,32 then 32,16 and 2 will have more priority. If 2 burst times tie on basis of digit count then tie is broken by greater value. Find m processes which will get scheduled.
- 3) Same as IIT BHU's 3rd question

Plutus Research Capital

IIT-Delhi

3 quant questions subjective and 4 coding questions in 1.5 hours

Quant

Find the smallest number which has 30 divisors. (30 marks)

let n be a 5-digit number with sum of digits being 41. What is the probability that the number is divisible by 11. (60 marks)

<https://www.geeksforgeeks.org/puzzle-16-100-doors/> (60 marks)

Coding

Number of integer solutions to $3a+5b+10c = N$.

This is similar to Coin Change problem

An array of size n given. We had to find $\max((j-i) * \min(\text{arr}[i], \text{arr}[j]))$. Here i and j are array indices

<https://practice.geeksforgeeks.org/problems/find-maximum-value/1>

A pseudo code was given we had to code it. Something on bit operations.

Someone please add this question. I seem to forget it.

Disk of various size were bottom given on different days we have arrange them such that maximum is at the .

Eligibility and CPI cutoff???

Codenation

IITK

<https://owncloud.iitd.ac.in/nextcloud/index.php/s/zCk3agFHce4XxBs>

IITG

3 Coding question 75 min.

Profile: Software Development Engineer

Open for Mtech

Coding Question:

https://drive.google.com/file/d/1jlnJLNeZyipRw2Te8q640_4psTJTY718/view?usp=sharing

Solution for No Distraction:

There can be only one “special word” starting at index i. Find all the words and then use Segment Tree to process all the queries offline.

Service Now

IITG

please add MCQ questions IITG guys, we have test tomorrow.

Were there different sets or were they the same for everyone? Coding same for everyone, MCQs were same for everyone but order was different

please add CTC and Branch/CPI cutoff . Branches - Circuital (CPI - 6.00)

same for everyone

Profile: Associate Software Engineer

Open for MTech

Total 90 min test.

25 Mcqs: on aptitude, data structures, automata

1 Coding:

<https://drive.google.com/file/d/1AR5mJjorQm7nclz1XnQMX9PwZknr1ZNh/view?usp=sharing>

Was switching between sections allowed?? Yes

IIT BHU

Same Pattern as IITG, switching between sections was allowed.

25 MCQs : aptitude, probability, automata, OS

1 Coding : Same as IITG

IITG

I have chosen Masters signal Processing. The topics in the core part are Signal and Systems. Mathematics and Communication Topics .

Mostly they concentrated on simple Signals and Systems such as fourier transform of $t^* \exp(-t)$.

2. Finding the Nyquist Rate of linear combinatioN of two cos signals.

In Coding questions

1.Game winner from previous papers.

2.This is simple string manipulation based on 2 functions i.e, stoi and to_string

Input:a26b27c52a9c1d9a1b2

Output:a36b29c53d9

The link is provided here

https://github.com/manojyamasani/Placement/blob/master/stoi&to_string

IIT kgp

Messenger CS_Bachelors_2020_IIT Kharagpur SP_Masters_2020_IIT Kharagpur

hackerrank.com/tests/8tacsbdanf/questions/331btcppgj6

Apps Welcome to ERP Zimbra: Inbox (1,710) - rajes... YouTube GeeksforGeeks | A c... (1) Problems - Leet... Programming - Inte... CDC Placecom Calen... Code

MathWorks CS_Bachelors_2020_IIT Kharagpur 30m to test end H Ankit kumar

★ (Math Question) Find a Particular Term

Find the 101th term in the following sequence: -5,-8,-11 ...

Pick one of the choices

-305
 -308
 -302
 Not enough information

[Clear selection](#)

★ (Math Question) Minimum number of cards needs to be drawn

How many cards must be selected from a standard deck of 52 cards to guarantee that at least three cards of the same suit are chosen?

Type here to search 10:17 PM 16/10/2019

Messenger CS_Bachelors_2020_IIT Kharagpur SP_Masters_2020_IIT Kharagpur

hackerrank.com/tests/8tacsbdanf/questions/dn0o7hpq16

Apps Welcome to ERP Zimbra: Inbox (1,710) - rajes... YouTube GeeksforGeeks | A c... (1) Problems - Leet... Programming - Inte... CDC Placecom Calen... Code

MathWorks CS.Bachelors_2020_IIT Kharagpur 30m to test end H Ankit kumar

★ (Math Question) Minimum number of cards needs to be drawn

How many cards must be selected from a standard deck of 52 cards to guarantee that at least three cards of the same suit are chosen?

Pick one of the choices

12
 8
 9
 21

[Clear selection](#)

★ (Math Question) Probability for a Ball Selection

Type here to search 10:17 PM 16/10/2019

Messenger CS_Bachelors_2020_IIT Kharagpur SP_Masters_2020_IIT Kharagpur

hackerrank.com/tests/8tacsbdanf/questions/92r0t0mmqd7

30m to test end

Ankit kumar

(Math Question) Probability for a Ball Selection

A bag contains 3 white balls and 5 black balls. Two balls are drawn one-by-one randomly without replacement. What is the probability of getting a white ball in the second draw?

Pick one of the choices

11/56
 21/56
 20/56
 15/56

[Clear selection](#)

(Math Question) Rolling a dice

If a dice is rolled 10 times, what is the probability that 2 will appear 4 times?

Type here to search

Messenger CS_Bachelors_2020_IIT Kharagpur SP_Masters_2020_IIT Kharagpur

hackerrank.com/tests/8tacsbdanf/questions/cs6q3ifbs8

30m to test end

Ankit kumar

(Math Question) Rolling a dice

If a dice is rolled 10 times, what is the probability that 2 will appear 4 times?

Pick one of the choices

$C(10,4)(1/6)^4(5/6)^6$
 $C(10,2)(1/6)^4(5/6)^6$
 $C(10,2)(1/6)^2(5/6)^8$
 $C(10,4)(1/6)^8(5/6)^4$

[Clear selection](#)

(Math Question) Probability for a Ball Selection

Bag A has 1 blue and 4 yellow balls, bag B has 3 blue and 2 yellow balls. Suppose a ball is drawn randomly from either bag A or B, what is the probability that the ball is from A given that ball is blue?

Type here to search

Messenger × CS_Bachelors_2020_IIT Kharagpur × SP_Masters_2020_IIT Kharagpur × +

hackerrank.com/tests/8tacsbdanf/questions/4g71cm0p49o

Apps Welcome to ERP Zimbra: Inbox M Inbox (1,710) - rajes... YouTube GeeksforGeeks | A c... (1) Problems - Leet... Programming - Inte... CDC Placecom Calen... Code

MathWorks CS_Bachelors_2020_IIT Kharagpur 30m to test end H Ankit kumar

★ (Math Question) Probability for a Ball Selection

Bag A has 1 blue and 4 yellow balls, bag B has 3 blue and 2 yellow balls. Suppose a ball is drawn randomly from either bag A or B, what is the probability that the ball is from A given that ball is blue?

Pick one of the choices

3/4
 1/4
 1/6
 1/5

[Clear selection](#)

[Continue](#)

About Privacy Policy Terms of Service

Type here to search 10:17 PM 16/10/2019

MathWorks Intern BTech & MTech - CS - IIT Kharagpur... 55m to test end 0/12 Attempted Ankit Jhawar

★ (Coding) Array Game

Jessica has an array, *numbers*, consisting of n integers. She plays a game with this array where, in each move, she selects $(n - 1)$ elements and increments their values by one. She wants to know the minimum number of moves required to make all of the array's elements equal.

For example, if $n = 5$, and her array is $[3, 4, 6, 6, 3]$, she chooses 4 of the 5 elements during each move and increments each of their values by one. Indexing begins at 1.

Iteration	Array	Unchanged element
0	$[3, 4, 6, 6, 3]$	
1	$[4, 5, 7, 6, 4]$	4
2	$[5, 6, 7, 7, 5]$	3
3	$[6, 7, 8, 7, 6]$	4
4	$[7, 8, 8, 8, 7]$	3
5	$[8, 9, 9, 8, 8]$	4
6	$[9, 9, 10, 9, 9]$	2
7	$[10, 10, 10, 10, 10]$	3

Function Description
Complete the function *countMoves* in the editor below. It must return a long integer denoting the minimum number of moves required to make elements equal.

countMoves has the following parameter(s):
numbers[*numbers*[0],...*numbers*[*n*-1]]: an array of integers

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq \text{numbers}[i] \leq 10^6$

▶ Input Format for Custom Testing
▼ Sample Case 0

7

Explanation 0

Initially, $\text{numbers} = [5, 6, 8, 8, 5]$. Jessica makes the following moves:

1. Increments the values corresponding to all indexes except $\text{numbers}[3]$, so the array becomes $[6, 7, 9, 8, 6]$.
2. Increments the values corresponding to all indexes except $\text{numbers}[2]$, so the array becomes $[7, 8, 9, 9, 7]$.
3. Increments the values corresponding to all indexes except $\text{numbers}[3]$, so the array becomes $[8, 9, 10, 9, 8]$.
4. Increments the values corresponding to all indexes except $\text{numbers}[2]$, so the array becomes $[9, 10, 10, 10, 9]$.
5. Increments the values corresponding to all indexes except $\text{numbers}[3]$, so the array becomes $[10, 11, 11, 10, 10]$.
6. Increments the values corresponding to all indexes except $\text{numbers}[1]$, so the array becomes $[11, 11, 12, 11, 11]$.
7. Increments the values corresponding to all indexes except $\text{numbers}[2]$, so the array becomes $[12, 12, 12, 12, 12]$.

Recall that the set of indexes updated during each move must be of size $n - 1$. It took a minimal 7 moves to make all elements in the array equal, so we return 7.

▼ Sample Case 1**Sample Input 1**

```
3  
2  
2  
2
```

Sample Output 1

```
0
```

Explanation 1

Initially, $\text{numbers} = [2, 2, 2]$. Because all of its elements are already equal, no moves are required and we return 0.

VALID ANSWER



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- Coding Challenge -
- 11
- 12

★ (Coding) Whole Minute Dilemma

Your music player allows you to choose songs to play, but only in pairs and only pairs of songs with durations that add up to whole minutes. Given a list of song durations, you must calculate the total number of different pairs of songs that can be chosen.

For example, given song lengths [40, 20, 60], there is one pair of songs that can be chosen [40, 20]. While the third song is a whole minute long, songs must be chosen in pairs.

Function Description

Complete the function *playlist* in the editor below. The function must return a single integer which is the number of ways to choose two songs such that the total duration is a multiple of a whole minute.

playlist has the following parameter(s):

songs[*songs*[0],...*songs*[*n*-1]]: an array of integers wherein each element denotes duration of a song in seconds

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq \text{songs}[i] \leq 1000$, where $0 \leq i < n$

► Input Format For Custom Testing

▼ Sample Case 0

Sample Input For Custom Testing

```
4
10
50
90
30
```

Sample Output

```
2
```



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- Coding Challenge -
- 11
- 12

Explanation

The first and second songs pair to 60 seconds. The third and fourth songs pair to 120 seconds. No other pairs will satisfy the requirement.

▼ Sample Case 1

Sample Input For Custom Testing

```
5
30
20
150
100
40
```

Sample Output

```
3
```

Explanation

We can select three pairs of songs whose whole duration is a multiple of a whole minute. They are (1, 3), (2, 4) and (2, 5).

▼ Sample Case 2

Sample Input For Custom Testing

```
3
60
60
60
```

Sample Output

```
3
```

Explanation

There are three pairs of songs that end in whole minutes. They are (1, 2), (1, 3) and (2, 3).

Jio Saavn

IITB

3 Questions 60 Minutes Interviewbit

Given a value N , find all valid parenthesis combination strings of length 2*N (Backtracking)

- 1) Coin Change Problem

IITR

Eligibility : B.Tech - CSE, EE, ECE

M.Tech - CSE, EE, ECE

IMSc Applied mathematics

Test duration : 60 Minutes

Platform : Interviewbit

<https://www.interviewbit.com/problems/gas-station/>

<https://www.interviewbit.com/problems/max-product-subarray/>

<https://www.interviewbit.com/problems/rain-water-trapped/>

Given two particles , their initial coordinates x_1, y_1 , x_2 , y_2 and their velocities vectors in $[u_x, u_y]$, $[v_x, v_y]$. return 1 if collision is possible else return 0.

IITD

Test duration: 1.5 hours

Platform: Interviewbit

- 1) <https://www.geeksforgeeks.org/longest-increasing-subsequence-dp-3/>
- 2) <https://www.geeksforgeeks.org/detect-and-remove-loop-in-a-linked-list/>
- 3) <https://www.geeksforgeeks.org/first-negative-integer-every-window-size-k/>

- 4) Given N, T, P. N->Length, T->time, P-> a constant. End points and 1 and N. At T = 1, end at pos =1 moves up and so on. At point P + 1, P+1 moves up but point 1 settles down. At time T = N + 1, N - P + 1th point comes down and so on. Find the number of points that are up at any time T.
- a) $1 \leq N \leq 10^9$, $1 \leq T \leq N + P$, $1 \leq P \leq N$.
- i) Sol - if($T \leq P$) return T;
 Else if($T \leq N$) return P;
 else return $P + N - T$;

Phonepe

IITR

Eligibility : JEE ALL

Test duration : 90 Minutes

Platform : DoSelect

Use this link to look at the questions: <https://imgur.com/gallery/kZ4p560>

<https://leetcode.com/problems/maximum-subarray-sum-with-one-deletion/>

Find Median of the sorted array formed after taking the sum of all the non-empty subsets of the given Array.

Anybody knows solution of median problem?+1

https://atcoder.jp/contests/agc020/tasks/agc020_c

Given a string consisting of 'A', 'B' & 'C', you have to replace all occurrences of 'ABC' with 'BCA' and find the number of times it is possible to do the operation. For ex -

Given 'ABCABC' -> 'BCAAABC' -> 'BCABCA' -> 'BCBCAA'. 3 operations can be made.

Given a pyramid consisting of bricks numbered from 1 to N. Every level has bricks 1 more than the level above. Now if a brick is removed. We had to find the sum of all the bricks that fall fall.

Ex -

```

1
2 3
4 5 6
7 8 9 10

```

If you remove brick 9, bricks 5,6,2,3,1 will fall. Ans is sum of $9+6+5+3+2+1 = 26$.

What is the input format? Just N?Constraints on N? Input was an integer denoting the brick removed.

Squarepoint Capital

IITG

Profile: Graduate Software Engineer

Eligibility: All B.Tech.

Test Duration: 90 minutes

Test Platform: HackerRank

how many questions were there in one set?

2 MCQs (Questions were different for all) (From which topic?)

5 Coding Questions(Questions were different for all)

Given a binary string, count the number of substrings with the following constraints:

All 1s and 0s are contiguous(Ex. 00011, 11000)

The string has equal number of 1s and 0s.

Ex. Input: "001101" Output: 4 (Explanation: "01", "10", "01" and "0011")

You are given two numbers a and b. Determine the sum s for which maximum numbers between a and b (inclusive) have their sum of digits equal to s and also the number of times this sum s occurs. Note: Brute force won't pass. a,b<=1e18. h

(Hint: See <https://www.geeksforgeeks.org/digit-dp-introduction/>)

(Solution : <https://ide.geeksforgeeks.org/O3XN7ByK7J>) (Digit DP) //how to pass the input

Someone please provide the solution for this question, it has been asked twice or thrice+3

Find the minimum number of moves needed to sort an array such that all even numbers occur before odd numbers. A move is defined as swapping of two elements of the array.

Ex. Input: [3 5 4 6] Output: 2 (Explanation: Swap 3 and 6 and Swap 4 and 5). Note: Both [6 4 3 5], [4 6 5 3] etc. are acceptable.

<https://www.geeksforgeeks.org/making-elements-distinct-sorted-array-minimum-increments/>

Given Prefix sum matrix, obtain the original matrix.

<https://www.geeksforgeeks.org/prefix-sum-2d-array/>

IITD

Same as IITG

All questions different for everybody

2 MCQs

5 Coding questions (Easy

to Medium Difficulty)

• • •

• • •

Someone has deleted this question. Hence adding it again.

n m e

• • •

• • •

IIT R

All questions different for everybody

2 MCQs

5 Coding questions

Most of the questions are same from the above bucket

Given string containing ‘l’ and ‘r’ and two values x and y; you have to find the number of subsequences of given string to reach y from x; Here l means decrement by 1 in x and r means increment; **Constraints on length of string**

Given two arrays A and B. $x + y = A[i]$, $x \text{ xor } y = B[i]$. Find minimum value of x for every i. If no such x exist return 0. Length of array ≤ 50 , $A[i], B[i] \leq 10^{15}$.

<https://leetcode.com/problems/special-binary-string/>

<https://www.geeksforgeeks.org/number-groups-formed-graph-friends/> (Variation of this question)

Implement a stack with the following operations:

push v - push v at top of stack

pop - pop element from top of stack

inc i v - increment bottom i elements of stack by v

Print the value at top of stack after every operation

<https://www.careercup.com/question?id=6229105402970112>

Trell

IIT Kanpur

(Not mine, I took this from the FB group and pasted it here. Possibly that guy doesn't have edit access to this doc)

IIT BHU

Duration : 1 Hour for SDE, 20 Questions

Platform : Google Doc

For SDE Profile Data Science exam is compulsory

Same as IIT Kanpur : SDE Profile

Oracle

Did anyone do screen recording?

IITG

Pattern same as that at IITD.

IITD

It was visiting for Server Technology (Bangalore, Hyderabad, Noida) and OFSS (Pune, Kochi) Profile.

There were different sections which had questions from DBMS concepts and OS concepts. There was aptitude section, logical reasoning, english comprehension and many more such questions which are part of CAT syllabus. **No coding questions.** Every section was timed and no negative marking was there. You can skip a lengthy question which you can re-attempt at last if you have time for that section after visiting each and every question. There were multiple sets.

Were there any coding questions or only MCQs? Read the above paragraph carefully ONLY MCQs!!!

IITK

**45 min aptitude test (3 section , Time was divided in 3 part then again subparts) CGPA>=7.0
(Exceptions can exist)**

- 1)Same test for both profiles (Applications Engineer – Applications Development and Member Technical Staff – Server Technology)**
- 2) No Coding question**
- 3) back option was not available**
- 4) questions were like given an algorithms fill blanks in it's pseudo code. Once understand algo next 4-5 questions were on same algo (so don't skip questions. Remember you can't come back)**
- 5) Given array representation of BST find leftmost node , rightmost node, post order , pre order , inorder , level order.**

Suggestion: Don't skip question just looking at too long. You can spend half of your allotted time in single question rest will follow.

Bounce What was the resume shortlisting criteria? Branch? Cgp?

IIT BHU

Hackerrank. 20 MCQs + 2 coding in 1 hour. Switching sections allowed.

MCQs:

Lot of questions from DBMS theory - transactions(commit, rollback), Normal forms, Functional dependency simplification, No. of Primary keys
OS - which one shows Belady anomaly - (FCFS or LRU), Thrashing, Bankers algo, Deadlock prevention, deadlock avoidance
Quicksort worst case time complexity when a pivot is chosen such that both left and right subarrays have at least 1/5th elements
Options 1. $T(n) \leq T(n/5) + T(4n/5) + n$ 2. $T(n) \leq 2 T(n/5) + n$ 3. $T(n) \leq 2 T(4n/5) + n$
Java OOPS, try, catch, finally block.

Coding1: You have a set of flasks with certain markings at different levels and you have a set of requirements by customers telling you how much quantity they need. Since the markings are not continuous, you need to fill the container upto the equal or next highest marking, i.e, the container/flask must be filled to a level greater than or equal to the requirement. Every flask has different markings. You need to return the flask which will lead to minimum loss. (filling it higher than the requirement results in loss). In case of tie, return the flask with least serial number.

Example- Requirement = [2,4,7]

Flasks - 4, Markings = [[0, 2], [0,4], [0, 8],flask 0 marking pairs
[1, 2], [1,5], [1, 9],flask 1
[2, 5], [2,6],flask 2
[3,7]]flask 3

Example solution - Flask 0 = $(2-2) + (4-4) + (8-7) = 1$ loss

Flask 1 = $(2-2) + (5-4) + (9-7) = 2$ loss

Flask 2 = <cannot be used to satisfy third requirement>

Flask 3 = $(7-2) + (7-4) + (7-7) = 8$ loss

Thus the answer would be flask 0

Coding2: Predators problem(JUNGLE BOOK - NFRENCE LABS IIT M) (repeat from somewhere in the doc) <http://prochal.com/2019/06/the-jungle-book/>

Intel

IIT KGP

Platform: HirePro

For Software Profile: 45 Gate Level Questions in 35 Mins, 1(around 15 questions) Aptitude Section for 25 Mins, 1 coding question for 30 mins

Switching between sections is not allowed.

Coding question was of Hard Level, difficult to do in 30 mins.

Question: There is a rectangular classroom and students are sitting in it. Some students are interested in playing chess. 0 denotes students interested in playing chess, 1 denotes students not interested in playing chess. A student can only play chess with its neighbours. Neighbour of a student{(i,j)} are students who are at locations {(i+1, j), (i, j+1), (i-1,j), (i,j-1)}. You have to find maximum number of pairs that can play chess.

Example:

n=3,m=3

Maximized formation:(3 pairs)

(0 0 0)

(0 1 1)

(1 0 0)

Not maximized formation:(2 pairs)

(0 0 0)

(0 1 1)

(1 0 0)

constraints: $1 \leq n, m \leq 500$

If anyone finds any solution or approach please share. (Brute force DFS will give TLE)

It was most difficult question for 30 minutes**

Maximum Bipartite Matching?

Seems So “yes”

Can someone please provide the solution?

OLA (SDE and RE)

IIT D

2 hours Test-4 Coding Questions (Java,C/C++,Python allowed,other languages were also allowed)

given a string, count the occurrences of the distinct characters in it and form another string in relative order these distinct characters appeared. E.g: “occurrences” will give “o1c3u1r2e2n1s1”

Any constraints on the size of string? 10^5

Count The number of nodes in the subtree. Input was an array formed by dfs

Algorithm for forming the array (Given in Question)(Using this array you had to count the number of nodes in the subtree of any node) :

```
void generate(node x){
```

```
insert x in the array  
visited[x]=true  
for child in adj_list of node:  
    if (child not visited)  
        generate(child)  
    insert x in array
```

Laxman DBMS:

The Table was of form ID | Username | Rides

Implement a DBMS which should be able to perform given set of instructions:

SELECT* Should return all entries in the table Sorted by ID
SELECT* from Rides such that Rides>555 : Should Print all the entries with number of Rides greater than 555
INSERT (ID,Username,Rides) : Can be a new entry or update of existing ID
Other Functions were also to be implemented (Pretty much like standard SQL queries) Can be done using self-balancing Trees

You just had to write SQL queries or the functions implementing them on your own?
implement this function

How to do this ? Make self balanced trees that have log(N) update and log(N) insertion time or use hashing with collision resolve to have O(1) insertion and removal Did your test cases pass?

LOG FILE:

Ad-hoc questions. Read given lines every pair of line is like

STARTED operation1 ----some details----

COMPLETED response message execution time----other details

You have to tell:

- i) Total number of operations executed
- ii) Busiest Hour (Hour of request was given in started line,24 Hour format)
- iii) Least responsive operations (with highest average execution time)
- iv) Number of Distinct Operation carried out
- v) Number of Distinct Response messages received

WHAT IS THIS ABOVE QUESTION ? ??? CAN SOMEONE PLEASE EXPLAIN THIS? +1

We had some lines of code of the form:

STARTED GET'\ride' for https://..... 13:10:10

COMPLETED OK in 246ms ----some other useless details----

(and so on we will get input from console)

Now each operation is STARTED-COMPLETED pair..so you had to count how many operations you executed

Next GET'\ride' is a type of operation so you had to count how many such distinct types of operation you encountered

OK is the response message similarly there were other response messages and you had to count all distinct response messages

246 ms is the response time for GET'\ride' operation and hence you had to output the operation having highest response time among all operations

This operation was executed at 13:10:10 o'clock and hence you had to output the busiest hour (Just the hour like if ans was [10-11] you'd output 10 like that

What about APM profile? APM Test will be held at a later date.

Were the questions same for both Research and SDE profile? YES

IIT M

Difficulty: Moderate

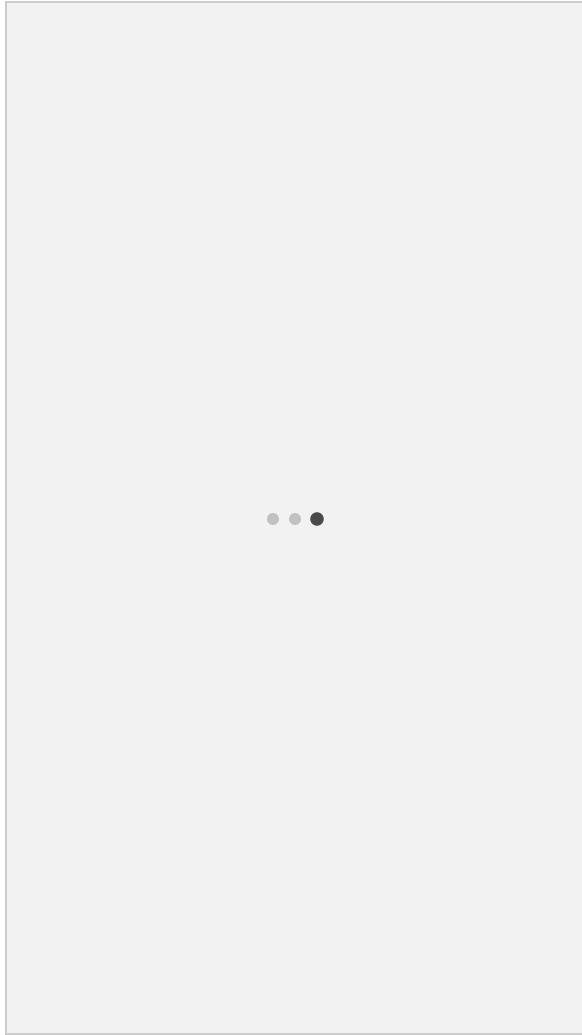
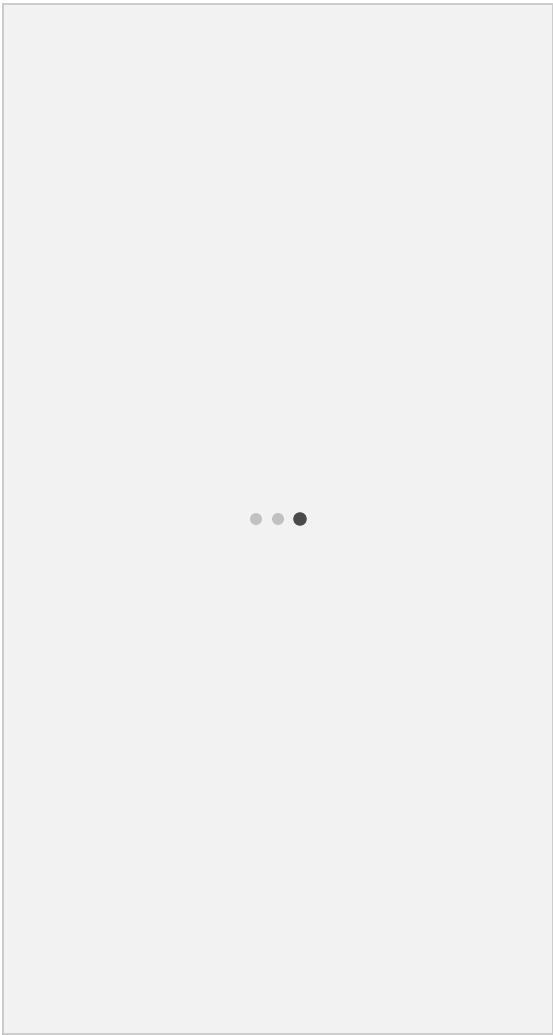
3 questions. (1.30 hrs)

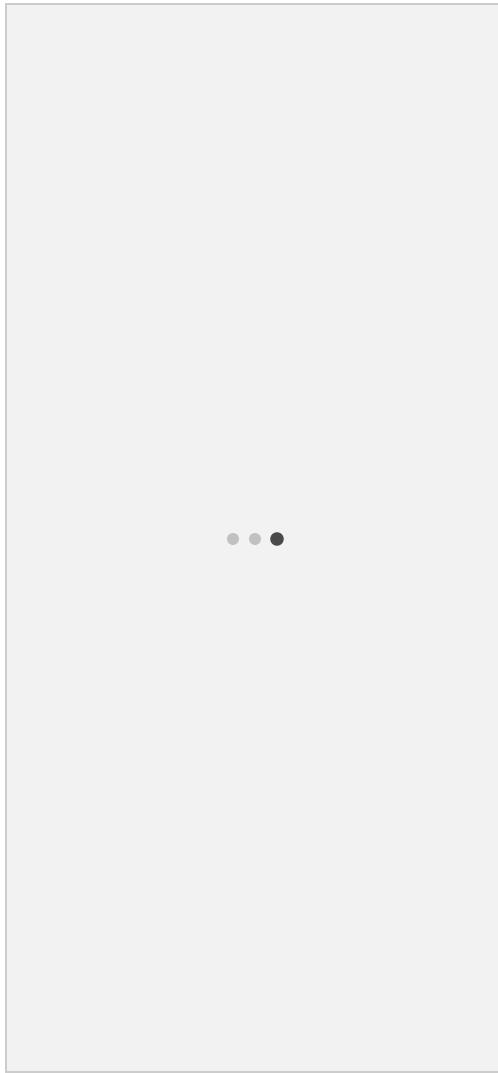
BFS

Sliding window in an array to find min distance between k contiguous elements.

lexicographic sort of 3 given strings

simple string compare function with sort() works!





Harness

IITD

1 hr Coding test on Hackerrank

2 Coding Ques. and 10 MCQs on OS/Networks

Eligibility??????+1

Coding Ques:

Easy Ad-hoc Problem que??

<https://imgur.com/a/7aL2Ggx>

This is solvable using simple bipartite checking right??.

NO. Need to find vertex cover using dp.

Can somebody please provide approach to solve it?+1

Eligibility ?

IITR somebody

All problems same as IITD

IITG

Mtech Allowed

CPI: 7.0

1 hr Coding test on Hackerrank

2 Coding Ques. and 10 MCQs on OS/Networks

Coding ques: <https://drive.google.com/open?id=10RZSpvUTdIfVte8BnCZ8ZFscM7fD2cei>

APT Portfolio

IIT Delhi

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Eligibility???

Über

IIT B

3 Questions 90 minutes

- 1) Weighted Job Scheduling Problem
- 2) Filtering String Problem from other IITs
- 3) Bob and Maze problem from other IITs

IITD

Uber shortlists more female candidates.

(Open for M.Tech ?) Yes

Q1. <https://leetcode.com/problems/cherry-pickup/> (Constraints were different: $n \leq 100$)

Q2. <https://leetcode.com/discuss/interview-question/202553/Traveling-is-Fun/>

R

please give constraints of Q3 (size of the array $\leq 10^5$)

Solution anyone?? Look comment->

IIT Roorkee

Q2.) Find the largest square sub-grid from a square grid of size n such that no square sub grid of this size has sum more than given maxSum . Constraints : $n < 1550$ & $A[i] \leq 1e9$

Trexquant

IIT KGP - Open for all branches (same questions as IITD & IITM)

1h 56m left

1. Second Order Difference with Missing Values

You are given company earnings data stored in a 2D matrix X where $X_{i,j}$ contains announced earnings for company i on day j. Because companies report earnings only a few times a year, X is a sparse matrix. A typical X may look like the following:

```
[[None, None, None, 8.6, None, None, None],  
 [None, None, 62.1, None, None, None, None],  
 [None, None, 67.7, None, None, None, None],  
 [9.1, None, None, None, None, None, None]]
```

In the example above, company 1 announced earnings of 8.6 on day 4 (i.e. $X_{1,4} = 8.6$).

You are tasked with computing the earnings acceleration for each company using the second-order backward finite difference. A second-order backward finite difference can be written as:

$$h^2(f(x) - 2f(x-h) + f(x-2h))$$

where f is the function we want to differentiate and h is the step size. In this case, f is the earnings and h is time in days. Assume that earnings are updated in regular intervals for every stock (that is, h is the same in every row). The output matrix should be padded such that the finite difference on day j is computed using information available on day j.

For bonus points, write a general function that can compute any n-th backward finite difference approximations at non-constant intervals.

Sample Input 1
[[1, None, 4, None, 2, None, 6]]

Sample Output 1
[[None, None, None, None, -1.25, None, 1.5]]

Explanation 1
Here, the earnings matrix X contains information about a single stock whose earnings are announced every two days. On day five, we have three points that we can use to approximate the acceleration. Using the formula above,

$$2^2(f(2) - 2f(1) + f(0)) = -1.25$$

This is stored in the output matrix on row 1, column 5. The update on day 7 is computed in a similar way.

Sample Input 2
[[9, None, None, None, 4, None, None, None, 3],
 [6, None, None, None, 1, None, None, None, 6]]

Test Results **Custom Input** **Run** **Submit Code**

1h 56m left

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 [9.1, None, None, None, None, None, None]]
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$$2^2(f(2) - 2f(1) + f(0)) = -1.25$$

This is stored in the output matrix on row 1, column 5. The update on day 7 is computed in a similar way.

Sample Input 2
[[9, None, None, None, 4, None, None, None, 3],
 [6, None, None, None, 1, None, None, None, 6]]

Sample Output 2
[[None, None, None, None, None, 0.25],
 [None, None, None, None, None, None, 0.625]]

Test Results **Custom Input** **Run** **Submit Code**

IIT Delhi - Open for all branches

Total 36 questions. 3 coding questions out of which 1 has to be done in python, while the other two could be attempted in any language. I would suggest to do all the questions in python, as their input was in such a way that it was easier to code in python.

IIT Madras

Two 2-D arrays were given of size numDays * numStocks. Let the two arrays be industry and ret. industry[i][j] gave the sector to which stock j belonged to on day i, while ret[i][j] was the return on stock j on day i. We had to output a 2-D of same dimension such that ans[i][j] is the average return for the sector to which stock j belongs on day i, on day i. Eg. industry = [[1,2],[2,2]], ret=[[0.5,0.6],[0.7,0.8]]. On first day stock 1 belongs to sector 1 and stock 2 belongs to sector 2, therefore average return remains same as individual returns. On day 2 both the stocks belongs to sector 2, therefore average return for sector 2 on day 2 is $(0.6+0.8)/2$. Therefore answer will be, ans=[[0.5,0.7],[0.7,0.7]]

A 2-D array was given and a function was given which takes in the stock prices of last three days. Return a 2-D matrix with applied function on each stock on each day. Was library like Numpy or Pandas allowed?- Why would u want them?

A python code had to be debugged, (had to add only a single line).

Then there was a paragraph, about 700 words. We had to count the number of instances of 'th', 've', 'ou' and 'gh' [essay link](#)

After this 30 questions were based on news. News headlines were given and we had to predict whether the stock of the given company in the headline would move up or down due to this.

35. List any number of factors which might affect the price of the stock.

36. Choose the best quality which describes yourself.

IIT Madras

Same as IITD

Sandvine

IIT BHU

Section 1: 15 Aptitude MCQs (20 minutes)

Section 2: 25 Technical MCQs (40 minutes)

Section 3: 4 Coding questions (30 minutes)

Code has to be written on simple text editor.

IIT (ISM) Dhanbad

Same as above.

RazorPay

IIT Mandi :

Coding 3 questions. Time: 1:30 min. Platform : HackerRank. CPI was 7 and above

10 MCQs : Mainly based upon tree traversals and pointers

Did the mcq include topics like os , networks, dbms??

Coding questions

Sort the Roman names : <https://www.careercup.com/question?id=5665093766348800>

Find Original 2D array from prefix sum 2D array.

Just opposite of this problem : <https://www.geeksforgeeks.org/prefix-sum-2d-array/>

You are given a string s i.e. “asdfgh” , and an integer array A[] = { 1, 2, 4 } here each entry in A is referring to an index in string s. Now for all values

A[i] you have to increase the characters occurring till the A[i]th index by 1.

In our example, the answer would be : “dvfghh”

IIT BHU:

Pattern same as in IIT Mandi

Coding:-

1. (Repeated from doc Service-now question)
[final discounted price](#)
2. <https://www.geeksforgeeks.org/find-the-first-maximum-length-even-word-from-a-string/>
3. Find the number of decreasing subsequences of length 3 in an array
(similar to <https://www.geeksforgeeks.org/count-number-increasing-subsequences-size-k/>
With k=3 and decreasing instead of increasing)

IITR:

Pattern same as in IIT Mandi

Coding:-

Link to other coding questions: <https://imgur.com/a/k8t34ot>

Enphase Energy

IIT BHU

Embedded Hardware Engineer - Eligibility - Electrical, Electronics - BTech, IDD, MTech - CGPA>=8.00

Mettl Platform

2 Sections - 1. Cognitive - Aptitude - 30 MCQs (Consists Quant, LR, DI, Verbal)

2. Domain - Technical - 20 MCQs (Questions on Computer architecture, 8086

Microprocessor, Digital)

Most of the questions are repeated across campuses

Total Time Duration - 55min

Difficulty level - Moderate

Link for questions asked in IIT Madras -

<https://drive.google.com/open?id=1SIVnZvLOYTZmiNyFADUBsJZZFC0c-qKf>

Oppo

There were 3 coding questions

Q-1 You have lower case characters ‘a’ to ‘z’ and you are given a number N which is the length of string. Now for a given value of N, you have to tell how many unique palindromes

can be formed using lower case characters. The range of N was $1 \leq N \leq 10^{18}$. Ans was to be returned by taking modulo.

Sol - We have 26 characters. Now if value of N is odd, Then to make palindrome string we need to fill

$(N/2) + 1$ places. For each place there are 26 options. Similarly if N is even, then we need to fill $N/2$ places. So the problem boils down to finding $\text{pow}(26, N/2 + 1)$ or $\text{pow}(26, N/2)$ which can be done in $O(\log n)$ using divide and conquer.

Q-3

3 Questions	Total Marks: 100.0	Question 3	Max. Marks 50.00
3 Programming Questions		Coin Sum	
1. Find the UnFairness	+ 20.0	Alice has N coins of amount 0 to $(N - 1)$ respectively. Bob wants to take K coins out of them. But Alice will only give it if the set of K coins is interesting.	
2. Funny Palindrome	+ 30.0	A set of coins is interesting if the sum of them is divisible by a unique integer M . Now Bob wants to know in how many ways can he get K coins.	
3. Coin Sum	+ 50.0	Since the answer can be large, so give $\% 10^9 + 7$.	
		Constraints: $1 \leq N \leq 10^3$ $1 \leq K \leq 10^2$ $1 \leq M \leq 10^3$	
		Format of the input file: First line : 3 space separated integers N, K, M .	
		Format of the output file: Print the answer.	
		Sample Input 4 2 2	Sample Output 2
		Explanation There are 2 ways :	(?)

Please post answer of 3rd question if someone solves.

(ctc of OPPO ?) Ans - 28 LPA

Have a solution in $O(N \cdot K \cdot M)$ not sure if it will pass. Can you tell your approach?

Dunzo

IIT Madras :

Coding 2 questions. Time: 1:20 min. Platform : HackerRank. CPI was 7.5 above

Counting no of inversions in array. (Inversion is, for given arr and index i,j such that $i < j$ and $\text{arr}[i] > \text{arr}[j]$. Question was framed slightly different way but they were asking for merge sort only. <https://www.hackerrank.com/challenges/ctci-merge-sort/problem>

Given array of strings of same length and a target string find number of ways to make the target string such that index used for making the string is in strictly increasing order.

Ex: Strings :1: “valya”, 2: “lyglb”, 3: “vldoh” . Target string: “val”

Ans: 4.

How: If i number above strings as 1-2-3 then

Can someone explain what the question is saying?

Can be done through dp. Passes all test cases.

Can you share the DP approach

IITD :

- String Q of IIT Madras.
- One
- operation is replacing $A[i]$ with $A[A[i]]$ for all i can the given array be sorted using such operations if yes then how many operations needed.
- Pair of ID's and their candy preference were given. We have to build a graph for each candy. In these graphs find the largest connected component and return the maximum of product of largest two ID's in those connected components.

Bidgely

IITR :

4 problems , 90 minutes , Hacker Rank.

Eligibility: B.Tech/IDD: CSE, EE, ECE (With a 7.0 CGPA cut-off)

Knapsack problem with changed language (https://atcoder.jp/contests/dp/tasks/dp_d)

Given a binary string of length 2^N , you can apply N operation and In one operation you can choose any two index(i, j). Invert the bits in between (i, j inclusive). Find the

number of ways of setting all the bits to 1. Each pair of index can be selected at most once.

eg . N = 2 , s = 0110 (ans = 4) , N = 5 , s = 111111111 (ans = 5!)

Given a matrix with values either 0 , 1 , 2 . Each cell denotes a cubicle in office 0 denotes empty , 1 denotes employee is non - diseased , 2 denotes employee is diseased. If an employee is diseased , it can infect the employees surrounding him ($\{i+1,j\}$, $\{i-1,j\}$, $\{i, j+1\}$, $\{i, j-1\}$) on a single day. Find minimum days in which ,all employees will be infected. Return -1 if all won't be infected. eg . $\{\{0,1\}, \{1,0\}\}$ ans = -1.

Solution :Take an auxiliary matrix for storing number of days it will take for the cell to be infected , apply dfs from all the points where $arr[i][j] == 2$,pass a day variable in the function , minimize the number of days in every dfs call for every cell it can reach.

. <https://www.interviewbit.com/problems/simplify-directory-path/>

Published by Google Drive—Report Abuse—Updated automatically every 5 minutes

Exxon Mobil:- IITk (open for MSE and Civil)

30min 25 question based on VARC 3 paragraph and 12 questions on grammar

30 min Technical:- for MSE they asked 25 questions based on basic metallurgy thermodynamics, different form carbon steel etc.

COMMVAULT

IIT (ISM) Dhanbad

Time- 50min, 5 ques. (Platform??geekd.com,the servers were too bad, were getting disconnected.) only C,C++ allowed

- 1) Sum of values on the direct path between node 'u' and node 'v' of binary search tree.
- 2) Josephus problem.
- 3) <https://www.geeksforgeeks.org/segregate-even-and-odd-elements-in-a-linked-list/>
- 4) Print all permutations of a given number which are greater than that number (input in the form of char array)
 - a) Array question, with some constraints which ended up to be, sum of minimum number on the left hand side of for each value on the given array.

IITD

- 1) Maximum value of a node on the direct path between node u and v of BST.

- a) Sol: Find LCA and using LCA as root, find the maximum of path
- 2) Find Smallest integer greater than K which does not have any consecutive ones in binary form.
 - a) (Only Log(K) solution accepted)
 - 3) Same as 3rd above.
 - 4) Find the number of pairs of integer which does not belong to the same component.
 - a) Sol: Simple Union Find works
 - 5)
 - 6) .. (number with trailing 0's are also counted).

AlphaGrep Securities

IITKGP

No CPI Cutoff, departments allowed : CSE, EE, ECE, MNC(Maths and Computing)
Open for MTechs too!

Test paper had only 5 coding questions, 90 mins. All primary languages were allowed.

Q1 - 100 marks, Q2 - 125 marks, Q3, 4, 5 - 75 marks each

Q1) Image Matching:

Given two matrices of the same size, each element is either a 1 or 0. Two 1's are adjacent if they one is directly below, to the left, to the right or above the other. A connected component in matrix is formed by a set of ones which are adjacent to each other, such that no other adjacent 1 can be added to it. Need to find number of matchings.

A matching is defined when any connected component of two matrices exactly overlap.

Soln : Use BFS on each one to get connected components, and then check for perfect overlap

Q2) Palindromic graph

Given a tree of n nodes and n-1 edges, in which each edge has a character assigned to it. For any two vertex, a string is formed by characters of all the edges of minimum path between both of them. If characters of that string can be readjusted to get a palindrome string, a valid string is found!

Need to find the number of valid strings in the given tree.

Q3) The Number Game

Given a list of numbers(numbers can be repeated), you can only select 3 numbers at a time from the list. Max and minimum of those three numbers will be deleted from the list.

For a given list of numbers, find maximum length of list with distinct elements remaining after performing any number of selections.

Ex : If list is [1, 2, 3, 3, 2] then answer will be 3, by selection (2, 2, 3) one time and then stop.

Soln : Just remove repeated numbers first until every number is repeated at most 2 times. Now consider numbers repeating 2 times. Take any of that number two times and third number as one of those numbers. Keep eliminating repeteadness this way and get the ans.

Q4) Text Formatting:

Didn't remember.

Q5) Meetup Schedule:

Given a list of (arrival, departure) date for n number of investors, find the maximum number of investors you can meet, if you can meet at most one investor per day.

Soln : Sort by arrival times. If arrival times match, sort by departure times. Meet investors in the order of sorted order.

Won't this solution fail if the arrival, departure times are :

(0,4)(0,0)(1,1)(2,2)(3,3). So, even though he can meet 5 investors, using above algo he would only be able to meet 4. Assuming here that the investors arrive in the morning and depart in the evening.

SALESFORCE

IIT DHANBAD, 29 OCT

Duration - 60min.

2 coding questions and 15 mcqs(topics- ml, dbms, tcp)

What was the coding platform ? Hackerrank STL Allowed ? Yes

1) Given 2 strings and find if we can add character on str1 and not remove any character from it to make it equal to str2.

Eg. str1 = "butfl", str2 = "beautiful" (output== yes)

Explanation - add character btw 'b' and 'u' and we can add between 't' and 'f' and then between 'f' and 'l'.

Note- sequence must be same (like if str1= "utflb" and str2 = "beautiful" output ==no, as the sequence of character appearing in str1 is not same as str2).

2) Smallest length of substring containing all characters of another string. With string being circular.

Subsequence or String? Based on the example below, it is substring...not sure though Subsequence. Question is unclear. Can someone elaborate please?

eg . str1 ="melody" str2 ="ldym" length == 5

IITH

Duration - 65min.

2 coding questions and 15 mcqs(topics- ml, dbms, tcp)

Q1- String Manipulation, List of bulleted strings is given and task was to remove bullets and extra spaces and remove duplicates after converting everything to lowercase.

Q2- <https://imgur.com/gallery/AR4xlm4>

IIT KGP guys, please upload some questions of Bajaj Auto (for Materials Science & Engineering dept) and Electrical Department also:)

CLOUDERA

IIT (BHU)
29 Oct Test
2 hr duration 5 Questions
Platform: Hackerrank

<https://www.geeksforgeeks.org/cloudera-interview-experience/>

Exactly same pattern and questions as on gfg

IIT(Delhi)
05-11-2019
Same as IIT BHU
-Histogram question was replaced by prison question in this link

<https://www.geeksforgeeks.org/cloudera-inc-interview-experience-software-engineer-internship-full-time-on-campus>

Oneplus

Campus:IIT Bombay

Test: Coding(2 questions 1hr)

Shortlisting criteria: Open for all branches and programmes(B.Tech,M.tech,...) No CGPA requirement as such.

Platform : hackerearth(can use Libraries)

Full screen is must(cannot change the tab while attempting exam)

Test case has a time limit of 2 secs.(Brute force not accepted)

2 Programming Questions

1. Parent node

+ 50.0

2. Counting subarrays

+ 50.0

You are given an array A of N integers. Let i denote the length of the subarray of the array A .

For every possible length of subarray i.e for every $1 \leq i \leq N$, you have to count the total number of subarrays such that the sum of all the elements in it is less than or equal to K .

Input format

For each test case T

- First line: Contains K and N
- Second line: Contains the array of elements

Output format

For each test case, print N space-separated numbers where each number denotes the number of possible subarrays of length i meeting the condition stated above.

Constraints

$$1 \leq i \leq n$$

$$1 \leq T \leq 20$$

$$1 \leq N \leq 10^5$$

$$1 \leq K \leq 10^{15}$$

$$1 \leq A_i \leq 10^9$$



Different people get different questions in one plus

https://docs.google.com/forms/d/e/1FAIpQLSdnJLCICMufNc2M3dyIYYlv3L57fkxVSE6sAKoGw44Pu7A7pA/viewform?usp=sf_link

2 Questions	Total Marks: 150.0
2 Programming Questions	
1. Sequence of integers	+ 100.0
2. Counting subarrays	+ 50.0

Question 1

Max. Marks 100.00 

Sequence of integers

You are given a sequence of n integers, (a_1, a_2, \dots, a_n) . You are required to perform the following operation and return the result:

For a given integer x , calculate the value of the expression $\min_{i=1}^{j=n-x+1}(\text{fun}(a_i, a_{i+1}, \dots, a_{i+x-1}))$

Here, $\text{fun}(a_i, a_{i+1}, \dots, a_{i+x-1})$ returns the value of the rightmost number with the highest number of distinct prime factors.

In other words, if $m_i = \text{fun}(a_i, a_{i+1}, \dots, a_{i+x-1})$, then your task is to determine the value of $\min(m_i)$.

Input format

- First line: Two integers, x and n
- Second line: n integers, (a_1, a_2, \dots, a_n)

Output format

Print an integer denoting the value of the expression.

Constraints

$$1 \leq n \leq 10^6$$

$$1 \leq x \leq n$$

$$0 \leq a_i \leq 10^6$$

Sample Input

3 5

2 4 6 10 5

Sample Output

6

Explanation

$$m_1 : \text{fun}(a_1, a_2, a_3) = 6$$

$$m_2 : \text{fun}(a_1, a_2, a_3) = 10$$

$$m_3 : \text{fun}(a_1, a_2, a_3) = 10$$

$$\min(m_1, m_2, m_3) = 6$$

Solution



Google

IIT Roorkee

Salary details:

Hardware Engineer- B.Tech/ B.E.

CTC Breakup:

Rewards Component	Value (INR)	% of Base Salary*
Base Salary	1,400,000	100%
Target Bonus	210,000	15%
Value of new hire equity** (12 months' vesting)	740,000	53%
Benefits	140,200	10%
Sign-on bonus	150,000	11%
Total Rewards Estimate for the first 12 months	2,640,600	

Values above are rounded to the nearest hundredth

*Base salary comprises basic salary and basket of allowances

**The above enlists equity for the first 12 months only and does not include equity for the next 3 years, which is over and above the CTC indicated above

Hardware Engineer- M.Tech/Dual

CTC Breakup:

Rewards Component	Value (INR)	% of Base Salary*
Base Salary	1,500,000	100%
Target Bonus	225,000	15%
Value of new hire equity (12 months' vesting)	782,500	52%
Benefits	147,200	10%
Sign-on bonus	150,000	10%
Total Rewards Estimate for the first 12 months	2,804,700	

Values above are rounded to the nearest hundredth

*Base salary comprises basic salary and basket of allowances

**The above enlists equity for the first 12 months only and does not include equity for the next 3 years, which is over and above the CTC indicated above

Medical requirements: No

Bond or service contract: No

Eligibility: B.Tech.-EE, ECE, Engineering Physics

IDD-EE, ECE

M.Tech.-EE, ECE, Physics

Profile: Hardware

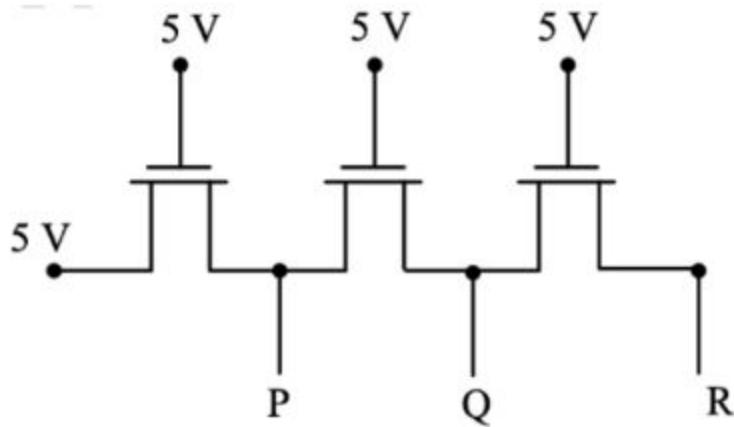
The selected options may not be correct. I'll try to upload with options as well

Questions

Pre-screening Challenge: Hardware Engineer

Questions

In following circuit employing pass transistor logic, all NMOS transistors are identical with a threshold voltage of 1V. Ignoring the body – effect, the output out-put voltage at P, Q and R are 2 points



Predict the output of the following code snippet-- 2 points

```
#include <iostream>
using namespace std;

int main()
{
    int i = 32, *ptr = &i;
    char ch = 'A', &ch_a = ch;

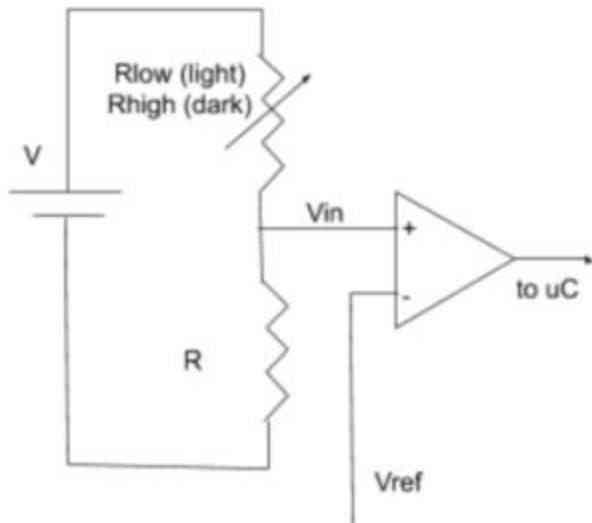
    ch_a += i;
    *ptr += ch;
    cout << i << ", " << ch << endl;
    return 0;
}
```

How many 2-Input xors are required to make 256 bit even parity generator. 2 points

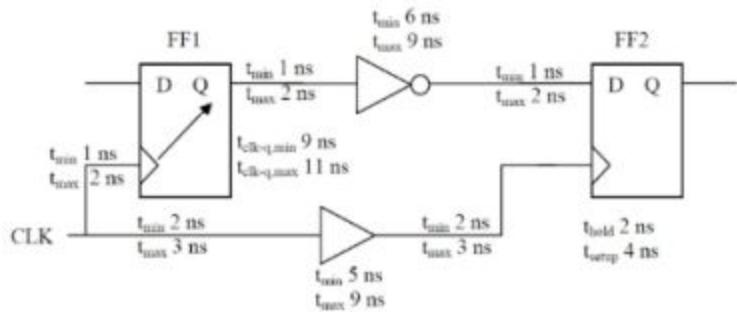
When writing an FSM state machine that transitions in only one direction (E.g. A->B->C->...->A), which of the below state encoding representation will result in least number of toggles in circuit? 1 point

- Decimal
- BCD
- One Hot
- Grey Code

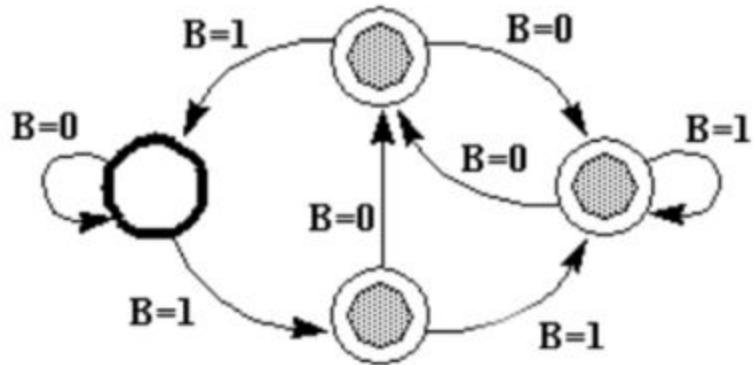
Given the following circuit deduce the value of R, so that the voltage swing at the comparator input ($V_{in,light} - V_{in,dark}$) between light and dark is maximised. The variable resistance shown is an LDR (light dependent resistor) whose resistance becomes R_{low} in light and becomes R_{high} in dark. 4 points



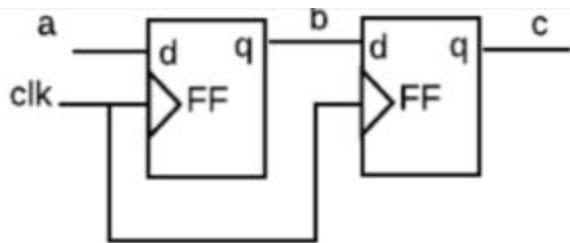
What is the minimum clock period required to operate the below circuit without any violation ? 4 points



In below FSM, starting state is marked by Bold circle. Is there a synchronising sequence of input which brings out the FSM from unknown state to its starting state? 1 point



- Sequence 01010
- Sequence 00010
- Sequence 11101
- No such sequence exists



**assign b = a;
assign c = b;**

```
always @ (posedge clk)
begin
    b = a;
    c = b;
end
```

Option 1

Option 2

```
always @ (posedge clk)
begin
    b = a;
    c <= b;
end
```

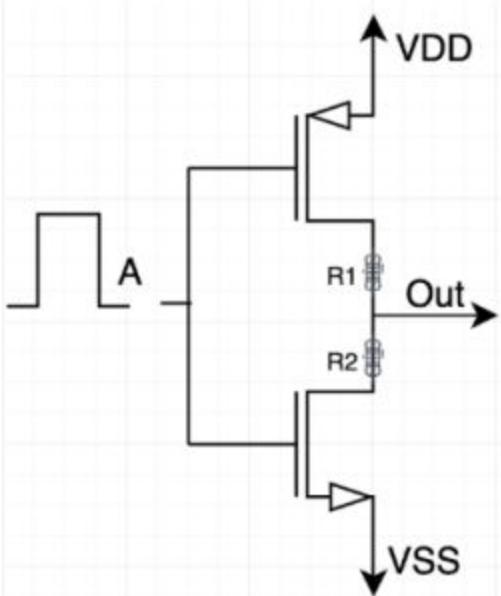
```
always @ (posedge clk)
begin
    b <= a;
    c <= b;
end
```

The drain of an n – channel MOSFET is shorted to the gate
 so that $V_{GS} = V_{DS}$. The threshold voltage (V_T) of MOSFET
 is 1 V. If the drain current (I_D) is 1 mA for $V_{GS} = 2$ V, then for
 $V_{GS} = 3$ V, I_D is

1 point

If a square input A is given to the circuit below, which of the statements hold true?(R1,R2 are very very small resistances.)

2 points



- A. Out will follow response A and Initial state of Out is VSS
- B. Out will follow inverted response of A and Initial state of Out is VDD
- C. Current waveform through R1 is an impulse function on positive edge of A
- D. Current waveform follows A
- E. NMOS is in linear mode when A is high
- F. PMOS is linear mode when A is in transition

Suppose you have the following bit of C code running on a system ---

```
for(i=0;i<N;i++){
    for(j=0;j<N;j++)
        sum+=Array[j][i];
}
```

To improve performance, you add a simple modification to the code —

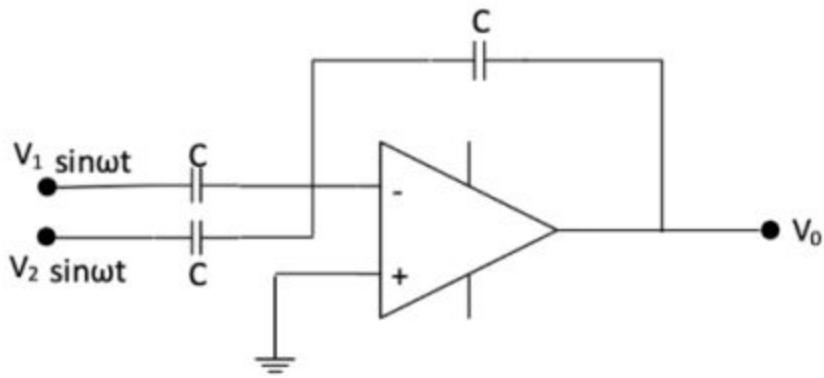
```
for(i=0;i<N;i++){
    for(j=0;j<N;j++){
        temp=Arr[i+16][j];
        sum+=Array[j][i];
    }
}
```

Ignoring block/page size boundary conditions, what enhancement does this modification produce ?

- Reduce memory usage
- Reduce cache misses by prefetching
- Improve cache access time by storing data in temporary register
- No improvement as such

What is the output voltage for the below circuit?

1 point



- Zero
- $-(V_1 + V_2) \sin \omega t$
- $(V_1 - V_2) \sin \omega t$
- $(V_1 + V_2) \sin \omega t$

Consider the circuit below. The input to A is a square pulse with 50% duty cycle and Time period T. The two inverters have delays d_1 and d_2 respectively, the XOR gate has no delay. What is the condition to get a duty cycle of 50% at output of XOR gate ?



- $(d_1+d_2) = T$
- $(d_1+d_2) = T/2$
- $(d_1+d_2) = T/8$
- $(d_1+d_2) = T/4$

The effective channel length of a MOSFET in saturation decreases with increase in

1 point

- Gate voltage
- Drain voltage
- Source voltage
- Body voltage

Consider a simple repetition coding to combat errors in a transmission channel. To transmit one bit of information, it is repeated 3 times on the channel and the receiver looks at the 3 bits to estimate the transmitted bit. If the bit error probability of the channel is P_e (probability of a transmitted bit getting flipped), then what is the probability of error after receiver error correction module.

2 points:

- $1 - [(1 - P_e)^3 + P_e^2(1 - P_e)^2]$
- $1 - P_e$
- $1 - [(1 - P_e)^3 + 3P_e^2(1 - P_e)^2 + P_e^3]$
- P_e^3

If I want to construct 1024 input multiplexer only using 2 input multiplexer. How many 2-input multiplexer will be required? 2 points

- 127
- 1023
- 511
- 11

In a CPU with 16 pipeline stages, each pipeline stage takes 1 cycle to process an instruction. Assuming no hazard instruction enters the pipeline and each instruction goes through all the pipeline stages, calculate cycles taken to process 1000 instructions. 2 points

- 1000
- 1015
- 1005
- 1010

What is the output of this C code when run on a 64-bit machine?

2 points

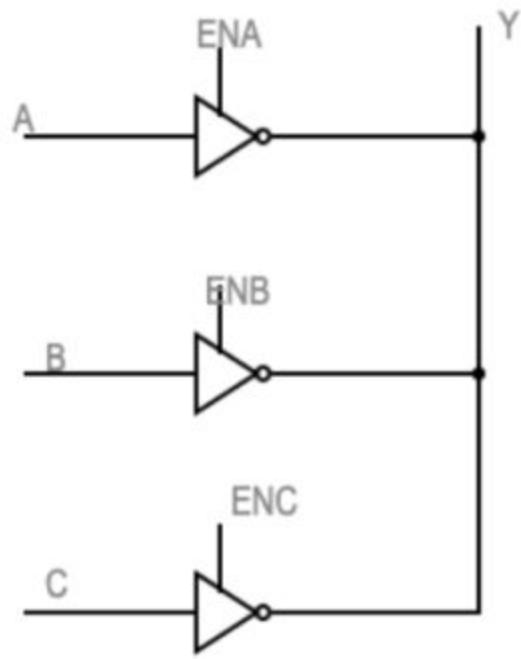
```
#include <stdio.h>
int main() {
    int c = 130;
    double t = 81992;

    int *m = &c;
    double *k = &t;

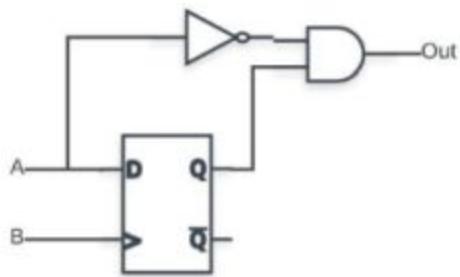
    printf("%d, %d", $sizeof(m), $sizeof(k));
    return 0;
}
```

- 32, 32
- 32, 64
- 130, 81992
- 64, 64

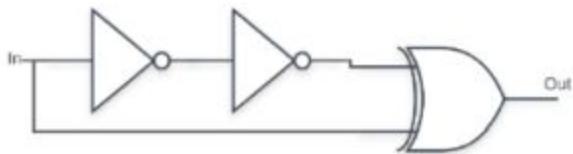
Consider the circuit with inverters having enable. If EN=0, output of the inverter is at high impedance. If EN=1, output = \sim input . Find the probability of a contention at the output node Y. (A contention will arise at Y, if outputs of two inverters are different)



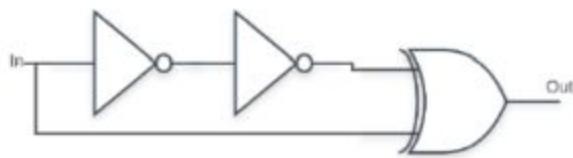
Which of these circuits indicate Positive Edge Detection logic? 4 points



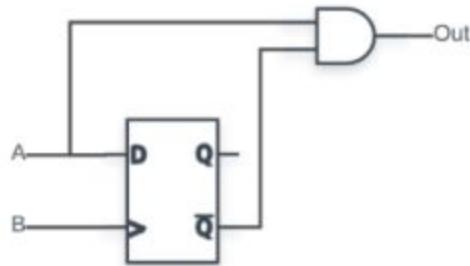
A.



B.



B.

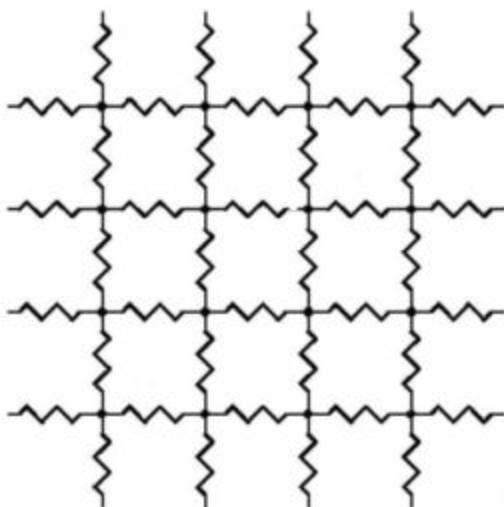


C.

D. None of the above

Consider an infinite 2-D grid of $1\ \Omega$ resistors as shown in the figure below. What is the resistance across any two adjacent vertices of this grid?

2 points



Consider having a wire of Length 'L' and has the total delay = 100ps. Now if we split the wire into two equal halves of length $L/2$ each and connect both the wires by placing a buffer in the center. Assuming the delay of buffer is 25ps. What is the delay of the entire system ?

- 75ps
- 125ps
- 100ps
- 50ps

How big a Look-Up Table (LUT) is required to implement a 4-bit multiplier?

- 128 bits
- 256 bits
- 1 Kbits
- 2 Kbits

The original Pentium 4 had a 4-way set associative L1 data cache of size 8 KB with 64 byte cache blocks. If the CPU address is 32 bits and the memory is byte-addressable, how many bits does the tag use?

- 17
- 21
- 16
- 13

gol

(strawberry 2019 google iitr)(for which profile?)
-For google hardware. Google software not yet updated.

MASTERCARD

IIT BHU

10 quant 10 LRDI 10 English

Quant

1. No of steps visible in elevator. Ans 56
2. No of 4 digit no. possible. Ans 235
3. Rate of interest. Ans 12.5%
4. Hours required by C to fill the tank. Ans 14
5. Probability of rod. Ans $\frac{2}{3}$
6. Different possible pair of R & K. Ans. 15
7. No of AP possible. Ans 7
8. Time n work question. Ans 10.5
9. Ratio of 4th term in two APs. Ans 3/2
10. Coins to son and daughters. Ans 63 or 67. Check the constraint on minimum no of coins

Paypal

IITR

- 1.) Shared Interests (<https://imgur.com/a/qMMIigr>, 2nd question in this)
- 2.) Max sum path in n- ary tree. Parent array given, value associated with each node given.
- 3.)

Veritas Questions @ roorkee

Jungle book

<https://leetcode.com/problems/coin-change/> (language change , code same)

20 MCQ

1.