

#### Problem A:

Author: Md Mahbubul Hasan

Special Thanks: Shiplu Hawlader

Solution: I wanted contestants to apply their common sense here instead of coding. They could count "A" by hand, or could use "ctrl+F" option to show number of appearance of "A" in the segment (may be difference between id of the first A and last A), or could copy paste it to some notepad and use "ctrl+H" to replace all occurrences of A to some other character and see the response like: "Replaced 97 A with Z".

#### Problem B:

Author: Zobayer

Special Thanks: Shahriar Manzoor, Arifuzzaman Arif

Solution: There is  $O(1)$  closed formula which you can consult from the epic post in math exchange website. Binary search is the most simplest thing to do (instead of deriving the  $O(1)$  formula for quite a few pages). Just assume position of P, say  $P'$  and try to calculate  $Q/R$  and then  $P''$  by shooting perpendicular. Depending on which side  $P''$  falls with respect to  $P'$ , we will move  $P'$  towards A/B.

I would like to make some additional personal comment. Using online resource is one thing, and seeking ones help is another thing. Whoever did this just ruined the entire contest that we prepared working hard for last few weeks. I dont know but did the current education system took us so low in the bottom of well that we dont even see what is "right" and what is "wrong" or what? I dont understand why does the person even want to participate in the contest if he wants to solve unethically? It is not some internal contest or some practice contest, this is related with icpc dhaka site even then he/she did not care? Really #respect to your mentality. I don't want to hope/wish that you face such same situation but, I hope you at least could imagine one ruining your weeks of hard work just acting like a stupid "clever" moron as you did.

#### Problem C:

Author: Monirul Hasan

Special Thanks: Shahriar Manzoor

Solution: Simple string problem. Actually not that much related with string. This is jus to run a loop and determine which category a movie is, and then running loop for each of those categories.

#### Problem D:

Author: Shiplu Hawlader

Special Thanks: Hasnain Heickal

Solution: BFS/DP/Dijkstra. Just consider the rows in which there is at least one tree as node including top and bottom row. Also you need to maintain some set for each column (actually only the columns that has some tree on it or in its adjacent column of treasure cell). Using that set you can determine the edges from each node. Not that difficult but you need to have some good knowledge of stl and some luck with implementation.

#### Problem E:

Author: Md Mahbubul Hasan

Special Thanks: Hasnain Heickal, Mohammad Hafiz Uddin

Big Thanks: A team from IST and Shiplu Hawlader.

Solution: This was another great effort from my side to produce wrong data (the other one was may be problem I of dhaka iclc 2012). It had alternate solutions from two very good contestants and trainer and also received numerous "wrong" solution from lots of top teams of BD. By this I don't want to hide behind the curtain but would like to show how tricky was the "wrong case". The tricky case was like: "1 1 2 2". In my absence during contest, Shiplu decided to remove such case and rejudge. That was the right decision to make at that moment. Thanks to IST team for informing us this bug. And a big apology from my side.

I don't have much to say about this problem, just a few if-else is required and an array containing the number of days of months.

Problem F:

Author: Hasnain Heickal

Special Thanks: Shiplu Hawlader

Solution: Meet in the middle. I personally liked this problem. Just divide the coins into two equal sets (or having 1 difference). Say in one part there is  $N_1$  coins and in the other there is  $N_2$ . Then generate all  $2^{N_1}$  sets and also  $2^{N_2}$  sets. The idea is you will pick a subset from first  $N_1$ 's and rest from  $N_2$ 's so that you can make the prefix sum  $K$ . So you can loop through first set and look for  $K - \text{sum subset from second one}$ .

Problem G:

Author: Anindya Das

Special Thanks: Mohammad Hafiz Uddin

Solution: Another BFS. Nothing to say more on this problem actually. Common BFS problem.

Problem H:

Author: Hedayet

Special Thanks: Shiplu Hawlader

Solution: Draw an outline around the remaining cells. Now start from upper-left most corner and go to lower-right corner. Each time either you move down or go right, depending on the outline. So if the entire picture has  $X$  row and  $Y$  column then you will make  $X$  right move and  $Y$  down move in some order. Actually for each order there is some valid game config. So the answer is: in how many ways can you arrange  $X$  same thing and  $Y$  same thing? Answer is:  $\text{ncr}(X, Y)$ . Since the mod is prime, you can precompute  $n! \% P$  and modular inverse of  $n!$ .

Sorry for any typo or spelling mistakes of names. Good luck with icpc.