

Ural Online Judge Hints

1338-1346 USU Championship 2004

1338 – Automobiles

Do BFS Search from the goal checkpoint. If two paths with same length meet at some point X, exactly one of them should be chosen (defined as the best path up to this point) according to the priority in problem description. Think more before you work☺.

1339 – Babies

The description is not clear enough I think. To put it easy, I am going to clarify some facts:

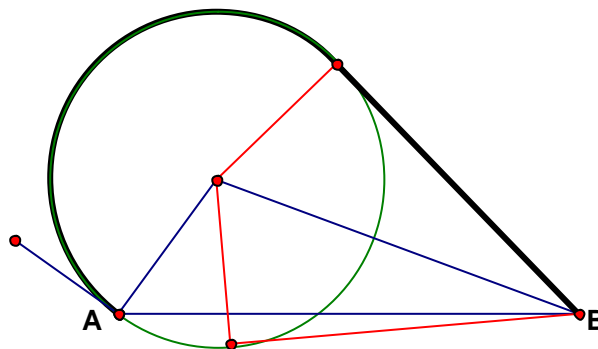
Each boy loves at most one girl, and each girl is loved by at most one boy; each girl loves at most one boy, and each boy is loved by at most one girl.

We are asked to fall them in pair, so that each boy/girl in love (it do love someone else) is a partner of either the one it loves, or the one loves it.

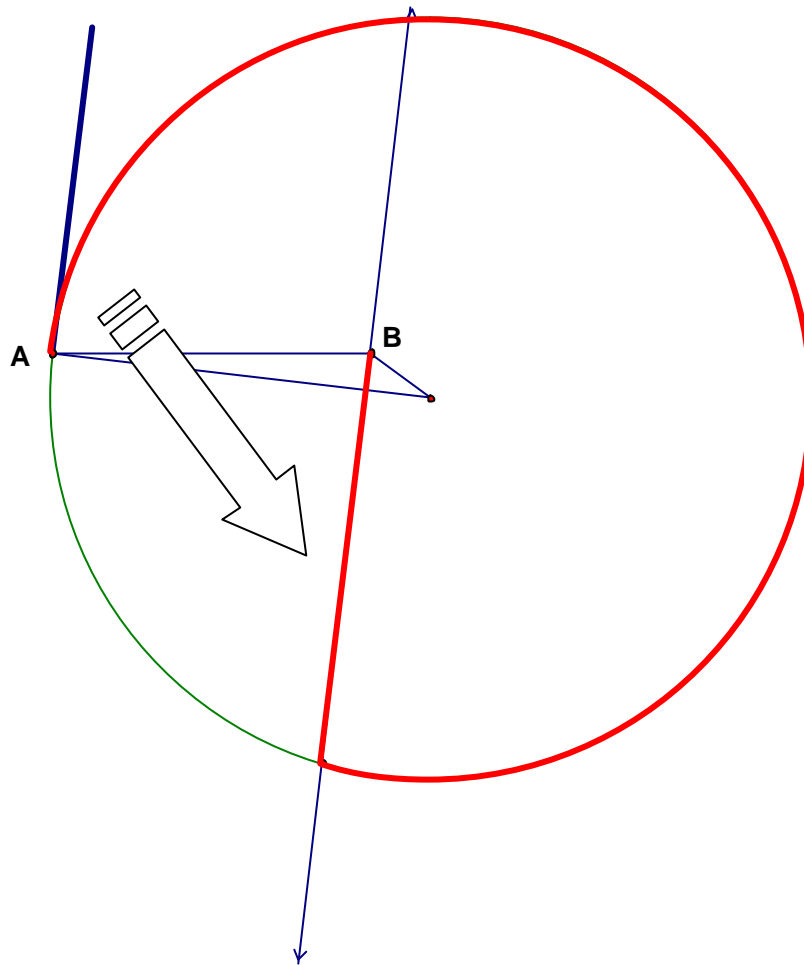
Let us do greedy easily. Find the boy who is loved by nobody, and generate the chain from it: Boy_A loves Girl_A; Girl_A loves Boy_B, and so on. Now we can daringly put Boy_A and Girl_A in pair, Boy_B and Girl_B in pair, etc. Similarly, we find the girl who is loved by nobody, and progress the chain from it. Do not forget to consider circles in the end. (As Boy_A->Girl_A->Boy_B->Girl_B->Boy_A)

1340 – Cucaracha

For most of the conditions, our hero – the cockroach – can move directly by “turning left/right” until its direction is just towards the goal point. As its core, however, I draw the map below.



If goal point B is inside the turning circle, what's on? The main idea is to go straight forward at point A, and then turn left/right as the above picture. For this solution (WARNING, it is not the best), we can move the segment which denotes its 'going straight forward' to the last:



I'm not providing the correct route of the cockroach, but the thoughtway of it – moving the segment at the beginning to the end. Think deeply and calculate out the better way than the picture above, then you'll get it. Good luck!

1341 – Device

The initial latitude and final latitude will be always the same, so one should calculate the device's displacement on exactly two different latitudes (initial/final latitude, and the interim latitude). I detected out the interim latitude would be larger than 90! But that doesn't prove difficult to avoid, because if you use the correct formula, the sign of cosine function will make it simple directly.

PS: If the answer is 180.00001, one might output -180.000 instead of 180.000. Pay attention to that!

1342 – Enterprise

The data set is easy, one can use $O(10^8)$ dynamic programming to get AC. I think this problem should be able to be solved by greedy or some mathematical formulas. If you got some ideas, please contact me ASAP.

1343 – Fairy tale

Enumeration one by one or randomly is okay. I only use the most naive prime checking algorithm, but pre-calculate the prime table and get AC.

1344 – Gigantic turnip

This problem is really the easiest one among all the nine. Interestingly, there are only 3 people submitted, and 13 submissions!?!? The test case 8 is modified correct now.

Calculate from the turnip (1 unit of weight), using basic knowledge in our physics books ($F_1=2F_2$). In fact, the types of the pulleys have nothing to do with our program. If we gain a conflict while calculating, we will say “No solution”. If the weight of the turnip has nothing to do with the free rope, we will say “Any”. Enjoy it.

1345 – HTML

We do not need to consider some mess conditions like: “542.5234.14”, “5234.” and “.5234”. The mistake nearly everyone made is the difference between “1.23” and “array[1..23]”. The full stop in the first example is a part of number and in the second example is not.

1346 – Intervals of monotonicity

Linearly check with greedy algorithm. Pay attention to such condition: “1 2 3 4 3 4 5 6 7”, which is “low->high->low->high”, but we only need two intervals “1 2 3 4” and “3 4 5 6 7” to describe it.