

Two robots are dropped from an airplane and land on a single line (with discrete positions) using a parachute which is left at the landing point. The robots are both facing north, they are an unknown distance apart, and one has landed directly east of the other. In our situation, the most important part is one of the robot is on the left of the other robot. As it mentioned in mail, we have to think one dimensional.

The robots are programmed that they meet each other in some point or at some time. They can be instructed to move left or right to a neighboring position and to check whether a parachute is present at the current location. If the other robot and robot meet, the result is true.

I thought there are any ways/approaches while I was thinking. One of them was moving both robot to left. If robot crosses other's parachute reverse direction of other robot and robot continue moving in same direction. But this thinking is wrong because both robots are executing a separate copy of the their program.

One of the other way is left-right rule. If a robot move more steps left than right steps, such as first move left 1 unit/times, then move right 2 unit/times. As a result, robot moved 1 step to right in total. In other word, 1 left, 2 right, 3 left, 4 right, moving more steps while changing direction in every step.

And lastly, I chose another approach which I used by keeping a flag. Goal was the same, our robot reaches other parachute or doesn't reach. If it does, moveLeft for 2 times, otherwise moveLeft and noOperation. At that moment, I realized speed is faster than displacement. If I double the robot's speed as fast as it reaches other's parachute and they meet. But in this approach, we should be careful at landing point, we shouldn't move a robot with twice as speed as other from landing point onwards. As we don't have any information which robot is behind and which robot is at front. So if front robot is moved with double speed than lagging behind robot then it will never be able to catch it hence, never meet. About locations of these robot, I gave a point such as one of robot can be at point 0, and the other robot at 50. I tried to think in one dimension.

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