

Letters Editorial

The main purpose of this task was to teach contestants how write solutions to interactive problems, in preparation for the COVID tests task. Therefore, the task was rather easy.

The easiest solution was to go through the houses in order and check if each house received the letter addressed to it. If the only such house was house number 1 000, then this solution has to make 1 000 queries, and therefore it receives 70 points,

A major improvement was to check the houses in random order. This meant that even if there was only one house with the correct letter, the program would find it on average after 500 queries, which would get it approximately 94.5 points.

To improve the solution further, we can notice that one query allows us to rule out two houses at once. If letter i was delivered to house j , this means that neither house i nor house j could have received its letter. Of course, it's possible that house i was already checked previously, but if the houses are checked in random order, then the solution will be able to rule out two houses at once pretty often. This solution would get the full 100 points.