British Informatics Olympiad Final
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Paper Cuts - Part Two

The paper guillotine is a rather limited tool for cutting out shapes, so we will now replace it with a pair of scissors. This tool can still only cut straight lines, but does not need to cut across the entire length of a piece of paper. Note that a scissor cut *must* start from a point on an external edge.

Write a new program which determines how to cut shapes out of a piece of paper using scissor cuts. The input to the program will be the same, and your output should follow the same rules as before. [**NB.** Since direction is important for a scissor cut, remember to put the start co-ordintates on the left.]

Sample Input

```
4 3
akkz
akkz
aaaz
```

Sample Output

```
(3,0) (3,3)
(1,3) (1,1)
(3,1) (1,1)
```

Sample Input

```
3 2
jnj
jjj
```

Sample Output

```
Impossible
```