At each step, use dfs to visit with the same direction until no more road. When there is no more road, turn right to try another direction. There are 4 rights in total. So it will return to the same direction.

left ↑ dir
        o
left ↘ ↓ move
right↗ o
    ↰ ↓ dir
right

→ backtracking steps
{ left
  left
  move
  right
  right.