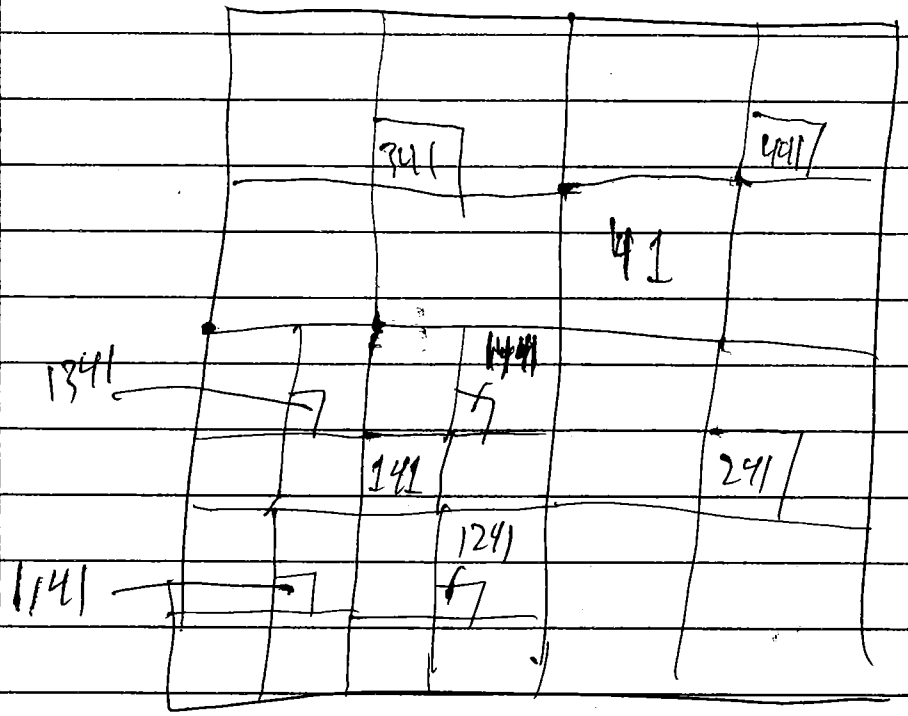

41 is empty implies that 141, 241, 341, and 441 are empty

For a point to be in square 241, the previous point must have been in square 41, and T_2 applied.

Every square with address containing the address of an empty square must itself be empty.

$T_1(x,y) = (x/2, y/2)$

$T_2(x,y) = (x/2, y/2) + (1/2, 0)$

$(12)^\infty = (x_a, y_a)$ $\quad$ $(21)^\infty = (x_b, y_b)$

$T_2(x_a, y_a)$ has address $2121212\cdots$

$T_1T_2(x_a, y_a)$ has address $12121212\cdots = (12)^\infty$

That is $T_1T_2(x_a, y_a) = (x_a, y_a)$

$T_2(x_a, y_a) = (x_a/2, y_a/2) + (1/2, 0)$

$= (x_a/2 + 1/2, y_a/2)$

$T_1T_2(x_a, y_a) = T_1(x_a/2 + 1/2, y_a/2)$

$= (x_a/4 + 1/4, y_a/4)$

Because $T_1T_2(x_a, y_a) = (x_a, y_a)$, we have

$(x_a/4 + 1/4, y_a/4) = (x_a, y_a)$

$y_a/4 = y_a$ means $y_a = 0$

$x_a/4 + 1/4 = x_a$

$1/4 = x_a - x_a/4 = \frac{3}{4}x_a$

$\frac{1}{3} = \frac{4}{3}\cdot\frac{1}{4} = x_a$