

Overview: Given a grid of squares (some of which may not exist), see whether it's possible to for a knight to visit all squares without visiting any square twice.

Description: Thor of Asgard has recently discovered the most wondrous beverage in all nine realms: hot chocolate. It is delicious. Another, he says!

Alas, even Nordic Gods have to work for their hot chocolate. Thor starts by standing at some corner of an N by N grid where there is a cup of hot chocolate. Thor's new goal in life is to drink every single cup of hot chocolate on the grid. Unfortunately for him, he can't simply walk across all rows, drinking merrily as he goes. Oh no, Thor the brave and good must move like a knight on a chessboard at all times to show the world just how brave/good he is.

A knight moves as follows: given four directions in which to move (N,S,E,W), it can only move two steps in one direction and one in a perpendicular direction. For example, two steps in the S direction and one step in the W direction.

To add further complication, Thor can only drink his chocolate when he is not moving, and yet absolutely refuses to move to a square that does not at that point in time contain hot chocolate. Thor would like to know if it is possible for him to drink all the hot chocolate on the grid. Can you help him figure out if it's possible?

Filename: adv91.{java, cpp, c, cc, py}

Input: The first line of the input is N , size of the grid.
Following the first line is N lines of input, each containing N characters. If a square has hot chocolate, then that square is marked with a 1. Otherwise, it is marked with a 0.

Output: YES if there is a tour, and NO otherwise.

Assumptions: All boards are $n \times n$ for $4 \leq n \leq 7$.

Sample Input #1: 5
10110
11001
00101
11001
10100

Sample Output #1: NO

Sample Input #2: 3
101
100
011

Sample YES

Output #2: