Problem H. Hypercube

Input file:	`hypercube.in`
Output file:	`hypercube.out`

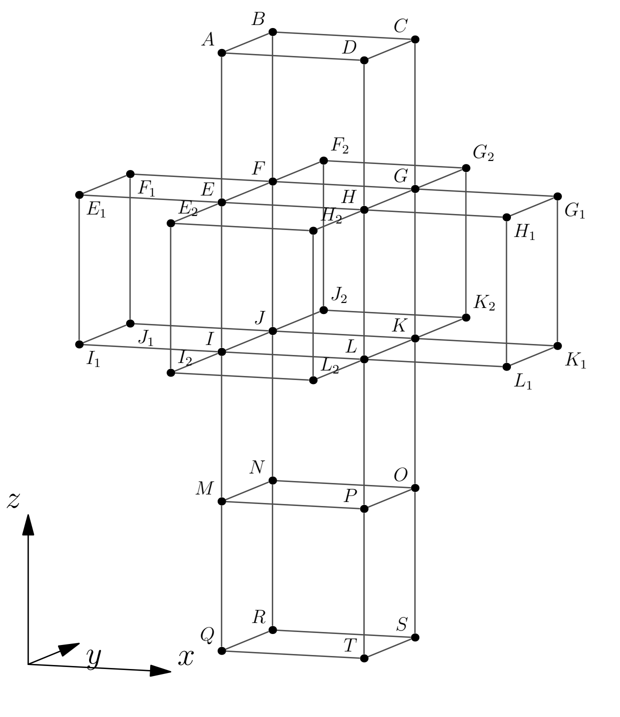
Consider a 4-hypercube also known as tesseract. A unit *solid tesseract* is a 4D figure that is equal to the convex hull of 16 points with Cartesian coordinates $(\pm\frac{1}{2}, \pm\frac{1}{2}, \pm\frac{1}{2}, \pm\frac{1}{2})$ — its vertices. It has 32 edges (1D), 24 square faces (2D), and 8 cubic 3-faces (3D) also known as *cells*. We study hollow tesseracts and define a *tesseract* as a boundary of a solid tesseract. Thus, a tesseract is a connected union of 8 solid cubes (its cells) that intersect between each other at 24 tesseract's square faces, 32 edges, and 16 vertices.

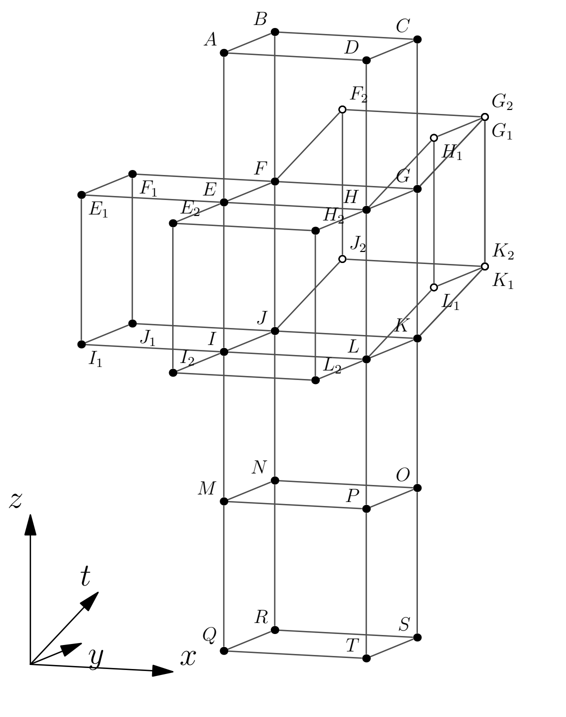
Let's cut a tesseract along 17 of its 24 faces, so that it still remains connected via 7 faces that were left intact. Unfold the tesseract into a 3D hyperplane by rotating its constituting cubes along the faces that were left intact until all its cells lie in the same 3D hyperplane. The result is called a *3-net* of a tesseract. This process is a natural generalization of how a 3D cube is cut and unfolded onto a 2D plane to produce a 2-net of a cube that consists of 6 squares.

In this problem you are given a tree-like 8-polycube in 3D space also known as *octocube*. An octocube is a collection of 8 unit cubical cells joined face-to-face. More formally, intersection of each pair of cubical cells constituting an octocube is either empty, a point, a unit line (1D), or a unit square (2D). The given octocube is tree-like in the following sense. Consider an *adjacency graph* of the octocube — a graph with 8 vertices corresponding to its 8 cells. There is an edge in the adjacency graph between pairs of adjacent cells. Two cells of an octocube are called *adjacent* when their intersection is a square. Cells that intersect at a point or a line are not considered adjacent. An octocube is called *tree-like* when its adjacency graph is a tree.

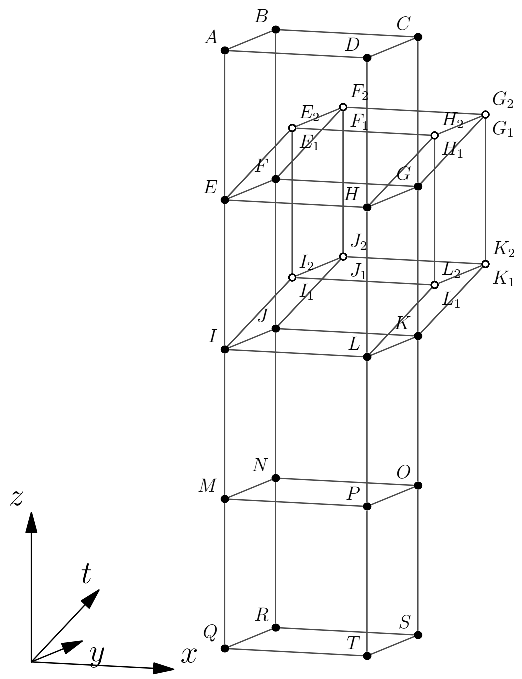
Your task is to determine whether the given tree-like octocube constitutes a 3-net of a tesseract. That is, whether this octocube being put onto a hyperplane in 4D space can be folded in 4D space along the squares of intersection between its cells into a tesseract.

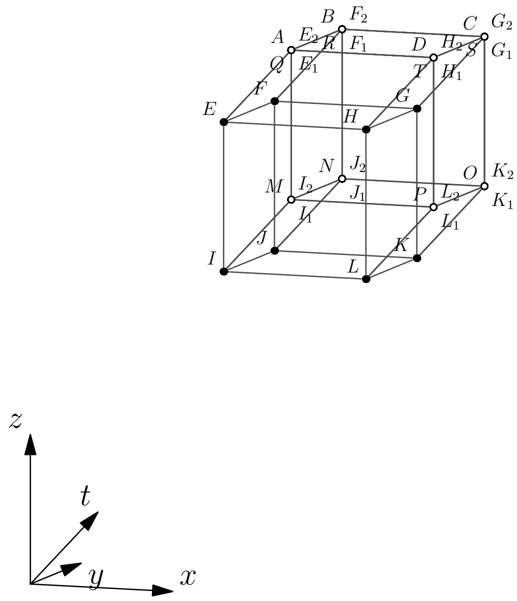
For example, look at the leftmost picture below. It shows a wire-frame of the tree-like octocube. Rotate cell $GHLKG_1H_1L_1K_1$ around a plane $GHLK$ and cell $FGKJF_2G_2K_2J_2$ around a plane $FGKJ$ at angle 90 degrees in 4-th dimension outside of the original hyperplane. As a result, point G_1 joins with G_2 and K_1 joins with K_2. The face GKK_2G_2 is glued to face GKK_1G_1. The result is shown on the right. The 4-th dimension is orthographically projected onto the 3 shown in perspective. The points that have moved out of the original hyperplane are marked with hollow dots.





Rotate $EFJIE_1F_1J_1I_1$ around $EFJI$ and $EHLIE_2H_2L_2I_2$ around $EHLI$. The result is shown on the following picture on the left. The remaining steps are as follows. Rotate $MNOPQRST$ around $MNOP$, then rotate both $MNOPQRST$ and $IJKLMNOP$ around $IJKL$ and rotate $ABCDEFGH$ around $EFGH$. The last step is to glue all faces that meet together to get a tesseract that is shown on the right.





Input

The first line of the input file contains there integers m, n, k — the width, the depth, and the height of the box that contains the given octocube ($1 \le m, n, k \le 8$). The following k groups of lines describe rectangular slices of the box from top to bottom. Each slice is described by n rows with m characters each. The characters on a line are either '`.`', denoting an empty space, or '`x`', denoting a unit cube. The input file is guaranteed to describe a tree-like octocube.

Output

Write to the output file a single word "Yes" if the given octocube can be folded into a tesseract or "No" otherwise.

Sample input and output

hypercube.in	hypercube.out
3 3 4 ... .x. ... .x. xxx .x. ... .x. ... ... .x. ...	Yes
8 1 1 xxxxxxxx	No