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PROG: winchk

LANG: C++

ID: hayk.sa1

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#include <cstdio>

#include <iostream>

using namespace std;

char s[510][510];

int num[510][510];

int I[250010], J[250010];

int \*g[130000], deg[130000];

int di[4] = {-1, -1, 1, 1};

int dj[4] = {-1, 1, 1, -1};

int a, b;

int st[2][400000];

void euler()

{

int p, q, i;

while (a)

{

p = st[0][a-1];

if (deg[p])

{

q = g[p][--deg[p]];

st[0][a++] = q;

for (i = 0; i < deg[q]; i++)

if (g[q][i] == p)

break;

g[q][i] = g[q][--deg[q]];

}

else

{

st[1][b++] = p;

a--;

}

}

}

void print(int s)

{

int i;

for (i = b-s-1; i >= 0; i--)

printf("%d %d\n", I[st[1][i]]+1, J[st[1][i]]+1);

}

int main()

{

freopen("winchk.in", "r", stdin);

freopen("winchk.out", "w", stdout);

int n, m, o, p, q, u, v, i, j, k;

scanf("%d", &n);

for (i = 0; i < n; i++)

scanf("%s", s[i]);

for (i = 0; i < n; i++)

if (s[i][0] == 'o' || s[i][n-1] == 'o' || s[0][i] == 'o' || s[n-1][i] == 'o')

{

printf("impossible\n");

return 0;

}

m = o = 0;

for (i = 0; i < n; i++)

for (j = !(i&1); j < n; j+=2)

if (s[i][j] != 'o')

{

I[m] = i;

J[m] = j;

num[i][j] = m++;

}

else

o++;

for (i = 0; i < n; i++)

for (j = !(i&1); j < n; j+=2)

if (s[i][j] == 'o')

for (k = 0; k < 4; k++)

{

p = i+di[k];

q = j+dj[k];

u = i+di[(k+2)%4];

v = j+dj[(k+2)%4];

if (p >= 0 && p < n && q >= 0 && q < n && s[p][q] != 'o' &&

u >= 0 && u < n && v >= 0 && v < n && s[u][v] != 'o')

deg[num[p][q]]++;

}

for (i = 0; i < m; i++)

{

g[i] = new int[deg[i]+1];

deg[i] = 0;

}

for (i = 0; i < n; i++)

for (j = !(i&1); j < n; j+=2)

if (s[i][j] == 'o')

for (k = 0; k < 4; k++)

{

p = i+di[k];

q = j+dj[k];

u = i+di[(k+2)%4];

v = j+dj[(k+2)%4];

if (p >= 0 && p < n && q >= 0 && q < n && s[p][q] != 'o' &&

u >= 0 && u < n && v >= 0 && v < n && s[u][v] != 'o')

g[num[p][q]][deg[num[p][q]]++] = num[u][v];

}

for (j = 1; j < 4; j+=2)

{

p = 0;

for (i = 0; i < m; i++)

if (s[I[i]][J[i]] == 'K' && (I[i]+J[i])%4 == j && deg[i])

p++;

if (p != 1)

continue;

p = 0;

for (i = 0; i < m; i++)

if ((I[i]+J[i])%4 == j && deg[i]%2)

p++;

if (p == 1 || p > 2)

continue;

a = b = 0;

if (p == 0)

{

for (i = 0; i < m && !(s[I[i]][J[i]] == 'K' && (I[i]+J[i])%4 == j && deg[i]); i++);

if (i < m)

{

st[0][a++] = i;

euler();

if (b == o+1)

{

print(0);

return 0;

}

}

}

else

{

for (i = 0; i < m && !(s[I[i]][J[i]] == '+' && (I[i]+J[i])%4 == j && deg[i]); i++);

if (i < m)

{

st[0][a++] = i;

for (i = 0; i < m && !(s[I[i]][J[i]] == 'K' && (I[i]+J[i])%4 == j && deg[i]); i++);

if (i < m)

{

st[0][a++] = i;

euler();

if (o+2 == b)

{

print(1);

return 0;

}

}

}

}

}

printf("impossible\n");

return 0;

}