Start with New Year Transportation:

https://codeforces.com/problemset/problem/500/A

Oh, but what if cells had multiple outgoing portals? What if portals were bidirectional?

It's ***graph time***

Collection of vertices and "adjacency relationships" between them, can be directed or undirected, oft represent by adj matrix

Any problem which discusses pairwise relationships? consider using graphs

But they're not linear? How to traverse graph? ???
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Do an example

Here's some pseudocode:

recursive version

```
1  procedure DFS(G,v):
2      label v as discovered
3      for all w in G.adjacentVertices(v) do
4          if vertex w is not labeled as discovered then
5              recursively call DFS(G,w)
```

non recursive version for dissidents

```
1  procedure DFS2(G,v):
2      let S be a stack
3      S.push(v)
4      while S is not empty
5          v = S.pop()
6          if v is not labeled as discovered:
7              label v as discovered
8              for all w in G.adjacentVertices(v) do
9                  S.push(w)
```

DFS for connected components (contrive a situation though)

```
1  procedure components(G)
2     int components = 0
3     for all v in G.vertices() do
4           if v is not labeled as discovered:
5                 call DFS(G,v)
6                 increment components
```

Now it's time for another sample problem: Party
https://codeforces.com/problemset/problem/115/A

Here is the problem for the people to do: https://codeforces.com/problemset/problem/893/C