Game Notes

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Position within square stored as an odd signed integer in half-pixels, e.g.

101	011	001	011
-3	-1	1	3

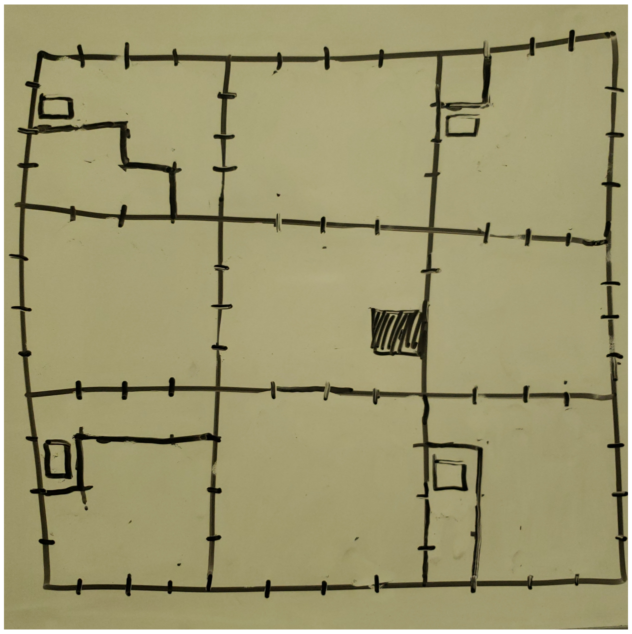
Requires entities to have odd pixel dims to be centered
Edge/vertex states are not possible
Updating position requires doubling velocity first
Store position as x and y seen on screen or relative to a square's axes?
Screen position:

- Graphics and movement are easier
- Collision would be most convenient by loading the current square rotated

Relative position:

- Collision is easier, just check against stored square
- Need to ensure that rendering is done correctly

View splitting is decided by determinant sign: will always give edge to cell further (counter?)clockwise
Vertices/edges are on the border between pixels (even position): do not require a special case



Shaded pixel: camera
Lines: region boundaries

Inlined pixels: edge cases (given to clockwise region in this case)
Going through a singularity and back is a holonomy loop
Entity gravity is ambiguous when not in the same square as the player:

- Freeze when player leaves the square: unintuitive, esp for flat regions
- Based on last player interaction: better, but initial direction must be set: could be none

Have "naked" singularities or cover them up?
Naked is easier to implement if accounted for at the cost of real physics:
an object of finite size can't actually pass through one
Not checking self-collisions would obviate this but may result in graphical glitches
Covering singularities would prevent glitches and restore accuracy but might hurt level design
Larger squares $\rightarrow$ fewer singularities $\rightarrow$ less harm in covering them
However, smaller squares $\rightarrow$ more convenient to travel/execute holonomy
Art style between pixel and vector: each "pixel" is not just a solid color but one of a few predefined shapes,
e.g. solid color, 2 colors split diagonally, split by circular arc, etc
Build a tree of regions, starting from current square
Region info: left and right boundary points, square rendered, position, and orientation of square
Region is split if strictly contains singularity (i.e. not on edge)
Might be easiest to form tree in 9 steps: current square, 4 orthogonal rays of squares, 4 quadrants
Should also be array mapping positions to regions at given position:
list of separating points in order and the squares/orientations between them
For each position, render oriented squares masked by separating points
Could use just one separating point and overlap regions: free anti-aliasing
Must be regions of square accessible in only one orientation: side longer than 2x jump height
Masking areas behind opaque objects should only be done at the end:
ensure consistent behavior inside/outside square containing object