



# Irrigation

A 2D puzzle game with  
procedurally generated level

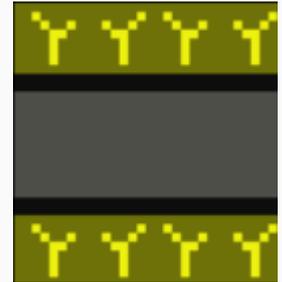
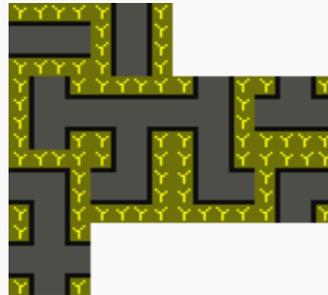
by Shujian Zhang

# Attributes of pipe

For the pipe like right upper one, its attributes will be 0,0,1,0,1 in the array, first 0 is the number 0 (total is from 0 - 15) in tile set. Last four numbers represent the connectivity of 4 directions. So 0, top no connectivity; 1, right has connectivity; 0, bottom no, 1, left has. And the pipe right lower one's attributes will be 6,1,0,1,1.

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

matrix of tileset



# What are inside? SFML

This game is builded in full C++ with SFML library.

To rotate tiles, mouse position + size of window + resolution of window + startposition of map in window => position of tile in the map. click mouse, the system will texture current tile with nearby tile in the Tileset and switch the attributes.

# What are inside? Perlin Noise

Get random numbers by Perlin Noise,

To make the game not too easy or too hard and according to the features of Perlin Noise, I can make the possibility of generating pipes in second and third rows higher than others.

The matrix of tilesets:

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15
16	17	18	19
20	21	22	23
24	25	26	27
28	29	30	31



# What are inside? Recursion

Implement recursion to check how many pipes are connected to the source of water (In map, it is (0,0) tile).

The sequence is, from (0,0), read the attributes array, if top of current tile is connective, check the upper tile if its bottom is connective && the tile is not connected before. If it is, move to the upper tile, if not, check the right of current tile,..., check the bottom of current tile,..., check the left of current tile,...,if all not, go back to the former tile.

