

## Terrain floor tiles

### Usage description

The game world space is a big part of the gameplay. Instead of the maps just being a thing that player characters stand on top of and move across, they are something that can be actively manipulated and shaped by the players, such as grass turning into dirt when walked over too much, dirt turning into mud when wet, grass turning into ash when burnt, etc.

Floor tiles revert back to the type that is next in the chain when they haven't been stood on in a while. The time it takes to change back is different for each terrain type, such as paved paths taking a lot longer to disappear than dirt, which helps create trails between areas of interest on the map in a more organic way based on actual player usage of that route, rather than a map designer defining a road that players might not even want to use.

### Technical description

#### *Why 16x16?*

The tiles are programmatically drawn to one huge image stored in memory that covers the whole map. That image is then modified as tiles change to a different type. Since the map is one big image, and maps are up to 64 x 64 tiles in size, 4096 tiles in total, that means the total pixel data to store that big image would be 4096 X the size of the tiles, so using a 16x16 pixel tileset would be 4096 X 16 X 16 = 1048576 bits of pixel data. Quite a lot.

The game previously used a 32x32 tileset, but that meant 4 times as much memory used than 16x16, which was too much for mobiles to handle, which is the primary target platform.

## Work description

I need a 16 x 16 pixel tileset for the floor layer, with tiles for:

- Grass
- Shallow water
- Deep water
- Sand
- Dirt
- Mud
- Paved path
- Snow
- Lava

Due to the dynamic nature of the map, each tile will need to be able to transition into every other kind of tile, so transition borders are needed for each terrain type, like so:

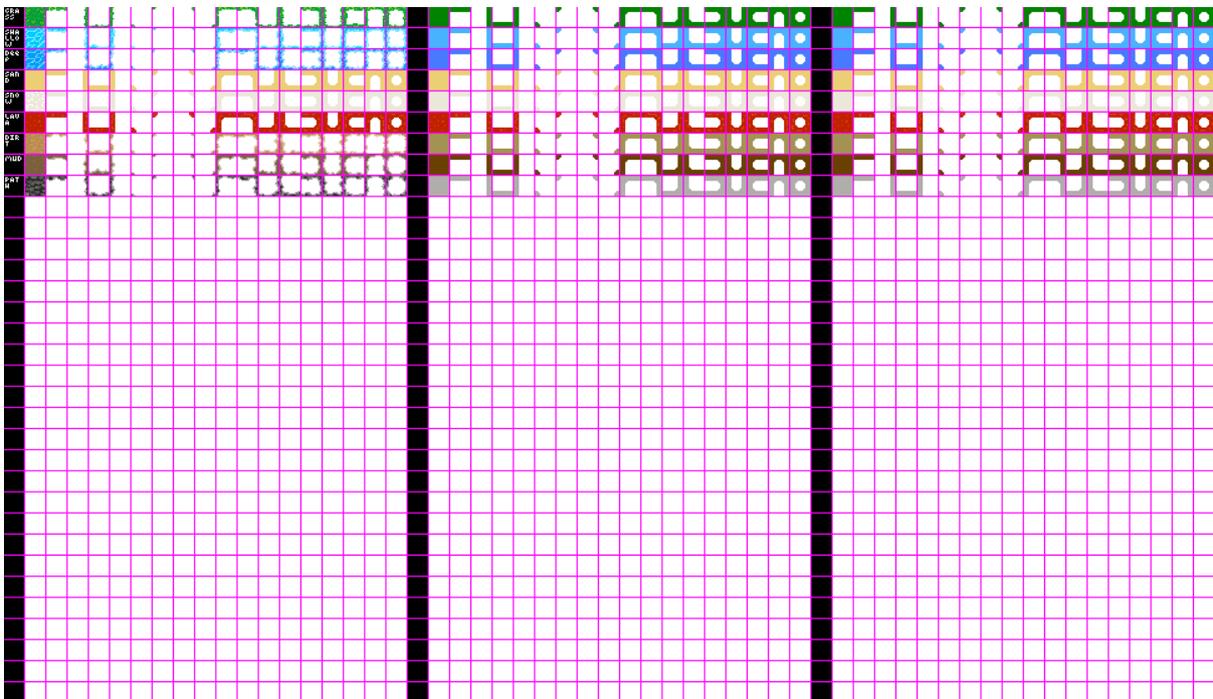


There are 18 tiles needed for each different terrain type, with 3 frames of animation for each terrain type, which should end up looking like the current tileset used in the game, that you may wish to just edit directly (attached), or send them to me individually and I'll arrange them myself.

Frame 1

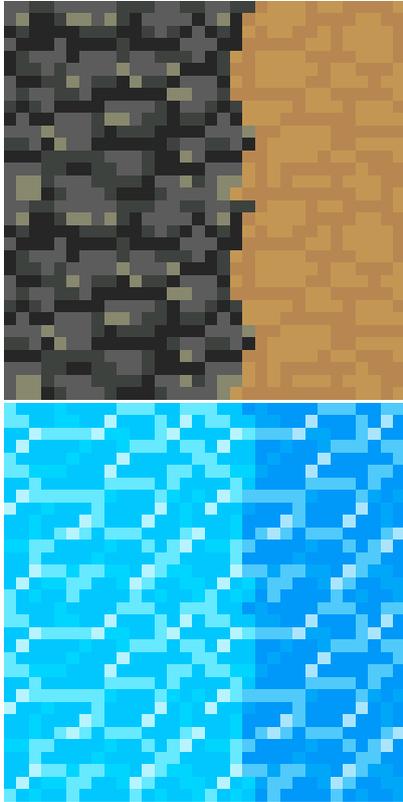
Frame 2

Frame 3



The transition between some terrains can look a bit jarring, so I experimented with giving a few pixels around the edge of each tile a 50% transparency to soften the transition so they blend into each easier, which has a nice effect. Perhaps a technique to use.

Without transparency

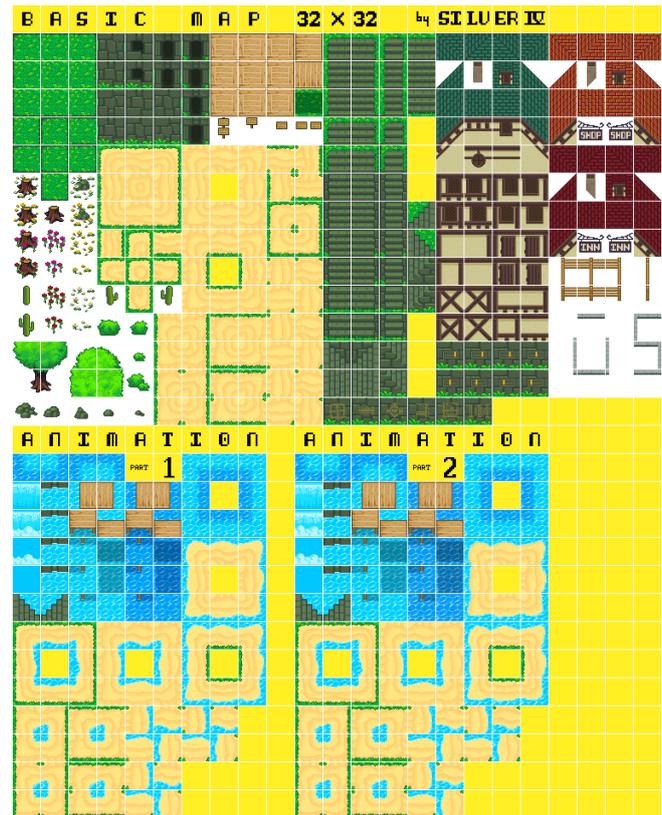


With transparency



I very much like the feel of this tileset, which I have used in the past, but it is missing some tiles I need, not enough frames, and not 16x16.

It seems like the feel of this tileset would be a good reference point to build upon, doing 16x16 versions of the tiles I need.



<https://opengameart.org/content/basic-map-32x32-by-silver-iv>

The main animated tiles I need are for deep water, shallow water, lava and optionally grass if you think it would be appropriate. A slight shimmer/sway will do. Just something to make the floor look like it isn't frozen solid.

Static things like dirt and paved paths don't need animating, so just do the first frame and copy it into the slots for the other frames.

Tilemap animations are disabled when the game is played on mobile, so the first frame of each animated terrain type should be usable as if it weren't animated at all.

Using the above tileset layout, I can either do the animation with 3 frames using each frame once then looping back to the first, like 1, 2, 3, 1, 2, 3, 1, ..., or an animation with 4 frames using one of the frames as a "middle" frame where it is repeated between the other ones, like 1, 2, 1, 3, 1, 2, 1, 3, ....

If you think one method would give a better result, let me know which.

Tile specific reference images

Just roughly what I had in mind, but feel free to deviate.

Paved path



<https://adorable-home.com/smart-home/paving-buying-guide-59818>

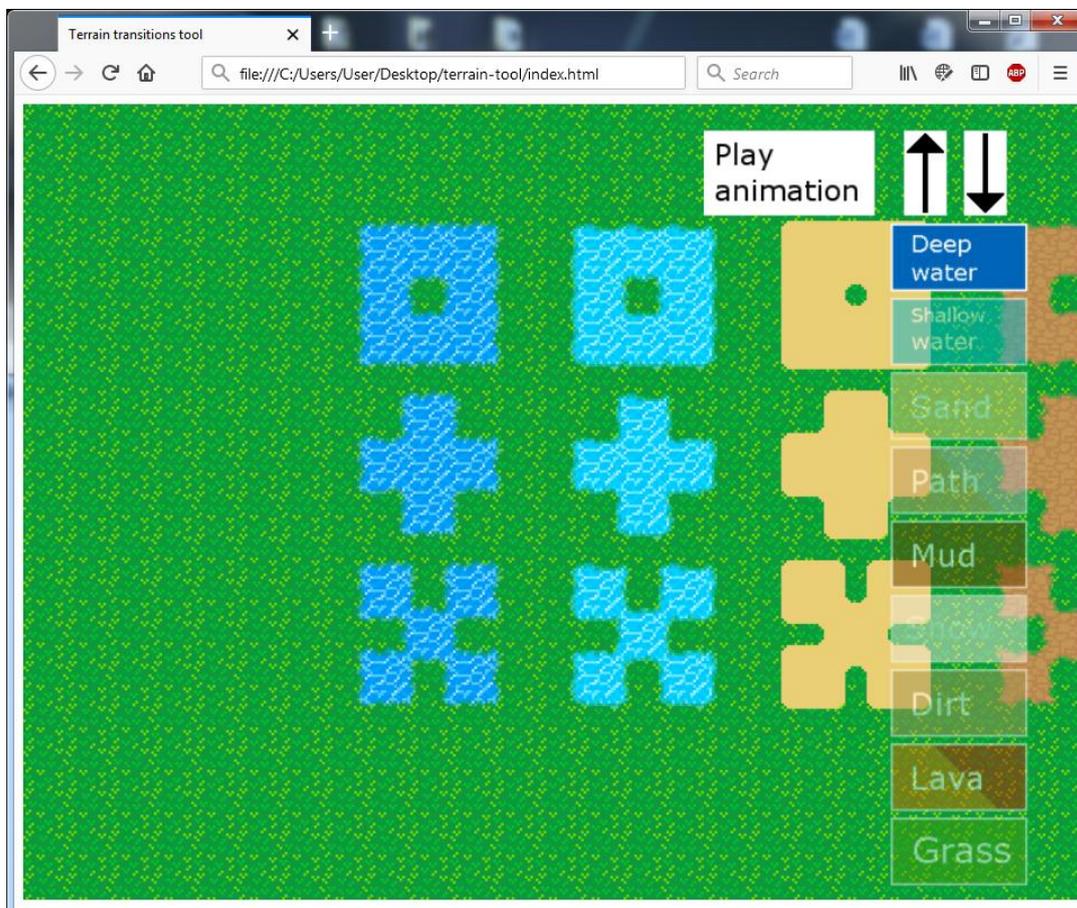
<http://www.lushome.com/30-stone-walkways-garden-path-design-ideas/148013>

Lava



<https://i.pinimg.com/736x/15/f7/3d/15f73d1dd4427c2ea6e1049c98bea160--texture-game-lava-texture.jpg>

Since there are so many ways that each of the tiles can transition into each other, I made a little tool to preview how the different terrains transition into each other that you might find useful, that has been included in the attached zip file. It runs as a web page and works in Firefox and Microsoft Edge and is adapted from the tilemap system from the main game.



Unzip the folder, and inside it is an ***index.html*** file. Open it in Firefox or Edge. It doesn't work with Chrome.

Arrow keys to move the camera around.

Mouse click and drag to draw the currently selected terrain onto the map.

Press on one of the buttons on the right side to change the currently selected terrain.

Each terrain is rendered on top of the one below, partially covering it at the borders. Press the up or down arrows in the top right to change the render order of the selected terrain, to see what it looks like when each terrain has a different priority.

To use the tiles you make, look in the ***assets*** folder of the tool, and there will be a ***floor-tileset.png*** image. Paste your work onto the matching grid spaces for each terrain, save the image, then refresh the page the tool is running in and your changes will now be visible.