Project Proposal

Cellular Fluid

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Synopsis

An interactive, ASCII-graphic 2D cellular automata fluid simulator. The simulator will have parallel simulation and concurrent display.

Unlike an implementation using directly the Finite Difference Method, the cellular automata implementation can support more complex behavior. The simulator would at least support fluid propagation through a grid of cells, some of which may be walls.

The graphic display would be in terminal, something like Dwarf Fortress’s interface.

Critical Aspects

Core Algorithm

- Stokes equation
- Or if too difficult, a simpler version that looks about right

Parallization

- Each cell likely depends on only adjacent cells when updating

Display and Interaction

- In concurrent process

Milestones

1. Implement concurrent display and interaction with stub simulation
2. Implement sequential simulation
3. Parallelize simulation
4. Clean up code