Falling Sand

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Prototype
Top Level
Timing
VGA
Physics

Particle transforms were based on surrounding particles. We used 4 particle types: Air, Sand, Sand_AM, and Wall.

To ensure there was no “columning error”, trapping sand within an 8 pixel wide partition, each tested value was 4 SDRAM words from memory - two from the current row, and 2 beneath it. The second column of chunks becomes the first column of chunks in the next iteration.
Physics
Challenges

SDRAM access - the SDRAM controller escaped us. We tested it by using read/write verification signals represented by blue and red particles in our chunk. Red and Blue stripes appeared at 8 pixel intervals, verifying our VGA driver but revealing that SDRAM continued to not actually store values.