

CMSC 161 Project Proposal

3D Terrain Generator

by

Adoptante, Angelica Nicolette U.

Borja, John Maui S.

Malazarte, Elijah Gabriel S.

Ramillano, Aron Resty B.

Section B1L

I. Introduction

This WebGL application generates a randomized terrain dependent on a “seed”. Utilizing a 16x16 grid play area, the seed dictates the contents of each tile in the grid, from elevation to other features such as models of trees, grass, and flowers.

The user may then explore this play area utilizing a god-game inspired 3D camera controls as well as modify the play area by changing the values of the tiles of the grid.



Image from the “*WorldBox*” mobile game as reference for god-game.



"Battle for Polytopia" game, reference for camera style and grid system

II. Features

A. Map Generator

1. The user will initially be presented with a randomly generated terrain.
2. A dashboard will be provided to adjust the settings of the entire grid or the selected tiles.
3. The dashboard will contain multiple settings and sliders such as:
 - a) Elevation - dictates the height of the tile.
 - b) Floor Texture - dictates the color/type of the tile, from grass to gravel or stone.
 - c) Tile Contents - provided models can be chosen and placed on grid tiles.
 - d) Regenerate - randomly creates a new seed and overwrites the currently displayed grid.
 - e) Create Blank - creates a blank 16x16 grid, essentially a superflat terrain of grass.
 - f) Save/Load seed - the grid can be saved so that it can be loaded at a later date.
 - g) Bloom Button - converts blank grass tiles into random flower tiles.
4. The terrain itself will be based on a block-system. Adjustments to elevation increases or decreases by blocks, and no terrain smoothing or curving will be done. The look will be more like a Minecraft mountain than an actual mountain.

B. Map Exploration

1. Currently, the proposed method of exploration is an overview-style camera system, reminiscent of Sims or City Skylines games, or even Google Earth/Maps.

2. Essentially, the user may:
 - a) pan,
 - b) zoom,
 - c) snap orthogonally to certain axes for vision,
 - d) rotate the play-area 360 degrees along the Y-axis.
3. The user can also click on a tile, or drag-select multiple tiles to affect chunks.

III. 3D Models

- A. The blocks will be of 32x32 pixel art blocks, but this can be reduced further during testing to get a balance between just HD enough for the perspective, and not blocky enough to be pixelated
- B. Each block will be a random selection of various terrains that is to be determined during development.

IV. Animations

- A. Camera Movement and Map Movements
- B. Block movements when being generated can be integrated to add a little bit more flair to the map generation.
- C. Day-night cycle.