Subjugation

A game of st*rat*egy and warfare

By Pádraig Crotty

20085012

BSc(Hons) in Applied Computing (Games Development)

Supervisor: Dr Denis Flynn

Overview

- 3rd person 1 vs 1 Multiplayer Online Battle Arena (MOBA) with Real Time Strategy (RTS) Like combat that uses procedural map generation to create a different map each match.

MOBA

- 5v5
- One Large Arena
- Objective Control
- Playable Characters
- Character Synergies
- Destroy the enemies base

RTS

- 1v1
- Varying Maps
- Objective Control
- Commanding Units
- Unit Synergies
- Destroy the enemies base

The Alpha Build

- Combines unique elements MOBA and RTS
- Functional? Yes!
- Many Features Implemented
- Behind the scenes complexity

What Motivated the Project?

Unique but not niche

Gap in the market
I think people would enjoy something fresh

For me personally

I like making games and developing ideas
I like working with randomness
Satisfaction with being proud of your work

As a developer

People enjoying your game
Bulking my skills
Working on one game for an extended period

How was the Project Created?

- Developed in the Unity Engine

- Programmed in C#

- Using Mirror Networking Library

- Steam Works for playing across Steam

- All the assets were created in Blender by me

- Patience & Time

Problems & Reworks

- Network Efficiency
  - Calling functions
  - Unnecessary creation of game objects across the network
- Network Bugs
  - Where a bug was on the host/client but not on the other
- Smoothness
  - Stuttering from client perspective
  - Solved with Network Efficiency
  - Mini Pools

Risks & Experimental Work

- Uncharted Terrain
  - New to Networking
  - Time Predictions
- Time was of the Essence
  - Risk of Neglecting Other Modules
- Aesthetic Rework
- Redesign Character Movement
  - Directional attacks/abilities

My Findings

Semester 1

- Networking is difficult and slow
- It is difficult to predict time
- Creating Assets can be time consuming
- All time related issues.

Semester 2

- Expect the unexpected
- Time is a constraint
- Experimentation is good
- Making Networked games is a fun challenge

Where is the project going after WIT/SETU?

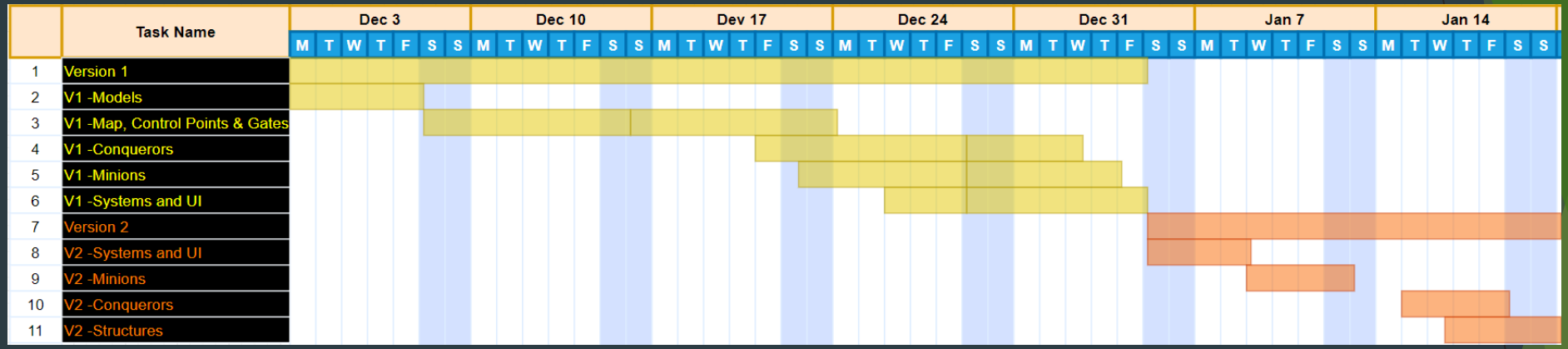
- AI Players > Single Player Campaign / Tutorials
- Adding the additional Conquerors, Minions & buildings
- Re-make for Servers
- Aesthetic Rework
- Unique Map Shapes
- Progression and Account System
- Monetization

Thank you for your time!

Questions?

Milestones & Plans

Plan 1



	Task Name
1	Version 1
2	V1 -Models
3	V1 -Map, Control Points & Gates
4	V1 -Conquerors
5	V1 -Minions
6	V1 -Systems and UI
7	Version 2
8	V2 -Systems and UI
9	V2 -Minions
10	V2 -Conquerors
11	V2 -Structures

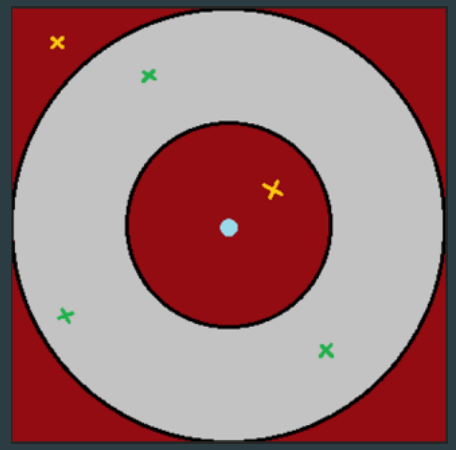
Plan 2:

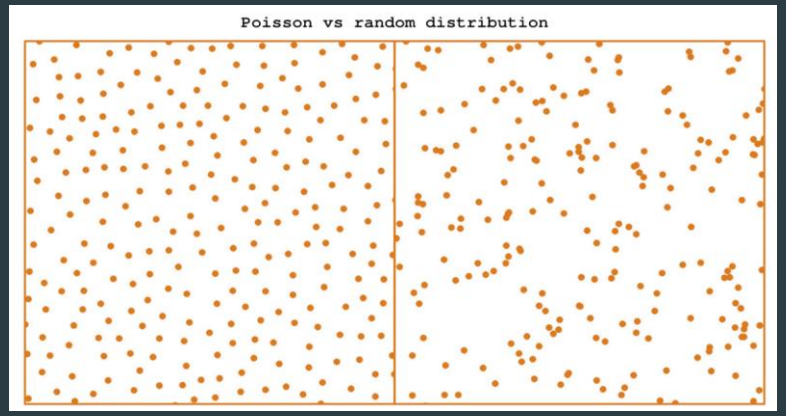
Agile >> Systems, rigorously test

Waterfall >> Characters, test at the end

Plan 3: Reworks

Poisson Disc Sampling & The Linear Congruential Generator

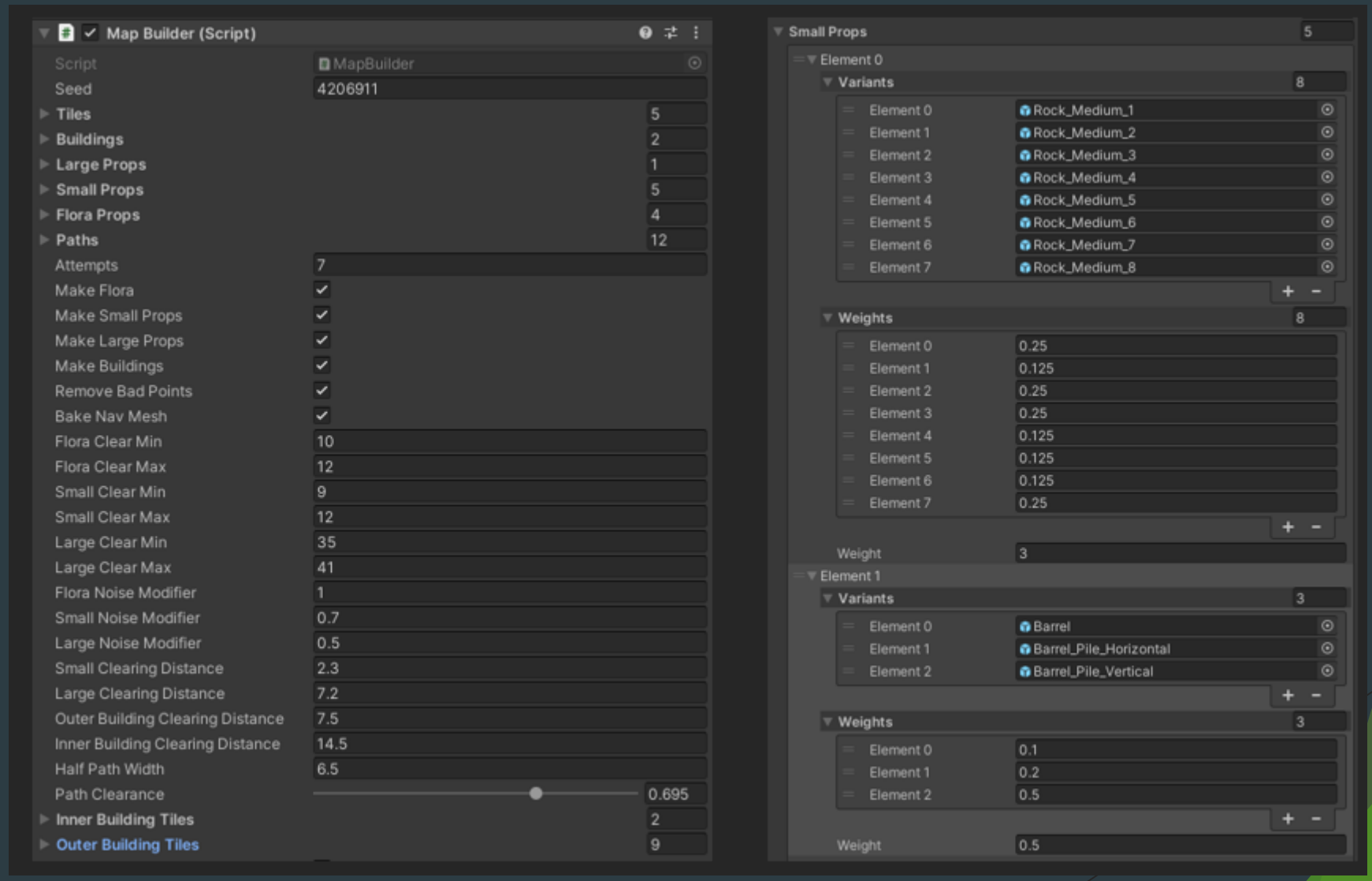




$$X_{n+1} = (aX_n + c) \mod m$$

Character Design

The Map


Map Builder (Script)
Script
MapBuilder
Seed
4206911
Tiles
5
Buildings
2
Large Props
1
Small Props
5
Flora Props
4
Paths
12
Attempts
7
Make Flora
Make Small Props
Make Large Props
Make Buildings
Remove Bad Points
Bake Nav Mesh
Flora Clear Min
10
Flora Clear Max
12
Small Clear Min
9
Small Clear Max
12
Large Clear Min
35
Large Clear Max
41
Flora Noise Modifier
1
Small Noise Modifier
0.7
Large Noise Modifier
0.5
Small Clearing Distance
2.3
Large Clearing Distance
7.2
Outer Building Clearing Distance
7.5
Inner Building Clearing Distance
14.5
Half Path Width
6.5
Path Clearance
0.695
Inner Building Tiles
2
Outer Building Tiles
9
Small Props
5
Element 0
Variants
8
Element 0 Rock_Medium_1
Element 1 Rock_Medium_2
Element 2 Rock_Medium_3
Element 3 Rock_Medium_4
Element 4 Rock_Medium_5
Element 5 Rock_Medium_6
Element 6 Rock_Medium_7
Element 7 Rock_Medium_8
Weights
8
Element 0 0.25
Element 1 0.125
Element 2 0.25
Element 3 0.25
Element 4 0.125
Element 5 0.125
Element 6 0.125
Element 7 0.25
Weight
3
Element 1
Variants
3
Element 0 Barrel
Element 1 Barrel_Pile_Horizontal
Element 2 Barrel_Pile_Vertical
Weights
3
Element 0 0.1
Element 1 0.2
Element 2 0.5
Weight
0.5