

# **Rat Wars**

A game of \*st\*rategy and warfare

## **Semester One Report**

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**Bsc(Hons) in Applied Computing with Games Development**

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# Introduction

So, what is Rat Wars?

Rat Wars is a 3<sup>rd</sup> person 1 vs 1 MOBA (Multiplayer Online Battle Arena)

Similarly, to other MOBAs Subjugation's map has two bases at opposing sides of the map and players fight to capture the enemy's base. Players control a Conqueror and can use their unique strengths/abilities along with an armada of minions they command to help dominate the map and win the game.

Before entering a match, players can select a Conqueror to play and four different minion types, this allows for a large variety of playstyles and strategies to be used.

## Why Rat Wars?

The map in Rat Wars is broken down into tiles and many of these tiles have randomly generated points of interest/areas that can be captured/controlled by players to reap bonus resources and/or gain strategic advantages to help over their opponent

This random generation offers players a fresh new map for each and every match they play.

## Game Concept & Mechanics

The game has several core mechanics: Conquerors, Minions, The Map, Match Time Scaling. Players gain "Shinies" overtime, shinies is a currency used by the rats to purchase minions for warfare. Players must capture tiles and control points in order to increase the rate that they gain shinies. One of my main goals with this project was to create a very diverse game where players of many different playstyles could enjoy the game by using any combination of characters they like.

### Conquerors

Conquerors as said before are player controlled characters, five are planned for when then the project is finished and each has their own strengths, weaknesses and play styles.

### Minions

Minions are AI controlled characters that follow the player, players choose four minion types to bring into the match. Minions are purchased for shinies and act based on what their owning player commands such as attack, defend and recall.

### The Map

The base map planned to be in Rat Wars uses an eight by eight of mostly random generated Tiles to create a different map for every match which will change how players interact with the map and cause players to adapt their strategies in every time. The map also is mirrored through the centre so

that players have the same tiles on their side ensuring that no player gets an unfair advantage from map generation.

Below is a simple view of the map and has different coloured tiles to show each different tile type:



### **Fixed/Constant Tiles**

These tiles remain the same in every match and are subject to little or no random generation. These tiles are where Bases and Control Points are located.

### **Cosmetic tiles**

Cosmetic tiles are tiles that are almost functionally the same in every match with some very minor mostly aesthetic randomness. All yellow tiles have Paths on them that Base Minions follow to get to Control Points and Bases.

### **Wall Cosmetic Tiles**

Wall tiles have a wall stretching from side to side in the middle of the tile preventing all traffic through them, they also have some very minor random generation for aesthetics. On the yellow tile between these wall tiles is where Gates are located.

### **Outer Gen Tiles**

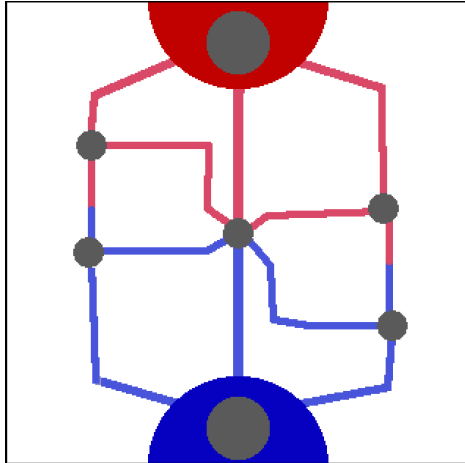
Outer gen tiles contain most of the generated parts of the game, these tiles will contain the bulk of capturable Structures, that when captured offer some bonus for the player who owns them.

### **Inner Gen Tiles**

Inner gen tiles contain more powerful combat orientated Structures which have a large bearing on combat in surrounding tiles

## Control Points & Paths

The map in Rat Wars contains 7 control points, 1 in each base, 2 on either side of the map and finally 1 in the very centre of the map. Below is an illustration of the map showing the paths, the bases and the control points.



Red/Blue Lines – Paths

Small Grey Circles – Map Control Points

Larger Grey Circle – Base Control Points

Red/Blue Semi-circle- Respective Bases

(All of the following control point/ minion values are subject to change)

Initially the only control point a player owns the one located inside their base (Large Grey Circle).

At the start of the match both player Bases will send out a group of around 3 Base Minions to the control points on the left and right side of the base, these minions will follow the paths to the control points and proceed to capture them.

### Capturing Points

Control points require 70 “Charges” (C for short) for a team to change a control point capture state,

Map control points have a neutral state between team states so capturing a point from the enemy team will take 140 C, 70 C to neutralise and a further 70 C to capture.

Minions generate 1 C/s while on a point and Conquerors generate 10 C/s, for example a group of 10 minions and their Conqueror would capture a point from neutral in 3.5 seconds.

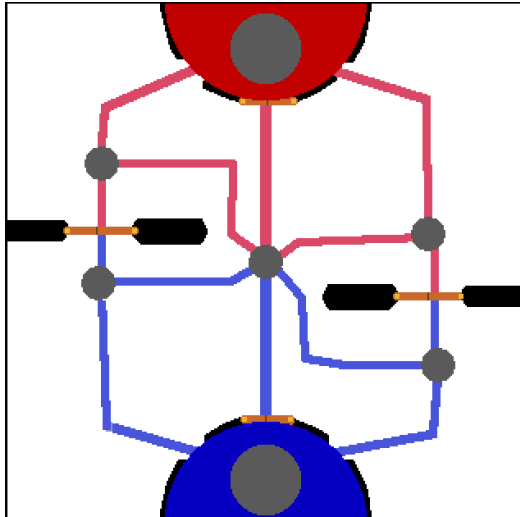
At the start of the match minions who trek from their base to the first 2 neutral points will take 23.33 seconds to capture the points while there.

### Control Point Win Condition

Players are only able to capture the enemy base control point if they own at least 1 control point on either side of the map and the central control point.

# GATES

Gates play an important role in the evolution of combat and the movement of Base Minions throughout a match in Subjugation. Overall, there are 4 gates on the map, 1 on each base and 2 in the middle of the map between the wall tiles. Once a gate has its opening condition filled it will open and will remain permanently open for the rest of the match. Below is an illustration of the map with gates and walls in place:



Brown Lines with yellow dots – Gates

Thick Black bars – Walls

Thin Black Bars – Base walls

## Opening Conditions

**Middle Gates** - One of the Gates in the middle of the map will open if a team owns both control points on either side of it. Once the gate is open minions and Conquerors are able to pass through it to reinforce the control point on the opposing side or to advance into enemy territory.

**Base Gates** - Both player Base Gates will open 10 seconds (condition and value subject to change) after the central control point is captured. Enabling the player Bases to Reinforce or Advance on the central control point.

## Base Minions

Base minions are spawned 1 by 1 to from a group of minions which will advance along a path to a control point to fight and capture it. They are not selected by the player before the match and are the same for everyone. Typically there are 2 kinds of base minions, melee and ranged.

**Melee** – Base Melee minions are the grunts of the game and only serve to mindlessly attack and soak damage for other minions/Conquerors. They regenerate health slowly and have a higher health pool.

**Ranged** – Base Ranged minions are what hide behind the melee minions and deal most of the damage. They are significantly squishier than melee minions, having a much small health pool. They shoot small arrows a from little crossbows that deal descent damage.

The ratio of ranged to melee minions will try to be 3 melee to 2 ranged.

## **Base Minions Spawning & Control Point Limiting**

The number of minions spawned by a base is affected by two things, [Match Time Scaling](#) and control points assignment / limits.

At the start of the game bases send an initial wave of 10 minions to both side control points and will then continue to spawn a wave minions every 20 seconds, these waves are called "spawn waves". The waves then shrink spawning up to 3 minions per wave and slowly this will scale up by 1 minion every 90 seconds up to a maximum of 10 minions per wave. (Values subject to change)

When spawning a wave of minions the base will spawn minions 1 second apart so they proceed in a line toward a control point. Bases will also see what kind of minions are assigned to a point and will try to spawn different minions to hit the 6/4 melee to ranged ratio. For example: If a side control point has 2 melee and 3 ranged it will try to spawn 4 melee and 1 ranged to fill the numbers.

In order to prevent bases from continuously spawning minions and lag out the game there are limits placed to control the spawning, the side control points have a limit of 10 base minions and the central point has a limit of 20 minions. Base control points are not assigned minions and have no effect on minion spawning.

Finally minions are spawned based on assigned position: So if 10 minions on a side control point are assigned to advance through a gate and get attacked before they leave it is possible that 10 base more base minions spawn to defend the point as there is no minions assigned to that point and 20 minions could be on the same point "defending" it.

## **Advancements & Reinforcements**

Every 20 seconds when a base spawns minions the base also checks if minions can do any advancing or reinforcing. Reinforcing is sending minions to a point you own to replenish numbers and advancing is sending minions to enemy control points to capture them.

Unlike bases which spawn minions 1 by 1 advancing is an entire control point of minions moving forward as one unit, reinforcing is similar but the number of moving minions is determined by minion type and number of minions that need to move to hit the control point limit, control points will rather satisfy the next control point than fulfil their own minion needs.

## **Match Time Scaling**

Match time scaling is a core system of Subjugation which effects how the game ramps and becomes more intense over time. The things effected by MTS are: Respawn Times, Gold Income /s, Control Point Limits, Horde Size, Signature Ability Unlocks and Conqueror Stats. Time scaling starts slowly after 1 minute slowly ramps up overtime stopping at its maximum at 15 minutes. This splits the game up into 3 parts Early Game, Mid Game and Late Game.

### **Respawn Times**

Respawn times are how long it takes a Conqueror to respawn after being slain in battle, initially this time is only 15 seconds and slowly ramps up over time up to 40 seconds over the match.

## Horde Size

The maximum number of minions that can follow a Conqueror increases throughout the course of a match beginning at 8 minions this amount scales to a maximum of 25 minions.

## Gold Income /s

As the Horde size increases so too must the amount of gold a base generates to accommodate this, at Late Game a player should have enough gold to summon about 70%+ of the maximum horde size and the other rough 30% should require a gold mine to be frequently afforded.

## Control Point Limits

This is detailed in the [Base Minions Spawning & Control Point Limiting](#) segment.

## Signature Ability Unlocks

As detailed in the [Abilities](#) section Signature abilities are very powerful and are unlocked after some time, the time to unlock signatures varies from Conqueror to Conqueror but usually it is around the Mid Game at roughly 3 minutes.

## Conqueror Stats

With the increase in the number of minions on the map over the course of the match Conquerors can start feeling weaker as time goes on, to compensate this some Conqueror stats increase slowly over time. The main stats that increase are health and damage, increasing by a factor of 30% from 5 to 15 minutes (1% every 20 seconds).

# Technologies

### Unity

The game is being created in Unity with C# and Mirror is being used for implementing networking

### Blender

All 3D assets will be created by me in Blender, this includes everything from the map props to the characters and buildings

### GNU Image Manipulation Program

All 2D assets such as sprites/textures sheets will be made by me also in GIMP.

For the game sound effects and music I plan to use my own sound recordings along with BFXR, Audacity and Bosca Ceoil.