

*COMP3770 Fall 2021 Group 14*

Design Document for:

# **Capture the Flag**

All work by COMP3770 Fall 2021 Group 14

Written by Dennis Dao, Mingxi Guo, Jim Lin, and Arthur Wei

Version 1.0

Wednesday, November 10, 2021

# Table of Contents

Game Name	0	Weapons	4
Game Overview	2	Overview	4
Game Features	2	Javelin	4
Multiplayer Features	2	Sword	5
Gameplay and Mechanics	2	Bow	5
Game World and Genre	3	Bola	5
Overview	3	Player-made Traps	5
Camera	3	Charge Attacks	5
Game Engine	3	Upgrading	5
Map Layouts	3	User Interface	6
Overview	3	Overview	6
Map #1	3	Audio	6
Map #2	3	Overview	6
Map #3	4	Multiplayer Games	6
Classes	4	Overview	6
Overview	4	Max Players	6
Mage	4	Networking	7
Rogue	4	Gameplay (Game Flow)	7
Monk	4		
Knight	4		

## Game Overview

Our version of the capture the flag captures the real life version of the game, but putting a medieval theme to the game. With the use of Mirror Networking for multiplayer gaming and the Unity Game Engine, we hope to provide a new twist to the game.

## FAQ

- What is this game?
  - Based on the real version of the game “Capture the Flag”, but with some new elements to put it in the medieval theme and expand on it. Teams of 2 players face off against each other to capture the other team’s flag.
- What will I control?
  - You control a chosen character class with a chosen weapon and work with your teammate to successfully capture the other team’s flag
- The main focus?
  - Like the real game, you work with your team to capture the other team’s flag and defend your own from them. First team with 10 captures wins.
- Different from others?
  - We plan to focus on making the game replay-able and allow the user to affect how the match will go other than just simply controlling your own character and working together with your team.

## Game Features

Our version of capture the flag will include the following features and mechanics for gameplay:

### Multiplayer Features

- Easy to find games
- A chat to help users coordinate their gameplay or to just the pass time waiting for the match to begin
- Markers to show where your teammate is, where your flag is
- A user interface displaying all player info and briefly mentioning your teammate’s status

### Gameplay and Mechanics

- 4 classes to choose from, each with their own abilities and perks
- 4 upgradeable starting weapons, and possibly customizable
- Several maps to choose from, some dynamically changing
- Buffs: Elemental arrows, speed up, defense up, attack up, armor piercing
- Debuffs: Slowness, defense down
- Other typical pickups such as health, energy shards
- Ability to pick up and place traps such as mini towers
- An optional time limit to raise stakes

## **Game World and Genre**

### **Overview**

Along with making our game world in a medieval theme, we plan to make our game match the following game genres:

- Strategy - capture your enemy's flag while defending your own, how to do it?
- Multiplayer online battle arena (MOBA) - playing with people over a network
- Role-Playing - play as a class
- Party Games - playing with other people
- Action-adventure - going into combat with others

Samples of the game world will be discussed in more detail in the maps section.

### **Camera**

We plan to allow the player to switch between a first-person camera and a third-person camera depending on their preferences. In the third-person camera, it follows the player from behind the direction they are facing.

### **Game Engine**

We plan to use Unity3D to handle physics and rendering our terrain/landscapes on the available maps. With the Mirror Networking asset, it will also be able to handle hosting the server for clients (the players).

## **Map Layouts**

### **Overview**

Our game provides several maps for players to capture the flag on. Each will have different features, and some of them have dynamically changing elements, such as moving platforms.

#### **Map #1**

A wide plain, with few hills in the middle, some broken ruins for cover, and some woods around/scattered on the map.

#### **Map #2**

This map might be a jungle map. Mostly covered in trees, small paths, streams, and caves. Aggressive monsters could be added for this map.

## **Map #3**

This map could be a city map. Filled with buildings, close corners, multiple routes from above on the rooftops and below on the ground.

## **Classes**

### **Overview**

In order to make the game more than just “pick one of four different weapons and play as a typical soldier”, we include four different classes the player can play as, each with their own perks and abilities. This can be combined with the weapon choices, allowing the player to see what works best for them.

### **Mage**

Decent attack and defense, can perform a spell (a choice of a teleport, fire, shock, or frost) after x amount of swings/fire

### **Rogue**

Decent attack and defense, quick, and can deal lethal damage to enemies who have low health remaining

### **Monk**

Poor defense and attack, can heal teammates

### **Knight**

Great defense and attack, but slow-moving

## **Weapons**

### **Overview**

In addition, the game should be more than just “pick a typical generic class” (mage does magic, knight goes melee). Players can choose the weapon they want to fight with along with their class, allowing them to see what works for them. In addition, weapons can be upgraded and some traps can be placed down during the match.

### **Javelin**

- Melee/Medium range
- Low damage & attack speed
- High damage when charged

- Long range throws when charged
- Will have different effects with different classes.

### **Sword**

- Melee/Close-range assault
- Medium damage & High attack speed
- Will have different effects with different classes.

### **Bow**

- Non-melee weapons/ranged weapons
- Medium damage & attack speed
- Ammo required and must be reloaded\*
- Will have different effects with different classes.

### **Bola**

- Melee/Medium range
- Medium damage & attack speed
- Will have different effects with different classes.

\*may not be applied

### **Player-made Traps**

- A tower-like trap that could shoot arrows automatically to the enemies.
- A speed bump trap that slows players when stepped on.
- A poison trap that deals X damage every second in a small area for 60 secs.
- A death trap that deals 100% of base health damage.
- A freeze trap that freezes a player for 60 secs.

### **Charge Attacks**

Charged attacks are performed based on the energy shards/fragments picked up. A player can hold up to 5 energy shards, with one shard equivalent to one charge attack.

### **Upgrading**

\* Only applied on weapons

#### **MAX Level 3**

Lv. 0 -> Lv. 1 requires 2 kills

Lv.1 -> Lv. 2 requires 3 kills

Lv.2 -> Lv. MAX requires 4 kills

## User Interface

### Overview

Like most games, our game will have an interface that the user can interact with as a graphical user interface (GUI). Including the typical main menu where users can decide to play, quit, or change some preferences, we plan to allow the user to have a helpful interface during gameplay.

- List the ammo (if applicable) of a weapon remaining
- List the equipped weapon and any items the player may have
- List the user's status (health)
- List the match status (points, time limit)
- Change the overall tint of the screen depending on status effects (none = healthy, green = poisoned, red = near death, etc.)
- A chat window, whether to pass the time or coordinate with your team
- Markers for where your teammates are and where your flag is
- If players drop connection unexpectedly (heavy lag, lost connection), then the team that lost their member could have a permanent buff to balance

## Audio

### Overview

To add to the feel of the game, we plan to add audio that matches the medieval theme of our game and to match the player's situation, such as:

- Different background audio depending on the map
- A team is one point away from winning/low time remaining
- Pre-match and post-match themes
- In the menus

## Multiplayer Games

### Overview

Our game has no single player features, it must be played with at least one other person over a network. The game should play out similarly to a real life version of capture of the flag.

### Max Players

The maximum number of players can be up to 4 human players, going in teams of 2. Alternatively, there can be 2 human players, going against each other. This game will not be using any bots.

## Networking

Using the Mirror Networking Asset provided in the Unity Asset Store, our game will use a TCP networking transport to network with other players. In designing this game, the server and client are one project and will use the same code.

## Gameplay (Game Flow)

Like a typical game of Capture the Flag, the two teams must work to defend their own flag and capture the other team's flag. At the start of the game, players will start at their bases with their base class and weapons. Throughout the map, there are collectibles that can be used to place down traps (ex. Towers that shoot arrows), energy shards to perform charge attacks, gain buffs, debuffs, and health, and gain experience by killing enemies. By gaining experience, the player can gain levels to improve their weapons.

Depending on class and weapon, a player can have specific abilities and limitations. Each player has a certain amount of defense, but all will have 100HP. If playing as a magic-based class (monk, mage), then mana will be gained on one successful hit on an enemy. Both will have a max of 10 mana, where each can cast their own spells. Mages can choose from a fire, frost, shock, or teleportation spell. Priests can choose a healing spell.

The aim of the game is to capture the opposing team's flag, located at their home base (usually opposing the other team's base). When capturing the flag, the team that owns the flag will be notified that their flag has been taken and the player holding the flag will be marked for them to find. If the enemy player holding the flag is killed, the flag will be dropped where it is. Depending on the next player that picks it up, the flag will either:

- Warp back to its base if collected by the team that owns the flag
- Be carried by the player if collected by the enemy team.

Teams can score by bringing back the enemy team's flag to their own base. With an optional time limit, it can increase the urgency to make progress. In the case of time-limited matches, the team with the most points by the end or has 10 points before the end wins. In the case of no time limit, the team who scores 10 points first wins. In both cases, the game in the current arena will end and then switch to a new arena, possibly voted for by players.