

# DinoFightinSaurS

Design Document

1.5

Team 1  
TC 497 Fall  
2013 @ Michigan State University

# *Table of Contents*

## 0 Design History

## 1 CONCEPT & STRUCTURE

### 1.0 General

### 1.1 Game Concept

### 1.2 Gameplay

### 1.3 Feature Set

### 1.4 Basic Level Settings

### 1.5 Basic Character Settings

## 2 GAMEPLAY MECHANIC

### 2.0 General

### 2.1 Control

### 2.2 System Workflow

### 2.3 Pickups

#### 2.3.1 General

#### 2.3.2 Category and function

#### 2.3.3 Block pickups

## 3 USER INTERFACE

### 3.1 In-game Interface

#### 3.1.1 Layout and content

#### 3.2.1 View and perspective

#### 3.2.2 Camera movement

##### 3.2.2.0 Fixed

##### 3.2.2.1 Standard movement setting

##### 3.2.2.2 Unique movement setting

#### 3.2.3 Camera effects

## 4 LEVEL DESIGN

### 4.0 General

### 4.1 Map 1

#### 4.1.1 General

#### 4.1.2 Feature

#### 4.1.3 Layout

### 4.2 Map 2

#### 4.2.1 General

#### 4.2.2 Feature

#### 4.2.3 Layout

### 4.3 Map 3

#### 4.3.1 General

#### 4.3.2 Feature

#### 4.3.3 Layout

**4.4 Map 4**

**4.4.1 General**

**4.4.2 Feature**

**4.5 Map 5**

**4.5.1 General**

**4.5.2 Feature**

**4.5.3 Layout**

**4.6 Map 6**

**4.6.1 General**

**4.6.2 Feature**

**4.7 Map 7**

**4.7.1 General**

**4.7.2 Feature**

**4.7.3 Layout**

**4.7 Map 8**

**4.7.1 General**

**4.7.2 Feature**

**4.7.3 Layout**

**5 ART, MUSIC & SOUND EFFECTS**

**5.1 Game Art Style Reference**

**5.2 Model List**

**5.3 Base Animation List**

**5.4 2D Asset List**

**5.4 Sound Effects**

# Design History

**Initial Draft** 9/16/2013

**Update 1** 9/17/2013

- Deleted speed upgrade
- Weapon firing animation shares one animation for now
- RS aiming with controller now only supports 8 direction
- Art reference update

**0.9** 9/19/2013

- Camera design

**0.95** 9/24/2013

- Level design concept
- Name change

**1.5** 11/21/2013

- Final polishes
- Team play mode
- 4 additional levels
- Graphic illustration updates

# 1 CONCEPT & STRUCTURE

## 1.0 General

- **Main Target Audience:** 10+
- **Target Platform:** PC / Mac
- **Genre:** Platformer / Action
- **Player Number:** 2-4
- **Screen Aspect:** Portrait

## 1.1 Game Concept

DinoFightinSaurS is an action game in which player competes with their friend against each other, trying to defeat their opponent by using a variety of ranged methods including arrow, magic spell, bomb, etc., while building their own path for a better strategic point.

The game supports 2-4 players competing against each other on a same screen, on one computer or through online competition. The game camera is using side view perspective view.



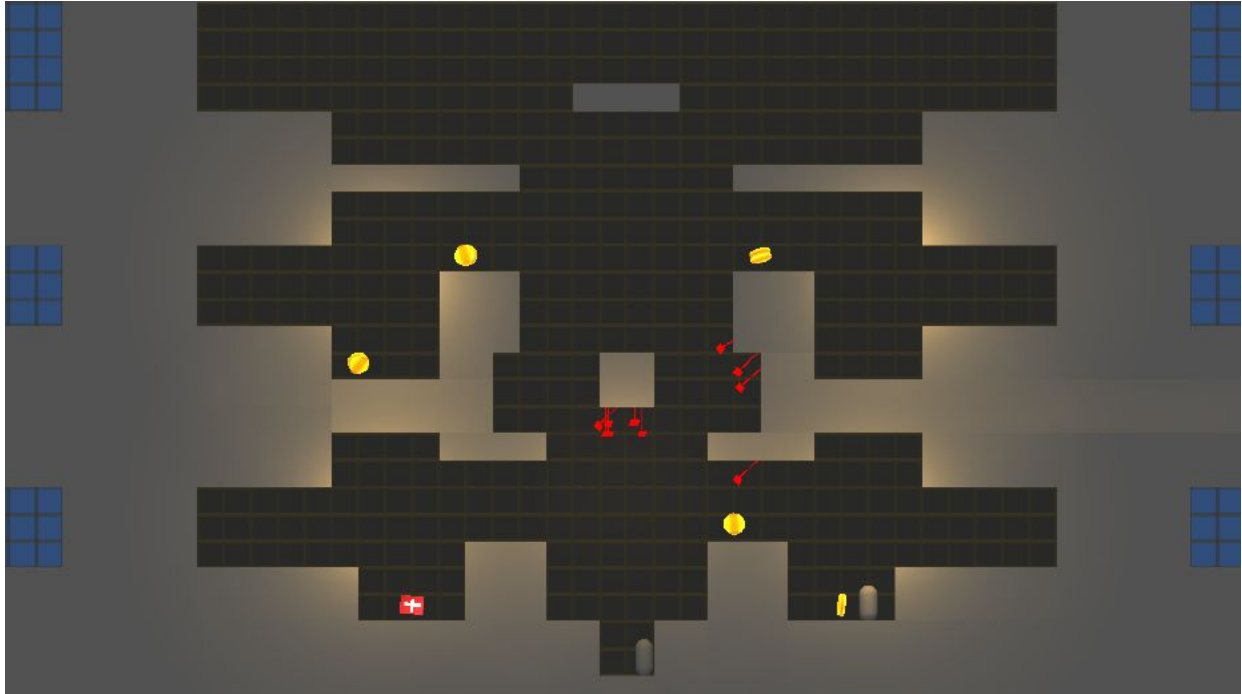
Concept Reference (Towerfall)

DinoFightinSaurS features pure PvP content, providing various environment for players to enjoy competing with each other, surviving other's attacks while trying to find opportunities to hit opponent.

## 1.2 Gameplay

The goal is to defeat every other player in the map, to be the last one standing.

In each round, all players start fresh and equal. The shape of each map will all be symmetrical for every player.



The most unique feature of the game is that the player will be able to destroy and create bricks to change the game map according to their tactical needs. Player can use choose to build up bricks to get higher in order to get a better strategic point, or can choose to simply use their bricks to lay a way out to get across the map in order to get specific item, or even simply just to use the brick to block an incoming attack from the opponents.

Besides different attack abilities which most likely player will get within the level, we will try to create a more dynamic environment which allow the player interact more with the environment.

Our goal is to pass the power of creation onto player's hand, into gameplay, into each round of the game.

## 1.3 Feature Set

- **2 – 4 Player**
- **Symmetric map**
- **Unique “block” system that allows player to create their own path**
- **Infinite possibilities of creation in each level**

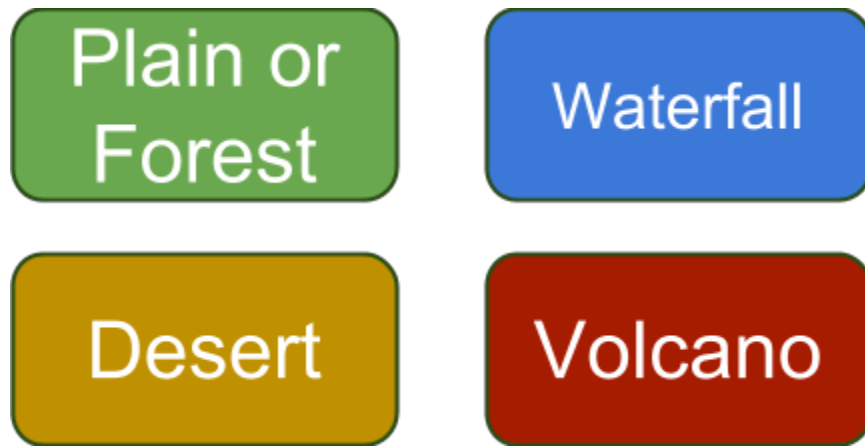
- **Combination of action and strategy**

## 1.4 Basic Level Settings

We start with **four** levels, each with their own unique theme. These “levels” are essentially “tournament maps” for player to choose from. Play will have access to all four maps from the start.

Different levels themes has their own model and potentially, textures for the blocks, decorative background and decorative foreground. Level structure itself also varies from one to another, creating opportunities to go for different strategies for the players.

The themes of the four levels are currently set as:



More level / themes might be introduced in the future.

**\*In update 1.5, 4 more additional levels are added to the game. See chapter 4 for more details.**

## 1.5 Basic Character Settings

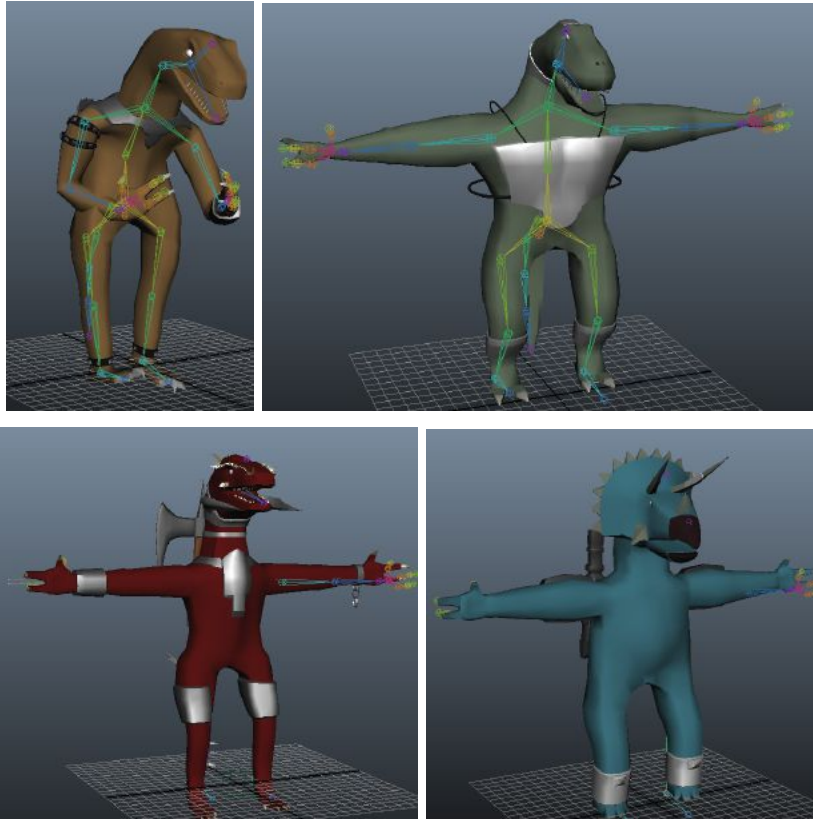
Again, we start with **four** controllable characters for player to select from. Each of them has unique appearances, but they are all the same in terms of game mechanic.

They will have:

- Same collider shape and size
- Same animation\*
- Same attributes setting
  - Health, speed, starting ammo, etc
- Different appearance
  - Model and texture
- Different sound

*\*Animation might vary as project develops.*

The theme for character design is humanoid dinosaur.



*Character design*

As shown above, characters in the game are dinosaurs resembling human features. They stand on their legs and uses weapons to attack the enemy.





*Character design reference (Extreme Dinosaur)*

## 2 GAMEPLAY MECHANIC

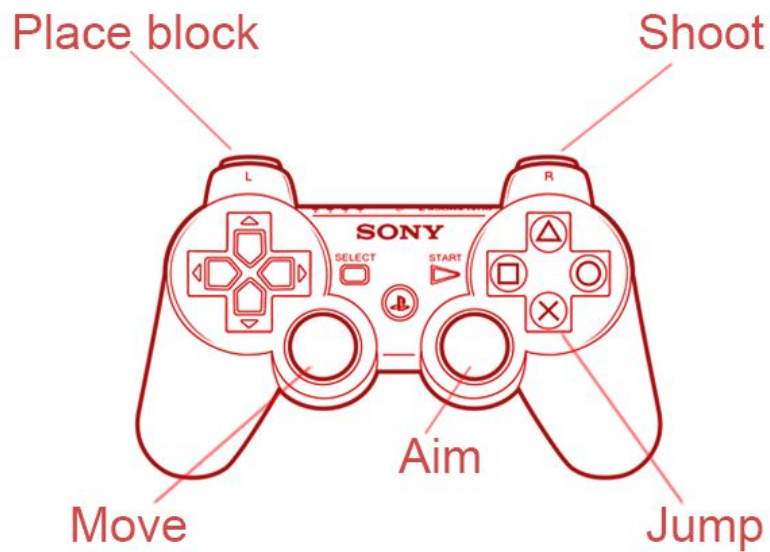
### 2.0 General

We want to bring the player an engaging gameplay experience while providing them enough space for creation, to allow players adjust their play style to with their own strategy.

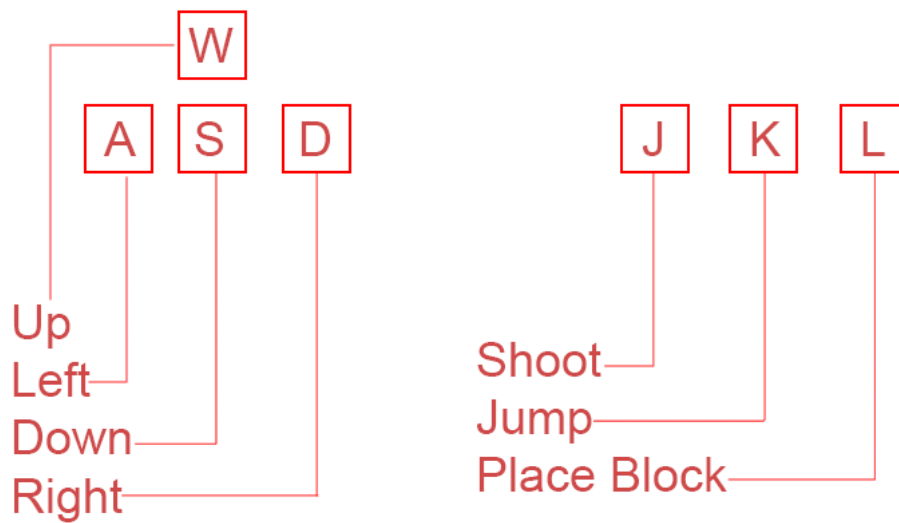
The intriguing part about the game is the idea when players are playing against each other, making decisions about if, when and how to use their bricks, and if, when and how to attack.

Besides local competition, one of the project's challenge is networking. We want to make the game able to support online competition, allowing players to play on different computer thus giving more space for each player's control.

### 2.1 Control



*Default control key map for controller (PS3 Dualshock 3)*



*Default control key map for keyboard (Player 1 only)*

For the controlling mechanic of the game, controller is suggested but keyboard is supported as well. Player will be able to customize keybindings to adjust the controller layout based on their habits.

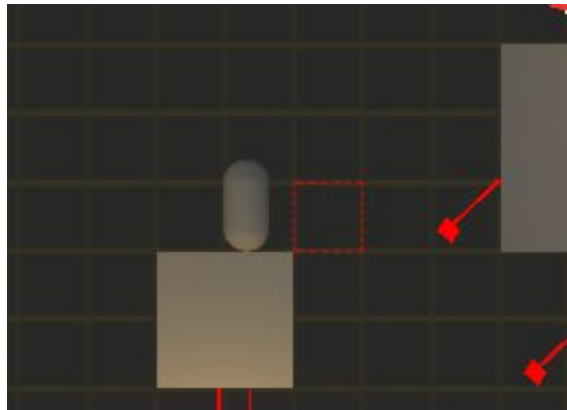
In the game, player's possible actions(**intended** and **unintended**) are defined and described as below:

- **Move**

- Moving left /right
- Up and down will not move the character, instead it will make the character look up / down.
  - For quick aiming purpose.
- Speed can be affected by pickup

- **Place block**

- With controller, player can use Right Stick for aiming.
  - While aiming, There will be an indicator showing where the current block spot is selected for block placing.



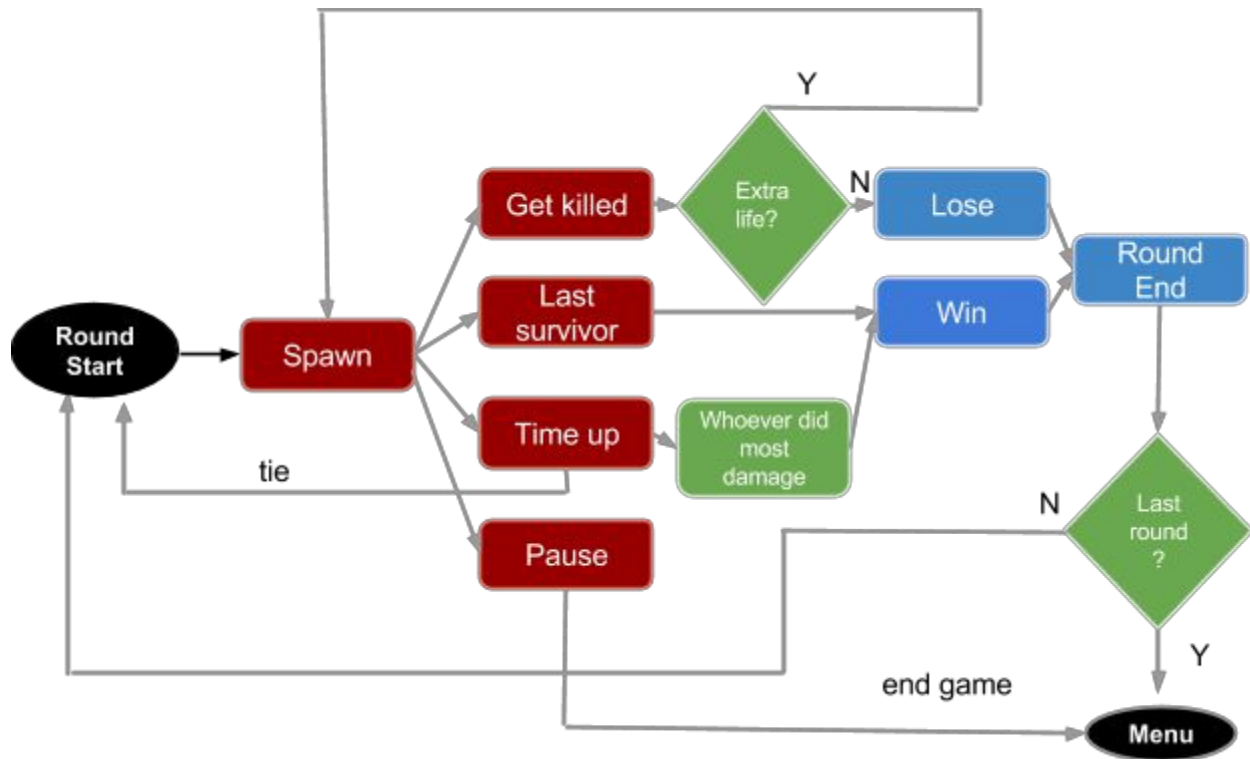
- 45 degree aiming is supported. Player can only place block within the grid.
- With controller, player cannot place block without aiming. Player simply lets go of aim stick and releases place button to conserve block.

- **Shot**

- With keyboard, the shooting direction will be determined by character's facing / moving direction.
  - 45 degree shooting is supported
- With controller, player can use Right Stick for aiming.
  - While aiming, a line indicating direction will be displayed.
    - While displaying this direction indicator, the block spot indicator will disappear.

- 45 degree shooting is supported
  - With controller, player cannot shoot without aiming, Player simply lets go of aim stick and releases place button to conserve ammo.
- **Jump**
  - Player can control moving direction while in the air.
  - **Double jump:** If player press jump for second time while the character is in the air, the character will perform a double jump.
- **Pickup**
  - Simply by walking to the item.
  - Pickups include
    - Ammo / Weapon
    - Extra life
    - Upgrade
    - ...
    - Blocks
- **Get hit by other player's attack**
  - If player has HP left.
- **Get killed by other player's attack**
  - If player has no HP left when being hit.
  - If player has more lives, he/she will respawn at his spawn point after a period of time.
  - If player doesn't have more lives, he/she will need to wait for the end of this round.
- **Get killed by camera edge**
  - In some levels cameras are moving in a designed pattern. If player goes off screen in this case, they will be killed by the camera.
- **Fall off the map**
  - If in the level there are places where player will fall, player can fall off the map.
  - If player does so, he will lose his life immediately.
    - If player has more lives, he/she will respawn at his spawn point.
    - If player doesn't have more lives, he/she will need to wait for the end of this round.

## 2.2 System Workflow



## 2.3 Pickups

### 2.3.1 General

Pickups are the resource in the game that player is encouraged to compete for.

Different pickups gives players different advantages including more ammo, better fire power, better tactical weapon, upgrade, extra life, or more blocks.

Pickups will be spawned in tactical positions in each level, and the spawn points will be fixed in potentially high traffic positions of each map. Spawn rate might also differ for different types of pickups.

*\*All associated parameters should be editable variables in the editor.*

### 2.3.2 Category and function

Basic weapon pickups:

Name	Description
<b>Arrow</b>	Player's arrow ammo amount will refill.
<b>Fireball</b>	Player will be able to shot fireball (straight line attack) in designated direction.
<b>RPG</b>	Player will be able to launch one rocket at the designated direction.
...	

\*Specific names and attributes of available pickups might change as project develops.

#### Arrow

- Player's default weapon.
- Projectile line affected by gravity.
- Ammo spawns as one of the pickups in the levels. General spawn rate should be above all the rest of the pickups.
- *At the beginning of each round, the amount of arrows given to the player should be changeable in the editor.*

#### Fireball

- Advanced pickup weapon.
- Projectile line NOT affected by gravity.

#### RPG

- Advanced pickup weapon.
- Projectile line affected by gravity.
- Causes 9x9 damage effect to the hit area, centering on the collided block.

### 2.3.3 Block pickups

Block is a special resource in the game. Player can use place blocks near themselves on the gridded map for strategic reasons.

There are 2 kinds of blocks in the game, normal blocks and level-base blocks.

At the start of each round, each player gets a default amount\* of blocks to use. After player place blocks down, they can recover it by hitting it with their weapon, and then pick up the block drop. Player can also try to get extra blocks by destroying non-level-base blocks and then

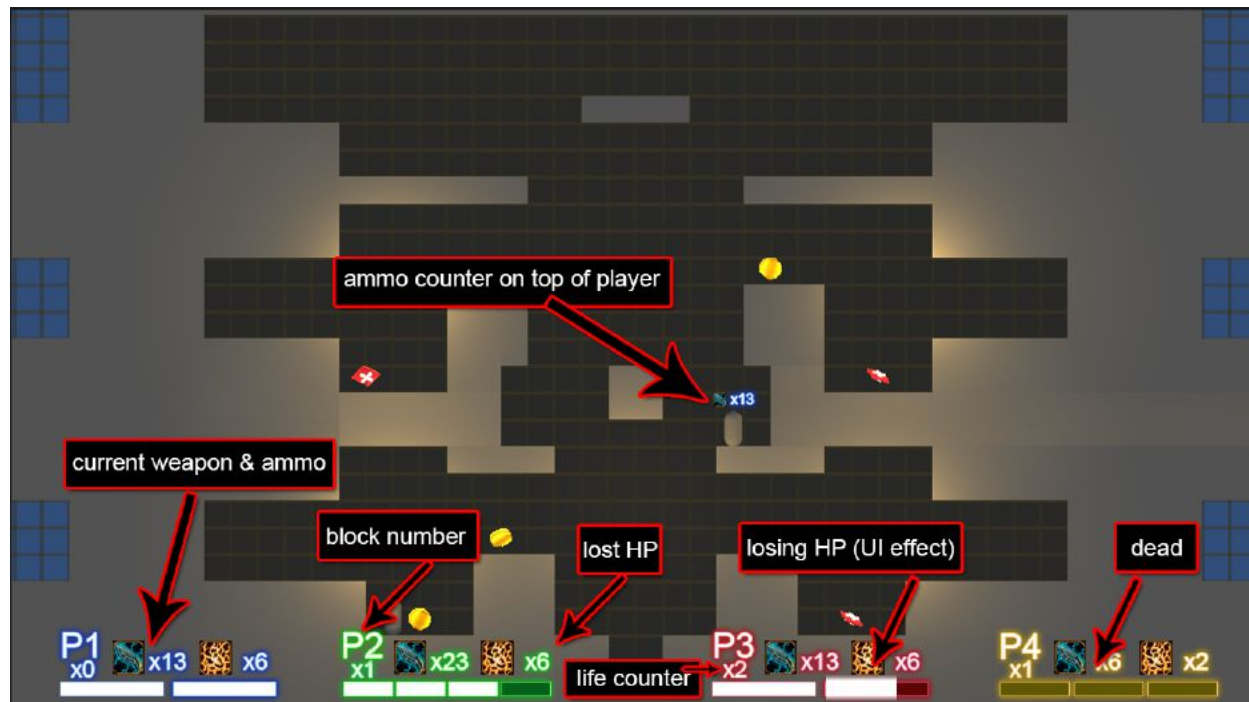
pick them up.

*\*Block pickup drop borrows the concept from minecraft.*

# 3 USER INTERFACE

## 3.1 In-game Interface

### 3.1.1 Layout and content



*UI Content*

\*This illustration only shows basic concept of UI, details including HP numbers and layout of UI might differ.

As shown above, the UI design in the game is simple and only conveys necessary informations without taking too much space of the screen.



Each player's situation is illustrated with a section containing:

- Player number
  - Identifies which player this section belongs to
- Player live count
  - Shows how many lives player still have
- Current weapon icon
  - Identifies what type of weapon is currently being used.

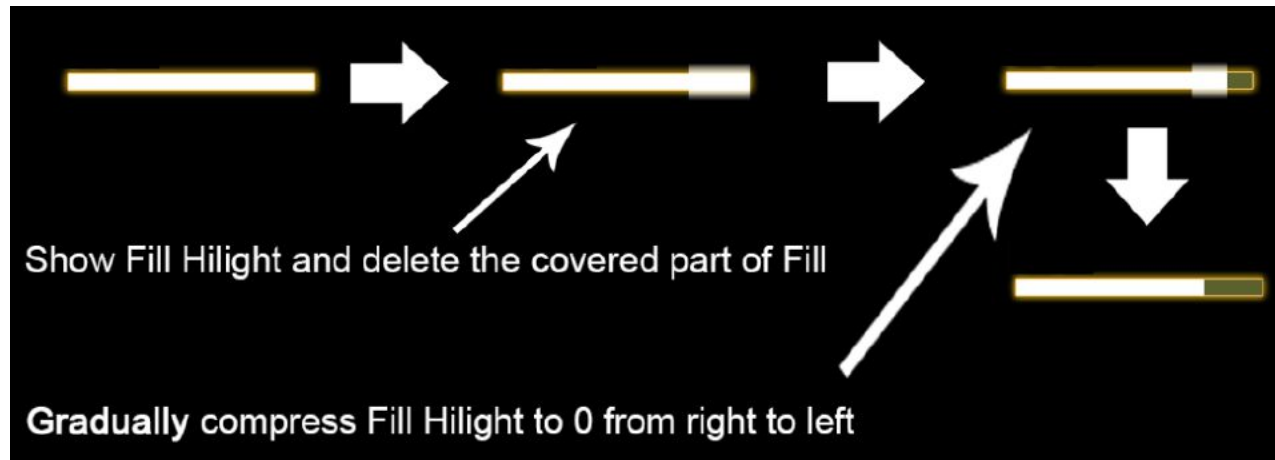


- Current weapon ammo
  - Shows the amount of ammo of current weapon.
- Current block icon \*
  - Identifies what type of block is currently being used.
- Current block number
  - Shows how many blocks is left.

*\*More than one types of block might be introduced in the future.*

### 3.1.2 Effects

In order to make the UI more dynamic and intuitive, special effect is applied when player loses health.



As player gets hit by the enemy and start to lose health, the to-be-lost section of the health bar will be “lighted up”, and then gradually disappear from right to left as shown above, revealing the emptied health section.

## 3.2 Camera

### 3.2.1 View and perspective

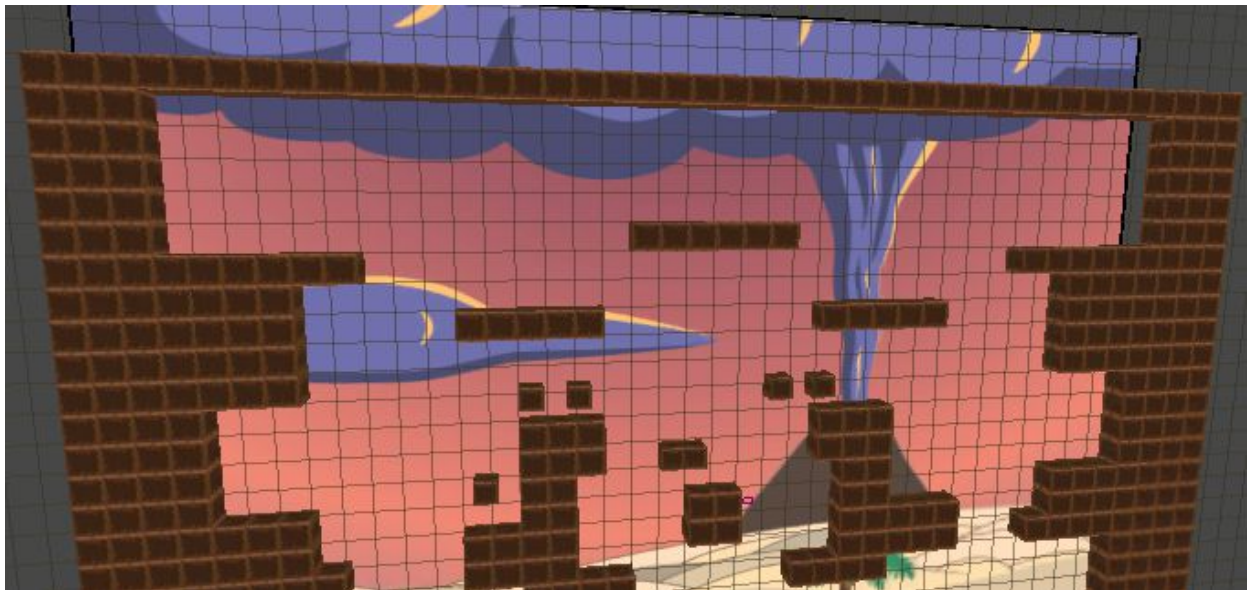
- **Orthographic**
- **Side View**

The cameras of the game in all levels are in orthographic side view. Player will not be able to see the side and back of the blocks regardless of any movement from the camera.\*

*\*The purpose of making blocks 3D is so that the player will see the brick shatter as they destroy them.*



*Game view of prototype level*

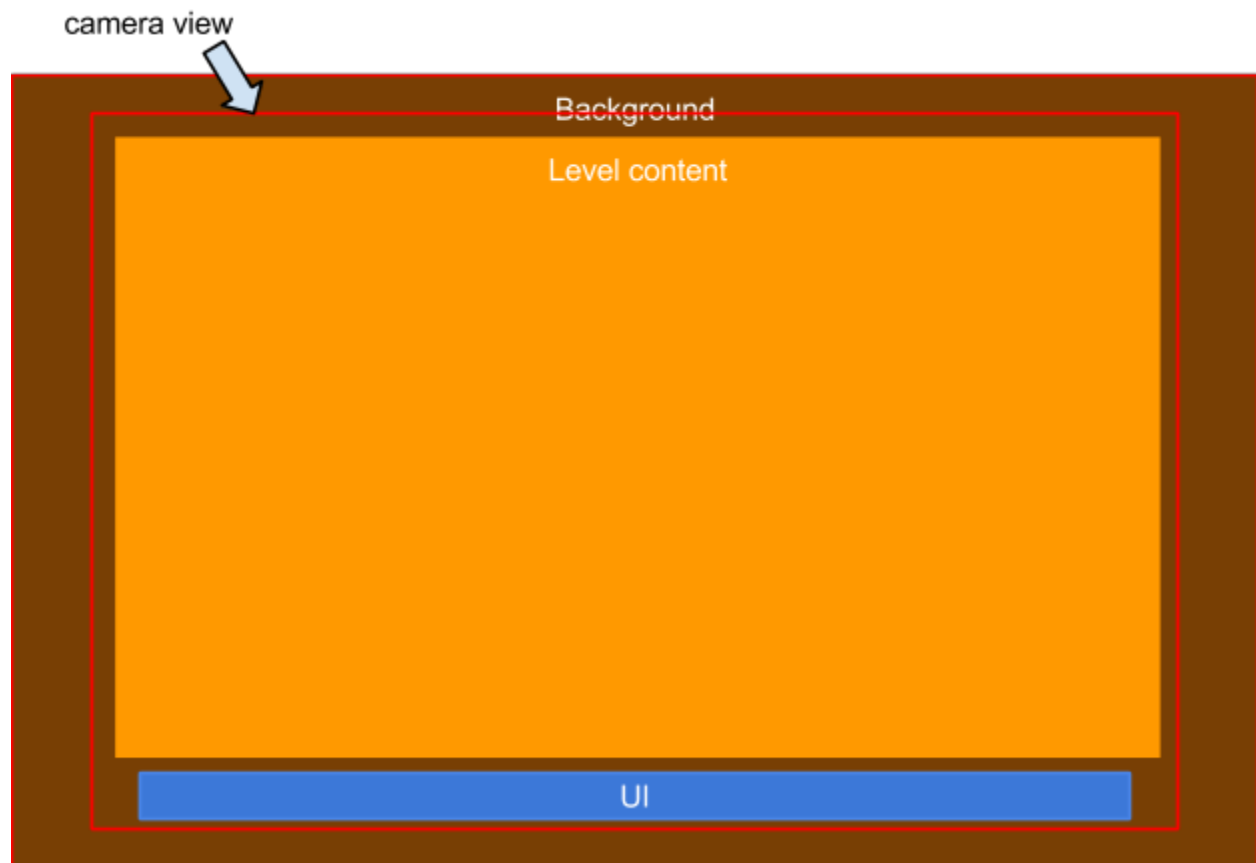


*Editor view of prototype level*

### 3.2.2 Camera movement

#### 3.2.2.0 Fixed

Depending on level design requirement, camera in some levels are to be fixed throughout game play. The camera view shows the layout of the whole level, while also allowing extra space for UI.



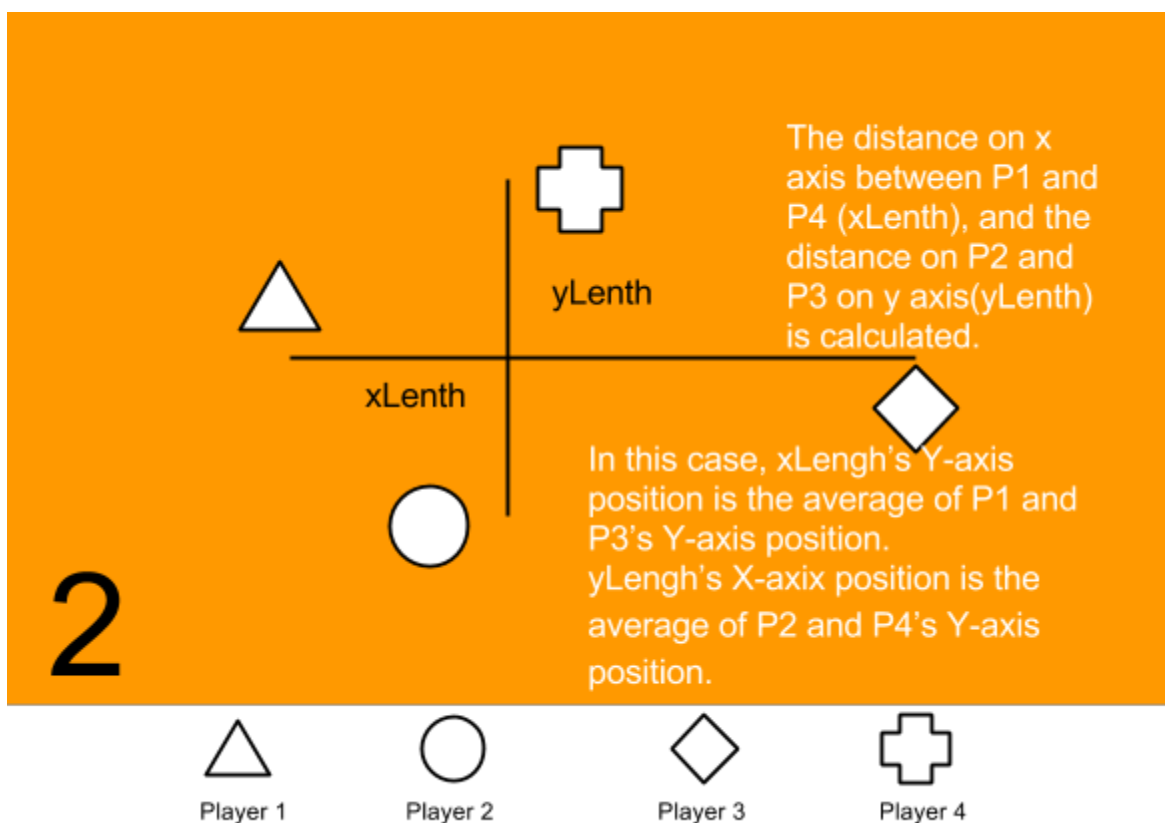
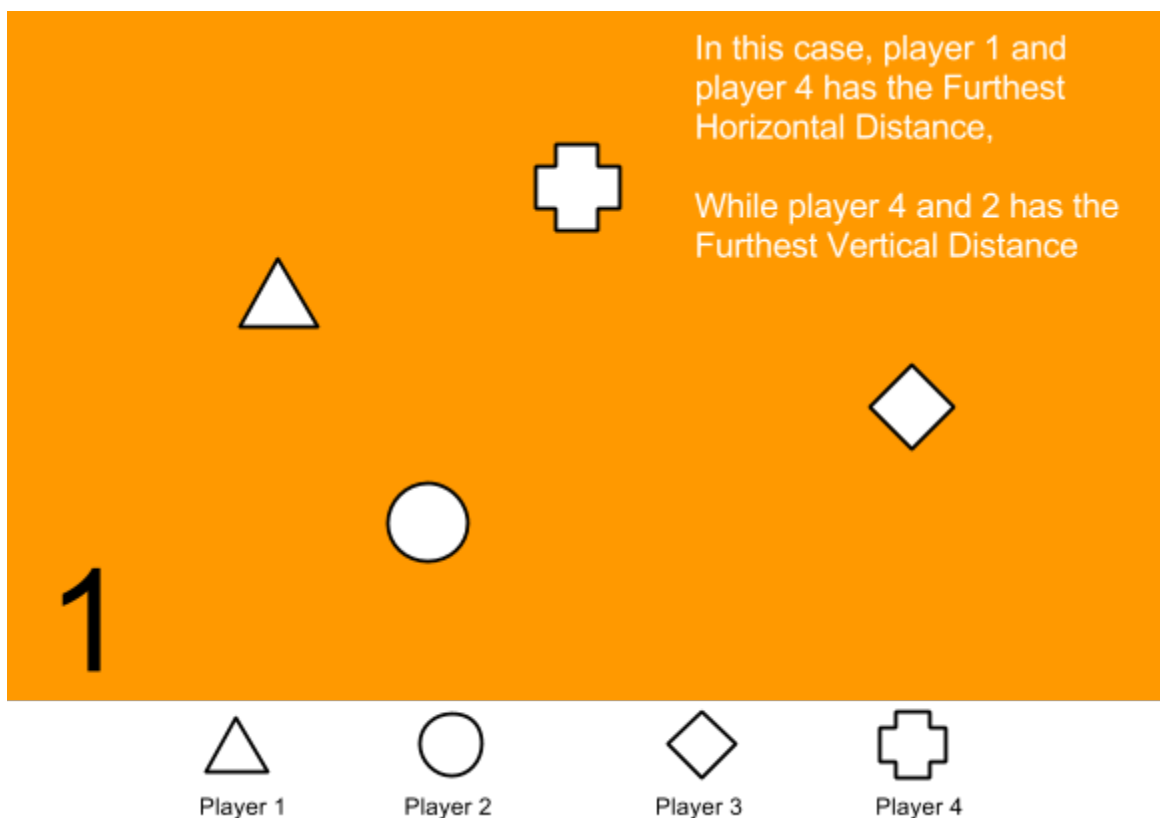
*Fixed camera view illustration*

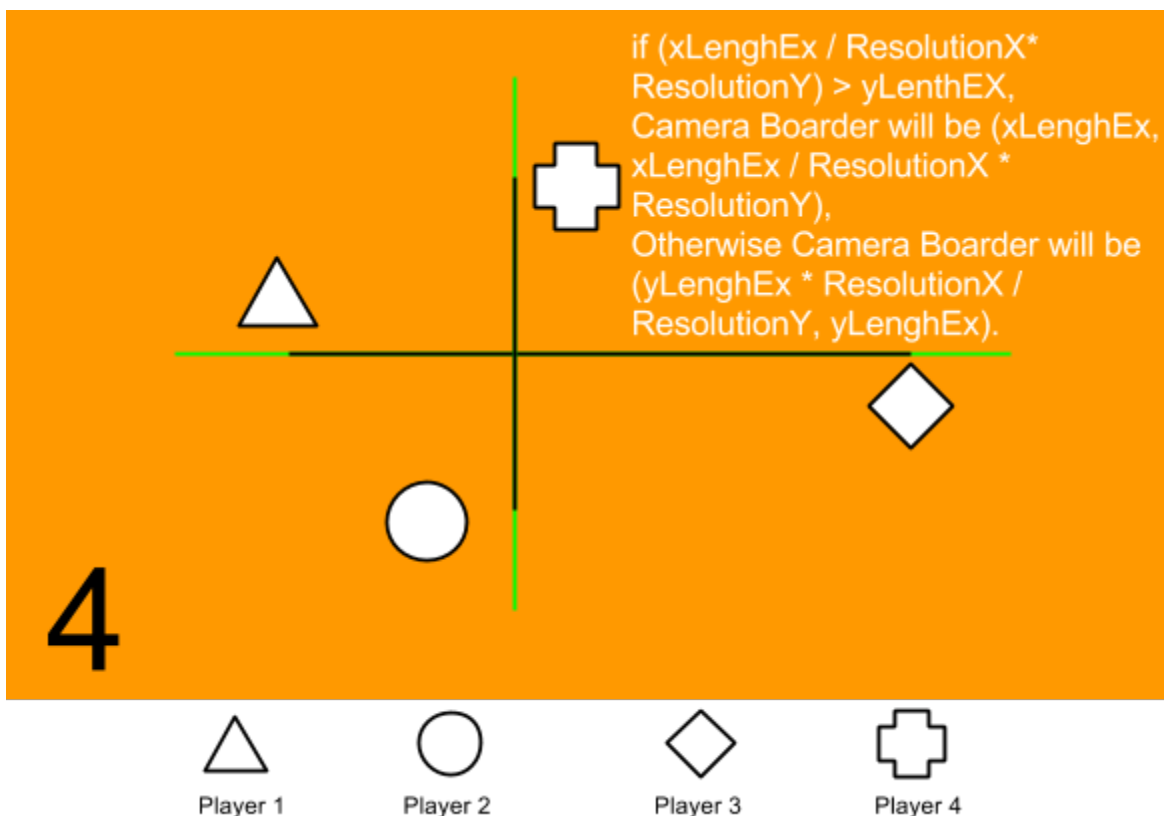
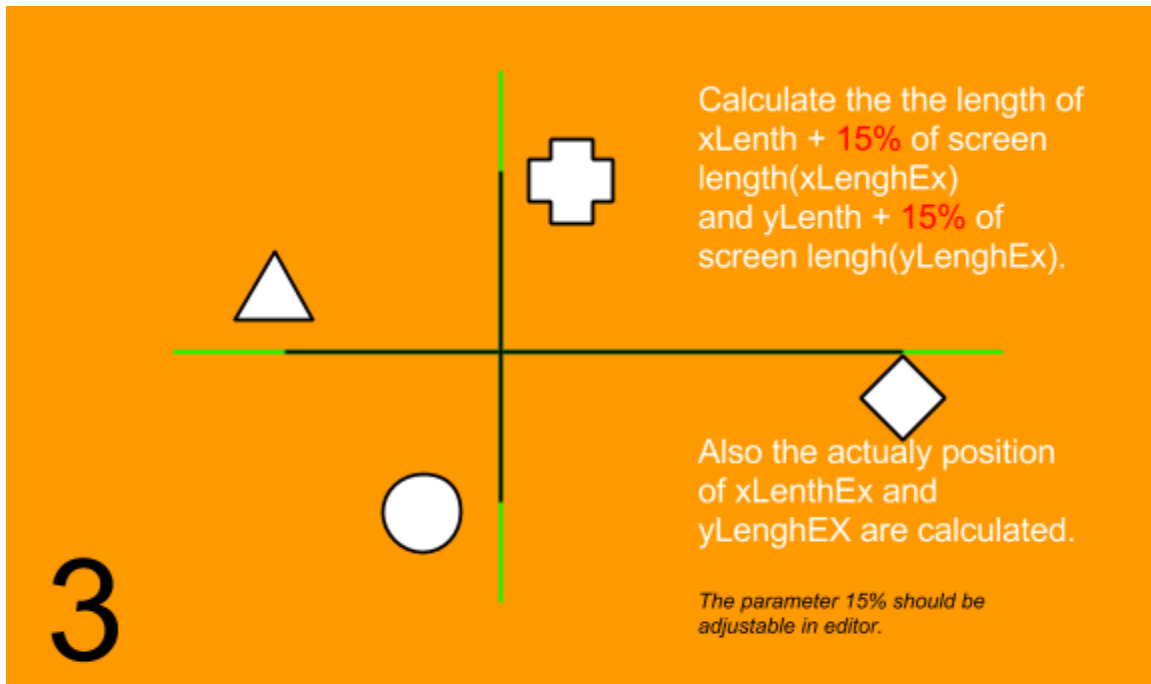
*\*Fixed camera is what's being used in the prototype level.*

#### 3.2.2.1 Standard movement setting

Depending on level design requirement, in some levels, cameras are moving, tracking player's movement while allowing a closer look at the detail of the level and graphic design, and adding more tension and sense of dynamic tension into gameplay.

The zooming in process is illustrated as below:





if

$(xLenghEx / ResolutionX * ResolutionY) > yLenthEX,$

Camera Boarder will be

$(xLenghEx, xLenghEx / ResolutionX * ResolutionY),$

Otherwise Camera Boarder will be

$(yLenghEx * ResolutionX / ResolutionY, yLenghEx).$

And the center of the camera will always be the cross point of xLenghEx and yLenghEx, making the camera following all four player at all time.

### 3.2.2.2 Unique movement setting

Depending on level design requirement, in some levels the movement of camera is scripted and is not affected by player's movement. Right now there are 2 designs for such specific movement:

- **Steadily moving up**
  - Camera goes up steadily with an speed parameter adjustable in the editor.
  - Player will be blocked if reaches the edge of any direction.
- **Steadily moving down**
  - Camera goes down steadily with an speed parameter adjustable in the editor.
  - Player will be blocked if reaches the edge of any direction.

### **3.2.3 Camera effects**

In certain occasions the camera will apply different effects.\*

- **Vignetting**
  - For visual presentation of some levels.
- **Sun draft**
  - For visual presentation of some levels.
- **Tonemapping**
  - For visual presentation of some levels.
- **Bloom**
  - For visual presentation of some levels.
- **Color Correction**
  - For visual presentation of some levels.
- **Twirl Effect**
  - For the spawning particle visual effect.
- **Multiple Cameras**
  - There are 7 cameras in each scene



- Main Camera
  - Renders the level itself in **orthographic** view.
- BG Camera
  - Background camera for rendering the multi-layer backgrounds in perspective view
- Spawn Cameras
  - For rendering the spawn particle swirl effect.
- Bloom camera
  - For visual presentation of some levels.

### 3.3 Menu Layout

The game supports 2 play mode, local and online play. In both modes, player can decide how many people to play with (2-4), how many rounds to play, how many lives each player has, etc.

General layout of menu is as below:

- Start
  - Character select\*
  - Team Select
  - Game setting
    - Round timer
    - Life count
    - Health count
    - Map select
- Keybinding
  - Keybinding settings
  - Back
- Credits
  - Back
- Exit

*\*The number of players joining the game will be decided by the number of players pressing the start button at the character selection screen.*



# 4 LEVEL DESIGN

## 4.0 General

We will start with 4 solid, symmetric levels. Each level will have different environment regarding background, color pattern, material, and most importantly, the different starting layout. New weapons will be found in fixed position in each level, allowing player to compete and race against each other for more firepower without disrupting their own strategy.

## 4.1 Map 1

### 4.1.1 General

Map 1 introduces player basic rules of the game, providing a friendly environment without environmental influence on game play. It needs to be visually attractive and the layout needs to be mechanically robust. Map 1 also trains players about using blocks by placing pickups on higher grounds.

### 4.1.2 Feature

- Robust level design
- Visually attractive
- Standard movement camera setting

### 4.1.3 Layout





## 4.2 Map 2

### 4.2.1 General

Map 2 introduces dynamic camera mechanic and advanced level assets including obstacles. In this level camera will be keep rolling down slowly and player are forced to go down gradually while fighting others. The map will not be procedurally generated. It should take longer than average time it takes to finish one round before the camera reaches the bottom. Once the camera reaches the bottom, it will be fixed.

### 4.2.2 Feature

- Unique movement setting
- Advanced level assets

### 4.2.3 Layout



## 4.3 Map 3

### 4.3.1 General

Inspired by Bomberman, Map 3 features fixed camera setting. In this map, player is spawned in fixed points with destructible rocks surround them, and fills huge portion of the map. Player needs to use good judgement to decide which way to dig out in order to get the most out of the map.

#### 4.3.2 Feature

- Bomberman style layout
- Decision regarding

#### 4.3.3 Layout



## 4.4 Map 4

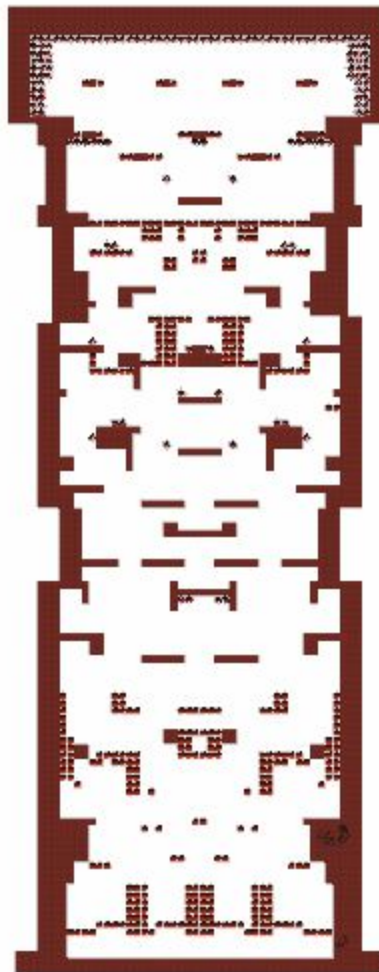
#### 4.4.1 General

Similar to Map 2, map 4 features unique movement setting where instead of going down, the camera goes up. There will also be lava at the bottom of the screen raising up gradually while the game play progresses. More skill is required to survive this level, and the tension of competition reaches its climax.

#### 4.4.2 Feature

- Extreme tension and challenges
- Skill competition

#### 4.4.3 Layout



## 4.5 Map 5

### 4.5.1 General

Map 5 provides something different for players to explore: A level in space made with spaceships. Level 5 features huge space for player to play against each other, space gravity and visually pleasant dynamic space background.

### 4.5.2 Feature

- Huge space
- Space gravity
- Exotic background setting

### 4.5.3 Layout



## 4.6 Map 6

### 4.6.1 General

Map 6 is set in a cave environment, where the platforms are simple and clean. In this place the player has relatively stable control of the environment. Everything that comes with the level is undestroyable, and player will still need to use their blocks to get to advantage points.

### 4.6.2 Feature

- Unique background setting
- Stable platforms

### 4.5.3 Layout



*\*Background used in this screenshot is an reference image.*

## 4.7 Map 7

### 4.7.1 General

Map 7 is set in a crystal / ice environment. It provides another different style of background. The level design is a simplified, easier version of map 3. The non-destructive blocks in this level reflects light and provides a pleasant visual effect.

### 4.7.2 Feature

- Unique background setting
- Stable platforms

### 4.7.3 Layout





## 4.7 Map 8

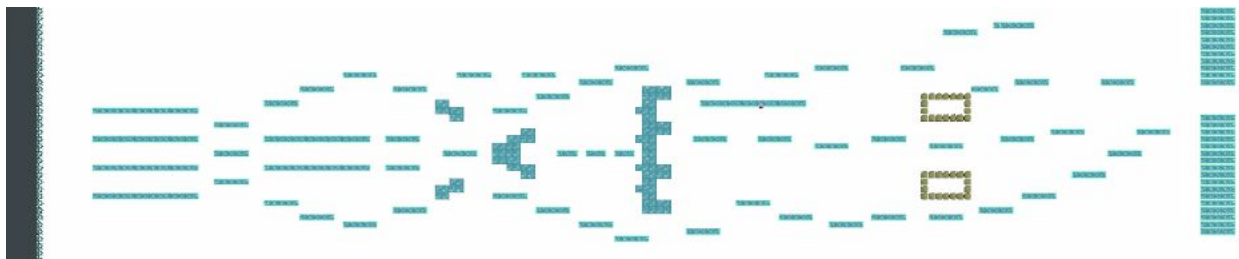
### 4.7.1 General

Map 8 takes the fight into the air. It's the ultimate challenge of platforming. Player needs to make their way to the right constantly to avoid the moving death wall from the left while avoid falling from the platforms and engaging other players. When players reach the end, the space is very limited unless they start creating their own with blocks.

### 4.7.2 Feature

- Classic platform challenge
- Competition and survival challenge

### 4.7.3 Layout



*\*The screenshot of this level was taken in development stage, final stage might vary.*

# 5 ART, MUSIC & SOUND EFFECTS

## 5.1 Game Art Style Reference



## 5.2 Model List

*\*Specific names for model / objects might vary from project assets.*

1. Dinosaur A
2. Dinosaur B
3. Dinosaur C
4. Dinosaur D
5. Block L1\_Base
6. Block L1\_Normal
7. Block L2\_Base
8. Block L2\_Normal
9. Block L3\_Base
10. Block L3\_Normal
11. Block L4\_Base
12. Block L4\_Normal
13. Bow and arrow
14. Arrow (projectile)
15. Heatseeker weapon
16. Heatseeker bullet (projectile)
17. RPG weapon
18. RPG grenade (projectile)

## 5.3 Base Animation List

1. Character - Walk
2. Character - Jump - up
3. Character - Jump - fall
4. Character - Jump - land
5. Character - Dash
6. Character - Fire weapon
7. Character - Death
8. Block - Break

## 5.4 2D Asset List

1. UI - HP Base, Fill, Highlight
2. UI - Timer clock
3. Menu - Button BG
4. Menu - Logo
5. Menu - BG
6. Menu - Level screenshots
7. Menu - Loading screen assets



**8. Menu - Illustrative menu assets \***

- a. Arrows / fingers etc.
- 9. BG Level 1
- 10. BG Level 2
- 11. BG Level 3
- 12. BG Level 4

**13. BG Decorative assets \***

- 14. Icon - Arrow
- 15. Icon - Fireball
- 16. Icon - RPG
- 17. Icon - Block

**18. Particle effects\***

*\* Might include multiple assets*

## 5.4 Sound Effects

- 1. Walk
- 2. Jump
- 3. Land
- 4. Shoot arrow
- 5. Arrow hit sound
- 6. Shoot fireball
- 7. Fireball hit sound
- 8. Shoot heatseeker
- 9. Shoot RPG
- 10. RPG hit sound
- 11. Pickup
- 12. Place block
- 13. Destroy block
- 14. Get hit
- 15. Get killed
- 16. Respawn

## 5.5 Music

- 1. Menu music
- 2. **Gameplay music\***
- 3. Round end music

*\* Might include multiple assets*