

# BCG

~Boiler Card Game~

## **Team 5 Design Document**

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# Purpose

Mobile trading card games like Hearthstone is very popular comparing to traditional card games. The tradition card games usually come in physical edition. The setting up of a physical card game is very time-consuming. However, if we implement it on a mobile platform the application can set up the games for the player. That makes the game a lot easier to play thus much funnier to play.

In our card game, people can build their own card deck with the cards they like on the card collection in the game and use the deck to play with other players. In order to make their decks stronger they need to collect more cards by wining from others or trading with others. We can also add new features and new cards in the future for updating. Our team wants to develop a mobile trading card game for entertainment.

Our functional requirements include the following items:

1. Introduction movie and welcome scene.
  - a. A movie will be played every time the user open the game, it can be skipped by tapping on the screen.
  - b. A welcoming scene will be displayed after the movie.
2. Menu
  - a. Player can choose which mode to enter in the menu.
3. Creating a player.
  - a. A registered player can pick a nickname to their liking as long as there

is no existing player uses this name.

- b. A registered player can use the picture they like as avatar as long as it doesn't violate the rights of other players.
- c. A registered user can access all the non-paying content of the game and can do in-app purchase for card packs.

#### 4. Building a deck.

- a. There will be a default deck for the players to get into this game.
- b. Once the player gets familiar with the game. They can upgrade their deck to make it stronger by replacing some of the cards in the default card deck.
- c. The players can build multiple decks if they want to try different play styles.
- d. The deck must be built according to the rules of the game. For example, a deck cannot have more than three same cards.

#### 5. Story Mode (offline mode):

- a. The player can play with the AI which will use some decks built by the developer.
- b. The players can win several cards by clearing the story mode.

#### 6. Practice Mode

- a. Even after the player have finished clearing the story mode, they could go to the practice mode to play with the same AI in the story mode for practicing purpose.

## 7. Online Mode

- a. The players can go to the online mode to play with other players.
- b. The players must choose which deck to use before entering the online mode.
- c. With every match win by the player. Certain amount of point will be added to the ranking points of the users. Vice versa.
- d. A player will only find a match between a player who has the similar ranking points.

## 8. Option

- a. The player can change the volume of the game.
- b. The player can send bug report to the developer.

# Design Outline

We will use Unity for our projects. We will divide different mode into different scene. We will use the client server model. We will use MySQL to parse and respond to the request of the users. Below is the high level overview of the system.

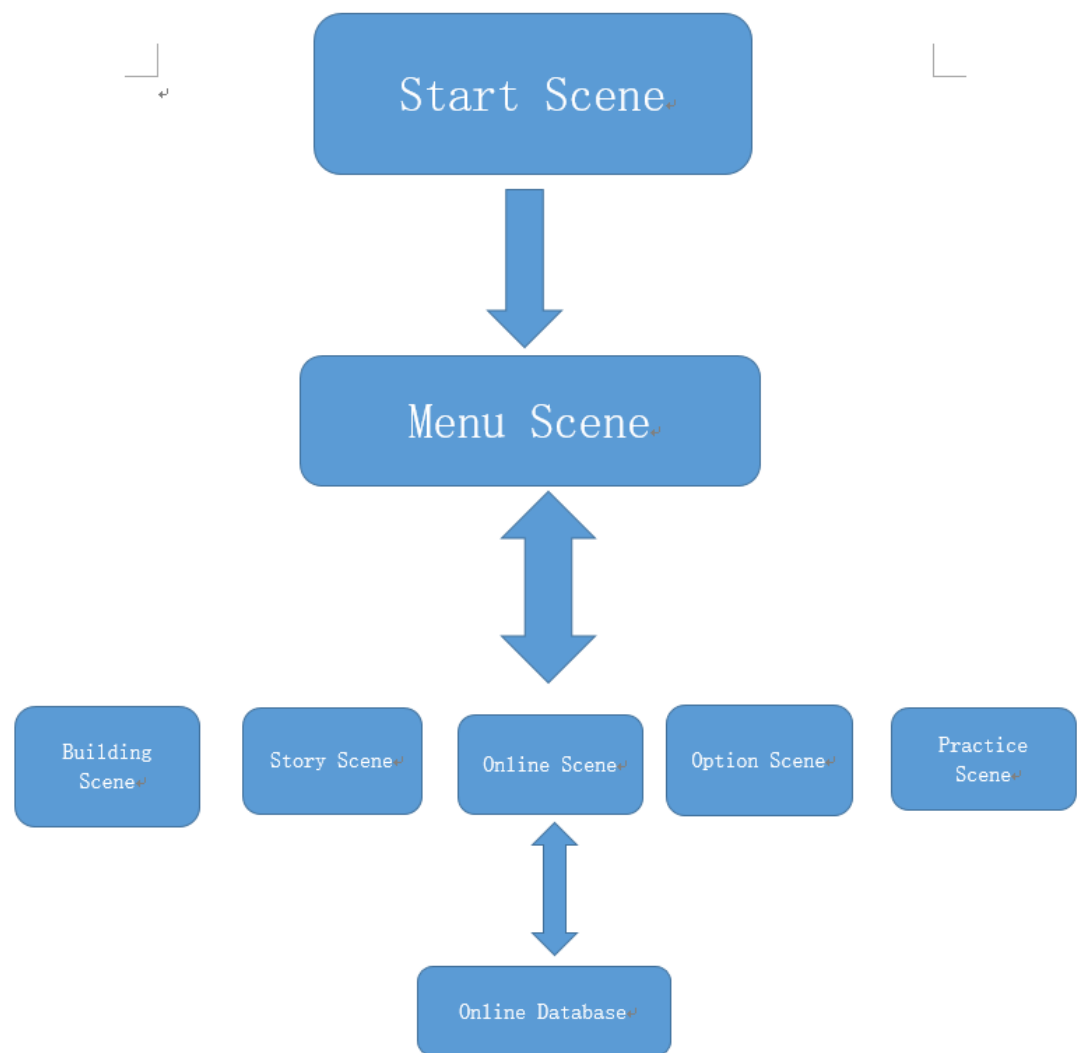


1. Start Scene
  - a. Containing the introduction movie.
  - b. Will show the welcoming scene when the movie is finished.
2. Log in Scene
  - a. This is where player create their account and log in to the game.
3. Menu Scene
  - a. Will have the buttons for every mode mentioned in the functional requirements.
4. Story Mode Scene
  - a. This is the scene that process the story mode including the logic and frame.
5. Practicing Mode
  - a. This is the scene where player can practice with the AI.
6. Building Scene
  - a. This is the scene where users can build their own deck.
7. Online Scene
  - a. This is the scene where players can play with the other players.
8. option Scene
  - a. This is the scene where players can change the settings of

the game.

## **Flow of the event**

The process starts when user log in to the game. He can choose which mode he wants to use. All the scene and event except the online mode take place offline. If the users want to play the online mode, we connect the player to the SQL server to get the data. Then we will match him to a player who has a similar ranking. In every mode the players can always choose to quit and go back to the menu.



## Design Issues

### 1. Issue: What software we use to develop the game?

Option 1: Android Studio.

Option 2: Swift.

**Option 3: Unity.**

We choose to use Unity because it is a professional game developing software. It also has the advantage that its code can run on multiple platforms.

### 2. Issue: What back end framework should we use.

### **Option 1: PHP**

Option 2: Python

Our team has limited knowledge about the backend framework.

However, one of the members of our team have used PHP before.

Based on his experience we decided to use PHP as our backend framework.

### **3. Issue: What database software should we use?**

#### **Option 1: MySQL**

Option 2: SQLite

Both options are the popular database system, but we don' t have much knowledge about the SQLite. Besides two of our team members have used MySQL before. As a result, we decided to use MySQL as the database for online mode.

### **4. Issue: How do we handle the offline system and the online system.**

Option 1: We store the deck and user information on the server database, every time user log in we retrieve the data from the server.

**Option 2: We store the deck information locally and the user information on the server database. We only retrieve information from the server when user log in or finding a match in online mode.**

There is no need for accessing the server when the player is playing offline mode and it will increase the game efficiency.



**5. Issue: How do we handle the situation when a user' s avatar or nickname violate the rights of others?**

Option 1: We set up a database containing the bad nickname or picture and match the username and avatar with the user information.

**Option 2: A user can report another player when they find the nickname or avatar is inappropriate. Then the admin will deal with the user being reported.**

Because it is impossible to set up a database containing all the inappropriate name and avatar. Besides, a user can avoid the detection like adding spaces or other symbols between the insulting words.

**6. Issue: Should we provide the user with the other users' information besides name and avatar like the ranking points or play history?**

Option 1: Yes.

**Option 2: No.**

Providing the information may cause miscommunication and misunderstanding since players will have friction with their opponent.

**7. Issue: How should users receive the update information.**

Option 1: Pop up notice.

**Option 2: Site based update information.**

The update mainly consists of new card packs or changings to

the card affect. A pop up notice can't present all the information.

#### **8. Issue: Should we have the in-game purchase function?**

**Option 1: Yes.**

Option 2: No.

Since card games have new card added to the collection from time to time, the developers have to get paid for the work they have done.

## **Design detail:**

### Description of Unity scene:

Unity is a professional game developing software that allows the developers to develop games which can run on many platform (PC, IOS, Android). In general, Unity divides different section of the game by scenes. For example, the main menu is coded in a scene. In the script of the scene you will have many functions and classes.

### Description of the database:

1. User name: This is the identity of a registered user.
2. Password: Used for log in authentication.
3. Avatar: This is the personalize information of the user.
4. Ranking: This is the ranking points of the user. It is the most important part of the database since we use it to match the users name.

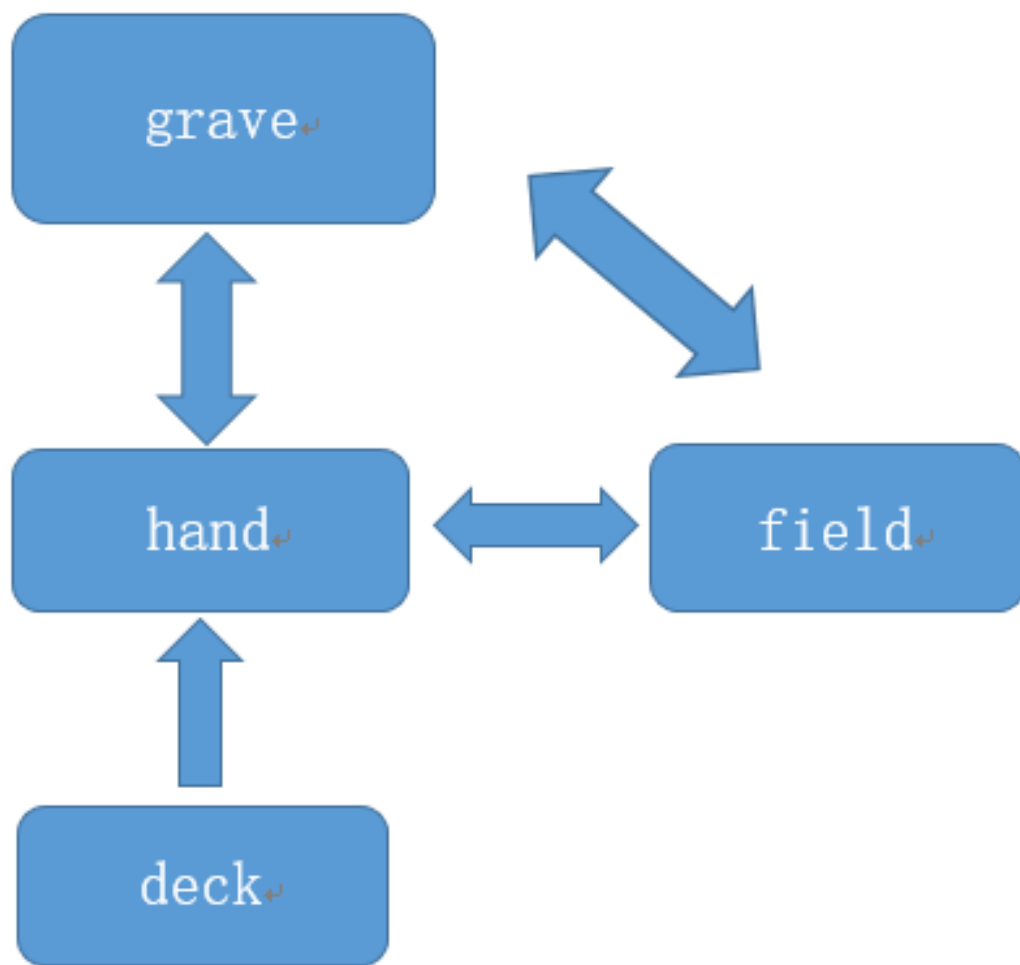
### Gaming Rules:

1. Each player draws 5 card. The player go second can draw an additional card. The order will be decided randomly by the system.

2. Each player has no mana at the beginning of the game. The player can draw a card when his turn start. The player gains one mana at the start of each term unless the player already have 10 mana. All the consumed mana will be restored at the start of each term.
3. Player can consume the mana he owns to summon creature or use magic.
4. The creature has attack and health status. It can attack enemy creatures or the other player causing certain amount of damage according to its attack. Magic has certain kind of effect which will affect the creature or player.
5. Each player has 30 health at the start of the game. The player loses all his health or have no card to draw from the deck lose the game.

### Gaming Scene:

1. Hand: This class holds the cards which players can use at their turn.
2. Field: This class holds the cards that are active on the battlefield. There are two subfields, creature field and magic filed.
3. Deck: This class holds the cards which the players can draw from. If the deck has no card when a player' s turn start, that player lose the game.
4. Grave: This class holds the cards which are discarded or "destroyed" , used.
5. Life: Set to 30 when the game started. If a player' s life is smaller or equal to 0, that player lose the game.



AI:

The AI will be hard-coded. First the AI will summon all the creature available. It will always summon the creature which cost least. Then it will use magic if the remaining mana allows.

Ranking System:

Player start with no ranking points. With each match win, the player gains 1 point. With each match lose, the player loses 1 points.

Matching System:

The player will only match another player whose ranking points is similar

to him. The range is 10 points. For example, a player with 20 points will only match the player with 10 to 30 points.

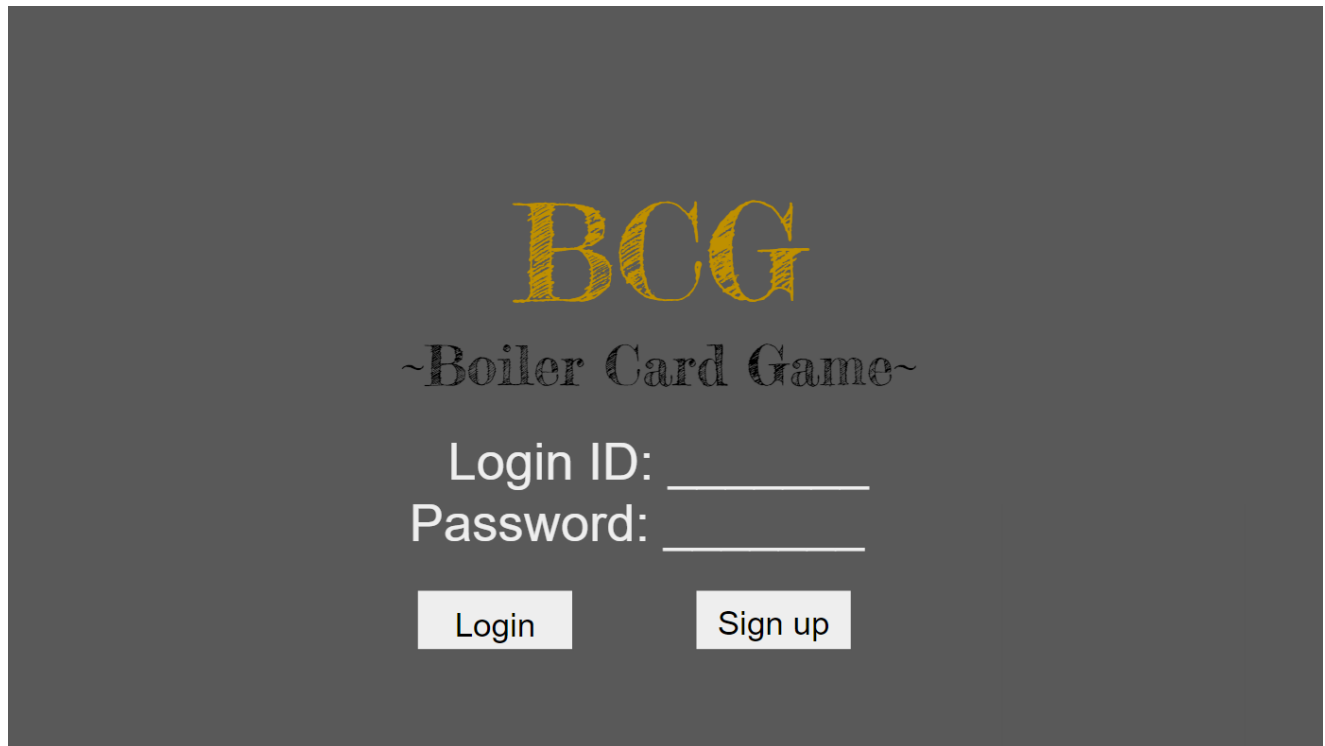
### Shop System(optional)

Player can win gold by winning the matches and there is a shop in the game which sell stronger cards. Player can use their gold to buy the cards in the shop. We will add this feature if we have enough time left.

### Trading System(optional)

Player can trade cards with other players using gold or the cards they don' t need. We will add this feature along with the shop system if we have enough time left.

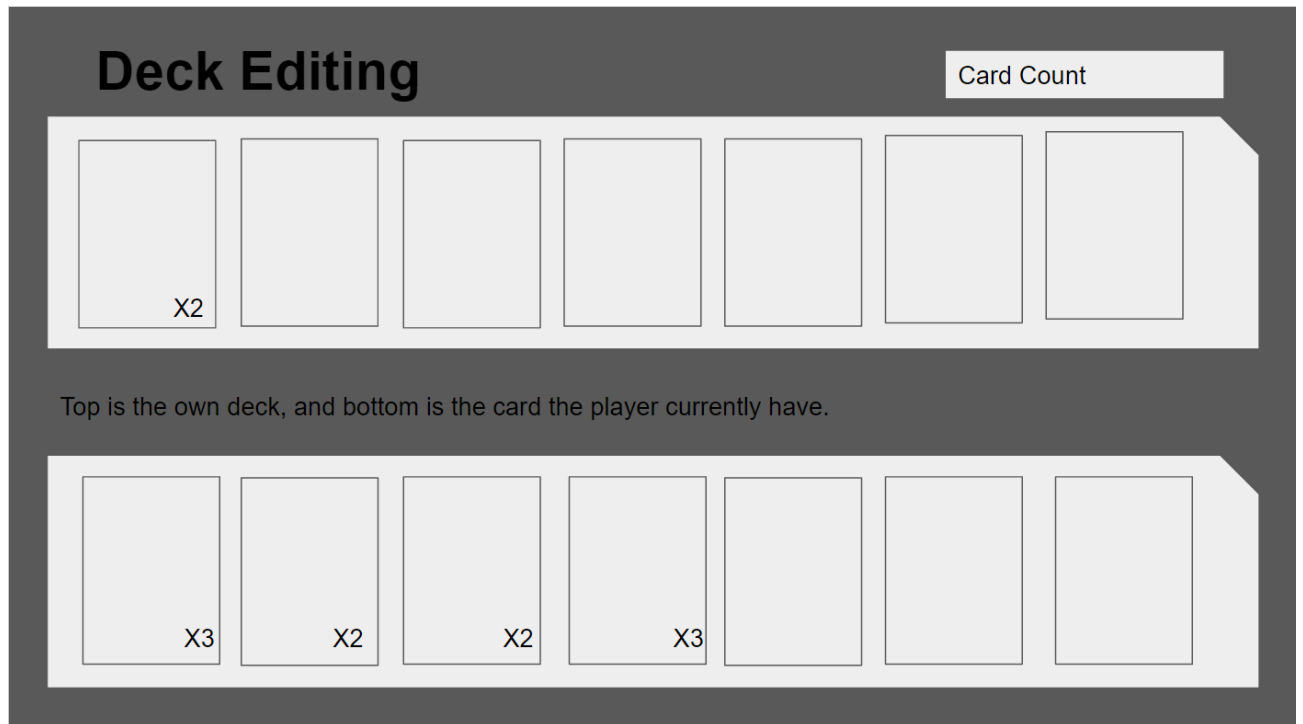
## Game Preview



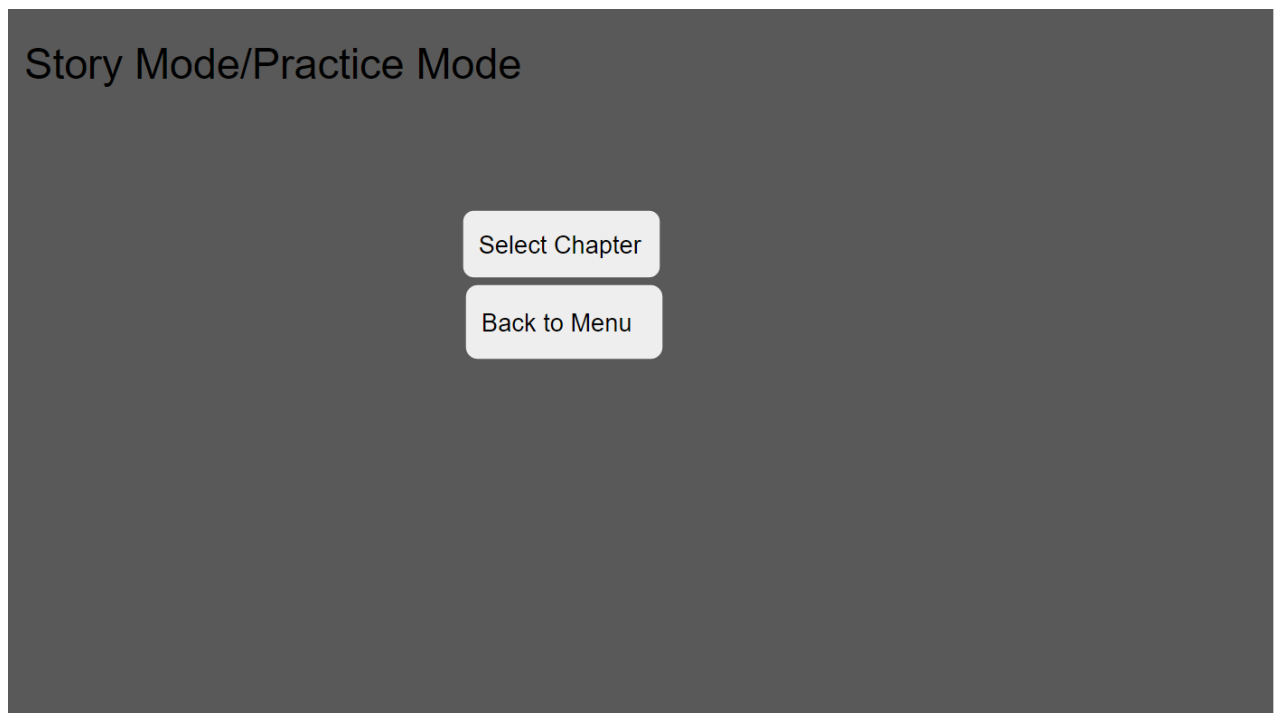
The log in page



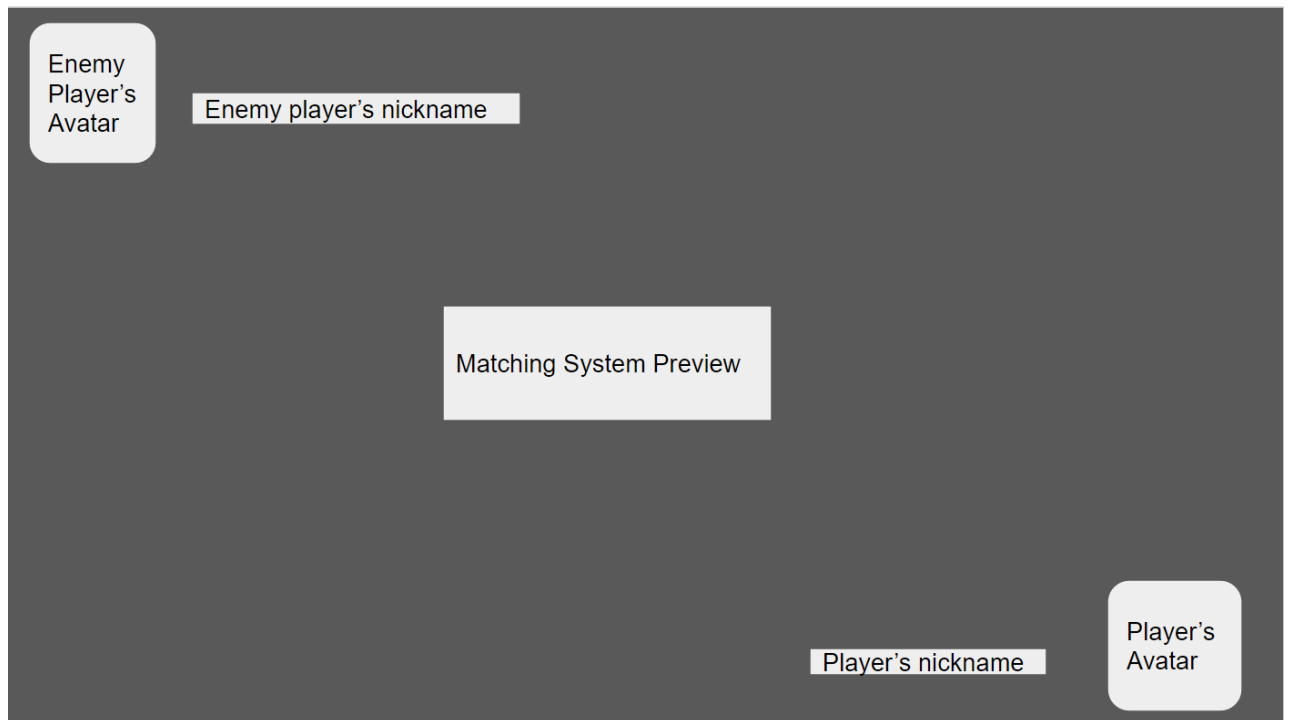
The Starting Menu



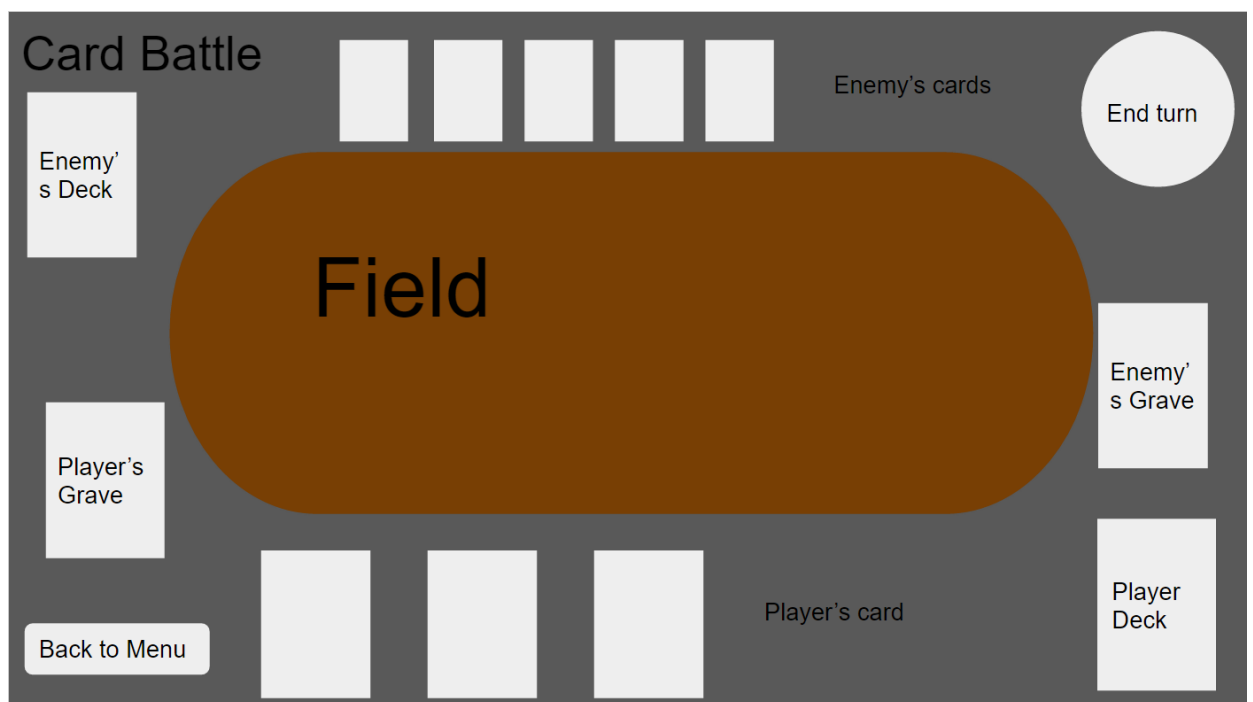
The deck building section



The Single Player Mode



The online matching system



The Gaming Scene preview.



Option Menu

Volume Setting

Bug Report

Option menu.