## CS 446

**jailbreak pong**

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<https://youtu.be/l1kagyLMLZ8>

# 1.0 COMPLETE FUNCTIONALITY

Like the classic arcade game Pong, in Jailbreak Pong, two players use paddles to relay a ball back and forth. However, instead of losing when a player fails to relay the ball back, the ball has an opportunity to destroy prisons behind the paddle. These prisons are placed by players during the game’s building mode, and can be protected by placing bricks around them.

The objective of the game is to use bricks and your paddle to protect your own prisons, and to free your people by destroying the opponent’s prisons. The game currently allows two users to play multiple sessions of Jailbreak Pong on a shared phone.

Our project does not make use of any game or physics engines. All of our visual components consist of custom views, on draws, and layouts.

## 1.1 Building Screen

As seen in the Appendix, Figure 1 to 3, there is a building screen that allows each player to build the layout of their own side of the board using bricks and prisons. Regardless of which phone this game is played on, the number of rows and columns of the board remains the same, and each grid item is always square. This ensures that the game looks consistent on any sized screen (heterogenity). On phones with aspect ratios that do not match our board, the board is vertically centered on the screen, with colored gaps added above and below it.

The interface will prevent the user from continuing to playing mode if they have not added at least one prison to their side of the board (Figure 4). However, if one player is done building, the other player has only 10 seconds before the game will start (Figure 5). If the other player has not allocated a prison by then, the game will randomly add a prison for them.

Once the game starts, the user can pause, play, or restart the game (Figure 6 & 7).

## 1.2 Gameplay

Without the use of game or physics engines, the ball is able to naturally animate its trajectory, and reverse direction upon hitting the sides of the board, prisons, or bricks. Whenever it hits prisons, the opponent’s score increases by 10 points. Bricks will deflect the ball away, but can also only sustain a single hit. When destroyed, they will not yield any points for the opponent.

When the ball hits a paddle, it speeds up, whereas when it destroys a brick or prison, it slows down.

When all the prisons on one person’s side of the board are destroyed, the game ends, with a fading message telling each user if they have won or lost. Here, the user is given the choice to restart or end the game.

## 1.3 Screen Recording

The user can toggle screen recording, which will capture both on-screen activity and ambient noise, allowing users to make commentary during gameplay. The app will ask the user for permissions to record the screen and audio. If the user allows it, the record button turns red and recording begins.

On toggle off screen recording, the game will be paused, and a share action box will pop up from the bottom of the screen, asking the user if they would like to share the video recording to several different social media apps on their phone. This allows for efficient and convenient sharing.

# 2.0 UNIMPLEMENTED FUNCTIONALITY

## 2.1 Remote Playing

We were able to successfully use peer-to-peer to sync the horizontal positions of the paddles. Since the vertical position was constant, it did not need to be synced.

However, the paddle position updates were not always very responsive, and we did not want to compromise the user experience. The ball’s position and game state is highly reliant on the paddle positions, therefore, the unresponsiveness could have made the game state different on the two phones.

## 2.2 Triangle Bricks

During the building screen we didn’t want overwhelm the user with too many options. Also, the triangle bricks did not seem to add much additional value to the game. We wanted the game to be quick and easy to setup and play.

## 2.3 Power-ups

We wanted to keep the game short and simple for the end users, therefore, we decided to forego this feature. It was also unclear where the power-ups should float from to the other side of the screen.

# APPENDIX

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|  |  | | |  | |
| Figure 1. Prompt to build fades in and out | Figure 2. Building Control View | | | Figure 3. Adding Prisons and Bricks | |
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| Figure 4. If user presses done but haven’t added any prisons, warn them | | Figure 5. After pressing done, other player has 10 seconds to build their board. The button slowly fades to bold red | Figure 6. Game session, with randomly generated prison for team blue, since they were too slow | |
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| Figure 7. Pausing Game | | Figure 8. Asking for Permissions | Figure 9. Recording Warning | |
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| Figure 10. Sharing Bottom Sheet  Triggered after toggling off screen recording | |  |  | |