Brick Breaker 2

Andrew Kuczynski & Oscar Miniet

# Gameplay Manual

## Single Player

In single player, the object of the game is to destroy all bricks in play using a ball that endlessly ricochets around the game area. If the ball touches the bottom side of the game screen, 1 of the players 3 lives is depleted. The player controls a paddle at the bottom of the screen that can move left and right to prevent the bouncing ball from hitting this edge.

## 2 Player (Co-op)

In co-op mode, 2 players work in unison to break all the bricks in the playing field. The goal and premise is the same as single player, but there are 2 players controlling 2 separate paddles in order to prevent the ball from touching the bottom edge.

## Controls

Player 1 can move his game paddle using the arrow keys, while player 2 can move using the WASD keys.

When the shooter powerup is enables, both players can shoot using their respective up keys.

The ball can be launched by either player using the neutral space key.

## Powerups

Only 1 paddle powerup can be utilized at a time (powerups 1-3). Powerups 4 and 5 can be utilized in combination with each other or any of the other powerups. Any powerups will be dismissed upon ball death.

1. Long paddle - Player receives a larger paddle than usual for a short duration.
2. Faster paddle - Player receives a larger paddle than usual for a short duration.
3. Shooter - Player gains the ability to shoot projectiles upwards that will damage bricks on contact for a short period of time.
4. Multi-ball - This power up will split the current ball in play in to 5 balls with different upward trajectories from the original
5. Fireball- All bricks in the path of the ball will be destroyed and not affect the ball’s trajectory. Powerup lasts until the ball touches the player paddle next.

# Group Contribution

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| Andrew Kuczynski | Oscar Miniet |
| * GUI and menu navigation * Leaderboard * Gameboard * Sound FX * Object orientation / class structure | * Advanced collision detection * 2 Player Co-op capability * Win/Loss detection * Fireball powerup * Multi-ball powerup |

# Problems Encountered

One big problem our team encountered was applying realistic collisions to the balls movement. Because the pixels are drawn on integer boundaries, and the ball may be moving X pixels per frame, there arises a scenario when the ball can move past a wall within 2 frames. To get around this, we implemented some vector calculations to perform a partial update that allows the ball to collide precisely.