

# 1 Instruction and Summary

## 1. Which milestones were implemented?

- Milestone 1: Draw the scene
  - (a) Walls and Ceiling: Walls are drawn 2 pixels wide on both, left and right sides, in red. The ceiling is drawn also 2 pixels wide in color blue.
  - (b) Bricks: Bricks are spread amongst 3 rows with 1 pixel in between them. There are 7 bricks per row with a 2 pixels distance between them. All of the bricks are filled in with one of 5 randomly assigned colors.
  - (c) Paddle: Paddle is generated at row 57 in color teal and 10 pixels wide.
  - (d) Ball: A 2x2 grey block is generated at location 31, 31.
- Milestone 2: Implement movement and other controls
  - (a) Keyboard paddle movement: Paddle moves left when A is pressed and right when D is pressed.
  - (b) Ball directions: Ball travels towards bottom-left from the initial position.
  - (c) Movement visuals: Every 300ms the ball is repainted and the paddle is repainted if a key (A or D) is pressed.
  - (d) Quit game: When Q is pressed, the game stops.
- Milestone 3: Implement collision detection
  - (a) Ball bounces(wall, brick, paddle, ceiling)
  - (b) Brick-pixel disappears when hit
  - (c) Player loses a life when ball at bottom
- Easy Features
  - (a) Multiples lives - 3 lives
  - (b) Timer - 60s
  - (c) Game Over screen
  - (d) Restart game
  - (e) Sound effects - wall, ceiling, paddle, brick
  - (f) Unbreakable bricks
  - (g) Pause the game
  - (h) Terminate program
- Hard Features
  - (a) Brick requires multiple hits to break

## 2. How to view the game:

- (a) - Unit width in pixels: 4
- (b) - Unit height in pixels: 4
- (c) - Display width in pixels: 256
- (d) - Display height in pixels: 256
- (e) - Base Address for Display: 0x10008000 (\$gp)

## 3. Game Summary:

- Simple take on the game breakout

- We prioritized having cleaner more flexible code over having a more complex game
- Game is broken down to independent functions which can be traced easily
- We also included fun features like, Random colors for the bricks each time
- Our game over screen code is flexible, such that we can have whatever design on it
- 

## 2 How to Play

Keyboard controls:

- A: Move paddle left
- D: Move paddle right
- P: Pause the game
- Q: Quit the game
- R: Restart the game
- T: Terminate the program

When the game starts, the ball will automatically start moving. Use the **A** and **D** keys to move the paddle left and right, respectively. The ball will bounce off the walls and the paddle. The game can be paused by pressing the **P** key, and resumed by pressing **A** or **D**. If the ball hits a brick, a part of the brick will dissappear. There is a time limit of \_ seconds. If the timer runs out or the ball reaches the bottom of the screen, or **Q** is pressed, the *Game Over* screen will be displayed. The player can press **R** to restart the game or **T** to terminate the program.

## 3 Attribution Table

Student 1 (Carina Rastarhuyeva 1008598545)	Student 2 (Razeen Ali 1008018324)
Draw Wall	Draw Bricks
Draw Ceiling	Paddle Movement
Draw Paddle	Ball Movement
Draw Ball	Screen Loop
Quit Game	Collisions
Pause Game	Game Over Screen
Multiple Lives	Timer
Sound	