



# BOUNCE

A R C A D E   B A L L   G A M E

# GAME OVERVIEW

BOUNCE is a fast-paced single-player brick-breaking arcade game. Players control a paddle to keep the ball in play, destroying all bricks across progressively harder levels to achieve the highest score.

## OBJECTIVE

Break every brick without losing all 3 lives. Survive all levels to achieve the highest possible score.

## GENRE

**Brick Breaker Arcade**

## PLATFORM

**Web Browser (HTML5)**

## PLAYERS

**Single Player**

## TECH

**HTML / CSS / Canvas API**

## CONTROLS

← → ARROW KEYS

Move paddle left / right

A / D KEYS

Alternative movement

MOUSE

Track cursor to move paddle

TOUCH

Swipe to move (mobile)

# GAME MECHANICS

## THE BALL

- Launches at a random angle
- Bounces off walls and paddle
- Reflects off brick surfaces
- Speed increases per level ( $+0.3/lvl$ )
- Lost if it falls below the paddle
- Trails a fading neon glow effect

## THE PADDLE

- 80px wide, 10px tall
- Full horizontal movement
- Ball angle shifts by hit position
- Center hit = straight; edge = wide
- Sparks on ball contact
- Mouse, keyboard & touch support

## THE BRICKS

- 8 columns  $\times$  5 rows per level
- 5 color-coded rows (cyan  $\rightarrow$  red)
- Top row requires 2 hits to break
- Each broken brick = 10 $\times$  level pts
- Particle burst on destruction
- All broken = Level Complete!

# SCORING & PROGRESSION

## POINT SYSTEM

ACTION	POINTS	NOTES
Brick destroyed	10 × Level	Multiplied each level
Level 1 brick	10 pts	Base value
Level 2 brick	20 pts	Double reward
Level 5 brick	50 pts	Maximum per brick
Top row (2-hit)	+50% bonus	Hits both count

## LEVEL PROGRESSION

L01	Speed: 3.8   Angle: ±20°
L02	Speed: 4.1   Angle: ±25°
L03	Speed: 4.4   Angle: ±30°
L04	Speed: 4.7   Angle: ±35°
L05+	Speed: 5.0+   Angle: ±40°

## LIVES SYSTEM

Players start with 3 lives shown as glowing dots in the HUD. One life is lost each time the ball drops below the paddle. All lives lost = GAME OVER. Lives do not reset between levels — endurance matters!

# VISUAL FX & ARCHITECTURE

## BALL TRAIL

12-frame motion trail fades from cyan to transparent, conveying speed and direction.

## PARTICLE BURSTS

On brick hit, 6 colored particles spray outward with gravity; 20 on life lost.

## NEON GLOW

All game elements use Canvas shadowBlur to simulate neon light emission.

## SCANLINE GRID

CSS pseudo-element overlays a subtle grid on the entire viewport for CRT feel.

## PADDLE BOUNCE FX

Tiny particle splash on paddle contact with angle-reactive ball deflection.

## TECHNICAL STACK

### RENDERING

#### HTML5 Canvas 2D API

60fps game loop via requestAnimationFrame

### PHYSICS

#### Custom Vector Math

AABB collision detection + surface normals

### INPUT

#### Mouse / Touch / Keyboard

Multi-input with unified paddle controller

### STATE

#### Vanilla JS Variables

No framework; pure game state machine

### STYLING

#### CSS + Google Fonts

Press Start 2P + Orbitron for arcade aesthetic

### DEPLOY

#### Single HTML File

Zero dependencies, works in any browser

# ROADMAP & FUTURE FEATURES

## v1.1 – GAMEPLAY

- Power-up drops (multi-ball, wide paddle, laser)
- High score leaderboard with localStorage
- Difficulty presets: Casual / Normal / Insane

## v1.2 – CONTENT

- 10 unique level layouts with themed brick maps
- Animated backgrounds per level
- Boss stages every 5 levels

## v1.3 – AUDIO / POLISH

- Web Audio API SFX: bounce, break, lose life
- Chiptune background music tracks
- Full-screen mode & mobile landscape lock

## v2.0 – MULTIPLAYER

- 2-player split screen mode
- Online competitive ladder via WebSockets
- Ghost replay of top scores