BomberKid - Retro Edition Documentation

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1. Project Overview

BomberKid is a retro-style Bomberman clone featuring:

- Pixel-art aesthetic with CRT simulation effects
- Classic Bomberman gameplay mechanics
- Multiple levels with increasing difficulty
- Power-ups and enemy AI
- Score system and lives

2. File Structure

bomberkid/

```
— index.html # Main HTML file with embedded CSS and JavaScript
 -css/
 style.css # Styling for the game (currently embedded in HTML)
— js/
 — config.js # Game configuration constants
 — gameState.js # Current game state management
 — domElements.js # DOM element references
 ├— init.js
              # Game initialization logic
 — player.js # Player character logic
 ├— enemies.js # Enemy Al and behavior
 – bombs.js
                 # Bomb placement and explosion logic
 ├— powerups.js # Power-up system
              # User interface updates
 ⊢— ui.js
 — gameLoop.js # Main game loop
 — audio.js
              # Audio management
   — main.js
               # Entry point and core game logic
```

3. * Game Components

Game Board

- 10x10 grid of cells
- Cell types:
 - o Empty (grass)
 - o Solid walls (indestructible)
 - o Breakable walls (may contain power-ups)
- Visuals:
 - o Pixelated rendering
 - o Scanlines & CRT simulation
 - o Animations for all elements

Player Character

- Controlled with WASD
- Places bombs with **SPACE**
- Features:
 - o Lives system
 - o Bomb capacity upgrades
 - Explosion range upgrades
 - Visual pulse animation

Enemies

- Random movement Al
- Two speed types (normal & fast)
- Destroyed by bomb explosions
- · Last enemy defeated unlocks exit

Bombs

- 3-second countdown
- Chain reactions
- Explosion range increases with power-ups
- Effects:
 - o Pulse animation
 - o Countdown display

o Particle explosion effects

Power-ups

Hidden in breakable walls:

Name Code Effect

Barrela B. Harris and barrela area in Vallana

Color

Bomb+ B Increase bomb capacity Yellow

Range+ R Increase explosion range Cyan

Life L Extra life Magenta

4. Game Mechanics

📜 Level Progression

- Start: (1,1)
- Exit: (7,8)
- Clear all enemies to unlock exit
- 5 levels total
- Increasing difficulty

Scoring

Action	Points
Break wall	+10
Defeat enemy	+50
Collect power-up	+20
Complete level	+500
Time bonus	+10 per 10s left

Time System

- 120 seconds per level
- Bonus: +10 pts per 10s remaining
- Game Over if timer reaches 0

5. P UI Elements

Game Screens

- 1. Start Screen Title, start button, controls
- 2. **Game Screen** Grid, HUD (lives, score, bombs, etc.)
- 3. Pause Screen Resume and controls
- 4. Level Complete Screen Bonus and level info
- 5. Game Over Screen Final score & restart
- 6. Victory Screen Confetti and message 🞉

65 HUD Indicators

• Lives: Red circle + number

• Score: Gold text

• Level: Blue circle + number

• **Bombs:** Black circle + current/max

• Range: Orange circle + number

• Time: Green circle + seconds

6. Audio System

Sound Effects

- 1. Background music (looping)
- 2. Bomb placement
- 3. Explosion
- 4. Power-up collected
- 5. Game over
- 6. Level complete

Audio Management

- Background music at 30% volume
- Pause/resume tied to game state
- Sounds reset on game restart

7. \ Configuration

```
const config = {

BOARD_SIZE: 10,

CELL_SIZE: 48,

INITIAL_LIVES: 3,

INITIAL_TIME: 120,

INITIAL_BOMBS: 1,

INITIAL_RANGE: 2,

LEVEL_TIME_BONUS: 15,

LEVEL_SCORE_BONUS: 500,

MAX_BOMBS: 5,

MAX_RANGE: 5

};
```

8. @ Game States

State Object

```
const gameState = {

player: {

x: 1,

y: 1,

lives: 3,

maxBombs: 1,

bombRange: 2

},

enemies: [],

bombs: [],

powerups: [],

score: 0,

timeLeft: 120,

level: 1,

active: false,
```

```
paused: false,
sounds: {
  bgMusic: audioElement,
  bomb: audioElement,
  explosion: audioElement,
  powerup: audioElement,
  gameOver: audioElement,
  levelComplete: audioElement
}
};
```

State Transitions

- 1. Initialization Reset, position player, spawn enemies
- 2. Gameplay Input, enemy updates, collisions
- 3. Level Complete Add bonus, next level
- 4. **Game Over** Stop, show summary, restart prompt

9. 🙉 Controls

Key Action W Move Up A Move Left S Move Down D Move Right SPACE Place Bomb ESC / P Pause/Unpause

10. 🗶 Development Notes

Yisual Effects

• Pixelated rendering: image-rendering: pixelated

• CRT effects: scanlines, vignette

• Retro font: Press Start 2P

• Full animation coverage

Performance

- DOM-based rendering (no canvas)
- Efficient element selection (IDs)
- Batch UI updates for performance

Compatibility

- Requires modern browsers (ES6)
- Fixed responsive layout
- Mobile audio requires interaction

Future Improvements

- 1. Split CSS & JS files
- 2. More enemy types
- 3. Save/load system
- 4. Multiplayer support
- 5. Level editor