Date: October 30, 2025

Scope: shapes.py, board.py, game.py

Component testing report

Results

- Components Tested: 3

- Test Scenarios Executed: 6

- Issues: 6

Components status

Stable Components: board.py, shapes.py

Components Needing Attention: game.py

Blocking Issues: None

Issues:

1. **Launching malfunction:** Game window must be closed to play the game.
2. **User movement is too fast:** loose control over the blocks.
3. **Single column failure:** failure counts only in the column that spawns blocks.
4. **Phasing blocks:** Controlled blocks can be within existing blocks.
5. **Control after losing:** Spawning blocks can be controlled the game is over.
6. **Unfunctional pause button.**

Recommendations:

1. Fix initialization sequence

- Add proper game state initialization
- Ensure game starts in "playing" state, not "paused" or "waiting for input"
- Test launch sequence independently

2. Implement input throttling

- Add movement cooldown timer (100-200ms between moves)
- Use key press detection instead of continuous key state checking
- Implement "auto-repeat" delay like standard games

3. Fix collision detection logic

- Check entire spawn row (all columns) for game over condition
- Update collision checks to validate ALL movements (left/right/down)
- Implement comprehensive collision detection that checks existing blocks
- Prevent movement into occupied grid positions

4. Implement proper game state management

- Add game over state checks to input handling
- Stop processing input and updates when game_over = True
- Ensure game completely freezes after game over condition

5. Debug event handling

- Verify key event detection for 'P' key
- Check pause state toggling logic
- Ensure game loop respects pause state consistently

Component Readiness

shapes.py: Ready for integration

Public Interface: Stable
Integration: Good
Issues: None critical
Confidence: High - Core logic solid

board.py: Ready for integration

Public Interface: Stable
Integration: Good
Issues: Minor UI polish needed
Confidence: High - Rendering reliable

game.py: Requites fixing

Public Interface: Unstable
Integration: Poor
Issues: 6 critical gameplay flaws
Confidence: Low - Core gameplay broken

Component	Code quality	Integration	Documentation	Overall
shapes.py	Good	Good	Partial	Good
board.py	Good	Good	Partial	Good
Game.py	Poor	Poor	Partial	Poor

Component Defect Log

CRITICAL DEFECTS (PRIORITY 1)

ID	Component	Description	Severity
D-01	game.py	**Launching malfunction:** Game window must be closed to play	HIGH
D-02	game.py	**Single column failure:** Game only ends when spawn column blocked	HIGH
D-03	game.py	**Phasing blocks:** Blocks can move through existing blocks	HIGH
D-04	game.py	**Control after losing:** Player can move blocks after game over	HIGH

MAJOR DEFECTS (PRIORITY 2)

ID	Component	Description	Severity
D-05	game.py	**Unfunctional pause:** clicking the pausing button doesn't pause game	MEDIUM
D-06	game.py	**User movement too fast:** No input throttling causes control loss	MEDIUM

DEFECT TRENDS & ANALYSIS

By Component

- **game.py:** 6 defects (100% of total)
- **shapes.py:** 0 defects
- **board.py:** 0 defects

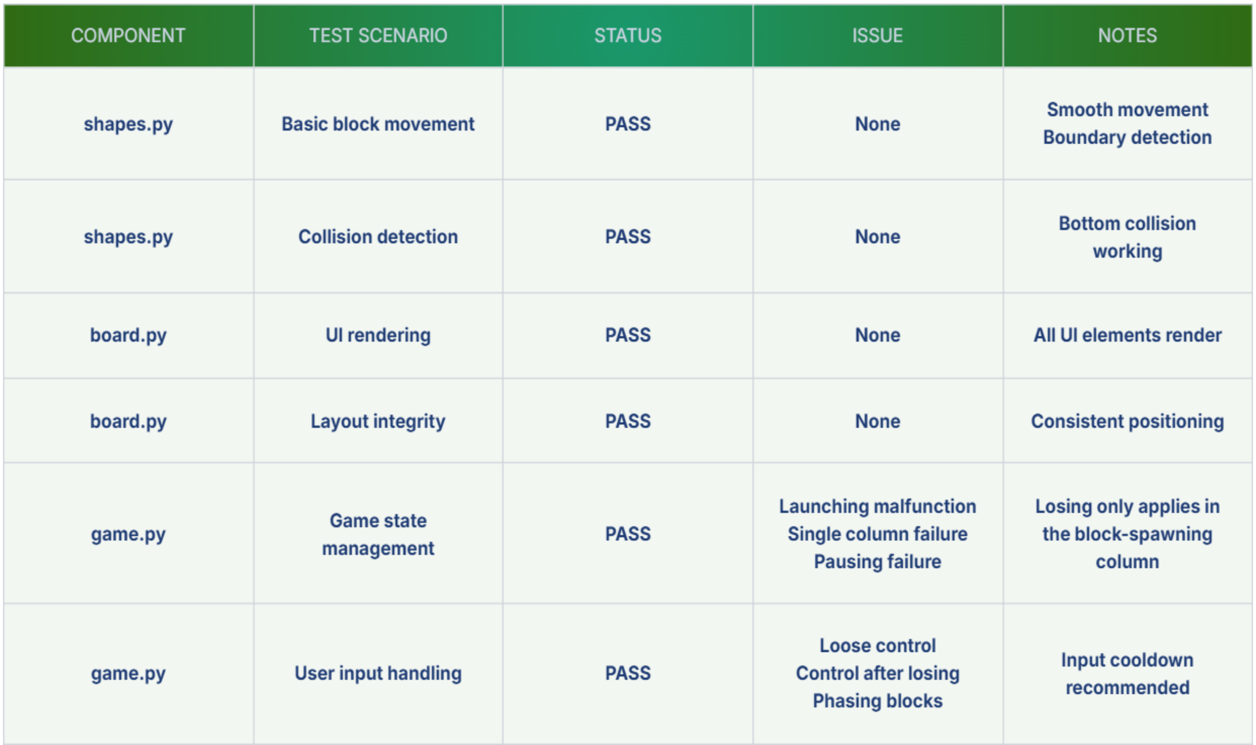
By Category

- **Game State Management:** 3 defects (D-01, D-04, D-05)
- **Collision System:** 2 defects (D-02, D-03)
- **Input Handling:** 1 defect (D-06)

Resolution Priority:

1. **Fix game state initialization** (D-01)
2. **Implement proper collision detection** (D-02, D-03)
3. **Add game over state management** (D-04)
4. **Fix pause functionality** (D-05)
5. **Implement input throttling** (D-06)

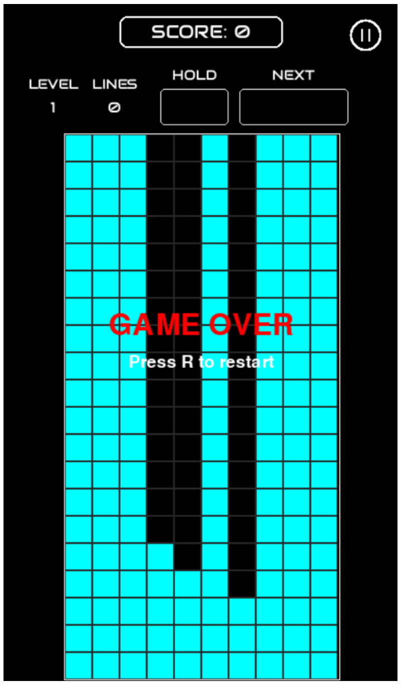
Summary table



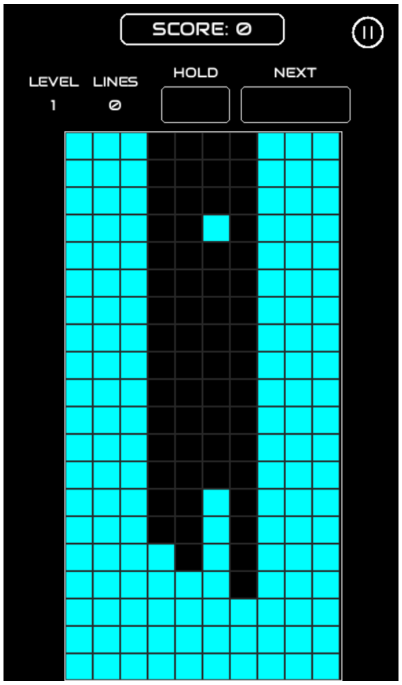
COMPONENT	TEST SCENARIO	STATUS	ISSUE	NOTES
shapes.py	Basic block movement	PASS	None	Smooth movement Boundary detection
shapes.py	Collision detection	PASS	None	Bottom collision working
board.py	UI rendering	PASS	None	All UI elements render
board.py	Layout integrity	PASS	None	Consistent positioning
game.py	Game state management	PASS	Launching malfunction Single column failure Pausing failure	Losing only applies in the block-spawning column
game.py	User input handling	PASS	Loose control Control after losing Phasing blocks	Input cooldown recommended

Screenshots

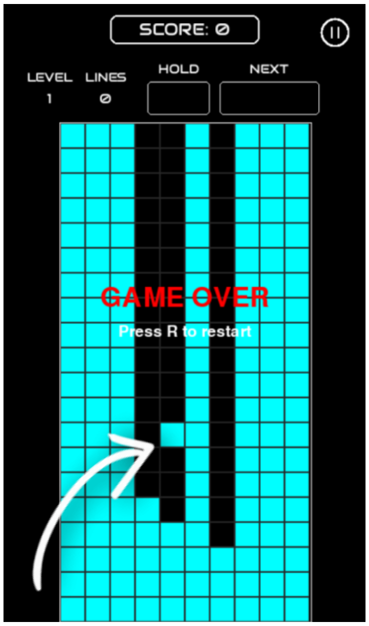
Block-spawning column filled

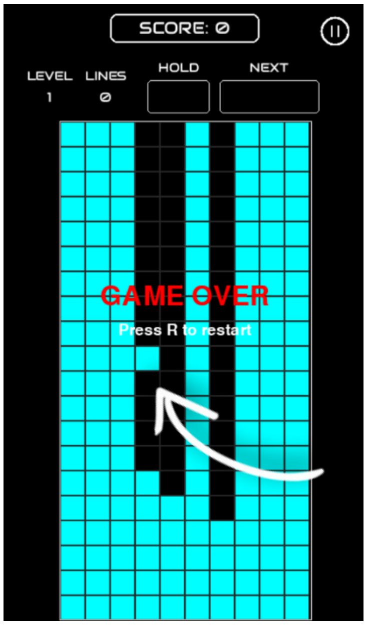


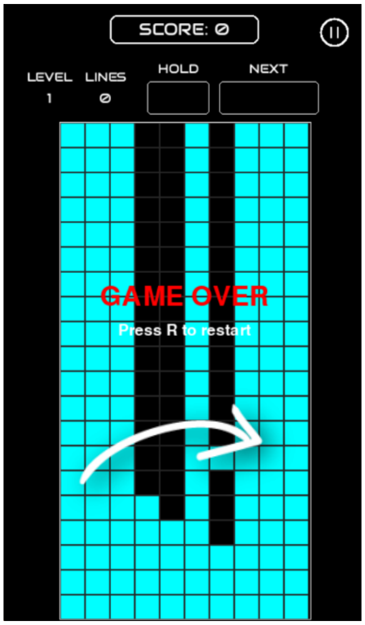
Most columns filled



Controlling spawning blocks after losing


SCORE: 0
LEVEL
1
LINES
0
HOLD
NEXT
GAME OVER
Press R to restart


SCORE: 0
LEVEL
1
LINES
0
HOLD
NEXT
GAME OVER
Press R to restart


SCORE: 0
LEVEL
1
LINES
0
HOLD
NEXT
GAME OVER
Press R to restart