

SafeHome Project Bug Report

Reporter: Team 8 Peer Review (3 Members)

Date: 2025-12-04

Project: Team 8 - SafeHome Security System

Test Method: Input Validation, Logic Error, State Management Testing

Executive Summary

This report documents bugs and missing requirements in the SafeHome system. Issues are separated into two main categories:

- Bugs:** Implementation errors in existing features
- Missing Requirements:** Features specified in SRS/SDS but not implemented

Overall Summary

| Category | Critical | High | Medium | Low | Total |
|----------------------|----------|----------|----------|----------|-----------|
| Bugs | 2 | 3 | 3 | 0 | 8 |
| Missing Requirements | 2 | 2 | 0 | 1 | 5 |
| Grand Total | 5 | 9 | 6 | 3 | 13 |

Part A: BUGS (Implementation Errors)

Critical Bugs (2)

BUG-C01: Password Change Does Not Persist

Severity: CRITICAL

Component: Authentication System

Files: safehome/interface/dashboard/main_dashboard.py:1092

Description

When attempting to change Master Password or Guest Password through Settings, the changes are not saved to the system. The new password is not persisted.

Reproduction Steps

1. Login as Admin / 1234
2. Click Settings (⚙️) button
3. Change "Master Password" from 1234 to 5678
4. Click "Save Settings"
5. See success message
6. Logout
7. Attempt to login with new password (5678)

Expected Behavior

- Password change persists to database/configuration
- User can login with new password
- Old password no longer works

Actual Behavior

- Settings UI shows success message
- **Password is not actually changed**
- Must still use old password (1234) to login
- New password (5678) does not work

Screenshot Placeholder

The screenshot shows a login form with the following fields:

- User: Admin (selected in a dropdown menu)
- Password: (empty input field)
- Login button: A green button labeled "Login".

Below the form, a red error message is displayed: "✖ Invalid password - Please try again".

Impact

- Users cannot change compromised passwords
- Security policy enforcement impossible

- Password management completely broken
-

BUG-C02: Empty Master Password Can Be Set

Severity: CRITICAL

Component: Authentication System

Files: safehome/interface/dashboard/main_dashboard.py:1092

Description

The system allows Master Password field to be completely empty, effectively disabling authentication.

Reproduction Steps

- 1 1. Login as Admin / 1234
- 2 2. Click Settings (⚙️) button
- 3 3. Clear "Master Password" field (delete all characters)
- 4 4. Click "Save Settings"
- 5 5. Observe result

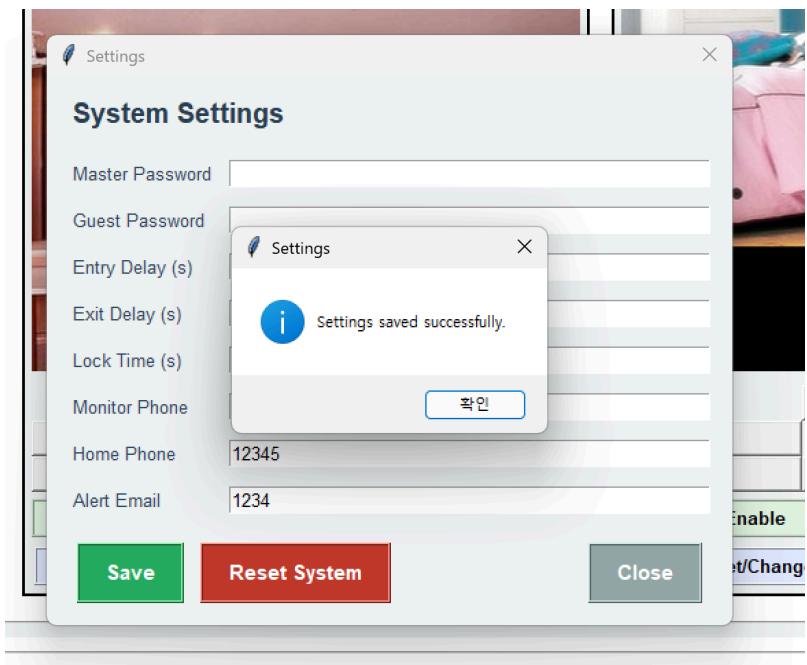
Expected Behavior

- Error message: "Password cannot be empty"
- Settings save rejected
- Original password retained

Actual Behavior

- Empty password is accepted
- No validation error shown
- System authentication bypassed

Screenshot Placeholder



Impact

- Authentication can be completely disabled
- Security system rendered useless
- Unauthorized access possible

High Severity Bugs (8)

BUG-H01: Negative Entry Delay Accepted

Severity: HIGH

Component: System Settings

Files: safehome/interface/dashboard/main_dashboard.py:1094

Description

Entry Delay field accepts negative values, which are meaningless and cause system malfunction.

Reproduction Steps

1. Login as Admin / 1234
2. Click Settings (⚙️) button
3. In "Entry Delay (sec)" field, enter: -100
4. Click "Save Settings"
5. Check if value is saved

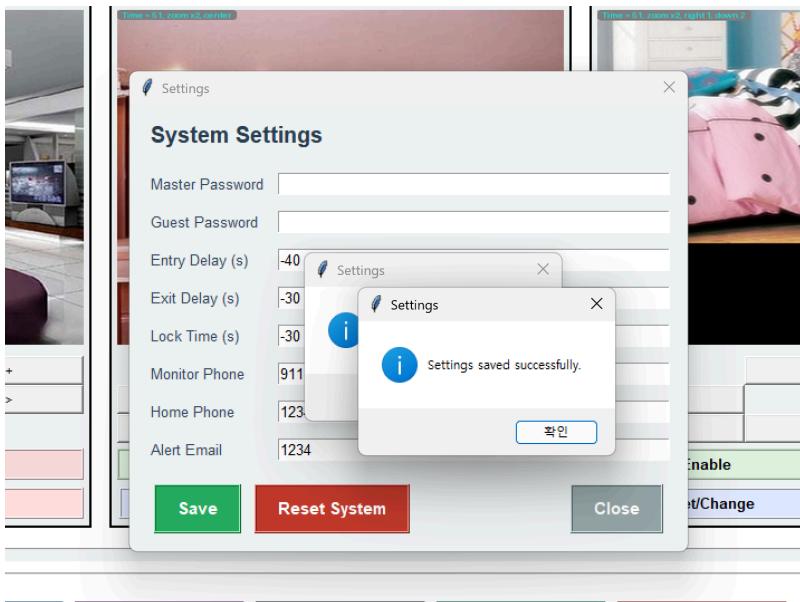
Expected Behavior

- Error message: "Entry Delay must be positive"
- Value rejected, not saved
- Field shows validation error

Actual Behavior

- Value -100 is saved successfully
- No validation error
- System accepts meaningless negative delay

Screenshot Placeholder



Impact

- Alarm timing logic broken
- Unpredictable system behavior
- Security timing unreliable

BUG-H02: Zone Name Length Unlimited (System Crash)

Severity: HIGH

Component: Zone Manager

Files: safehome/interface/dashboard/zone_manager.py:480-488

Description

Zone name field has no length limit. Extremely long names (1000+ characters) cause UI freeze or system crash.

Reproduction Steps

1. Login as Admin / 1234
2. Click "Manage Zones" button
3. Click "Add Zone"
4. In "Zone Name" field, paste 1000-character string (e.g., "A" repeated)
5. Click "Create"
6. Observe system behavior

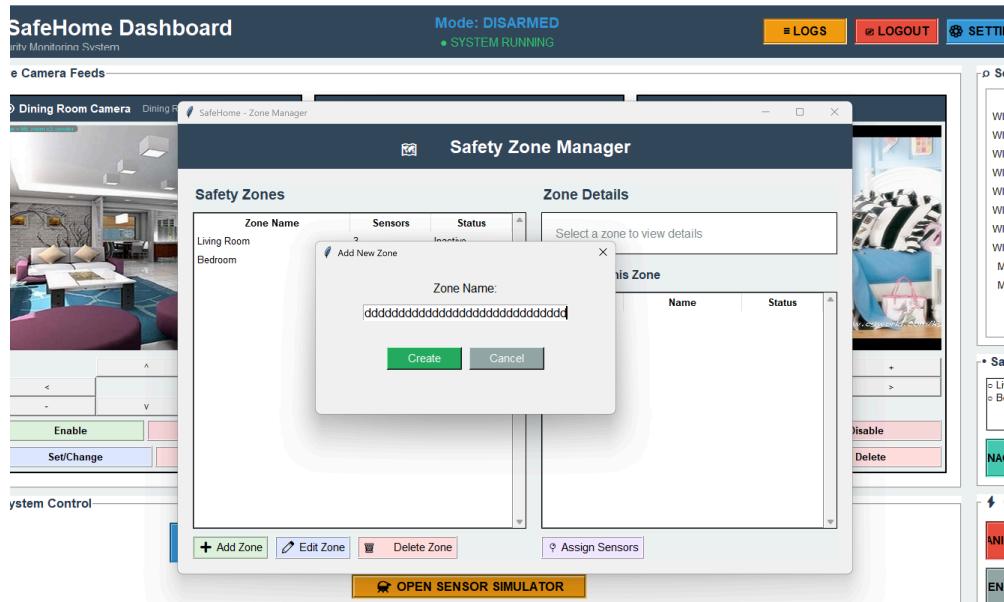
Expected Behavior

- Error message: "Zone name too long (max 50 characters)"
- Long name rejected
- System remains stable

Actual Behavior

- 1000+ character name accepted
- UI freezes when displaying zone
- Potential system crash
- Layout completely broken

Screenshot Placeholder



Impact

- System crash/freeze
 - Data corruption risk
 - UI unusable
-

BUG-H03: Duplicate Zone Names Allowed

Severity: HIGH

Component: Zone Manager

Files: safehome/interface/dashboard/zone_manager.py:480–488

Description

Multiple zones can have identical names, making zone identification impossible.

Reproduction Steps

- 1 1. Login as Admin / 1234
- 2 2. Click "Manage Zones"
- 3 3. Create zone: "Living Room"
- 4 4. Create another zone: "Living Room" (exact same name)
- 5 5. Observe both zones created
- 6 6. Try to identify zones in sensor assignment

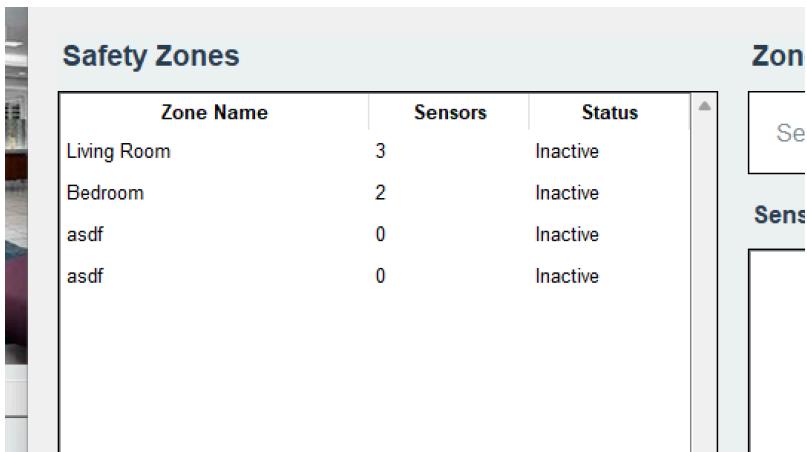
Expected Behavior

- Error message: "Zone name already exists"
- Duplicate name rejected
- Unique name enforcement

Actual Behavior

- Multiple "Living Room" zones created
- No uniqueness check
- Zone identification ambiguous

Screenshot Placeholder



| Zone Name | Sensors | Status |
|-------------|---------|----------|
| Living Room | 3 | Inactive |
| Bedroom | 2 | Inactive |
| asdf | 0 | Inactive |
| asdf | 0 | Inactive |

Impact

- Zone identification impossible
- Sensor assignment errors
- User confusion

Medium Severity Bugs (6)

BUG-M01: Timer Settings Accept Zero or negative

Severity: MEDIUM

Component: System Settings

Files: safehome/configuration/system_settings.py:40-44

Description

Entry Delay, Exit Delay, and Siren Duration accept 0 and negative values (e.g., -10), causing unusable timing.

Reproduction Steps

1. Login as Admin / 1234
2. Click Settings (⚙️) button
3. Set Entry Delay: 0
4. Set Exit Delay: -10
5. Set Siren Duration: 0
6. Click "Save Settings"
7. ARM system and trigger sensor

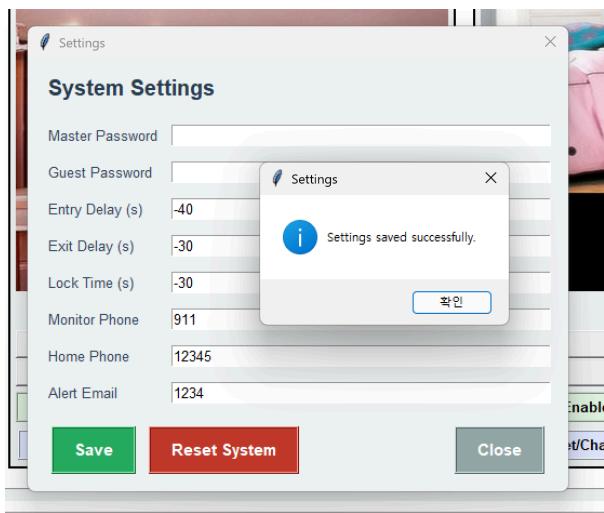
Expected Behavior

- Minimum value validation (e.g., Entry/Exit: 10-300 sec, Siren: 30-600 sec)
- Error message for invalid range
- Reasonable default enforced

Actual Behavior

- Zero and -1-second values accepted
- Entry Delay = 0: No time to disarm
- Siren Duration = 0: Alarm never stops (infinite)
- System timing unusable

Screenshot Placeholder



Impact

- Alarm never stops (Duration=0)
- No time to disarm (Entry Delay=0)
- System unusable

BUG-M02: Login Lock Timer Thread Not Cancelled

Severity: MEDIUM

Component: Login Manager

Files: safehome/configuration/login_manager.py:136-138

Description

When login fails 3 times consecutively multiple times, old lock timer threads continue running alongside new ones.

Reproduction Steps

- 1 1. Enter wrong password 3 times → Locked for 30 seconds
- 2 2. Wait 10 seconds
- 3 3. Enter wrong password 3 times again
- 4 4. Observe: Two timer threads now running
- 5 5. Repeat → Thread accumulation

Expected Behavior

- Old timer cancelled before new timer starts
- Single timer thread active at a time

Actual Behavior

- New timer overwrites reference only
- Old thread continues running
- Multiple timer threads accumulate

Problem Code

```
1 # login_manager.py:136-138
2 timer = threading.Thread(target=unlock_after_delay, daemon=True)
3 timer.start()
4 self.lock_timers[interface_type] = timer # Overwrites reference only!
```

Impact

- Memory leak
- Unpredictable unlock timing
- Resource waste

BUG-M03: Camera Password Delete Button Active When No Password

Severity: MEDIUM

Component: Camera Control

Files: safehome/interface/dashboard/ (camera control section)

Description

The "Delete Password" button for cameras remains active even when no password is set.

Reproduction Steps

- 1 1. Login as Admin / 1234
- 2 2. Go to Surveillance section
- 3 3. Select a camera that has no password set
- 4 4. Observe "Delete Password" button state
- 5 5. Click button

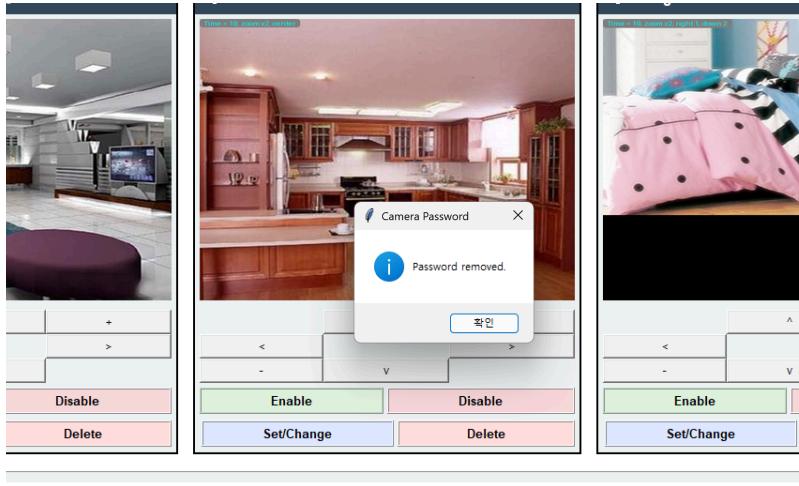
Expected Behavior

- Button disabled (grayed out) when no password exists
- Clicking does nothing or shows "No password to delete"

Actual Behavior

- Button is active clickable
- Attempting to delete when no password exists
- Confusing UX

Screenshot Placeholder



Impact

- Confusing user experience
- Potential error state
- UI logic issue

Part B: MISSING REQUIREMENTS

Critical Missing Requirements (2)

REQ-C01: Control Panel Interface Not Implemented

Severity: CRITICAL

SRS Reference: Section 2.1.1 - User Interfaces

Component: System Architecture

Requirement Description

SafeHome specification requires **two separate user interfaces**:

1. Web Browser Interface (WI) ✓ Implemented
2. **Control Panel Interface (CP)** X MISSING

The Control Panel should be a physical device interface with:

- PIN-based authentication (4-digit entry)
- Dedicated buttons for ARM/DISARM
- Status display
- Panic button
- Independent operation from web interface

Current Status

- Only web interface exists
- No Control Panel window/mode available
- No PIN entry mechanism
- No Panic functionality

Verification Steps

1. Launch SafeHome application
2. Search for "Control Panel" option → Not found
3. Look for PIN entry interface → Does not exist
4. Search for Panic button → Not implemented

Screenshot Placeholder

- 1 [Screenshot 1: Application showing only web interface]
- 2 [Screenshot 2: No Control Panel option in menus]

Impact

- **Top-level SRS requirement violated**
- Dual-interface architecture not implemented
- Missing critical emergency feature (Panic)
- Project specification non-compliant

Implementation Needed

- Create separate Control Panel UI window
- Implement PIN authentication (4 digits)
- Add ARM/DISARM/STAY mode buttons
- Implement Panic button functionality
- Status display (Armed/Disarmed/Alarm)

REQ-C02: Two-Factor Authentication Not Implemented

Severity: CRITICAL

SRS Reference: Section 3.2 - Security Requirements

Component: Authentication System

Requirement Description

Login process should include two-factor authentication (2FA) for enhanced security.

Current Status

- Single-factor authentication only (password)
- No 2FA mechanism exists
- No OTP/SMS/email verification
- No backup authentication method

Verification Steps

1. Go to login screen
2. Enter Admin / 1234
3. Observe: Direct login with password only
4. No second factor requested

Screenshot Placeholder

- 1 [Screenshot 1: Login screen with only password field]
- 2 [Screenshot 2: Successful login without 2FA]
- 3 [Screenshot 3: SRS requirement for 2FA]

Impact

- Security requirement not met
- Single point of authentication failure
- Reduced security posture
- SRS compliance failure

Implementation Needed

- Add 2FA enrollment during setup
- Implement OTP generation/verification
- Add backup codes
- SMS/Email/App-based authentication options

High Missing Requirements (2)

REQ-H01: System Turn On/Off Not Implemented

Severity: HIGH

SRS Reference: Section 2.2 - System Operations

Component: System Control

Requirement Description

System should have explicit "Turn On" and "Turn Off" operations to power the entire SafeHome system on/off.

Current Status

- No "Turn On" functionality
- No "Turn Off" functionality
- System is always running once launched
- No power management

Verification Steps

- 1 1. Launch SafeHome application
- 2 2. Login successfully
- 3 3. Look for "Turn System On/Off" option → Not found
- 4 4. System remains active with no power control

Screenshot Placeholder

- 1 [Screenshot 1: Dashboard with no power control options]
- 2 [Screenshot 2: Settings menu without On/Off option]
- 3 [Screenshot 3: SRS showing Turn On/Off requirement]

Impact

- Cannot disable system temporarily
- No maintenance mode
- Power management impossible
- SRS requirement not met

Implementation Needed

- Add "Turn System On" operation
- Add "Turn System Off" operation
- Define system behavior when off (all sensors disabled, no monitoring)
- Require authentication for power state changes

REQ-H02: Alarm System Does Not Trigger

Severity: CRITICAL

Component: Alarm System

Files: safehome/core/system.py , safehome/device/alarm/alarm.py

Description

When the system is armed and a sensor is triggered, no alarm response occurs. The core security function is completely non-operational.

Reproduction Steps

- 1 1. Login as Admin / 1234
- 2 2. Click "AWAY" button
- 3 3. Verify system status shows "Armed – Away"
- 4 4. Open any door/window sensor (or trigger motion sensor)
- 5 5. Observe behavior

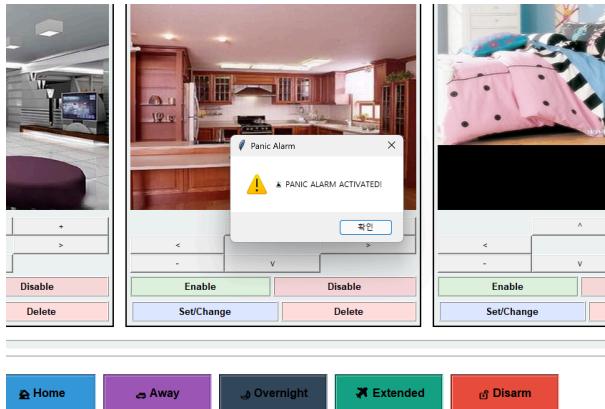
Expected Behavior

- Entry Delay countdown begins (30 seconds default)
- Dashboard shows countdown timer
- After Entry Delay expires: Alarm sounds
- Alert email/phone notification sent
- System state changes to "Alarm"

Actual Behavior

- No response when sensor triggered
- No Entry Delay countdown
- No alarm sound
- Dashboard remains in "Armed" state
- No notifications sent

Screenshot Placeholder



Impact

- **Core security functionality completely broken**
- System cannot detect intrusions
- SafeHome provides no protection
- Primary SRS requirement failed

Low Missing Requirements (1)

REQ-L01: Dashboard Lacks Hierarchical Navigation

Severity: LOW

SRS Reference: UI/UX Guidelines

Component: User Interface Design

Requirement Description

Dashboard should have hierarchical organization with separate sections/buttons for:

- Security operations (ARM/DISARM)
- Surveillance (camera controls)
- System configuration (settings)

Current Status

- All information displayed on single dashboard screen
- No hierarchical menu structure
- No separate Security/Surveillance panels
- Flat information architecture

Verification Steps

1. Login and view dashboard
2. Observe: All features on one screen
3. No "Security" button leading to security panel
4. No "Surveillance" button leading to camera panel
5. Settings accessed via icon, not organized panel

Screenshot Placeholder

- 1 [Screenshot 1: Current dashboard showing all features at once]
- 2 [Screenshot 2: Proposed hierarchical structure (mockup)]
- 3 [Screenshot 3: UI design guideline showing depth requirement]

Impact

- Information overload
- Cluttered UI
- Poor UX design
- Not a functional issue

Implementation Needed

- Reorganize dashboard into sections

- Add navigation buttons: Security, Surveillance, Settings
- Implement sub-panels for each section
- Improve information hierarchy