## **Georgia State University**

**Group Information** 

Member name	Percent contribution	Activities completed by the member
Navjit Singh	33.3%	Stakeholder and User Descriptions, Product Overview, Use Cases, Object Model, Goals, BPM Diagram
Mason Graves	33.3%	Introduction, Object Modeling, BPMN Diagram
Ramzi Kassim	33.3%	Introduction, Positioning, Goal Model, Use Cases, Use Case Diagram, Use Case Traceability
Total	100	

## **Georgia State University**

# Code Green Home Security Vision

Version 3.0

Code Green Home Security	Version: 3.0
Vision	Date: 10/December/2022
Code Green Home Security Vision 3.0	

**Revision History** 

Date	Version	Description	Author
10/22/22	1.1	Rewrote the Goal Model.	Ramzi Kassim
10/25/22	1.1	This version now includes a use case diagram and a company logo.	Ramzi Kassim
11/7/22	2.1	Grammatical Errors Corrected.	Navjit Sign, Mason Graves, Ramzi Kassim
11/7/22	2.2	Added a sequence diagram and action diagram for each UC	Ramzi Kassim
11/8/22	2.3	Use Cases, Use Case Model, BPM Model, and goal models were all updated	Mason Graves, Ramzi Kassim, Navjit Singh
12/10/22	3.0	BPM Model Revision, New Goals, Updated Object Model	Navjit Singh, Ramzi Kassim, Mason Graves

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## **Vision Document**

#### 1. Introduction

The purpose of this document is to collect, analyze, and define high-level needs and features of Code Green Home security. It focuses on the capabilities the stakeholders and target users need and why these needs exist. The details of how Code Green Home Security fulfills these needs are detailed in the use case and supplementary specifications.

The document goes over how CGHS (Code Green Home Security) improves the quality of life for those in all sectors of society. Service is provided to those who seek a safe and aim to provide joy to those we serve.

#### 1.1 Purpose

Our service targets individuals and shareholders with information about our company's top priorities as well as what is provided.

#### 1.2 Scope

This document aims to provide customers with a full package security system including cameras, motion sensor devices, and multiple alarms for each entrance to the building. The requirements include a team of cyber security agents, web developers, engineers, and consultants. Each individual is responsible for a set of instructions in order to fulfill customer needs.

#### 1.3 Definitions, Acronyms, and Abbreviations

CGHS - Code Green Home Security

#### 1.4 References

References listed: https://en.wikipedia.org/wiki/Use case diagram,

https://en.wikipedia.org/wiki/Traceability\_matrix, https://en.wikipedia.org/wiki/User\_story.

#### 1.5 Analyst Certifications

We, Mason Graves, Navjit Singh, and Ramzi Kassim have analyzed these documents and believe that they:

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- Comply with current UML syntax and best practices.
- Are internally consistent
- Meet the stakeholder needs, as we understand them

#### 1.6 Overview

The vision document has information entailing business opportunities, product position statement, and highlights stakeholder and user needs. It organized 10 separate sections, each containing its own unique contents.

#### 2. Positioning

### 2.1 Business Opportunity

As technology continues to make great leaps across all cylinders of the world, many new business opportunities arise. As such, home security is a profitable market and one that is rightfully so. Businesses can have faith in their facilities by switching over to CGHS. Homeowners can feel at ease and in comfort as our software provides excellent service unrivaled by others.

#### 2.2 Problem Statement

The problem of	Not having proper home security equipment	
	Lack of technology needed to keep a building safe	
affects	homeowners, business owners	
the impact of which	afraid homeowners and business owners	
	current security systems not providing enough support for individuals	
	individuals who are being overcharged for devices such as motion sensor lights and cameras	
	options for security systems being very limited	
a successful solution would be	a comprehensives, affordable, and easy to use home monitoring and security system	

#### 2.3 Product Position Statement

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For	homeowners and firms
Who	enjoy the comfort of a safe home
The CGHS	is a security system
That	is compatible with all electronic devices
Unlike	home surveillance systems
Our product	delivers all customers with 24/7 customer service, high-quality cameras, sensors, and high tech equipment unrivaled by others.

## 3. Stakeholder and User Descriptions

## 3.1 Stakeholder Summary

Name	Description	Responsibilities
Management & Administrative Staff	Provide duties and carry out managerial work within a company that requires a large infrastructure to consistently deliver our product to all customers.	Management & administrative staff will provide the company with continued changing requirements to constantly innovate systems as well as provide funding. Administrative staff will receive feedback from customers and support infrastructure to allow for the technical implementation of security systems.
Competitors (ADT/Ring/Simplisafe)	These companies have a vested interest in seeing how we operate our business and implement software with security systems.	These companies may attempt to copy our systems and business model by implementing similar packages. Continued innovation and enhanced security will thwart their vested interests in our products.
Cybersecurity Consultants(Pentesters)	The company requires outside contractors to test our cybersecurity infrastructure against a constantly evolving criminal base.	Penetration testing and instructions from various cybersecurity consultant firms will provide the information security department with critical information to evolve and maintain their procedural methods.
Camera & Alarm Suppliers	We will need to request supplies from outside companies to deliver reliable hardware to supply homes' security apparatus.	Security apparatus and home monitoring systems cannot exist without appropriate hardware acquired from these suppliers. The inventories taken from these suppliers will move security apparatus plans forward.

## 3.2 User Summary

Name	Description	Responsibilities	Stakeholder

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Home Owner	End-user and customer.	<ul> <li>Communicates with the company regarding issues</li> <li>Operates system UI</li> <li>Purchases product</li> </ul>	Camera & Alarm Suppliers, Competitors (ADT/Ring/Simplisafe), Management & Administrative Staff
Cybersecurity Engineer	Users will provide information security to home systems.	<ul> <li>Provides information security for customers.</li> <li>Maintains integrity of online security for customers</li> </ul>	Management & Administrative Staff, Cybersecurity Consultants(Pentesters)
Technician	Maintains and supports physical installation and maintenance of security systems in homes.	<ul> <li>Installs and maintains security apparatus in homes.</li> <li>Communicates between customer and company.</li> <li>Provides on-site assistance to any issues that arise with the system.</li> </ul>	Camera & Alarm Suppliers, Management & Administrative Staff
Law Enforcement	Police will be notified and contacted during active use of the security system.	<ul> <li>Response to alarm systems.</li> <li>Apprehends and arrests any. criminals present</li> <li>Enforces local law.</li> </ul>	Camera & Alarm Suppliers
Criminals	Primary user that activates home security system.	<ul> <li>Violate local law by breaking into homes.</li> <li>May harm other users physically or through cyberspace.</li> <li>Security apparatus is innovated to keep up with break-in tactics.</li> </ul>	Camera & Alarm Suppliers, Cybersecurity Consultants(Pentesters)
Software Engineers	Responsible for the development of software in security apparatus systems.	<ul> <li>Helps design operating systems for the security system.</li> <li>communicates with a cybersecurity engineer.</li> <li>Connects hardware of apparatus to security system.</li> <li>Innovates and maintains all software within security systems.</li> </ul>	Camera & Alarm Suppliers, Management & Administrative Staff

## 3.3 Key Stakeholder or User Needs

Need	Priority	Concerns	Current	Proposed

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Cybersecurity	Medium	Increasing concerns in the digital age for information and network security when connected to the internet.	Network security for homes is nonexistent and cybersecurity software requires different purchases from separate providers.	Provide network security, and a comprehensive information security package to secure internet access and the integrated security apparatus.
Home monitoring	Medium	When individuals are away from their homes they have no idea what is happening with their property and are blind to it.	Home surveillance is limited and has many blindspots and poor quality.	Implement several high-quality cameras around homes covering key areas of access and provide remote access to the video feed.
Ease of accessibility	Low	Home security consoles can be difficult to use, and instructions for activation may be unclear.	Home protection systems are clunky, old, and difficult to access and most cannot be accessed at all remotely.	Create a centralized command console that is simple and easy to operate that requires minimal input.
Preemptive measures from attacks	Medium	When break-ins occur there is always the issue of property damage, and bad actors may not be deterred to break into a home.	Current home security systems only show that there is active security present, no complex apparatus exists to physically deter criminals.	Extend security apparatus to the outside of the home to provide external alarms as a physical deterrent to prevent homes from being broken into.
Alarm system & advanced security apparatus	High	Most homes do not come with any safety features to ward off criminals during a break-in.	Current alarm systems are awkward, can be circumvented, and are sometimes dependent on several other systems.	Maintain an extensive security apparatus by providing independent sensors and alarms throughout the home that trigger automatically and only during break-ins.
Response time to contact authorities	High	When a home is broken into if there is any security apparatus in place there is no way to notify authorities most of the time.	Home security systems sometimes may have difficulty reaching the proper authorities or may trigger false alarms.	Implement software that correctly and quickly notifies authorities of attempted and in-progress break-ins. Provided failsafe is easily accessible to homeowners only.

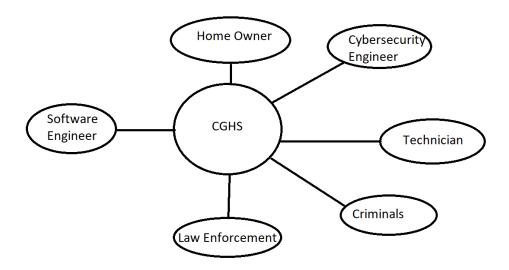
## 4. Product Overview

Code Green Home Security system provides an all-in-one security package at a medium cost to individuals

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who highly prioritize a state of security within their homes by providing cutting-edge security apparatuses, innovative cybersecurity measures, tenable surveillance, and consistent performance to increase confidence in home security.

#### 4.1 Context Diagram



#### 4.2 Assumptions and Dependencies

- Large cybersecurity team to maintain and constantly keep software up-to-date, and prevent data breaches.
- Customers must be absolutely interested in paying a slightly above market price for increased protections.
- Customers must have a large vested interest in home security.
- Ability to innovate and provide cutting-edge software for our operating system, cybersecurity team, and hardware including the security apparatus on a consistent basis.
- Large infrastructure and expenses to be maintained to provide excellent customer service, installation, and maintenance.
- Very dependent on supplies for hardware in security apparatus.

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#### 5. Goal Model

#### **EARS Goals**

**Ubiquitous**: The system shall run smoothly with no interruptions.

**Event-driven**: When the alarm is triggered then the system shall notify the police.

**Unwanted**: If an entry point is not secured, then the system shall notify the homeowner.

**State-driven**: While the footage is being accessed, the system shall store and save data.

Optional: Where homeowners request extra security, then window alarms will be installed.

User Story Requirement: As as a customer and homeowner, I want to be notified by the CGHS about security reports daily

#### **5.1 Arm Security System**

- 5.1.1 Achieve: When the user turns on the alarm, the system activates it.
- 5.1.2 Avoid: When the user attempts to activatem, prevent the system from failing to do so.
- 5.1.3 Maintain: While the user has the alarm activated, the system will keep it activated until further instructions.

#### 5.2 Activate VPN

- 5.2.1 Achieve: When the user activates the vpn, the system provides secure private network connection.
- 5.2.2 Avoid: When the user is under the vpn, the system should not fail to connect the VPN.
- 5.2.3 Maintain: When the user is using the VPN, the system will maintain a strong, private connection.

#### **5.3 Active Prevention of Cyberthreats**

- 5.3.1 Achieve: When a developer wants to install new software into the system, the current diagnostic of the software will be provided.
- 5.3.2 Avoid: While the user is running a report on the current state of the framework, avoid improper diagnostics given to the customer.
- 5.3.3 Achieve: Always implement tools to protect sensitive information.
- 5.3.4 Maintain: Always allow technicians to install new equipment as the system goes outdated.
- 5.3.5 Maintain: While the software ages over time, maintain it by allowing updates to the system

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- 5.3.6 Avoid: While the user is running a report on the current state of the framework, avoid improper diagnostics given to the customer.
- 5.3.7 Avoid: When a user reports a bug in the application, a systems report is sent to a technician for viewing.

#### 5.4 Seek Footage

- 5.4.1 Achieve: When the user requests real-time footage of their home, then the application is alerted of customers' requests and displays footage
- 5.4.2 Cease: Once the user completes viewing the footage, then the footage will be transmitted in any form of messaging device per user request.
- 5.4.3 Maintain: While the footage is being displayed, the system will maintain all records in a closed database.

#### **5.5 Triggering Security System**

- 5.5.1 Achieve: While an individual enters an incorrect pin for a door, then locks the door.
- 5.5.2 Avoid: When an individual enters an incorrect pin multiple times for a door, then lock the door.
- 5.5.3 Maintain: When the system reports unwanted individuals on-premise, a security report is generated and sent to the home-owner.
- 5.5.4 Cease: When the motion detectors no longer sense movement, then turn off outdoor lighting.
- 5.5.5 Cease: When user requests are met, the system closes the application.
- 5.5.6 Cease: When the motion detectors no longer sense movement, then turn off outdoor lighting.

#### 5.6 Seek Data Report

- 5.6.1 Achieve: When the user recognizes a bug, the system will send a report to that user.
- 5.6.2 Avoid: When the user is analyzing the report, the system will prevent itself from sending previous information to avoid misconception of results
- 5.6.3 Maintain: When the user has completed the analysis, the system will continue to create data reports.
- 5.6.4 Cease: When the user closes the application, the system will cease creating data reports unless programmed to do so.

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#### **5.7 Test Network Security**

- 5.7.1 Achieve: While an individual enters an incorrect pin for a door, then locks the door.
- 5.7.2 Avoid: While an unrecognized device is connected to the network, prevent adding anymore unrecognized devices that are connected to the unauthorized one.
- 5.7.3 Maintain: When the system runs its test, continue to identify and consistently scan all network connections for results correctly.
- 5.7.4 Cease: When a security vulnerability is detected cease connections with unrecognized devices.

#### 5.8 Disarm or Override System

- 5.8.1 Achieve: When the user seeks to disarm any security holds, the system will allow the user to do so.
- 5.8.2 Avoid: When the user is disarming the security hold, the system will avoid any difficult procedures to do so in order for a simple deactivation.
- 5.8.3 Maintain: While the user overrides the system, the system maintains the state the user wishes it to be in.
- 5.8.4 Cease: The system rearms the house when the user seeks to quash the current deactivation.

#### **5.9 Provide Feedback**

- 5.9.1 Achieve: When the user wishes to provide feedback about a feature in the system, the system will send a report form to the user.
- 5.9.2 Avoid: When the user is providing feedback, the system will avoid sending the wrong form to the user.
- 5.9.3 Maintain: While the user is actively using the CGHS application, maintain automatic notifications to be sent to the user about the feedback they want to share.
- 5.9.4 Cease: When a user is no longer part of the CGHS program, cease sending them notices of what they would like to change with the security system.

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#### 6. Constraints

Several constraints the company faces include local and federal restrictions, privacy concerns, skills and knowledge shortages, and competing companies. These restrictions hold the company back from operating at its maximum potential.

## 7. Precedence and Priority



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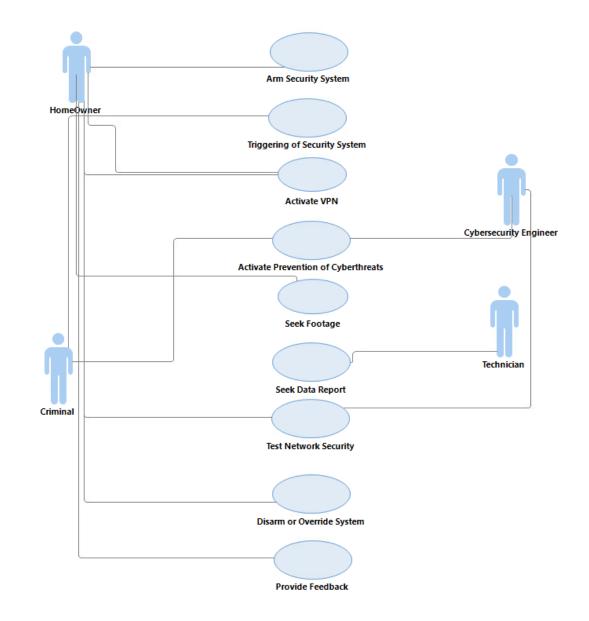
## 8. Use-Case Model

## 8.1 Goal Use-Case Traceability

Functional Requirement	Arm Security System	Activate VPN	Active Prevention of Cyber Threat	Seek Footage	Triggering of Security System	Test Network Security	Seek Data Report	Disarm or Override System	Provide Feedback
5.1.1	X								
5.2.3		X							
5.3.3			X						
5.4.1				X					
5.5.3					X				
5.6.4						X			
5.7.1							X		_
5.8.1								X	
5.9.1									X

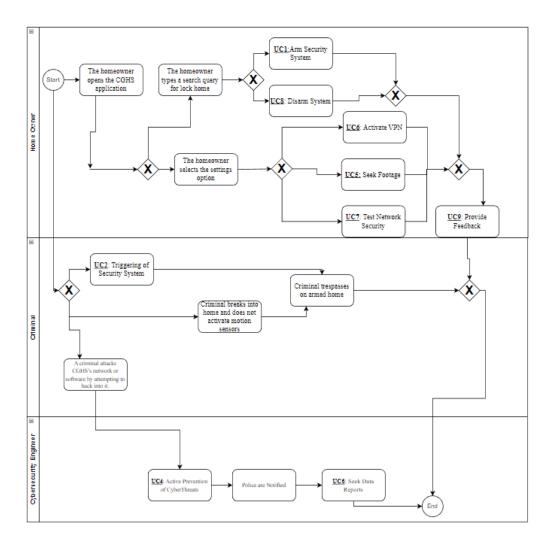
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## 8.2 Use-Case Diagram



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### 8.3 Business Process Model



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## 8.4 Use-Case 1: Arm Security System [9]

Name	Arm Security System [9]		
Description	The user will be able to lock all windows, doors, and activate cameras with the CGHS app.		
Goal	5.1.1: When the user turns on the alarm, the system		
	activates it.		
Pre-Condition	All doors, windows, and other openings of the building must be closed.		
Post-Condition	The opening of the door is locked.		
Home-Owner(Actor)	System		
1) Homeowner opens the CGHS application.	2) System is opened.		
3) Homeowner types a search query for a locked home.	4) System provides the security interface		
5) Homeowner presses the lock house button.	6) System locks all doors, windows, and arms the security alarms.		
Alternatives			
5) Homeowner presses the unlock house button	6) The system unlocks all doors, and windows, and disarms the security alarms.		

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## 8.5 Use-Case 2: Triggering of Security System[10]

Name	Triggering of Security System[10]	
Description	When an armed CGHS system is activated, notifications will be sent to users.	
Goal	5.5.3: When the system reports unwanted individuals on-premise, a security report is generated and sent to the homeowner.	
Pre-Condition	Criminal trespasses and may harm homeowner's property	
Post-Condition	Law enforcement and homeowners are notified at a moment's notice when the CGHS system is activated.	
Criminal (Actor)	System	
Criminal activates motion system sensors outside the home.	2) CGHS activates preliminary systems	
3) Criminal trespasses and breaks into the home, activating motion sensors within the home.	CGHS activates alarms     CGHS notifies home-owner with alarm notification	
6) Criminal trespasses on armed homes.	<ul> <li>7) Incident is logged and sent to the home-owner and law enforcement is notified</li> <li>8) Security apparatus moves forward with alarms and deterrent measures</li> </ul>	
Alternatives		
Criminal leaves outside the zone of motion sensor coverage.	2) Incident is logged to the home-owner account	
Criminal breaks into the home and does not activate motion sensors.	CGHS sensors are ineffective and do not completely activate all measures.	

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## 8.6 Use-Case 3: Activate VPN[8]

Name	Activate VPN[8]	
Description	The home-owner will be able to connect to the internet with a private, anonymous connection using CGHS's VPN feature.	
Goal	5.2.3 when the user is using the VPN, the system will	
	maintain a strong and private connection	
Pre-Condition	User must not be on a VPN or Proxy connection.	
Post-Condition	User will be under a VPN connection	
Homeowner (Actor)	System	
1) Homeowner is on the home screen.	<ol><li>System presents a list of options for a user to choose from.</li></ol>	
3) Homeowner selects the settings option.	4) System opens the settings interface.	
5) Homeowner selects network and internet.	6) Systems the network interface.	
7) Homeowner selects the desired VPN connection.	8) System connects the VPN.	
Alternatives		
7) Homeowner selects a proxy connection.	8) System connects the user to a proxy.	

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## 8.7 Use-Case 4: Active Prevention of CyberThreats[6]

Name	Active Prevention of CyberThreats[6]	
Description	Cybersecurity engineers will be able to ward off criminals from attacking CGHS networks and accessing private information by using tools available to CGHS networks.	
Goal	5.3.3: Always implement tools to protect sensitive information.	
Pre-Condition	Cyber threats may go unnoticed through the security system.	
Post-Condition	Active cyber threats are found and are actively put down using CGHS tools.	
Cybersecurity Engineer, Criminal (Actor)	System	
Criminal attacks CGHS's network or software by attempting to hack into it.	<ol> <li>CGHS's preliminary cybersecurity software and firewalls are used to ward off initial breaches.</li> <li>CGHS notifies the cybersecurity team of attacks made.</li> </ol>	
<ul> <li>3.) Cybersecurity engineers are notified of any potentially hazardous breach and quickly utilize all cybersecurity software within CGHS.</li> <li>4.) New security patches are created</li> </ul>	CGHS's updated software responds to new attacks and automatically prevents repeated attacks.	
Alternatives		
Criminal attacks CGHS's network attempting to hack it.	CGHS network prevents a security breach automatically.	

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## 8.8 Use-Case 5: Seek Footage[8]

Name	Seek Footage [8]	
Description	Home-owners use surveillance footage to see what is happening on their property.	
Goal	5.4.1: When the user requests real-time footage of their	
	home, then the application is alerted of customers'	
	requests and displays footage.	
Pre-Condition	Homeowners are unaware of what is happening around their property.	
Post-Condition	Homeowner has seen what is going on around the property.	
Home-owner (Actor)	System	
1) Homeowner opens the app.	CGHS displays available features to be utilized.	
3) Homeowner picks the camera icon.	<ol> <li>CGHS application displays surveillance footage across the home.</li> </ol>	
5) Homeowner switches between cameras to see what is going on around the house.	CGHS app displays footage for all separate cameras.	
Alternatives		
3.) Homeowner picks activate the icon.	4.) Homeowner's house becomes armed	
3.) Homeowner picks the shield icon.	4.) VPN becomes activated on homeowner's network	

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## 8.9 Use-Case 6: Seek Data Reports[5]

Name	Seek Data Reports[5]	
Description	The user will be able to collect & submit data to create analysis.	
Goal	5.7.1: When the user recognizes a bug, the system will	
	send a report to that user.	
Pre-Condition	The user must have the credentials to gain this report.	
Post-Condition	Data output must be stored in a secure library.	
Technician (Actor)	System	
1) Technician has placed a request to review data	2) System will provide raw data to the user	
3) Technician seeks to analyze the data	System provides easy-to-use data analysis tools	
5) Technician requests data report once the data analyzation is complete	6) System will generate a data report	
Alternatives		
5) Technician places request to review security report	6) System will generate a security report	

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## 8.10 Use-Case 7: Test Network Security[7]

Name	Test Network Security[7]	
Description	The home-owner will be able to see any current vulnerabilities present within their network by testing their network's security.	
Goal	5.6.4 Cease: When a security vulnerability is detected cease connections with unrecognized devices.	
Pre-Condition	Home-owner is unaware of current threats or vulnerabilities surrounding their network security.	
Post-Condition	Home-owner is aware of all possible threats or issues within their network.	
Home-owner, Cybersecurity engineer (Actor)	System	
<ol> <li>Homeowner connects to their internet.</li> <li>Homeowner opens the CGHS application.</li> </ol>	3) The application authenticates the user.	
4) Homeowner clicks on the test network security icon.	<ul><li>5) CGHS begins testing and analyzes all network connections to devices and the internet.</li><li>6) CGHS generates a report for users.</li></ul>	
<ul> <li>7) Homeowner receives generated report.</li> <li>8) Homeowner may choose to change connections or attach devices to the network and retry the network security test.</li> </ul>	<ol> <li>CGHS runs separate network security for each request made by the homeowner.</li> </ol>	
Alternatives		
7.) Homeowner receives a critical report of the system.	8.) CGHS security system notifies the cybersecurity engineer of the report.	

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## 8.11 Use-Case 8: Disarm or Override System[7]

Name	Disarm or Override System [7]	
Description	The homeowner will be able to turn off their armed security system at will.	
Goal	5.8.1 Achieve: When the user seeks to disarm any security holds, the system will allow the user to do so.	
Pre-Condition	The home security system prevents anyone from entering the house without activating its countermeasures.	
Post-Condition	The home security system's countermeasures are deactivated.	
Home-Owner (Actor)	System	
1.) Homeowner opens the CGHS application.	2.) CGHS application authenticates the correct user.	
3.) Homeowner inputs their security number and login.	4.) CGHS application confirms authentication.	
5.) Homeowner clicks on the shield icon.	6.) Home's security system is disarmed.	
Alternatives		
3.) Home-owner incorrectly inputs their security number or login.	4.) Application will lock out any unrecognized user.	
Homeowner enters the house premises and activates motion sensors.	<ul><li>2.) CGHS home security countermeasures are activated.</li><li>3.) CGHS sends notifications of incidents to the homeowner.</li></ul>	
4.) Homeowner can reauthenticate themselves and input the correct login credentials.	<ul><li>5.) CGHS deactivates countermeasures upon correct authentication.</li><li>6.) CGHS deletes the previous log report.</li></ul>	

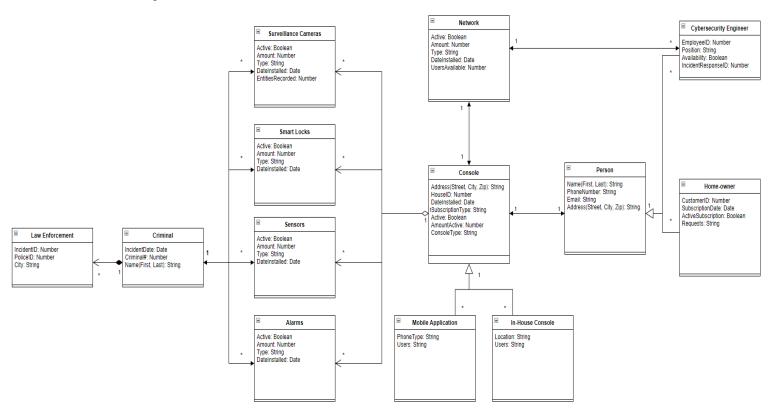
Code Green Home Security	Version: 3.0
Vision	Date: 10/December/2022
Code Green Home Security Vision 3.0	

### 8.12 Use-Case 9: Provide Feeback[5]

Name	Provide Feedback[5]
Description	Homeowner gives feedback to CGHS based on their experiences with the system through the application.
Goal	5.9.1 Achieve: When the user wishes to provide
	feedback about a feature in the system, the system will
	send a report form to the user.
Pre-Condition	Home-owner wishes to gain more functionality or better protection with their system.
Post-Condition	Home-owner will have provided feedback through the reporting system of things that they would like to see implemented or changed.
Home-Owner (Actor)	System
Homeowners open applications for their CGHS system.	UI displays a variety of options including settings and rating options.
3.) Homeowner clicks on the star icon at the bottom of the UI	4.) The CGHS application will display a prompt.
5.) Homeowner describes any issues or complaints they have or any things they thought worked very well with their security system.	6.) User report is submitted to CGHS.
Alternatives	
Every month the homeowner logs into the CGHS application a notification will appear.	2.) The notification will give the user an option to provide an open-ended review or rating.
3.) User inputs review or rating and submits it.	4.) CGHS application receives a rating.

Code Green Home Security	Version: 3.0
Vision	Date: 10/December/2022
Code Green Home Security Vision 3.0	

## 9. Object Model



Code Green Home Security	Version: 3.0
Vision	Date: 10/December/2022
Code Green Home Security Vision 3.0	

## 10. Stakeholder Requests