

CPSC 875 PROJECT PROPOSAL

Home Security System

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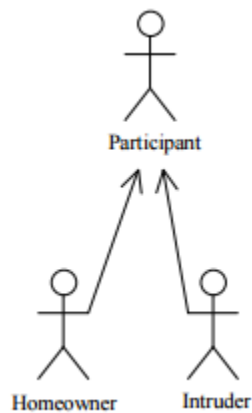
Description

A security system is designed to detect intrusion or unauthorized entry into a building or area. They are used in residential, commercial, industrial, and military properties for protection against burglary or property damage, as well as personal protection against intruders. Prisons also use security systems for control of inmates.

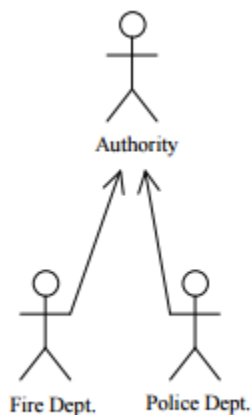
The Home Security System provides an additional functionality of fire/smoke detection apart from protection against intrusion. The system provides functionality to alert both the homeowner as well as authority (Police and Fire Department) in case of a fire break out or theft attempt.

Use Case Diagrams

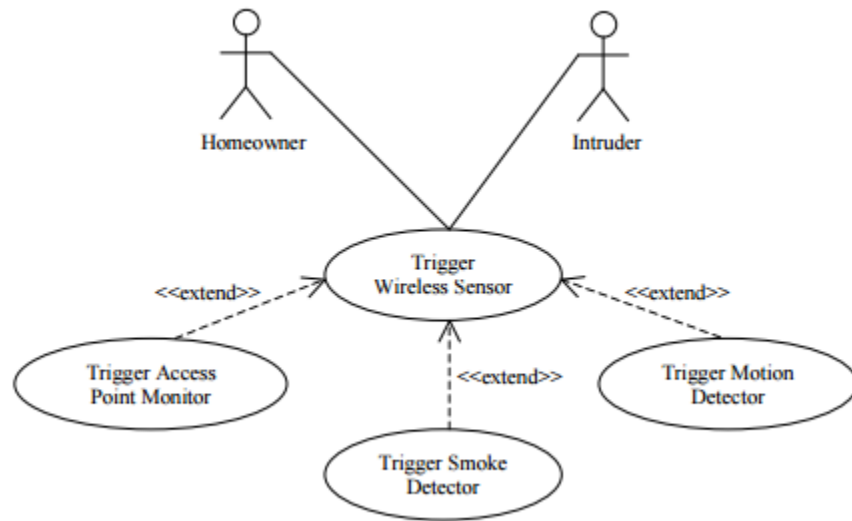
1. Use Case Diagram- 1 : Participants



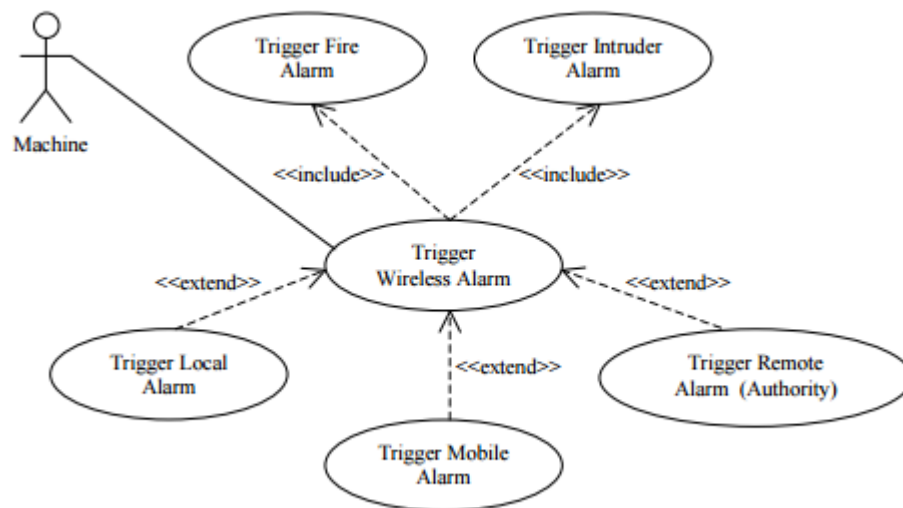
2. Use Case Diagram- 2 : Authority



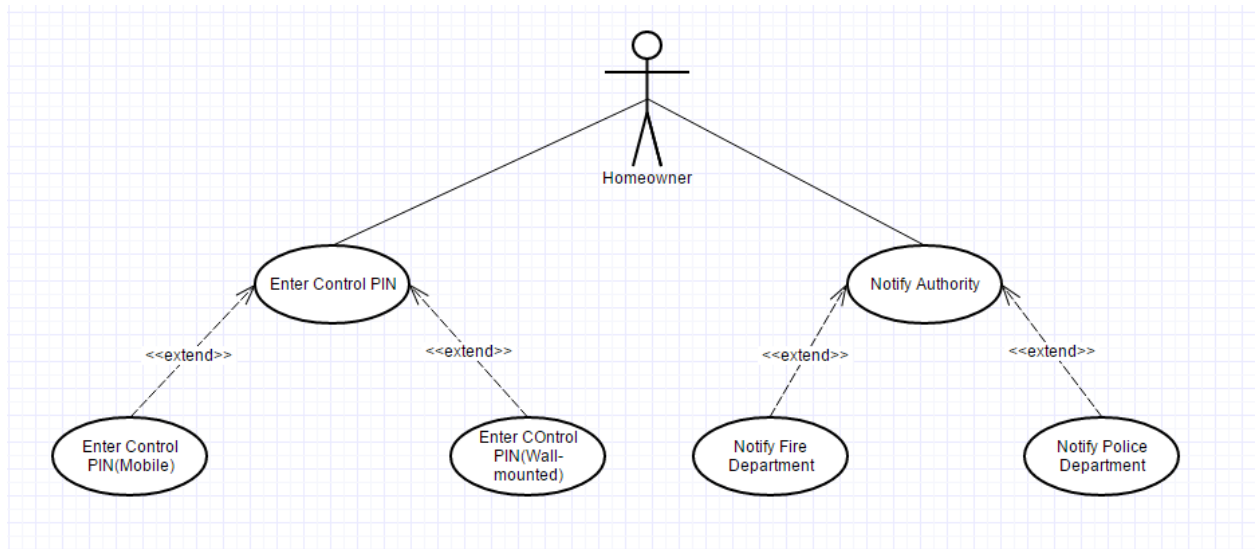
3. Use Case Diagram- 3: Wireless Sensor Activation



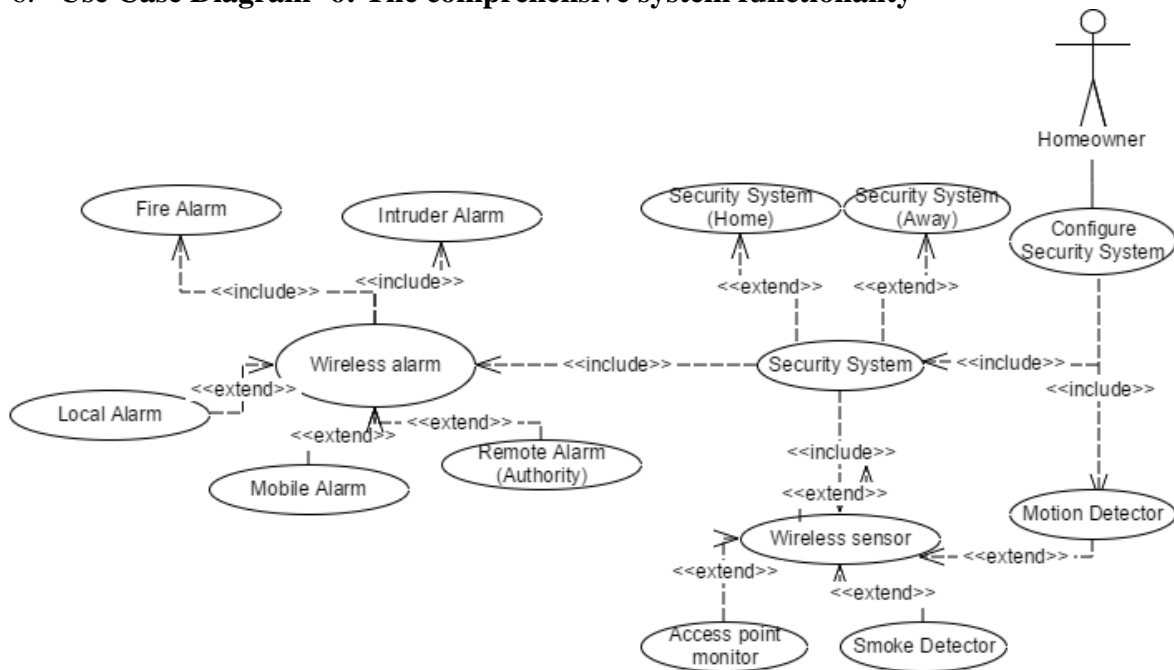
4. Use Case Diagram- 4: Activation of Wireless Alarm



5. Use Case Diagram- 5: Configuring the device and Notifications



6. Use Case Diagram- 6: The comprehensive system functionality



Output from QAW

1. Quality Attributes to be met:

1. Availability
2. Correctness
3. Completeness
4. Reliability
5. Latency/Timeliness
6. Effectiveness
7. Installability
8. Robustness
9. Usability
10. Maintainability

2. Scenarios

1. Smoke in the house triggers a smoke detector.
2. The machine triggers the local fire alarm (a wireless alarm).
3. The machine triggers the mobile fire alarm (a wireless alarm).
4. The machine triggers the remote fire alarm (authority) (a wireless alarm).
- 4.1 Remote fire alarm (authority) is inoperative
5. Homeowner is notified of the smoke detection via the local/mobile fire alarm trigger (attempted, not guaranteed).
6. Fire department is notified of the smoke detection via the remote fire alarm trigger or homeowner notification
7. Homeowner returns to house armed in away mode.
8. Homeowner enters the control PIN via the mobile (wireless) control interface prior to entering home.
- 8.1. Control PIN entry fails (e.g., home owner forgets the control PIN): Use case terminates in failure
9. Homeowner disarms the home security system via the mobile (wireless) control interface prior to entering home.
10. Access point monitor triggers or motion detector triggers via detection of an intruder in the home.
- 10.1. Access point monitor or motion detector is inoperative (access point monitor or motion detector trigger fails): Use case terminates in failure
11. The machine triggers the local intruder alarm (wireless alarm).
- 11.1 Local intruder alarm is inoperative (local intruder alarm trigger fails)
12. The machine triggers the mobile intruder alarm (wireless alarm).
- 12.1 Mobile intruder alarm is inoperative
13. The machine triggers the remote intruder alarm (authority) (wireless alarm).
14. Homeowner is notified of the intruder detection via the local/mobile intruder alarm trigger (attempted, not guaranteed).
15. Police department is notified of the intruder detection via the remote intruder alarm trigger or homeowner notification.
16. Homeowner enters the control PIN via the mobile (wireless) control interface.
- 16.1. Control PIN entry fails (e.g., home owner forgets the control PIN): Use case terminates in failure

17. Homeowner arms the security system at the home security level (via a wireless control interface).

18. Homeowner arms motion detectors in a configuration as desired (via a wireless control interface).

3. Prioritised and Refined Scenarios :

1. Smoke in the house triggers a smoke detector.
2. Access point monitor triggers or motion detector triggers via detection of an intruder in the home
3. The machine triggers the local alarm (a wireless alarm).
4. The machine triggers the mobile alarm (a wireless alarm).
5. The machine triggers the remote alarm (authority) (a wireless alarm).
6. Homeowner is notified of the smoke detection or Intruder detection via the local/mobile alarm trigger (attempted, not guaranteed).
7. Respective Authority or department is notified of the smoke/intrusion detection via the remote fire alarm trigger or homeowner notification

Sources Of Information

[1] Tom Polanski, "Use Case Diagrams", Colarado University

[2] <http://www.safewise.com/home-security-faq/how-do-security-systems-work>