Edmon Begoli, Lucent Technologies
CSCI 6448
University of Colorado – CATECS
Homework 3 Submission
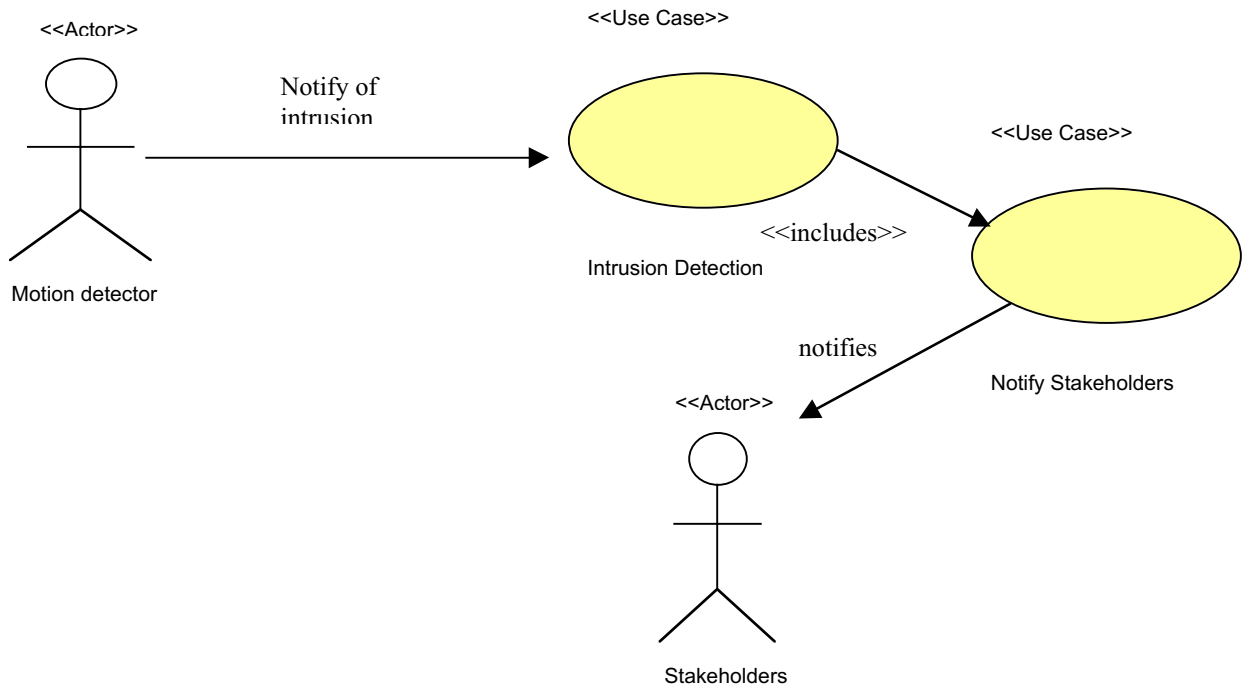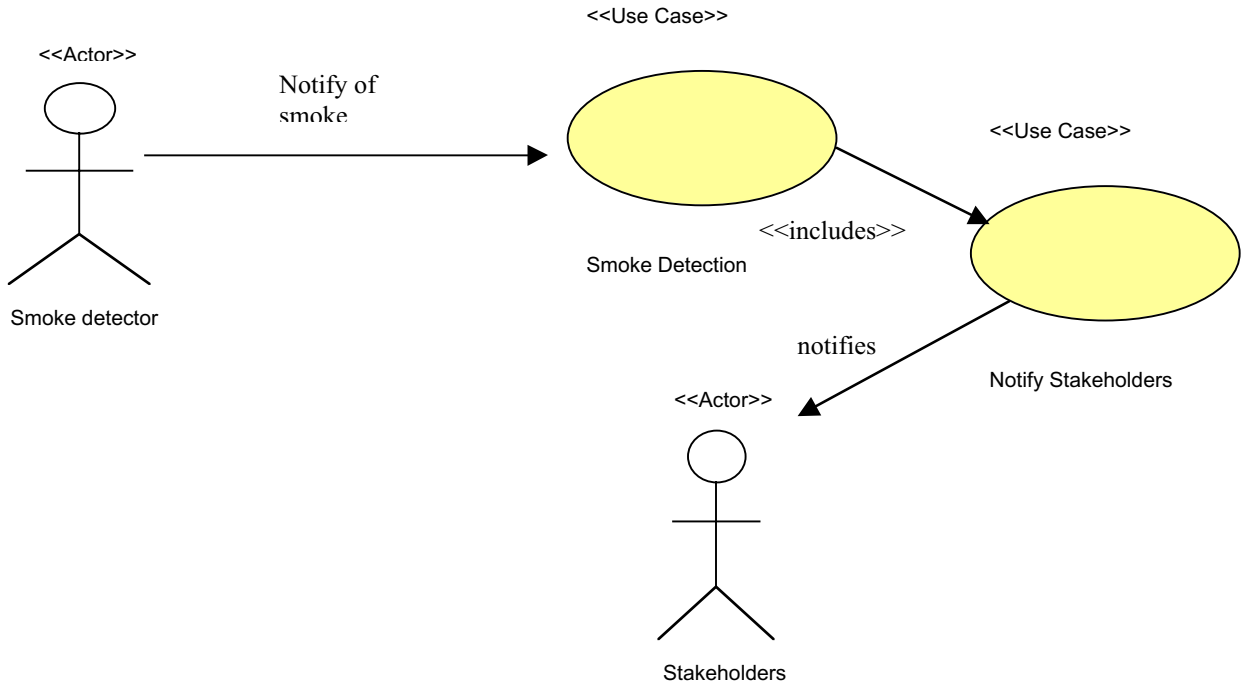

Notes on homework:
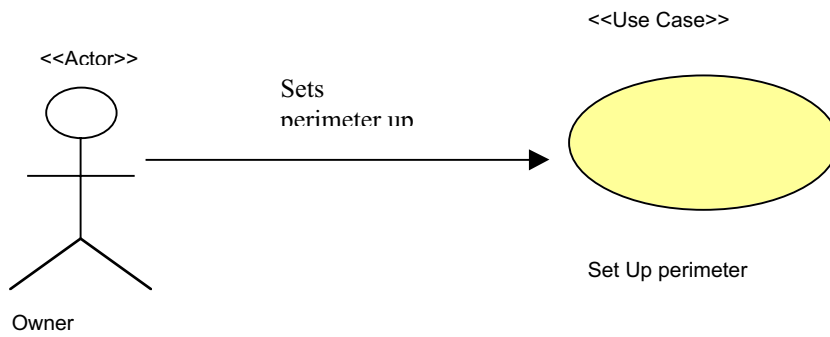

Dr. Anderson,

Please not that I used Use Case templates provided by Alistair Cockburn on his use
cases web site:

www.usecases.org.

Use case diagrams:

<<Actor>>

Notify of
smoke

<<Use Case>>

<<Use Case>>

<<includes>>

Smoke Detection

Smoke detector

notifies

Notify Stakeholders

<<Actor>>

Stakeholders

<<Actor>>

Notify of
intrusion

<<Use Case>>

<<Use Case>>

<<includes>>

Intrusion Detection

Motion detector

notifies

Notify Stakeholders

<<Actor>>

Stakeholders

<<Use Case>>

<<Actor>>

Disarms

Disarm Alarm system

Owner

<<Use Case>>

<<Actor>>

Sets
perimeter up

Set Up perimeter

Owner
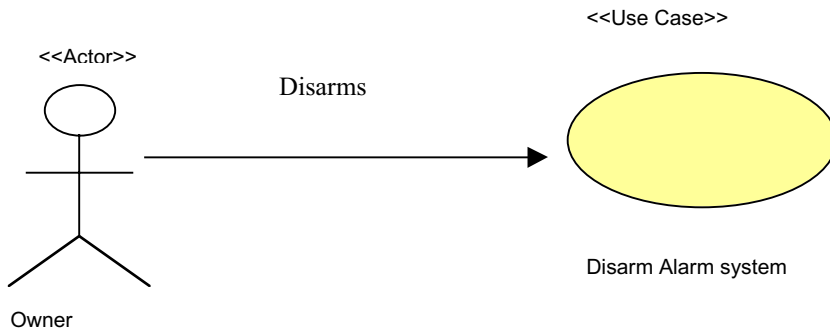
Exercise in Use case and Actors Hierarchy

<<Actor>>

Detector

<<Actor>>

<<Actor>>

Smoke Detector

Motion Detector

<<Actor>>

Stakeholder

<<Actor>>

<<Actor>>

Proximal

Remote

<<Use Case>>

Detection

<<Use Case>>

<<Use Case>>

Smoke detection

Motion Detection

<<Actor>>

Report
Alarm
Condition

<<Use Case>>

Alarm Detection

Alarm Report Detector
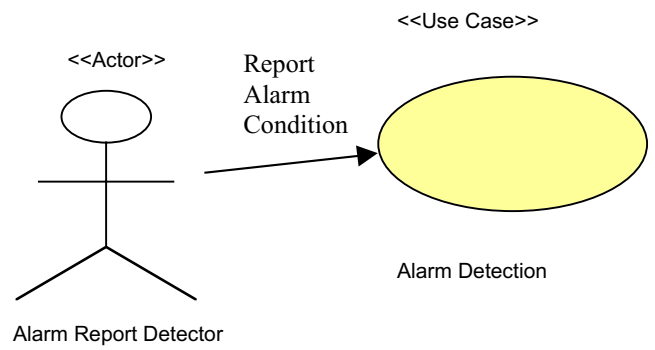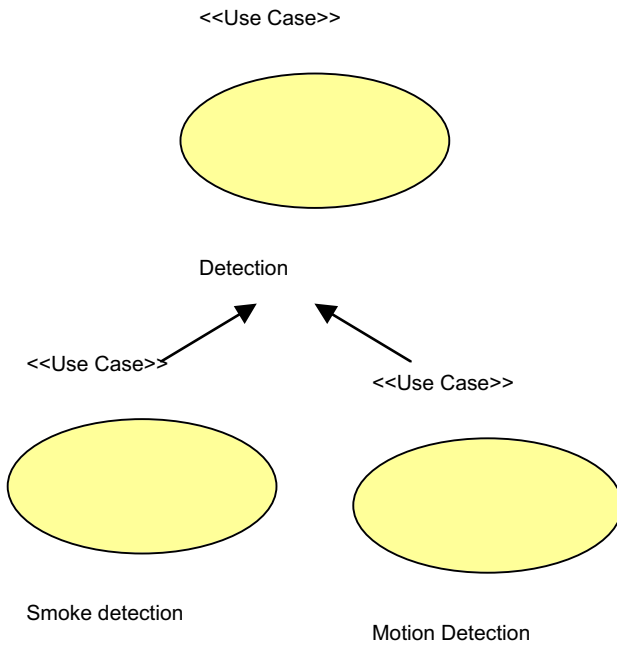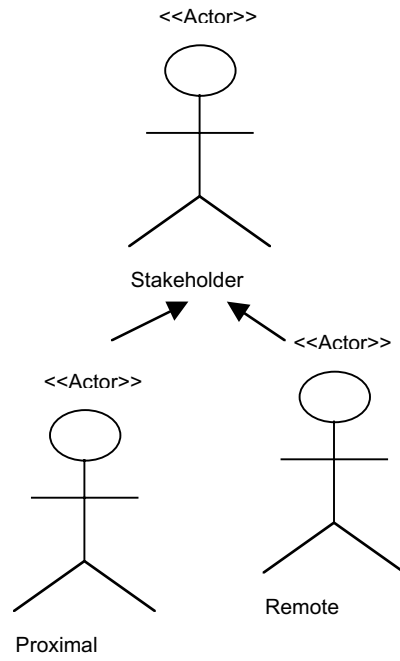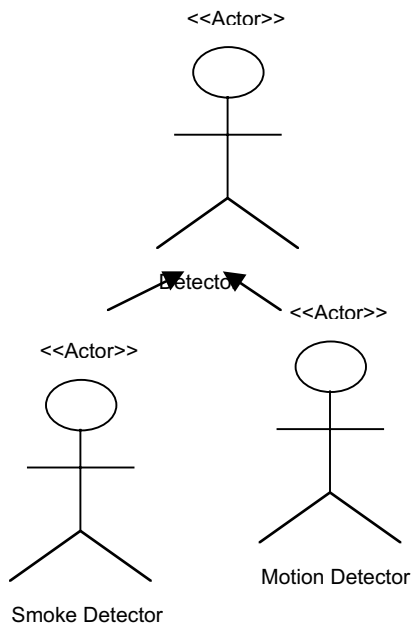
Use Case: **Smoke detection**

CHARACTERISTIC INFORMATION
Goal in Context: To inform stakeholders of the fire in the house.
Scope: Alarm system.
Level: Primary task
Preconditions: Alarm system is armed and active. Detector is working. Communication means are
functioning.
Success End Condition: Stakeholder is informed.
Failed End Condition: Stakeholder are not informed of smoke. Fire destroys monitored property.
Primary Actor: **Smoke detector.**
Trigger: Detection of smoke.

MAIN SUCCESS SCENARIO
<put here the steps of the scenario from trigger to goal delivery, and any cleanup after>
1.   One of the smoke detector signals smoke presence.
2.   System identifies smoke detector location by its comm. port.
3.   System informs stakeholders via phone line and the a/v speaker.

RELATED INFORMATION (optional)
Priority: Top priority.
Performance Target: Stakeholders should be notified within 5 seconds.
Frequency: Rarely. Only in extreme cases of fire, or strong smoke concentration.
Subordinate Use Cases: **Notify Stakeholders**
Channel to primary actor: Simplex, one way, Electric wire.
Secondary Actors: Stakeholders – Authorities and Owners
Channel to Secondary Actors: Phone line, Speaker

OPEN ISSUES (optional)
1. How the system will recognize that someone is cooking food that generates smoke.

SCHEDULE
Due Date: Version 1.0 release.

Table format:

USE CASE #	Notify Stakeholders	
Goal in Context	To notify all the stakeholders that are interested in home security.	
Scope & Level	Alarm notification, dial-in system and data protocol, audio/visual means. Sub-function	
Preconditions	Alarm system is armed and active. Stakeholders are identified and their contact info is known. Communication means (phone lines and a/v equipment) are working.	
Success End Condition	Stakeholders were notified.	
Failed End Condition	Notification has failed.	
Primary, Secondary Actors	**Stakeholder** – Remote: Owners direct phone, Authorities phone answering system, Proximal: by standers (owners, neighbors,police) who can hear alarm signal.	
Trigger	Invocation with alarm signal details by alarm system	
DESCRIPTION	**Step**	**Action**
	1	Notification is invoked with alarm signal.
	2	Remote stakeholders are notified by calling in with pre-recorded message.
	3	Proximal stakeholders are notified with A/V signal.
EXTENSIONS	**Step**	**Branching Action**
	2a	Phone line is busy. Notify alternate stakeholder answering system or phone.
SUB-VARIATIONS		**Branching Action**
	2b	Second line is paging service Notify alternate stakeholder with prerecorded numerical code sequence.

RELATED INFORMATION	Notify Stakeholders
Priority:	Top priority
Performance	System should initiate notifications within 1 second.
Frequency	Rarely, but every time that alarm situation is detected.
Channels to actors	Phone line, electric wiring to A/V notifier.
OPEN ISSUES	1. What if owner does not have a working phone 2. What is fire has damaged wires. 3. How to differentiate alarm codes for paging purposes.
Due Date	Release 1.0
...any other management information...	Developers for module that notifies authorities should be bonded for integration testing.
Superordinates	Smoke detection, Intrusion detection
Subordinates	None

USE CASE #	Disarm Alarm System	
Goal in Context	Quick, safe and straight forward disarming of the alarm system.	
Scope & Level	Authentication and system disabling Primary Task	
Preconditions	Alarm system is armed and active. User knows disarming procedure and Remembers password.	
Success End Condition	System is disarmed.	
Failed End Condition	System goes off.	
Primary, Secondary Actors	**House owner**	
Trigger	Entry of numerical password sequence	
DESCRIPTION	Step	Action
	1	User enters 4 digit password
	2	System recognizes password and disarms.
	3	User disables alarm system
EXTENSIONS	Step	Branching Action
	1a	Timeout Timeout starts with first numerical entry to the system while it Is armed. Timeout lasts 15 seconds. If main system is not authenticated them timeout will notify system to go off. Timeout resets after expiration.
SUB-VARIATIONS		Branching Action

RELATED INFORMATION	Disarm alarm system
Priority:	High priority
Performance	Disarming process has to occur within 15 seconds.
Frequency	At least 3 times a day. Every time user leaves the house.
Channels to actors	Interactive – LCP and display.
OPEN ISSUES	1. Is 15 seconds enough for all environments, and should that be made variable.
Due Date	Release 1.0
...any other management information...	N/A
Superordinates	N/A
Subordinates	**Timeout – For simplicity I did not model this as a use case.**

Use Case: Disarm Alarm System.
Narative:

User A has to go to grocery store. She leaves the house and arms the system.
When she comes back she wants to have time to enter the house with groceries, drop them
and quickly enter her 4 digit numerical password before the alarm goes off.
She also wants to be given a chance to make a password mistake and re-enter the right one.
She also does not like complicated long and alphanumeric passwords.
However, she is afraid that someone can break in the house
and break the simple password with multiple attempts. For that reason buffer time between
entry to monitored premises and alarm activation should be short enough to allow user to
get ready to enter password, maybe make a mistake or two, but to disallow numerous trials
in order to break the password code through 4 digit combinations.

USE CASE #	Intrusion detection	
Goal in Context	To inform stakeholders of intrusion into premises.	
Scope & Level	Primary Task	
Preconditions	Alarm system is on and armed. Detector is working. Communication means are functioning.	
Success End Condition	Stakeholders are informed.	
Failed End Condition	Stakeholders are not informed of intrusion, and premises are compromised.	
Primary, Secondary Actors	Intrusion detector Stakeholders	
Trigger	Intrusion detector reports intrusion.	
DESCRIPTION	**Step**	**Action**
	1	Motion sensor reports motion
	2	Await 15 seconds to allow authentication of the motion
	3	Receive timeout and report intrusion to stakeholders
EXTENSIONS	**Step**	**Branching Action**
	1a	Motion is authenticated Use case: Disarm Alarm system
SUB-VARIATIONS		**Branching Action**

RELATED INFORMATION	Intrusion Detection
Priority:	Top priority
Performance	Detection instant, 15 seconds for positive intrusion identification
Frequency	Rarely, every time that intrusion occurs
Channels to actors	Electric wire, Phone lines, A/V
OPEN ISSUES	1. Should 15 seconds buffer be disallowed for areas other then entrance.
Due Date	Release 1.0
...any other management information...	N/A
Superordinates	<optional, name of use case(s) that includes this one>
Subordinates	Notify Stakeholders, Timeout

USE CASE #	Activate perimeter monitoring	
Goal in Context	To have one part of the house monitored for alarm conditions, and other Part available for use.	
Scope & Level	Alarm system, coverage area and system reaction. Sub-function	
Preconditions	System is disarmed. User is trained to use this feature.	
Success End Condition	System is armed for the perimeter area while the rest of the house is available for use.	
Failed End Condition	Perimeter area is not set. System goes off.	
Primary, Secondary Actors	**Owner of the house**	
Trigger	Actor selects to set perimeter monitoring.	
DESCRIPTION	**Step**	**Action**
	1	Actor selects to set perimeter area monitoring
	2	Actor selects rooms to be monitored
	3	Actor activates the system for monitoring, system activates
EXTENSIONS	**Step**	**Branching Action**
	2a	Perimeter area is not selected, but system is activated. Notify the user that perimeter mode can be set without some rooms selected for exemption
	2b	System is ready to be programmed for perimeter monitoring, but nothing is selected for monitoring. Timeout after 30 seconds and return to stand by state.
SUB-VARIATIONS		**Branching Action**

RELATED INFORMATION	Intrusion detection
Priority:	This is optional feature available on more expensive models.
Performance	Respond to user input immediately.
Frequency	Once a week to once a day.
Channels to actors	Interactive: buttons, LED, display
OPEN ISSUES	Should this function be available from armed mode ,so that owners Can selectively disarm alarm.
Due Date	Release 1.0
...any other management information...	
Superordinates	
Subordinates	