

Homework #4  
Project Deliverable #1  
Due Wednesday, October 12<sup>th</sup> – Hardcopy.

**Deliverable 1: Project Definition and Domain Analysis**

**Part 1: Project Definition:** Using your project proposal as inputs, include the following text.

0. Team Designation: A or 1 and list members
1. Statement of the Problem
2. Background
3. Proposal
4. Materials Needed
5. Value or Application of Application when completed

**Part 2: Domain Analysis**

See Object Oriented Software Engineering text for write up on Domain Analysis. Materials below is a short example of a Domain Analysis provided by a previous student. Clearly, the domain analysis is to address your project. Please note: this assignment does not include the Domain Model, which will be your second deliverable.

**Domain Analysis for a Household Alarm System**

**Introduction**

This embedded software system is the “Household Alarm System Controller”. It is being developed for Use Case Industries. The controller will provide the ability to monitor conditions in the home and communicate to several control numbers an indication of what event is taking place. The types of events are fire and intruders.

**Glossary**

Event: A detected fire or intruder

False alarm: Accidental activation of the system

Keypad: An input device to the system

Motion detector: A device for sensing motion

Sensor: Generic hardware devices for detecting and forwarding events such as sound, motion, visual, forced entry, etc.

UPS: Backup battery power supply

**General Knowledge about the Domain**

The system controller will need to monitor several different types of sensors. These will include, but not be limited to: motion detectors, temperature sensors, water and humidity sensors, surveillance cameras, keypads, window and door opening/closing/breaking sensors, sound detectors, etc. The user needs a way to remotely access the system and its sensors in a secure manner. The method of communication to the various sensors will be either wired or wireless. There needs to be a way to detect loss of dial tone on a connected telephone line as well as a method of seizing the telephone line. A voice recording needs to be available for each of the major events (fire, intruder). There needs to be several possible numbers that will be called if an event is detected. Alternative methods of contact such as cellular telephones need to be

considered. The user of the system needs a way to communicate a false alarm, arm/disarm and test the system. It is important that the system be able to communicate or, at the very least, have its communication facilities monitored and for a call to the appropriate authorities be instigated upon failure of any of these communication facilities. There needs to be a UPS in the event of a power failure.

### **Customers and Users**

The customer for this system is the ordinary home owner and possibly a small business owner. They are also the users and the controller needs to be as foolproof as possible.

### **The Environment**

The controller will need to be able to operate with the many types of sensors and surveillance equipment that is available on the market. It will also have to interface with standard telephone lines as well as cellular telephony equipment. It will also need to be able to interface to standard keypads that are available in the market place.

### **Tasks and Procedures currently performed**

This is a new controller, and, as such, must have the ability of interfacing to as many of the current sensor designs that are currently on the market. It should match the capabilities of existing controllers while adding the capabilities that make it unique in the market.

### **Competing Software**

There are many competitive systems available on the market but very few of them are capable of communicating via a cellular telephone. If this system can be developed to include this capability together with the ability to interface with a large number of current off the shelf sensors etc., then a competitive product will be viable.

### **Similarities across Domains and Organizations**

This should be a generic system that is capable of being instructed and setup to monitor many different types of sensors and to be able to communicate on many numbers across differing types of communications equipment. As a generic system, it should offer value to any user that purchases the system.