Home Security System with Arduino

Software Development Plan

Version 1.2

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Revision History

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| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 9/5/2014 | 1.0 | Added primary content | Blayne Naufel |
| 9/11/2014 | 1.1 | Added Project Organization | Aaron Rodriguez |
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Software Development Plan

# Introduction

## Purpose

This Software Development Plan establishes the plan to be used during the development process of the Home Security System with Arduino. The purpose of this document is to gather all of the necessary information to develop and deliver a final product in a timely, efficient manner. This document is for use by the project members to outline project requirements, create and track a project schedule, and develop a deeper understanding of the project as a whole.

## Scope

This Software Development Plan outlines the steps by which the development of the Home Security System with Arduino will be executed and the management approach to the software and hardware development. Please refer to the Scope Statement document for a further elaboration of the scope of the project, some of this information is included in section 2 of this document.

## Overview

This Software Development Plan contains the following:

* Project Overview - objectives of the product to be developed along with organizational structure of the development process
* Project Organization - entails organization and authorities of project team members
* Management Process - outlines major phases and milestones and describes how the project will be monitored
* Supporting Process Plan - includes other documents that are to be generated during the development cycle of this project
* References - appropriate references will be appended to this document as needed (see References for more details)

## Definitions, Acronyms and Abbreviations

Arduino - an open-source microcontroller based on easy-to-use hardware and software

PIR – Passive Infrared, a technology used in order to detect motion in the presence of humans in the vicinity of the sensor

Rasberry Pi – A compact low power applications processor with built in I/O devices such as ethernet and USB

# Project Overview

## Project purpose, scope and objectives

The project will be to implement a home security system by use of motion sensors, cameras, speakers, a pin pad, and a web application that will rely heavily on the micro controller, Arduino. The objective of this product is to alert the user of unsuspected intrusion in his or her home. The user will have the ability to set up an account via the web application that will allow customizable pass codes to be set up as well as monitoring of the system’s log files to view times of the triggers as well as pictures of the invader.

## Assumptions and constraints

Assumptions

* User will be computer-literate enough to set up account and equipment in home
* User primarily speaks English as we do not plan to release the product in any other language
* User has Internet access where the product will be set up
* The allotted time will be enough to deliver a complete and finalized version of the project
* The team budget will be sufficient to obtain all required components

Constraints

* 10 weeks of time for development of final product
* A maximum budget of $60 for all components and project requirements
* Use of programming languages which will suit the application best
* Project testing cannot be executed individually by team members unless Arduino is present
* Reliability of network connection

## Project deliverables

|  |  |
| --- | --- |
| Project Scope Statement | September 1, 2014 |
| Software Development Plan | September 8, 2014 |
| Software Requirements Document | September 29, 2014 |
| Software Design Document | October 13, 2014 |
| Finalized Project Report | December 15, 2014 |

# Project Organization

## Organizational Structure

|  |  |
| --- | --- |
| Christopher Mack | Software Developer |
| Blayne Naufel | Software Developer |
| Aaron Rodriguez | Project Lead, Git Project Maintainer, Software Developer |
| Chance Williams | Software Developer, Primary Document Editor |

## External Interfaces

The database and webhost can optionally be hosted on an external 3rd party hosting service. The scope of this particular project does not include reporting security intrusions to government authorities (e.g. Law Enforcement, Emergency Services), however intrusions may be reported to the users via e-mail, in which case, these events must interface with a mailserver (optionally hosted on the same server as the webhost and the database)

## Social and Ethical Issues

The database will be storing sensitive information including the users’ passcodes and information related to the intrusion events in the users’ home. Given the nature of the data stored on this sever, encryption is required at least for the passcodes, and optionally for all data stored in the database. Additionally, pictures of these events will be stored on the server, which poses a privacy issue with the possibility of unknowingly photographing people within frame of the camera.

# Management Process

## Project Plan

### Phase Plan

In the Gannt chart below we have broken up the each of our milestones and assignments to reflect the time needed to complete each task. This will help provide us with a good timeline of where we should be during the life cycle of our project.

## Project Monitoring and control

### Schedule control plan

In order to make sure our group is on track for completing each milestone and assignment by the desired end date, our group will participate in SCRUM meetings on Tuesdays and Thursdays of each week. We will use this time to discuss the progress of the weekly assigned tasks and any road blocks they may foresee happening during the week. The Monday of each week will be used to discuss our accomplishments from the previous week along with the future tasks. These meetings will help ensure that our current goals will be reached by the end date for each of our tasks. By having these meetings it allows us to catch any major issues that may cause a delay in any deliverables, allowing us to re-allocate any available resources to help keep us on track for success.

### Reporting Plan

Throughout the project we will be providing weekly reports to the instructor and our group members these reports will provide information of current tasks for the week and tasks that were accomplished in the previous week. Our group members will also participate in SCRUM meets on Tuesdays and Thursdays of each week to discuss the progress of their assigned tasks or any road blocks they foresee happening during the week. The Monday of each will be used to discuss our accomplishments from the previous week and confirm we are still on track.

# Supporting process plans

## Documentation plan

* Presentation #1 – Sept 22, 2014
* Software Requirements Specification – Sept 29, 2014
* Software Design Document – Oct 13, 2014
* Presentation #2 – Oct 27, 2014
* Presentation #3 – Dec 1, 2014
* Final Report – Dec 10, 2014

# References

Scope Statement – CS4850\_Aaron\_Rodriguez\_Week2.docx