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Project Proposal

1/18/2019

# Overview

## Project Scope

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|  | Problem and Solution to the Problem |

Problem:

Off the shelf home automation systems require email signup, user terms and agreements, and/or the ability of the producer of the automated device to monitor the statistics and usage of the product for their benefit.

Solution:

A simple integration project into an existing environment that allows a novice consumer to integrate home automation without sacrificing personal and private information. The solution with run on a private network that does not require internet but has the ability to have extra features if it is on the internet. The solution will not require any email, external monitoring or agreements other than those that are standard and required due to the high-voltage part of wiring the project into the current system.

## High-Level Requirements

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|  | High-level requirements for implementing the solution |

The ability to implement the solution must include:

* Interfacing with high-powered electronical systems
  + Lighting automation
  + HVAC automation
    - Using temperature sensors located in multiple rooms
  + Ability to expand into security protocols in the future
    - Doors and windows
    - Security Camera monitoring
* Multiple microcontroller platforms requiring full knowledge of their GPIO system and compatibility
* Multiple programming language solutions for working with multiple platforms including:
  + Python
  + C#
  + C++ or C
  + Java
  + XAML

## Deliverables

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|  | Proposed deliverable solutions at the completion of the project |

The items that will be delivered in the solution are as follows:

* Windows IOT UI running on a Raspberry Pi 3 B+
* Temperature and humidity sensor and relay switches in a combined solution for easy setup and integration into an existing system
* Voice Command integration with Alexa, Cortona or Google Assistant
* Android Application to control the system when not home(Least priority item)

## Plan of Action

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| --- | --- |
|  | The stages of development for the solution and the due date for delivery |

Phase for Testing and Implementation

* Phase 1: Design – 2 Weeks
  + Communication Protocol – MQTT, TCP and UDP
  + Microcontrollers – Arduino Nano, ESP8266, Raspberry Pi Systems
  + User Graphical Interface
  + Wiring diagrams
* Phase 2: Testing Small Scale – 3 Weeks
  + Breadboard
  + Wiring
  + Programming
* Phase 3: Testing Larger Scale – 4 Weeks
  + Integration into home environment
  + Multiroom monitoring
* Phase 4: Packaging the Solution – 3 Weeks
  + Container for Controllers
  + User Graphical Interface and Raspberry Pi IOT
  + Easy package for integration into existing systems

Final Completions Date: April 15, 2019