**SCADA Home Automation**

**Project Management Plan**

| ID | Activity | Description | Deliverable | Duration (hr) | People | Resources | Predecessors |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | **Project Initiation** | | | | | | |
| 1.1 | Inventory | Check the Components on hand | Inventory List | 1 | Jon Beason |  |  |
| 1.2 | Development Environment | Install OpenPLC on Rasp. Pi and Arduino |  | 2 | Jon Beason | Pi, Arduino  OpenPLC |  |
| 2 | **Case Construction** | | | | | | |
| 2.1 | Prep Material | Measure / Cut material to specification |  | 5 | Ben Calvert, Ben Mcanulty | Saw , Tape Measure |  |
| 2.2 | Sharp Edges | Check for sharp edges and file |  | 2 | Ben Calvert, Ben Mcanulty | Metal File | 2.1 |
| 2.3 | Assemble Case | Fastens case together |  | 5 | Ben Calvert, Ben Mcanulty | Hex keys | 2.2 |
| 2.4 | Structural Test | Test the durability of the case and adjust accordingly | Completed Case | 3 | Ben Calvert, Ben Mcanulty |  | 2.3 |
| 3 | **Building Model** | | | | | | |
| 3.1 | Prep Material | Measure / Cut material to specification |  | 10 | Ben Calvert, Ben Mcanulty | Foam board, razor blade |  |
| 3.2 | Assemble Model | Glue the foam board together using hot glue. |  | 20 | Ben Calvert, Ben Mcanulty | Dual temp. hot glue gun | 3.1 |
| 3.3 | Finish Model | Paint and add details to model | Completed Model | 10 | Ben Calvert, Ben Mcanulty | Paint | 3.2 |
| 4 | **Smart Lock System** | | | | | | |
| 4.1 | Simulate Deadbolt | Create deadbolt using solenoid  Program it with ladder logic | Deadbolt Prototype  (DB prototype) | 5 | Chad Bryan, Ben Curths | Solenoid, Arduino, OpenPLC |  |
| 4.2 | Combine smart lock and DB prototype | Integrate smart lock to work with the Deadbolt Prototype | Deadbolt Subsystem | 15 | Chad Bryan, Ben Curths | Smart lock | 4.1 |
| 4.3 | Deadbolt Unit Test | Test Deadbolt system to ensure it works correctly |  | 5 | Chad Bryan, Ben Curths |  | 4.2 |
| 4.4 | Integrate deadbolt subsystem | Integrate deadbolt subsystem into the building model |  | 5 | Chad Bryan, Ben Curths | Building model | 3.2, 4.2 |
| 4.5 | Integration Testing Deadbolt | Test the deadbolt system to ensure it still works correctly | Completed Deadbolt Subsystem | 5 | Chad Bryan, Ben Curths |  | 4.4 |
| 5 | **Garage Door System** | | | | | | |
| 5.1 | Simulate Garage Door | Create garage door using DC motor and program it with ladder logic | Garage Door Prototype  (GD prototype) | 5 | Chad Bryan, Ben Curths | DC Motor, Arduino, OpenPLC |  |
| 5.2 | Garage remote and GD prototype | Integrate remote to work with the garage subsystem | Garage Door Subsystem | 15 | Chad Bryan, Ben Curths | Garage Remote | 5.1 |
| 5.3 | GD Unit Test | Test Garage Door system to ensure it works correctly |  | 5 | Chad Bryan, Ben Curths |  | 5.2 |
| 5.4 | Integrate Garage Door subsystem | Integrate GB subsystem into the building model |  | 5 | Chad Bryan, Ben Curths | Building model | 3.2, 5.2 |
| 5.5 | Integration Testing Garage Door | Test the Garage Door system to ensure it still works correctly | Completed Garage Door Subsystem | 5 | Chad Bryan, Ben Curths |  | 5.4 |
| 6 | **Window System** | | | | | | |
| 6.1 | Window Prototype | Connect magnetic sensor to Arduino and program it with ladder logic | Window prototype | 10 | Jon Beason, Simone Gbouomou | Mag sensor, OpenPLC, Arduino |  |
| 6.2 | Window Unit Test | Test the window subsystem to ensure it works correctly |  | 1.5 | Jon Beason, Simone Gbouomou |  | 6.1 |
| 6.3 | Window system Integration | Integrate window system into the model |  | 1 | Jon Beason, Simone Gbouomou | Building model | 3.2, 6.2 |
| 6.4 | Integration Testing Window system | Test the window system to ensure it still works correctly | Completed Window System | 3 | Jon Beason, Simone Gbouomou |  | 6.3 |
| 7 | **Motion System** | | | | | | |
| 7.1 | Motion Prototype | Connect motion sensor to Arduino and program it with ladder logic | Motion prototype | 10 | Ben Calvert, Ben McAnulty | Motion sensor, OpenPLC, Arduino |  |
| 7.2 | Motion Unit Test | Test the motion subsystem to ensure it works correctly |  | 1.5 | Ben Calvert, Ben McAnulty |  | 7.1 |
| 7.3 | Motion system Integration | Integrate motion system into the model |  | 1 | Ben Calvert, Ben McAnulty | Building model | 3.2, 7.2 |
| 7.4 | Integration Testing Motion system | Test the motion system to ensure it still works correctly | Completed Motion System | 3 | Ben Calvert, Ben McAnulty |  | 7.3 |
| 8 | **IR Sensor (Beam Break) System** | | | | | | |
| 8.1 | Beam Break (BB) Prototype | Connect IR sensor to Arduino and program it with ladder logic | Beam Break prototype | 10 | Chad Bryan, Ben Curths | IR sensor, OpenPLC, Arduino |  |
| 8.2 | BB Unit Test | Test the BB subsystem to ensure it works correctly |  | 1.5 | Chad Bryan, Ben Curths |  | 8.1 |
| 8.3 | BB system Integration | Integrate BB system into the model |  | 1 | Chad Bryan, Ben Curths | Building model | 3.2, 8.2 |
| 8.4 | Integration Testing Motion system | Test the BB system to ensure it still works correctly | Completed BB System | 3 | Chad Bryan, Ben Curths |  | 8.3 |
| 9 | **Anti-Theft System** | | | | | | |
| 9.1 | Anti-Theft Prototype | Connect pressure sensor to Arduino and program it with ladder logic | Anti-Theft prototype | 10 | Chad Bryan, Ben Curths | Pressure sensor, OpenPLC, Arduino |  |
| 9.2 | Anti-Theft Unit Test | Test the Anti-Theft subsystem to ensure it works correctly |  | 1.5 | Chad Bryan, Ben Curths |  | 9.1 |
| 9.3 | Anti-Theft system Integration | Integrate Anti-Theft system into the model |  | 1 | Chad Bryan, Ben Curths | Building model | 3.2, 9.2 |
| 9.4 | Integration Testing Anti-Theft system | Test the Anti-Theft system to ensure it still works correctly | Completed Anti-Theft System | 3 | Chad Bryan, Ben Curths |  | 9.3 |
| 10 | **Cybersecurity Analysis** | | | | | | |
| 10.1 | Risk Assessment | Perform Risk Analysis on the system | Assessment Report | 15 | Jon Beason, Ben Calvert, Simone Gbouomou, Ben McAnulty |  | 9.3 |
| 10.2 | Threat identification | Research and Identify attack vectors | Threat Identification Report | 15 | Jon Beason, Ben Calvert, Simone Gbouomou, Ben McAnulty |  | 10.1 |
| 10.3 | Threat Mitigation | Create solutions to reduce/mitigate risk. | Mitigation Report | 30 | Jon Beason, Ben Calvert, Simone Gbouomou, Ben McAnulty |  | 10.2 |
| 11 | **Cyber Hacks/Exploits** | | | | | | |
| 11.1 | Hack system | Develop attacks using the information from Threat Identification | 2 System Exploits | 35 | Jon Beason, Ben Calvert, Simone Gbouomou, Ben McAnulty |  | 10.1 |
| 11.2 | Test Hacks | Test that hacks work correctly on the system | Completed System Hacks | 5 | Jon Beason, Ben Calvert, Simone Gbouomou, Ben McAnulty |  | 11.1 |