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Revision History

Name	Date	Reason For Changes	Version
Derek James	3/15/2019	Initial Document Creation	0.1

1. Introduction

1.1 Purpose

The purpose of this document is to describe the software requirements of an Automatic Door Opener (ADO) system.

1.2 Document Conventions

SBC	Single Board Computer
ADO	Automatic Door Opener

1.3 Intended Audience and Reading Suggestions

This document is intended for developers, testers, users, and documentation writers on the Performance Software team that is developing the software solution for the ADO system.

1.4 Product Scope

The goal of the software being developed is to provide a solution that controls and monitors an ADO. The objectives are to meet the system requirements specified by Awesome Customer Inc.

1.5 References

- Memo titled *Automatic Door Opener Request Memo2 Revised12_07_18* given by Awesome Customer Inc.

Overall Description

2.1 Product Perspective

This is a new, self-contained system for controlling and monitoring the opening and closing of a door. The major components include 2 drive motors, 1 push button and the SBC. All data is collected and stored in the SBC. The SBC interacts with the push button by collecting data when the button is pressed. The SBC interacts with the 2 drive motors by sending data to the motors, telling them to either open or close. The SBC also collects data from the motors about the position of the door and state of the motor.

2.2 Product Functions

The major functions of the system include:

- Opening the door.

- Closing the door.

- Monitoring the door position.

2.3 User Classes and Characteristics

This ADO system is designed to be easy to use by all customers. The user must have the ability to press the button and understand the basic functionality of the system. There is no distinction between types of users of this system. All user classes are of equal importance.

2.4 Operating Environment

The software will run in the Windows operating system installed on the SBC. There are no other third party applications or software components running on the SBC.

2.5 Design and Implementation Constraints

No constraints at this time.

2.6 User Documentation

A user instruction manual will be provided.

2.7 Assumptions and Dependencies

- The ADO system is assumed to have power to operate at all times.

- The SBC is assumed to always have the software installed.

- The ADO system is assumed to have one motor to open the door and another motor to close the door. Motor 1 will be assumed to control the opening of the door while Motor 2 will be assumed to control the closing of the door.

- There is no system requirement specified for the initialization of the motor speed. Therefore, it is assumed that the motors can be initialized to the maximum speed of 7.

- The two drive motors are assumed to both track the position of the door together and not independently.

- The SBC is assumed to have a Windows operating system installed.

External Interface Requirements

3.1 User Interfaces

The push button is the only user interface to the system. The button is the only method of interaction the operate the system.

3.2 Hardware Interfaces

The drive motors are mapped to specific memory addresses in the SBC. Some bits in the motor-specific memory locations are used to command the motors to carry out an operation while some bits are used to store data pertaining to the motor. Some bits in the push button-specific memory locations are used to store the state of the push button.

3.3 Software Interfaces

Refer to **Device Driver Interface Details** in Memo titled *Automatic Door Opener Request Memo2 Revised12_07_18* given by Awesome Customer Inc.

3.4 Communications Interfaces

No communication interfaces are required.

System Features

4.1 ADO Control

4.1.1 Description and Priority

ADO Control feature opens or closes the door. This feature has a high priority. This is the main functionality used for control of ADO system.

4.1.2 Stimulus/Response Sequences

The ADO Control feature responds to the push button only when the door is in the open position or when the door is in the closed position.

4.1.3 Functional Requirements

- The software shall send a command to the motor to close the door.

- The software shall send a command to the motor to open the door.

- The software shall send a command to the motor to set the speed.

4.2 ADO Monitoring

4.2.1 Description and Priority

The ADO Monitoring feature monitors the system status. This feature has a high priority. This feature works with the ADO Control feature to monitor the state of the system. This feature is critical to meeting the system requirements provided.

4.2.2 Stimulus/Response Sequences

The ADO Monitoring feature constantly monitors the status of the system, beginning at system initialization.

4.2.3 Functional Requirements

- The software shall check the current position of the door.

- The software shall check the current state of both motors.

- The software shall check the instantaneous speed of both motors.

- The software shall check the current state of the button.

Other Nonfunctional Requirements

5.1 Performance Requirements

No performance requirements are stated in the system requirements.

5.2 Safety Requirements

Do not remove power from the system.

5.3 Security Requirements

No security or privacy requirements. No personal data is collected or stored in the system.

5.4 Software Quality Attributes

- Ease of use: The system should be easy to use and perform self initialization when started.

5.5 Business Rules

N/A