

*Software Requirements Specification*

*Version 1.0*

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*Prepared for*

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# Introduction

## Scope

This specification establishes the functional, performance, and development requirements for Release 1 of a software application for controlling a Dream Cheeky RC Car.

## Purpose

*The Mindstorm Robot Control Software is an interactive software application that allows the user to operate a Lego Mindstorm Robot remotely from the Windows environment. The Robot is connected to the PC via either a USB connection or a BlueTooth connection. A proxy has been made available for this program which will interface between the robot and the PC.*

## 1.3 Definitions, Acronyms, and Abbreviations

*DI Driver Interface*

*GUI Graphical User Interface*

*SRS Software Requirements Specification*

*TOD Time of Day, typically in reference to a clock.*

## References

J-STD-016-1995 IEEE/EIA Standard for Information Technology, Software Lifecycle Processes, Software Development, Acquirer-Supplier Agreement

IEEE-STD-P1063 IEEE Standard for Software User Documentation

## Overview

*Section 1 of this document identifies the scope of this document, the purpose for the software, and lists acronyms, definitions, and reference documents for this project. Section 2 provides an overview of the system written in terms of use cases. A use case diagram related the individual use cases, and use case scenarios describe the behavior throughout each of the use cases.*

# Use Case Scenarios

This section describes the use cases for this system. Included within this section are scenarios describing the behavior exhibited by each use case as well as the flows through the use case.

For each user case, there is a prioritization of that use case, with a lower number indicating higher priority being placed upon the given use case.

<Insert a Use Case Diagram Generated with EA in this location>

Figure 1 Use case diagram.

## Authenticate

### Actors

Driver

### High Level Description

This use case scenario describes how a user would go about authenticating to the robot. When the user authenticates, it indicates that the user wishes to control the robot, and the authentication act verifies that the user has the appropriate credentials to control the robot.

### Preconditions

Before this use case can be activated, the robot control software must have been started and the lego mindstorms robot executable must be running.

### Use Case Flow:

1. The operator has a desire to authenticate to the lego mindstorm robot.
2. The user enters their user id into the system.
3. The user interface prompts the user to enter their password into the system.
4. The user enters the associated password into the system.
5. The robot displays on its LCD panel a 4 digit code.
6. The user enters the 4 digit code into the user interface.
7. The system authenticates the user and allows them to control the robot. A dialog box is displayed indicating that the operation has been successful.

Alternate flows:

2-a-1. The user cancels the operation. Use case will be aborted.

4-a-1. The user cancels the operation. Use case will be aborted.

6-a-1. The user cancels the operation. Use case will be aborted.

7-a-1. The user enters an invalid password or an in valid user ID combination. A dialog box indicates that an invalid combination has been entered.

7-a-2. The robot shall make an audible noise indicating that an invalid login has occurred.

7-b-1. The user enters a passcode which does not match that which is shown on the LCD display of the robot. A dialog box is displayed indicating that an invalid match has occurred and the user is not allowed to log into the system.

7-b-2. The lego mindstorm robot shall make an audible noise indicating that an invalid login has occurred.

7-b-3. The lego mindstorm robot will change its 4 digit code to another random number.

# Specific Requirements

In this section, specific requirements for the system are stated. Each specific requirement is to receive a prioritization, where priority 1 indicates the highest priority requirement and priority 10 indicates the lowest priority requirement.

## User Interface Requirements

The user interface for controlling the system shall be implemented as a GUI. However, in addition to button presses, keyboard control may also be possible.

### General requirements

1. Splash Screen. Upon program startup, the Robot Control Software shall display the name of the development team, the product name, the copyright year, and the members of the development team as a splash screen for 2 seconds before allowing normal operation of the RC car control software. (Priority 2)
2. All textual displays on the user interface shall have a minimum of 12 point font in order to be appropriately visible to the user. (Priority 4)
3. The user interface shall provide a pop-up dialog box for the user to enter their username, password, and authentication code from the lego mindstorm robot. (Priority 1)
4. The user interface shall obfuscate the entry of the users password on the display. (Priority 1)
5. <Write This>…

### Path Loading

1. <Write These>…

### Grapple Control

1. <Write This>…

### Direction Control

1. <Write These>…
2. <Write This>…

### <Write The Rest Here>

## Functional Requirements

### Ignition

Ignition control shall control the behavior of the system in terms of an operating engine.

1. <Write These>… Note there may be some other headings.

## External Interfaces

## Non-Functional Requirements

Non-functional requirements may exist for the following attributes. Often these requirements must be achieved at a system-wide level rather than at a unit level. State the requirements in the following sections in measurable terms (e.g., 95% of transaction shall be processed in less than a second, system downtime may not exceed 1 minute per day, > 30 day MTBF value, etc).

### Performance

### Reliability

### Availability

### Security

The users password shall be stored using an encrypted hash.

### Maintainability

### Portability

### Safety

### Training-related Requirements

### Packaging Requirements

### Legal Requirements

* Copyright laws and license agreements must be respected for any third party software used in the creation of this system. (Priority 1)