INCOMPLETE. MSAF SUBMITTED.

1. Introduction

1.1 Overview

The resistance scanner project is the re-implementation of an open-source software application that allows a user to scan a resistor using their camera and read an on screen value representing the resistance of that resistor.

1.2 Context

This document is the Module Guide (MD). The Module guide comes after the SRS, which specifies all functional and nonfunctional requirements for this project. In contrast, the MG provides a modular decomposition of the system, showing the structure and design. The MG also documents how the functional and nonfunctional requirements specified in the SRS are met.

After completing the MG, the Module Interface Specification (MIS) is created, which explains the semantics and syntax of exported functions, providing further detail on each module specified in the MG.

1.3 Design Principles

1.4 Document Structure

The document structure is as follows:

- Section 2 lists Anticipated and Unlikely Changes to the system's implementation. This list is used for the Traceability Matrices later in the document.
- Section 3 details the Module Hierarchy, listing all the modules and their hierarchy by secrets. • Section 4 explains the Connection Between Requirements and Design, which details how the software requirements are related to the modules.
- Section 5 provides the Module Decomposition, detailing the module name, secret, and service/responsibility for each module.
- Section 6 provides the Traceability Matrices. The first matrix connects the requirements to the modules, thereby checking completeness of the design against the requirements provided in the SRS. The second matrix connects anticipated changes from Section 2 to the modules.
- Section 7 provides the Uses Hierarchy for the project, which shows the uses relations between modules. • Section 8 provides the Project Schedule for the rest of the term, providing Gantt and Pert charts.

- Section 9 provides the Major Revision History for the document.

Anticipated and Unlikely Changes

2.1 Anticipated Changes
- The method of retrieving input images
- The method of determining the axis of a resistor
- The platform of the application (desktop to mobile)

2.2 Unlikely Changes
- The format of the output data
- The method used to scan the bands resistor
- The method used to get colours from the bands of the resistor
- The method used to calculate values from the resistor colours
- The content of the output

3. Module Hierarchy

Level 1	Level 2
Hardware Hiding Module	Camera Module
	Image File Module
Behavior Hiding Module	User Interface Module
Software Decision Module	Resistor Body ID Module
	Band Location Module
	Colour Mapping Module
	Resistor Value Calculation Module

4. Connections Between Requirements and Design

5. Module Decomposition

The following modules are decomposed into David Parnas' principle of information hiding, They are broken down in the following matter:
- Secret
- Service
- Implemented By

Secret will describe in a single word what it is that the module is hiding. Service will detail what the module does and Implemented By states by what means the module is implemented.

5.1 Hardware Hiding Module

5.1.1 Camera Module

5.1.2 Image File Module

5.2 Behaviour Hiding Module

5.2.1 User Interface Module

5.3 Software Decision Module

5.3.1 Resistor Body ID Module

5.3.2 Band Location Module

5.3.3 Colour Mapping Module

5.3.4 Resistor Value Calculation Module

6 Traceability Matrices
6.1 Modules and Requirements

Requirement	Modules
Functional Requirements	
FR1	M3
FR2	M4, M5, M6, M7

Non-functional Requirements	
NF1	M3
NF2	M3
NF3	M1, M2, M3, M4, M5, M6, M7
NF4	M3
NF5	M1, M2, M3, M4, M5, M6, M7
NF6	M1, M2, M3, M4, M5, M6, M7
NF7	M2, M4, M5, M6, M7
NF8	M5, M6, M7
NF9	M4, M5, M6, M7
NF10	M3
NF11	M1, M2, M3, M4, M5, M6, M7
NF12	M1, M2, M3, M4, M5, M6, M7
NF13	M1, M2, M3, M4, M5, M6, M7
NF14	M1, M2, M3, M4, M5, M6, M7
NF15	M1, M2, M3, M4, M5, M6, M7
NF16	M1, M2, M3, M4, M5, M6, M7
NF17	M3

6.2 Modules and Anticipated Changes

Anticipated Changes	Modules
AC1	M2
AC2	M4
AC3	M1, M2, M3

7. Use Hierarchy Between Modules

8. Schedule
8.1 Gantt

7.2 Pert

9 Major Revision History