Software Description Document

Project Name: redTAG System
Version: v010
Author: Nolan Manteufel
Date: 26 AUG 2024
Organization: miniPCB

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1. Introduction

1.1 Purpose

The purpose of this document is to provide a comprehensive description of version v010 of the redTAG system. The redTAG system is a simple, yet effective, tool designed for collecting and managing Red Tag messages associated with printed circuit board (PCB) barcodes. This document outlines the key features, system functionalities, and technical specifications implemented in this version.

1.2 Scope

This document covers the functional and non-functional aspects of version v010 of the redTAG system. It includes details about the primary user interface, backend processes, and newly introduced features, particularly the Engineer Menu options for file management.

1.3 Audience

This document is intended for developers, testers, engineers, and stakeholders who are involved in the development, deployment, and use of the redTAG system.

2. System Overview

The redTAG system is designed to manage Red Tag messages linked to PCBs through barcode scanning. It allows users to apply labels to PCB files, view existing issues, and perform specific file operations via an Engineer Menu.

3. Features and Functionalities

3.1 Barcode Scanning and File Management

- **Barcode Parsing:** The system parses the scanned PCB barcode into specific components: Board Name, Board Revision, Board Variant, and Serial Number.
- **File Creation and Management:** When a barcode is scanned, the system creates or updates a corresponding file in the designated directory. The file contains the board details and any associated Red Tag messages.

3.2 Label Application

- **Label Options:** Users can apply predefined labels to PCB files. The available labels include:
    - "LABEL CREATED"
    - "BRING-UP TEST: PASS"
    - "FINAL ASSEMBLY TEST: PASS"
- **GitHub Integration:** Each label applied to a file triggers an automatic commit and push operation to the remote GitHub repository, ensuring all changes are tracked and synchronized.

3.3 Engineer Menu

Version v010 introduces an **Engineer Menu** accessible from the main interface. This menu provides advanced file management options:

- **[1] DELETE FILE:** Allows users to delete a PCB file based on the scanned barcode. The deletion is also committed and pushed to GitHub.

3.4 User Interface

- **Main Menu Options:**
    - [ ] Press ENTER to scan a barcode
    - [1] Apply a label
    - [ENGR] Engineer Menu (hidden)
    - [x] Exit program
- **Engineer Menu Options:**
    - [1] DELETE FILE
    - [2] Placeholder Option 2

4. Technical Specifications

4.1 Programming Language

The system is implemented in Python, leveraging standard libraries such as os, subprocess, and re.

4.2 Operating System

The redTAG system is designed to run on Unix-like operating systems, specifically tested on Raspberry Pi OS.

4.3 GitHub Integration

The system is tightly integrated with GitHub for version control. All file modifications, including label applications and deletions, are automatically committed and pushed to the repository.

4.4 Hardware Requirements

- **2D Barcode Scanner:** The system requires a 2D barcode scanner, such as the Honeywell Model 1900, to scan and process PCB barcodes accurately.

4.5 Directory Structure

- **SAVE_DIRECTORY:** /home/pi/redTAG/redtags
    - This directory is where all PCB-related files are stored and managed.

5. Future Enhancements

- **Expansion of Engineer Menu:** Additional file management and system diagnostic options will be added to the Engineer Menu.
- **Enhanced User Feedback:** Implementing more detailed feedback messages and error handling for improved user experience.

6. Conclusion

Version v010 of the redTAG system introduces significant enhancements, particularly in file management via the Engineer Menu. The system remains user-friendly while ensuring all changes are securely tracked through GitHub integration. This version builds on the solid foundation of previous iterations, adding more control and functionality for engineering tasks.

Appendix: Screen Layouts and Descriptions

This appendix provides visual representations and descriptions of each screen in the redTAG system as of version v010. The screens are presented in the order a typical user might encounter them.

A.1 Welcome Screen

```
------------------------------------------------------------

 Welcome to redTAG!
 A simple system for collecting Red Tag messages.

 By Nolan Manteufel
 Mesa Technologies
 (c)2024
 (v)010

 Scan a barcode,
 See previous messages,
 Enter new messages!

------------------------------------------------------------
 OPTIONS:
 [] Press ENTER to scan a barcode
 [1] Apply a label
 [x] Exit program
------------------------------------------------------------
Select an option and press ENTER:
```

- **Description:** This is the main welcome screen where users can choose to scan a barcode, apply a label, access the Engineer Menu, or exit the program.

A.2 Barcode Scanning Screen

```
Scan a barcode:
```

Description: This screen prompts the user to scan a barcode. Once a barcode is scanned, the system processes the barcode and either creates or updates the corresponding file.

A.3 Label Selection Screen

```
------------------------------------------------------------
  LABELS:
  [1] Label created
  [2] Bring-up testing: PASS
  [3] Final assembly testing: PASS
------------------------------------------------------------
  [x] Return to Welcome page
------------------------------------------------------------
Select an option and press ENTER:
```

Description: This screen allows the user to select a predefined label to apply to the file associated with the scanned barcode.

A.4 Applying Label Screen

```
Apply label: 'LABEL CREATED'. Type 'x' when finished.
```

Description: This screen is shown after the user selects a label to apply. The user is prompted to scan a barcode, and the label is applied to the corresponding file. The screen clears after each label application.

A.5 Engineer Menu Screen

```
------------------------------------------------------------
  ENGINEER MENU:
  [1] DELETE FILE
------------------------------------------------------------
  [x] Return to Welcome page
------------------------------------------------------------
Select an option and press ENTER:
```

Description: The Engineer Menu provides advanced file management options. In this version, it includes the ability to delete a file based on a scanned barcode.

A.6 Delete File Screen

```
------------------------------------------------------------
DELETE FILE
------------------------------------------------------------
Scan or enter the barcode of the file to delete:
```

Description: This screen allows the user to scan a barcode and delete the corresponding file. After the file is deleted, the changes are pushed to GitHub.

A.7 Message Entry Screen

```
redTAG!
-------------------------------------------------------------------------------------------------
|    Board Name: [Board Name]
|    Board Rev: [Board Rev]
|    Board Variant: [Board Variant]
|    Board SN: [Board SN]
|
|    No existing issues.
-------------------------------------------------------------------------------------------------
redTAG!

 OPTIONS:
 [1] Enter new message.
 [x] Return to welcome screen.

Choose an option:
```

Description: This screen is shown when a user scans a barcode. It displays the board details and any existing issues. The user can enter a new message or return to the welcome screen.

End of Appendix

Revision History

REV	DESCRIPTION	ECO	DATE
A	Initial Release, v010	N/A	26AUG2024