SE 3XA3: Software Requirements Specification
TheLenaProject

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November 10, 2016

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Table 1: **Revision History**

Date	Version	Notes
Nov 7, 2016	1.0	Completed section 1,2,4
Nov 10, 2016	1.1	Completed section 3,5,6,7
Nov 11, 2016	1.2	Reviewed document for grammar and format

1 Introduction

This document is dedicated to documenting the module (MG) of TheLenaProject. It is intended to represent the systems architectural design, detailed design, and describe the levels of interaction and hierarchy of modules throughout the project. The creation of this project will facilitate developers and testers to create test cases, and find modules that can potentially violate certain design principles.

2 Anticipated and Unlikely Changes

This section lists possible changes to the system. According to the likeliness of the change, the possible changes are classified into two categories. Anticipated changes are listed in Section 2.1, and unlikely changes are listed in Section 2.2.

2.1 Anticipated Changes

Anticipated changes to TheLenaProject mainly include addition of an upgraded GUI and the application layout so the user may be able to navigate the application easier. Perhaps the addition of a web cam which is enabled to take live photos that are able to be processed. The web cam may be out of the scope for this project but would be likely be the next major addition to the application.

AC1: Upgrading the current GUI to have a better input and output interface and utilizes file checking

AC2: Addition of an auto-resizing window to allow the application to look fitting at any size of window.

AC3: Implementing web cam access by the application for additional filters and live web cam photos to be taken

2.2 Unlikely Changes

Constants used in the system will unlikely be changed. These values are common throughout various implementations of TheLenaProject. Changing some of these values may result with an inconsistent implementation, and will no longer be following TheLenaProject standard. Implementing file types other than image file types such as mp4 or svg and creating a web application are possible but are unlucky to occur within the scope of this project.

UC1: Support for svg images to be imported or exported.

UC2: Creating a web interface such as Instagram.

UC3: Implementing video processing (mp4).

3 Module Hierarchy

The different design modules of TheLenaProject will be defined in this section. The modules listed below will be implemented into TheLenaProject.

Level 1	Level 2
Hardware-Hiding Module	N/A
Behaviour-Hiding Module	File Explorer Module Control Module Lena Processing Module
Software Decision Module	Marvin Framework Module

Table 2: Module Hierarchy

- M1: File Explorer Module

- M2: Control Module

- M3: Lena Processing Module

- M4: Marvin Framework Module

4 Connection Between Requirements and Design

Due to some of the non-function, requirements specified in the Software Requirements Specification document, certain design decisions were made:

- The applications user interface will be visually appealing and will operate seamlessly on any operating system providing a very simple and easy way to navigate the application satisfying the look and feel requirements

- The software will have a simple UI that will allow for any individual no matter their age or familiarity with image processing to be able to use the application. This will satisfy the ease of use, and learning requirements of the project.

- Operational and environmental requirements will entail the following requirement that any image size will be accepted as long as the file format is either a PNG or a JPG and will be returned as a PNG or JPG.

- The application should take no longer than PROCESSING TIME to load. The set value of PROCESSING TIME is currently set to 1 second by may change in order to satisfy the performance requirements.

- The program will be continuously updated to fix any bugs and add more functionality.This requirement will satisfy the maintainability and support requirements

The connection between requirements and modules is listed in Table 3.

5 Module Decomposition

5.1 Hardware Hiding Modules

N/A

5.2 Behaviour-Hiding Module

5.2.1 M1: File Import

Secrets: Determines file path for the inputted file.

Services: Verifies if the file path and image are valid.

Implemented By: TheLenaProject

5.2.2 M1: File Export

Secrets: Determines file path for the outputted file.

Services: Verifies if the file path and save location for the image are valid.

Implemented By: TheLenaProject

5.2.3 M1: Action Listener

Secrets: Decides if an image file will be saved or opened.

Services: Waits for either button to be clicked before processing and executing the appropriate task.

Implemented By: TheLenaProject

5.2.4 M1: File Explorer Display

Secrets: Ensures that only image files are opened by the application.

Services: Filters files such that only image extensions (png,jpg,jpeg,gif) can be selected.

Implemented By: TheLenaProject

5.2.5   M2: File Selection Validation

Secrets: Confirms file is chosen to before running application.

Services: Waits for user to select a file before running the application to guarantee the application is processing an image.

Implemented By: TheLenaProject

5.2.6   M3: Plugin Selection

Secrets: Determining each plugin corresponds to a button.

Services: Receives user response and the button click corresponds to a plugin which then executes the task listed such as running filters: Invert, Grey Scale, etc.

Implemented By: TheLenaProject

5.2.7   M3: MainGUI Display

Secrets: Interface to interact with the user's selected actions.

Services: Incorporates File Selection Validation in order to display import, output and filtering options to the user in an GUI.

Implemented By: TheLenaProject

5.3   Software Decision Module

5.3.1   M4: Marvin's Plugin Loader

Secrets: Allows filters to be applied on images.

Services: Grabs filter from Marvin Framework plugin and applies it to the uploaded image.

Implemented By: TheLenaProject

6   Traceability Matrix

The connection between the requirements and the modules is depicted in Table 3.

Req.	Modules
R1	M1, M2
R2	M3, M4
R3	M1, M2, M3, M4
R4	M1, M3, M4
R5	M3

Table 3: Trace Between Requirements and Modules

The connection between the anticipated changes and the modules is depicted in Table 4.

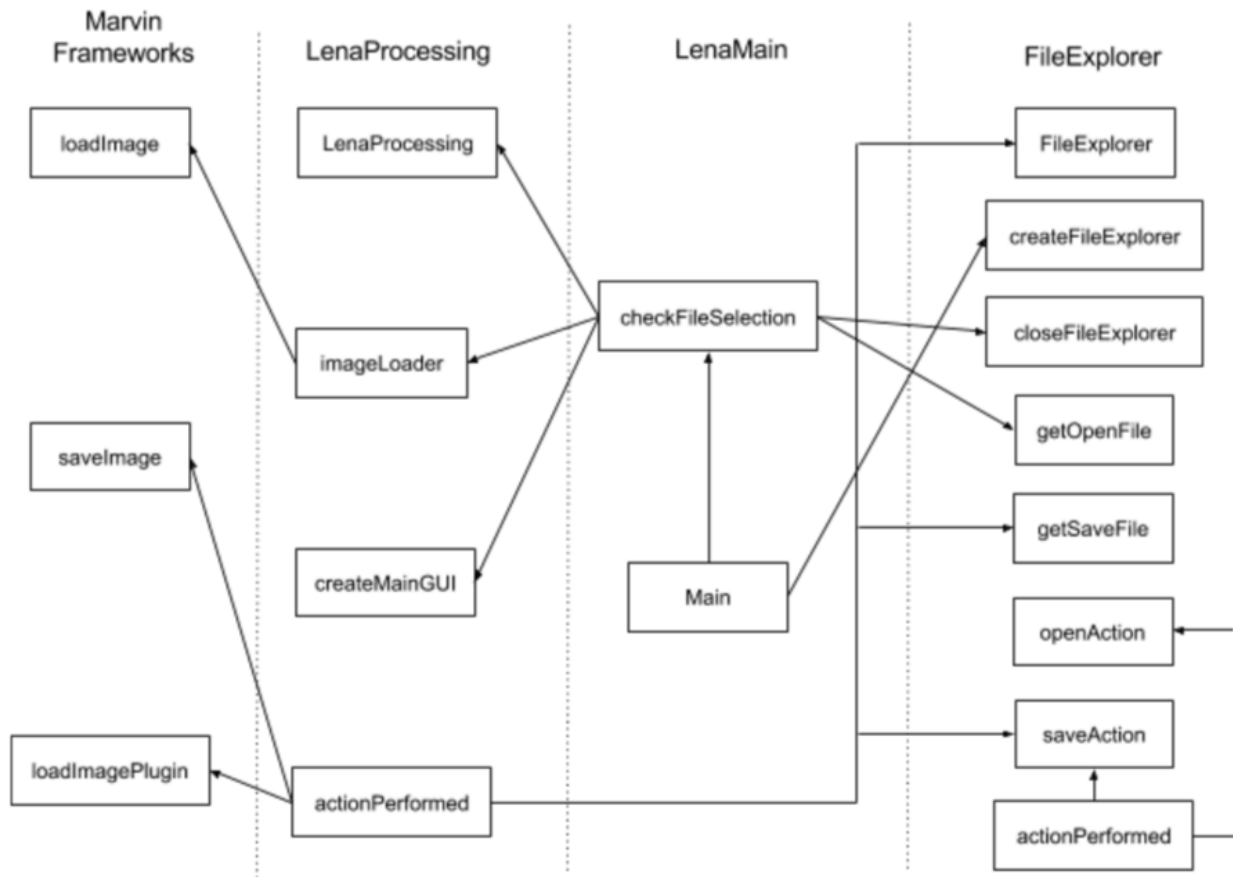| AC	Modules
AC1	M2, M3
AC2	M3
AC3	M1, M2, M3, M4

Table 4: Trace Between Anticipated Changes and Modules

7 Use Hierarchy Between Modules

Figure 1: Use hierarchy among modules