ColoReX: Color Mixer — Lab 1

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ColoReX

Abstract

ColoReX is a GLUI OpenGL application that gives user the power to find colors for designing (of all kinds) by manipulating color channels. It supports RGB and HSV color models.

Please view the README in the doc/ folder for more details and HTML User Manual for usage.

Keywords: opengl, glut, glui, c++, graphics, color, channels

1 Package

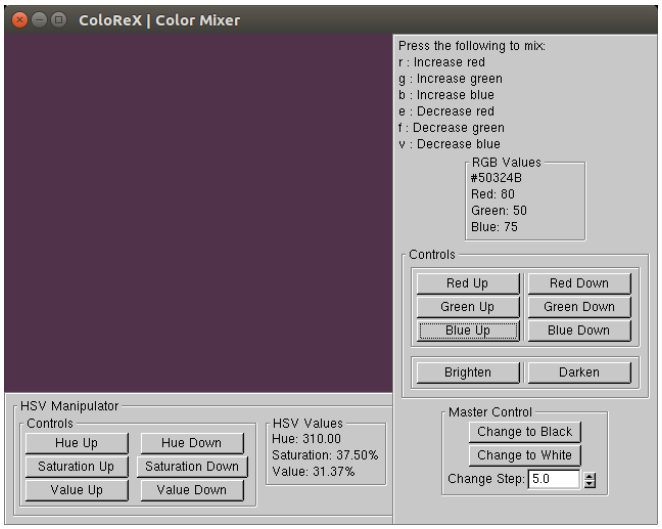
The code submitted contains the source files, this document and an HTML user manual for the application. It uses the Make build system for easy compiling of the source code to executables. There are two extra programs that were used for testing the OpenGL system. Main code is in src/assignment.cpp

2 Project

The code is written in C++ with OpenGL, GLUT and GLUI libraries. Most of the code is written by self, and algorithms for conversion between HSV and RGB are sourced from the web pages indicated in the code itself. I used GLUI manual available on GLUI SourceForge page and the Lab Document given in the assignment for development. Apart from this, I referenced GLUT examples provided on https://www.opengl.org/archives/resources/code/samples/glut_examples/progs.html for demo to usage. The LOGO has been created on CoolText.

2.1 Interface

The application has one GLUT window for color display, and 2 GLUI subwindows for the controls.The first control window contains options for RGB manipulation and some master controls described below. The second control window contains HSV controls. The Idea of the app is we can start with a color and change channel values to see slight variations, which help us in fine tuning for perfect shade. The application has brightness and darkness controls to change all channels uniformly. It can be used both for color ideas also.



2.2 Usage

- The User starts the application with the default color as BLACK (RGB 000000).
- Using the shortcut keys on the keyboard, or the buttons given in the interface, the user can change the values of the RGB channels.
- There is also an option of changing via HSV color model, all changes are reflected to the RGB panel too.
- The user can reset to BLACK or WHITE using the buttons given in the Master Control.
- The user can change the step change per button click using the Spinner.
- The user can use **brighten** or **darken** to increase/decrease the RGB channel values simultaneously.

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2.3 Testing and bugs

The application has been compiled using the "-Wall" flag which displays all the warnings. No warnings show up on compilation. I have tested the program, yet, there are some bugs that show up. One of it is non-responsiveness of keyboard I/O. If such a bug shows up during testing of the assignment, please click once on the GLUT color window and try again.

3 Outcomes from the project

The broader objective of the assignment was to get acquainted with the OpenGL GLUT and GLUI libraries for C/C++. In this project, I was able to explore different controls offered by the GLUI Library. In this project I used the following controls:

- Panel
- Button
- Column
- StaticText
- Spinner

In addition to this, I learnt about interaction with the user using keyboard and mouse I/O. I learnt about callbacks, live variables, and window management. In GLUT, I learnt about setting window background color, and also read about creating shapes, but wasn't able to incorporate it in the application.
I would like to continue this project to make the application usable in real world scenarios by adding more color models, suggestion modes, color picking, and color extraction from images.

4 References

The following list of web pages and documents have been used for reference.

- https://www.cs.rit.edu/~ncs/color/t_convert.html
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- Lab Assignment PDF from the instructor
- CLUI User Manual from clui.sourceforge.net