

User Guide for APO semestral project

version: 1.0

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Introduction

This project was created as an semestral work in subject Computer Architecture at The Czech Technical University in Prague. The authors are Karina Balagazova and Lukáš Frána. The main goal of this project was to create a software to control two RGB LED diodes (simulation for reflectors). The software runs on ARM microprocessor called MicroZed APO. We had several peripherals to use. First of all, a non-touch LCD display with resolution 480x320 px is used to show information to user. Three knobs with buttons are used to handle user input. The knobs are located below the display and have three colors: red, green and blue.

Tutorial

Colors and mode

When the system boots up you should see two colors in the top left corner and in the top right corner. Pair of colors is used to show from which color to which color will be smooth transition used (for example: if you see red and blue color, then the color will go from red to blue and back). It will cycle these two colors. Mode determines in which mode you are running.

There are following possibilities:

- 0: normal mode
- 1: copy mode (right LED will always have same color as left LED)
- 2: anticopy mode (same as 1, but it will have opposite color)

If you select mode 1 or 2 and then you modify right LED color the system will override your changes and use color from the left LED.

Menu

A menu is located under previous section. It has two elements: settings and exit. If you choose exit, system will shut down. On the other hand, under settings are many levels of submenus. They are self explanatory, so it will not be necessary to explain them all. You can set font size or settings for left, right or both LEDs. To select item in menu use green knob. To enter selected submenu use green button. Go back to parent menu with red button. If you want to change some value, use blue knob.

Effects

Two LEDs have several effects. You can combine them freely. Also, you can set them for one LED (left or right) or both at once.

Below is list of all effects:

- static (set both colors to same value, so you will not see any transition object)
- dynamic (you will see transition effect from one color to another)
 - minimal color (from which color the transition starts)
 - maximal color (to which color)
 - period (how long should the transition lasts)
- blinking (LEDs can blink)
 - on time (how long will the LED light)
 - off time (how long will the LED be off)
 - phase (LED can be shifted against another)

All time effects are set in milliseconds. All color settings are set in HSV model.

The END

We hope you will have a lot of fun with our project. If you have any questions, feel free and contact us on our school e-mail addresses. See you next semester and have a nice day!