Porting LCD Driver to LPC 4088 Dev Kit

Austin Hwang, Anna Lee

Overview

Create an API for an LCD display so that text and shapes can be written to the display through the LPC 4088 dev kit board. The data transfer between the board and the display is done through SPI. It will be able write the desired text or shape in a specified location and color scheme.

Peripherals

- 18-bit color TFT LCD display (ILI9340)
- On-board push button

Software Design

We will first need to implement a procedure that initializes the SPI connection between the board and the display. Then to be able to write a string of text to the display we need to set a font and print a character to the LCD. We can chain calls to the the function that prints a character to write any sentence to the display. Drawing the shapes to the display can be implemented by write each pixel within a specified shape's location and boundaries with an RGB value.

If we are able to finish all of these tasks with time to spare, we will implement a simple tunnel flight game using the QP/C framework to control the states and flow of the game.

Goals

Write functions that will:

1. Initialize the LCD controller values.
2. Set a font and write a string of text at a specified location on the LCD display.
3. Draw different shapes (such as a rectangle and circle) in a specified color on the LCD display.

If we have extra time, we want to implement a tunnel flight game on the LCD display with our new functions.

Group Responsibilities

We will both be responsible for reading the LCD datasheet and figuring out how to interface it with the board. Austin will implement the LCD initializing function that connects the two devices and function to print a character with a specific font. Anna will be in charge of getting the full text and shapes to display on the LCD according to specified function parameters. We will both be testing all code along the way.

For the game portion: Austin will setup the QP/C state machines and Anna will design the game graphics.