**Objectives:**

The purpose of this lab was to create a fixed.c file containing functions that will allow us to input both decimal and binary input to the ST7735 LCD as well as plotting points given by an int array. While completing this lab we also made sure that our Keil software was running correctly, we can compile and execute our code, and familiarize ourselves with the Keil software and debugging. The four functions that were created in fixed.c are ST7735\_sDecOut3, ST7735\_uBinOut8, ST7735\_XYplotInit, ST7735\_XYplot. sDecOut3 takes a signed int input of up to 4 digits and displays it to the LCD with 3 decimal places. uBinOut8 takes an unsigned binary int input with a fixed point resolution of 1/256 and displays it to the LCD in decimal fixed point format with 2 decimal places. XYplotInit sets up the LCD to display a graph given int inputs for minimum values of x and y. XYplot outputs points to an initialized XYplot from an int array.

**Analysis and Discussion:**

1) In what way is it good design of fixed.c that there is no arrow directly from the fixed.c module to the rit128x96x4.c module in the call graph for your system?

2) Why is it important for the decimal point to be in the exact same physical position independent of the number being displayed?

3) When should you use fixed-point over floating point? When should you use floating-point over fixed-point?

4) When should you use binary fixed-point over decimal fixed-point? When should you use decimal fixed-point over binary fixed-point?

5) Give an example application (not mentioned in this lab assignment) for fixed-point. Describe the problem, and choose an appropriate fixed-point format. (no software implementation required).

6) Can we use floating point on the Arm Cortex M3? If so, what is the cost?

Extra credit) Is fixed-point or floating-point arithmetic faster on the Pentium w/MMX?