Lab Exercise #6

rev 1

Objectives

- Learn about the Serial Peripheral Interface (SPI)
- Implement a demonstration SPI loop-back program to observe SPI operation
- Write routines to initialize and then gather data from an STM LIS2MDL magnetometer

References

- [1] NXP Kinetis KL25 processor sub-family data sheet (pdf) on class web page.
- [2] NXP Kinetis KL25 processor sub-family reference manual (pdf) on class web page.
- LIS2MDL Magnetometer data sheet (pdf) on class web page

Lab 6 Problem Statement

Implement the SPI Loopback test routines listed on pages 224 to 226 in the textbook.

Design Flow

Lab Part A

1) Create a new folder and project for SPI loopback testing.
2) Copy files from prior project(s), as needed, to the new folder
3) Implement the loopback test as shown in the textbook
   Monitor the SPI signals with three scope channels.
4) Submit your loopback project to D2L as Lab6a

Lab Part B

1) Create a new folder and project for SPI communication with the LIS2MDL magnetometer
2) Create a program to read data from two axes of the magnetometer and display it in a terminal window at an update rate of about twice a second.
3) Submit lab part B files to D2L as Lab6b

To Turn In

- In the "comment header" of your main.c files report success, failure, or other observations
- Submit your lab6a main.c file to a D2L drop box for lab6a.
- Zip up your complete lab6a uVision project and submit to the lab6a D2L drop box

- Submit your lab6b main.c file to a D2L drop box for lab6b.
- Zip up your complete lab6b uVision project and submit to the lab6b D2L drop box