COMP_ENG 346 Microprocessor Systems
Project Lab 4: Using the nRF24 Radio

Overview
In this lab you will play with the nRF24 transceiver, which allows you to send and receive data over the air. The nRF24 is a pretty full feature, and low power radio transceiver (12mA, about 10x more energy-efficient than Wifi). This provides another way to get data to more powerful devices for processing, or enabling networking and coordination between multiple MSP430 devices. The nRF24 can out of the box support up to six "pipes" connecting six devices together which allows you to exchange data in a mesh network, including nice features like auto-ACK.

For this lab we will only seek to enable basic communication by opening up a virtual UART between two nRF24 devices which can transmit and receive. This functionality will enable a game like controller between team members devices.

Instructions
In this lab you will use the built-in SPI (eUSCI in SPI mode) connected on P5.1, P5.2, and P5.3 on the MSP430FR5994 Launchpad to send messages to your team members MSP430. You can use processing to visualize this, or just the printf library. *Receive* and *transmit* must be working. This lab might require some rewiring so that the nRF24 is wired to P5.x.

Resources
We will use this adapted library to interact with the nRF24:
https://github.com/jhester/msprf24

Here is the wiki / manual:
https://github.com/spirilis/msprf24/wiki/msprf24_rxtx_ike

Hints
Make sure to configure nrf_userconfig.h to set the CSN pin to the correct pin that is wired to your radio. The CE pin can be held to VDD, and the IRQ pin may also be set to allow low power mode

Due: Monday during **Lab Check**, June 3rd, 2019.