

Color-Calibration Joystick

ECE 511

Group 10 Members

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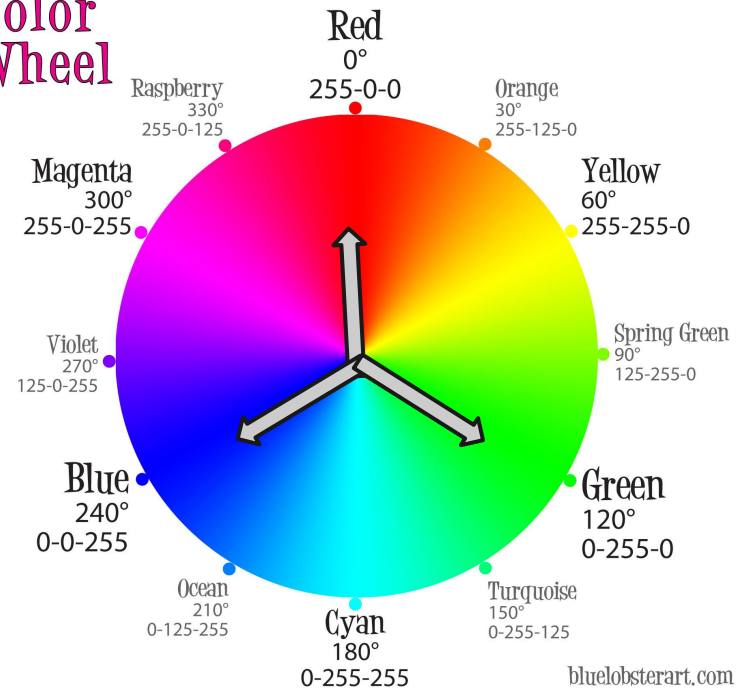
Rebel Sequeira

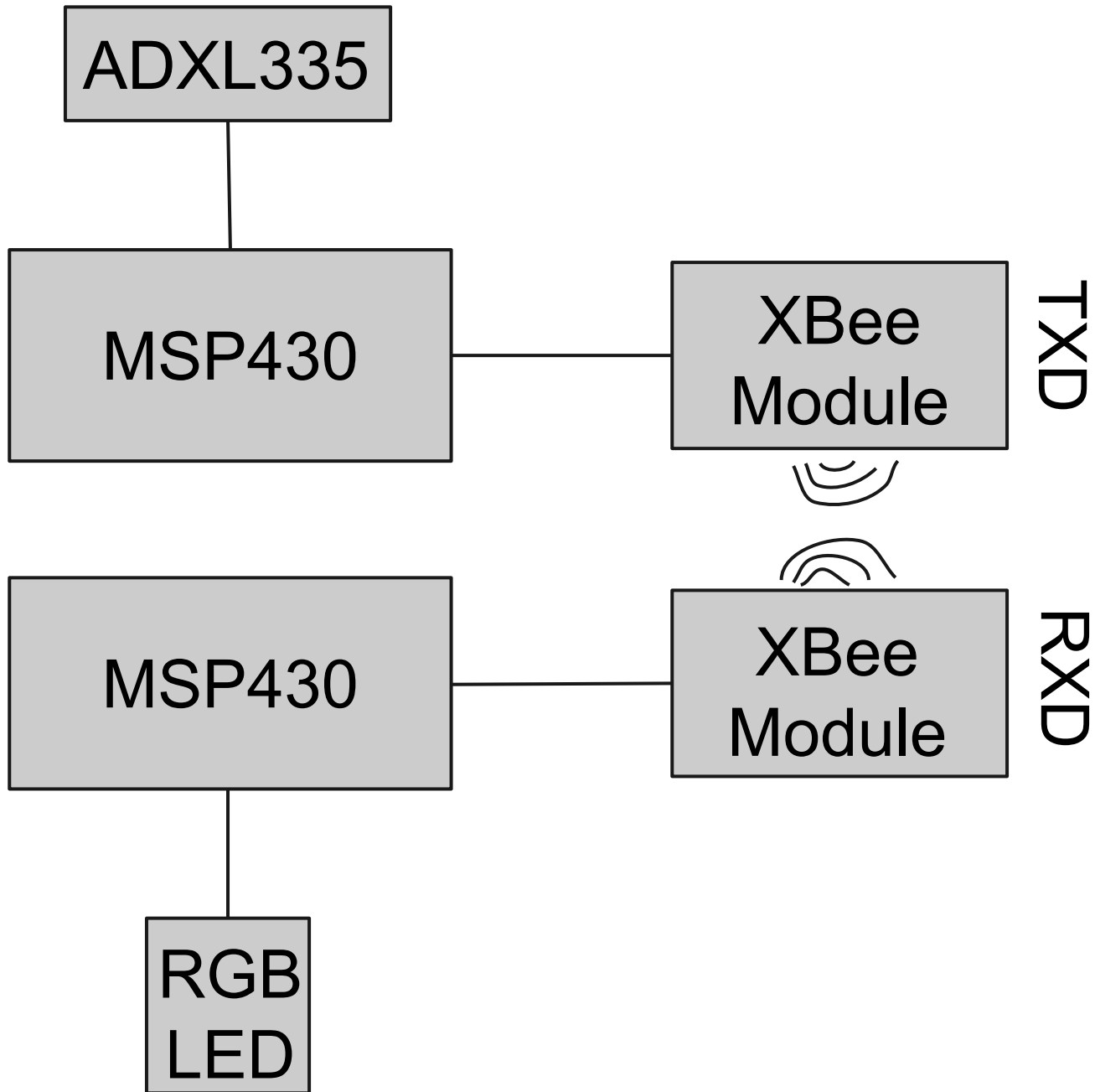
What is it?

Wirelessly controlled color changing LED lamp

- Nightlight
- Childrens Toy
- DANCE PARTY!

RGB
Color
Wheel





Component List

2x MSP430 Microcontrollers

1x ADXL335 Accelerometer

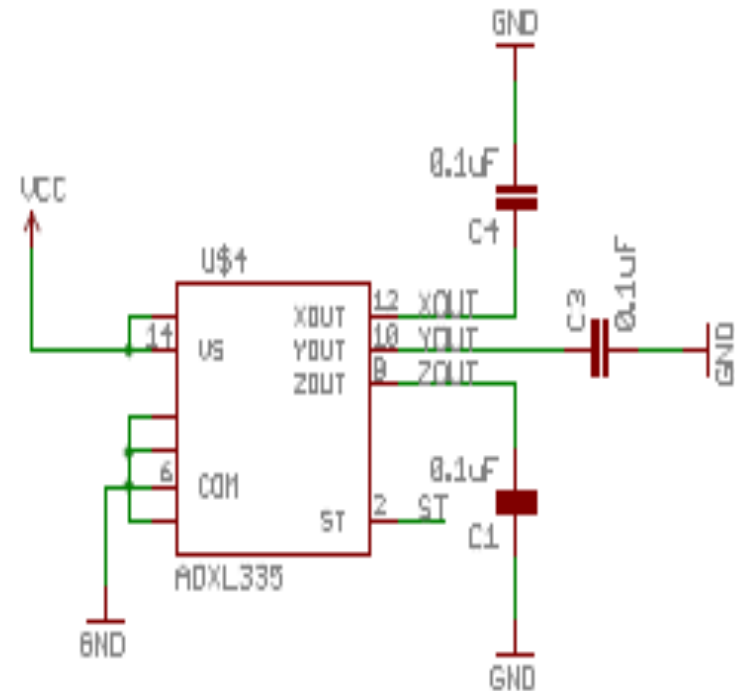
2x XBee Wireless module

1x RGB LED

ADXL335(Accelerometer)

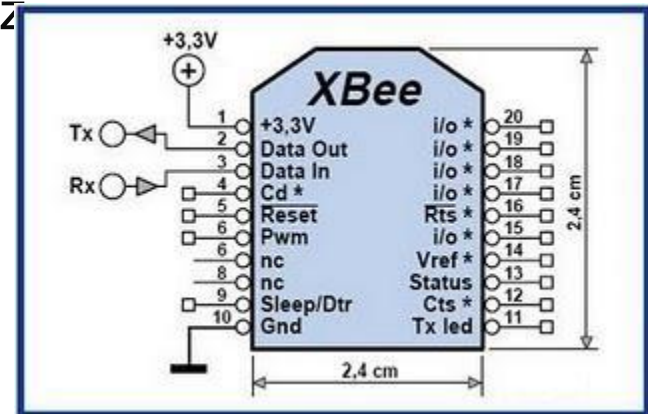
Features

- 3-axis accelerometer
- Low power device
- Excellent temperature stability



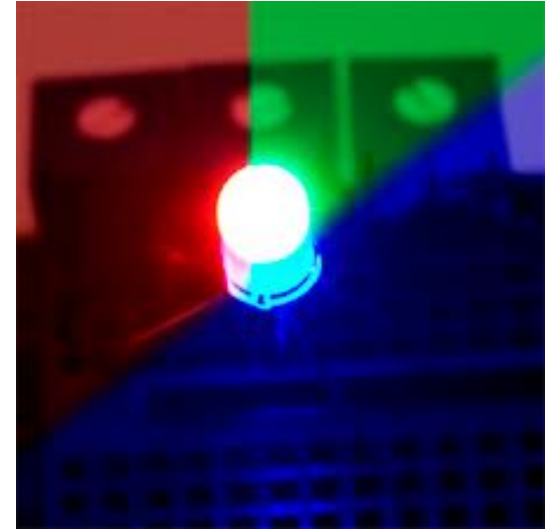
XBEE MODULE

- Xbee is a wireless microcontroller made by Digi International which uses zigbee protocol (IEEE 802.15.4) for wireless communication
- It consists of 20 pins and a little antenna
- Requires 3.3V to operate and uses 2.4Ghz frequency
- Indoor range- 40 meters
Line of sight- 120 meters

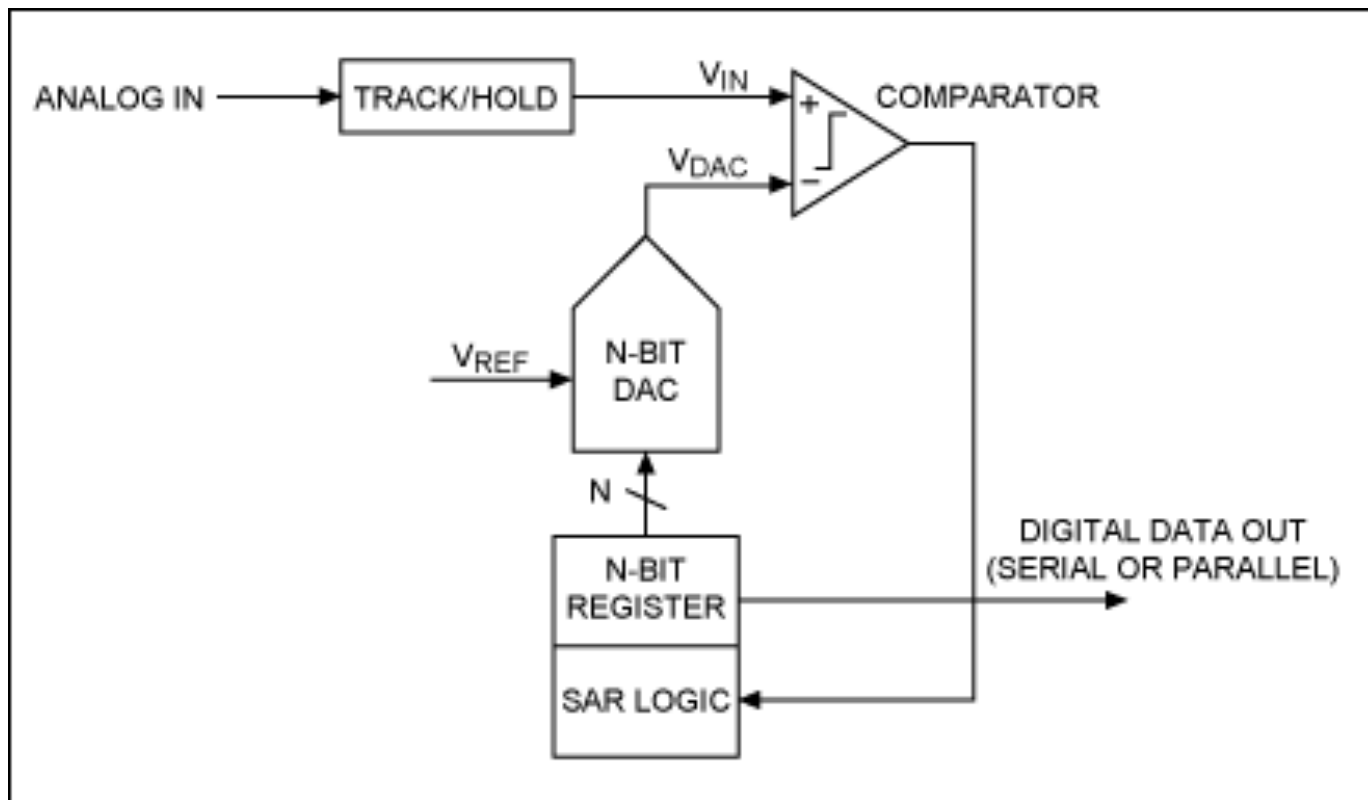


RGB LED

- The RGB LED has four pins- three for the colors and one as common cathode (longest pin)
- Most light emitting diodes contain only a single internal die, and can produce only one primary color or optical wavelength. However, the full color or RGB LED contains three separate dice, corresponding with three separate colors.
- By mixing three primary colors, the RGB LED can actually generate a vast array of custom colors.

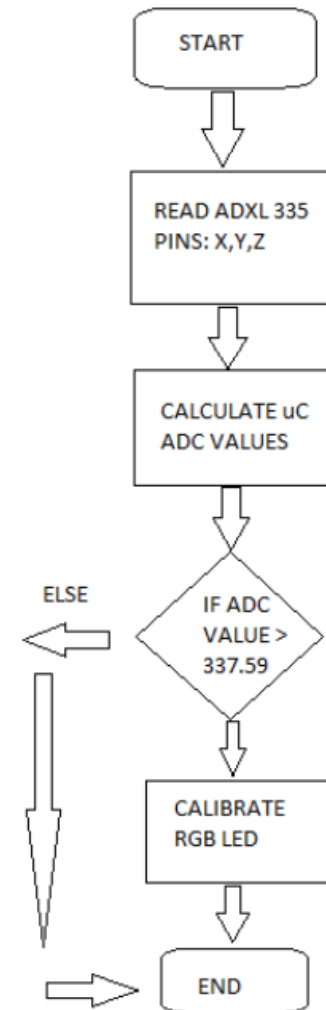


SAR ADC ARCHITECTURE



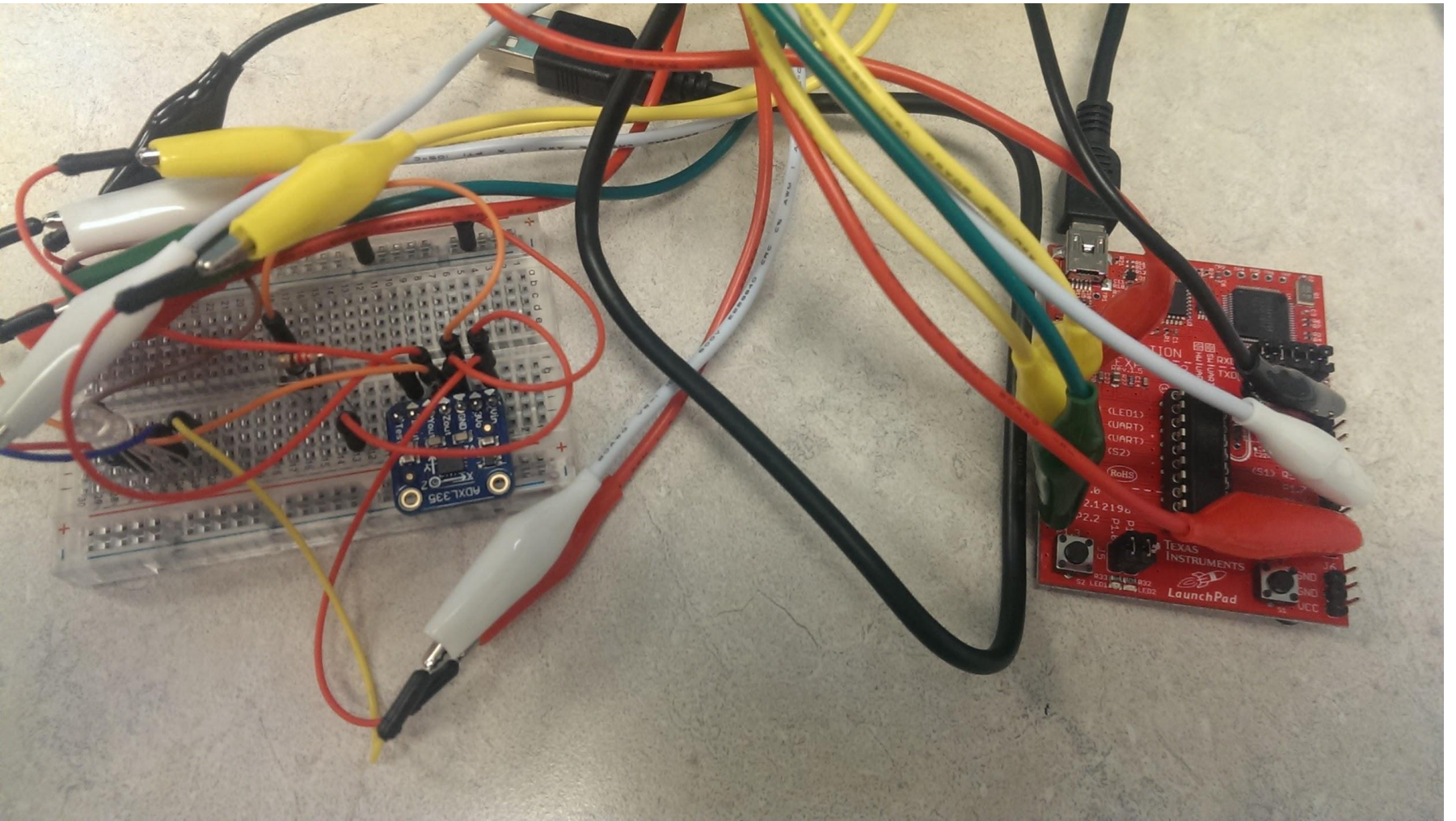
Hardware/Software Integration

- MSP 430 has a 10-bit ADC
- $V_{in} = (ADC_Value / 1023) * 5$
- 0g point for the accelerometer is $3.3 V / 2 = 1.65$
- So the ADC_value for each axis is 337.59



Challenges

- Interfacing Xbee with Launchpad.
- Making color changes look “Natural”
- Calibrating the Accelerometer



Plan B

- Replace the Xbee Module with a R/F Transmitter and Receiver
- Suggestions?
- Questions?

Thank you!!