Week 3 Lab

CC3501

Your task is communicate with a digital accelerometer sensor.

Task Description

The FRDM board embeds an **`MMA8451Q`** accelerometer. You might use an accelerometer such as this to detect the motion of an embedded system, or you might use it to detect the direction of the gravity force vector and thereby determine the orientation of handheld electronics.

Your task is to read the accelerometer data, and:

1. Display the magnitude along each axis by PWM on a LED colour. For example, you might use the red colour for the magnitude of the acceleration along the x axis, and the green colour for the magnitude of the acceleration along the y axis.
2. Print the raw accelerometer values over a serial port.

Suggested Resources

- You must locate the datasheet for the accelerometer and read it very carefully.
- You may find it convenient to use some of the following Processor Expert components:
  - `InternalI2C`
  - `ConsoleIO`
  - `FreeCntr32`

HINT—Do not expect your tutor to tell you how exactly how to communicate with the accelerometer. An important part of being an engineer is learning how to find such information in datasheets.

Assessment

To complete this lab task, you must demonstrate to your prac tutor:

- A working board where the accelerometer data is visually displayed on the LED in an appropriate manner.
- A serial terminal displaying the raw accelerometer values along each of the three axes.
- Your GitHub webpage showing your code uploaded to your repository.