EE 186 Lab 3 - I2C

Part 2 - LSM303AGR IMU Datasheet

1.

Device	I2C Address
Accelerometer	0011001b
Magnetometer	0011110b

2. Sub-address is how the leader device selects which register to read from or write into. It follows the I2C address and has a leading 1 or 0 to enable address incrementing so that the following byte (data) can be followed by more data without readdressing.
3. CTRL_REG1_A is a register with configuration settings for the accelerometer including low-power mode enable, xyz axis enable, and data rate selection from a table of options.
4. CTRL_REG1_A address is 0x20 or (010 0000) and is itself as 8-bit register. It should be set to 0101 0111 (for 100Hz, normal mode, and all three axes enabled).
5. Each data point is a 16 bit word spanning two 8-bit registers

Axis	Register	Hex Sub-addr	Bin Sub-addr
Acc_X	OUT_X_L_A	0x28	0b0101000
	OUT_X_H_A	0x29	0b0101001
Acc_Y	OUT_Y_L_A	0x2A	0b0101010
	OUT_Y_H_A	0x2B	0b0101011
Acc_Z	OUT_Z_L_A	0x2C	0b0101100
	OUT_Z_H_A	0x2D	0b0101101

Part 3 - Writing the Driver

1. Screenshot of registers are in "ee186_lab3/part3_who_am_I_terminal.png"

Part 4 - Measuring Gravity

1. Plot demo in "ee186_lab3/lab3_part_4_live_plot.MOV"
2. Terminal g force data in "lab3_part_4_terminal_g_values.MOV"
3. Terminal raw bytes in "lab3_part_4_terminal_raw_bytes.MOV"
4. Live_plot code in the "ee186_lab3/live_plot" directory. This python script was generated in chatGPT based on my serial output because I figured that it would be faster than finding and installing a plotter online. It was.