

EE 3921

Dr. Johnson

Homework 13

1 – Run the accelerometer example from class. Start the program and record the average value and approximate variation for each of the 3 axis, in 4 orientations - 80 pts

Flat on table

	average	variation
x	3	+/- 5
y	7	+/- 7
z	252	+/- 3

Standing on sw/sseg edge

	average	variation
x	-6	+/- 10
y	245	+/- 9
z	7	+/- 15

Standing on VGA edge

	average	variation
x	-250	+/- 5
y	-12	+/- 14
z	-3	+/- 11

Upside down on table

	average	variation
x	4	+/- 4
y	6	+/- 4
z	-254	+/- 3

Interpret the numbers from the first orientation in terms of g (gravity on earth) - 20 pts

The accelerometer is set to show 0g when not accelerating

Since it is located on the earth, there is a 1g gravitational acceleration downward

Your value (252) in the z direction represents the table pushing up with 1g force

$$(1024 / 2 / 2 = 256)$$

$$10\text{bit } +/- 2g$$