ECEN 5013- FINAL PROJECT MILESTONE

Team Members:

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Test/Verification Methodology:

| Function	Feature to be tested	Plan test	Definition of pass or fail
Accelerometer	RGB LED controlled by the accelerometer	Change the orientation of the FRDM board	Does it give 3 different colors in 3 different orientations?
ADC with Temperature sensor	Display the temperature	Initialise and configure ADC and temperature sensor	Does it display the present temperature?
DMA	Perform memory allocation without using the CPU	Initialise and configure the DMA.	Does the memory allocation happen without using DMA?
I2C	Communication with EEPROM	Sending data to the over I2C EEPROM and reading it back.	Does it send and read the correct data from the EEPROM?
EEPROM	Storing Logged data or Error Logging data	Writing and reading single byte as well as block of data	Does it read block of data correctly?
RTC	Providing Time stamp for the Logged data	Checking for correct time stamp on the Logged Data	Does it show correct time for the data logging on the UART?
Capacitive Touch	Controlling the speed of Motor	Touch the capacitive touch pad in different patterns	Does it change speed of motor correctly for respective touch input?
Motor	Its speed is adjusted by inputs of various sensors mentioned above	Run motor at different possible speeds	Does the motor runs for all possible specified speeds?
Low Power Modes		Checking overall functionality of the mode with reduced power consumption	Does it show a lower current when connected to the multimeter?

DEMO:

We would be demonstrating the changing colors of RGB LED with respect to change in the orientation of the board measured by the accelerometer which can be used for light control.

Using temperature sensor with ADC and DMA, we would be displaying the temperature which can later on be used to control the speed of the motor.

Using Capacitive touch speed of motor will be controlled through DAC.

EEPROM will be used for data logging through I2C. After certain time data will be read by controller including time stamp using RTC and sent to terminal through UART for demo purpose.

System Diagram:
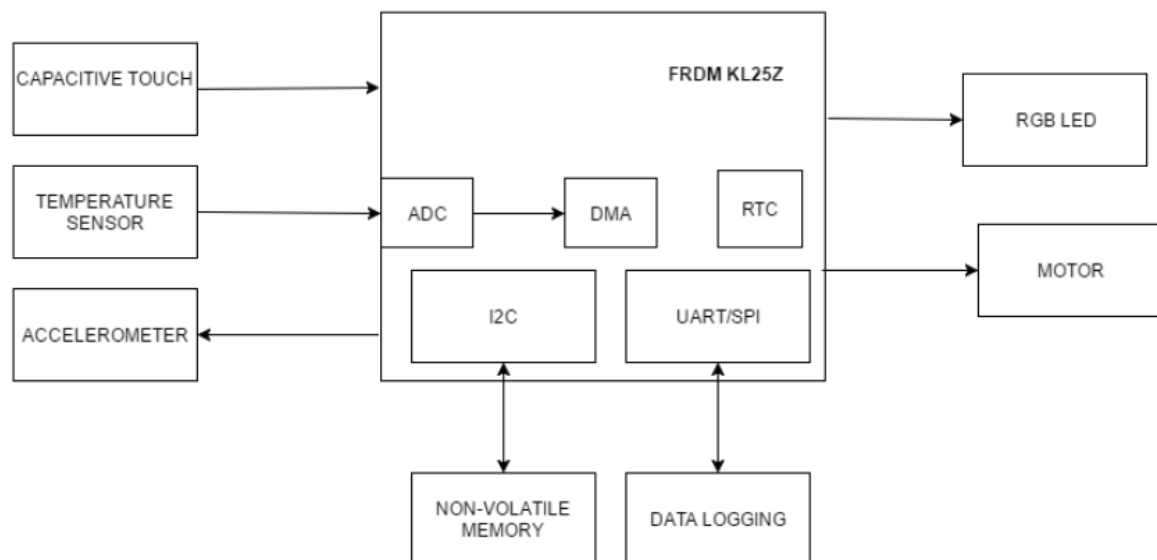
Stretch Goals:

1. Implementing Binary Data Logging and Python script for the user interface
2. Implementing NRF communication between frdm and Beaglebone Black using either NRF module or Zigbee