

## Assignment 4

Basic flow of program and how it optimizes our approach:

- While booting all three devices are created and loaded statically, here we have implemented both `DEVICE_INIT()` and `DEVICE_API_INIT()` which works pretty much the same
- We have used shell commands which will modularize our measurement and data logging approach
- Two hcsr04 provides flexibility in measurement of distances
- In the main program we are using two threads which are statically defined to execute measuring as well as data logging operation for entire 512 pages of EEPROM
- Thread 1 in main program is high priority and corresponds to measuring distances which can be stored in one page
  - We are using 64 bit `data_log` structure which contains both distance and time elapsed (both 32 bit )
  - Each structure is read in one iteration which enables us to maximize the bandwidth given by i2c system call by writing 64 bit at once
  - This also reduces no. of iterations required per page
  - Using 64 bit structure also eases the process of erasing data in the EEPROM
- Thread 2 copies all 8 `data_logging` structures created thread1 and writes it into EEPROM
  - Page by page writing of the data allows the concurrent and well synchronized approach towards for data logging
- Reading of the data from the EEPROM is done with the third shell command
  - Using this command we are enabling user to see all the 512 pages written into the EEPROM
  - This could be well seen if you use putty