Team Anant Probation 2024

On-Board Computer Subsystem

Probation Tasks – Day 1

Task : Interfacing Magnetometer

The On-Board Computer uses multiple communication protocols like I2C and SPI to communicate with various components. In this specific task you will be focusing on one such sensor.

For this task you have to interface a magnetometer using the I2C communication protocol. You will have to make use of file i/o, linux system calls and C language to perform the task. You have been given the datasheet to the sensor. Using the datasheet, you have to write a code in C to access the readings from the sensor.

The code must initialize the sensor to operate in single operation mode and take X,Y and Z axis readings every 3 seconds while printing on the command line. Make sure you initialize all the required registers to configure with the sensor. Write a function to take the measurement using I2C and call it from the main function where the I2C channel is opened.

Focus on the mode of measurement and make use of the right system calls to do so. Your code need not be completely functional but should have the right approach in using I2C to obtain data. Your understanding of the mode of communication through the datasheet and its implementation will be key for judgement.

Explain your code in sufficient comments and store in .txt file before submission.

Save it as <name>_obc_t1.txt.