Project Requirement

Project Brief
Implement the Client/Server model over UART interface. The Client sends the various commands to the server such as getting/setting the internal data registers, update the date/time and so on. The server should respond accordingly to the client.

Project Requirements
The device should support below commands from the server
- Command to change the date & time
- Command to control the LED.
- Command to change the device address
- Commands to get & set the various registers. These registers hold the various parameters such as voltage (Va, Vb & Vc), current (Ia, Ib & Ic) and KW.
- Command to set the periodicity of sending the values
- Command to stop the periodic sending of the values

The device should periodically (period defined by the client) send the register values to the client

The device should display the important parameters such as Voltage, Current, KW periodically on the LCD.

The device should send the appropriate error code in case of erroneos request

The device should interact with RTC over the I2C interface for getting/setting the date & time.

Another internal requirement is to update the registers periodically within the server to simulate the values being received from the sensors. Also the max & average values (avg_max of four readings) for current & voltage should be managed by separate tasks.

LCD/RTC

Server

Energy Meter
Registers

Ia, Ib, Ic
Va, Vb, Vc
KW, ...

Client

Display the
parameters

Registers

Ia, Ib, Ic
Va, Vb, Vc
Kw

va_max,
vb_max,
vc_max
ia_max,
ib_max,
ic_max
Kw

Iavg_max
Vag_max

T1
update_re
gisters

T2
main
update_s
hm

T3
calc_max

T4
calc_avg
_max

Application

RTOS Tasks

Middleware

LCD **RTC** **UART Buffer Handling**

Drivers

GPIO Driver **I2C Driver** **Uart Driver**