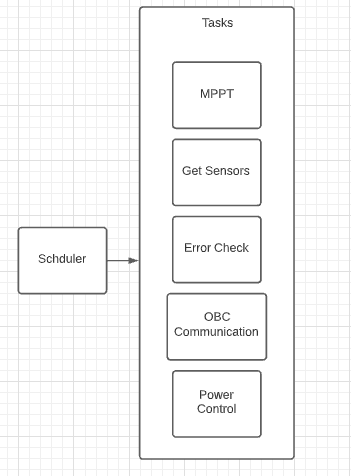
Implementation Plan

Tasks:

1. MPPT:

It’s responsible of stepping down the solar panels Voltages to a fixed voltage to charge the batteries by varying the pwm values to maintain the charging voltage at a stable value.

1. Get Sensors

Gets all sensors data (temp,voltage current,.. etc)

1. Error Check:

It generally checks for safety limits of the sensed quantities, checks for error status of the previous operations whether it’s done successfully or not.

1. OBC Com:

send error check report to obc & gets power control packet

1. Power Control:

Opens/Closes the power on the subsystems based on control packet recieved from OBC

Power Module :

Initialization:

eps\_power\_module\_init

EPS\_PowerModule\_init\_ALL

HAL\_ADC\_Init

HAL\_DMA\_Init

TIM3\_Init

Tasks:

1. MPPT:

Functions:

1. EPS\_PowerModule\_mppt\_update\_pwm

2. EPS\_PowerModule\_mppt\_apply\_pwm

1. Power State:

EPS\_update\_power\_module\_state

Setters/Getters:

Getters:

module\_X: pointer to the power module instance to set.

starting\_pwm\_dutycycle: initial duty cycle at which the power module will start the mppt !0 is not a good start.

htim: pointer to timer peripheral handle for pwm generation.

timer\_channel: timer peripheral channel used for this pwm module.

hadc\_power\_module: pointer to adc peripheral handle that holds the current/voltage measurements.

ADC\_channel\_current: pointer to adc channel with the current measurement.

ADC\_channel\_voltage: pointer to adc channel with the voltage measurement.

module\_top: pointer to top solar panel side power module.

module\_bottom: pointer to bottom solar panel side power module.

module\_left: pointer to left solar panel side power module.

module\_right: pointer to right solar panel side power module

voltage\_avg:

current\_avg:

Setters:

Error status for handling and debugging.

duty\_cycle

step\_size

power\_now\_avg

TC\_74:

Initialization:

1.GPIO\_Init

GPIO\_TC74\_POWER\_Pin

GPIO\_HEATERS\_Pin

2.I2C2\_Init

Setters/Getters:

Getters:

h\_i2c: pointer to the i2c bus peripheral handle that the temperature sensor ics are connected.

device\_i2c\_address: i2c adress of the sensor to request measurement.

receive\_word: pointer to the word where the measurement register will be returned.

Setters:

TC\_74\_STATUS.

OBC Com

Initialization:

1.USART1\_UART\_Init