Main Loop

Initialize system

→ (decision)

While True

Read Inputs

Update State

Set Outputs

Overview of All Possible **Conditions**

Condition 1.1 ==> [Sensor system started/Initialized ADC]

Condition 1.2 ==> [Sanesor looks for the reading]

Condition 2.0 ==> [ADC driver is used to convert analog to digital]

Condition 2.1 ==> [Value of digital is calculated is shown on control board]

Condition 2.2 ==> [Value within the safe range]

Condition 2.3 ==> [Value outside of the safe range]

Condition 2.4 ==> [Control board sends an LED signal]

Overview of All Possible **States**

State 000 ==> [Sensor and initialization and setup, broadcasting ID over UART]

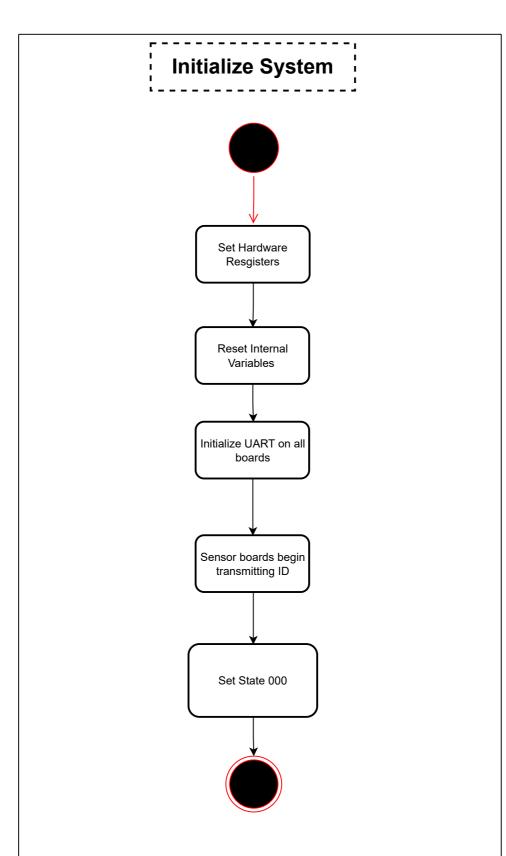State 001 ==> [Sensor taking seeing all the reading]

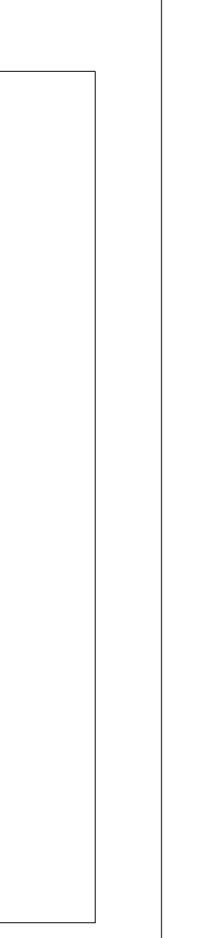State 002 ==> [Conversion to analog from digital via ADC]

State 003 ==> [Value calculated and sent to the board controlling]

State 004 ==> [Power Green LED on and print SAFE on control board]

State 005 ==> [Power Red LED on and print DANGER on control board]

State 006 ==> [Reading is not fully ok → warning zone and yellow LED]

Initialize System

Set Hardware Resgisters

Reset Internal Variables

Initialize UART on all boards

Sensor boards begin transmitting ID

Set State 000

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pH Sensor

Sensor Activates and takes reading

Convert Analog Value to Digital via ADC Driver

Calculate Value of reading

Send Value of Reading to control board

Is value within safe range?
- No
- Yes

Power Red LED on and send DANGER to control board

Power Green LED on and send SAFE to control board

Opacity Sensor

Active LED and takes reading

Convert Analog Value to Digital via ADC Driver

Calculate Value of reading
(1-(Reading/(MinBright Reading- Max Bright reading)))*100 = Clarity %

Send Value of Reading to control board

Is value within safe range?
- No
- Yes

Power Red LED on and se d DANGER to control board

Power Green LED on and send SAFE to control board

Conductivity Sensor

Sensor Activates and takes reading

Condition 2.0

Calculate Value of reading

Send Value of Reading to control board

Is value within safe range?
- No
- Yes

Power Red LED on and send DANGER to control board

Power Green LED on and send SAFE to control board