Start:
- initializations
- clear LEDs
-initialize timer
-connect to wifi
- initial string for status messages

Turn back on after power management

Main Loop

setPulse():
- send 10 micro second pulse to TRIG pin on sensor

Does the sensor need to send a message? — No →

get/incriment heartbeat count (ZeroHour) and put back into hibernation register

Is it time to send a heartbeat message? — Yes → send_flag = 1 for heartbeat message Zerohour = 0

Yes

Socket_Connect():
- connect to socket for sending messages to and recieving messages from gateway

SendStatusMessage():
- take current strings for message

Tx_Send():
- send the status message
-incriment send counter

Is the counter > 5 — No

Yes

Did the message send successfully? — No

Yes

Rx_Recieve():
- wait to recieve message from gateway

Check_Response():
Did the user successfully park? — Yes → RGB_Color();
-Update status to closed
-Turn LEDs green
-greencount = 1

No

Is the user illegally parked? — Yes → RGB_Color();
- Update status to illegal
-Turn LEDs red

No

Did the sensor recieve OK from the gateway? — Yes → SendStatusMessage();
Clear message after it is sent

No

Did the sensor recieve ACK from the gateway? — Yes → SendStatusMessage();

No

Unknown/Wrong message:
- flash LEDs purple

Are the green LEDs currently on?

Yes

Incriment GreenCount

Have the green LEDs been on for 20 seconds? — Yes → Turn off green LEDs greencount = 0

No

Sleep for 1 second

Put the micro in sleep mode? — No

Yes

Sleep mode for power management 3s

Interrupt for Sensor? — No / Yes

Sensor ISR

Read the Echo pin, set to Echo_Echo

Is Echo_Echo High? — Yes → Start timer

No

End the timer

GetDistance():
Is there something in front of the sensor? — Yes → incriment ans

No → Zero out ans

Has something been in front of the sensor for more than 5 seconds? — Yes → Was the spot previously open? — Yes → Turn the LEDs blue
- Set the change bit to 1 for messages
- Set spot status to busy
- Turn on Bluetooth
- send_flag = 1

No → Set the change bit to 0

No

Was the spot busy? — Yes

No

Was the spot closed? — Yes → - Turn off the blue LEDs
- Turn off bluetooth
- Change the spot status to open
- change the change bit to 1
- send_flag = 1

No

Was the spot illegal? — Yes

No

Does the micro need to send a message? — No → Set the change bit to 0