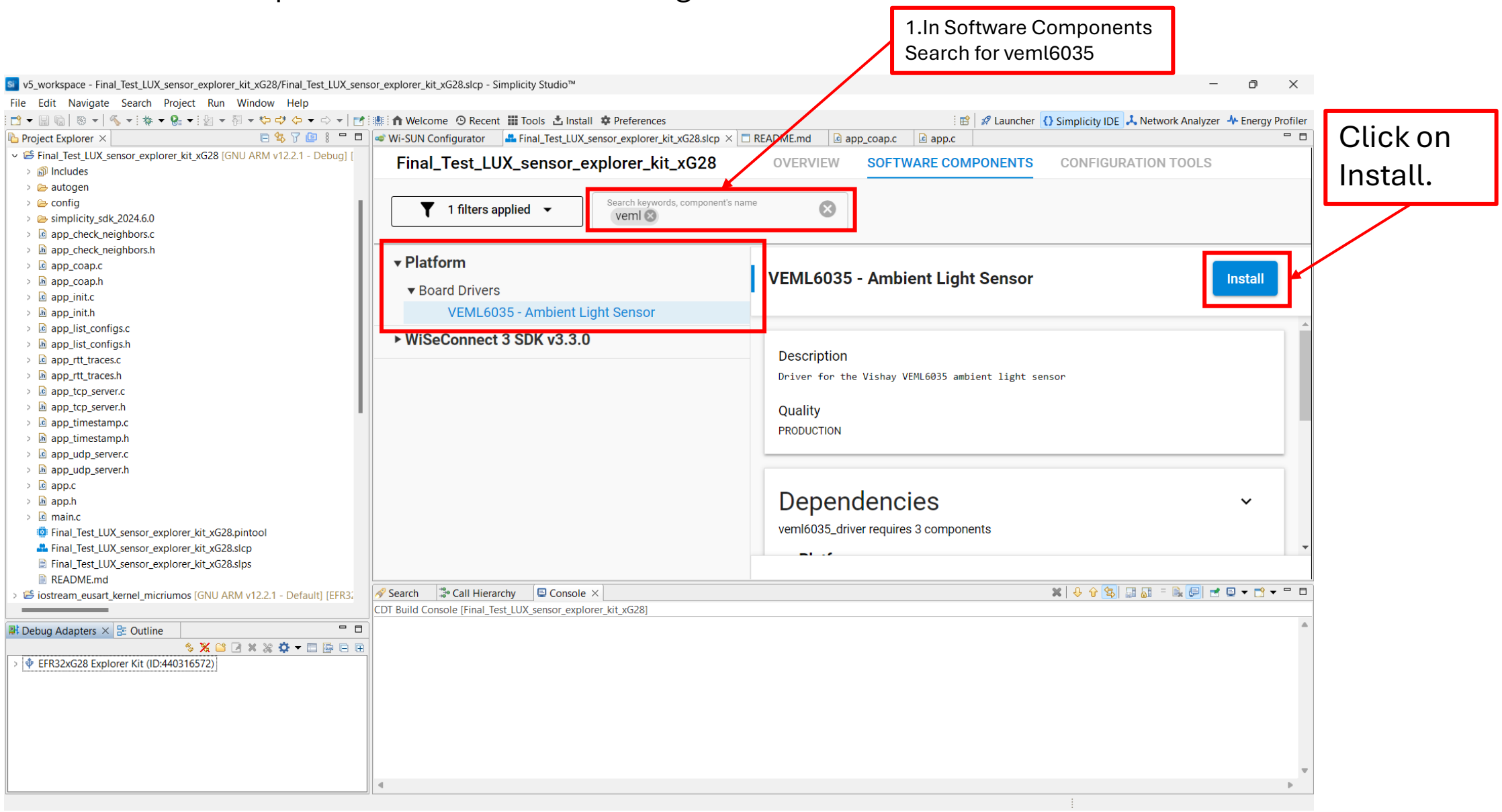
Sensor Interfacing with Wi-SUN Explorer Kit (EFR32ZG28)

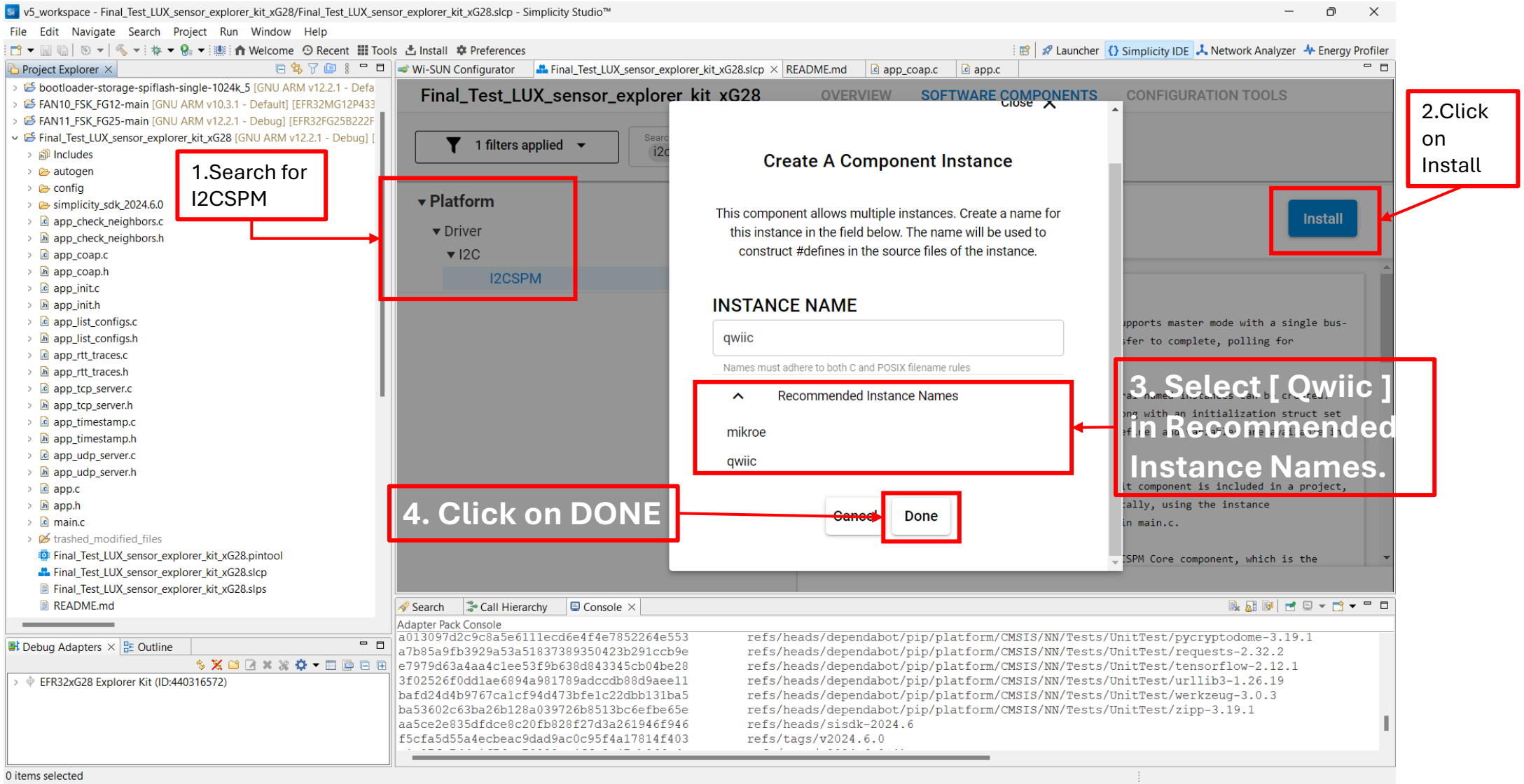
Step 1: Creating Application Monitoring Project

1. Create Wi-SUN Node Monitoring Application
2. Goto .slcp file
3. Click on Software Component
4. Remove “Wi-SUN OTA DFU” Component
5. Add “CoAP” Component

Note:- This steps are same as that of the Wi-SUN node monitoring application.

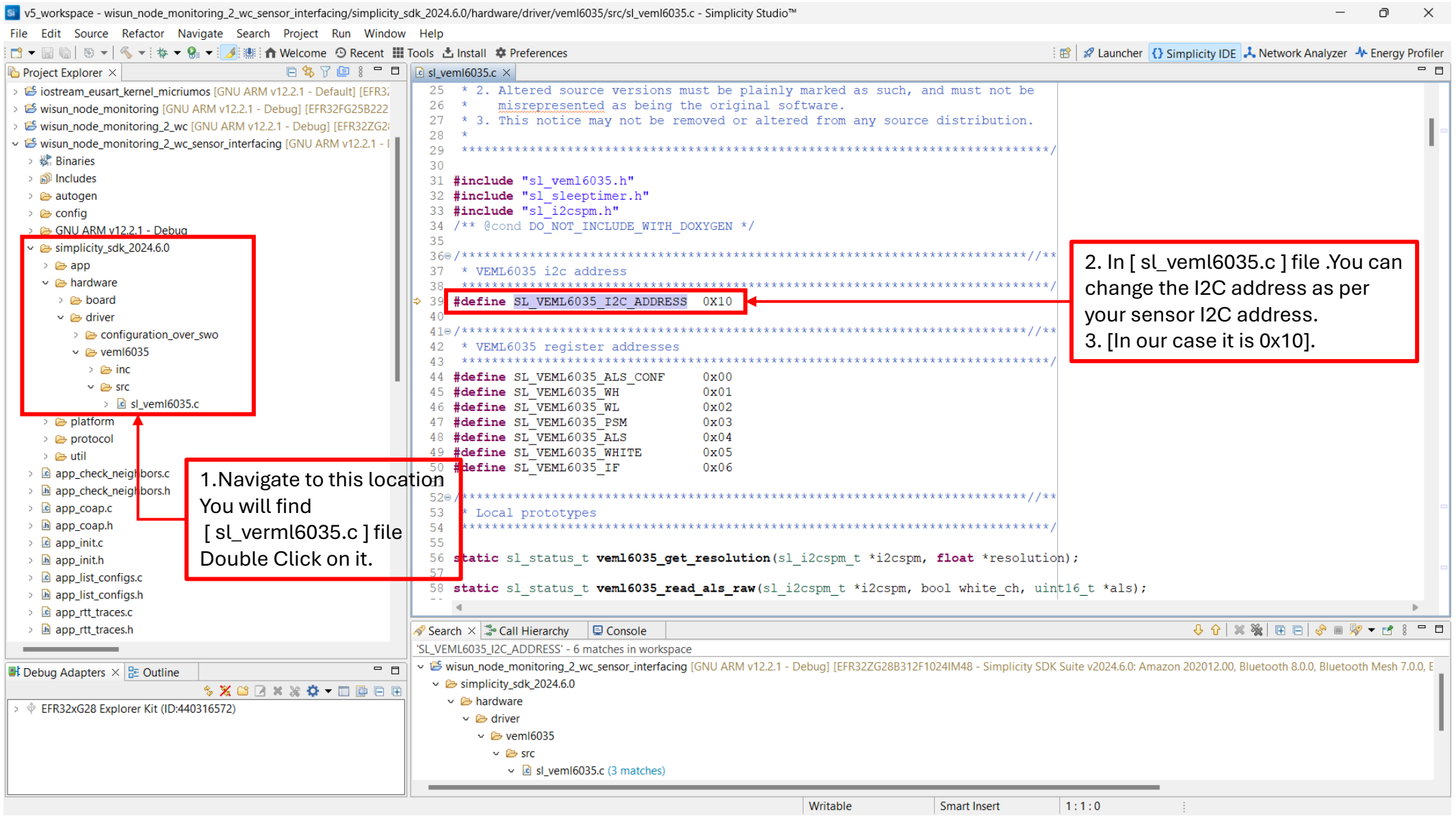
Step 2: Add Software components for Sensor Interfacing.

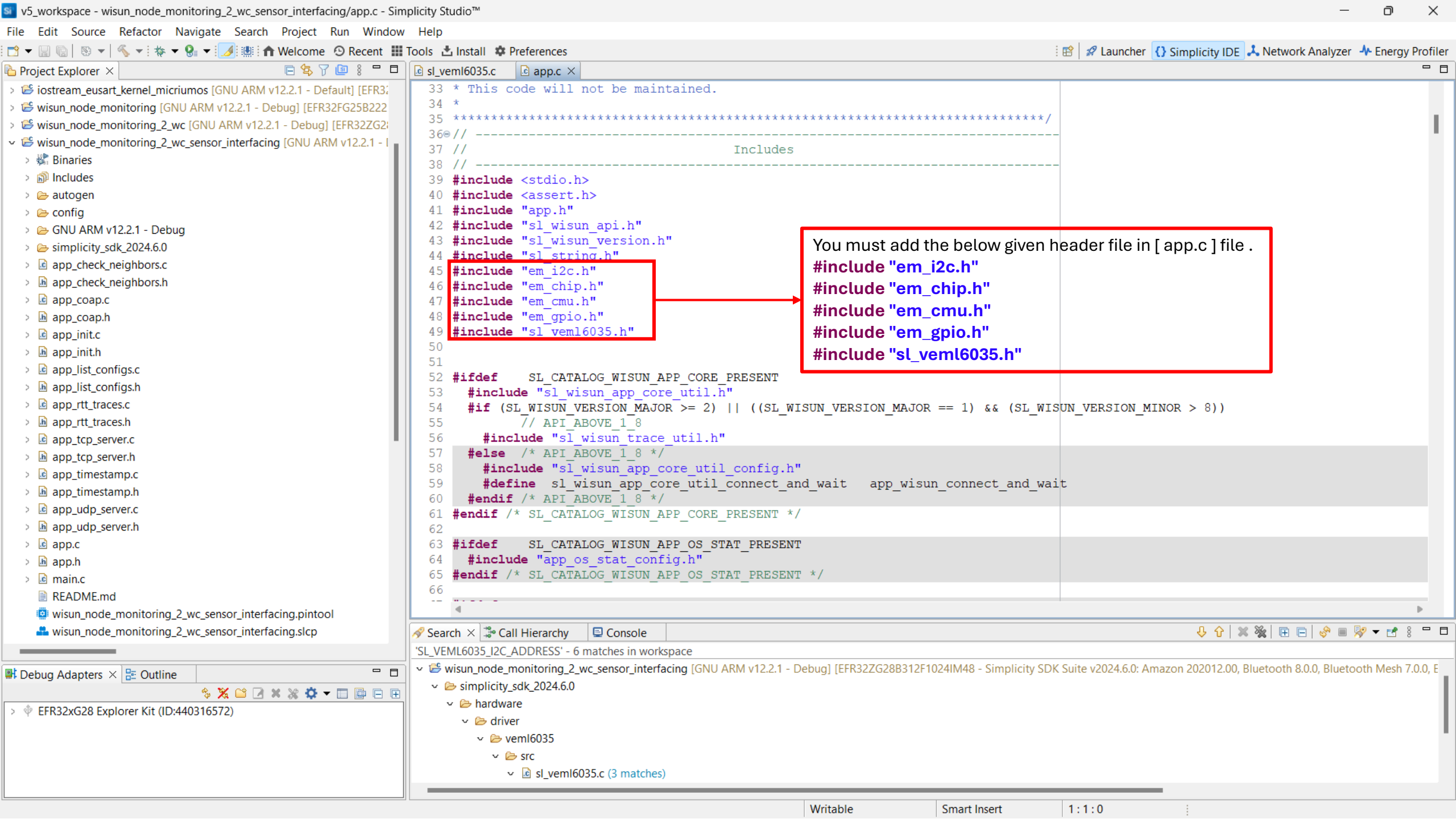


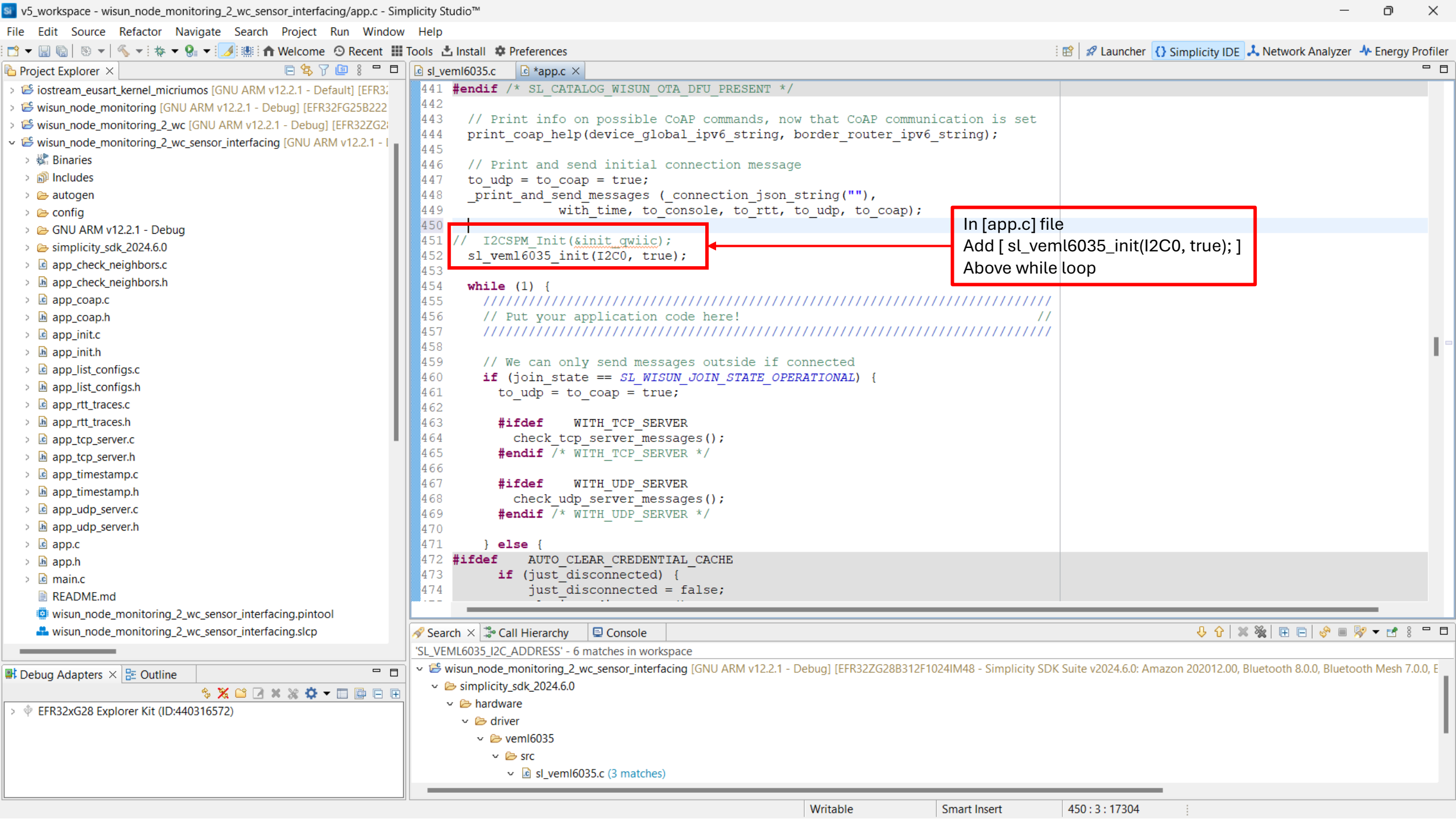

v5_workspace - Final_Test_LUX_sensor_explorer_kit_xG28/Final_Test_LUX_sensor_explorer_kit_xG28.slcp - Simplicity Studio™
File Edit Navigate Search Project Run Window Help
Welcome Recent Tools Install Preferences
Launcher Simplicity IDE Network Analyzer Energy Profiler
Project Explorer
bootloader-storage-spiflash-single-1024k_5 [GNU ARM v12.2.1 - Defa
FAN10_FSK_FG12-main [GNU ARM v10.3.1 - Default] [EFR32MG12P433
FAN11_FSK_FG25-main [GNU ARM v12.2.1 - Debug] [EFR32FG25B222F
Final_Test_LUX_sensor_explorer_kit_xG28 [GNU ARM v12.2.1 - Debug]
Includes
autogen
config
simplicity_sdk_2024.6.0
app_check_neighbors.c
app_check_neighbors.h
app_coap.c
app_coap.h
app_init.c
app_init.h
app_list_configs.c
app_list_configs.h
app_rtt_traces.c
app_rtt_traces.h
app_tcp_server.c
app_tcp_server.h
app_timestamp.c
app_timestamp.h
app_udp_server.c
app_udp_server.h
app.c
app.h
main.c
trashed_modified_files
Final_Test_LUX_sensor_explorer_kit_xG28.pintool
Final_Test_LUX_sensor_explorer_kit_xG28.slcp
Final_Test_LUX_sensor_explorer_kit_xG28.slps
README.md
1.Search for I2CSPM
Wi-SUN Configurator
Final_Test_LUX_sensor_explorer_kit_xG28.slcp
README.md
app_coap.c
app.c
Final_Test_LUX_sensor_explorer_kit_xG28
OVERVIEW
SOFTWARE COMPONENTS
CONFIGURATION TOOLS
1 filters applied
Platform
Driver
I2C
I2CSPM
Close
Create A Component Instance
This component allows multiple instances. Create a name for this instance in the field below. The name will be used to construct #defines in the source files of the instance.
INSTANCE NAME
qwiic
Names must adhere to both C and POSIX filename rules
Recommended Instance Names
mikroe
qwiic
Cancel
Done
2.Click on Install
Install
3. Select [Qwiic] in Recommended Instance Names.
4. Click on DONE
Search
Call Hierarchy
Console
Adapter Pack Console
a013097d2c9c8a5e6111ecd6e4f4e7852264e553 refs/heads/dependabot/pip/platform/CMSIS/NN/Tests/UnitTest/pycryptodome-3.19.1
a7b85a9fb3929a53a51837389350423b291ccb9e refs/heads/dependabot/pip/platform/CMSIS/NN/Tests/UnitTest/requests-2.32.2
e7979d63a4aa4c1ee53f9b638d843345cb04be28 refs/heads/dependabot/pip/platform/CMSIS/NN/Tests/UnitTest/tensorflow-2.12.1
3f02526f0dd1ae6894a981789adccdb88d9aee11 refs/heads/dependabot/pip/platform/CMSIS/NN/Tests/UnitTest/urllib3-1.26.19
bafd24d4b9767ca1cf94d473bfe1c22dbb131ba5 refs/heads/dependabot/pip/platform/CMSIS/NN/Tests/UnitTest/werkzeug-3.0.3
ba53602c63ba26b128a039726b8513bc6efbe65e refs/heads/dependabot/pip/platform/CMSIS/NN/Tests/UnitTest/zipp-3.19.1
aa5ce2e835dfdce8c20fb828f27d3a261946f946 refs/heads/sisdk-2024.6
f5cfa5d55a4ecbeac9dad9ac0c95f4a17814f403 refs/tags/v2024.6.0
Debug Adapters
Outline
EFR32xG28 Explorer Kit (ID:440316572)
0 items selected

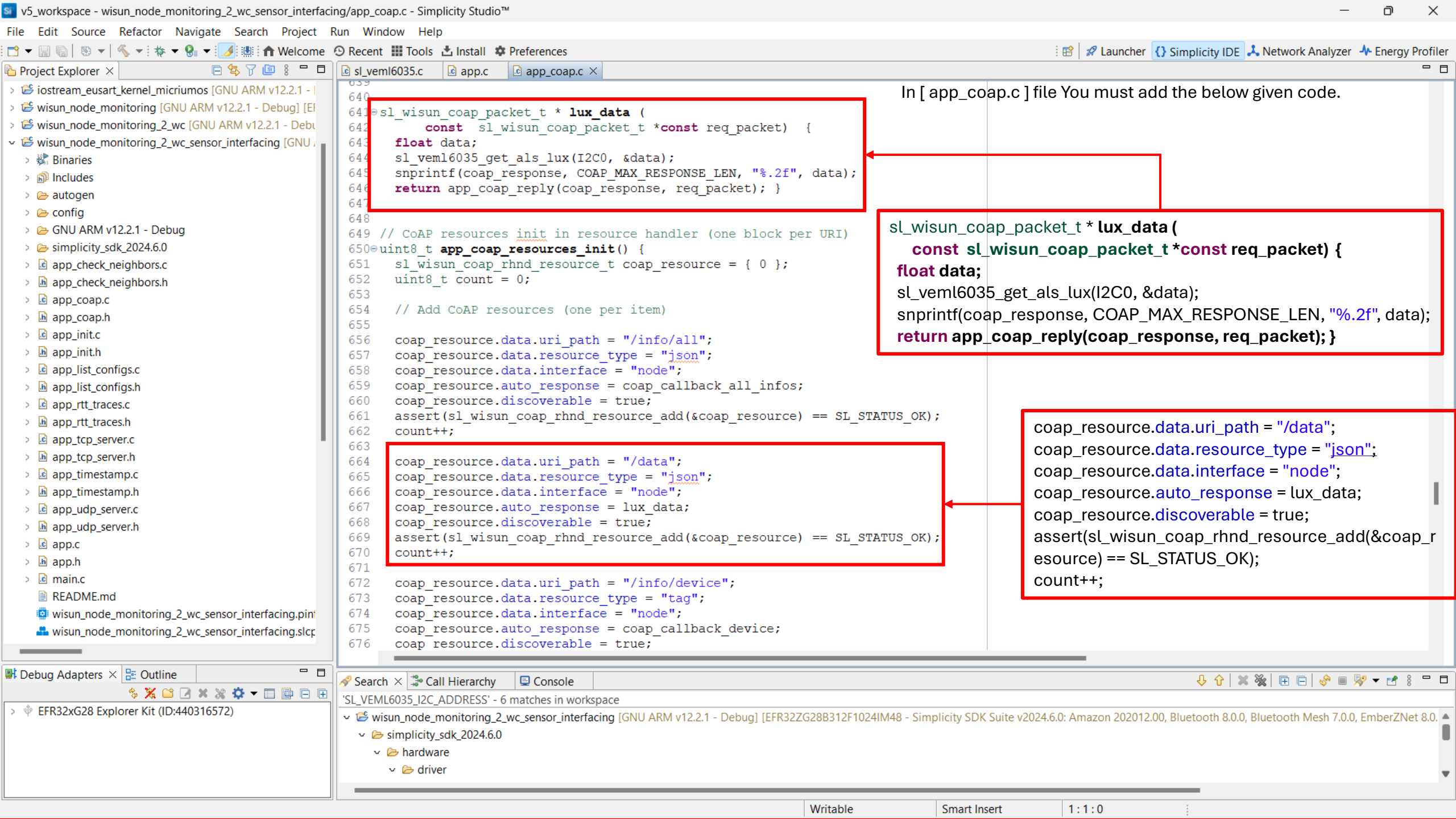
Step 3 : Add few lines of code

Note: while editing the [sl_veml6035.c] file it will ask you to save a copy.
So pls make sure to save a copy.




v5_workspace - wisun_node_monitoring_2_wc_sensor_interfacing/app.c - Simplicity Studio™
File Edit Source Refactor Navigate Search Project Run Window Help
Welcome Recent Tools Install Preferences
Launcher Simplicity IDE Network Analyzer Energy Profiler
Project Explorer
iostream_eusart_kernel_micriumos [GNU ARM v12.2.1 - Default] [EFR3
wisun_node_monitoring [GNU ARM v12.2.1 - Debug] [EFR32FG25B222
wisun_node_monitoring_2_wc [GNU ARM v12.2.1 - Debug] [EFR32ZG2
wisun_node_monitoring_2_wc_sensor_interfacing [GNU ARM v12.2.1 - I
Binaries
Includes
autogen
config
GNU ARM v12.2.1 - Debug
simplicity_sdk_2024.6.0
app_check_neighbors.c
app_check_neighbors.h
app_coap.c
app_coap.h
app_init.c
app_init.h
app_list_configs.c
app_list_configs.h
app_rtt_traces.c
app_rtt_traces.h
app_tcp_server.c
app_tcp_server.h
app_timestamp.c
app_timestamp.h
app_udp_server.c
app_udp_server.h
app.c
app.h
main.c
README.md
wisun_node_monitoring_2_wc_sensor_interfacing.pintool
wisun_node_monitoring_2_wc_sensor_interfacing.slcp
sl_veml6035.c
app.c
33 * This code will not be maintained.
34 *
35 *****/
36// -----
37 // Includes
38 // -----
39 #include <stdio.h>
40 #include <assert.h>
41 #include "app.h"
42 #include "sl_wisun_api.h"
43 #include "sl_wisun_version.h"
44 #include "sl_string.h"
45 #include "em_i2c.h"
46 #include "em_chip.h"
47 #include "em_cmu.h"
48 #include "em_gpio.h"
49 #include "sl_veml6035.h"
50
51
52 #ifdef SL_CATALOG_WISUN_APP_CORE_PRESENT
53 #include "sl_wisun_app_core_util.h"
54 #if (SL_WISUN_VERSION_MAJOR >= 2) || ((SL_WISUN_VERSION_MAJOR == 1) && (SL_WISUN_VERSION_MINOR > 8))
55 // API_ABOVE_1_8
56 #include "sl_wisun_trace_util.h"
57 #else /* API_ABOVE_1_8 */
58 #include "sl_wisun_app_core_util_config.h"
59 #define sl_wisun_app_core_util_connect_and_wait app_wisun_connect_and_wait
60 #endif /* API_ABOVE_1_8 */
61 #endif /* SL_CATALOG_WISUN_APP_CORE_PRESENT */
62
63 #ifdef SL_CATALOG_WISUN_APP_OS_STAT_PRESENT
64 #include "app_os_stat_config.h"
65 #endif /* SL_CATALOG_WISUN_APP_OS_STAT_PRESENT */
66
You must add the below given header file in [app.c] file .
#include "em_i2c.h"
#include "em_chip.h"
#include "em_cmu.h"
#include "em_gpio.h"
#include "sl_veml6035.h"
Search
Call Hierarchy
Console
'SL_VEML6035_I2C_ADDRESS' - 6 matches in workspace
wisun_node_monitoring_2_wc_sensor_interfacing [GNU ARM v12.2.1 - Debug] [EFR32ZG28B312F1024IM48 - Simplicity SDK Suite v2024.6.0: Amazon 202012.00, Bluetooth 8.0.0, Bluetooth Mesh 7.0.0,
simplicity_sdk_2024.6.0
hardware
driver
veml6035
src
sl_veml6035.c (3 matches)
Debug Adapters
Outline
EFR32xG28 Explorer Kit (ID:440316572)
Writable
Smart Insert
1 : 1 : 0


v5_workspace - wisun_node_monitoring_2_wc_sensor_interfacing/app.c - Simplicity Studio™
File Edit Source Refactor Navigate Search Project Run Window Help
Welcome Recent Tools Install Preferences
Launcher Simplicity IDE Network Analyzer Energy Profiler
Project Explorer
iostream_eusart_kernel_micriumos [GNU ARM v12.2.1 - Default] [EFR3
wisun_node_monitoring [GNU ARM v12.2.1 - Debug] [EFR32FG25B222
wisun_node_monitoring_2_wc [GNU ARM v12.2.1 - Debug] [EFR32ZG2
wisun_node_monitoring_2_wc_sensor_interfacing [GNU ARM v12.2.1 - I
Binaries
Includes
autogen
config
GNU ARM v12.2.1 - Debug
simplicity_sdk_2024.6.0
app_check_neighbors.c
app_check_neighbors.h
app_coap.c
app_coap.h
app_init.c
app_init.h
app_list_configs.c
app_list_configs.h
app_rtt_traces.c
app_rtt_traces.h
app_tcp_server.c
app_tcp_server.h
app_timestamp.c
app_timestamp.h
app_udp_server.c
app_udp_server.h
app.c
app.h
main.c
README.md
wisun_node_monitoring_2_wc_sensor_interfacing.pintool
wisun_node_monitoring_2_wc_sensor_interfacing.slcp
sl_veml6035.c
*app.c
441 #endif /* SL_CATALOG_WISUN_OTA_DFU_PRESENT */
442
443 // Print info on possible CoAP commands, now that CoAP communication is set
444 print_coap_help(device_global_ipv6_string, border_router_ipv6_string);
445
446 // Print and send initial connection message
447 to_udp = to_coap = true;
448 _print_and_send_messages (_connection_json_string(""),
449 with_time, to_console, to_rtt, to_udp, to_coap);
450
451 // I2CSPM_Init(&init_qwiic);
452 sl_veml6035_init(I2C0, true);
453
454 while (1) {
455 //
456 // Put your application code here! //
457 //
458
459 // We can only send messages outside if connected
460 if (join_state == SL_WISUN_JOIN_STATE_OPERATIONAL) {
461 to_udp = to_coap = true;
462
463 #ifdef WITH_TCP_SERVER
464 check_tcp_server_messages();
465 #endif /* WITH_TCP_SERVER */
466
467 #ifdef WITH_UDP_SERVER
468 check_udp_server_messages();
469 #endif /* WITH_UDP_SERVER */
470
471 } else {
472 #ifdef AUTO_CLEAR_CREDENTIAL_CACHE
473 if (just_disconnected) {
474 just_disconnected = false;
In [app.c] file
Add [sl_veml6035_init(I2C0, true);]
Above while loop
Search
Call Hierarchy
Console
'SL_VEML6035_I2C_ADDRESS' - 6 matches in workspace
wisun_node_monitoring_2_wc_sensor_interfacing [GNU ARM v12.2.1 - Debug] [EFR32ZG28B312F1024IM48 - Simplicity SDK Suite v2024.6.0: Amazon 202012.00, Bluetooth 8.0.0, Bluetooth Mesh 7.0.0, E
simplicity_sdk_2024.6.0
hardware
driver
veml6035
src
sl_veml6035.c (3 matches)
Debug Adapters
Outline
EFR32xG28 Explorer Kit (ID:440316572)
Writable
Smart Insert
450 : 3 : 17304


v5_workspace - wisun_node_monitoring_2_wc_sensor_interfacing/app_coap.c - Simplicity Studio™
File Edit Source Refactor Navigate Search Project Run Window Help
Welcome Recent Tools Install Preferences
Launcher Simplicity IDE Network Analyzer Energy Profiler
Project Explorer
iostream_eusart_kernel_micriumos [GNU ARM v12.2.1 -
wisun_node_monitoring [GNU ARM v12.2.1 - Debug] [E
wisun_node_monitoring_2_wc [GNU ARM v12.2.1 - Debu
wisun_node_monitoring_2_wc_sensor_interfacing [GNU
Binaries
Includes
autogen
config
GNU ARM v12.2.1 - Debug
simplicity_sdk_2024.6.0
app_check_neighbors.c
app_check_neighbors.h
app_coap.c
app_coap.h
app_init.c
app_init.h
app_list_configs.c
app_list_configs.h
app_rtt_traces.c
app_rtt_traces.h
app_tcp_server.c
app_tcp_server.h
app_timestamp.c
app_timestamp.h
app_udp_server.c
app_udp_server.h
app.c
app.h
main.c
README.md
wisun_node_monitoring_2_wc_sensor_interfacing.pint
wisun_node_monitoring_2_wc_sensor_interfacing.slcp
sl_veml6035.c
app.c
app_coap.c
In [app_coap.c] file You must add the below given code.
sl_wisun_coap_packet_t * lux_data (
const sl_wisun_coap_packet_t *const req_packet) {
float data;
sl_veml6035_get_als_lux(I2C0, &data);
snprintf(coap_response, COAP_MAX_RESPONSE_LEN, "%.2f", data);
return app_coap_reply(coap_response, req_packet); }
// CoAP resources init in resource handler (one block per URI)
uint8_t app_coap_resources_init() {
sl_wisun_coap_rhnd_resource_t coap_resource = { 0 };
uint8_t count = 0;
// Add CoAP resources (one per item)
coap_resource.data.uri_path = "/info/all";
coap_resource.data.resource_type = "json";
coap_resource.data.interface = "node";
coap_resource.auto_response = coap_callback_all_infos;
coap_resource.discoverable = true;
assert(sl_wisun_coap_rhnd_resource_add(&coap_resource) == SL_STATUS_OK);
count++;
coap_resource.data.uri_path = "/data";
coap_resource.data.resource_type = "json";
coap_resource.data.interface = "node";
coap_resource.auto_response = lux_data;
coap_resource.discoverable = true;
assert(sl_wisun_coap_rhnd_resource_add(&coap_resource) == SL_STATUS_OK);
count++;
coap_resource.data.uri_path = "/info/device";
coap_resource.data.resource_type = "tag";
coap_resource.data.interface = "node";
coap_resource.auto_response = coap_callback_device;
coap_resource.discoverable = true;
sl_wisun_coap_packet_t * lux_data (
const sl_wisun_coap_packet_t *const req_packet) {
float data;
sl_veml6035_get_als_lux(I2C0, &data);
snprintf(coap_response, COAP_MAX_RESPONSE_LEN, "%.2f", data);
return app_coap_reply(coap_response, req_packet); }
coap_resource.data.uri_path = "/data";
coap_resource.data.resource_type = "json";
coap_resource.data.interface = "node";
coap_resource.auto_response = lux_data;
coap_resource.discoverable = true;
assert(sl_wisun_coap_rhnd_resource_add(&coap_r
esource) == SL_STATUS_OK);
count++;
Debug Adapters
Outline
EFR32xG28 Explorer Kit (ID:440316572)
Search
Call Hierarchy
Console
'SL_VEML6035_I2C_ADDRESS' - 6 matches in workspace
wisun_node_monitoring_2_wc_sensor_interfacing [GNU ARM v12.2.1 - Debug] [EFR32ZG28B312F1024IM48 - Simplicity SDK Suite v2024.6.0: Amazon 202012.00, Bluetooth 8.0.0, Bluetooth Mesh 7.0.0, EmberZNet 8.0.
simplicity_sdk_2024.6.0
hardware
driver
Writable
Smart Insert
1 : 1 : 0

Step 4: Upload [.s37] file and check the data on oneM2M

After That Just Build the Project and Flash [.s37] file to the Board