BUILD AND USE CUSTOM LIBRARY USING EM9305 SDK

Product Family: **EM BLE System-On-Chip solution**

Part Number: EM9305
Keywords: SDK, library, build, cmake, compiled library

PURPOSE

The purpose of current application note is to provide guidelines to create your own library. This note outlines library generation and use, linking a simple custom library and project example.

SCOPE

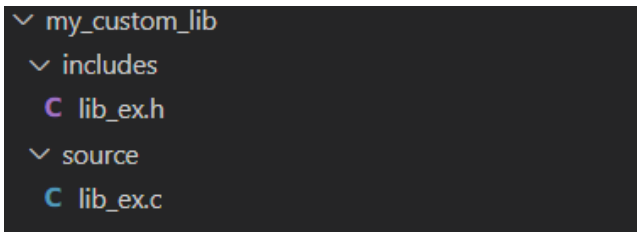
This example is applicable to EM9305 SDK using cmake utility to build the targeted firmware.

SOFTWARE PRE-REQUISITE

Synopsys Metaware IDE toolchain (Version 2021.03 or more recent version) has been installed (Full or Lite version) in Windows environment. EM9305 SDK is installed and initialized.

COMPILED LIBRARY GENERATION PRINCIPLE

Add a new library folder named <my_custom_lib> under <sdk/libs> directory following a subdirectory structure <includes> and <source> to keep consistency. Folder <includes> will host lib_ex.h include file and <source> folder includes .c files.



To provide library build directives a CMakeList.txt is required within <my_custom_lib> library:

```
PROJECT(my_custom_lib C)
SET(${PROJECT_NAME}_SRCS
    source/lib_ex.c
    includes/lib_ex.h
)
ARC_ADD_LIBRARY(${PROJECT_NAME}
${${PROJECT_NAME}_SRCS})
ARC_INCLUDE_DIRECTORIES(${PROJECT_NAME}
    ${COMMON_INCLUDES}
    includes
)
```

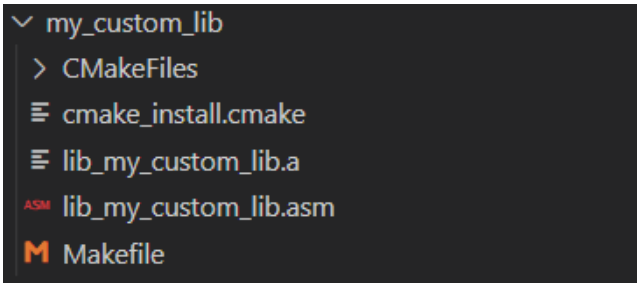
Finally, library folder name needs to be added to the subdirectory list located into <CMakelists.txt> file under <sdk/libs> directory to be considered during the build process.

```
ADD_SUBDIRECTORY(my_custom_lib)
```

Running cmake command in a terminal window should build library.

```
cmake --build .\build --target all
```

The output of library is available in the <sdk/build/libs/my_custom_lib> folder:



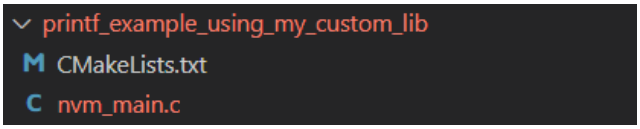
EM9305 SDK library naming convention has been applied adding prefix “lib_” to the library name ending with .a extension (archive).

The .asm file is useful to verify the resources used by compiled library and any detail about implementation.

A Makefile automatically generated by cmake build system should not be edited.

LINK A PROJECT WITH COMPILED LIBRARY

In principle, the process of using a compiled library is the same as using an SDK pre-compiled library.



printf_example standard project example has been reused and modified to call function implemented into my_custom_lib.

nvm_main.c includes library header files required:

```
#include "lib_ex.h"
```

MAINTENANCE

In case library source code has been modified, build system will automatically regenerate the custom library before building target project using the same library.

It is possible to be more verbose during the build process in case of issue by adding the VERBOSE option:

```
# cmake –build .\build –target all
VERBOSE=1
```

This option will show all the commands issues to complete the build process.

CONCLUSIONS

This document provides a quick overview to setup EM9305 SDK with a custom library across a simple example and how to use. Please contact your support team in case of more specific needs related to this topic. More information might available into DesignWare® MetaWare® ELF Linker and Utilities User's Guide from Synopsys.