

AN13114

Enable More USB Examples on M4 Core for i.MX RT1170

Rev. 0 — January 20, 2021

Application Note

by: NXP Semiconductors

1 Introduction

i.MX RT1170 works with M7 and M4, on which all USB examples can run. However, all USB examples in the release package are enabled on M7.

Only example `host_hid_mouse` and `dev_hid_mouse` are enabled on M4. Since USB projects on both cores share the same demo source files but with different project settings, examples are migratable.

This document describes how to migrate USB examples from M7 to M4 with different toolchains. There are four main steps required:

1. Create an M4 project.
2. Rearrange source files.
3. Rearrange project files.
4. Adjust project settings.

This document takes the `dev_msc_disk_bm` as an example to show how to enable USB examples on M4 core with IAR, MDK, ARMGCC and MCUXpresso IDE.

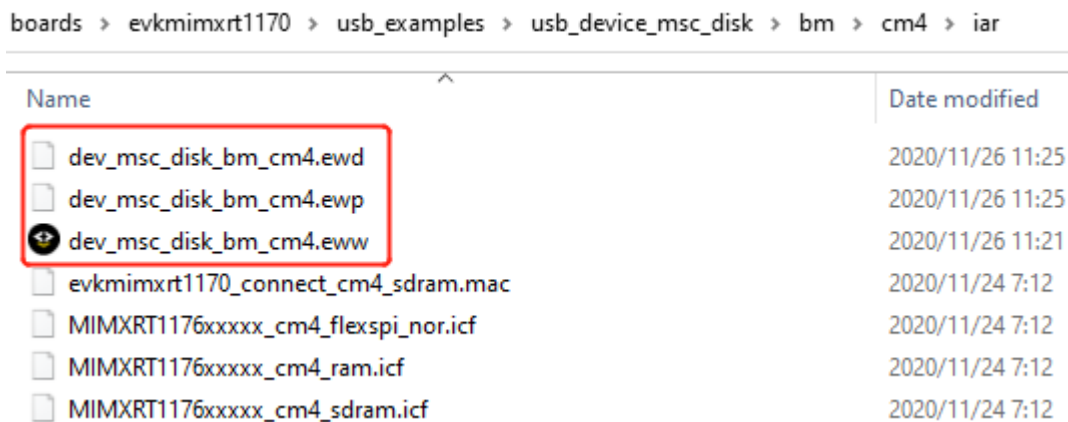
2 IAR

1. Create an M4 project


- a. Copy the `cm4` folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_hid_mouse/bm/cm4` to the folder where the example needs to be enabled.

In this case, copy the `cm4` folder to `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm`.

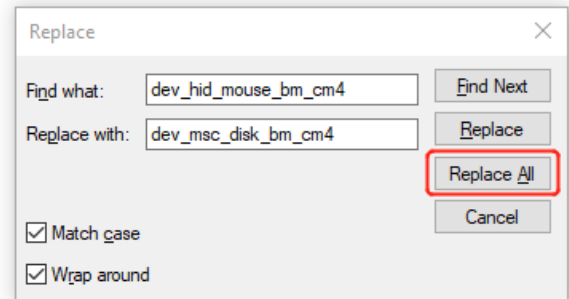
- b. Open the `iar` folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4/iar`.
- c. Change the file name `dev_hid_mouse_bm_cm4` to `dev_msc_disk_bm_cm4` respectively.




- d. Open the `dev_msc_disk_bm_cm4.eww` and `dev_msc_disk_bm_cm4.ewp` files with a text editor, such as notepad, notepad++, sublime or visual studio code.
- e. Search and replace all `dev_hid_mouse_bm_cm4` with `dev_msc_disk_bm_cm4`, and then save the files.

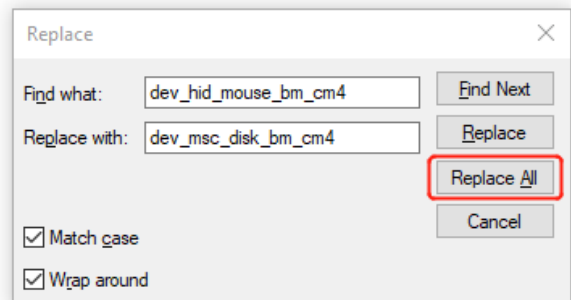
 `dev_hid_mouse_bm_cm4.eww` - Notepad

```
File Edit Format View Help
<?xml version="1.0" encoding="iso-8859-1"?>
<workspace>
  <batchBuild>
    <batchDefinition>
      <name>all</name>
      <member>
        <project>dev_hid_mouse_bm_cm4</project>
        <configuration>debug</configuration>
      </member>
      <member>
        <project>dev_hid_mouse_bm_cm4</project>
        <configuration>release</configuration>
      </member>
    </batchDefinition>
  </batchBuild>
</workspace>
```



 `dev_msc_disk_bm_cm4.ewp` - Notepad

```
File Edit Format View Help
<?xml version="1.0" encoding="UTF-8"?>
<project>
  <fileVersion>3</fileVersion>
  <configuration>
    <name>debug</name>
    <toolchain>
      <name>ARM</name>
    </toolchain>
    <debug>1</debug>
    <settings>
      <name>General</name>
      <archiveVersion>3</archiveVersion>
      <data>
```



2. Rearrange source files

- a. Open the `cm4` folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4`, and delete all files with the `.c` and `.h` extension.
- b. Copy files with the `.c` and `.h` extension in the `cm7` folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm7` to the `cm4` folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4`.

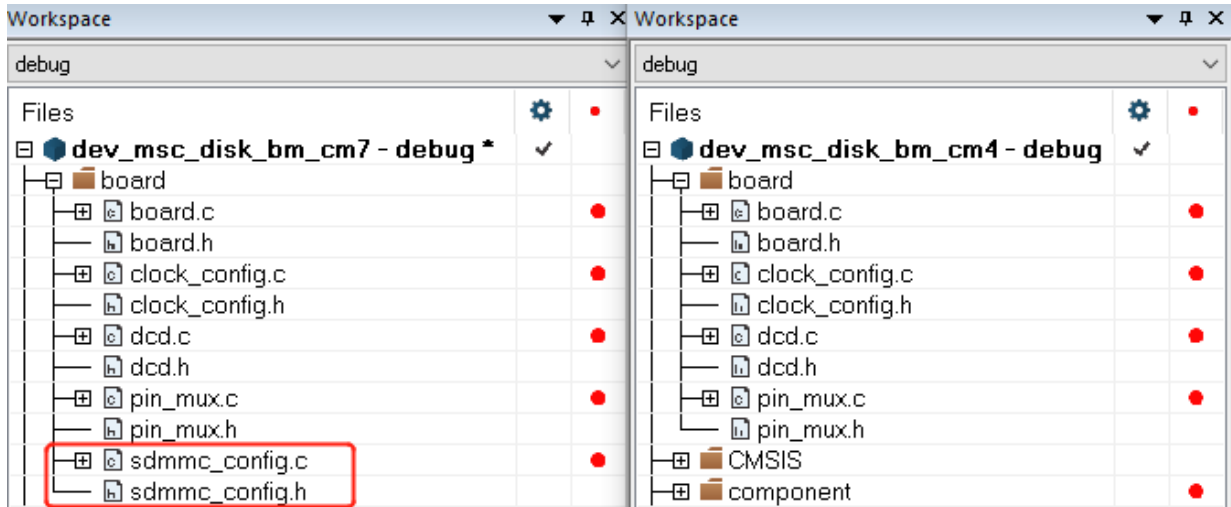
boards > evkmimxrt1170 > usb_examples > usb_device_msc_disk > bm > cm7		boards > evkmimxrt1170 > usb_examples > usb_device_msc_disk > bm > cm4	
Name	Date modified	Name	Date modified
armgcc	2020/11/24 7:12	armgcc	2020/11/26 10:44
iar	2020/11/24 7:12	iar	2020/11/26 10:44
mdk	2020/11/24 7:12	mdk	2020/11/26 10:44
board.c	2020/11/24 7:12	dev_hid_mouse_bm_cm4_v3_8.xml	2020/11/24 7:12
board.h	2020/11/24 7:12	evkmimxrt1170_connect_cm4_cm4side.jlinkscript	2020/11/24 7:12
clock_config.c	2020/11/24 7:12	evkmimxrt1170_connect_cm4_cm4side_sdram.jlinkscript	2020/11/24 7:12
clock_config.h	2020/11/24 7:12	readme.pdf	2020/11/24 7:12
dcd.c	2020/11/24 7:12	readme.txt	2020/11/24 7:12
dcd.h	2020/11/24 7:12		
dev_msc_disk_bm_cm7_v3_8.xml	2020/11/24 7:12		
disk.c	2020/11/24 7:12		
disk.h	2020/11/24 7:12		
evkmimxrt1170_connect_cm4_cm7side.jlinkscript	2020/11/24 7:12		
pin_mux.c	2020/11/24 7:12		
pin_mux.h	2020/11/23 7:12		
readme.pdf	2020/11/24 7:12		
readme.txt	2020/11/24 7:12		
usb_device_ch9.c	2020/11/24 7:12		
usb_device_ch9.h	2020/11/24 7:12		
usb_device_class.c	2020/11/24 7:12		
usb_device_class.h	2020/11/24 7:12		
usb_device_config.h	2020/11/24 7:12		
usb_device_descriptor.c	2020/11/24 7:12		
usb_device_descriptor.h	2020/11/24 7:12		
usb_device_msc.c	2020/11/24 7:12		
usb_device_msc.h	2020/11/24 7:12		
usb_device_msc_ufi.c	2020/11/24 7:12		
usb_device_msc_ufi.h	2020/11/24 7:12		
usb_disk_adapter.h	2020/11/24 7:12		
usb_sdcard_adapter.c	2020/11/24 7:12		

3. Rearrange project files

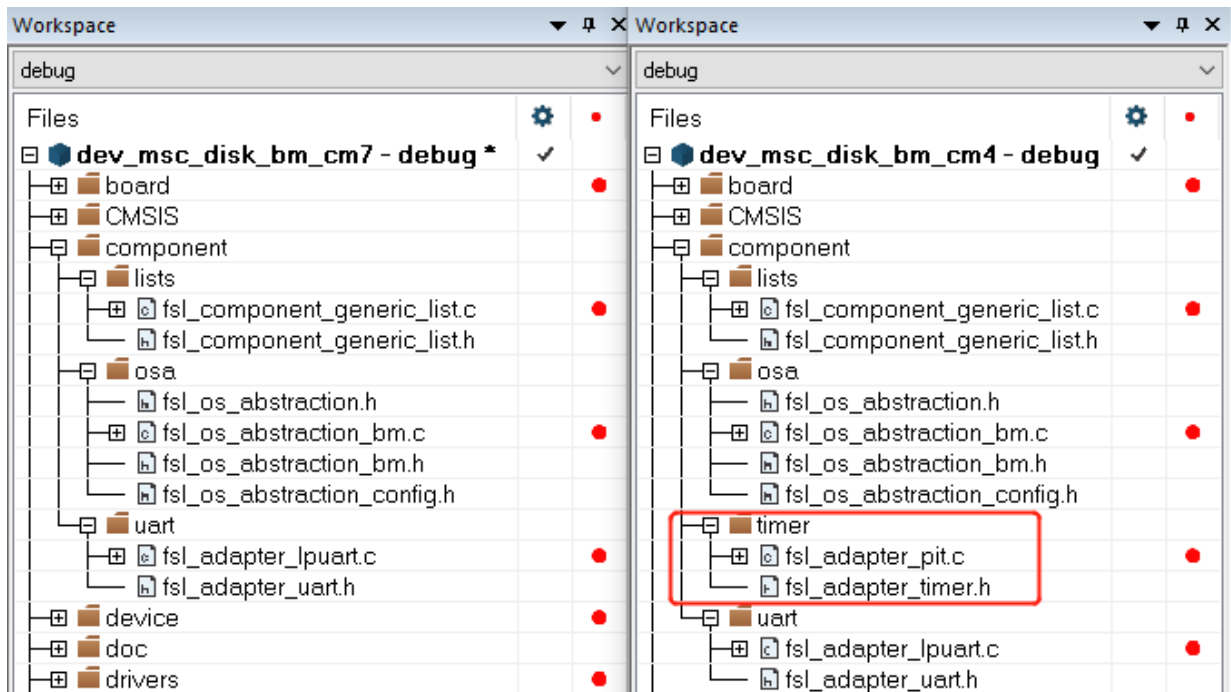
- Open `dev_msc_disk_bm_cm7` and `dev_msc_disk_bm_cm4` IAR project respectively. The two workspaces are respectively located under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm7/iar` and `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4/iar`.
- Compare the whole project directory. Find file groups that are in the `cm7` project but not `cm4` and add them to the `cm4` project.
- Compare the two groups with the same name. Delete files that are in the `cm4` project but not `cm7`. Find files that are in the `cm7` project but not `cm4` and add them to the `cm4` project.

In this case,

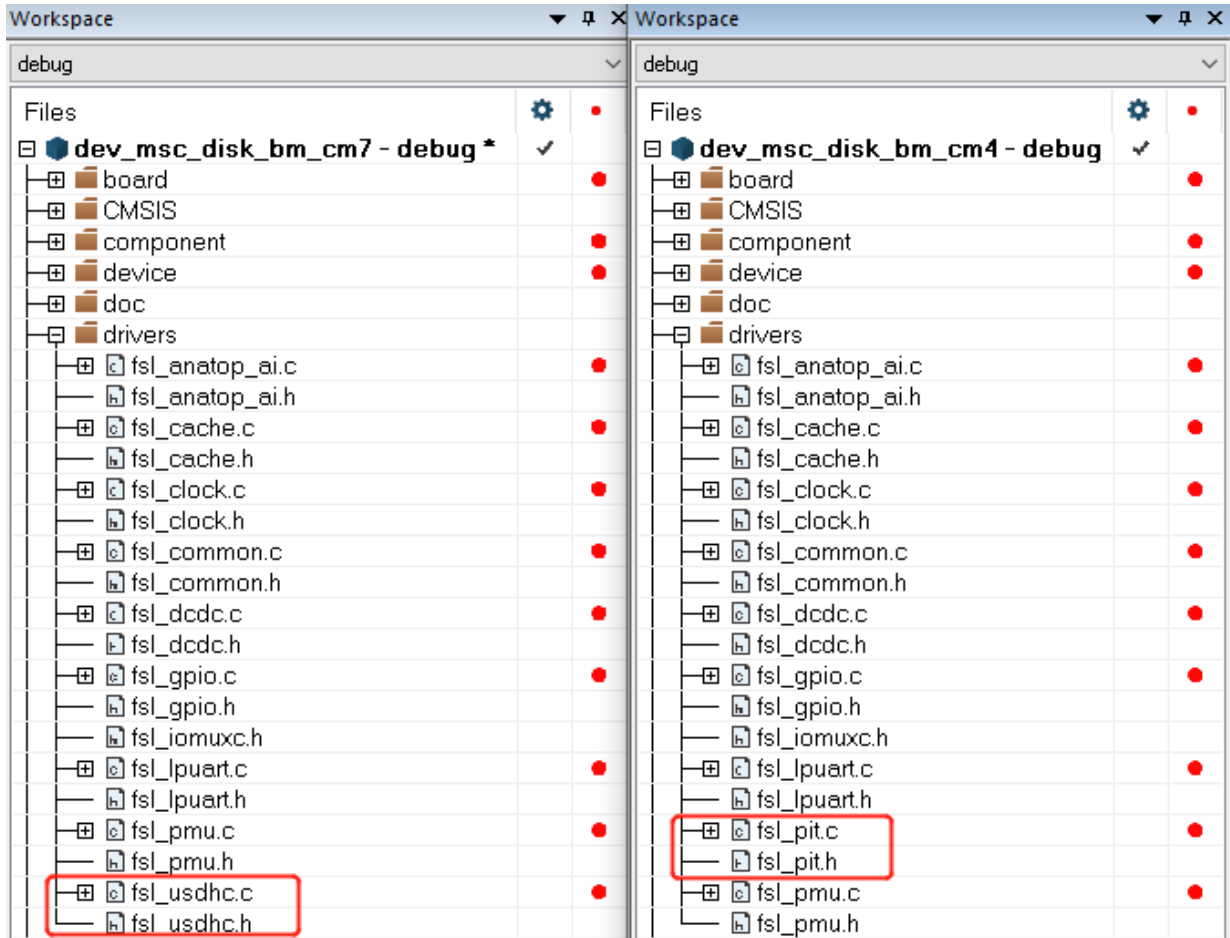
- For the `board` group, add `sdmmc_config` source files to `board` group in the `cm4` project.



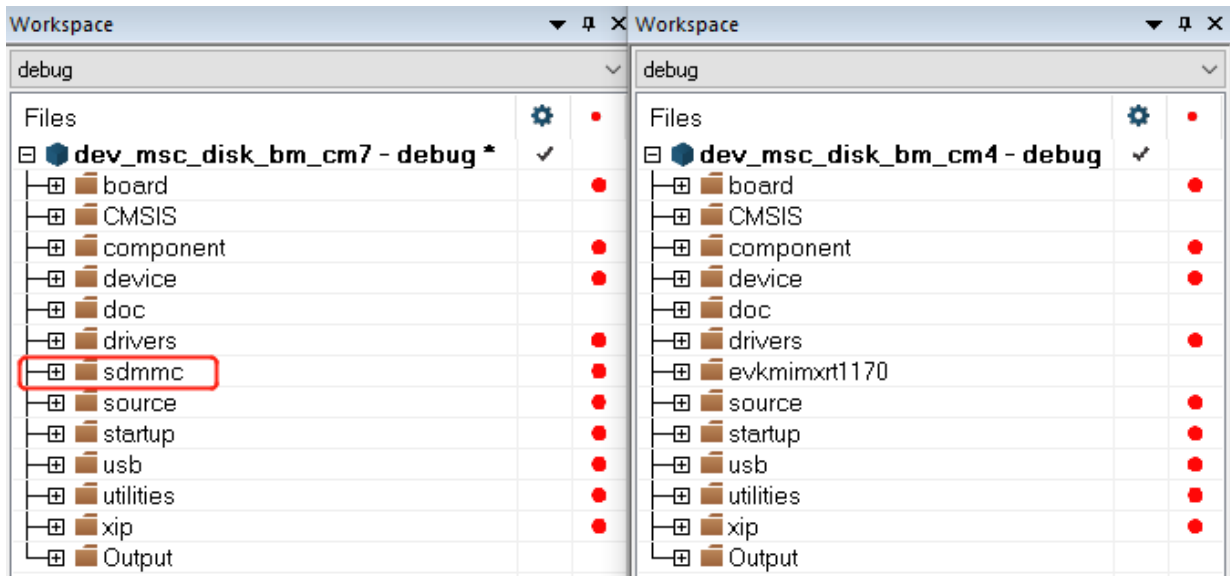
- For the component group, delete files associated with timer from cm4 project and add no files.



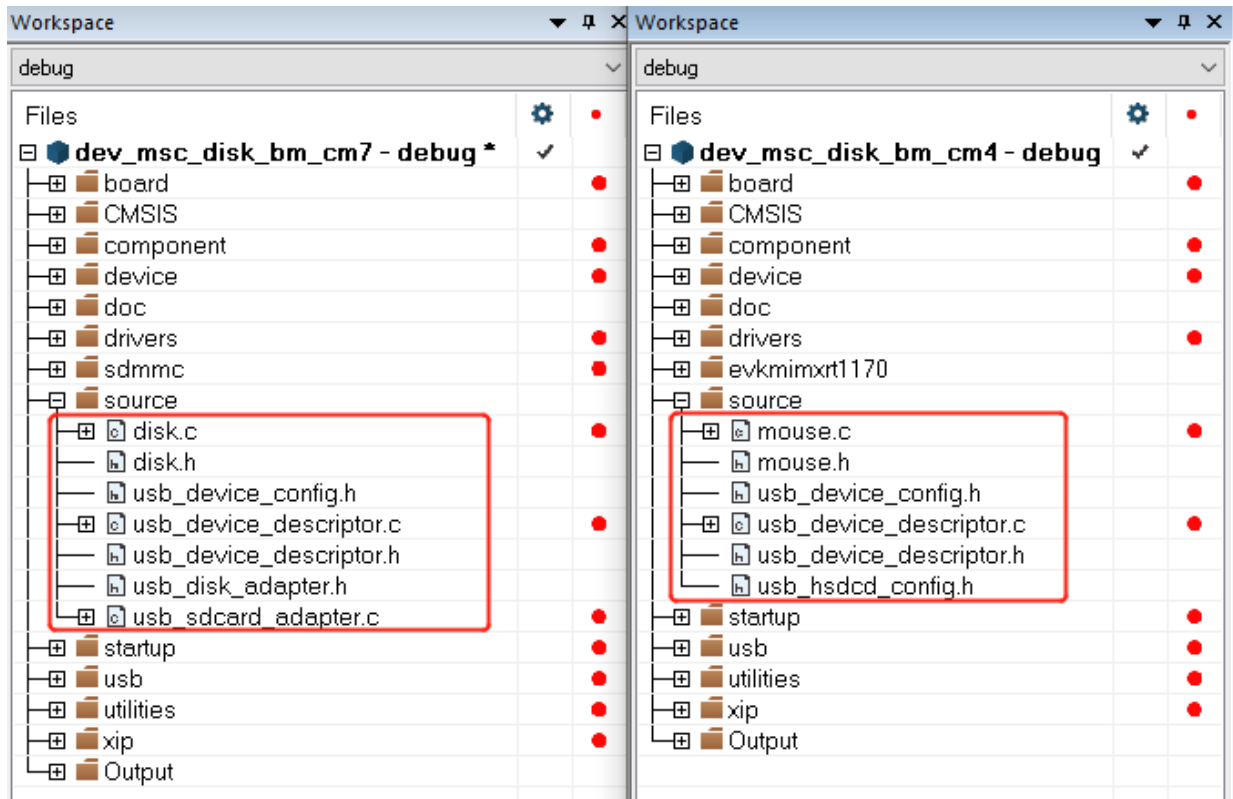
- For the drivers group, delete fsl_pit source files from the cm4 project and add fsl_usdhc source files to the cm4 project.



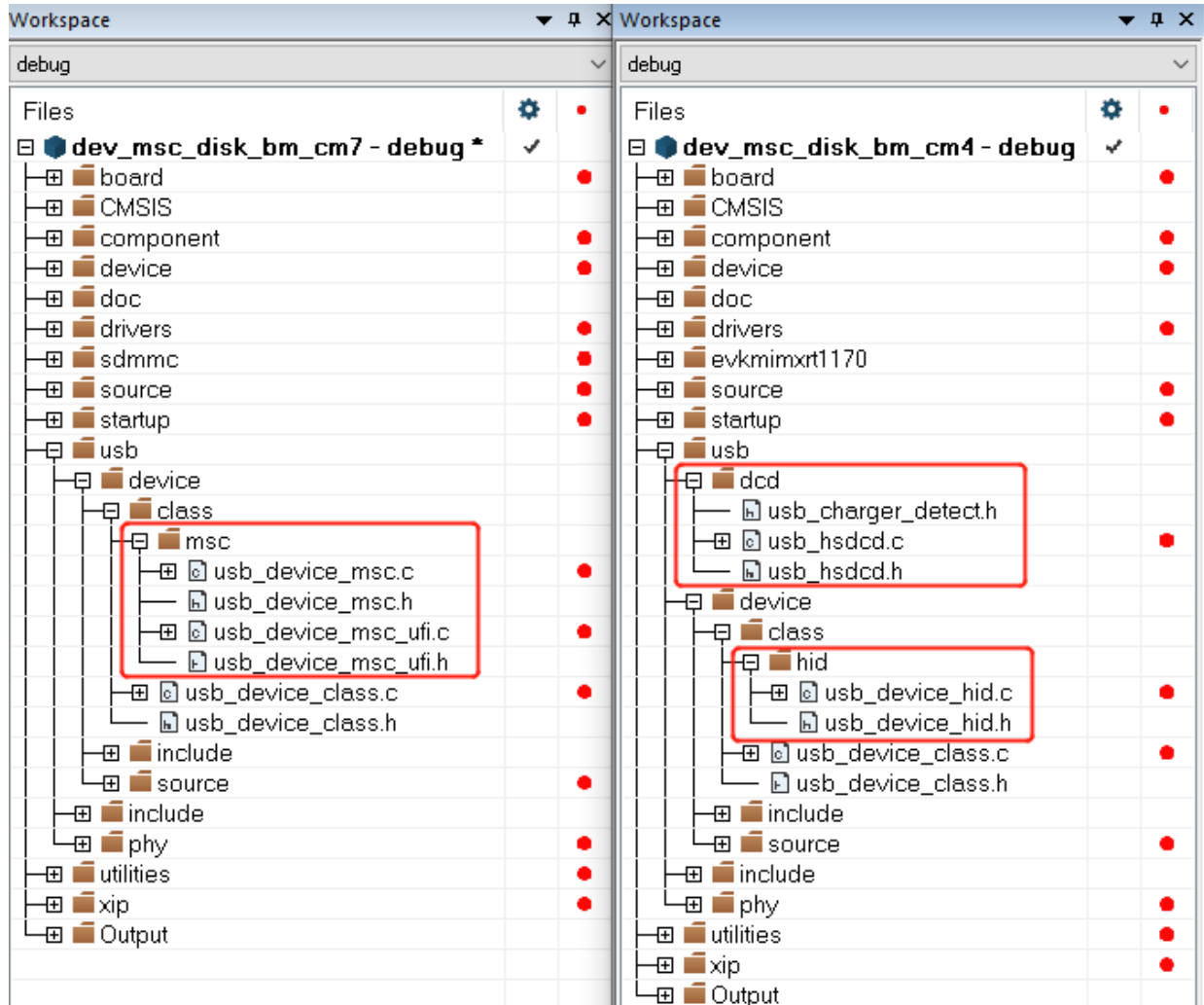
- For the `sdmmc` group, there isn't `sdmmc` group in the `cm4` project. Add `sdmmc` group and its children to the `cm4` project.



- For the `source` group, delete the files in the `cm4` source group and add the files under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4` with the same name as in the `cm7` project.



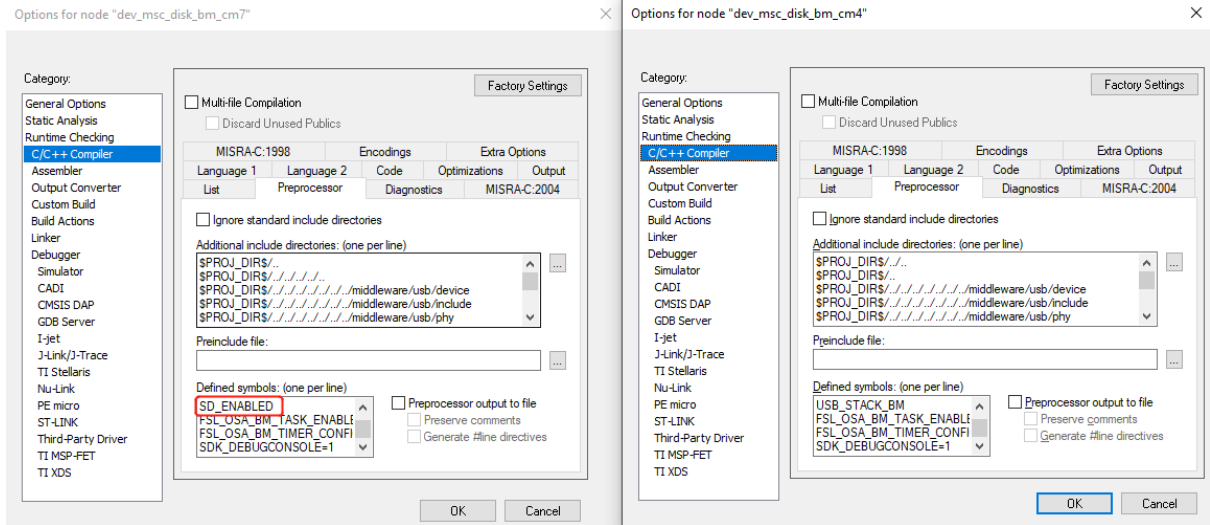
- For the `usb` group, replace the `hid` group and its children in the `cm4` project with `msc` group in the `cm7` project and delete the `dcd` group.



4. Adjust project settings

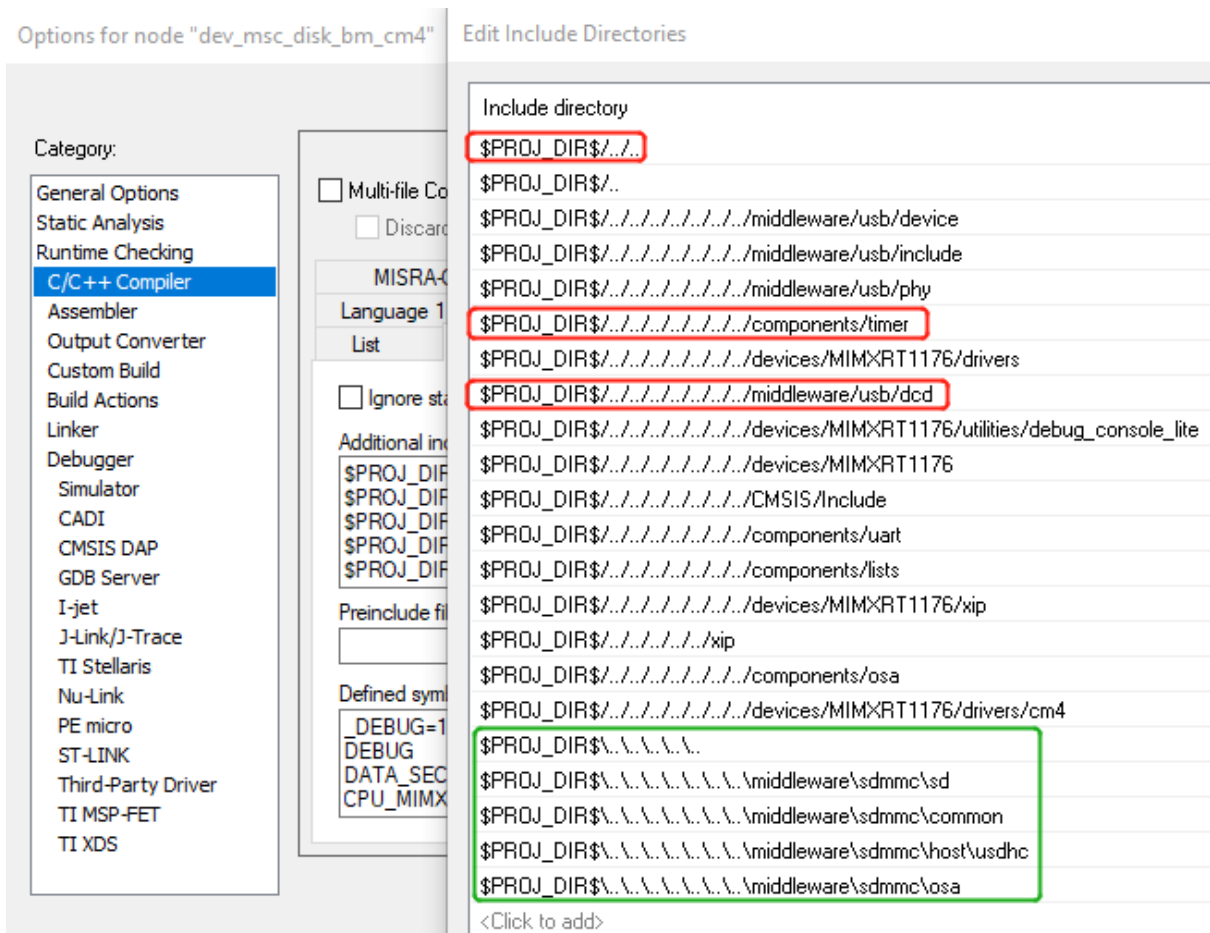
- a. Compare the macro in the project settings: **Option -> C/C++ compiler -> Preprocessor**. Add the macro that are in the cm7 project but not cm4 to the cm4 project.

In this case, add the `SD_ENABLED` macro to the cm4 project.



- b. Change the include directories in the project settings, by clicking **Option -> C/C++ compiler -> Preprocessor**, according to the changes of project files.

In this case, delete the directories framed in red and add those in green.



With all above steps done, the M7 project is successfully changed to an M4 project and the M4 example USB project can be downloaded and debugged.

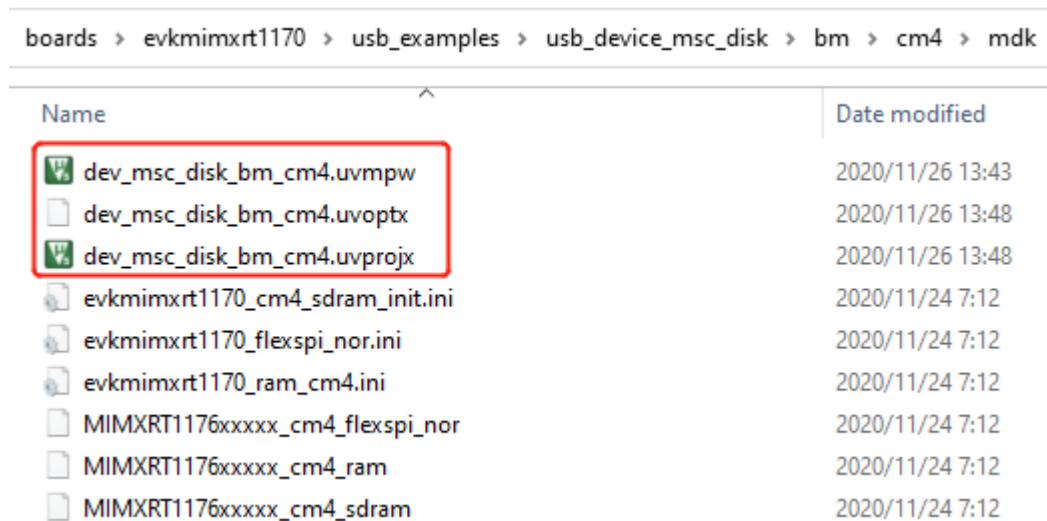
3 MDK

1. Create an M4 project

- a. Copy the *cm4* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_hid_mouse/bm/cm4` to the folder where the example needs to be enabled.

In this case, copy the *cm4* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_hid_mouse/bm/cm4` to the *bm* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm`.

- b. Open the *mdk* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4/mdk`.
- c. Change the file name *dev_hid_mouse_bm_cm4* to *dev_msc_disk_bm_cm4* respectively.



- d. Open the *dev_msc_disk_bm_cm4.uvmpw*, *dev_msc_disk_bm_cm4.uvoptx* and *dev_msc_disk_bm_cm4.uvprojx* files with a text editor, such as notepad, notepad++, sublime or visual studio code.
- e. Search and replace all *dev_hid_mouse_bm_cm4* with *dev_msc_disk_bm_cm4*, and then save the files.

dev_msc_disk_bm_cm4.uvmpw - Notepad

File Edit Format View Help

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<ProjectWorkspace xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.w3.org/2001/XMLSchema-instance http://www.w3.org/2001/XMLSchema-instance" >
```

```
<SchemaVersion>1.0</SchemaVersion>
```

```
<Header>### uVision Project, (C) Keil Software
```

```
<WorkspaceName>WorkSpace</WorkspaceName>
```

```
<project>
```

```
<PathAndName>.\dev hid mouse bm cm4.uvprojx</PathAndName>
```

Replace

Find what: dev_hid_mouse_bm_cm4

End Next

Replace with: dev_msc_disk_bm_cm4

Replace

Replace All

Cancel

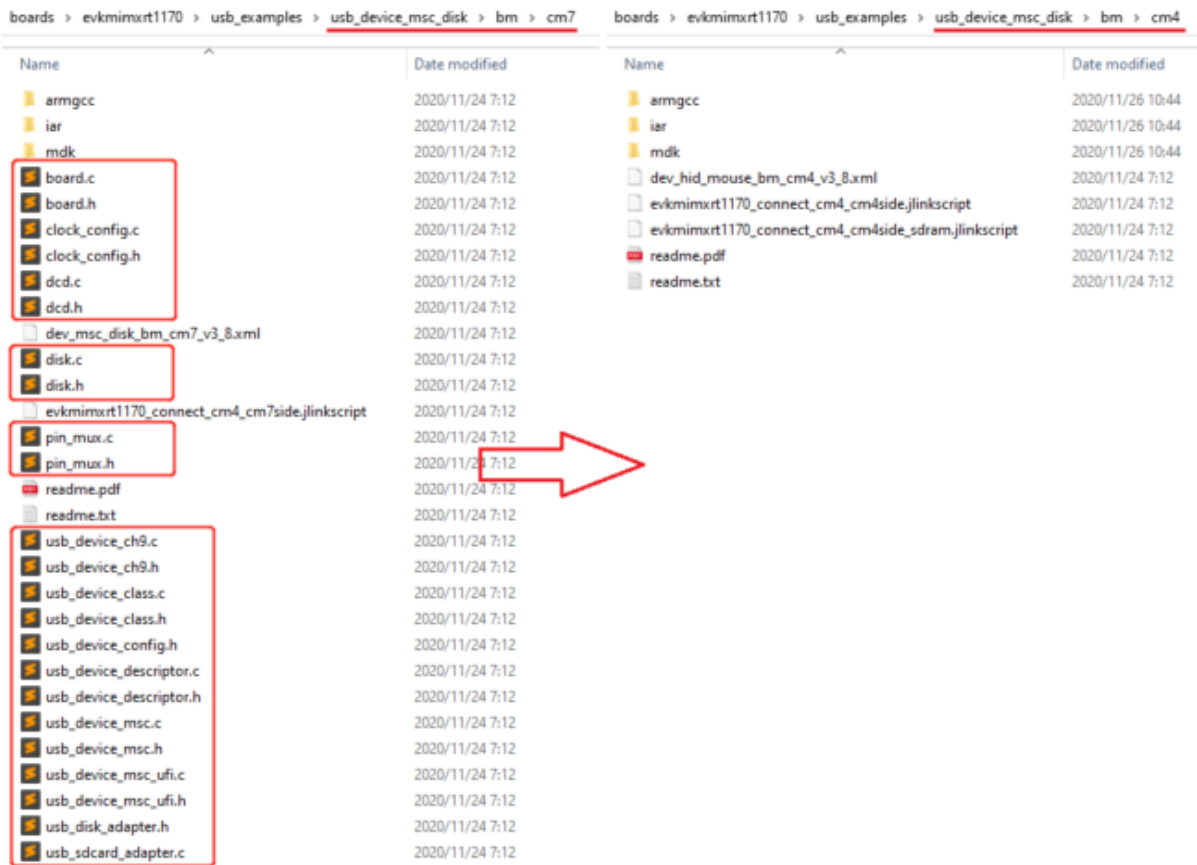
Match case

Wrap around

2. Rearrange source files

- a. Open the *cm4* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4`, and delete all files with the *.c* and *.h* extension.

- b. Copy files with the .c and .h extension in the cm7 folder under <install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm7 to the cm4 folder under <install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4.

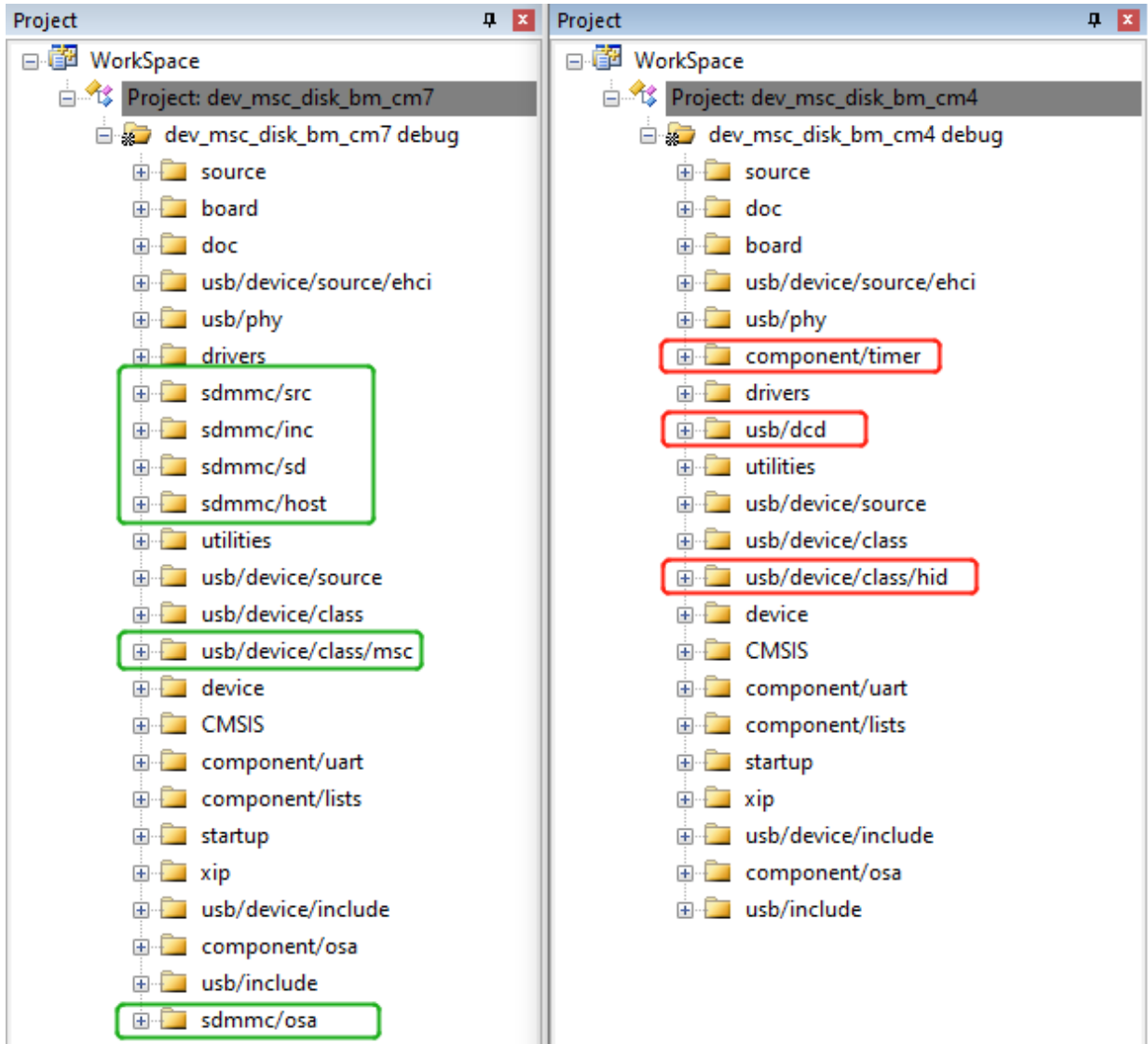


3. Rearrange project files

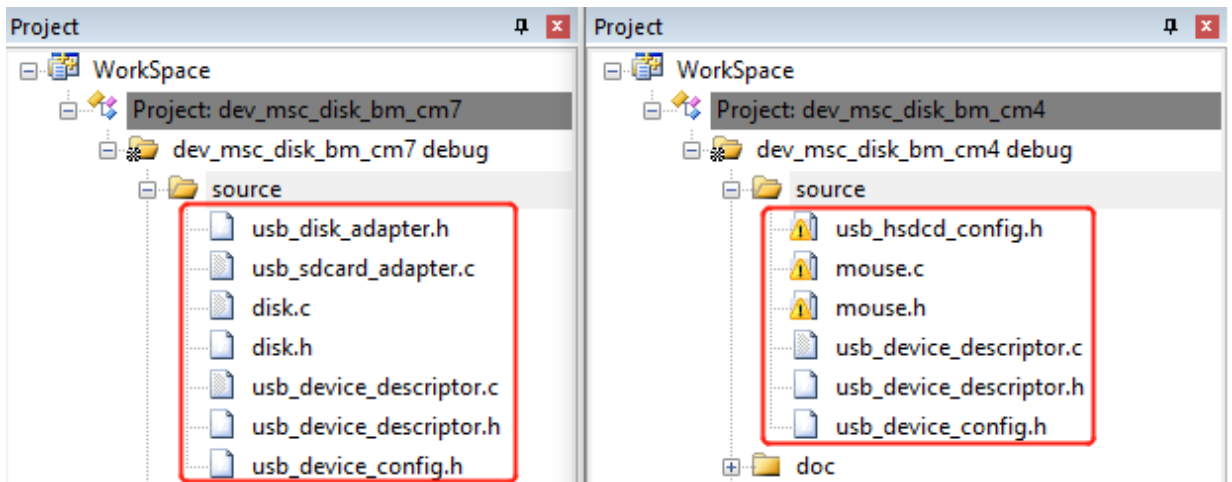
- a. Open dev_msc_disk_bm_cm7 and dev_msc_disk_bm_cm4 MDK project respectively. The two workspaces are respectively located in <install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm7/mdk and <install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4/mdk.
- b. Compare the whole project directory, delete groups that are in the cm4 project but not cm7. In the cm4 project, add groups that are in the cm7 project but not cm4.
- c. Compare the two groups with the same name. Delete files that are in the cm4 project but not cm7. Add files that are in the cm7 project but not cm4.

In this case,

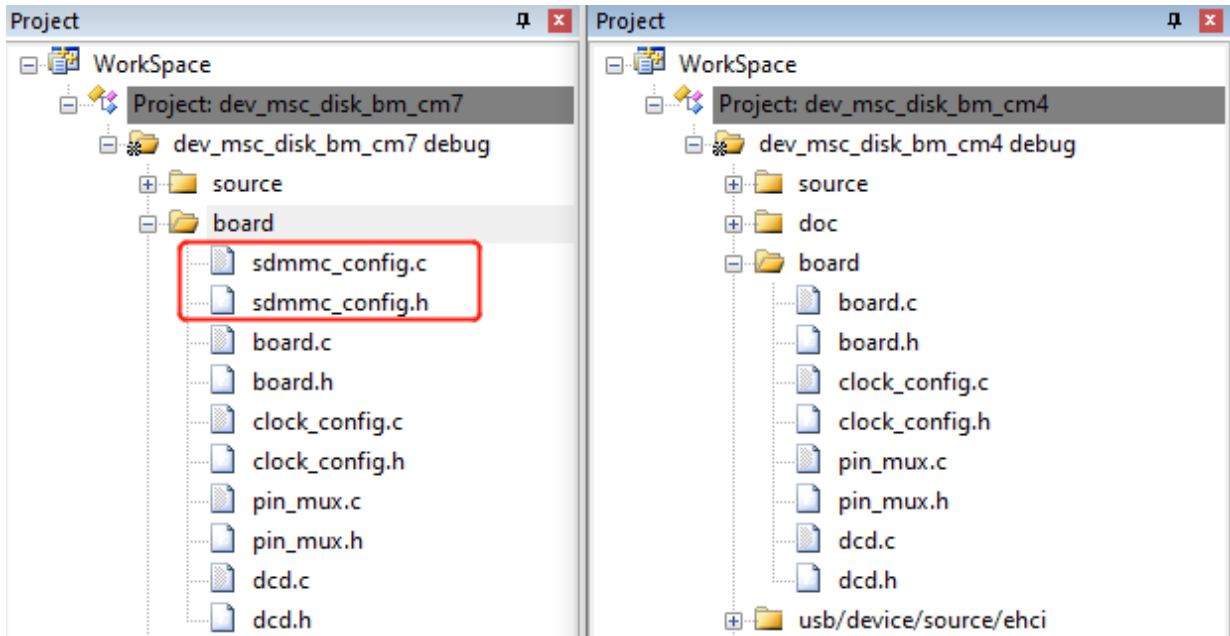
- Delete the groups framed in the red box in the cm4 project and add those framed in the green box to the cm4 project.



- For the `source` group, delete the files in the `source` group in the `cm4` project and add files under `<install_dir>boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4` with the same name as those in `cm7` project.



- For the `board` group, add `sdmmc_config` source files to the `board` group in the `cm4` project.

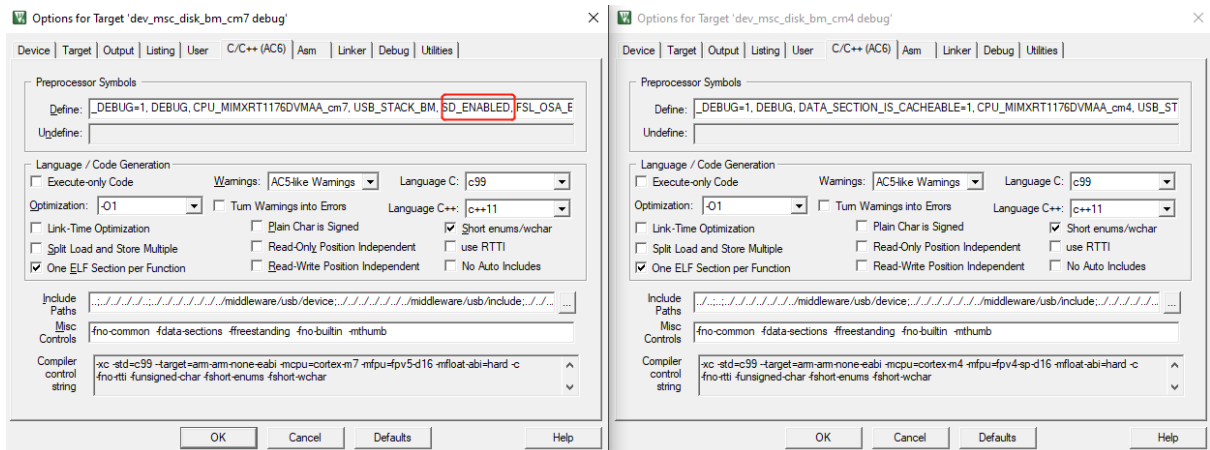


- For the `drivers` group, delete `fsl_pit` source files in the `cm4` project and add `fsl_usdhc` source files to the `cm4` project.

4. Adjust project settings

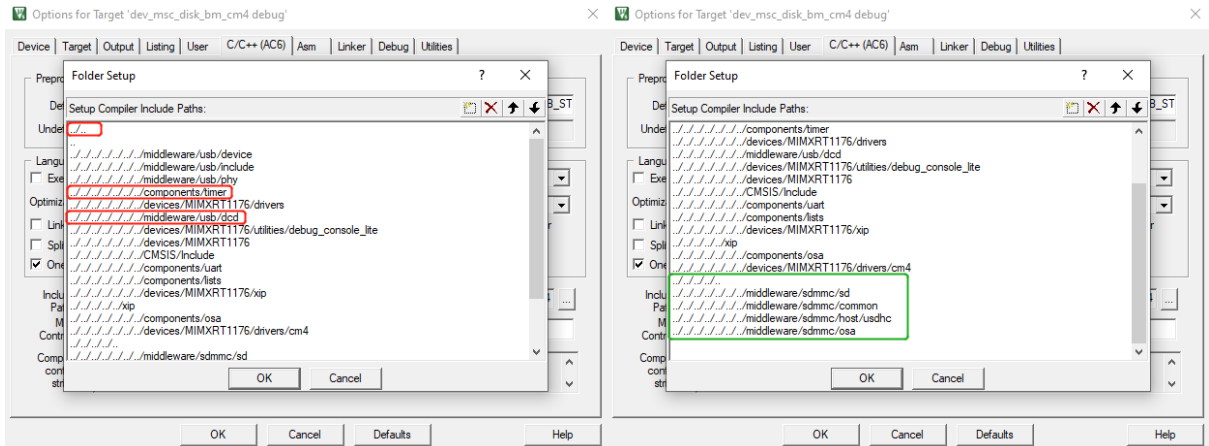
- Compare the macro in the project settings by clicking **Option** -> **C/C++**. Add a macro that is in the `cm7` project but not `cm4`.

In this case, add the `SD_ENABLED` macro to the `cm4` project.



- Change the include paths in the project settings, by clicking **Option** -> **C/C++**, according to the changes of project files.

In this case, delete the paths framed in the red box and add those framed in the green box.



With all above steps done, the M7 project is successfully changed to an M4 project and the M4 example USB project can be downloaded and debugged.

4 ARMGCC

1. Create an M4 project

- a. Copy the *cm4* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_hid_mouse/bm/cm4` to the folder where the example needs to be enabled.

In this case, Copy `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_hid_mouse/bm/cm4` to `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm`.

- b. Open the *CMakeLists.txt* of the example. The file is located under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4/armgcc`.
- c. Search and replace all `dev_hid_mouse_bm_cm4` with `dev_msc_disk_bm_cm4`, and then save the files.

2. Rearrange source files

- a. Open the *cm4* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4` folder and delete all files with the `.c` and `.h` extension.
- b. Copy files with the `.c` and `.h` extension in the *cm7* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm7` to the *cm4* folder under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4`.

boards > evkmimxrt1170 > usb_examples > usb_device_msc_disk > bm > cm7		boards > evkmimxrt1170 > usb_examples > usb_device_msc_disk > bm > cm4	
Name	Date modified	Name	Date modified
armgcc	2020/11/24 7:12	armgcc	2020/11/26 10:44
iar	2020/11/24 7:12	iar	2020/11/26 10:44
mdk	2020/11/24 7:12	mdk	2020/11/26 10:44
board.c	2020/11/24 7:12	dev_hid_mouse_bm_cm4_v3_8.xml	2020/11/24 7:12
board.h	2020/11/24 7:12	evkmimxrt1170_connect_cm4_cm4side.jlinkscript	2020/11/24 7:12
clock_config.c	2020/11/24 7:12	evkmimxrt1170_connect_cm4_cm4side_sdram.jlinkscript	2020/11/24 7:12
clock_config.h	2020/11/24 7:12	readme.pdf	2020/11/24 7:12
dcd.c	2020/11/24 7:12	readme.txt	2020/11/24 7:12
dcd.h	2020/11/24 7:12		
dev_msc_disk_bm_cm7_v3_8.xml	2020/11/24 7:12		
disk.c	2020/11/24 7:12		
disk.h	2020/11/24 7:12		
evkmimxrt1170_connect_cm4_cm7side.jlinkscript	2020/11/24 7:12		
pin_mux.c	2020/11/24 7:12		
pin_mux.h	2020/11/24 7:12		
readme.pdf	2020/11/24 7:12		
readme.txt	2020/11/24 7:12		
usb_device_ch9.c	2020/11/24 7:12		
usb_device_ch9.h	2020/11/24 7:12		
usb_device_class.c	2020/11/24 7:12		
usb_device_class.h	2020/11/24 7:12		
usb_device_config.h	2020/11/24 7:12		
usb_device_descriptor.c	2020/11/24 7:12		
usb_device_descriptor.h	2020/11/24 7:12		
usb_device_msc.c	2020/11/24 7:12		
usb_device_msc.h	2020/11/24 7:12		
usb_device_msc_ufi.c	2020/11/24 7:12		
usb_device_msc_ufi.h	2020/11/24 7:12		
usb_disk_adapter.h	2020/11/24 7:12		
usb_sdcard_adapter.c	2020/11/24 7:12		

3. Rearrange project files

- Open the *CMakeLists.txt* of the two examples respectively. The two files are respectively located under `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm7/armgcc` and `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4/armgcc`.
- Search the **add_executable** section in the *cm7* and *cm4* projects. Delete files that are in the *cm4* project but not *cm7*. Add files that are in the *cm7* project but not *cm4* to the *cm4* project.

In this case, delete the files in red box and add those in the green box to the *cm4* project.

4. Adjust project settings

- a. Search the **target_include_directories**, **CMAKE_MODULE_PATH**, and **# include modules** section one by one. Add macros that are in the **cm7** project but not **cm4** to the **cm4** project.

In this case, remove the paths framed in the red box from the **cm4** project and add those framed in the green box.

NOTE

Modify the include modules with the **cm7** suffix to **cm4**. For example, modify **driver_usdhc_MIMXRT1176_cm7** to **driver_usdhc_MIMXRT1176_cm4**.

```

C:\_usb_examples\usb_device_msc_disk\bm\cm7\armgcc\CMakeLists.txt
2020/11/24 7:12:54 4,885 bytes Everything Else ANSI PC
83 # include modules
84 include(middleware_usb_device_ehci_MIMXRT1176_cm7)
85
86 include(middleware_usb_phy_MIMXRT1176_cm7)
87
88 include(driver_usdhc_MIMXRT1176_cm7)
89
90 include(middleware_sdmmc_sd_MIMXRT1176_cm7)
91
92 include(middleware_sdmmc_common_MIMXRT1176_cm7)
93
94 include(middleware_sdmmc_host_usdhc_MIMXRT1176_cm7)
95
96 include(middleware_sdmmc_host_usdhc_interrupt_MIMXRT1176_cm7)
97
98
99 include(utility_debug_console_lite_MIMXRT1176_cm7)
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114 include(middleware_sdmmc_osa_bm_MIMXRT1176_cm7)
115
116 include(component_osa_bm_MIMXRT1176_cm7)
117
118 include(utilities_misc_utilities_MIMXRT1176_cm7)

C:\_usb_examples\usb_device_msc_disk\bm\cm4\armgcc\CMakeLists.txt
2020/11/26 16:51:06 4,617 bytes Everything Else ANSI PC
83 # include modules
84 include(middleware_usb_device_ehci_MIMXRT1176_cm4)
85
86 include(middleware_usb_phy_MIMXRT1176_cm4)
87
88 include(component_pit_adapter_MIMXRT1176_cm4)
89
90 include(driver_pit_MIMXRT1176_cm4)
91
92
93
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99
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101
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103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118 include(utilities_misc_utilities_MIMXRT1176_cm4)

```

- b. Open the `flags.cmake` of the two examples respectively. The two files are respectively located in `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm7/armgcc` and `<install_dir>/boards/evkmimxrt1170/usb_examples/usb_device_msc_disk/bm/cm4/armgcc`.
- c. Search the `CMAKE_C_FLAGS_DEBUG` section in the `cm4` and `cm7` projects. Compare the macros and add the macro that is in the `cm7` project but not `cm4` to the `cm4` project.
In this case, add the `SD_ENABLED` macro to the `cm4` project.


```

C:\...\bm\cm7\armgcc\flags.cmake
2020/11/24 7:12:54 11,973 bytes Everything Else ▾ AN
161 SET(CMAKE_C_FLAGS_DEBUG " " \#
162 .....-D_DEBUG=1 \#
163 .....-DDEBUG \#
164 .....-DCPU_MIMXRT1176DVMAA_cm7 \#
165 .....-DUSB_STACK_BM \#
166 .....-DSD_ENABLED \#
167 .....-DFSL_OSA_BM_TASK_ENABLE=0 \#
168 .....-DFSL_OSA_BM_TIMER_CONFIG=0 \#
169 .....-DSDK_DEBUGCONSOLE=1 \#
170 .....-g \#
171 .....-O0 \#
172 .....-mcpu=cortex-m7 \#
173 .....-Wall \#
174 .....-mfloat-abi=hard \#
175 .....-mfpu=fpv5-d16 \#
176 .....-mthumb \#
177 .....-MMD \#
178 .....-MP \#
179 .....-fno-common \#
180 .....-ffunction-sections \#
181 .....-fdata-sections \#
182 .....-ffreestanding \#
183 .....-fno-builtin \#
184 .....-mapcs \#
185 .....-std=gnu99 \#
186 ") \#

C:\...\bm\cm4\armgcc\flags.cmake
2020/11/24 7:12:54 11,979 bytes Everything Else ▾ AN
106 SET(CMAKE_C_FLAGS_DEBUG " " \#
107 .....-D_DEBUG=1 \#
108 .....-DDEBUG \#
109 .....-DDATA_SECTION_IS_CACHEABLE=1 \#
110 .....-DCPU_MIMXRT1176DVMAA_cm4 \#
111 .....-DUSB_STACK_BM \#
112 .....-DFSL_OSA_BM_TASK_ENABLE=0 \#
113 .....-DFSL_OSA_BM_TIMER_CONFIG=0 \#
114 .....-DSDK_DEBUGCONSOLE=1 \#
115 .....-g \#
116 .....-O0 \#
117 .....-mcpu=cortex-m4 \#
118 .....-Wall \#
119 .....-mfloat-abi=hard \#
120 .....-mfpu=fpv4-sp-d16 \#
121 .....-mthumb \#
122 .....-MMD \#
123 .....-MP \#
124 .....-fno-common \#
125 .....-ffunction-sections \#
126 .....-fdata-sections \#
127 .....-ffreestanding \#
128 .....-fno-builtin \#
129 .....-mapcs \#
130 .....-std=gnu99 \#
131 ") \#

```

With all above steps done, the M7 project is successfully changed to an M4 project and the M4 example USB project can be downloaded and debugged.

5 MCUXpresso IDE

1. Rearrange source files

- Import `dev_msc_disk_bm_cm7` and `dev_hid_mouse_bm_cm4` example.
- Open the directory of the two examples in the file explorer.
- Compare the whole project directory and add the folders that are in the `cm7` project but not `cm4` to the `cm4` project.
- Compare the two folders. Delete the files that are in the `cm4` project but not `cm7` and add the files that are in the `cm7` project but not `cm4` to the `cm4` project.

In this case,

- For the `board`, `source` and `usb` folders, replace them in the `cm4` project with those in the `cm7` directory.

mcux_workspace5 > evkmimxrt1170_dev_msc_disk_bm_cm7		mcux_workspace4 > evkmimxrt1170_dev_hid_mouse_bm_cm4	
Name	Date modified	Name	Date modified
.settings	2020/11/26 20:04	.settings	2020/11/26 19:57
board	2020/11/26 20:04	board	2020/11/26 19:57
CMSIS	2020/11/26 20:04	CMSIS	2020/11/26 19:57
component	2020/11/26 20:04	component	2020/11/26 19:57
device	2020/11/26 20:04	device	2020/11/26 19:57
doc	2020/11/26 20:04	doc	2020/11/26 19:57
drivers	2020/11/26 20:04	drivers	2020/11/26 19:57
evkmimxrt1170	2020/11/26 20:04	evkmimxrt1170	2020/11/26 19:57
sdmhc	2020/11/26 20:04	source	2020/11/26 19:57
source	2020/11/26 20:04	startup	2020/11/26 19:57
startup	2020/11/26 20:04	usb	2020/11/26 19:57
usb	2020/11/26 20:04	utilities	2020/11/26 19:57
utilities	2020/11/26 20:04	xip	2020/11/26 19:57
xip	2020/11/26 20:04	.cproject	2020/11/26 19:57
.cproject	2020/11/26 20:04	.project	2020/11/26 19:57
.project	2020/11/26 20:04		

- For the component folder, delete the timer folder in the cm4 directory.

mcux_workspace5 > evkmimxrt1170_dev_msc_disk_bm_cm7 > component		mcux_workspace4 > evkmimxrt1170_dev_hid_mouse_bm_cm4 > component	
Name	Date modified	Name	Date modified
lists	2020/11/26 20:04	lists	2020/11/26 19:57
osa	2020/11/26 20:04	osa	2020/11/26 19:57
uart	2020/11/26 20:04	timer	2020/11/26 19:57
		uart	2020/11/26 19:57

- For the drivers folder, delete fsl_pit source files in the cm4 project and add fsl_usdhc source files to the cm4 directory.

mcux_workspace5 > evkmimxrt1170_dev_msc_disk_bm_cm7 > drivers		mcux_workspace4 > evkmimxrt1170_dev_hid_mouse_bm_cm4 > drivers	
Name	Date modified	Name	Date modified
fsl_anatop_ai.c	2020/11/26 20:04	fsl_anatop_ai.c	2020/11/26 19:57
fsl_anatop_ai.h	2020/11/26 20:04	fsl_anatop_ai.h	2020/11/26 19:57
fsl_cache.c	2020/11/26 20:04	fsl_cache.c	2020/11/26 19:57
fsl_cache.h	2020/11/26 20:04	fsl_cache.h	2020/11/26 19:57
fsl_clock.c	2020/11/26 20:04	fsl_clock.c	2020/11/26 19:57
fsl_clock.h	2020/11/26 20:04	fsl_clock.h	2020/11/26 19:57
fsl_common.c	2020/11/26 20:04	fsl_common.c	2020/11/26 19:57
fsl_common.h	2020/11/26 20:04	fsl_common.h	2020/11/26 19:57
fsl_dcdc.c	2020/11/26 20:04	fsl_dcdc.c	2020/11/26 19:57
fsl_dcdc.h	2020/11/26 20:04	fsl_dcdc.h	2020/11/26 19:57
fsl_gpio.c	2020/11/26 20:04	fsl_gpio.c	2020/11/26 19:57
fsl_gpio.h	2020/11/26 20:04	fsl_gpio.h	2020/11/26 19:57
fsl_iomuxc.h	2020/11/26 20:04	fsl_iomuxc.h	2020/11/26 19:57
fsl_lpuart.c	2020/11/26 20:04	fsl_lpuart.c	2020/11/26 19:57
fsl_lpuart.h	2020/11/26 20:04	fsl_lpuart.h	2020/11/26 19:57
fsl_pmu.c	2020/11/26 20:04	fsl_pmu.c	2020/11/26 19:57
fsl_pmu.h	2020/11/26 20:04	fsl_pmu.h	2020/11/26 19:57
fsl_usdhc.c	2020/11/26 20:04	fsl_pit.c	2020/11/26 19:57
fsl_usdhc.h	2020/11/26 20:04	fsl_pit.h	2020/11/26 19:57
		fsl_pmu.c	2020/11/26 19:57
		fsl_pmu.h	2020/11/26 19:57

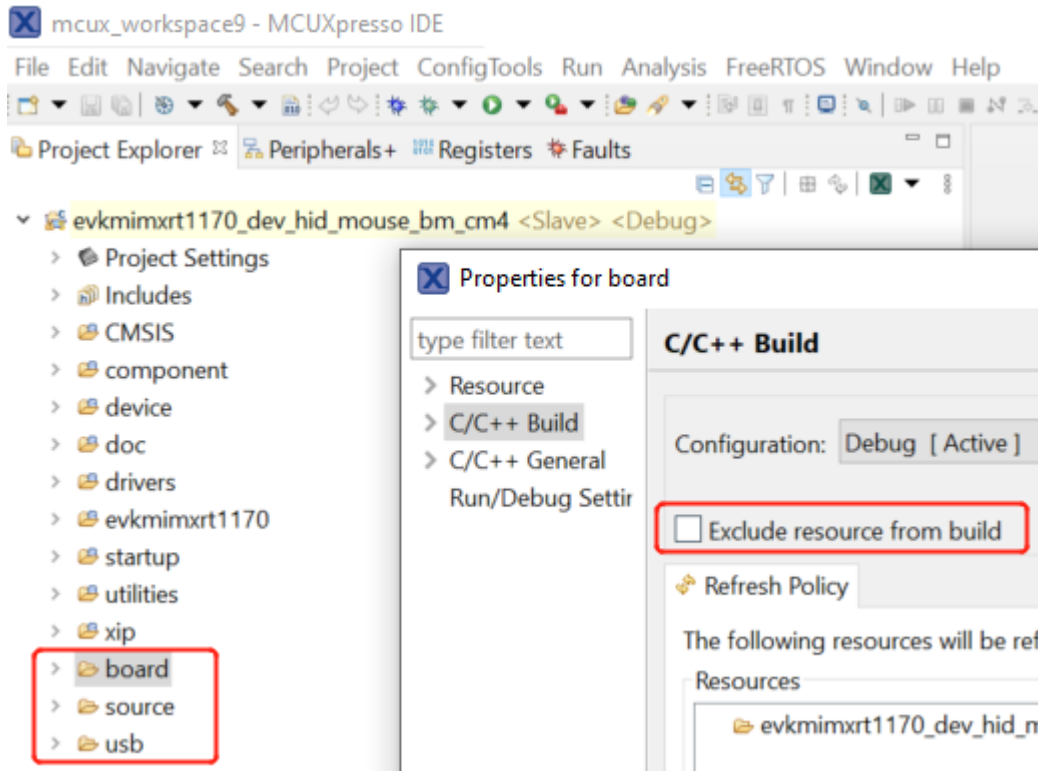
- For the `sdmmc` folder, copy it to the `cm4` project.

mcux_workspace5 > evkmimxrt1170_dev_msc_disk_bm_cm7		mcux_workspace4 > evkmimxrt1170_dev_hid_mouse_bm_cm4	
Name	Date modified	Name	Date modified
.settings	2020/11/26 20:04	.settings	2020/11/26 19:57
board	2020/11/26 20:04	board	2020/11/26 19:57
CMSIS	2020/11/26 20:04	CMSIS	2020/11/26 19:57
component	2020/11/26 20:04	component	2020/11/26 19:57
device	2020/11/26 20:04	device	2020/11/26 19:57
doc	2020/11/26 20:04	doc	2020/11/26 19:57
drivers	2020/11/26 20:04	drivers	2020/11/26 19:57
evkmimxrt1170	2020/11/26 20:04	evkmimxrt1170	2020/11/26 19:57
sdmmc	2020/11/26 20:04	source	2020/11/26 19:57
source	2020/11/26 20:04	startup	2020/11/26 19:57
startup	2020/11/26 20:04	usb	2020/11/26 19:57
usb	2020/11/26 20:04	utilities	2020/11/26 19:57
utilities	2020/11/26 20:04	xip	2020/11/26 19:57
xip	2020/11/26 20:04	.cproject	2020/11/26 19:57
.cproject	2020/11/26 20:04	.project	2020/11/26 19:57
.project	2020/11/26 20:04		

2. Rearrange project files

After the source files are updated, the project files are loaded to the `cm4` project automatically. No manual updates to the project files are required.

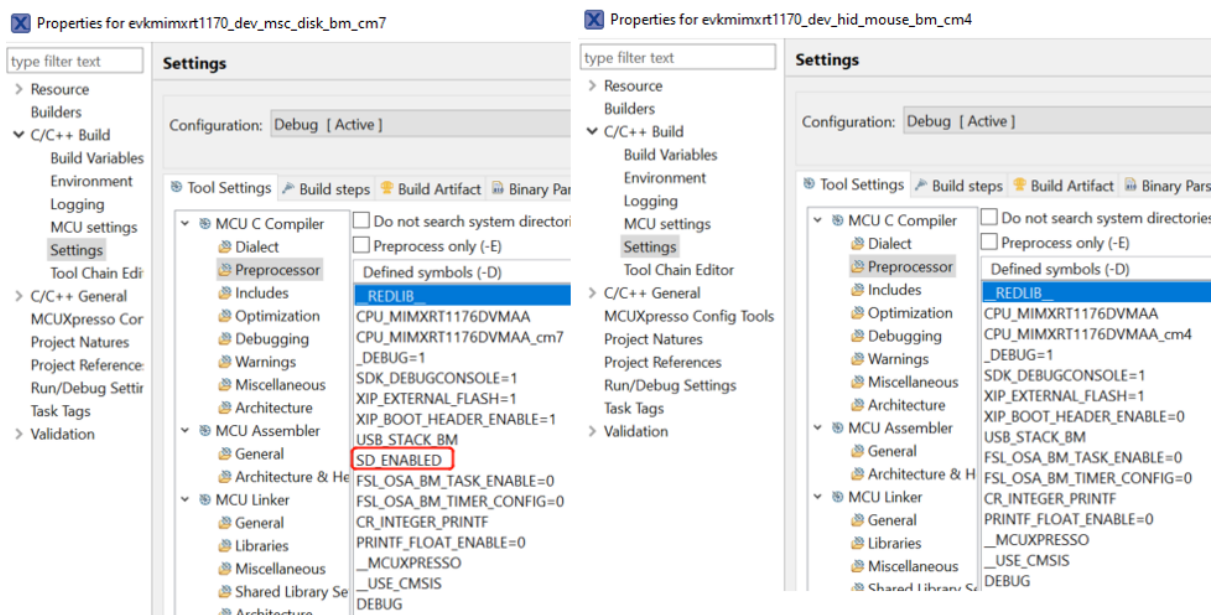
Due to the deletion in [Rearrange source files](#), for the *board*, *source* and *usb* folders, an option needs to be deleted in the properties. Right click **board** -> **properties** -> **C/C++-build** and uncheck **Exclude resource from build**. Perform the same operation in the **source** and **usb** folders.



3. Adjust project settings

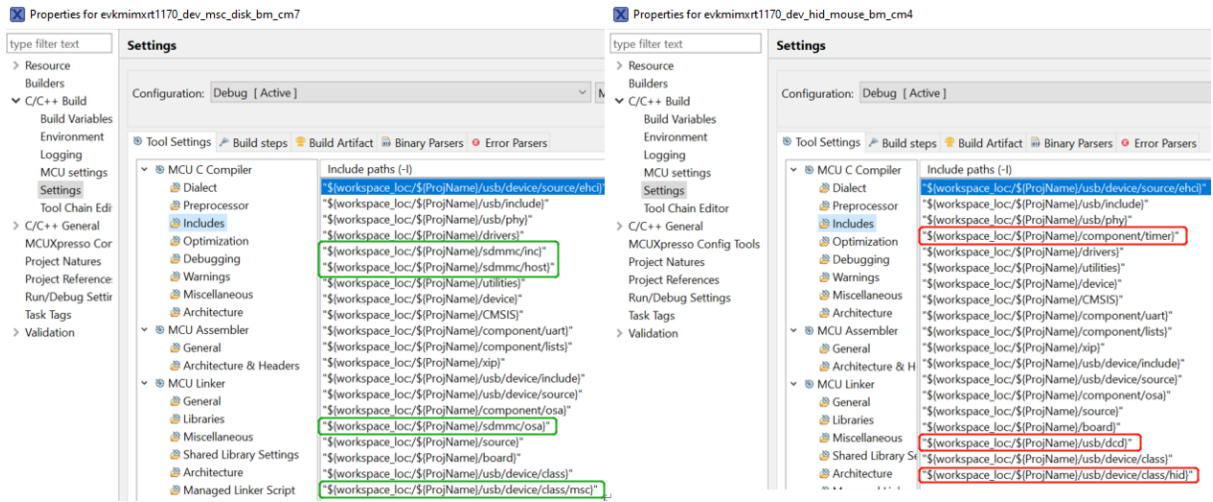
- a. Compare the macro in the project settings, by clicking **Properties** -> **C/C++ Build** -> **Setting** -> **MCU C Compiler** -> **Preprocessor**. Add the macro that is in the *cm7* project but not in *cm4* to the *cm4* project.

In this case, the macro is `SD_ENABLED`.



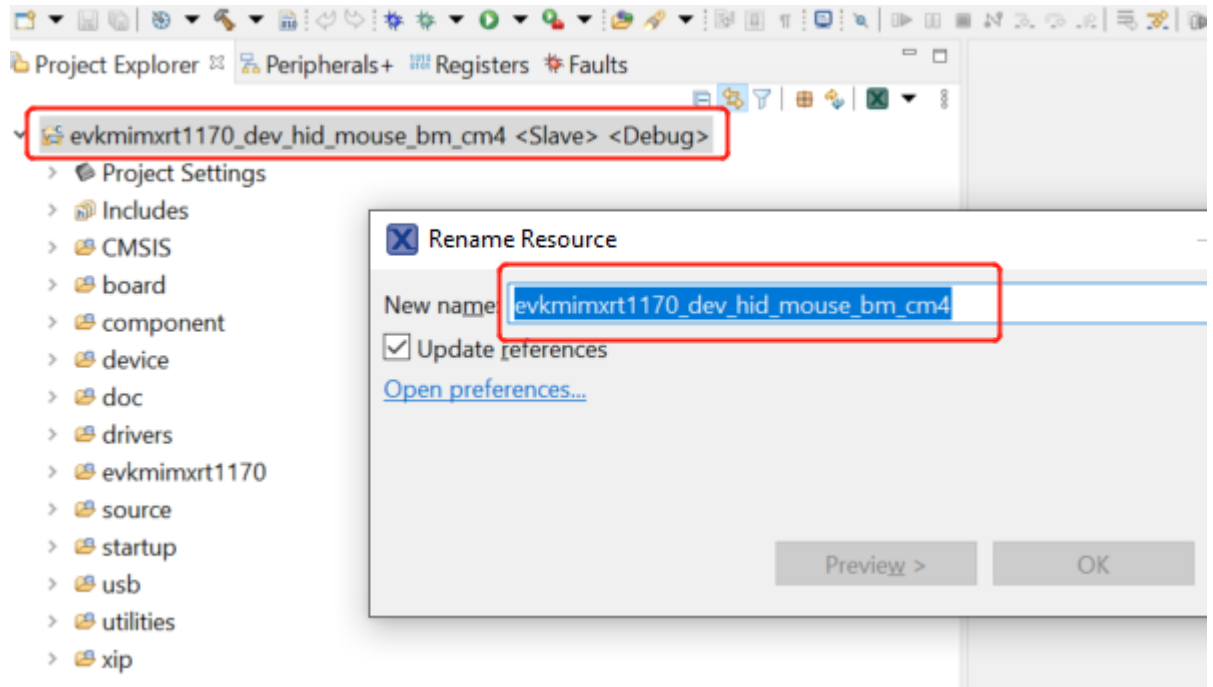
- b. Change the include paths in the project settings, by clicking **Properties -> C/C++ Build -> Setting -> MCU C Compiler -> Includes**, according to the changes of project files.

In this case, delete the paths framed in the red box and add those in the green box.



4. Change project name

- a. Right click **project name -> rename**, change the file name `dev_hid_mouse_bm_cm4` to `dev_msc_disk_bm_cm4`, and then click **OK**.



With all above steps done, the M7 project is successfully changed to an M4 project and the M4 example USB project can be downloaded and debugged.

6 Note

1. The above steps provide the method based on the `dev_hid_mouse_bm` example to enable the `dev_msc_disk_bm` example on M4 core. For other examples, similar way applies to change an M7 project to an M4 project.
2. To enable FreeRTOS examples, refer to `dev_hid_mouse_freertos`.

3. To enable USB host examples, refer to *host_hid_mouse_bm* or *host_hid_mouse_freertos*.

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Date of release: January 20, 2021

Document identifier: AN13114

