

Import&build: CCS project “GPIO_LedBlink_idkAM574x_armTestProject”

We found “boot.aa15fg” in map file.
(it seems to be link lib file from boot.asm)

The screenshot displays the CCS IDE interface. On the left, the Project Explorer shows the project structure for "GPIO_LedBlink_idkAM574x_armTestProject". The main window shows the Map File for the project, which lists memory addresses and sections. A red arrow points from the text "c_int00 is mapped to 0x80005128" to the entry for ".c_int00" in the map file, which is located at address 0x80005128.

Project Explorer:

- GPIO_LedBlink_idkAM574x_armTestProject [Active - Debug]
 - Binaries
 - Includes
 - Debug
 - configPkg
 - GPIO_idkAM574x_board.o - [ARM/le]
 - GPIO_LedBlink_idkAM574x_armTestProject.out - [ARM/le]
 - GPIO_log.o - [ARM/le]
 - GPIO_soc.o - [ARM/le]
 - main_led_blink.o - [ARM/le]
 - UART_soc.o - [ARM/le]
 - app
 - ccsObjs.opt
 - GPIO_idkAM574x_board.d
 - GPIO_LedBlink_idkAM574x_armTestProject.map
 - GPIO_LedBlink_idkAM574x_armTestProject.out.rprc
 - GPIO_log.d
 - GPIO_soc.d
 - main_led_blink.d
 - makefile
 - objects.mk
 - sources.mk
 - subdir_rules.mk
 - subdir_vars.mk
 - UART_soc.d

Map File:

Address	Section	Symbol
3646	0x80005100	__TRDR__
3647		
3648	.c_int00	0x80005128 0x13c
3649	*(.c_int00)	
3650	.c_int00	0x80005128 0x13c C:\ti\bios_6_73_01_01\packages\gnu\targets\arm\rtsv7A\lib\boot.aa15fg(boot.aa15fg)
3651	0x80005128	c_int00
3652		
3653	.text	0x80005270 0x1ce50
3654	CREATE_OBJECT_SYMBOLS	
3655	*(.resetVecs)	
3656	*(.text)	
3657	.text	0x80005270 0x198 ./GPIO_idkAM574x_board.o
3658	0x80005270	GPIOApp_UpdateBoardInfo
3659	0x80005308	AppGPIOInit
3660	0x8000536c	GPIOAppUpdateConfig
3661	.text	0x48 ./GPIO_log.o
3662	0x80005408	ConsoleUtilsInit
3663	.text	0x0 ./GPIO_soc.o
3664	.text	0x2bc ./UART_soc.o
3665	0x80005450	UART_socGetInitCfg
3666	0x80005680	UART_socSetInitCfg
3667	.text	0x264 ./main_led_blink.o
3668	0x8000570c	AppLoopDelay
3669	0x800057c8	main
3670	0x80005818	AppDelay
3671	0x80005864	gpio_test
3672	0x80005910	AppGpioCallbackFxn
3673	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\MyExampleProjects\GPIO_LedBlink_idkAM574x_armTestPr
3674	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3675	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3676	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3677	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3678	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3679	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3680	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3681	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3682	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3683	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3684	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3685	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3686	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3687	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy
3688	.text	0x0 C:\ti\pdk_am57xx_1_0_13\packages\ti\drv\gpio\test\led_blink\am574x\armv7\bios\src\sy

Check behavior

File Edit View Project Tools Run Scripts Window Help

Debug

- Texas Instruments XDS100v2 USB Debug Probe_0/Cortex_M4_IPU2_C1 (Disconnected : Unknown)
- Texas Instruments XDS100v2 USB Debug Probe_0/C66xx_DSP1 (Disconnected : Unknown)
- Texas Instruments XDS100v2 USB Debug Probe_0/C66xx_DSP2 (Disconnected : Unknown)
- Texas Instruments XDS100v2 USB Debug Probe_0/CortexA15_0 (Suspended - SW Breakpoint)
 - 0x80005128 (no symbols are defined)
- Texas Instruments XDS100v2 USB Debug Probe_0/CortexA15_1 (Disconnected : Unknown)
- Texas Instruments XDS100v2 USB Debug Probe_0/PRU_0_ICSS1 (Disconnected : Unknown)
- Texas Instruments XDS100v2 USB Debug Probe_0/PRU_1_ICSS1 (Disconnected : Unknown)
- Texas Instruments XDS100v2 USB Debug Probe_0/PRU_0_ICSS2 (Disconnected : Unknown)
- Texas Instruments XDS100v2 USB Debug Probe_0/PRU_1_ICSS2 (Disconnected : Unknown)

Break at address "0x80005128" with no debug information available, or outside of program code.

View Disassembly...

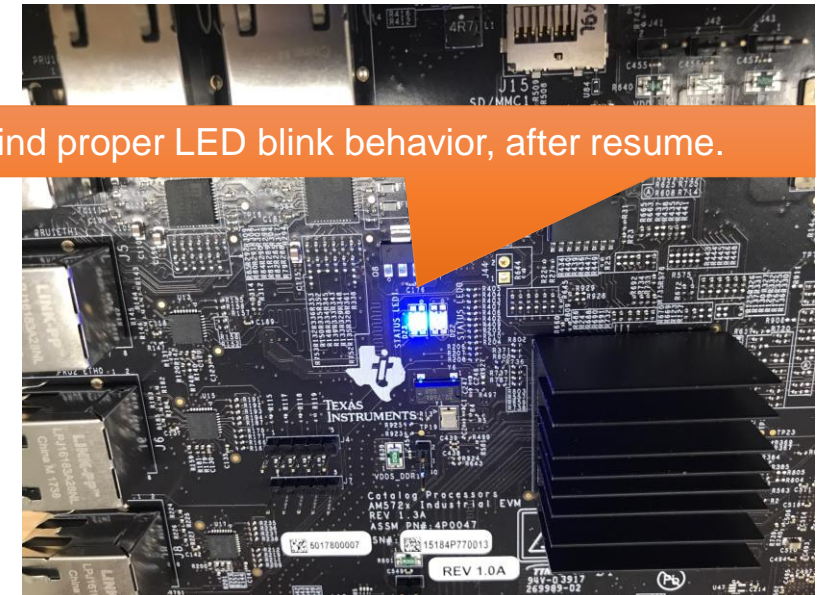
Configure when this editor is shown Preferences...

Disassembly

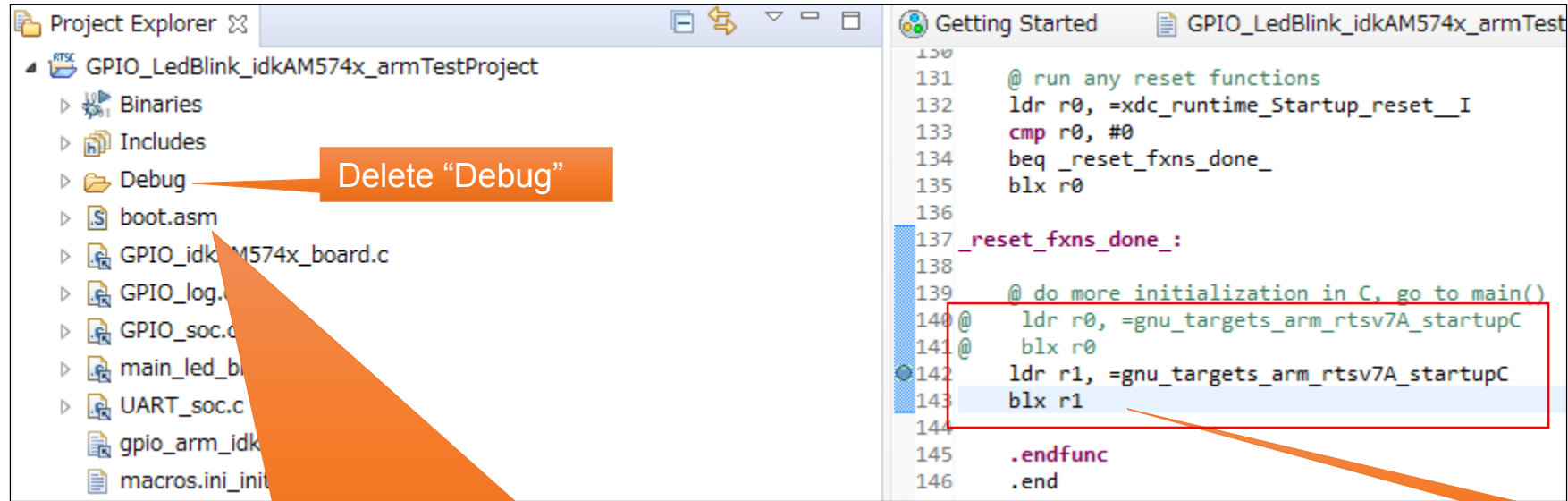
```
.....  
80005128: E10F0000 mrs r0, apsr  
8000512c: E380C0C0 orr r12, r0, #0xc0  
80005130: E129F00C msr cpsr_fc, r12  
80005134: F102001F cps #0x1f  
80005138: EE110F10 mrc p15, #0, r0, c1, c0, #0  
8000513c: E3011004 movw r1, #0x1004  
80005140: E1C00001 bic r0, r0, r1  
80005144: EE010F10 mcr p15, #0, r0, c1, c0, #0  
80005148: F57FF06F isb sy  
8000514c: EE300F30 mrc p15, #1, r0, c0, c0, #1  
80005150: E2103407 ands r3, r0, #0x7000000  
80005154: E1A03BA3 lsr r3, r3, #0x17  
80005158: 0A00001A beq #0x800051c8  
8000515c: E3A0A000 mov r10, #0  
80005160: E08A20AA add r2, r10, r10, lsr #1  
80005164: E1A01230 lsr r1, r0, r2  
80005168: E2011007 and r1, r1, #7  
8000516c: E3510002 cmp r1, #2  
80005170: BA000011 blt #0x800051bc  
80005174: EE40AF10 mcr p15, #2, r10, c0, c0, #0  
80005178: F57FF06F isb sy  
8000517c: EE301F10 mrc p15, #1, r1, c0, c0, #0
```

We can find to break at "0x80005128" c_int00 in boot.asm

We can find proper LED blink behavior, after resume.



Copy & modify: boot.asm -> delete Debug & Build



Modify here

Copy from "C:\ti\bios_6_73_01_01\packages\gnu\targets\arm\rtsv7A\boot.asm"

Check behavior

The screenshot displays a debugger window with the following components:

- Debug Console:** Lists several disconnected probes and one suspended probe: "Texas Instruments XDS100v2 USB Debug Probe_0/CortexA15_0 (Suspended - SW Breakpoint)". Below it, a status bar indicates the current location: "() at boot.asm:143 0x80005250 (no symbols are defined)".
- Source Code Window:** Shows the assembly file `boot.asm` at line 143. The code includes a comment "@ do more initialization in C, go to main()", followed by `ldr r0, =gnu_targets_arm_rtsv7A_startupC`, `blx r0`, and `blx r1`. An orange arrow points to the `blx r1` instruction with the text "Break here in boot.asm".
- Registers Window:** Displays the "Core Registers" with their current values:

Name	Value
PC	0x80005250
SP	0x8104B668
LR	0x80005EEC
CPSR	0x000001DF
R0	0x80000000
R1	0x80020B48
R2	0x00000000

An orange arrow points to the R1 register value with the text "R1 is updated properly".
- Disassembly Window:** Shows the assembly instructions at memory addresses starting from 8000524c. The instruction at 80005250 is `blx r1`, which is highlighted. Other instructions include `ldr r1, [pc, #0xc]`, `.word 0x8102b668`, `andeq r0, r2, r0`, `ldrdhi r5, r6, [r0], -r8`, `andhi r0, r2, r8, asr #22`, and `andeq r0, r0, r0`.

In the bottom right corner, there is a photograph of a Texas Instruments AM572x Industrial EVM circuit board. A blue LED is illuminated, and an orange arrow points to it with the text "We can find proper LED blink behavior, after resume." The board is labeled "REV 1.0A".