

LAB2

Using ARM CortexM3 Board and ARM tool chain

1- Before adding alias and weak attributes

```
sama@DESKTOP-NJKEPON MINGW64 /e/Work/Toggle_Led Unit3_lesson3
$ make sym
arm-none-eabi-nm.exe Learn-In-Depth-CortexM3.elf
20000000 B buffer
080000bc T Bus_Fault
080000a4 T H_fault_Handler
0800001c T main
080000b0 T MM_Fault_Handler
08000098 T NMI_Handler
080000d4 T Reset_Handler
080000c8 T Usage_Fault_Handler
08000000 T vectors
```

```
sama@DESKTOP-NJKEPON MINGW64 /e/Work/Toggle_Led Unit3_lesson3
$ make dumb
arm-none-eabi-objdump.exe -h Learn-In-Depth-CortexM3.elf

Learn-In-Depth-CortexM3.elf:      file format elf32-littlearm

Sections:
Idx Name          Size      VMA           LMA           File off  Algn
 0 .text          000000e0  08000000      08000000      00010000  2**2
CONTENTS, ALLOC, LOAD, READONLY, CODE
 1 .bss           0000000c  20000000      20000000      00020000  2**2
ALLOC
 2 .debug_info    00000216  00000000      00000000      000100e0  2**0
CONTENTS, READONLY, DEBUGGING
 3 .debug_abbrev  0000011f  00000000      00000000      000102f6  2**0
CONTENTS, READONLY, DEBUGGING
 4 .debug_loc     00000140  00000000      00000000      00010415  2**0
CONTENTS, READONLY, DEBUGGING
 5 .debug_aranges 00000040  00000000      00000000      00010555  2**0
CONTENTS, READONLY, DEBUGGING
 6 .debug_line    000003b6  00000000      00000000      00010595  2**0
CONTENTS, READONLY, DEBUGGING
 7 .debug_str     00000165  00000000      00000000      0001094b  2**0
CONTENTS, READONLY, DEBUGGING
 8 .comment       0000007b  00000000      00000000      00010ab0  2**0
CONTENTS, READONLY
 9 .ARM.attributes 00000033  00000000      00000000      00010b2b  2**0
CONTENTS, READONLY
10 .debug_frame   000000e4  00000000      00000000      00010b60  2**2
CONTENTS, READONLY, DEBUGGING
```

2-After adding alias and weak attributes

```
sama@DESKTOP-NJKEP0N MINGW64 /e/Work/Toggle_Led Unit3_lesson3
$ make sym
arm-none-eabi-nm.exe Learn-In-Depth-CortexM3.elf
20000000 B buffer
08000098 W Bus_Fault
08000098 T Default_Handler
08000098 W H_fault_Handler
0800001c T main
08000098 W MM_Fault_Handler
08000098 W NMI_Handler
080000a4 T Reset_Handler
08000098 W Usage_Fault_Handler
08000000 T vectors
```

```
sama@DESKTOP-NJKEP0N MINGW64 /e/Work/Toggle_Led Unit3_lesson3
$ make dumb
arm-none-eabi-objdump.exe -h Learn-In-Depth-CortexM3.elf

Learn-In-Depth-CortexM3.elf:      file format elf32-littlearm

Sections:
Idx Name              Size      VMA       LMA       File off  Algn
 0 .text              000000b0  08000000  08000000  00010000  2**2
   CONTENTS, ALLOC, LOAD, READONLY, CODE
 1 .bss               0000000c  20000000  20000000  00020000  2**2
   ALLOC
 2 .debug_info        000001bf  00000000  00000000  000100b0  2**0
   CONTENTS, READONLY, DEBUGGING
 3 .debug_abbrev      00000109  00000000  00000000  0001026f  2**0
   CONTENTS, READONLY, DEBUGGING
 4 .debug_loc         00000090  00000000  00000000  00010378  2**0
   CONTENTS, READONLY, DEBUGGING
 5 .debug_aranges     00000040  00000000  00000000  00010408  2**0
   CONTENTS, READONLY, DEBUGGING
 6 .debug_line        000003a8  00000000  00000000  00010448  2**0
   CONTENTS, READONLY, DEBUGGING
 7 .debug_str         00000129  00000000  00000000  000107f0  2**0
   CONTENTS, READONLY, DEBUGGING
 8 .comment           0000007b  00000000  00000000  00010919  2**0
   CONTENTS, READONLY
 9 .ARM.attributes    00000033  00000000  00000000  00010994  2**0
   CONTENTS, READONLY
10 .debug_frame       00000074  00000000  00000000  000109c8  2**2
   CONTENTS, READONLY, DEBUGGING
```

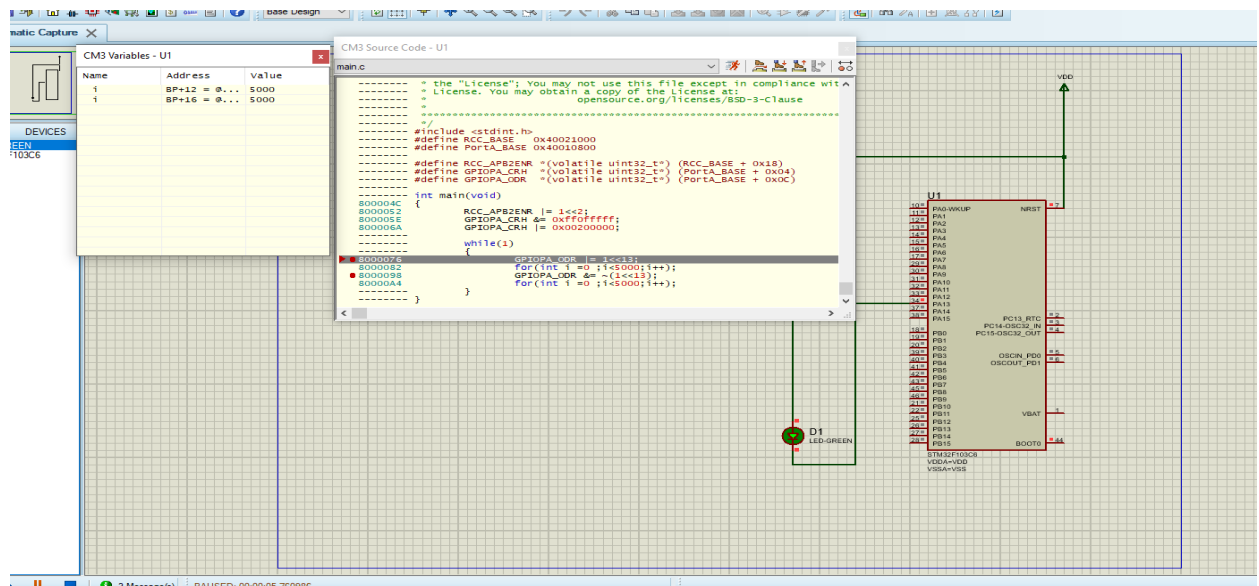
3-After Coping the .data section from flash to sram

```
sama@DESKTOP-NJKEPON MINGW64 /e/Work/Toggle_Led Unit3_lesson3
$ make dumb
arm-none-eabi-objdump.exe -h Learn-In-Depth-CortexM3.elf

Learn-In-Depth-CortexM3.elf:      file format elf32-littlearm

Sections:
Idx Name          Size      VMA       LMA       File off  Algn
  0 .text          00000128  08000000  08000000  00010000  2**2
CONTENTS, ALLOC, LOAD, READONLY, CODE
  1 .rodata         0000000c  08000128  08000128  00010128  2**2
CONTENTS, ALLOC, LOAD, READONLY, DATA
  2 .data           0000000c  20000000  08000134  00020000  2**2
CONTENTS, ALLOC, LOAD, DATA
  3 .bss            0000000c  2000000c  08000140  0002000c  2**2
ALLOC
  4 .debug_info     000002be  00000000  00000000  0002000c  2**0
CONTENTS, READONLY, DEBUGGING
  5 .debug_abbrev   00000176  00000000  00000000  000202ca  2**0
CONTENTS, READONLY, DEBUGGING
  6 .debug_loc      000000b4  00000000  00000000  00020440  2**0
CONTENTS, READONLY, DEBUGGING
  7 .debug_aranges  00000040  00000000  00000000  000204f4  2**0
CONTENTS, READONLY, DEBUGGING
  8 .debug_line     000003d3  00000000  00000000  00020534  2**0
CONTENTS, READONLY, DEBUGGING
  9 .debug_str      0000018e  00000000  00000000  00020907  2**0
CONTENTS, READONLY, DEBUGGING
10 .comment         0000007b  00000000  00000000  00020a95  2**0
CONTENTS, READONLY
11 .ARM.attributes 00000033  00000000  00000000  00020b10  2**0
CONTENTS, READONLY
12 .debug_frame     0000007c  00000000  00000000  00020b44  2**2
CONTENTS, READONLY, DEBUGGING
```

4-Final Simulation



Commands Used:

```
arm-none-eabi-gcc.exe -c -mcpu=cortex-m3 -gdwarf-2 -I . main.c -o main.o  
arm-none-eabi-gcc.exe -c -mcpu=cortex-m3 -gdwarf-2 -I . startup.c -o startup.o  
arm-none-eabi-ld.exe -T linker_script.ld main.o startup.o -o Learn-In-Depth-CortexM3.elf -Map=Map-file.map  
arm-none-eabi-objcopy.exe -O binary Learn-In-Depth-CortexM3.elf Learn-In-Depth-CortexM3.bin
```

```
arm-none-eabi-nm.exe Learn-In-Depth-CortexM3.elf
```

```
arm-none-eabi-objdump.exe -h Learn-In-Depth-CortexM3.elf
```