

Youssef Samy Youssef

2]

GPIOF

Property Value

DATA	0x08080819
DIR	0x08080808
IS	0x00000000
IBE	0x00000000
IEV	0x00000000
IM	0
RIS	0
MIS	0
ICR	0
AFSEL	0x00000000
DR2R	0xFFFFFFFF
DR4R	0x00000000
DR8R	0x00000000
ODR	0x00000000
PUR	0x00000000
PDR	0x00000000
SLR	0x00000000
DEN	0x08080808
LOCK	0x01010101
CR	0x1E1E1E1E

TexaS edX Lab 2

Port F Hardware

TM4C123

SW1

SW2

PF3

PF2

PF1

PF4

PF0

16 MHz

LED

LED

LED

Green

Port F Registers

DATA: 0x19 PUR: 0x00 LOCK: 0x01

DIR: 0x08 PDR: 0x00 CR: 0x1E

DEN: 0x08 RCGC2: 0x00000020 Clock enabled

Grading Controls

Number from edX: Grade Score: 0

Copy this to edX:

Logic Analyzer

Min Time Max Time Grid Zoom Min/Max Update Screen Transition Jump to Signal Info Amplitude Timestamps Enable

2.897813 ms 43.43662 ms 1 ms In Out All Auto Undo Stop Clear Prev/Next Code Trace Show Cycles Cursor

PORTF

1

0

23.48663 ms 33.48662 ms 44.48663 ms

main.c startup.c

```
15 for(i=0;i<2000;i++);
16
17
18 GPIO_PORTF_DEN_R |= 1<<3;
19 GPIO_PORTF_DIR_R |= 1<<3;
20
21 while(1){
22     GPIO_PORTF_DATA_R ^= 1<<3;
23 }
```

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DA\Projects\learn_in_depth_workspace\unit_3_embedded_c\lec4\vision_unit3_lab4_project\uvprojx - µVision [Non-Commercial Use License]

File Edit View Project Flash Debug Peripherals Tools SVCS Window Help

Registers

Register	Value
R0	0x00000000
R1	0x00000000
R2	0x00000424
R3	0x00000424
R4	0x00000000
R5	0x00000000
R6	0x00000000
R7	0x00000404
R8	0x00000000
R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x00000000
R13 (SP)	0x20000404
R14 (LR)	0x00000407
R15 (PC)	0x00000010
PSR	0x61000000

Disassembly

```

11: {
12:     volatile unsigned i;
13: }
14: FUSE (i7)
15:
16: void main()
17: {
18:     volatile unsigned i;
19:     SYSCTL_RCGC2_R = 0x20;
20:     for(i=0; i<2000; i++);
21:     GPIO_PORTF_DEN_R |= 1<<3;
22:     GPIO_PORTF_DIR_R |= 1<<3;
23:     while(1){
24:         GPIO_PORTF_DATA_R ^= 1<<3;
25:         for(i=0; i<2000; i++);
26:     }
27:     return 0;

```

Project Registers

Command

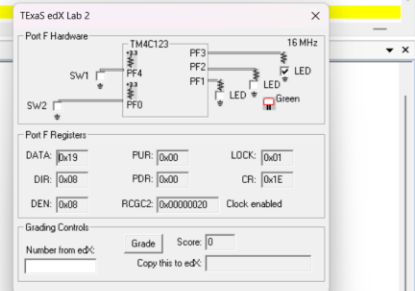
Running with Code Size Limit: 32K
Load "D:\Projects\learn_in_depth_workspace\unit_3_embedded_c\lec4\toggle_led_tiva_c.axf"

Call Stack - Locals

Name	Location/Value	Type
main	0x00000010	void f()
i	0x00000000	auto - uint

Simulation

tt: 58.96700000 sec L:11 C:1 CAP NUM SCRL OVR R/W



DA\Projects\learn_in_depth_workspace\unit_3_embedded_c\lec4\vision_unit3_lab4_project\uvprojx - µVision [Non-Commercial Use License]

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Registers

Register	Value
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R6	0x00000000
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R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x00000000
R13 (SP)	0x20000404
R14 (LR)	0x00000407
R15 (PC)	0x00000010
PSR	0x61000000

Disassembly

```

25: }
26: 0x00000000 ETE5 B 0x0000000E
27: 0x0000000A BF00 WOP
28: 40: void _reset(void)
29: 41: uint32_t i;
30: 42:
31: //copy data from flash to ram
32: 43: 0x000000A4 B580 FUSE (i7,i2)
33: 44: 0x000000A6 B086 SUB sp,sp,#0x18
34: 45: 0x000000A8 AF00 ADD z7,sp,#0x00
35: 46: uint32_t data_size = (uint32_t)&_E_DATA - (uint32_t*)&_S_DATA;
36: 47: 0x000000AA F2400200 MOVW r2,#0x00
37:
38: void _reset(void)
39: {
40:     uint32_t i;
41:
42:     //copy data from flash to ram
43:     uint32_t data_size = (uint32_t)&_E_DATA - (uint32_t*)&_S_DATA;
44:     uint8_t* p_src = (uint8_t*)&_E_DATA;
45:     uint8_t* p_dst = (uint8_t*)&_S_DATA;
46:     for(i = 0; i<data_size; i++){
47:         p_dst = (uint8_t*) p_src;
48:         p_src++;
49:     }
50:     p_dst++;
51:     p_src++;
52: }
53:
54:

```

Project Registers

Command

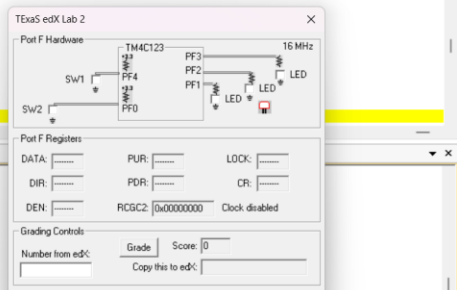
Running with Code Size Limit: 32K
Load "D:\Projects\learn_in_depth_workspace\unit_3_embedded_c\lec4\toggle_led_tiva_c.axf"
BS \toggle_led_tiva_c\startup.c:40
RS \toggle_led_tiva_c\main.c:24

Call Stack - Locals

Name	Location/Value	Type
main	0x00000010	void f()
i	0x00000000	auto - uint

Simulation

tt: 0.00139488 sec L:44 C:1 CAP NUM SCRL OVR R/W



```

PS D:\Projects\learn_in_depth_workspace\unit_3_embedded_c\lec4> arm-none-eabi-nm .\toggle_led_tiva_c.elf
00000148 T _default_handler
20000424 B _E_BSS
20000000 T _E_DATA
00000154 T _E_TEXT
000000a4 T _reset
20000000 B _S_BSS
20000000 T _S_DATA
00000000 T _S_TEXT
00000000 T g_p_fn_vector
00000148 W HARD_FAULT_Handler
00000010 T main
00000148 W NMI_Handler
20000000 b stack_top

```