

## stop\_go.c

```
1 // Stop Go C Example (Basic)
2 // Jason Losh
3
4 //-----
5 // Hardware Target
6 //-----
7
8 // Target Platform: EK-TM4C123GXL Evaluation Board
9 // Target uC:      TM4C123GH6PM
10 // System Clock:   40 MHz
11
12 // Hardware configuration:
13 // Red LED:
14 //   PF1 drives an NPN transistor that powers the red LED
15 // Green LED:
16 //   PF3 drives an NPN transistor that powers the green LED
17 // Pushbutton:
18 //   SW1 pulls pin PF4 low (internal pull-up is used)
19
20 //-----
21 // Device includes, defines, and assembler directives
22 //-----
23
24 #include <stdint.h>
25 #include <stdbool.h>
26 #include "tm4c123gh6pm.h"
27
28 //-----
29 // Subroutines
30 //-----
31
32 // Blocking function that returns only when SW1 is pressed
33 void waitPbPress()
34 {
35     while(GPIO_PORTF_DATA_R & 0x10);
36 }
37
38 // Initialize Hardware
39 void initHw()
40 {
41     // Configure HW to work with 16 MHz XTAL, PLL enabled, system clock of 40 MHz
42     SYSCTL_RCC_R = SYSCTL_RCC_XTAL_16MHZ | SYSCTL_RCC_OSCSRC_MAIN | SYSCTL_RCC_USESYSDIV | (4
43     << SYSCTL_RCC_SYSDIV_S);
44
45     // Set GPIO ports to use APB (not needed since default configuration -- for clarity)
46     SYSCTL_GPIOHBCTL_R = 0;
47
48     // Enable GPIO port F peripherals
49     SYSCTL_RCGC2_R = SYSCTL_RCGC2_GPIOF;
50
51     // Configure LED and pushbutton pins
52     GPIO_PORTF_DIR_R = 0x0A; // bits 1 and 3 are outputs, other pins are inputs
53     GPIO_PORTF_DR2R_R = 0x0A; // set drive strength to 2mA (not needed since default
54     configuration -- for clarity)
55     GPIO_PORTF_DEN_R = 0x1A; // enable LEDs and pushbuttons
56     GPIO_PORTF_PUR_R = 0x10; // enable internal pull-up for push button
```

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```
55}
56
57//-----
58// Main
59//-----
60
61int main(void)
62{
63    // Initialize hardware
64    initHw();
65
66    // Turn on red LED, turn off green LED, other port bits are zeroed
67    GPIO_PORTF_DATA_R = 0x2;
68
69    // Wait for PB press
70    waitPbPress();
71
72    // Turn off red LED, turn on green LED, other port bits are zeroed
73    GPIO_PORTF_DATA_R = 0x8;
74
75    // Endless loop
76    while(1);
77}
78
```