```
;-------------------------------------------------------------------------------
; MSP430 Assembler Code Template for use with TI Code Composer Studio
;
;
;-------------------------------------------------------------------------------
            .cdecls C,LIST,"msp430.h"       ; Include device header file

;-------------------------------------------------------------------------------
            .def    RESET                   ; Export program entry-point to
                                            ; make it known to linker.
;-------------------------------------------------------------------------------
                                            ; Assemble into program memory.
            .retain                         ; Override ELF conditional linking
                                            ; and retain current section.
            .retainrefs                     ; And retain any sections that have
                                            ; references to current section.
counter:            1
;-------------------------------------------------------------------------------
RESET               #__STACK_END,SP         ; Initialize stackpointer
StopWDT             #WDTPW|WDTHOLD,&WDTCTL  ; Stop watchdog timer


;-------------------------------------------------------------------------------
; Main loop here
;-------------------------------------------------------------------------------
            ; Configure red LED for output, start with unlit LED
            ; Red LED is connected to P1.0
                    #BIT0, &P1OUT               ; Red LED off
                    #BIT0, &P1DIR               ; Direction to output

            ; Configure green LED for output, start with unlit LED
            ; Green LED is connected to P9.7
                    #BIT7, &P9OUT               ; Green LED off
                    #BIT7, &P9DIR               ; Direction to output

            ; Configure push buttons S1 and S2 for input
            ; S1 is connected to P1.1; S2 is connected to P1.2
                    #BIT1|BIT2, &P1REN          ; Resistor enabled
                    #BIT1|BIT2, &P1OUT          ; Pullup resistor
                    #BIT1|BIT2, &P1IES          ; Interrupt on raising-edge
                    #BIT1|BIT2, &P1IE           ; Enable port interrupts

            ; Disable power lock
                    #LOCKLPM5, &PM5CTL0

            ; Clear all IFGs in P1 in case they are set during config
                    &P1IFG


                                ; Enable general interrupts


main:               main


;-------------------------------------------------------------------------------
; Interrupt Service Routines
```

```
58 ;-------------------------------------------------------------------------------
59 P1_ISR:
60
61 check_S1:    ; Check source of interrupt: is it P1.1?
62                     #BIT1, &P1IFG
63                     check_S2
64
65 service_S1:
66                     R7
67                     counter, R7
68
69 blink_loop:
70                     #BIT7, &P9OUT           ; turn lights on
71                     #BIT0, &P1OUT
72
73                     #delay                  ; delay
74
75                     #BIT7, &P9OUT           ; turn lights off
76                     #BIT0, &P1OUT
77
78                     #delay                  ; delay again
79
80                     R7                      ; decrement counter
81                     blink_loop              ; loop if not zero
82
83                     R7                      ; restore counter
84                     counter                 ; increment counter
85                     return_from_P1_ISR
86
87 check_S2:
88             ; Check source of interrupt: is it P1.2?
89                     #BIT2, &P1IFG
90                     return_from_P1_ISR
91
92 service_S2:
93                     #1, counter             ; reset counter
94
95 return_from_P1_ISR:
96
97                     #BIT1, &P1IFG           ; Reset flags
98                     #BIT2, &P1IFG
99                                             ; return from interrupt
100
101 ;-------------------------------------------------------------------------------
102 ; Delay
103 ;-------------------------------------------------------------------------------
104
105 delay:
106                     R10
107                     #0xFFFF, R10
108
109 countdown:
110                     R10
111
112                     countdown
113
114                     R10
```

```
115
116
117 ;-------------------------------------------------------------------------------
118 ; Stack Pointer definition
119 ;-------------------------------------------------------------------------------
120                     __STACK_END
121                     .stack
122
123 ;-------------------------------------------------------------------------------
124 ; Interrupt Vectors
125 ;-------------------------------------------------------------------------------
126                     ".reset"                ; MSP430 RESET Vector
127                     RESET
128
129                     ".int37"                ; I/O Port 1 Vector
130                     P1_ISR
131
```