Experiment-6

1) In the given Pulse_INIT subroutine TIMER0A is set to 'Periodic Timer Mode'. It runs at count down mode. Figure 1 shows the modification in the **Startup.s** file. Prescale is set to 16 in other word clock is down to 1 MHz.

```
338                     IMPORT  My_TimerOA_Handler
339  TimerOA_Handler    PROC
340                     EXPORT  TimerOA_Handler           [WEAK]
341                     PUSH{LR}
342                     BL   My_TimerOA_Handler
343                     POP{LR}
344                     BX   LR
345                     ENDP
346
```

Figure 1: Modification in the Startup.s file for TIMER0A handler

Fig. 2 and Fig.3 respectively shows the frequency settings and toggle codes to get 10 kHz square wave output at the port F pin 2.

```
35  ;-----------------------------------------------------
36  LOW                  EQU 0x00000032; half period  1KHz 0x00000100
37  ;HIGH                EQU 0x00000100
38  ;-----------------------------------------------------
```

Figure 2: TimerA0 interval Load Register is set to 10 kHz

```
45  ;-----------------------------------------------------
46  My_TimerOA_Handler   PROC
47                       LDR R1, =GPIO_PORTF_DATA ; set direction of PF2
48                       LDR R0, [R1]
49                       EOR R0, R0, #0x04 ;0000 0100 toggle the output
50                       STR R0, [R1]
51                       BX  LR
52                       ENDP
53  ;-----------------------------------------------------
```

Figure 3: The handler codes for toggle the output pin to get square wave

Note: *Duty cycle configurable version of the part 1 is added as appendix at the end of the report*

2) I use the codes in first part to generate external signal and I do not attached same code twice. I also used a binary to decimal converter which is written for previous experiment. Lastly, main codes of the part 2 which called as ReadPulse.s, is attached at the end.