## *On-Chip Peripheral Program Example*

Description

The µPD7805x/78005x subseries has more than 60 input/output ports, each of which is capable of 1-bit and 8-bit manipulation and varied control operations.

This example program initializes port 1.0 as output port and port 1.4 as input port. If port 1.4 is zero, then port 1.0 outputs a 1.2-kHz frequency. If port 1.4 is logical one, then port 1.0 outputs a 2.4-kHz frequency.

Program Specifications

❑ Frequency selector input; port 1.4

❑ Frequency output: port 1.0

❑ Pins used in program:
  - Port 1.4 (input selects the frequency on port 1.0)
  - Port 1.0 (toggles every 416 µs or 208 µs)

Flowchart
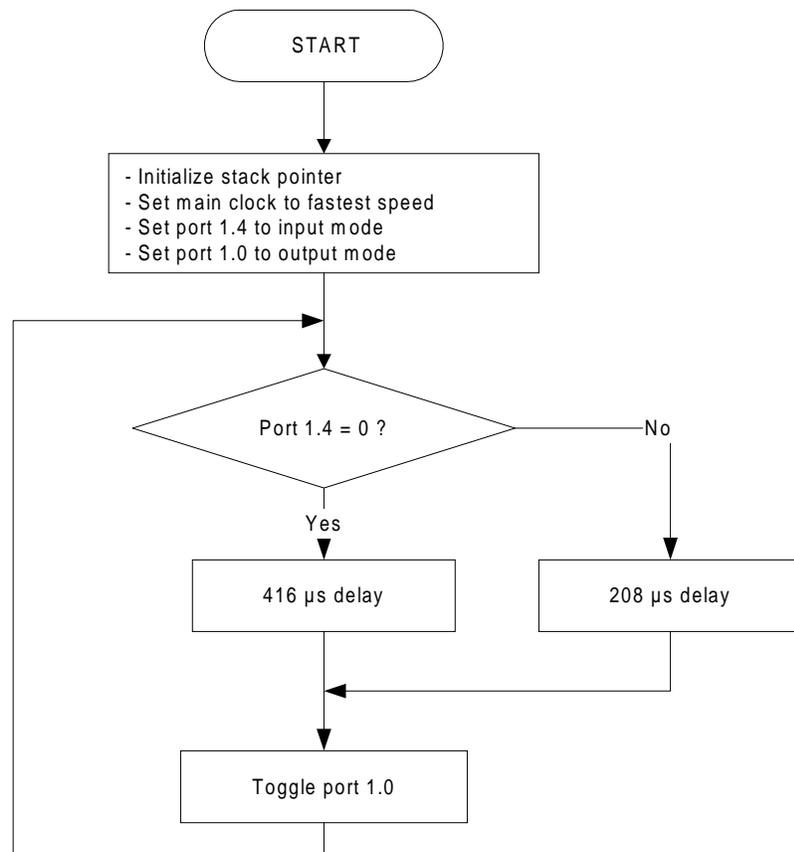
Assembly Language Program

```
;*******************************************************************
; Date:        08/18/1999
;
; Parameters: - fastest CPU clock
;               (fx = 5 MHz; 1 CPU clock cycle = 200ns)
;             - Port 1.0 outputs 1.2 kHz square wave frequency, if P1.4 is 0
;             - Port 1.0 outputs 2.4 kHz square wave frequency, if P1.4 is 1
;*******************************************************************


;=======================================
;       Specify Interrupt Vectors     =
;=======================================

Res_Vec    CSEG AT 0000h                ; Set main program start vector.
           DW     Start


;=======================================
;       Main Program                   =
;===-===================================

MAIN       CSEG
Start:     DI                           ; Disable interrupts
           MOVW   AX, #0FE20h           ; Load SP address
           MOVW   SP, AX                ; Set Stack Pointer
           MOV    OSMS,#01h             ; Don't use scaler
           MOV    PCC, #00h             ; Main system clock at fastest setting
           CLR1   PM1.0                 ; Set port 1.0 to output mode
MainLoop:  BF     P1.4, $Del20          ; Test port 1.4
           MOV    B, #7Dh               ; Load short count value
           BR     $DLoop                ; Branch to delay loop
Del20:     MOV    B, #0FFh              ; Load long count value
DLoop:     NOP
           DBNZ   B, $DLoop             ; Decrement B and continue if B=0
           XOR    P1, #01h              ; Toggle port 1.0
           BR     MainLoop              ; Branch back to main loop
           END
```

C Language Program

```
/*****************************************************************
; Date:        08/18/1999
;
; Parameters: - fastest CPU clock
;               (fx = 5 MHz; 1 CPU clock cycle = 200 ns)
;             - Port 1.0 outputs 1.2 kHz square wave frequency, if P1.4 is 0
;             - Port 1.0 outputs 2.4 kHz square wave frequency, if P1.4 is 1
;*****************************************************************/

/* extension functions in K0/K0S compiler */
#pragma sfr                      /* key word to allow SFR names in C code */
#pragma asm                      /* key word to allow ASM statements in C code */

/*======================================
;        Constants/Variables        =
;======================================*/

#define TRUE      1
#define FALSE     0
unsigned char PortData;
unsigned int  i;

/*======================================
;        Main Program               =
;======================================*/

void main(void)
{
        OSMS = 0x01;                     /* Don't use scaler */
        PCC  = 0x00;                     /* Main system clock at fastest setting */
        PM1  = 0xFE;                     /* Only port 1.0 in output mode */
        while(TRUE)
        {
            PortData = P1;               /* Read port 1 data */
            PortData &= 0x10;            /* Mask all bits except bit 4 */
            if(PortData == 0x10)        /* Test port 1.4 state */
                for(i=1; i<19 ; i++);   /* Short delay if port 1.4 = 1 */
              else
                for(i=1; i<38 ; i++);   /* Long delay if port 1.4 = 0 */
            P1 ^= 0x01;                  /* Toggle port 1.0 */
        }                                /* End of while loop */
}                                        /* End of function main() */
```

NEC

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