

On-Chip Peripheral Program Example

August 1999

Description

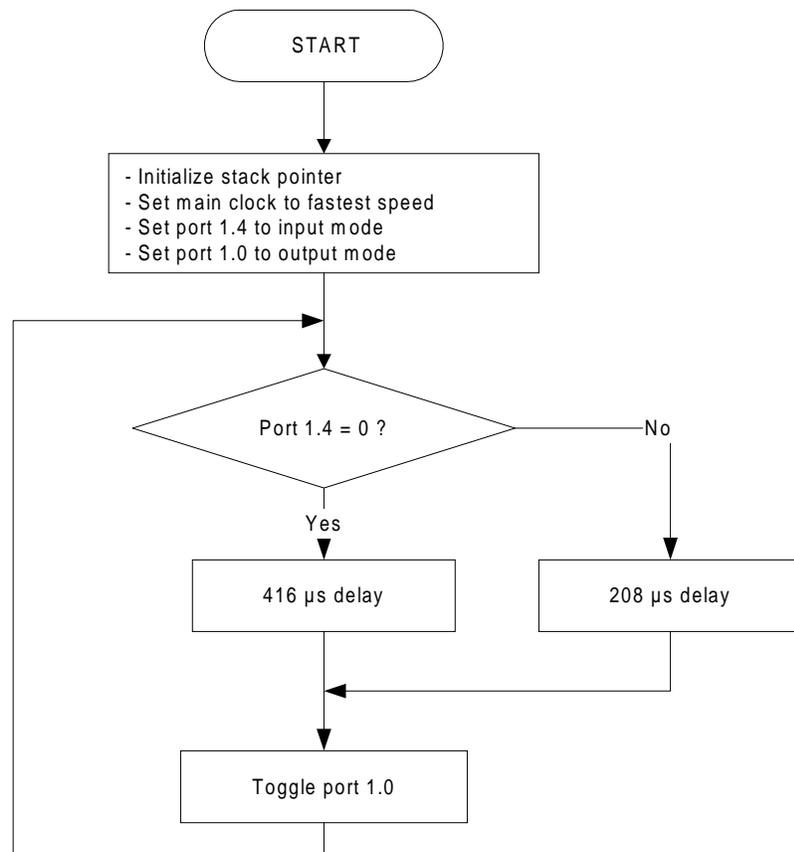
The μ PD7805x/78005x subseries has more than 60 input/output ports, each of which is capable of 1-bit and 8-bit manipulation and varied control operations.

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 μ s or 208 μ s)

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
MainLoop:  CLR1    P1.0                 ; Set port 1.0 to output mode
           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() */

```



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