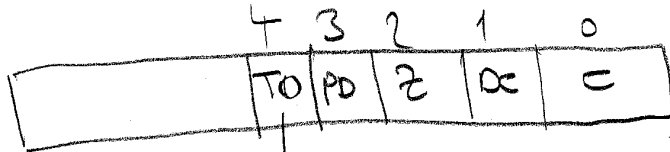


①

STATUS REGISTER



Time out bit

1 = When PIC is reenergized or CLRWDT or SLEEP commands are executed.

0 = When WDT overflows

```
btfss STATUS, TO;  
goto wdt-SBR;
```

PD: Power down bit

1 = When PIC is energized or CLRWD command is executed.

0 = When SLEEP command is executed.

CLRWDT → Clear the watch-dog-timer register register content is cleared.

SLEEP → Processor is put into SLEEP state less power consumption occurs.

(2)

When WDT (Watch-Dog-Timer) is enabled. WDT counter resets when it goes from 0xFF to 0x00. This takes 18ms. Using prescaler in OPTION register, ^{reset time} it may be extended.
When $PS_2 PS_1 PS_0 = 111$

$$128 \times 18ms \approx 2.3sec$$

Ex: - If RAO button is pressed in less than every 2sec, RBO is turned ON for 1sec and then turned OFF. Otherwise BUZZER connected to RB2 is turned ON for 1sec.

S/n:

List P=16F84A

Include "16F84A.INC"

-config -WDT_ON & _PWRTE_ON & _XT_OSC

org 0x00;

clrf PORTB;

bsf STATUS, RPO,

clrf TRISB,

movlw 0xFF,

movwf TRISA,

movlw b'00001111',

movwf OPTION_REG;

bsf STATUS, RPO;

btfs STATUS, TO; check whether WDT
goto turnON-BUZZER, overflows or NOT

③

```
test-RAO btfsc PORTA, RAO;
```

```
goto test-RAO;  
CLRWDT;
```

```
btf PORTB, RBO;  
call delay-1-sec;
```

```
btf PORTB, RBO;
```

```
CLRWDT; → clear watch-dog timer
```

```
goto test-RAO;
```

turn-ON-BUZZER

```
btf PORTB, RB1;
```

```
call delay-1-sec;
```

```
btf PORTB, RB1;
```

```
CLRWDT;  
return;
```

delay-1-sec

```
return;
```

```
end
```

Examples

The processor goes into SLEEP for power saving, and wakes UP every 144 msec and checks PORTA, if any of the BUTTONS connected to PORTA is pressed, an alarm device connected to RBO is activated for 10sec and SLEEPS again

④ S10³

List P=16f84A

include "p16f84A.INC"

- config _WDT_ON & _PWRT_ON & _XT_OSC

org 0x00;

clrf PORTB;

bcf STATUS, RPO

clrf TRISB;

movlw 0xFF;

movwf TRISA;

movlw b'00001011'

→ prescaler 18 8

i.e, $8 \times 18 = 144 \text{ms}$.

movwf OPTION_REG;

bcf STATUS, RPO;

CLRWDI;

clrw;

movf PORTA, W;

xorlw .15;

btsc STATUS, Z;

SLEEP;

goto alarm-SBR,

SLEEP;

alarm-SBR

bsf RBO;

call delay-10sec;

bcf RBO;

return;

5

```
delay_10sec;
delay_1sec;
delay_1sec;
delay_1sec;
return;
```

10 times

```
delay_1sec;
delay_100msec;
delay_100msec;
delay_100msec;
return;
```

10 Times

```
delay_100msec;
CLRWDI;
return;
```

very important

6

Examples

Write a program for the following tasks

- Processor normally is in SLEEP mode
- If an interrupt signal from RB0/INT is received processor wakes UP and actuates the alarm device connected to RB1 for 10 sec, and goes to SLEEP again.
- Every 2 sec processor wakes UP and checks PORTA for 100 msec, if any button connected to PORTA is pressed alarm is actuated for 5 sec, and SLEEP mode is entered again.

Slnc

Write the program for the above problem

Topics LEFT to be covered in this course

- MACROS
- INDIRECT ADDRESSING
- USE OF DIRECTIVES
- and some other tricky commands
- Introduction to PIC16F628 ← Nice Processor