

11_CW_CCW_887

;The delay cycles (long, medium and short) are copyright Charly Bechara - Demystifying
;The Microchip PIC Microcontroller For Engineering Students 2014
;Un motore DC ruota CW e CCW. Ad ogni rotazione si
;accende un led rosso o verde

```
List      P=PIC16F887
Include   "p16F887.inc"
ERRORLEVEL -302
__config 0x2007, 0x20E4 ;0010 0000 1110 0100
__config 0x2008, 0x3EFF ;0011 1110 1111 1111
```

```
DELAY_holdCount1 EQU 0x20
DELAY_holdCount2 EQU 0x21
DELAY_holdCount3 EQU 0x22
DELAY_count1 EQU 0x23
DELAY_count2 EQU 0x24
DELAY_count3 EQU 0x25
```

```
ORG 0x00
GOTO BEGIN
```

```
BEGIN      BSF      STATUS,RP0
            MOVLW 0X61
            MOVWF  OSCCON
            MOVLW 0
            MOVWF  TRISC
            BCF      STATUS,RP0
            MOVLW d'6'
            MOVWF  DELAY_holdCount1
            MOVLW d'216'
            MOVWF  DELAY_holdCount2
            MOVLW d'255'
            MOVWF  DELAY_holdCount3
```

```
MAINLOOP   BSF      PORTC, 7
            BCF      PORTC, 6
            BSF      PORTC, 0
            BCF      PORTC, 1
            CALL     DELAY_Long
            CALL     DELAY_Long
            CALL     DELAY_Long

            BCF      PORTC, 7
            BCF      PORTC, 6
            BCF      PORTC, 0
            BCF      PORTC, 1
            CALL     DELAY_Long

            BCF      PORTC, 7
            BSF      PORTC, 6
            BCF      PORTC, 0
            BSF      PORTC, 1
            CALL     DELAY_Long
```

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```
CALL    DELAY_Long
CALL    DELAY_Long
```

```
BCF     PORTC, 7
BCF     PORTC, 6
BCF     PORTC, 0
BCF     PORTC, 1
CALL    DELAY_Long
```

```
GOTO    MAINLOOP
```

.*****

```
DELAY_Long    MOVF    DELAY_holdCount1, W
               MOVWF   DELAY_count1
LOOP_LONG2    MOVF    DELAY_holdCount2, W
               MOVWF   DELAY_count2
LOOP_LONG3    MOVF    DELAY_holdCount3, W
               MOVWF   DELAY_count3
```

```
RIPETI        DECFSZ  DELAY_count3, F
               GOTO    RIPETI
               MOVF    DELAY_holdCount3, W
               MOVWF   DELAY_count3
               DECFSZ  DELAY_count2, F
               GOTO    RIPETI
```

```
               MOVF    DELAY_holdCount3, W
               MOVWF   DELAY_count3
               MOVF    DELAY_holdCount2, W
               MOVWF   DELAY_count2
               DECFSZ  DELAY_count1, F
               GOTO    RIPETI
               RETURN
```

;La formula è $T = 3 \cdot \text{DELAY_count1} \cdot \text{DELAY_count2} \cdot \text{DELAY_count3} + 5 \cdot \text{DELAY_count1} + \text{DELAY_count2} + \text{DELAY_count1}$

+ 2

.*****

```
DELAY_Medium  MOVF    DELAY_holdCount1, W
               MOVWF   DELAY_count1
LOOP_MEDIUM    MOVF    DELAY_holdCount2, W
               MOVWF   DELAY_count2
               DECFSZ  DELAY_count2, F
               GOTO    $-1
               DECFSZ  DELAY_count1, F
               GOTO    LOOP_MEDIUM
               RETURN
```

;La formula è $T = 3 \cdot \text{DELAY_count1} \cdot \text{DELAY_count2} + 5 \cdot \text{DELAY_count1}$

.*****

```
DELAY_Short    MOVF    DELAY_holdCount1, W
               MOVWF   DELAY_count1
               DECFSZ  DELAY_count1, F
               GOTO    $-1
               RETURN
```

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;La formula è $T = 3 \cdot \text{DELAY_count1} + 3$

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,

END