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1 ; *****
2 ; ** PROGRAMME MADE BY FADISHOP Card: FADICLOCK http://www.fadishop.eu FADITECO, S.L.U. Lleonard G. **
3 ; ** This program reads the current time and date, also reads the temperature every 64 seconds. **
4 ; ** Sets the current time by program and a DS3232 RTC alarm that is activated by interrupt INT2 (B.2) **
5 ; ** SLAVE ADDRESS IS STILL DS3232 I2C $ D0. **
6 ; ** ALARM INTERRUPT ROUTING JP6 (BLUE JUMPER) (I0 = 1 I1 = 0, I2 = 1, portC.7 = 0; Rpullup = 1) **
7 ; **
8 ; *****
9 ; SETTINGS
10 #picaxe 28x2
11 let dirsB=%10000000 ; 1=output 0=input
12 let dirsC=%00000000 ; 1=output 0=input
13 ; C.3 I2C_SCL
14 ; C.4 I2C_SDA
15 ;adcsetup = %00000000 ; SETTING ANALOG
16 ;setfreq em16 ; Oscillator / external oscillator to 16Mhz.
17 device_DS3232SN:
18 symbol adress_slave_A =$D0 ; Address 0xD0 DS3232 I2C only.
19 symbol @now=$00 ; Internal address register of seconds, minutes and hours.
20 symbol @today=$03 ; Internal address register of dayanal, day, month and year-century.
21 symbol @alm1=$07 ; Internal address register alarm_1 (sec, min, hour and day / day).
22 symbol @alm2=$0B ; Internal address register alarma2 (min, hour and day / day).
23 symbol @control=$0E ; (7)/EOSC (6)BBSQW (5)CONV (4-3)RS2-1 (2)INTCN (1)A2IE (0)A1IE
24 symbol @status=$0F ; (7)OSF (6)BB32KHZ (5-4)CRATE (3)EN32KHZ (2)BSY (1)A2F (0)A1F
25 symbol @offset=$10 ; temperature offset. (adds / subtracts capacitance)
26 symbol @temp=$11 ; Internal word temperature address($11-MSB_temperature and $12-LSB_temperature) .
27 symbol @test=$13 ; Reserved for test.
28 symbol @sram=$14 ; Internal address of the start of the block of 236 bytes SRAM.
29 symbol control=b16 ; Register/shadow control DS3232.
30 symbol status=b18 ; Register/shadow control/status DS3232.
31 ; Program Definitions and Initialization
32 symbol seconds=b0
33 symbol minutes=b1
34 symbol hour=b2
35 symbol day=b3
36 symbol date=b4
37 symbol mounth=b5
38 symbol year=b6
39 symbol T_msb=b7
40 symbol T_lsb=b8
41
42 ; INICIALITZACIONES:
43 let control =%00011100 ; Match default initialization.
44 let status =%11001000 ; Match default initialization.
45 call set_time_date ; Change the date-time DS3232 RTC.
46 call set_alarm1 ; Alarma_1 sets the DS3232 RTC.
47 configuracio_interrupcions:
48 hint2flag = 0 ; Clear the flag INT_2.
49 symbol hint_setting = %00000100 ; Are triggered by interrupts INT2.
50 hintsetup hint_setting ; Transfers such activation.
51 setintflags %00000100,%00000100 ; INT2 interrupts are enabled per falling edge.

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52
53 main:
54 i2cslave adress_slave_A, i2cslow, i2cbyte ; DS3232 I2C Address (0xD0-0xD1)
55 readi2c @now, (seconds, minutes, hour, day) ; Read now (seconds minutes, hour and day)
56 readi2c @today, (date, month, year) ; Read today (date, month and year)
57 readi2c @temp, (T_msb, T_lsb) ; Read 2 bytes temperature
58 readi2c @alm1, (b10, b11, b12, b13) ; Read alarma_1.
59 readi2c @control, (b17, b19) ; Read control registers.
60 debug ; Output data to display PC
61 PAUSE 5000 ; Pause 5 seconds
62 goto main ; Reboot
63
64 ; SECUENCE OF INTERRUPT
65 interrupt:
66 play A.2,2 ; The buzzer is sounded FADILEDS card.
67 let status=status and %11111110 ; Flag is cleared alarma_1 in DS3232.
68 let status=status and %11111101 ; Flag is cleared alarma_2 in DS3232.
69 writei2c @control, (control, status) ; We send and delete flag clearance A1F.
70 hint2flag = 0 ; INT2 flag is cleared
71 hintsetup hint_setting ; Newly re-enable interrupts INT2.
72 setintflags %00000100, %00000100 ; INT2 interrupts are enabled per falling edge.
73 return ; After return is when you actually enable the interrupt.
74 ; SUBROUTINE
75 set_time_date:
76 symbol xseg=$25 ; @_intern DS3232: $00
77 symbol xminu=$00 ; @_intern DS3232: $01
78 symbol xhora=$13 ; @_intern DS3232: $02
79 symbol xsemdia=$00 ; @_intern DS3232: $03
80 symbol xdia=$03 ; @_intern DS3232: $04
81 symbol xmes=$03 ; @_intern DS3232: $05
82 symbol xanno=$12 ; @_intern DS3232: $06
83 i2cslave adress_slave_A, i2cslow, i2cbyte ; Adress I2C of DS3232 (0XD0-0XD1)
84 writei2c @now, (xseg, xminu, xhora, xsemdia, xdia, xmes, xanno); It send current date-time to the RTC DS3232.
85 return
86
87
88 set_alarm1:
89 symbol al_seg=$00
90 symbol al_min=$01
91 symbol al_hor=$13 ; Time format->bit(6)=0:24h, bit(6)=1:AM/PM 12h.
92 symbol al_dia_sem=$03 ; Day format-> bit(6)=0:dia del mes, bit(6)=1:dia de la semana.
93 i2cslave adress_slave_A, i2cslow, i2cbyte ; Adress I2C of DS3232 (0XD0-0XD1)
94 writei2c @alm1, (al_seg, al_min, al_hor, al_dia_sem) ; It sends the settings of the alarma_1.
95 let control=control or %00000001 ; Interruption is enabled alarma_1 A1E.
96 let control=control or %00000100 ; Alarm interrupt is enabled INTCN in DS3232.
97 let status=status and %11111110 ; Flag is cleared alarma_1 in DS3232.
98 writei2c @control, (control, status) ; It sends and delete flag clearance A1F.
99 return
100
101 set_alarm2:
102 symbol a2_min=$01

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103 symbol a2_hor=$13 ; Time Format-> bit (6) h = 0:24, bit (6) = 1: AM / PM 12h.
104 symbol a2_dia_sem=$03 ; Day format-> bits (6) = 0: day of the month, bit (6) = 1: day of the week.
105 i2cslave adress_slave_A, i2cslow, i2cbyte ; Dirección I2C del DS3232 (0XD0-0XD1)
106 writei2c @alm2,(a2_min,a2_hor,a2_dia_sem) ; It sends the settings of the alarma_2.
107 let control=control or %00000010 ; Interruption is enabled alarma_1 A2E.
108 let control=control or %00000100 ; Alarm interrupt is enabled INTCN in DS3232.
109 let status=status and %11111101 ; Flag is cleared alarma_2 in DS3232.
110 writei2c @control,(control,status) ; It sends and delete flag clearance A1F.
111 return
```