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1      #picaxe 08m2
2
3
4      '      VER. 1.0      02/26/2017
5
6
7
8      '
9      '      PocketPAL Picaxe (08M2) Project
10     '      Logical Pin = (#) _____ (#)
11     '      serial in from PC / (5) [ Vcc [ | _ | ] Ground
12     '      Piezo/Speaker under TEST (4) [ 08M ] (1) Attention line from PC
13     '      Input from counter (3) [ ] (2) INTERNAL PIEZO for OP comms via
MORSE
14
15     'Define the Input & Output lines
16
17     Output 0      'Led #1 output active low 0=Led on 1=Led off
18     Output 1      'Led #2 output active low 0=Led on 1=Led off
19     Input 2       'Temperature Sensor 1-Wire Input
20     Output 4      'Piezo sounder Output for Chirp
21
22
23     'Define some constants used in generating Morse Code
24
25     Symbol DITLEN=12      'time length of basic DIT = 12 milliseC.
26     Symbol NTRDIT=12     'time between element flashes = 12 milliseC.
27     Symbol CHARLEN=500   'time between characters = 500 milliseC.
28     Symbol HZ=120       'frequency of Morse tones
29
30     'Define some variables to hold variable data
31
32     Symbol I=b0      'Loop/General variable
33     Symbol J=b1      'Loop/General variable
34     Symbol K=b2      'Loop/General variable
35     Symbol L=b3      'another Loop/General variable
36
37     Symbol MCHAR=b4  'Variable holding the current Morse character for
transmission
38     Symbol NUMDIT=b5 'Variable holding the # of elements data of the Morse
character
39     Symbol DITDAT=b6 'Variable holding the element data of the Morse character
40     Symbol MASK=b7  'Variable holding changing mask data to obtain
41     '      successive bits in the Morse character
42     Symbol D1=b8    'MSB (Most Significant Digit) of Measured/Calculated
Frequency
43     Symbol D2=b9    '2nd Digit of Measured/Calculated Frequency
44     Symbol D3=b10   '3rd Digit of Measured/Calculated Frequency
45     Symbol D4=b11   '4th Digit of Measured/Calculated Frequency
46     Symbol D5=b12   'MLSB (Least Significant Digit) of Measured/Calculated
Frequency
47
48     Symbol SEND=w12 'Word length variable holding the count representing
FREQ/1024
49     Symbol MSUB=w13 'Word length variable holding large number math values
(>256)
50
51
52     Init: COUNT 3,1000,SEND      'count the FREQUENCY output from counter chip for
1 second
53
54     MSUB=SEND/250*6      'results = BIG number like 6865
55     SEND=SEND+MSUB      'caclulate .004% * 6 = .024% = 162
7027!
56     '      DEBUG SEND
57
58     IF SEND>0 THEN XTAL      'GOT a frequency reading so crystal plugged
in...go measure it...!
59     '      NO crystal so issue a "72 PAL" message in Morse
60
61     TONES: FOR D1 = 0 TO 5      '6 chars in intro message

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62      Lookup D1, (163,188,0,134,66,130),Mchar 'get D1(th char in intro
63      IF Mchar>0 THEN SENDIT                '=0 then just a pause
64      PAUSE CHARLEN                          '          HERE
65      GOTO MOTONE                            'go to the next char
66  SENDIT: gosub didah                        'go announce the char in Morse
67      pause 50                               'just a little time between
      chars...
68
69  MOTONE: NEXT D1                            'next char in intro
70      PAUSE 50                               'a .5sec pause between intro &
      tones
71
72  '      now generate an asending test tone pattern on both the INTERNAL & under
      test Piezo
73
74      FOR I=1 TO 126 STEP 5                   'asending note pitches
75      SOUND 2, (I,10)                        'sound note on INTERNAL Piezo
76      SOUND 4, (I,10)                        'sound note on Piezo/Speaker
      under test
77      NEXT I                                  'next note in sequence
78
79  '      go do it again...and again...and again...until the lower right power
      button is released
80      GOTO TONES
81
82
83  XTAL:  MSUB=SEND/10000                      'calculate MSB of crystal frequency
84      D1=MSUB                                'DIGIT 1 = Ten Thousands KHZ
85      MSUB=D1*10000                          'Calc actual Ten Thousands KHZ
86      SEND=SEND-MSUB                         'remove that value from freq. in order to calc
      next digit
87      D2=SEND/1000                           'calculate DIGIT 2 = Thousands KHZ
88      MSUB=D2*1000                           'Calc actual Thousands KHZ
89      SEND=SEND-MSUB                         'remove that value from freq. in order to calc
      next digit
90      D3=SEND/100                             'calculate DIGIT 3 = Hundreds KHZ
91      MSUB=D3*100                             'Calc actual Hundreds KHZ
92      SEND=SEND-MSUB                         'remove that value from freq. in order to calc
      next digit
93      D4=SEND/10                              'calculate DIGIT 4 = Tens KHZ
94      MSUB=D4*10                              'Calc actual Tens KHZ
95      D5=SEND-MSUB                           'and DIGIT 5 = Ones...the remainder...
96
97      DEBUG SEND
98
99      IF D1=0 THEN NOzero                     'SURPRESS THE LEADING ZERO if there is
      one...
100
101      Lookup D1, (191,190,188,184,176,160,161,163,167,175),Mchar 'Morse code
      values for chars 0-9
102      gosub didah
103      pause 50
104  NOzero:
105
106      Lookup D2, (191,190,188,184,176,160,161,163,167,175),Mchar 'Morse code
      values for chars 0-9
107      gosub didah
108      pause 50
109      Lookup D3, (191,190,188,184,176,160,161,163,167,175),Mchar 'Morse code
      values for chars 0-9
110      gosub didah
111      pause 50
112      Lookup D4, (191,190,188,184,176,160,161,163,167,175),Mchar 'Morse code
      values for chars 0-9
113      gosub didah
114      pause 50
115      Lookup D5, (191,190,188,184,176,160,161,163,167,175),Mchar 'Morse code
      values for chars 0-9
116      gosub didah
117
118      pause 2000                             'pause 2 sec before doing it ALL

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again
119      goto init
120
121  Didah: Numdit= Mchar & %11100000      'Break off the top 3 bits of the
Morse character
122      Numdit=Numdit /32 -1      'Fix them as 0 to 7 for number of
elements -1 (adjusted for Lookup command)
123      Ditdat=Mchar & %00011111      'Break off the lower 5 bits which
are element data
124
125      For I=0 to Numdit      'Loop through flash routine for #
of elements times
126
127      Lookup I, (1,2,4,8,16),Mask      'Make masks to mask off the lower
5 bits 1 bit at a time
128
129      SEND=Ditlen      'Element time starts out as a Dit
130      K=Ditdat & Mask      'Mask off the proper bit in the
character sequence
131      If K=0 Then Flash      'Is the bit a zero? Then the
Element time is OK...
132  Got1: SEND=3*Ditlen      'Bit is a 1 so element is a dash,
element time = 3 * Dit
133
134  Flash: sound 2, (HZ,SEND)      'Sound Piezo for the proper
element time      'Turn OFF the LEDs
135      Pause Ntrdit      'Wait for the proper
inter-element time
136
137      Next I      'Next element
138
139      Pause Charlen      'Pause for the inert-character
time
140      Return      'Done sending character
141
142
143
144
145
146
147
148

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