

;DTMF touch tone decoder with LCD display

;1020 bytes would fit in a 16F84

;This demonstrates the Easy use of Interrupts

;Written for the ATOM version 2.2

;The demonstrate how to use the EXTINT interrupt as well as using a 8870 DTMF display chip

;lookup table is for display purpose only

;setup vars and constants

temp0	var	byte	;local var used and destroyed in subroutines
temp1	var	byte	
digit	var	byte	;number of digit pressed
newdigit	var	bit	;flag
yes	con	1	;yes new digit
no	con	0	;no digit was serviced
std	CON	P0	;pin 15 on M-8870 goes low after detecting touch tones
CLK	CON	P1	;LCD strobe line
RegSel	CON	P3	;LCD register or data line
LCDDATA	VAR	OUTC	;Data to LCD
DATA8870	VAR	IND	;Data from M8870 pins 11-14, D0-D3

;initialize

pause 500

lcdwrite RegSel\CLK,LCDDATA,[INITlcd1,INITlcd2]

REBOOT: ;jump to this label if you want to clear display  
lcdwrite RegSel\CLK,LCDDATA,[home,CLEAR]

;setup interrupt

SetExtInt Ext_H2L	;triggered on a high to low transition
OnInterrupt ExtInt, detectbuttonpushed	;jump to where on interrupt
input STD	;make PO input high to low interrupt detect
Enable ExtInt	;Turn on EXTINT interrupt

;end setup interrupt

clear ;clear all vars

main:

if newdigit=yes then gosub phonenumberlcdwrite ;only update display is new digit detected

goto main

;\*\*\*\*\*End main routines\*\*\*\*\*



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Disable ;all code below is disabled

;*routine is kept short as possible
detectbuttonpushed: ;interrupt is sent here below DISABLE to prevent multi interrupts
    newdigit=yes ;flag is set
    temp0=DATA8870
resume ;return from interrupt

phonenumberlcdwrite: ;only needed for the LCD display
    lookup
TEMP0,["0","1","2","3","4","5","6","7","8","9","*","#","D","E"],TEMP0
    lcdwrite RegSel\CLK,LCDDATA,[temp0]
    newdigit=no
return
```

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