

Assignment 33 1-Wire Temperature Sensor

จุดประสงค์ เพื่อออกแบบและเขียนโปรแกรมสร้างระบบการวัดและควบคุมอุณหภูมิ โดยต่อเชื่อมกับอุปกรณ์วัดอุณหภูมิแบบขาเดียว คือ DS1820

' One-wire temperature Sensor using DS1820 and send to LCD Display in Degree C and Degree F

```
temperature    VAR WORD           ' Temperature storage
count_remain   VAR BYTE          ' Count remaining
count_per_c    VAR BYTE          ' Count per degree C
```

```
DQ              VAR PORTC.0      ' One-wire data pin
heater           VAR PORTB.5
```

' Define LCD registers and bits

```
DEFINE LCD_DREG PORTD
DEFINE LCD_DBIT 4
DEFINE LCD_RSREG PORTE
DEFINE LCD_RSBIT 0
DEFINE LCD_EREG PORTE
DEFINE LCD_EBIT 1
```

```
ADCON1 = 7      ' Set PORTA and PORTE to digital
```

```
Low  PORTE.2    ' LCD R/W line low (W)
```

```
High heater
```

```
mainloop: OWOut DQ, 1, [$CC, $44] ' Start temperature conversion
```

```
waitloop: OWIn DQ, 4, [count_remain] ' Check for still busy converting
          IF count_remain = 0 Then waitloop
```

```

OWOut DQ, 1, [$CC, $BE]      ' Read the temperature
OWIn DQ, 0, [temperature.LOWBYTE, temperature.HIGHBYTE, Skip 4, count_remain, count_per_c]
' Calculate temperature in degrees C to 2 decimal places (not valid for negative temperature)
temperature = (((temperature >> 1) * 100) - 25) + (((count_per_c - count_remain) * 100) / count_per_c)
LCDOut $fe, 1, DEC (temperature / 100), ".", DEC2 temperature, " C"
If temperature >= 70 then
    Low heater
Else
    High heater
Endif
' Calculate temperature in degrees F to 2 decimal places (not valid for negative temperature)
temperature = (temperature * / 461) + 3200
LCDOut $fe, $c0, DEC (temperature / 100), ".", DEC2 temperature, " F"
Pause 1000      ' Display about once a second
GoTo mainloop   ' Do it forever

```

End

