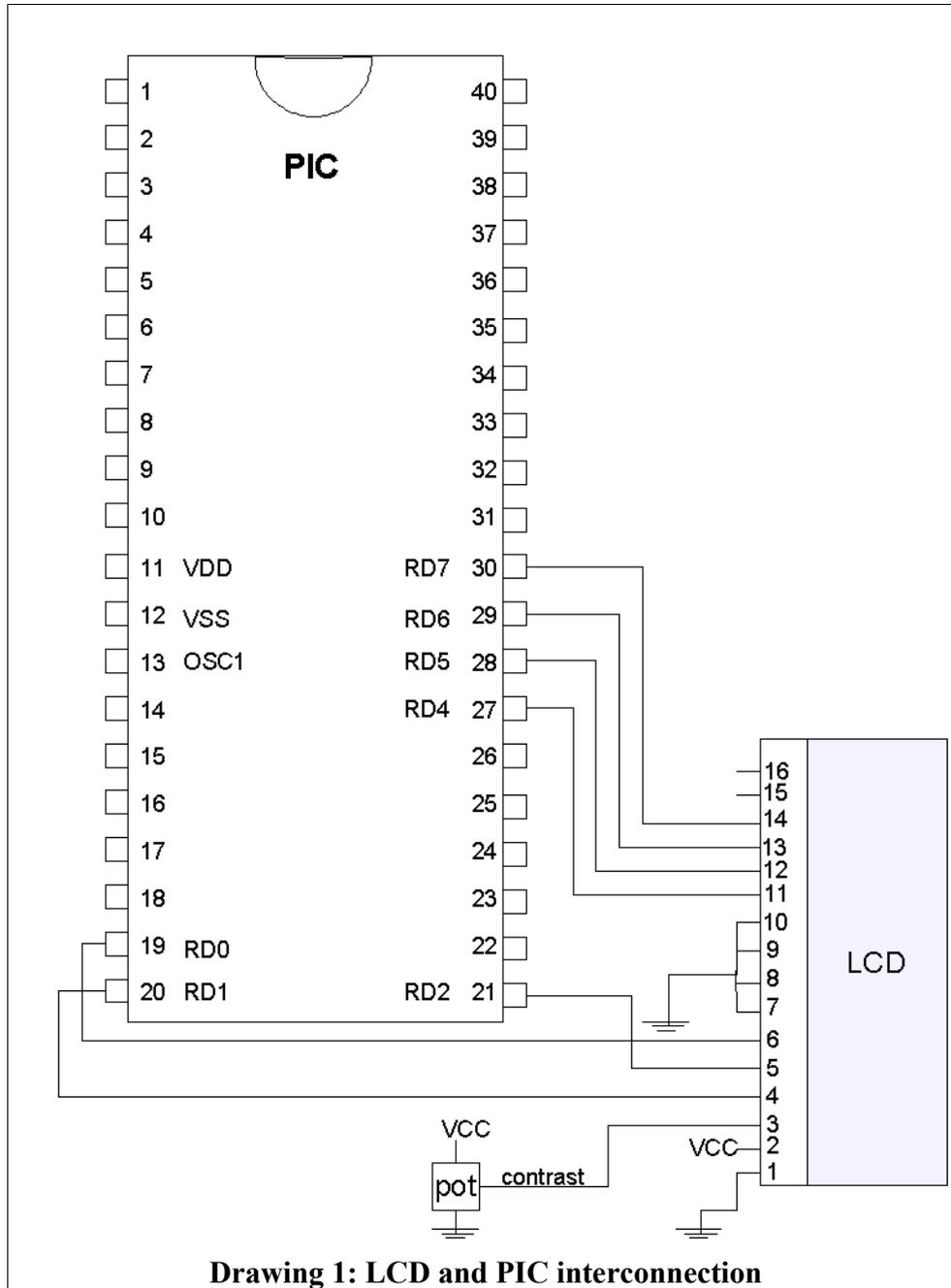


## Using the C18 compiler and the LCD

<b>Name:</b>	
<b>ID:</b>	
<b>Date:</b>	

# 1 Connecting the PIC and the LCD

From the stores, get the PIC, crystal, pot and LCD and connect them as per the diagram (Fig 1) shown. We will be using Port D to interface with the LCD and have it working in 4-bit mode. That is, only four lines of Port D are used for data transfer and another three used for control. The LCD uses the standard Hitachi HD44780 LCD controller and you can read the [datasheet](#) for details on its operation. The potentiometer in the diagram can be anything greater or equal to 10K



## 2 Configuring the code for the LCD

The compiler has built-in support for LCDs, but you need to configure the file to your setup. In the C:\mcc18\h folder you will find a file xlcd.h which needs to be configured. Copy that file to your working folder and edit it for the port settings which you have.

VERY IMPORTANT: You will need to modify the project setting for the compiler, by changing the include path so that your working folder is listed before the compiler's include folder, e.g. c:\myfolder;c:\mcc18\h. This is to ensure that the compiler reads your modified xlcd.h before the default one.

You also need some functions for proper timing of the LCD signals, these are delays for 18 cycles, at least 15ms and 5ms. I have given them below for a 4MHz clock, adjust them for the clock you are using and save them in a file that you include in the project.

```
#include <delays.h>
void DelayFor18TCY( void )
{
    Nop(); Nop(); Nop(); Nop();
    Nop(); Nop(); Nop(); Nop();
    Nop(); Nop(); Nop(); Nop();
    Nop(); Nop();
}
void DelayPORXLCD( void )
{
    Delay1KTCYx(15); //Delay of 15ms
    return;
}
void DelayXLCD( void )
{
    Delay1KTCYx(5); //Delay of 5ms
    return;
}
```

To learn how to use the built-in routines to control the LCD, read the [C18 Libraries Guide](#), in the Software Peripheral section you will find the documentation on the routines.

### **3 Exercise**

Use the PIC to write the words “Hello world!” starting at the second line and fourth character of the LCD. Submit your code and any explanation needed to understand how you accomplished the exercise. Show your working system to the demonstrator and have him sign your submission certifying that you have achieved the objective.