## LAB. 3: Liquid Crystal Display (LCD) and Timer

### Objectives

- Learn how to interface an LCD to a microcontroller
- Learn how to read/calibrate data input from an analogue sensor
- Gain skills in using delay loops to measure time in embedded applications.

a) Write a software program in a language of your choice (MikroC, Assembly, CCS etc…) that controls and displays a text message on an LCD screen at the press of a switch. The text should be the of each member of your goup; *Name on line 1* and *Matriculation number on line 2*. *Display this information for all group members at regular intervals of 1 second.*

b) Modify your program in a) to display on the LCD a number read from the analogue input pin (ADC) of your microcontroller. The number read should be the voltage of a 9V battery source as shown in figure 5.

- Choose appropriate values for the resistors R4 and R5 to conveniently measure the voltage of the 9V battery without any possibility of destroying the microcontroller
- Your program should do a real time voltage measurement of the battery source BAT1. The potentiometer RV2 is used to vary the battery voltage that is fed into the microcontroller for measurement

c) Simulate the result on Proteus ISIS
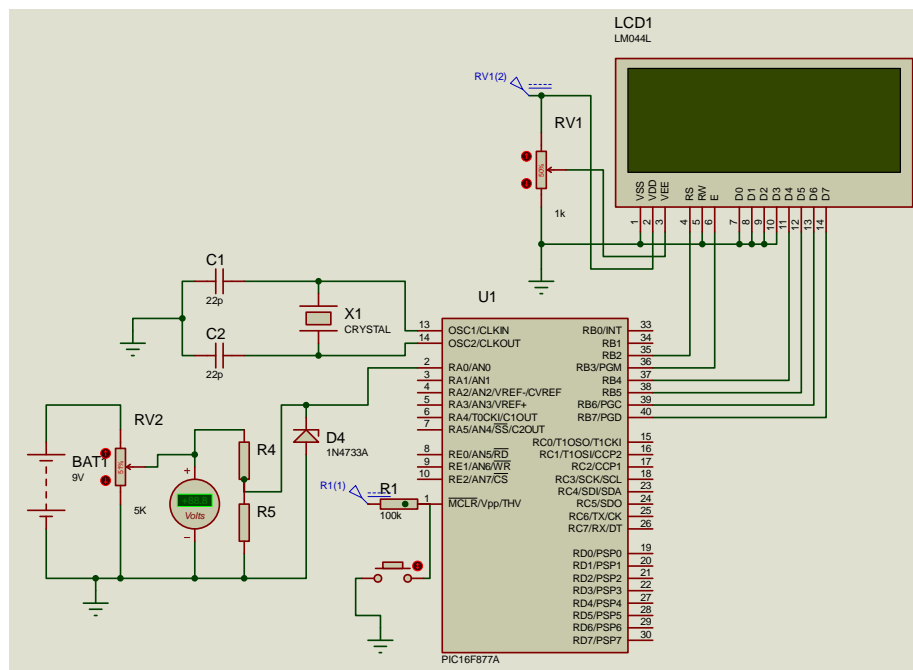
d) Build the circuit on a project board and verify your results



*Figure 5: Voltage Measurement system*