8051 Project prompt:

Write a program to do the following:

1 - PORT 1 must start with the LED's connected to P1.0, P1.1, P1.6, and P1.7 being ON while the rest of the LED's are OFF for 2 seconds. You must then switch the LED's off before reading the ADC.

2 - In the main program, read the ADC which is connected to address 0X4000. The ADC0804 on board is an 8-bit device with an internal reference voltage of 5 volt. The ADC is connected to a temperature sensor. If the temperature sensor output is 5V, then the real temperature is 90-degree Celsius. In the main program you must read the sensor output and convert it to the real temperature. This real temperature must be displayed on the two 7-segment displays which is connected to Port 1. (Binary to BCD conversion must thus be done). If the temperature goes above 40 degree Celsius (Including 40), the LED connected to Port 3.0 must switch ON (Take note of how it is connected). For temperatures below 40-degree Celsius, the LED must be OFF.

3 - You must also activate the external interrupt 0, for the Hex keypad which is connected to address 0x2000. The keypad is also connected to P3.2 (from the PIC and
latch combination which forms the keypad encoder) and can be used to interrupt the main program.

In the interrupt service routine:

-you must read the values that you receive from the keypad encoder when a key is pressed, correct the received values and display the corrected value on Port 1 for as long as the key is pressed. Display only the binary value received from the keypad on the LED's connected to Port 1.

-While still in the interrupt routine, just after the pressed key is released, display the raw value that was received from the ADC for 1 second. (Hint: The value received from the ADC must thus be globally declared. Create another 1-second software delay in the interrupt service routine. Do not call an outside delay function).

-Only after displaying the key pressed value and the raw ADC value the program must return to the main program and display the temperature again on the 7-segment displays.