EEE 174 Homework assignment 8

Due Dec. 2nd

PROBLEM 1
What is the resolution of an ADC chip that has 8 bits at the output if the input voltage range is 0 to 12V?

PROBLEM 2
Figure 1 shows the interfacing of ADC chip with the 8051.
1) What do the signals IN0-IN7 represent?
2) Assuming that

\[
\begin{align*}
P0.0 &= 1 \\
P0.1 &= 1 \\
P0.2 &= 0
\end{align*}
\]

which analog channel is selected? Explain.

PROBLEM 3
Figure 2 shows interfacing the 8051 with seven-segment display.
1) Which ports of the micro-controller are we using?
2) What is the role of the 74LS240?
3) What would be the values of the port pins if we want to display the number 4.

PROBLEM 4
We consider the seven segment display interfacing with the micro-controller where the table in figure 3 shows the data format. The program for getting data from port 3 and displaying it in port 1 is as follows:

Figure 1: Interfacing ADC with 8051
MOV A, P3  
ANL A, 0FH  
GETCODE: MOV DPTR, #TABLE  
MOVC A, @A+DPTR  
MOV P1, A  

TABLE:   DB 3FH, 30H, 5BH, 4FH, 66H, 6DH, 07H, 7FH, 6FH

In this program the look up table concept is used to select the display code correspond to each digit. The data in the table is stored in a series of memory locations starting at ‘TABLE’. Index addressing mode is used to access this table. Explain what each instruction in the code above is doing.