**REQUIREMENTS NOT MET**

N/A

**PROBLEMS ENCOUNTERED**

N/A

**FUTURE WORK/APPLICATIONS**

Converting analog to digital signals is used in applications such as:  
Using PWM to control motors  
Using inverters to convert AC to DC then back to AC  
Controller photoresistors  
Transmitting bits across lines  
and other applications where an analog signal must be converted to a binary signal.

**PRE-LAB EXERCISES**

**i. Why must we use the ADCA module as opposed to the ADCB module?**

**Our photoresistor is wired to port A of our ATX. Therefore, its not possible to use any other ADC but ADCA**

**ii. Would it be possible to use any other ADC configurations such as single-ended, differential, differential with gain, etc. with the current pinout and connections of the OOTB Analog Backpack? Why or why not?**

**No, we can only use differential with gain.  
 The reason why is because single-ended and differential without gain requires a 16 bit input port  
 Our input port is only 7 bits, so we can only use differential with gain.**

**iii. What would the main benefit be for using an ADC system with 12-bit resolution, rather than an ADC system with 8-bit resolution? Would there be any reason to use 8-bit resolution instead of 12-bit resolution? If so, explain.**

**A 12 bit resolution allows a greater range of values we can measure.  
 However, this requires a longer conversion time.   
 An 8 bit resolution provides a pretty good range of values for conversion. And its quicker than 12 bit. So you may prefer that if you don’t need a super accurate measurement.**

**iv. What is the decimal voltage value that is equivalent to a 12-bit signed result of 0x360, given a voltage range of -5V to +5V?**

**v. Given an 8-bit signed ADC system with a voltage reference range of -1V to +2V, express the expected digital value in terms of the analog input voltage, using the form VD = f(VA).**

**PSEUDOCODE/FLOWCHARTS**

**SECTION 1**

**A diagram of a program

Description automatically generated  
Figure 1: Flowchart for “lab7\_1.C”**

**PROGRAM CODE**

**SECTION 1**

**APPENDIX**

<insert copy of all *supporting* ASM or C program code, e.g., header files referenced within your programs, as well as any other relevant information, e.g., screenshots (with meaningful captions), when applicable (if not applicable, write “N/A”)>