# Lab0 In-Lab Questions

1. Briefly, in your own words, describe the purpose of each of the header (\*.h) files.

config\_bits.h  
This header file configures the operating characteristics of the processor and contains pragma directives.

CerbotMX7cK.h

Contains the functions that initialize all of the pin connections on the board.  
  
lab0.h

Contains defintions that lab0.c uses like A and B. This header file also prototypes the no\_swap function and the swap function.

1. Set a breakpoint at the no\_swap() function and observe the variables a and b. Single step through the function and observe the behavior. Next, repeat with the swap() function. Comment on the differences between the two functions and explain the reasons for the difference in behavior.  
     
   The difference between the two functions is that the no\_swap() function does not use a pass by reference where the swap() function does. This means that when the no\_swap() function is called it does not modify the variables a and b because only a copy of the value is used. When no\_swap() exits the values are lost and return to their previously declared state.

The swap() function uses pass by references and not copied values, as denoted by the ‘&’. This means that the function is using the actual stored value to swap and not a copied value. In short, the pass by reference uses a memory address to access the true value where the no\_swap() function only is passed the value of the variable.

1. Lastly, move the first two lines of the while(1) loop where the variables a and b are initialized, outside of the loop so they appear right after the Cerebot\_mx7ck\_setup() function call. Using the debugger, determine the values of a, b, c, and d after the body of the while(1) loop has been executed four times.

Time 1: a=0x00000013, b=5, c=0x00000016, d=0x00000003  
Time 2: a=0x00000015, b=0x00000013, c=0x00000018, d=0x00000003  
Time 3: a=0x00000025, b=0x00000015, c=0x00000028, d=0x00000003  
Time 4: a=0x00000037, b=0x00000025, c=0x0000003A, d=0x00000003