Student Name:_____ Student ID: _____

Problem 1 (40 pts)

Write the equivalent C code for the assembly below. Assume J, K and L are local variables and that the X register is a stack frame pointer.

```
        ldaa    J,X
        cmpa    #$A0
        bgt     done
        ldaa    K,X
        cmpa    #$10
        blt     done
        ldaa    L, X
        cmpa    #$FF
        beq     done
        staa    J,X
done:   clr     L,X
```

Student Name:_____ Student ID: _____

Problem 2 (20 pts)

If the SP is pointing to $3BFE at the time an IRQ occurs, fill in the column below for the chip just after entering the interrupt service routine located at $4000.

Location	Just prior to IRQ	After entering ISR
A	**12**	
B	**34**	
D		
PC	**4000**	
Y	**1234**	
CCR	**00**	
X	**2000**	
SP	**3BFE**	
Mem 3BF5	**00**	
Mem 3BF6	**00**	
Mem 3BF7	**11**	
Mem 3BF8	**32**	
Mem 3BF9	**00**	
Mem 3BFA	**00**	
Mem 3BFB	**55**	
Mem 3BFC	**55**	
Mem 3BFD	**00**	
Mem 3BFE	**00**	
Mem 3BFF	**FF**	
Mem 3C00	**FF**	
Mem 3C01	**FF**	

Student Name:_____ Student ID: _____

Problem 3 (40 pts)
Below is the code for a simple subroutine (do_it) that uses one local variables implemented with a stack frame. Given the initialized values in the table, fill in the rest of the table describing the registers and memory locations at different times during the execution of the function.

```
TEMP    set     -2
swap:   pshx
        tsx
        leas    TEMP,X
        sty     TEMP,X
        tfr     D, Y
        ldd     TEMP,X
        txs
        pulx
        rts
```

Location	Just prior to IRQ	After the TFR instruction	After the rts instruction
A	**12**		
B	**34**		
D			
X	**2000**		
Y	**4000**		
SP	**3BFB**		
Mem 3BF5	**00**		
Mem 3BF6	**00**		
Mem 3BF7	**00**		
Mem 3BF8	**00**		
Mem 3BF9	**00**		
Mem 3BFA	**00**		
Mem 3BFB	**55**		
Mem 3BFC	**55**		
Mem 3BFD	**00**		
Mem 3BFE	**00**		
Mem 3BFF	**FF**		
Mem 3C00	**FF**		
Mem 3C01	**FF**		