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### ECE 242 Exercise #7

1. Let  $(D1)[7:0] = \{1101\ 1011\}$ . Show the final value of D1 after the execution of the following instruction: ORI.B #03,D1.  
Data stored in D1 is DB in hex or  $\{1101\ 1011\}$ . After the instruction ORI.B #03,D1, the value in D1 would be DD in hex or  $\{1101\ 1011\}$ . There is ORI for the byte size of  $(11)_2$  in the DD1 register and  $(11)_2$  of #03. Crossed-checked with EASy68k.
2. Let  $(D1)[7:0] = \{1011\ 1111\}$ . Show the final value of D1 after the execution of the following instruction: ASR.B #2,D1.  
Data stored in D1 is BF in hex or  $\{1011\ 1111\}$ . After the instruction ASR.B #2,D1, the value in D1 would be EF in hex or  $\{1110\ 1111\}$ . The instruction is an arithmetic right shift by 2 so the value in data register D1 will be  $\{1110\ 1111\}$ . Crossed-checked with EASy68k.
3. Let  $(D1) = \$0000\ 0005$  and  $(D2) = \$0000\ 88FF$ . Show the final values of D1 and D2 after the execution of the following instruction: BCHG.L D1, D2.  
The value at D1 is  $\$0000\ 0005$  and D2 is  $\$0000\ 88FF$ . The final value after execution of the instruction is D1 is  $\$0000\ 0005$  and D2 is  $\$0000\ 88DF$ . The fifth bit was flipped in D2. Crossed-checked with EASy68k.
4. Which instruction is equivalent to ANDI.W #\$7FFF,D2? (Justify your answer)  
ii.)BCLR #15,D2  
For the value originally stored in D2 be 1111 1111 1111 1111. The instruction ANDI #\$7FFF, D2 will store the data  $(0111\ 1111\ 1111\ 1111)_2$  in D2 and BCLR #15, D2 will clear the 15<sup>th</sup> bit from the right and the last bit is 0 which makes the instructions equivalent.
5. Show how you would change the Interrupt Level Mask from 1 to 5 using MC68000 Assembly Language programming.  
The instructions to change Interrupt Mask from 1 to 5 is:  
SR = x010 0001 000x xxxx  
BSET #5A, SR  
SR = x010 0101 000x xxxx  
This instruction will set the 10<sup>th</sup> bit as 1.