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COE 202, Term 052
Fundamentals of Computer Engineering

Quiz# 7 (1% Bonus)

Due date: Monday, May 15, 2006

Q.1. It is required to design a circuit that has two 4-bit inputs $A=A_3A_2A_1A_0$ and $B=B_3B_2B_1B_0$ and one **6-bit output** $C= C_5C_4C_3C_2C_1C_0$. The circuit implements the following eight functions based on the values of the three selection inputs S2, S1 and S0.

S2 S1 S0	Function
0 0 0	$C=A + B$
0 0 1	$C=A - B$
0 1 0	$C=A+1$
0 1 1	$C=A-1$
1 0 0	$C=B$
1 0 1	$C=-B$
1 1 0	$C=2B$
1 1 1	$C=3B$

Assume that you can use MSI components like Adder, Multiplexor, Decoder in your design as needed. Do not assume the availability of a subtractor or multiplier. Note that you only need to show the used components as blocks showing only their inputs and outputs without showing their detailed implementations. Model your design in Logic Works and verify its correct functionality.