DATE: February 9, 2007
TO: CENG 244 Students
FROM: Elaine Linde
SUBJECT: Laboratory #4 – Karnaugh Maps

Preliminary Work:
(1) Create a truth table that corresponds to the Boolean function F, given below.

\[ F(A,B,C) = \Sigma(0, 2, 3, 5, 7) \]

(2) Derive a Boolean expression (i.e. a logic equation) for function F using sum-of-minterms, Boolean algebra, and/or a K-map.

(3) Draw a logic circuit that will implement your logic expression for Boolean function F.

(4) Simulate your circuit from Part 3 with Xilinx ISE and verify its functionality.

(5) Create a truth table that corresponds to the Boolean function G, given below.

\[ G(A,B,C,D) = \Sigma(0, 1, 4, 6, 13, 15) \]

(6) Derive a Boolean expression (i.e. a logic equation) for function G using sum-of-minterms, Boolean algebra, and/or a K-map.

(7) Draw a logic circuit that will implement your logic expression for Boolean function G.

(8) Simulate your circuit from Part 7 with Xilinx ISE and verify its functionality.

Experimental Work:
(1) Connect your logic circuit from Part 3 of the Preliminary Work and verify its functionality.

(2) Connect your logic circuit from Part 7 of the Preliminary Work and verify its functionality

Conclusion:
(1) Document your findings.

(2) Turn in your log book at the end of the period for grading.