

CoCO Studio #4 (25 Points Total)

INDIVIDUAL ACTIVITIES!

1. Minimize the logic expression below.

$$F = \sum_{wxyz} (0, 2, 4, 6, 7, 8, 10, 11, 12, 13, 14)$$

(a) (7 points) Solve it manually using K-map.

(b) (6 points) Solve it using the Espresso software: Read the intro.html file in the espresso folder on LMS. Download “espresso_complete.zip” to your PC from that site. It is simplest to have the program and your input file in the same directory. Download the first sample date file listed there, decoder.txt. Run espresso on it, and see if you get the same answer as the Intro. Now solve the above minimization problem using Espresso. Espresso provides only one solution. Hand in a copy of your input file and output file.

2. Consider the following truth table with 3 inputs and 2 outputs. It's a full adder, with D being the carry out and S being the sum.

ABC	DS
0 0 0	0 0
0 0 1	0 1
0 1 0	0 1
0 1 1	1 0
1 0 0	0 1
1 0 1	1 0
1 1 0	1 0
1 1 1	1 1

(a) (2 points) Write down the unminimized expression for D.

$$D = \underline{\hspace{10cm}}$$

(b) (2 points) Write the corresponding K-map for D, with the variables in this order.

AB	00	01	11	10
C				
0				
1				

(c) (4 points) What's the resulting simplified expression?

D = _____

(d) (4 points) Create a small input file to correspond to the truth table with 3 inputs and 2 outputs. (It's a full adder.) You'll have to add the proper header declarations. Run it thru espresso. What is the boolean expression for D?

D = _____