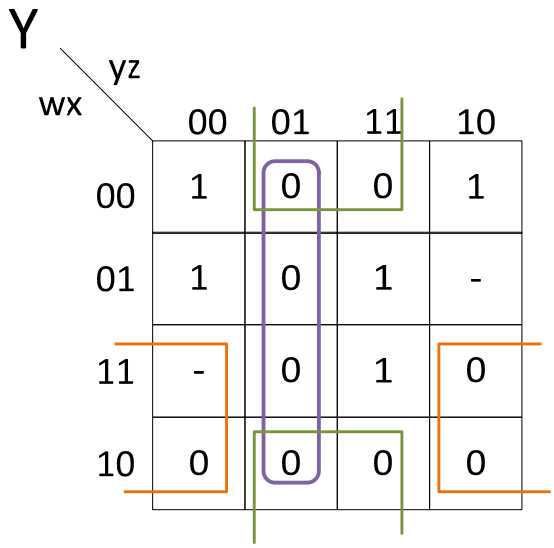
CSE 320 Fall 2014 *Homework #2 Quiz Version 1*

*Name:*_____ ***SOLUTION*** _____*ID:*_____

No calculators, notes, or textbooks allowed. Show all your work for full credit.
Time limit: *20 mins*

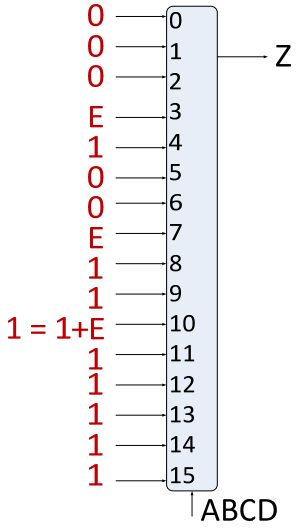
Problem 1 [5 points]: Write the minimal POS expression for Z using the k-map.



Y = (w' + z) (y+z') (x+z')

Problem 2 [5 points]: Implement the Z using **one** 16-input (4-bit selector) multiplexor with the selectors bits as ABCD.

Z (A,B,C,D,E) = AB'CD'E' + A'BC'D' + CDE + A

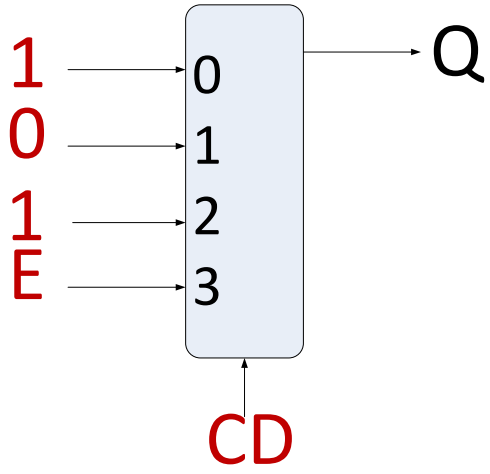


(More on back)

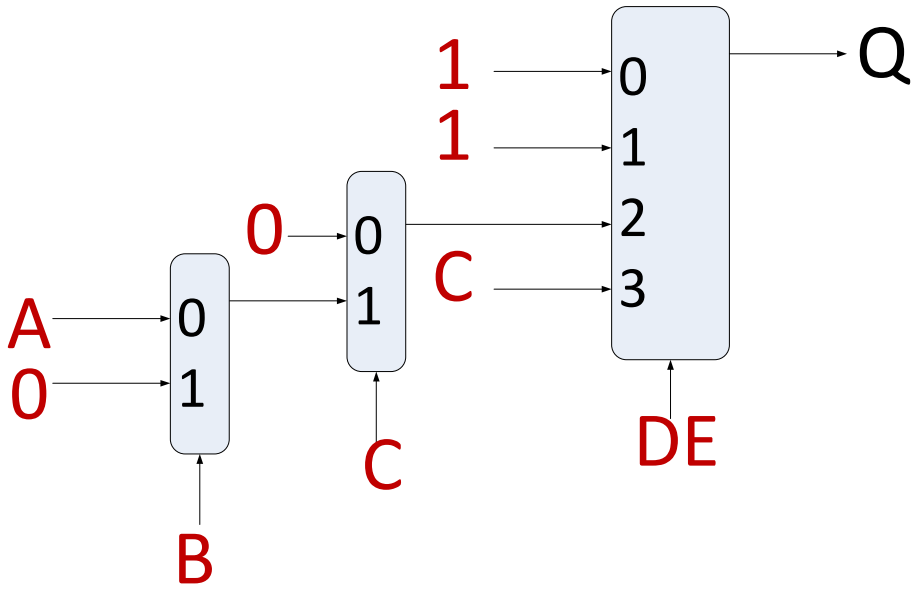
Problem 3 [5 points]: Implement the Q using **one** 4-input (2-bit selector) multiplexor and the **minimal** number of 2-input (1-bit selector) multiplexors.

$$Q\ (A,B,C,D,E) = AB'CD'E' + CDE + D'$$

If you simplify:
= AB'CD'E' + CDE + D'
= CD'(AB'E' + 1) + CD(E)
= CD'(1) + CD(E) + C'D' (1) + C'D(0)



Alternate possible solution without simplification (not minimal, but accepted)

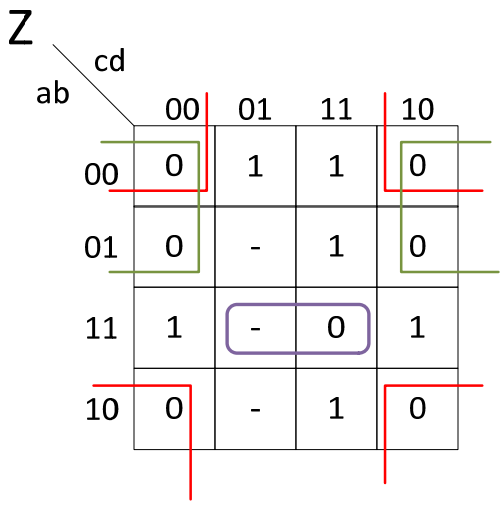


CSE 320 Fall 2014 *Homework #2 Quiz Version 2*

Name:_____SOLUTION_____ID:_____

No calculators, notes, or textbooks allowed. Show all your work for full credit.
***Time limit:** 20 mins*

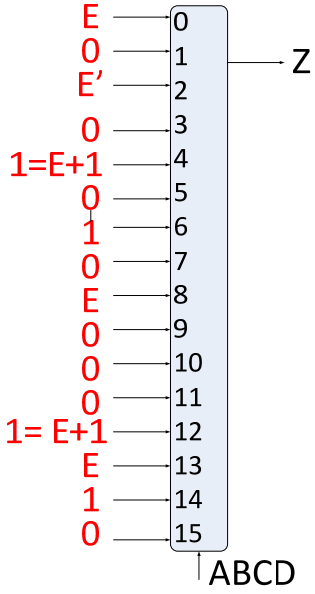
Problem 1 [5 points]: Write the minimal POS expression for Z using the k-map.



Z = (b + d) (a'+b'+d') (a+d)

Problem 2 [5 points]: Implement the Z using **one** 16-input (4-bit selector) multiplexor with the selectors bits as ABCD

Z (A,B,C,D,E) = A'B'CD'E' + BD'+ C'D'E + ABC'E



(More on back)

Problem 3 [5 points]: Implement the Q using **one** 4-input (2-bit selector) multiplexor and the **minimal** number of 2-input (1-bit selector) multiplexors.

$$Q\,(A,B,C,D,E) = A'B'CD'E' + BD' + A$$