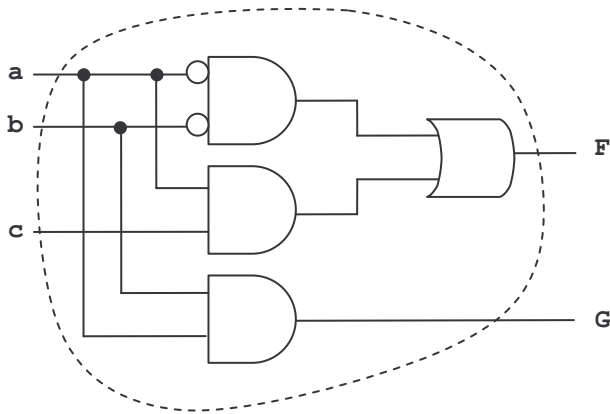


1. Show how to implement the functions $F = a'b' + ab'c + ac$ and $G=ab$ Using a MINIMUM number of 3-input 2-output LUTs. You may create any connections you wish to/from the LUTs and between the LUTs (i.e., do not use switch matrices, for simplicity - of course, real FPGAs must have switch matrices).

- (a) Draw the circuit. Hint: You might wish to minimize the equations first.
 (b) Draw circles indicating the mapping of circuit regions to LUTs.
 (c) Show the COMPLETE bit contents of all LUTs.

$F = a'b' + ac(b' + 1) = a'b' + ac, G = ab$



a	000	1	0
b	001	1	0
c	010	0	0
	011	0	0
	100	1	0
	101	1	0
	110	0	1
	111	1	1
		F	G

2. (a) Draw an internal design for a switch matrix with 3 inputs ABC and 3 outputs XYZ, such that any input can be routed to any output.
 (b) Show the program bits to achieve $X=A, Y=A, \text{ and } Z=C$.

