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Group ID: 9
Session ID:

CMPE 240 2022 Experiment 2 Preliminary Work

Truth Table

#	i2	i1	i0	b
0	0	0	0	0
1	0	0	1	0
2	0	1	0	1
3	0	1	1	0
4	1	0	0	0
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

Sum of Products (SOP)

b   = i2'i1i0' + i2i1'i0 + i2i1i0' + i2i1i0

Minimized SOP

b   = i2'i1i0' + i2i1'i0 + i2i1i0' + i2i1i0

= i2i0(i1' + i1) + i2'i1i0' + i2i1i0'   (Distributivity)

= i2i0 + i2'i1i0' + i2i1i0'   (Complement and Identity)

= i2i0 + i1i0'(i2' + i2)   (Distributivity)

= i2i0 + i1i0'   (Complement and Identity)

Student Names:
Student IDs:
Group ID:

Product of Sums (POS)

b $= (i2 + i1 + i0)(i2 + i1 + i0')(i2 + i1' + i0')(i2' + i1 + i0)$

Minimized POS

b $= (i2 + i1 + i0)(i2 + i1 + i0')(i2 + i1' + i0')(i2' + i1 + i0)$
       $= (i2 + (i1 + i0))(i2' + (i1 + i0))(i2 + i1 + i0')(i2 + i1' + i0')$ (Grouping)
       $= ((i1 + i0) + i2 i2')(i2 + i1 + i0')(i2 + i1' + i0')$ (Distributivity)
       $= (i1 + i0)((i2 + i0') + i1)((i2 + i0') + i1')$ (Complement, Identity and Grouping)
       $= (i1 + i0)((i2 + i0') + i1 i1')$ (Distributivity)
       $= (i1 + i0)(i2 + i0')$ (Complement, Identity and Grouping)

Circuit