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Session ID: 1

CMPE 240 2018 Experiment 2 Preliminary Work

Truth Tables

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

Sum of Products (SOP)

b = (i2’ i1’ i0’) + (i2’ i1 i0’) + (i2 i1’ i0’) + (i2 i1’ i0)
+ (i2 i1 i0’)

Minimized SOP

b = (i2’ i0’) (i1’ + i1) + (i2 i1’ i0’) + (i2 i1’ i0) + (i2 i1 i0’)

from distributive Law

=(i2’ i0’) 1 + (i2 i1’ i0’) + (i2 i1’ i0) + (i2 i1 i0’)

from complement Law

=(i2’ i0’) + (i2 i1’ i0’) + (i2 i1’ i0) + (i2 i1 i0’)

from identity Law

=(i2’ i0’) + (i2 i1’ i0’) + (i2 i1 i0’)+ (i2 i1’ i0)

from commutative Law

=(i2’ i0’) + (i2 i0’) (i1+i1’)+ (i2 i1’ i0)

from distributive Law

=(i2’ i0’) + (i2 i0’)1 + (i2 i1’ i0)

from complement law

=(i2’ i0’) + (i2 i0’) + (i2 i1’ i0)

from identity law

= (i0’)(i2’ + i2) + (i2 i1’ i0)

from distributive law

= (i0’)(1) + (i2i1’i0)

from complement law

= (i0’) + (i2i1’i0)

from identity law

= (i0’) + (i2i1’)

from idempotency law

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Product of Sums (POS)

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

Minimized POS

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

from distributive Law

=(i2 + i1 + i0') (i1'+ i0')+0

from complement Law

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

from identity Law

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

from distributive Law

=(i0') + (i2i1' + i1i1')

from distributive Law

=(i0') + (i2i1' + 0)

from complement Law

=(i0') + (i2i1')

from identity Law

Circuit