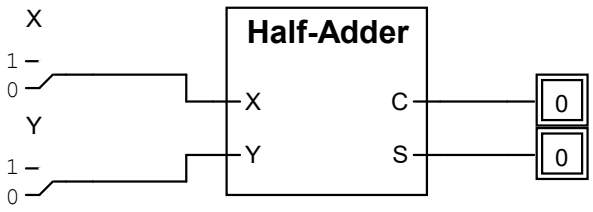
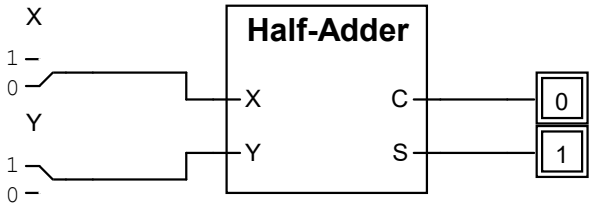
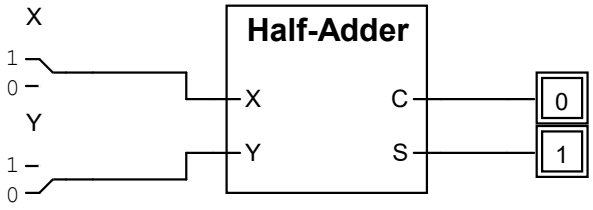
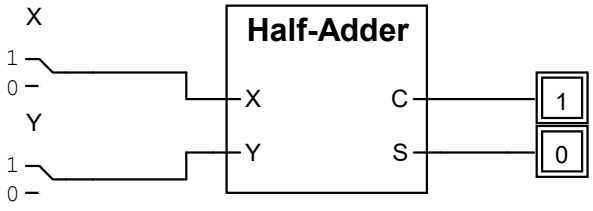




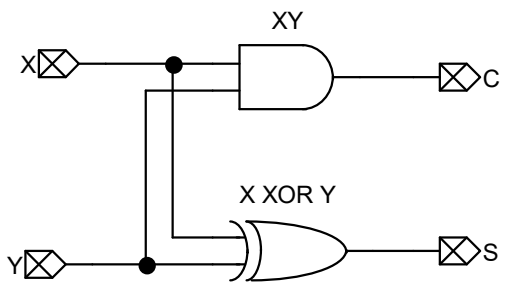
Carry = XY

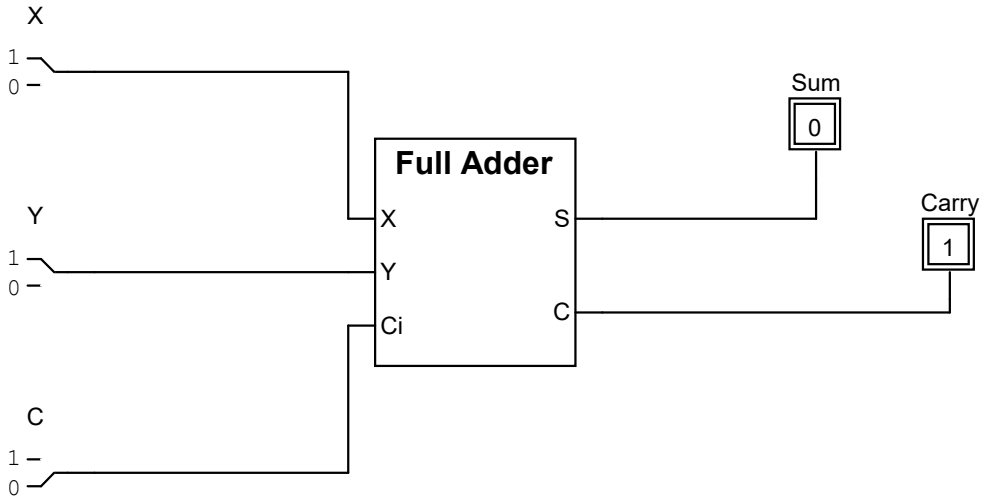
Sum = X XOR Y



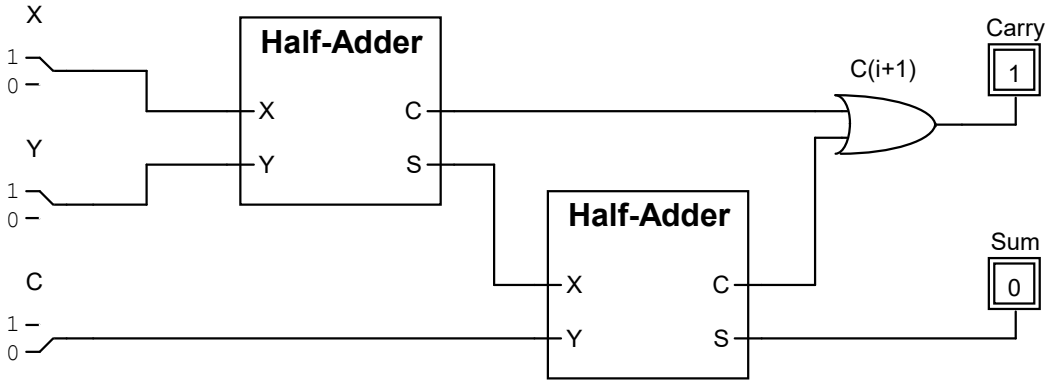


Half Adder Circuit





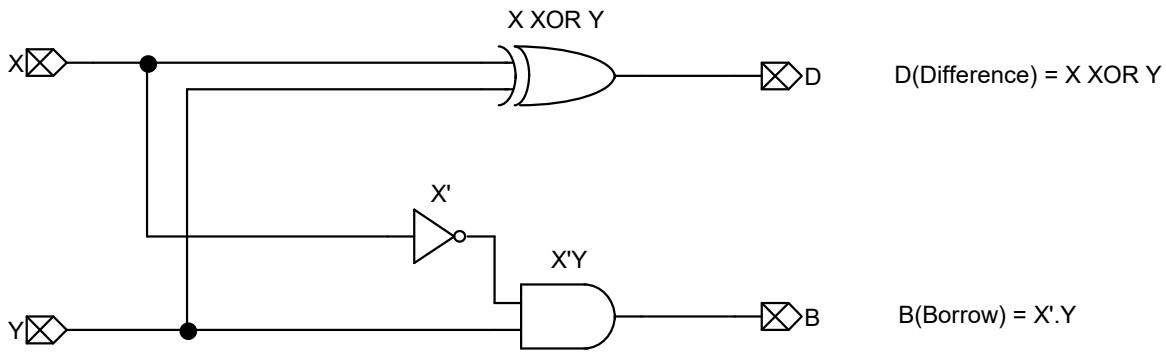
Full Adder Circuit

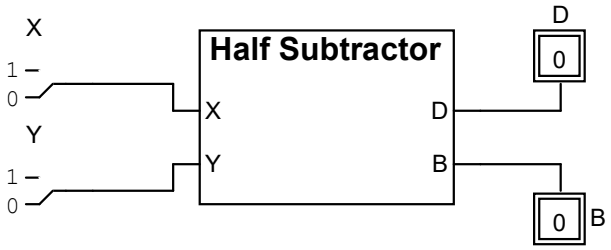


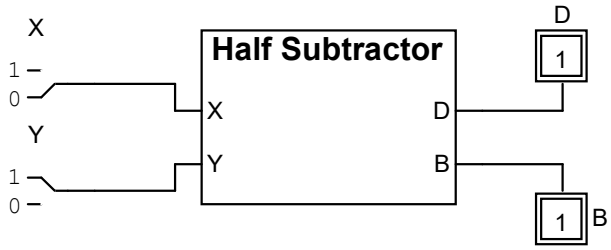
S(SUM) = (X XOR Y) XOR Ci

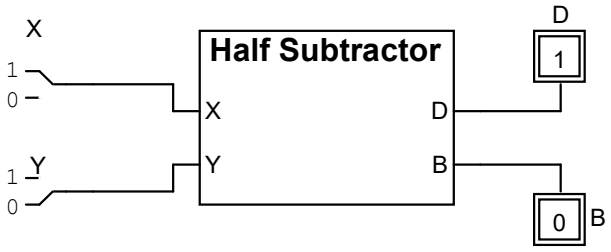
C(i+1)(Carry) = (X XOR Y) + XY

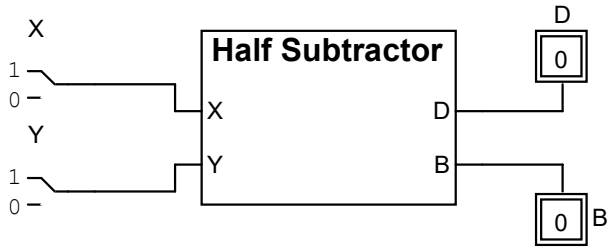
Halh Subtractor





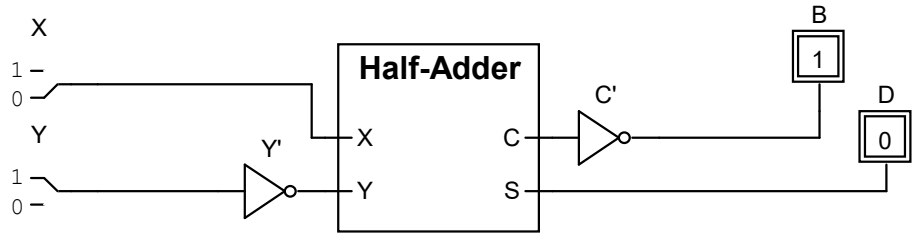






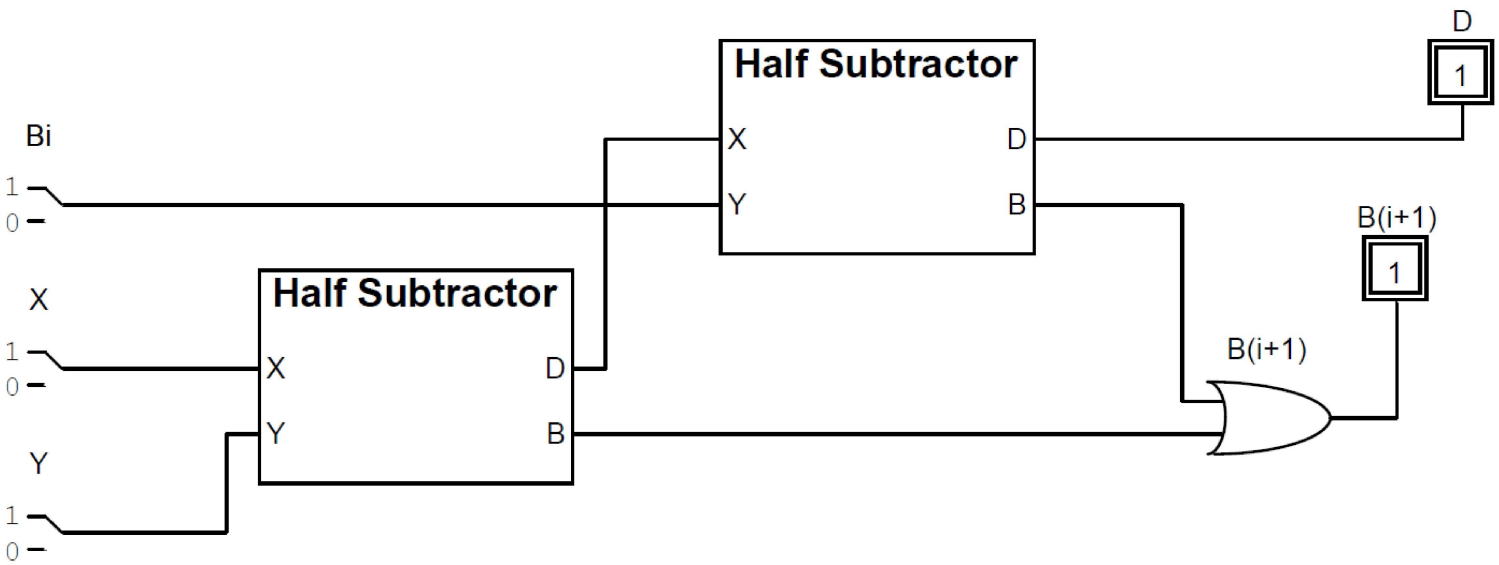
Half Subtactor

B(Borrow) = XY'

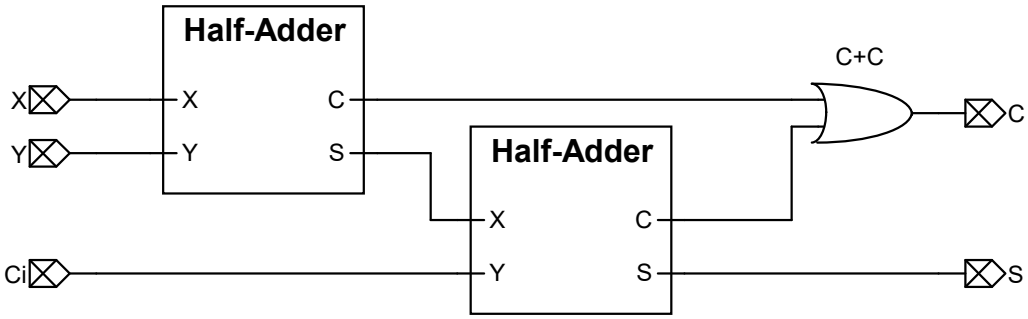


D(Difference) = (Y' XOR X)'

D(Difference) = (X XOR Y) XOR Bi

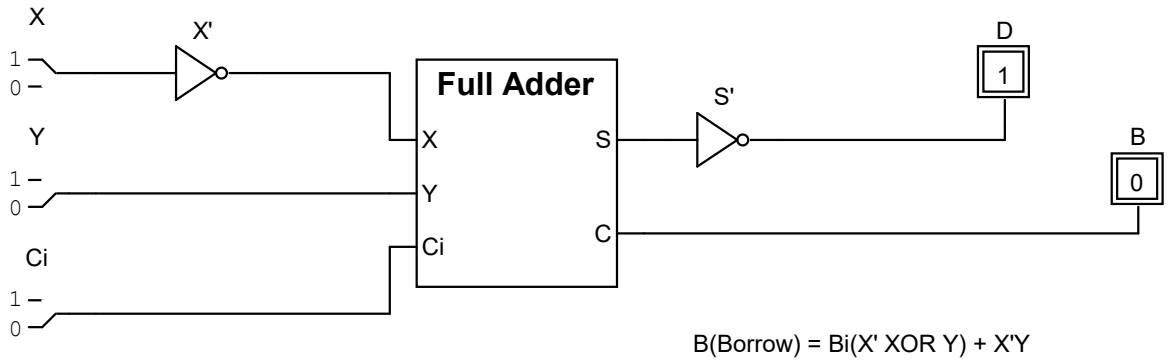


B(Borrow) = (X XOR Y)' Bi + X'Y

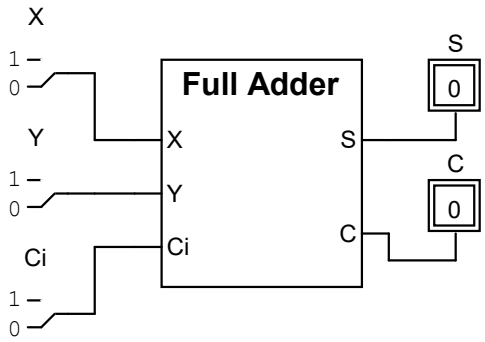


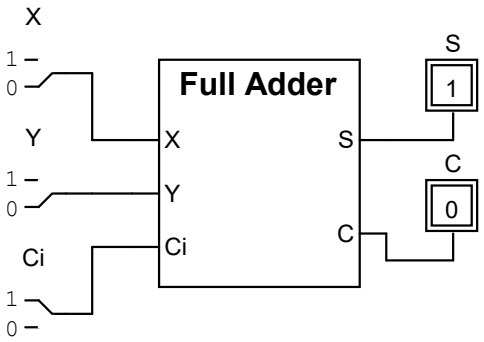
Full Subtractor

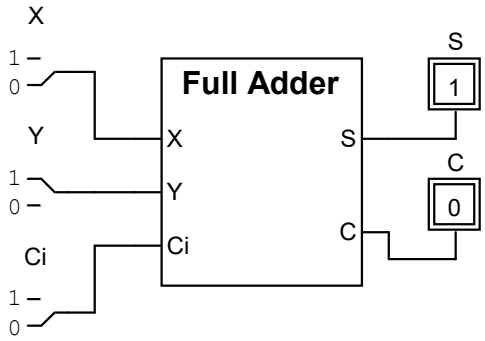
D(Difference) = ((X' XOR Y)(XOR)Bi)'



B(Borrow) = Bi(X' XOR Y) + X'Y


X
1
0
Y
1
0
Ci
1
0
Full Adder
X
Y
Ci
S
C
S
0
C
0


X
1
0
Y
1
0
Ci
1
0
Full Adder
X
Y
Ci
S
C
S
1
C
0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Y
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Ci
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Full Adder
X
Y
Ci
S
C
S
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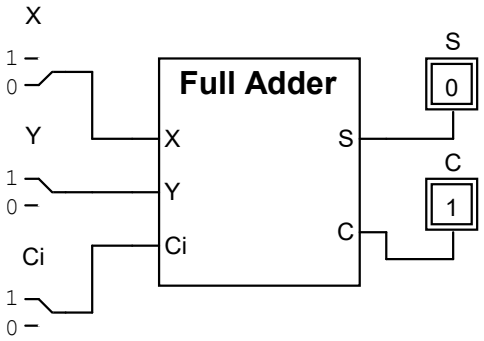
C
0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Y
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0
Ci
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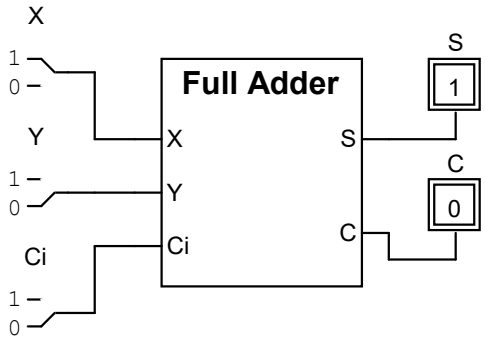
0
Full Adder
X
Y
Ci
S
C
S
0
C
1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Y
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0
Ci
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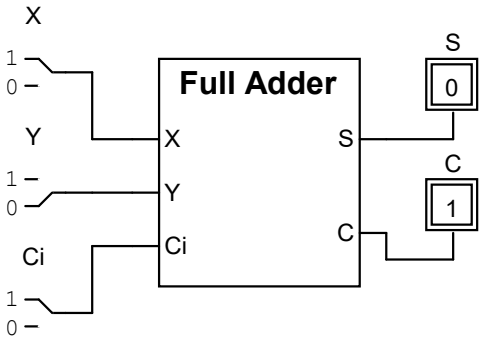
Full Adder
X
Y
Ci
S
C
S
1
C
0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Y
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0
Ci
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Full Adder
X
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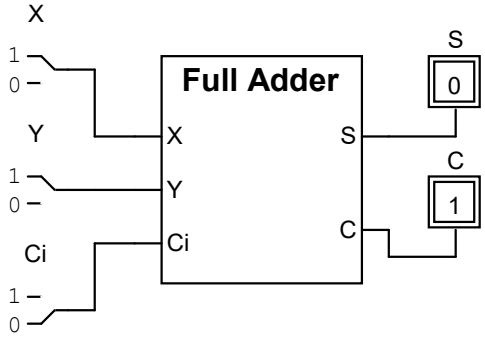
S
C
S
0
C
1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0
Ci
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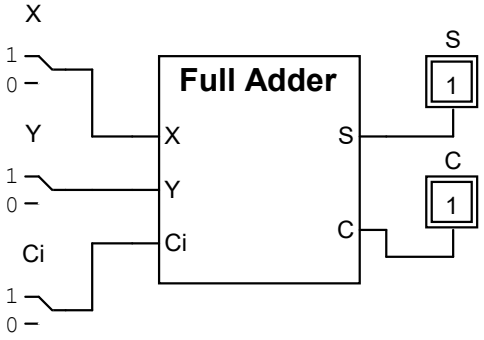
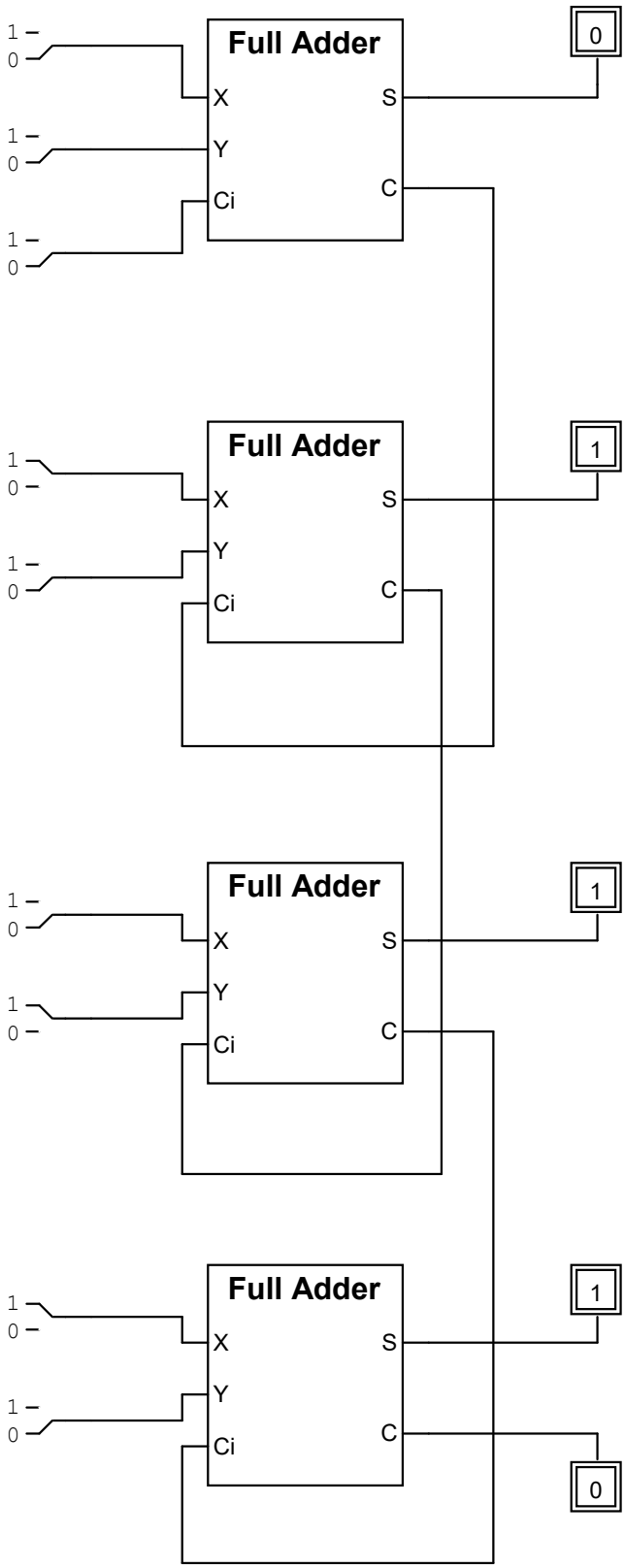
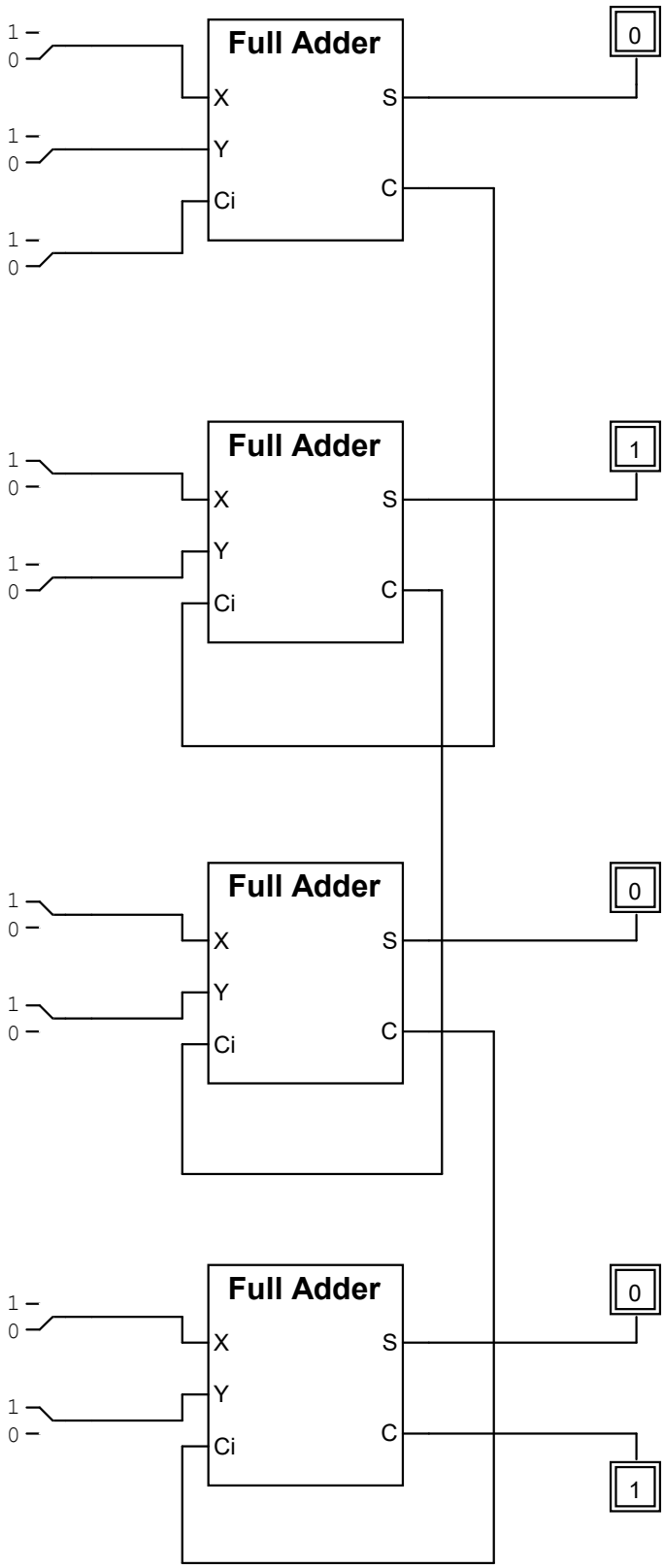
Full Adder
X
Y
Ci
S
C
S
0
C
1


X
1
0
Y
1
0
Ci
1
0
Full Adder
X
Y
Ci
S
C
S
1
C
1

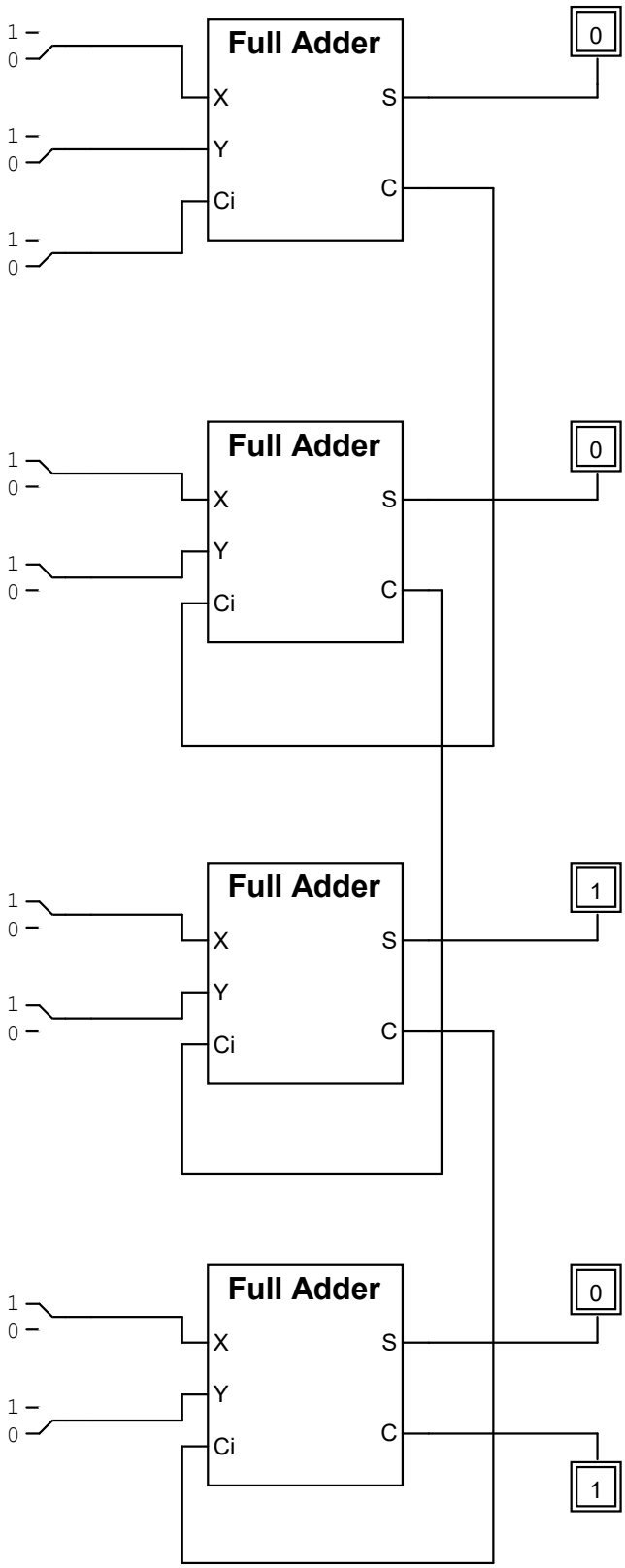
0101 + 0010 = 0111



0110 + 0011 = 0100



0111 + 0110 = 0010



0100 + 0101 = 0011