LAB # 1

Logic Design Fundamentals Review

Lab Report

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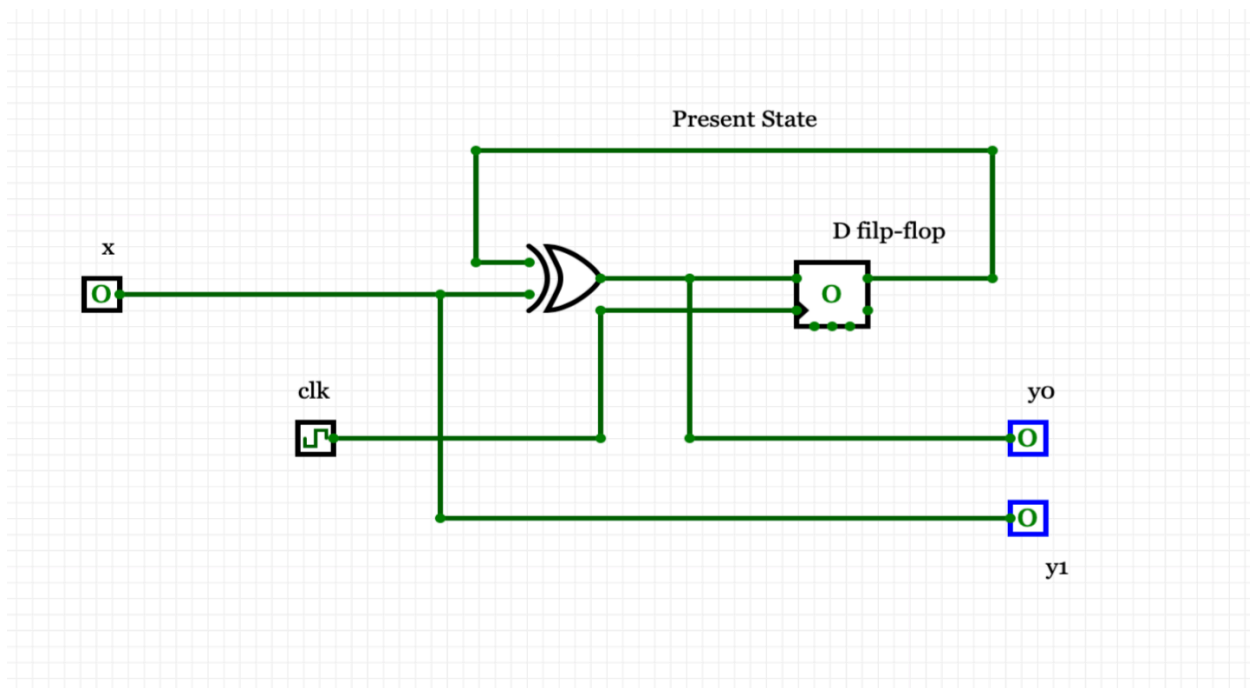## Discussions are Accurate to Design:

For design 1:

Base on AND gate $Y = AB$ which A and B both activating high, it will output 1 and OR gate $Y = A + B$ which one of A or B activating high the it will output 1. For Xor gate $Y = A * B' + A' * B$ which If both inputs have the same input, then output will activating low and if the two inputs are different, the XOR gate outputs will activating high

For 4 bit subtraction we can assume A and B be a 4-digit binary number, where A=a4a3a2a1 and the number is going to be subtracted, B=b4b3b2b1 the number subtracted which the sum is S=s4s3s2s1.And execute A-B by using complement operation
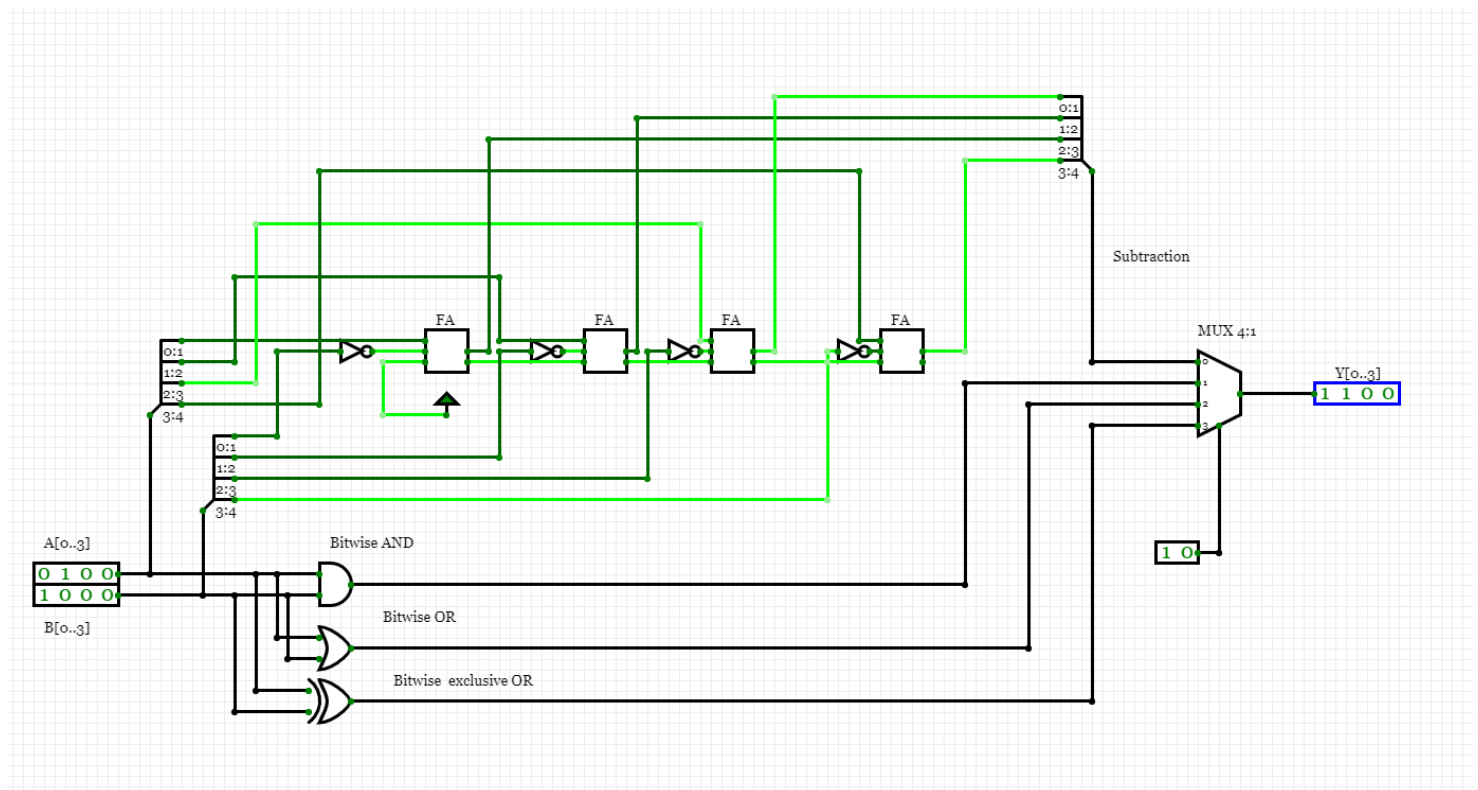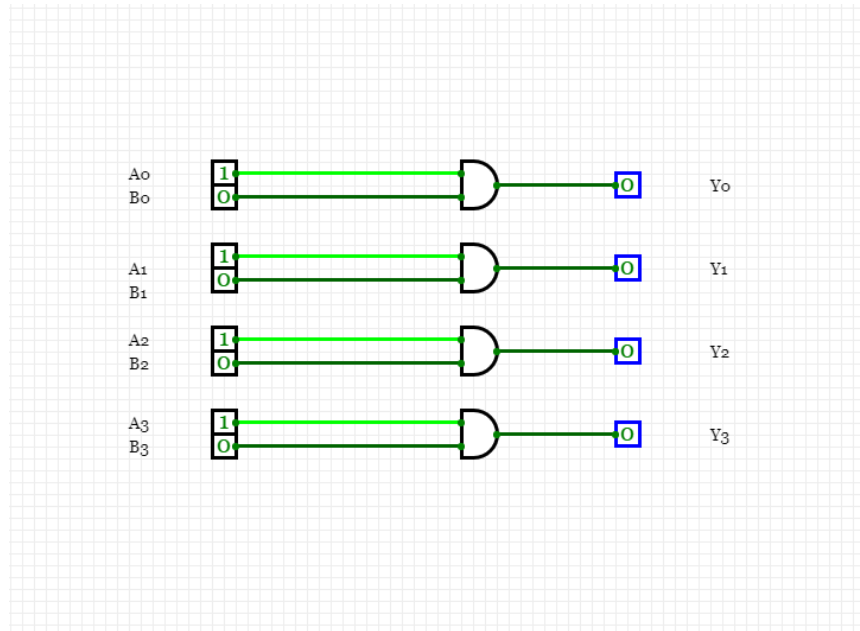
For design 2:

Base on the table and state diagram we can get the output function which Q =
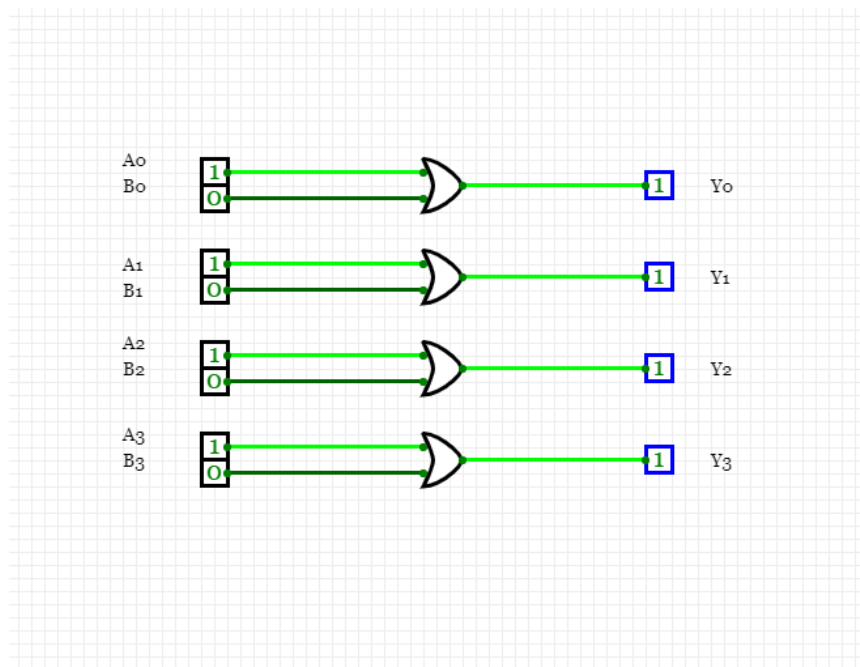xQ' + Qx', y0 = xQ' + Qx', y1 = x which the x is the input

Process Steps:

Bitwise AND: 4 bit AND gate Y = AB which A and B both activating high, it will output 1

Ao
Bo
Yo

A1
B1
Y1

A2
B2
Y2

A3
B3
Y3

Bitwise OR: 4 bit OR gate OR gate Y = A + B which one of A or B activating high the it will output 1

Ao
Bo
Yo

A1
B1
Y1

A2
B2
Y2

A3
B3
Y3

Bitwise XOR: 4 bit XOR gate Xor gate $Y = A * B' + A' * B$ which If both inputs have the same input, then output will activating low and if the two inputs are different, the XOR gate outputs will activating high
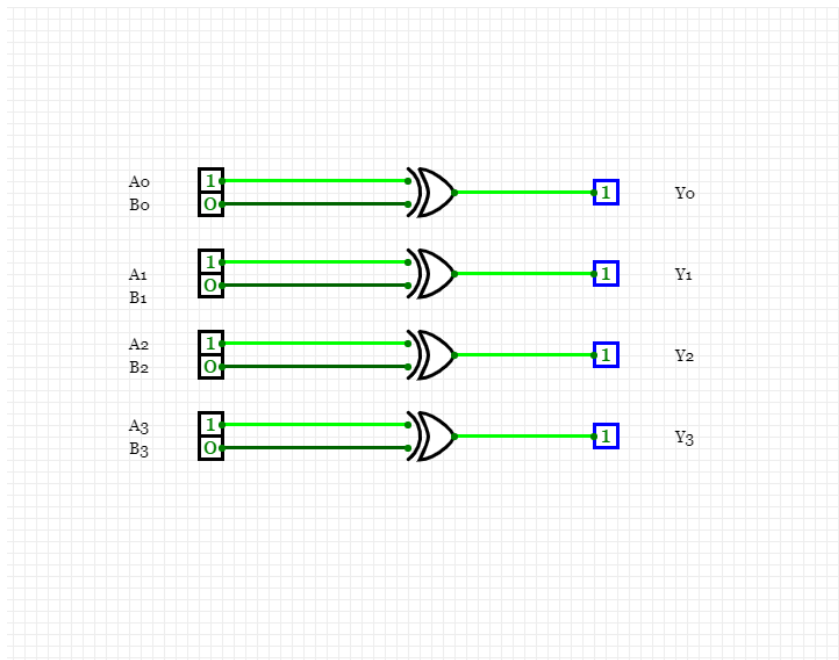
Subtraction with negative result: subtraction by complement operation