

ESET 219 Homework 2

1. For the given binary math operations, write the answer in **binary** and **decimal**. Assume numbers are represented as a **signed** byte.

a. $20 - 33$

20: 00010100	-33: 00100001 11011110 11011111	00010100 (20) +11011111 (-33) ----- 11110011 (-13)
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b. $89 + 55$

89: 01011001	55: 00110111
01011001 (89) +00110111 (55) ----- 10010000 (144)	

2. For the given binary math operations, write the answer in **HEX** and **decimal**. Assume the numbers are represented as an **unsigned** byte.

a. $200 + 160$

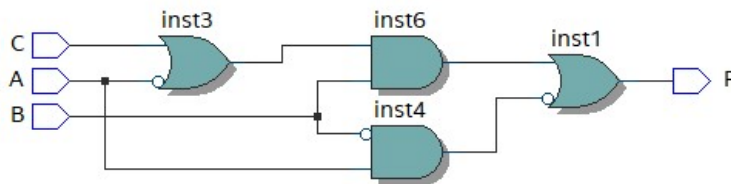
200: 11001000	160: 10100000	11001000 (200) +10100000 (160) ----- 01101000 (104)	0110 1000 6 8 0x68
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b. $100 - 135$

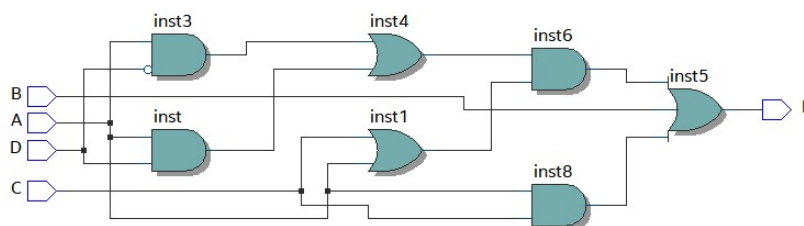
100: 01100101	-135: 10000111 01111000 01111001	0110101 (100) +01111001 (-135) ----- 11011110 (-35)	1101 1110 D E 0xDE
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3. Draw the logic circuit for the following Boolean equations

a. $F = \overline{A}\overline{B} + B(\overline{A} + C)$



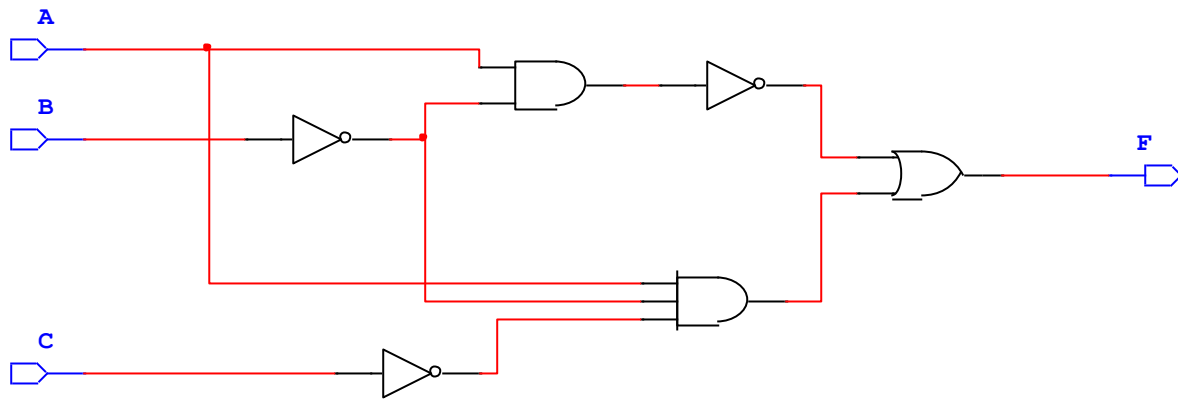
b. $F = AC + [(A + C)(AD + A\overline{D})] + B$



4. Given the following schematics, write the Boolean equation for the output F

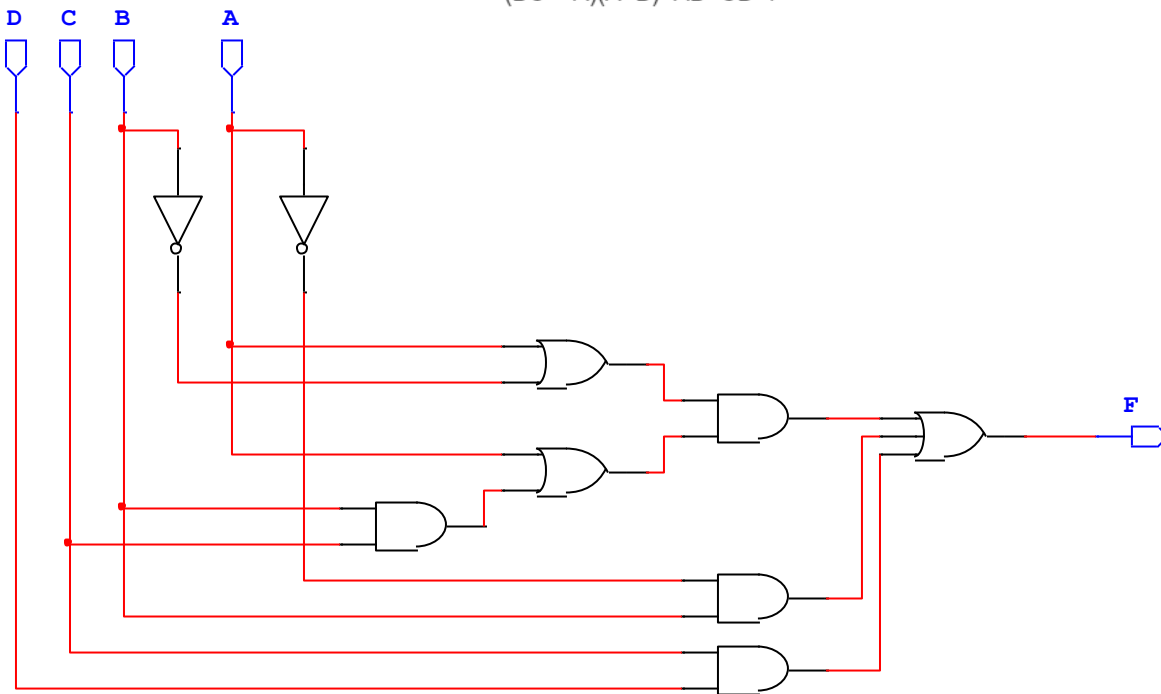
a.

$$(A\bar{B})' + (A\bar{B}\bar{C}) = F$$

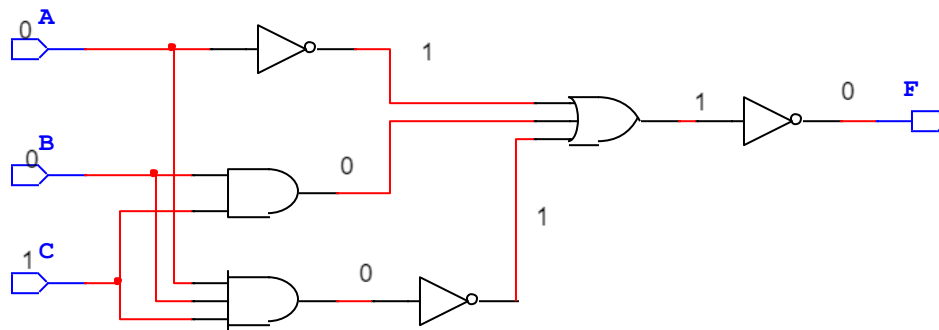


b.

$$(BC + A)(A + \bar{B}) + \bar{A}B + CD = F$$



5. Given the following schematic, if the input is 001 what is the output F? Assume A is the MSB.



6. Given the following schematic

a. Fill in the timing diagram for the output F

