Non-Restoring division

Presented by:

Roshan Saud

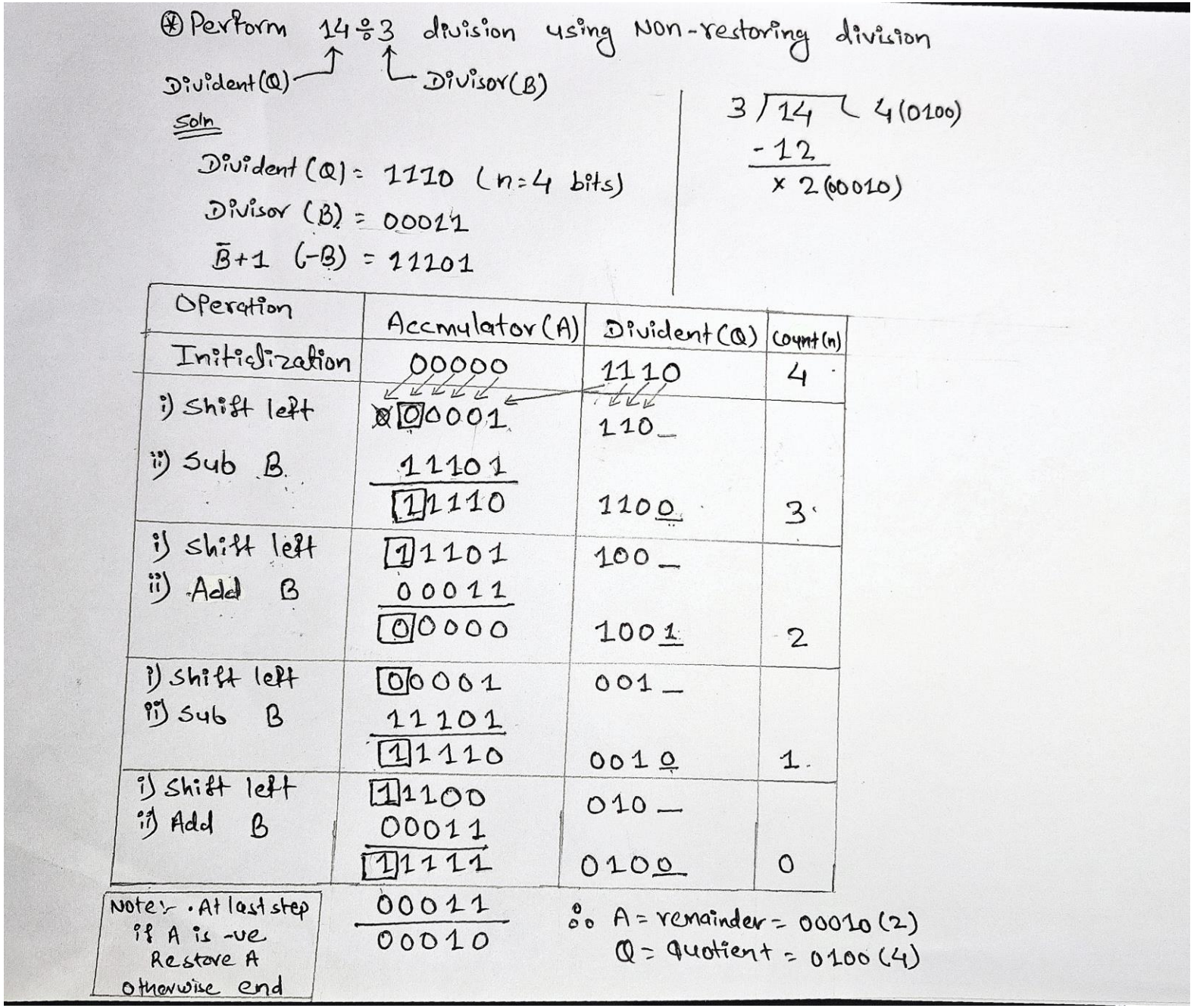
Non-Restoring division

- The Non-Restoring Division Algorithm is a method used to perform division operations on signed integers without relying on restoring intermediate remainders. It's an iterative approach that approximates the quotient and updates the remainder in each iteration, leading to an accurate division result.

Non-Restroing Division(Algorithm)

- Step 1: If the sign of A is 0(+ve), shift A and Q left one bit position and subtract divisor from A (A ← A-B) otherwise, shift A and Q left and add divisor to A (A ← A+B).
- Step 2: Repeat steps 1 and 2 for n times.
- Step 3: If the sign of A is 1(-ve), add divisor to A(restore A) otherwise do nothing.

Numerical-Problem:



⊛ Perform 14 ÷ 3 division using Non-restoring division

Divident(Q) ↑ 14 ÷ 3 ↑ Divisor(B)

Soln

Divident (Q) = 1110 (n=4 bits)

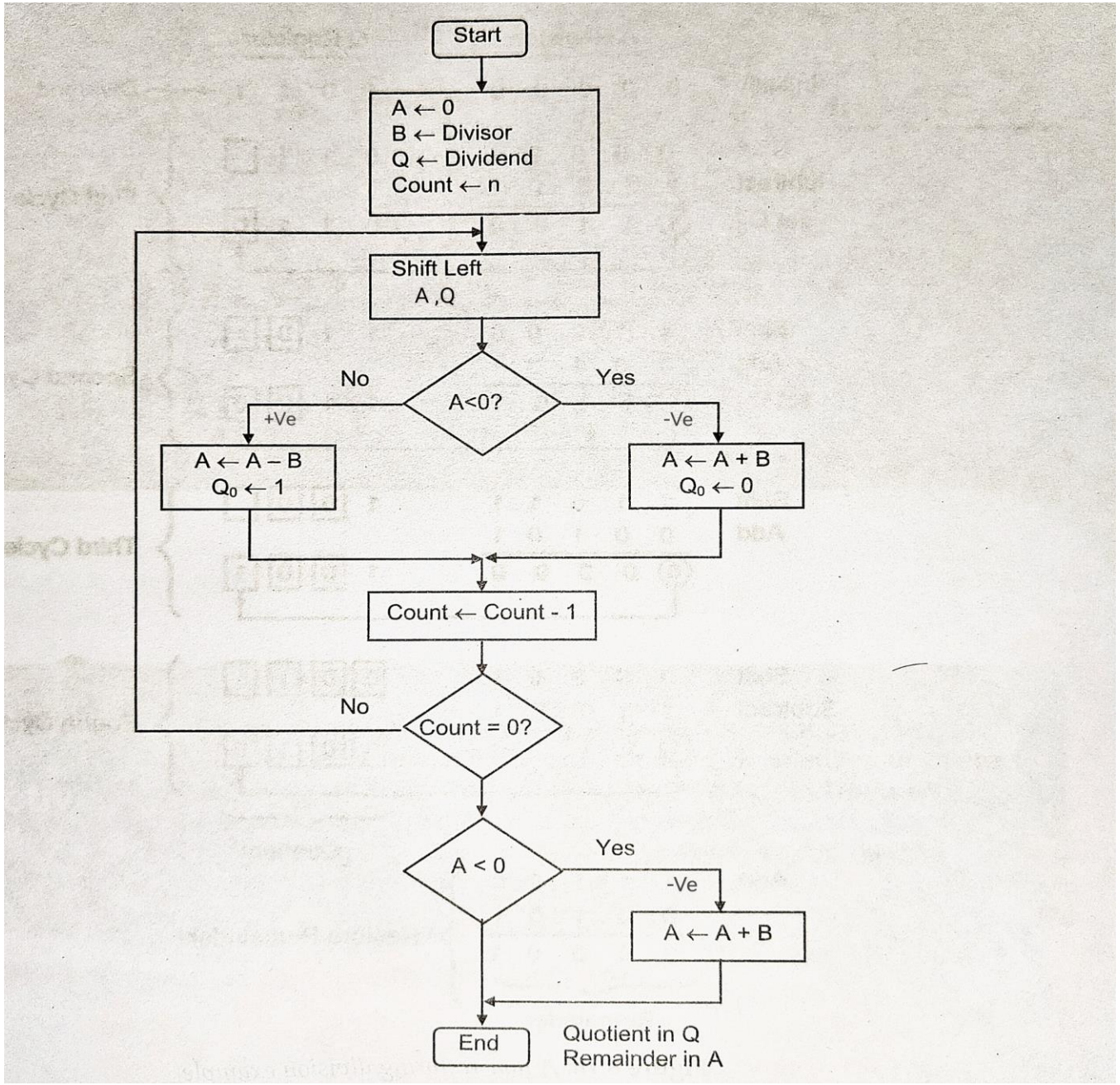
Divisor (B) = 00011

$\bar{B}+1$ (-B) = 11101

3 | 14 | 4(0100)
-12
x 2(00010)

Operation	Accmulator (A)	Divident (Q)	count (n)
Initialization	00000	1110	4
i) shift left ii) Sub B	~~0~~ 0001 11101 1 1110	110_ 1100	3
i) shift left ii) Add B	1 1101 00011 0 0000	100_ 1001	2
i) shift left ii) Sub B	0 0001 11101 1 1110	001_ 0010	1
i) shift left ii) Add B	1 1100 00011 1 1111	010_ 0100	0
Note:- At last step if A is -ve Restave A otherwise end	00011 00010	∴ A = remainder = 00010 (2) Q = quotient = 0100 (4)	

Non-Restroing Division(Flowchat):



THANK YOU