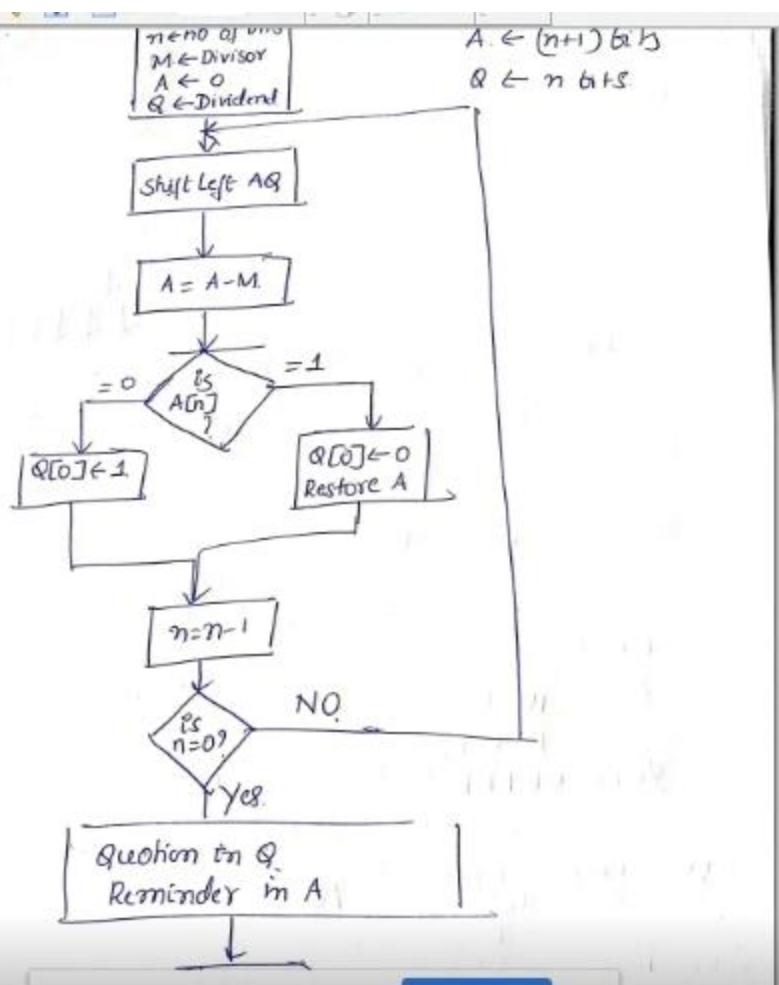
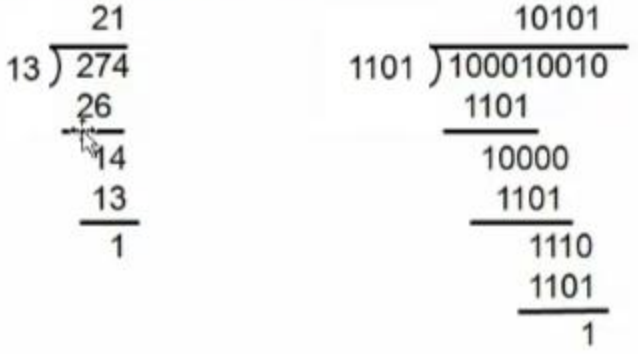


Manual Division



Longhand division examples.

at the start of operation & register A is set zero.

ii) Shift left both the registers A & Q.

iii) Subtract M from A & place the answer in A.

iv) If the sign of A is 1 set Q_0 to zero add M back to A (i.e., to restore A). Otherwise set Q_0 to 1.

v) The steps (ii), (iii) & (iv) are repeated n-times.

vi) After the division is complete, n-bit quotient is in register Q & the remainder in register

* Perform the division of $8 \div 3$ using restoration method (4-bit).

Initially

n	A (n+1)	Q	M(n+1)
2	00010	1100	00011-11101
SLAQ	00101	100?	
A=A-M	11101	100?	
	1]00010	100?	
A[2]=0	00010	1001	
n=1			

n	A (n+1)	Q	M(n+1)
3	00001	0110	00011-2's-11101
SLAQ	00010	110?	
A=A-M	11101	110?	
	11111	110?	
A[3]=1	00010	1100	
n=2			

n	A (n+1)	Q	M(n+1)
3	00001	0110	00011-2's-11101
SLAQ	00010	110?	
A=A-M	11101	110?	
	11111	110?	
A[msb]=1	00010	1100	
n=2			

n	A (n+1)	Q	M(n+1)
2	00010	1100	00011-11101
SLAQ	00101	100?	
A=A-M	11101	100?	
	1]00010	100?	
A[msb]=0	0D010	1001	
n=1			

Circuit Arrangement

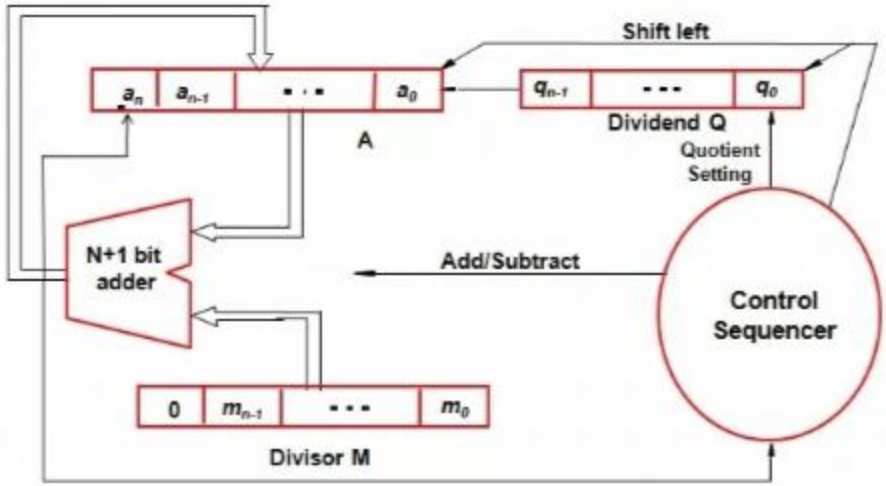


Figure 6.21 Circuit arrangement for binary division