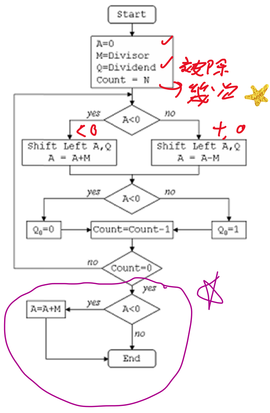
div ch3 div-nonrestoring 1

2023年5月24日 星期三　　下午3:51

div ch3 div-



Set Register A = 0000
Set Register Q = Dividend = 0111
(So AQ = 00000111 , Q0 = LSB of Q =1)
Set M = Divisor = 0010, M' = 2's complement of M = 1110
Set Count = 4, since 4 digits operation is being done here.
Dividend = 0111
Divisor (D) = 0010
(-D) = 1110

7 / 2 = ? 3 ... 1

Action	A	Q	Iteration
initial	0000	0111	0
A>=0 SL(AQ)	0000	1110	1
A=A-D	1110	1110	
A<0 Q[0]=0	1110	1110	
A<0 SL(AQ)	1101	1100	2
A=A+D	1111	1100	
A<0 Q[0]=0	1111	1100	
A<0 SL(AQ)	1111	1001	3
A=A+D	0001	1001	
A>=0 Q[0]=1	0001	1001	
A>=0 SL(AQ)	0011	0011	4
A=A-D	0001	0011	
A>=0 Q[0]=1	0001	0011	
	Remainder	Quotient	

Set Register A = 00000
Set Register Q = Dividend = 01010
(So AQ = 0000001010 , Q0 = LSB of Q =1)
Set M = Divisor = 00011, M' = 2's complement of M = 11101
Set Count = 5, since 5 digits operation is being done here.
Dividend =01010 Divisor (D) = 00011 (-D) = 11101

10 / 3 = ?

Action	A	Q	Iteration
initial	00000	01010	0
A>=0 SL(AQ)	00000	1010?	1
A=A-D	11101	1010?	
A<0 Q[0]=0	11101	10100	
A<0 SL(AQ)	11011	0100?	2
A=A+D	11110	0100?	
A<0 Q[0]=0	11110	01000	
A<0 SL(AQ)	11100	1000?	3
A=A+D	11111	1000?	
A<0 Q[0]=0	11111	10000	
A<0 SL(AQ)	11111	0000?	4
A=A+D	00010	0000?	
A>=0 Q[0]=1	00010	00001	
A>=0 SL(AQ)	00100	0001?	5
A=A-D	00001	0001?	
A>=0 Q[0]=1	00001	00011	
	Remainder	Quotient	

5 / 2 = ?

Set Register A = 0000
Set Register Q = Dividend = 0101
(So AQ = 00000101 , Q0 = LSB of Q =1)
Set M = Divisor = 0010, M' = 2's complement of M = 1110
Set Count = 4, since 4 digits operation is being done here.
Dividend = 0101
Divisor (D) = 0010
(-D) = 1110

Action	A	Q	Iteration
initial	0000	0101	0
A>=0 SL(AQ)	0000	1010	1
A=A-D	1110	1010	
A<0 Q[0]=0	1110	1010	
A<0 SL(AQ)	1101	0100	2
A=A+D	1111	0100	
A<0 Q[0]=0	1111	0100	
A<0 SL(AQ)	1110	1000	3
A=A+D	0000	1000	
A>=0 Q[0]=1	0000	1001	
A>=0 SL(AQ)	0001	0010	4
A=A-D	1111	0010	
A<0 A=A+D Q[0]=0	0001	0010	
	Remainder	Quotient	