

# Lab 5

## SRT -2 division

$$Q_0 = \overline{1}$$

$$P = P + 3$$

$\left\{ \overline{1}, 0, 1 \right\}$

$$Q_0 = 0$$

$$Q_0 = 1 \quad P = P - B$$

$Q$	0	0	1
$Q^x$	1	0	0

$$Q = Q - Q^x$$

Com if  $P[8] = 1$  &  $cnt = 7$

$$P = P + 3$$

$$Q = Q - 1$$

RShift  $P \gg K(\text{Rshift init})$

# SRT-2 division

COUNT	P	A	B
000	0 0000 1110	1000 1101	00010 0111
0	0 0011 1010	0011 0100	01001 1100 K=2
1	0 0111 0100	0110 1000	
001	0 1110 1000		
-	0 1001 1100		
	0 0100 1100		
1	0 1111 1101	1101 0001 00	
010	0 1001 1001		
-	0 1001 1100		
	1 1111 1101	1010 0011 000	
011	0 1111 1011	0100 0110 0000	
100	0 1111 0110	1000 1100 0000	
101	0 1110 1101	0001 1000 00 0000	
110	0 1110 1010	0011 0000 00 0000	
111	0 1101 0100	0110 0000 0000 0000	
COR.	+ 0 1001 1100 0 0101 0000	0110 0000 0000 0001	
SHIFT	0 0001 0100 = 20 = rest	0101 1111 C = 95	

# SRT-4 division

P [8:3] 6 bits

b = B[7:4] 4 bits  $\rightarrow$  se in den Tabel von

T, b  $\rightarrow$  2<sub>0</sub>

P.A  $\leftarrow$  2

$$x = 3725$$

$$y = 39$$

$$\begin{array}{r} 3725 \\ 2048 \\ \hline 1677 \\ 1024 \\ \hline 653 \\ 512 \\ \hline 141 \\ 128 \\ \hline 13 \\ 8 \\ \hline 5 \\ 4 \\ \hline 1 \end{array}$$

$$X = 0000.1110.1000.1101$$

$$Y = 0010.0111$$

$$\begin{array}{r} 39 \\ 32 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 2^5 \\ 2^7 \\ \hline 7 \end{array}$$

CNT	P	A	B
000	000001110	1000 1101	000100111 010011100
1	000111010 <u>0011101000</u>	0011 01000 011010000	<u>k=2</u>
001	010011100 <u>111011000</u>	11010001 00	
1	110110000	11010001 00	
010	+0		

SRT-2 division

COUNT	P	A	B
000	0 0000 1110	1000 1101	00010 0111
0	<u>0 0911</u> 1010	0011 0100	01001 1100 K=2
1	<u>00111</u> 0100	0110 1000	
001	01110 1000		
-	01001 1100		
	<u>00100</u> 1100	1101 0001	
010	01001 1001		
-	01001 1100		
0	<u>11111</u> 1101	1010 0011	
011	0 11111 1011	0100 0110	
000	<u>11111</u> 0110	0000 0000	
101	0 11110 1101	0001 1000	
110	0 11101 1010	0011 0000	
111	11011 0100	0000 0000	
COR.	01001 1100	0110 0000	
	<u>00101</u> 0000	0000 0001	
SHIFT	00 001 0100 =20 = rest	0101 1111	C=95

$$X = 1107 = 0000.010001010011$$

$$Y = 11 = 00001011$$

1107 -

$$\begin{array}{r} 7024 \\ \hline 083 \\ 64 \\ \hline 19 \\ 16 \end{array}$$

$2^{70}$

6

2

COUNT	P	A	B
00	00000 0100	0101 0011	0000 1011
$P=3$	$\boxed{0100} 0101$ $2_0=1$	0011 0000	$1011$ 0000 $b=11$
00	0001 0100 01011 0000	1100 0001 00	
$P=12$	$\boxed{00110} 0100$ $2_1=2$		
01	11001 0011 - 10110 0000	0000 0110 0000	
	$\boxed{00011} 0011$		
10	011001100 - 010110000	00 011001 000000	
	$\boxed{000011100}$		
	$2_2=0$		
11	001110000 0000 00111	01 100100 00 000000 - 101 100100	

HW SRT 2 4813: 105

SRT 4 2396: 19

$$X = 4813$$

$$X = 0001.0010.1100.1101$$

$$\begin{array}{r} 4813 \\ 4096 \quad 2^{12} \\ \hline 717 \quad 2^9 \\ 512 \\ \hline 205 \\ 128 \\ \hline 77 \\ 64 \\ \hline 13 \\ 8 \\ \hline 5 \\ 4 \\ \hline 1 \end{array}$$

$$Y = 105$$

$$\begin{array}{r} 105 \\ 64 \quad 2^6 \\ \hline 41 \\ 32 \\ \hline 9 \\ 8 \\ \hline 1 \end{array}$$

$$Y = 01101001$$

$$2396$$

$$2048 \quad 2^{11} \quad X = 0000.1001.0101.1100$$

$$\begin{array}{r} 348 \\ 256 \quad 2^8 \\ \hline 92 \\ 64 \\ \hline 28 \\ 16 \\ \hline 12 \\ 8 \\ \hline 4 \end{array}$$

$$Y = 0001.0011$$

$$19$$

CNT	A	Q	M k=1
000	0 0 001 0010 0 0 010 0101 $g_1 = 1$	1 1 00 1101 1 0 01 1010 0 0 11 0101 $g_1 = 1$	0 0 11 01 001 0 1 10 1001 0
001	$\begin{array}{r} 0 1 0 0 1 0 1 1 0 \\ + 0 1 1 0 1 0 0 1 \\ \hline 1 1 1 0 0 0 1 0 0 \end{array}$ $g_2 = 0$	0 1 1 0 1 0 0 0 1 0 0	
010	1 1 0 0 0 1 0 0 0 $g_3 = 1$	1 1 0 1 0 0 1 0 0 0 0	
011	$\begin{array}{r} 1 0 0 0 1 0 0 0 1 \\ + 0 1 1 0 1 0 0 1 \\ \hline 1 1 1 1 0 0 0 1 1 \end{array}$ $g_4 = 0$	1 0 1 0 0 1 0 0 0 0 0 1	
100	1 1 1 0 0 0 1 1 1 $g_5 = 0$	0 1 0 0 1 0 0 0 0 0 0 1 0	
101	1 1 0 0 0 1 1 1 0 $g_6 = 1$	1 0 0 1 0 0 0 0 0 0 0 1 0 0	
110	$\begin{array}{r} 1 0 0 0 1 1 1 0 1 \\ + 0 1 1 0 1 0 0 1 \\ \hline 1 1 1 1 0 1 1 1 1 \end{array}$ $g_7 = 0$	0 0 1 0 0 0 0 0 0 0 0 1 0 0 1	
111	(1) 1 1 0 1 1 1 1 0	0 1 0 0 0 0 0 0 0 0 0 1 0 0 1 0	
COPP	$\begin{array}{r} 0 1 1 0 1 0 0 1 0 \\ + 0 1 0 1 1 0 0 0 \\ \hline 0 1 0 1 1 0 0 0 0 \end{array}$	0 0 1 1 1 1 1 1 0 0 0 1 0 0 1 0	- Q-1
SHIFT	1 0 1 0 1 1 0 0 0 88	0 0 1 0 1 1 0 1 45	
	48 13   105 -- 45	✓	

CNT	A	Q	M
00	00000 1001	01 01 1100	0 0001 0011
$q_2=2$	<u>0010010</u> <sup>10</sup> <sub>q</sub>	11 100000	<u>01001</u> <sup>1000</sup> <sub>b=g</sub>
00	$\begin{array}{r} 100101011 \\ -100110000 \\ \hline 1111111011 \end{array}$	1000000100 00	
$q_1=0$	<u>111101110</u> <sub>-3</sub>	00000 1000 0000	
$q_2=-2$	<u>110111000</u> <sub>-9</sub>	0010 0000 0000000	
11	$\begin{array}{r} 011100000 \\ +100110000 \\ \hline 000010000 \end{array}$	100000000 00000010 01111110	-
Shift	<u>000000010</u> <u>2</u> ✓	<u>01111110</u> <u>126</u> ✓	