

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 000 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 2₀

P.A \leftarrow 2

$$x = 3725$$

$$y = 39$$

$$\begin{array}{r} 3725 \\ 2048 \\ \hline 1677 \end{array}$$

$$\begin{array}{r} 1677 \\ 1024 \\ \hline 653 \end{array}$$

$$\begin{array}{r} 653 \\ 512 \\ \hline 141 \end{array}$$

$$\begin{array}{r} 141 \\ 128 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 13 \\ 2^7 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 0 \\ 2^5 \\ \hline 32 \end{array}$$

$$\begin{array}{r} 32 \\ -7 \\ \hline 25 \end{array}$$

$$\begin{array}{r} 25 \\ -1 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 4 \\ -1 \\ \hline 1 \end{array}$$

$$X = 0000.1110.1000.1101$$

$$Y = 0010.0111$$

CNT	P	A	B
000	000001110	1000 1101	000100111 010011100
1	000111010 <u>001110100</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

$$X = 1107 \quad = 0000.010001010011$$

$$Y = 11 \quad = 0000\ 1011$$

1107 -

$$\begin{array}{r} 7024 \\ - 5000 \\ \hline 2024 \\ - 1920 \\ \hline 104 \\ - 80 \\ \hline 24 \\ - 16 \\ \hline 8 \end{array}$$

COUNT	P	A	B
00	0 0000 0100	0101 0011	0000 1011 $k=4$
$\frac{P=3}{-}$	$\boxed{0 0100 0101}$	0011 0000	$\boxed{1011} 0000\ b=11$
00	0 0001 0100 0 1011 0000	1100 0001 00 00	
$\frac{P=12}{-}$	$\boxed{0 0110 0100}$		
01	1 1001 0011 - 1 0110 0000	00 00 01 10 00 00	
	$\boxed{0 0011 0011}$		
10	0 1100 1100 - 0 1011 0000	00 01 1001 00 00 00	
	$\boxed{0 0001 1100}$		
	$\frac{q_2=1}{-}$		
11	0 0111 0000 0 000 00111	01 1001 00 00 00 00 00 - 101 1001 00	
	$\frac{q_3=0}{-}$		

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 <u>0001</u> 0011 $k=3$
$q_2 = 2$	<u>0010010</u> ¹⁰ $q = 9$	11 10 0000	0 <u>1001</u> 1000 $b = 9$
00	$\begin{array}{r} 100101011 \\ -100110000 \\ \hline 1111111011 \end{array}$	10 00 0010 00	
$q_1 = 0$	<u>111101110</u> -3	0000 1000 0000	
$q_2 = 2$	<u>110111000</u> -9	0010 0000 0000000	
$q_3 = -2$	$\begin{array}{r} 011100000 \\ +100110000 \\ \hline 000010000 \end{array}$	1000 00000 00000010 01111110	-
Shift	000000010 $2 \curvearrowright$	01111110 $126 \curvearrowright$	