



Lab 4

# Restoring Division

$$\begin{array}{r} \overline{A} \\ 11 \phantom{00} \\ - 10 \phantom{00} \\ \hline 01 \phantom{00} \end{array}$$

$$\begin{array}{r} \overline{Q} \\ 01 \phantom{00} \end{array}$$

$$\begin{array}{r} 10 \\ \overline{110} \\ \hline \end{array}$$

cat = 6

Restoring division		A	Q
CNT			
000	-	0010 1101 0111 0101 ----- 1011 1000 0111 0101 ----- 0010 1101 0101 1011	1110 1110
001	-	0111 0101 1110 0110 ----- 0111 0101 0101 1011 ----- 1011 0111	1011 1000
010	-	0111 0101 1000 0010 ----- 1000 0101 0111 0010 ----- 1110 0010	1000 1100
011	-	0111 0101 0001 0000 ----- 0010 0000 0111 0101 ----- 1010 0101	1110 0110
100	-	0111 0101 1010 1011 ----- 0111 0101 0010 0000	1110 0110

$$\begin{array}{r} \overline{A} \\ 11 \phantom{00} \\ - 10 \phantom{00} \\ \hline 01 \phantom{00} \end{array}$$

$$\begin{array}{r} \overline{Q} \\ 01 \phantom{00} \end{array}$$

$$\begin{array}{r} 10 \\ \overline{110} \\ \hline \end{array}$$

rest = 1

$$X = 7217$$

$$Y = 197$$

$$X = 00001110010110001$$

$$Y = 011000101$$

CNT	A								Q								
000	0	0	0	0	1	1	1	0	0	0	0	1	1	0	0	0	1
	0	0	0	1	1	1	0	0	0	0	1	1	0	0	0	1	0



# Restoring division

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CNT	A	Q
000	00001 1100	0011 0001
	0 0011 1000	0110 0010
	0 1100 0101	
	1 0111 0011	
	0 1100 0101	
	0 0011 1000	
	0 0111 0000	1100 0100
001	0 1100 0101	
	1 1010 1011	
	0 1100 0101	
	0 0111 0000	
	0 1110 0001	1000 1000
	0 1100 0101	
010	0 0001 1100	
	0 0011 1001	0001 0010
011	0 1100 0101	
	1 0111 0100	
	+Y	

$$X = 0001\ 1100\ 0011\ 0001$$

$$Y = 01\ 100\ 0101$$

$$X = 7217$$

$$Y = 197$$

$$\frac{128}{=69} -$$

$$\frac{64}{5}$$

$$\frac{0\ 047}{32}$$

$$\frac{17}{16}$$

$$1$$

011	0011 1001	0001 0010
100	0110 0010	1
	1101 0110	1
	0 110 0010	1
	0 0111 0010	
	0 1110 0100	0100 1000
	0 1100 0101	
101	0 0001 1111	
	0 0011 1110	1001 0010
	0 1100 0101	
110	1 0111 1001	
	0 1100 0101	
	0 0011 1110	
	0 0111 1101	0010 0100
	0 1100 0101	
111	1 1011 1000	
	0 1100 0101	
	0 0111 1101	0010 0100

$$\frac{197}{36}$$

$$\frac{1782}{591}$$

$$\frac{7092}{125}$$

$$7217$$

## Non Restoring

Asul :  $x_i = (2x_i - m) + m$   
 $x_{i+1} = 2(x_i + m) - m$   
if  $A[i] = 1$

$$\left\{ \begin{array}{ll} \text{if } A[i] = 0 & x_{i+1} = 2x_i - m \\ \text{if } A[i] = 1 & x_{i+1} = 2x_i + m \end{array} \right.$$

CORR. if  $A[i] = 1 \rightarrow A = A + m$

