Questão 2 - capítulo 4

EMANUELLE GUSE

a) BINÁRIO: [0, 1048575]

A) [0, 1062346] ✓ eficiência = 100%
B) [0, 1007759] ✗ eficiência = 96,1%
C) [0, 949343] ✗ eficiência = 90,5%
D) [0, 2097023] ✓ eficiência = 100%
E) [0, 1047552] ✗ eficiência = 99,9%

b) $m = 3$

A) $400 + 2000 + 2500 \cdot 3 = 9900$
D) $1000 + 1200 + 1670 \cdot 3 = 7210$ ✓

Ao triplicar o atraso de multiplicação ressoando aos outros atrasos, o conjunto modular D é o mais veloz.

c) $n = 7$ $\quad D = 2^7, 2^7 - 1, 2^7 + 1$

$X = \{ x_{20}, x_{19}, \cdots, x_1, x_0 \}$

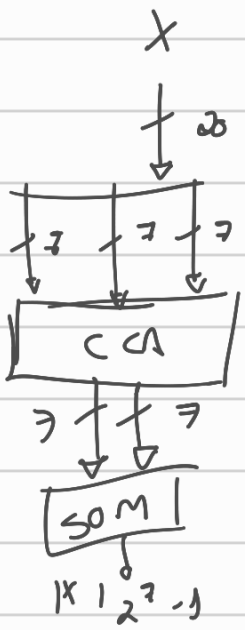
$X = x_6\ x_5\ x_4\ x_3\ x_2\ x_1\ x_0 \rightsquigarrow N_1$
$x_{13}\ x_{12}\ x_{11}\ x_{10}\ x_9\ x_8\ x_7 \rightsquigarrow N_2$
$x_{20}\ x_{19}\ x_{18}\ x_{17}\ x_{16}\ x_{15}\ x_{14} \rightsquigarrow N_3$

2^7: $N_1 \rightarrow \{ x_6, x_5, x_4, x_3, x_2, x_1, x_0 \}$

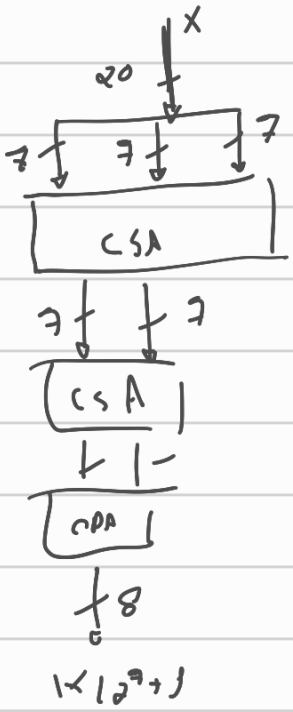
$2^7 - 1$: $|N_1 + N_2 + N_3|_{2^7-1}$

$2^7 + 1$: $|N_1 + N_2 + N_3|_{2^7+1} = |N_2 - N_1 + N_3|_{2^7+1}$

$2^7 - 1$:



$2^7 + 1$:



a) $m_1 = 2^7$

$m_2 = 2^7 - 1$

$m_3 < 2^7 + 1$

$\hat{m}_1 = (2^7 - 1)(2^7 + 1) = 2^{14} - 1$

$\hat{m}_2 = 2^7 (2^7 + 1) = 2^{14} + 2^7$

$\hat{m}_3 = (2^7 - 1) 2^7 = 2^{14} - 2^7$

$|\hat{m}_1^{-1}| m_1 = 2^7 - 1$

$|\hat{m}_2^{-1}| m_2 = 2^6$

$|\hat{m}_3^{-1}| m_3 = 2^6 + 1$

$$V_1 = \frac{(2^7 - 1)(2^{14} - 1) - 1}{2^7} = \frac{2^{21} - 2^7 - 2^{14}}{2^7} = 2^{14} - 2^7 + 1$$

$$V_2 = \frac{2^6 \cdot 2^7 (2^7 + 1)}{2^7} = 2^{13} + 2^6$$

$$V_3 = \frac{(2^6+1)\,2^7\,(2^7-1)}{2^7} = 2^{13}+2^6-1$$

	2^{13}	2^{12}	2^{11}	2^{10}	2^9	2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
A	$\overline{r_{1,5}}$	$\overline{r_{1,5}}$	$\overline{r_{3,4}}$	$\overline{r_{1,3}}$	$\overline{r_{1,2}}$	$\overline{r_{3,1}}$	$\overline{r_{3,0}}$	$r_{2,6}$	$r_{2,5}$	$r_{2,4}$	$r_{2,3}$	$r_{2,2}$	$r_{2,1}$	
B	$r_{2,0}$	$r_{2,6}$	$r_{2,5}$	$r_{2,4}$	$r_{2,3}$	$r_{2,2}$	$r_{2,1}$	$r_{3,7}$	$r_{3,6}$	$r_{3,5}$	$r_{3,4}$	$r_{3,3}$	$r_{3,2}$	$r_{3,1}$
C	$r_{3,0}$	$r_{3,6}$	$r_{3,5}$	$r_{3,4}$	$r_{3,3}$	$r_{3,2}$	$r_{3,1}$	$r_{2,1}$	$\overline{r_{3,3}}$	$\overline{r_{3,6}}$	$\overline{r_{3,5}}$	$\overline{r_{3,2}}$	$\overline{r_{3,4}}$	$\overline{r_{2,0}}$
D	$r_{3,7}$	0	0	0	0	0	0	0	0	0	0	0	0	0