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# Hollow Man

### 一.简答题 (共1题,100.0分)

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教材63页, 第9,10,11,14,18题

正确答案:

我的答案：

蒋瑞林 32018090194 | 2018计算机基础班

9. (1)  $x = 2^{-11} * 0.100101$ ,  $y = 2^{-10} * (-0.011110)$

$[x]_{\text{浮}} = 11101, 0.100101$

$[y]_{\text{浮}} = 11110, -0.011110$

$E_x - E_y = 11101 + 00010 = 11111$

$[x]_{\text{浮}} = 11110, 0.010010(1)$

$x + y$

$00.010010(1)$

$+ 11.100010$

$11.110100(1)$

规格化处理:  $1.010010$  阶码  $11100$

$x + y = 1.010010 * 2^{-4} = 2^{-4} * -0.101110$

$x - y$

$00.010010(1)$

$+ 00.011110$

$00.110000(1)$

规格化处理:  $0.110000$  阶码  $11110$

$x - y = 2^{-2} * 0.110000$

(2)  $x = 2^{-101} * (-0.010110)$ ,  $y = 2^{-100} * 0.010110$

$[x]_{\text{浮}} = 11011, -0.010110$

$[y]_{\text{浮}} = 11100, 0.010110$

$E_x - E_y = 11011 + 00100 = 11111$

$[x]_{\text{浮}} = 11100, 1.110101(0)$

$x + y$

$11.110101$

$+ 00.010110$

规格化处理:  $0.101100$  阶码  $11010$

$x + y = 0.101100 * 2^{-6}$

$x - y$

$11.110101$

$+ 11.101010$

$11.011111$

规格化处理:  $1.011111$  阶码  $11100$

$x - y = -0.100001 * 2^{-4}$

商  $= 0.110110 * 2^{-6}$

余数  $= 0.101100 * 2^{-6}$

(1)  $E_x = 0011$ ,  $M_x = 0.110100$

$E_y = 0100$ ,  $M_y = 0.100100$

$E_z = E_x + E_y = 0111$

$M_x * M_y$

$0.1101$

$* 0.1001$

$01101$

$00000$

$00000$

$01101$

$00000$

$001110101$

规格化:  $2^6 * 0.111011$

(2)  $E_x = 1110$ ,  $M_x = 0.011010$

$E_y = 0011$ ,  $M_y = 0.111100$

$E_z = E_x - E_y = 1110 + 1101 = 1011$

$[M_x]_{\text{补}} = 00.011010$

$[M_y]_{\text{补}} = 00.111100$

$[-M_y]_{\text{补}} = 11.000100$

$00011010$

$+ [-M_y]_{\text{补}} 11.000100$

$11011110$

$10111100$

$+ [M_y]_{\text{补}} 00111100$

$11111000$

$11110000$

$+ [M_y]_{\text{补}} 00111100$

$00101100$

$01011000$

$+ [-M_y]_{\text{补}} 11.000100$

$00011100$

$00111000$

$+ [-M_y]_{\text{补}} 11.000100$

$11111000$

$11111000$

$+ [M_y]_{\text{补}} 00111100$

$00110100$

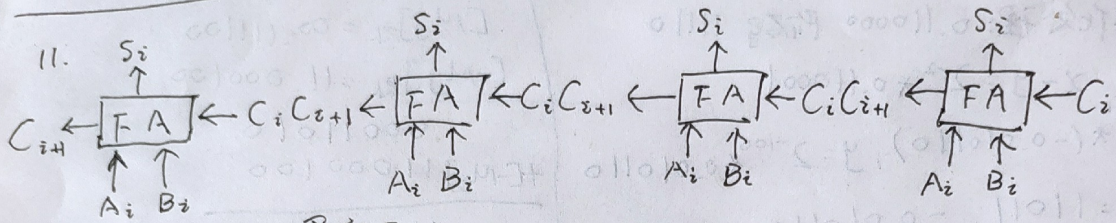
$01101000$

$+ [-M_y]_{\text{补}} 11.000100$

$00101100$

$0.01101$





4位加法器如上图所示

$$\begin{aligned}
 C_i &= A_i B_i + A_i C_{i-1} + B_i C_{i-1} \\
 &= A_i B_i + (A_i + B_i) C_{i-1} \\
 &= A_i B_i + (A_i \oplus B_i) C_{i-1}
 \end{aligned}$$

(1) 串行进位方式

$$C_1 = G_1 + P_1 C_0 \quad \text{其中: } G_1 = A_1 B_1, \quad P_1 = A_1 \oplus B_1$$

$$C_2 = G_2 + P_2 C_1 \quad G_2 = A_2 B_2, \quad P_2 = A_2 \oplus B_2$$

$$C_3 = G_3 + P_3 C_2 \quad G_3 = A_3 B_3, \quad P_3 = A_3 \oplus B_3$$

$$C_4 = G_4 + P_4 C_3 \quad G_4 = A_4 B_4, \quad P_4 = A_4 \oplus B_4$$

(2) 并行进位方式

$$C_1 = G_1 + P_1 C_0$$

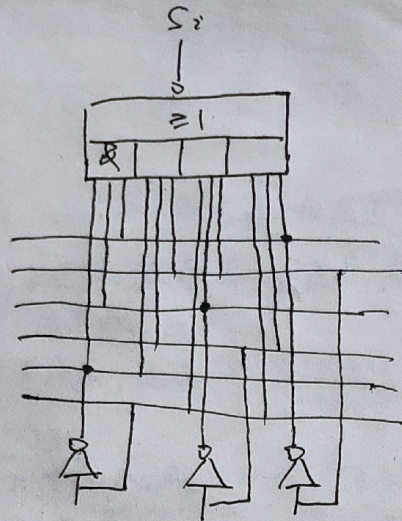
$$C_2 = G_2 + P_2 G_1 + P_2 P_1 C_0$$

$$C_3 = G_3 + P_3 G_2 + P_3 P_2 G_1 + P_3 P_2 P_1 C_0$$

$$C_4 = G_4 + P_4 G_3 + P_4 P_3 G_2 + P_4 P_3 P_2 G_1 + P_4 P_3 P_2 P_1 C_0$$

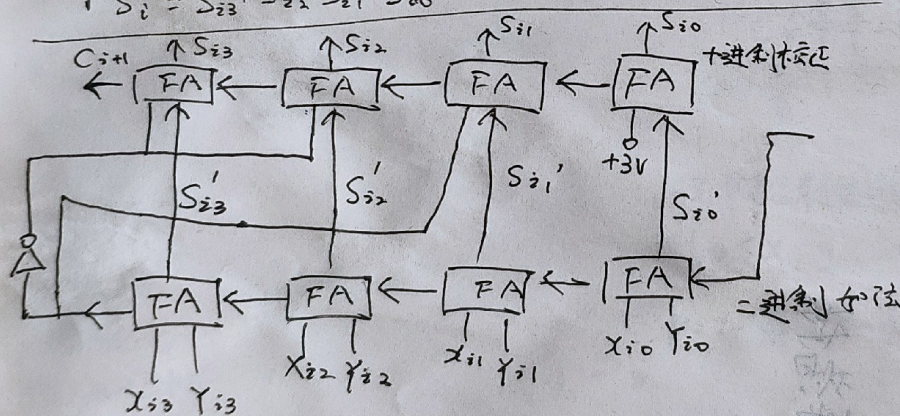


$$14. S_i = \bar{A}_i \bar{B}_i \bar{C}_i + \bar{A}_i B_i C_i + A_i \bar{B}_i C_i + A_i B_i \bar{C}_i$$



18. 设余三码编码的两个运算数为  $X_i$  和  $Y_i$ , 第一次用二进制加法求和运算和数为  $S_i'$ , 进位为  $C_{i+1}'$ , 校正后所得的余三码和数为  $S_i$ , 进位为  $C_{i+1}$ , 则有:

$$\begin{cases} X_i = X_{i3} X_{i2} X_{i1} X_{i0} \\ Y_i = Y_{i3} Y_{i2} Y_{i1} Y_{i0} \\ S_i' = S_{i3}' S_{i2}' S_{i1}' S_{i0}' \end{cases}$$



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14题是什么?