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Факультет программной инженерии и компьютерной техники

Домашняя работа №7

по дисциплине “Дискретная математика”

вариант 4

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A	B
8.3	0.059

$$A = 8.3 = 8.4(C)_{16}$$

$$B = 0.059 = 0.0F1_{16}$$

$$\text{SignC} = \text{SignA} \oplus \text{SignB} = 0$$

$$X_A = P_A + d; X_B = P_B + d$$

$$X_C = X_A + X_B - d;$$

$$P_C + d = \frac{P_A + d + P_B}{P_C} + d - d.$$

Ф1

$$A = 8.4(C)_{16} = 0.84(C)_{16} * 16^1$$

0	1	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	1	0	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

$$B = 0.0F1_{16} * 16^0$$

0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

$$\begin{array}{r}
 X_A = 1000001 \\
 + \quad X_B = \underline{1000000} \\
 X_A + X_B = 10000001 \\
 - \quad d = \underline{1000000} \\
 \quad \quad \quad 0000001
 \end{array}$$

$$P_C = 1.$$

№	Операнды	СЧП (старшие разряды)	В/СЧП (младшие разряды)	Признак коррекции
0	СЧП	0000000000000000	00001111000 01	0
	[M _A]	000100001001101		
1	СЧП	000100001001101	00001111000 01	0
	СЧП → 2	000001000010011	01 00001111 00	
2	СЧП	000001000010011	01 00001111 00	0
	СЧП → 2	000000010000100	1101 000011 11	
3	[-M _A]	111011110110011		1
	СЧП	111100000110111	1101 00001111	

	СЧП → 2	1 1 1 1 1 1 0 0 0 0 0 1 1 0 1	1 1 1 1 0 1 0 0 0 0 1 1	
4	СЧП	1 1 1 1 1 1 0 0 0 0 0 1 1 0 1	1 1 1 1 0 1 0 0 0 0 1 1	1
	СЧП → 2	1 1 1 1 1 1 1 1 0 0 0 0 0 1 1	0 1 1 1 1 1 0 1 0 0 0 0	
5	[M _A]	0 0 0 1 0 0 0 0 1 0 0 1 1 0 1		0
	СЧП	0 0 0 0 1 1 1 1 1 0 1 0 0 0 0	0 1 1 1 1 1 0 1 0 0 0 0	
	СЧП → 2	0 0 0 0 0 0 1 1 1 1 1 0 1 0 0	0 0 0 1 1 1 1 1 0 1 0 0	
6	СЧП	0 0 0 0 0 0 1 1 1 1 1 0 1 0 0	0 0 0 1 1 1 1 1 0 1 0 0	0
	СЧП → 2	0 0 0 0 0 0 0 0 1 1 1 1 1 0 1	0 0 0 0 0 1 1 1 1 1 0 1	
	4 ← M _C	0 0 0 0 1 1 1 1 1 0 1 0 0 0 0	0 1 1 1 1 1 0 1 0 0 0 0	

$$X_C = X_C - 1$$

$$C^* = 0.7D_{16} * 16^0 = 0.7D_{16} = 0.48828125_{10}$$

$$C_T = 0.4897$$

$$\Delta C = C_T - C^* = 0.4897 - 0.48828125 = 0.00141875$$

$$\delta C = \left| \frac{\Delta C}{C_T} \right| \cdot 100\% = \frac{0.00141875}{0.4897} \cdot 100\% = 0.29\%$$

Φ2

$$A = 8.3 = 0.10000100110_2 * 2^4$$

0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

$$B = 0.059 = 0.11110001101_2 * 2^{-4}$$

0	0	1	1	1	1	1	0	0	1	1	1	0	0	0	1	1	0	1	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

$$\begin{array}{r}
X_A = 10000100 \\
+ \quad X_B = \underline{01111100} \\
X_A + X_B = 100000000 \\
- \quad d = \underline{10000000} \\
X_C = 00000000 \\
P_C = 0
\end{array}$$

№	Операнды	СЧП (старшие разряды)	В/СЧП (младшие разряды)	Признак коррекции
0	СЧП	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1 0 0 0 1 1 0 1 0	0
1	[8M _A]	0 0 1 0 0 0 0 1 0 0 1 1 0 0 0 0 0 0		0
	[2M _A]	0 0 0 0 1 0 0 0 0 1 0 0 1 1 0 0 0 0		
	СЧП	0 0 1 0 1 0 0 1 0 1 1 1 1 1 0 0 0 0	1 1 1 1 0 0 0 1 1 0 1 0	
	СЧП → 4	0 0 0 0 0 0 1 0 1 0 0 1 0 1 1 1 1 1	1 0 0 0 1 1 1 1 0 0 0 1	

2	[M _A]	0 0 0 0 0 1 0 0 0 0 1 0 0 1 1 0 0		0
	СЧП	0 0 0 0 0 1 1 0 1 0 1 1 1 1 0 1 1	1 0 0 0 1 1 1 1 0 0 0 1	
	СЧП → 4	0 0 0 0 0 0 0 0 0 1 1 0 1 0 1 1 1	1 0 1 1 1 0 0 0 1 1 1 1	
3	[-M _A]	1 1 1 1 1 0 1 1 1 1 0 1 1 0 1 0 0		1
	СЧП	1 1 1 1 1 1 0 0 0 1 0 0 0 1 0 1 1	1 0 1 1 1 0 0 0 1 1 1 1	
	СЧП → 4	1 1 1 1 1 1 1 1 1 1 0 0 0 1 0 0 0	1 0 1 1 1 0 1 1 1 0 0 0	
4	[M _A]	0 0 0 0 0 1 0 0 0 0 1 0 0 1 1 0 0		
	СЧП	0 0 0 0 0 0 1 1 1 1 1 0 1 0 1 0 0	1 0 1 1 1 0 1 1 1 0 0 0	
	← M _C	0 0 0 0 0 1 1 1 1 1 0 1 0 1 0 0 1	0 1 1 1 0 1 1 1 0 0 0 0	

$$X_C = X_C - 1 = -1$$

$$C^* = 0.111110101001_2 * 2^{-1} = 0.0111110101001_2 = 0.4893798828125$$

$$C_T = 0.4897$$

$$\Delta C = C_T - C^* = 0.4897 - 0.4893798828125 = 0.00032011718$$

$$\delta C = \left| \frac{\Delta C}{C_T} \right| \cdot 100\% = \frac{0.00032011718}{0.4897} \cdot 100\% = 0.065\%$$

Погрешности результатов вызваны неточным представлением операндов. В формате Ф2 операнды представлены точнее и погрешность меньше.