

представление чисел:

13.11.2024

Со знаком:

$$2^{n-1} \leq A_{2^n} \leq 2^n - 1$$

без знака:

$$0 \leq A_{\text{беззнак.}} \leq 2^n - 1$$

Домашняя работа №1 по
дискретной математике. Вар. 99
Стасен Станислав, РЗИИ, 3.

$$\Rightarrow A = 675 ; B = 0,038$$

① Число B представте BCD: ASCII I:

$$A_{BCD} = (6_{10})(7_{10})(5_{10}) = (0110)_2 (0111)_2 (0101)_2 = \\ = 0000.0110.0111.0101$$

$$A_{\text{ASCII}} = (\cancel{54}_{10})(\cancel{55}_{10})(\cancel{53}_{10}) = [0011.0110][0011.0111] \\ [0011.0101]$$

суп. +

2) A и $-A$ представляются в форме с группами занятыми

$$A = (1010100011)_2 = (2A3)_{16}$$

$$A = \boxed{0 \underbrace{00000}_{2} \underbrace{10101}_{10} \underbrace{00011}_{3}} = (2A3)_{16}$$

$$[-A]_{\text{imp}} = [1 \ 000 \ 0010 \ 1010 \ 0011]$$

$$[-A]_{\text{loop}} = [1 \ 111 \ 1101 \ 0101 \ 1100]$$

$$+$$

$$1$$

$$[-A]_{\text{gen}} = -A = [1 \ 111 \ 1101 \ 0101 \ 1101]$$

3) A и B - неблок. генераторы P_1 :

$$a) A = (675)_{10} = (2A3)_{16} = (0, 2A3)_{16} \cdot 16^3$$

$$P = 3; X_A = 6 \cdot 4 + 3 = 67 = (1000011)_2$$

$$[0 \boxed{1000011} \ 0010 \ 1010 \ 0011 \ 0000 \ 0000 \ 0000]$$

$$b) B = 0,038_{10} = 0,09BA_{16} = (0,9BA)_{16} \cdot 16^{-1}$$

$$0,038 \cdot 16 = 0,608 \quad 0,328 \cdot 16 = 11,648$$

$$0,608 \cdot 16 = \underline{9},728 \quad 0,648 \cdot 16 = 10,368.$$

comp. 2

$$p = -1 ; X_A = 64 - 1 = 63_{10} = 011111_2$$

$[0 | 011111 | 1001 \ 1011 \ 1010 \ 0000 \ 0000 \ 0000]$

(4) A u B b populare PL

a) $A = 675_{10} = (1010100011)_2 = (0,1010100011)_2 \cdot 2^{10}$

$P = 10 ; X_A = 10 + 128 = 138_{10} = (10001010)_2$

$[0 | 10001010 | 010 \ 1000 \ 1100 \ 0000 \ 0000 \ 0000]$

b) $B = 0,038_{10} = (0,000010)_2 = (0,1)_2 \cdot 2^{-4} \quad (=)$

$0,038 \cdot 2 = 0,076 \quad 0,304 \cdot 2 = 0,608$

$0,076 \cdot 2 = 0,152 \quad 0,608 \cdot 2 = 1,216$

$0,152 \cdot 2 = 0,304 \quad 0,216 \cdot 2 = 0,432 \quad (\rightarrow)$

$P = -4 ; X_B = 128 - 4 = 124_{10} = (1111100)_2$

$\cancel{[0 | 01111100 | 0000 \ 0000 \ 0000 \ 0000 \ 0000 \ 0000]}$

$\rightarrow 0,432 \cdot 2 = 0,864 \quad 0,728 \cdot 2 = 1,456$

$0,864 \cdot 2 = 1,728 \quad 0,456 \cdot 2 = 0,912 \dots$

$(0,10011)_2 \cdot 2^{-4}$

$[0 | 01111100 | 001 \ 1000 \ 0000 \ 0000 \ 0000 \ 0000]$

cmp. 3

5) $A \cup B = B$ formato 93

a) $A = 675_{10} = (1,010100011)_2 \cdot 2^9$

$P = 9; X_4 = 127 + 9 = 136_{10} = (10001000)_2$

$[0 | 10001000] 010 \ 1000 \ 1100 \ 0000 \ 0000 \ 0000]$

b) $B = 0,038_{10} = (1,001111)_2 \cdot 2^{-5}$

$0,912 \cdot 2 = 1,824 \quad 0,824 \cdot 2 = 1,648$

$P = -5; X_4 = 127 - 5 = 122_{10} = (0111010)_2$

$[0 | 0111010] 001 \ 1110 \ 0000 \ 0000 \ 0000 \ 0000]$

6) $R = 400C0000 \quad S = BDF90000$

Haiku Y u Z no R u S (P1):

a) $R = [0|100.0000] 1101.1100.0000.0000.0000.0000$

$\underbrace{64}_{\text{1000}} \underbrace{+ 0}_{\text{00110111}}$

$Y = (0,110111)_2 \cdot (0,37)_{16} \cdot 16^0 = 0,37_{16}$

$Y = (0,37)_{16} = 3 \cdot 16^{-1} + 7 \cdot 16^{-2} = \underline{0,21484375}_{10} \approx \underline{0,2148}_{10}$

cmp. 4

8) ~~E~~

$$S = [1|011 \quad 1101|1111 \quad \frac{1001}{9} \quad 0000 \quad 0000 \quad 0000 \quad 0000]$$
$$X_S = (0111101)_2 = 61_{10}; P_S = -64 + 61 = -3$$

$$Z = (0, FG)_{16} \cdot 16^{-3} = (0, 000 FG)_{16} \stackrel{-4 -5}{=} -(15 \cdot 16 + 9 \cdot 16) =$$
$$= -0,00023746 \underset{10}{\sim} -0,2375 \cdot 10^{-3}$$

⑦ V u W no R u S (P2):

a) $R = [0|00 \cdot 0000 \cdot 1101 \cdot 1100 \cdot 0000 \cdot 0000 \cdot 0000 \cdot 0000]$

$$X_R = 129 = 128 - 1; P_R = 1$$

$$V = (0, 10111)_2 \cdot 2^1 = (1, 0111)_2 \quad \textcircled{=}$$

$$\textcircled{=} 1 + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} = \underline{1,4375}_{10} \approx \underline{1,44}_{10}$$

8) $S = [1|01111011|1111001 \quad 0000 \quad 0000 \quad 0000 \quad 0000]$

$$X_S = (01111011)_2 = 123; P_S = 123 - 128 = -5$$

$$W = (0, 1111001)_2 \cdot 2^{-5} \approx (0, 1111)_2 \cdot 2^{-5} = (0, 000001111)_2 =$$
$$= \left(\frac{1}{64} + \frac{1}{128} + \frac{1}{256} + \frac{1}{512} \right) = \underline{-0,0215}_{10} \approx \underline{-0,02}_{10}$$

camp. 5

⑧ $T \cup Q$ no $R \cup S$ (P3)

$$R = [0 | 100\ 0000\ 1 | 101\ 1100\ 0000\ 0000\ 0000\ 0000]$$

$$X_T = 129; P_T = 129 - 127 = 2$$

$$T = (1, 10111)_2 \cdot 2^2 = 1 + \frac{1}{2} + \frac{1}{8} (110, 111)_2 = \\ = 4 + 2 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} = \underline{6, 875}_{10}$$

$$S = [1 | 01111011 | 1111001\ 0000\ 0000\ 0000\ 0000]$$

$$X_Q = 123; P_Q = (-1, 1111001) = -127 + 123 = -4$$

$$PQ = (1, 1111001)_2 \cdot 2^{-4} = (-1) \cdot (0, 00011111)_2 = \\ = (-1) \cdot \left(\frac{1}{16} + \frac{1}{32} + \frac{1}{64} + \frac{1}{128} + \frac{1}{256} \right) = \underline{-0, 121}_{10}$$

camp. 6