

## Домашня работа

① Преобразуйте числа от една бройна система в друга

а) DEC  $\rightarrow$  BIN

1)  $98_{(10)} \rightarrow \text{BIN}$

$$98_{(10)} = \overset{4}{1} \overset{2}{1} \overset{1}{0} \overset{1}{0} \overset{0}{0} \overset{1}{1} \overset{0}{0}$$

<del>98</del> : 2	0
49 : 2	1
24 : 2	0
12 : 2	0
6 : 2	0
3 : 2	1
1 : 2	1
0	

BIN  $\rightarrow$  DEC

$$01100010 = 2^6 + 2^5 + 2^1 = 64 + 32 + 2 = 98_{(10)}$$

2)  $56_{(10)} \rightarrow \text{BIN}$

56 : 2	0
28 : 2	0
14 : 2	0
7 : 2	1
3 : 2	1
1 : 2	1
0	

$$56_{(10)} = 111000_{(2)}$$

3)  $32_{(10)} \rightarrow \text{BIN}$

32 : 2	0
16 : 2	0
8 : 2	0
4 : 2	0
2 : 2	1
1 : 2	1
0	

$$32_{(10)} = 100000_{(2)}$$

a) BIN  $\rightarrow$  DEC

$$1) 10_{(2)} = \overset{2^4}{0} \overset{2^3}{0} \overset{2^2}{1} \overset{2^1}{0} = 9_{(10)} \quad 2_{(10)}$$

$$2) 11101_{(2)} = \overset{2^4}{0} \overset{2^3}{0} \overset{2^2}{0} \overset{2^1}{1} \overset{2^0}{1} = \cancel{32} + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 29_{(10)}$$

$$3) 1111_{(2)} = 1 \cdot 2^0 + 1 \cdot 2^1 + 1 \cdot 2^2 + 1 \cdot 2^3 = 1 + 2 + 4 + 8 = 15_{(10)}$$

$$4) 10101010_{(2)} = 5 \cdot 12 + 1 \cdot 28 + 3 \cdot 2 + 8 + 2 = 68_{(10)}$$

b) DEC  $\rightarrow$  HEX

$$1) 48_{(10)} = \begin{array}{r|l} 48 : 16 & 0 \\ 3 : 16 & 3 \\ 0 & \end{array} \Rightarrow 48_{(10)} = 30_{(16)}$$

$$2) 156_{(10)} = \begin{array}{r|l} 156 : 16 & 12 \\ 9 : 16 & 9 \\ 0 & \end{array} \Rightarrow 156_{(10)} = 9C_{(16)}$$

$$3) 1024_{(10)} = \begin{array}{r|l} 1024 : 16 & 0 \\ 64 : 16 & 0 \\ 4 : 16 & 4 \\ 0 & \end{array}$$

7) HEX  $\rightarrow$  DEC

$$1) A_{(16)} = 10^{16^0} = 10_{(10)}$$

$$2) 100_{(16)} = 100_{(16)} = 16^2 = 256$$

$$3) 1EA_{(16)} = 1EA_{(16)} = 256 + 14 \cdot 16 + 10 = 490_{(10)}$$

$$3) 2A2B_{(16)} = 2 \cdot 4096 + 10 \cdot 256 + 2 \cdot 16 + 11 = 8192 + 2560 + 32 + 11 = 10795_{(10)}$$

9) HEX BIN

$$1) B_{(16)} = 1011_{(2)}$$

$$2) 200_{(16)} = 0010\ 0000\ 0000$$

$$1) 200_{(16)} = 200_{(16)} = 0010\ 0000\ 0000$$

$$1) 1EA_{(16)} = 0001\ 1110\ 1010_{(2)}$$

c) BIN  $\rightarrow$  HEX

$$1) 110_{(2)} = \overset{8421}{0110} = 6_{(16)}$$

$$2) 110011_{(2)} = \underset{3}{0011} \underset{3}{10011} = 33_{(16)}$$

$$3) 1010110010_{(2)} = \underset{2}{0010} \underset{11}{1010} \underset{2}{10010} = 2B2_{(16)}$$

H) DEC  $\rightarrow$  OCT

$$1) 8_{(10)} = \begin{array}{l} 8 : 8 \\ 1 : 8 \\ 0 \end{array} \begin{array}{l} 0 \\ 1 \\ 0 \end{array}$$

$$8_{(10)} = 10_{(8)}$$

$$2) 56_{(10)} = \begin{array}{l} 56 : 8 \\ 7 : 8 \\ 0 \end{array} \begin{array}{l} 0 \\ 7 \\ 0 \end{array}$$

$$= 256_{(10)} = 70_{(16)}$$

$$\begin{array}{l} 111_{(10)} = \begin{array}{l} 111 : 8 \\ 13 : 8 \\ 1 : 8 \\ 0 \end{array} \begin{array}{l} 7 \\ 5 \\ 1 \\ 0 \end{array} \\ \Rightarrow 111_{(10)} = 157_{(8)} \end{array}$$

3) OCT  $\rightarrow$  DEC

$$1) 25_{(8)} = 16 + 5 = 21_{(10)} \quad 2) 24_{(8)} = 16 + 4 = 20_{(10)}$$

$$3) 621_{(8)} = 6 \cdot 64 + 2 \cdot 8 + 1 = 401_{(10)}$$

$$4) 34_{(8)} = 24 + 4 = 28_{(10)}$$



4) Троица БС  $\rightarrow$  Четвертица БС

$$1) \overset{3^2}{2} \overset{3^1}{0} \overset{3^0}{0}_{(3)} = 9 + 6 + 0 = 15_{(4)}$$

$$2) \overset{3^3}{2} \overset{3^2}{1} \overset{3^1}{1} \overset{3^0}{0}_{(3)} = \overset{27 \cdot 2}{18} + 9 + 6 + 0 = \overset{48}{33}_{(4)} \quad \overset{48}{54} + 9 + 6 = 69_{(4)}$$

$$3) \overset{3^5}{1} \overset{3^4}{1} \overset{3^3}{1} \overset{3^2}{2} \overset{3^1}{2} \overset{3^0}{1}_{(3)} = 243 + 81 + 27 + 18 + 6 + 1 = 376_{(4)}$$

$$4) 100_{(3)} = 9_{(4)}$$

• 4629, 345070 ед