RANDOM ACCESS MEMORY

↳ време за достъп еднакво до всяка клетка

Hw - Day - 2

[1A] DEC → BIN

98	0
49	1
24	0
12	0
6	0
3	1
1	1
0	

56	0
28	0
14	0
7	1
3	1
1	1
0	

31	1
15	1
7	1
3	1
1	1
0	

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

2	0
1	1
0	

1000	0
500	0
250	0
125	1
62	0
31	1
15	1
7	1
3	1
1	1
0	

$0b1100010_{(2)}$ $0b111000_{(2)}$ $0b11111_{(2)}$ $0b1000000_{(2)}$ $0b10_{(2)}$ $0b1111101000_{(2)}$

111	1
55	1
27	1
13	1
6	0
3	1
1	1
0	

45	1
22	0
11	1
5	1
2	0
1	1
0	

14825	1
7412	0
3706	0
1853	1
926	0
463	1
231	1
115	1

57	1
28	0
14	0
7	1
3	1
1	1
0	

$0b11011111_{(2)}$ $0b101101_{(2)}$

$0b11100111101001_{(2)}$

[1B] BIN → DEC

2^9	2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
512	256	128	64	32	16	8	4	2	1

$10_{(2)} → 2_{(10)}$

$11101_{(2)} → 16+8+4+1 = 29_{(10)}$

$1111_{(2)} → 8+4+2+1 = 15_{(10)}$

$11110_{(2)} → 16+8+4+2 = 30_{(10)}$

$11011_{(2)} → 16+8+2+1 = 27_{(10)}$

$1001_{(2)} → 8+1 = 9_{(10)}$

$1110111_{(2)} → 64+32+16+4+2+1 = 119_{(10)}$

$11001100_{(2)} → 128+64+8+4 = 204_{(10)}$

$1010101010_{(2)} → 512+128+32+8+2 = 682_{(10)}$

1C DEC→HEX   10→A   11→B   12→C   13→D   14→E   15→F

$48 | 16$
0   3

$0x30_{(16)}$

$156 | 16$
12   9

$0x9C_{(16)}$

$321 | 16$
1    $20 | 16$
      4   1

$0x141_{(16)}$

$255 | 16$
15   15

$0xFF_{(16)}$

$1024 | 16$
0    $64 | 16$
      0   4

$0x400_{(16)}$

$8 | 16$
8   0

$0x8_{(16)}$

$100 | 16$
4   6

$0x64_{(16)}$

$14567 | 16$
7    $910 | 16$
      14   $56 | 16$
            8   3

$0x38E7_{(16)}$

$2020 | 16$
4    $126 | 16$
      14   7   → $0x7E4_{(16)}$

1D HEX→DEC

16^3	16^2	16^1	16^0
4096	256	16	0

$A_{(16)}$ → $10 \cdot 16^0 = 10_{(10)}$

$100_{(16)}$ → $1 \cdot 256 = 256_{(10)}$

$3E_{(16)}$ → $3 \cdot 16 + 14 \cdot 1 = 62_{(10)}$

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

$ABC_{(16)}$ → $10 \cdot 256 + 11 \cdot 16 + 12 \cdot 1 = 2748_{(10)}$

$EF_{(16)}$ → $14 \cdot 16 + 15 \cdot 1 = 239_{(10)}$

$5B3_{(16)}$ → $5 \cdot 256 + 11 \cdot 16 + 3 \cdot 1 = 1459_{(10)}$

$14C_{(16)}$ → $1 \cdot 256 + 4 \cdot 16 + 12 \cdot 1 = 332_{(10)}$

$2A2B_{(16)}$ → $2 \cdot 4096 + 10 \cdot 256 + 2 \cdot 16 + 11 \cdot 1 = 10795_{(10)}$

1E HEX→BIN

0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9
1010	A
1011	B
1100	C
1101	D
1110	E
1111	F

$B_{(16)}$ → 0b 1011

$200_{(16)}$ → 0b 0010 0000 0000

$3E_{(16)}$ → 0b 0011 1110

$1EA_{(16)}$ → 0b 0001 1110 1010

$CAB_{(16)}$ → 0b 1100 1010 1011

$ED_{(16)}$ → 0b 1110 1101

$7B3_{(16)}$ → 0b 0111 1011 0011

$24C_{(16)}$ → 0b 0010 0100 1100

$3A2D_{(16)}$ → 0b 0011 1010 0010 1101

1F BIN → HEX

$0110_{(2)} \rightarrow 0x6$ $\qquad$ $1011_{(2)} \rightarrow 0xB$

$0110|0101_{(2)} \rightarrow 0x65$ $\qquad$ $0011|1101_{(2)} \rightarrow 0x3D$

$0011|0011_{(2)} \rightarrow 0x33$ $\qquad$ $1100|1011_{(2)} \rightarrow 0xCB$

$0001|0111|0110_{(2)} \rightarrow 0x176$ $\qquad$ $0010|1100_{(2)} \rightarrow 0x2C$

$00\ 10|10\ 11|00\ 10_{(2)} \rightarrow 0x2B2$

1G DEC → OCT

$8\underline{\lfloor 8}$ $\qquad$ $56\underline{\lfloor 8}$ $\qquad$ $31\underline{\lfloor 8}$ $\qquad$ $7\underline{\lfloor 8}$ $\qquad$ $2\underline{\lfloor 8}$
0 1 $\qquad$ 0 7 $\qquad$ 7 3 $\qquad$ 7, 0 $\qquad$

$010_{(8)}$ $\qquad$ $070_{(8)}$ $\qquad$ $037_{(8)}$ $\qquad$ $07_{(8)}$ $\qquad$ $02_{(8)}$

$1000\underline{\lfloor 8}$ $\qquad$ $111\underline{\lfloor 8}$ $\qquad$ $45\underline{\lfloor 8}$ $\qquad$ $14825\underline{\lfloor 8}$
0 $125\underline{\lfloor 8}$ $\qquad$ 7 $13\underline{\lfloor 8}$ $\qquad$ 5 5 $\qquad$ 1, $1853\underline{\lfloor 8}$
$\quad$ 5, $15\underline{\lfloor 8}$ $\qquad$ $\quad$ 5 1 $\qquad$ $\qquad$ $\quad$ 5, $231\underline{\lfloor 8}$
$\qquad$ 7 1 $\qquad$ $\qquad$ $\qquad$ $055_{(8)}$ $\qquad$ $\qquad$ 7, $28\underline{\lfloor }$
$\qquad$ $\qquad$ $\qquad$ $\qquad$ $\qquad$ $\qquad$ 4, 3

$01750_{(8)}$ $\qquad$ $0157_{(8)}$ $\qquad$ $\qquad$ $034751_{(8)}$

1H OCT → DEC

8^3	8^2	8^1	8^0
512	64	8	1

$25_{(8)} \rightarrow 2 \cdot 8 + 5 \cdot 1 = 21$ $\qquad$ $2_{(8)} \rightarrow 2 \cdot 1 = 2$

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

$24_{(8)} \rightarrow 2 \cdot 8 + 4 \cdot 1 = 20$ $\qquad$ $45_{(8)} \rightarrow 4 \cdot 8 + 5 \cdot 1 = 37$

$7_{(8)} \rightarrow 7 \cdot 1 = 7$ $\qquad$ $34_{(8)} \rightarrow 3 \cdot 8 + 4 \cdot 1 = 28$

$5423_{(8)} \rightarrow 5 \cdot 512 + 4 \cdot 64 + 2 \cdot 8 + 3 \cdot 1 = 2835$

[1I] BASE 3 → BASE 4

3^5	3^4	3^3	3^2	3^1	3^0
243	81	27	9	3	1

$120_{(3)} \to 1\cdot9 + 2\cdot3 = 15_{(10)} \to 15 \underline{|4} \atop 3\ \ 3 \to 33_{(4)}$

$10_{(3)} \to 1\cdot3 = 3_{(10)} \to 3_{(4)}$

$21_{(3)} \to 2\cdot3 + 1\cdot1 = 7_{(10)} \to 7\underline{|4} \atop 3\ \ 1 \to 13_{(4)}$

$2110_{(3)} \to 2\cdot27 + 1\cdot9 + 1\cdot3 = 66_{(10)} \to 66\underline{|4} \atop 2\ \ 16\underline{|4} \atop 0\ \ 4\underline{|4} \atop 0\ \ 1 \to 1002_{(4)}$

$112_{(3)} \to 1\cdot9 + 1\cdot3 + 2\cdot1 = 14_{(10)} \to 14\underline{|4} \atop 2\ \ 3 \to 32_{(4)}$

$111221_{(3)} \to 1\cdot243 + 1\cdot81 + 1\cdot27 + 2\cdot9 + 2\cdot3 + 1\cdot1 = 376_{(10)} \to 376\underline{|4} \atop 0\ \ 94\underline{|4} \atop 3\ \ 23\underline{|4} \atop 3\ \ 5\underline{|4} \atop 1\ \ 1$

$11320_{(4)} \leftarrow$

$100_{(3)} \to 1\cdot9 = 9_{(10)} \to 9\underline{|4} \atop 1\ \ 2 \to 21_{(4)}$

$110_{(3)} \to 1\cdot9 + 1\cdot3 = 12_{(10)} \to 12\underline{|4} \atop 0\ \ 3 \to 30_{(4)}$

$11001_{(3)} \to 1\cdot81 + 1\cdot27 + 1\cdot1 = 109_{(10)} \to 109\underline{|4} \atop 1\ \ 27\underline{|4} \atop 3\ \ 6\underline{|4} \atop 2\ \ 1 \to 1231_{(4)}$