

Arabic numerals: (10-based number system)

0 1 2 3 4 5 6 7 8 9 10

X1-based number system:

0

2-based number system:

0 1 10 11

3-based

0 1 2 10

8-based

0 1 2 ... 7 10 11

537

10-based
(decimal)

0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

2-based
(binary)

0
1
10
11
100
101
110
111
1000
1001
1010
1011
1100
1101
1110
1111
10000
10001

8-based
(Octal)

0
1
2
3
4
5
6
7
10
11
12
13
14
15
16
17
20
21

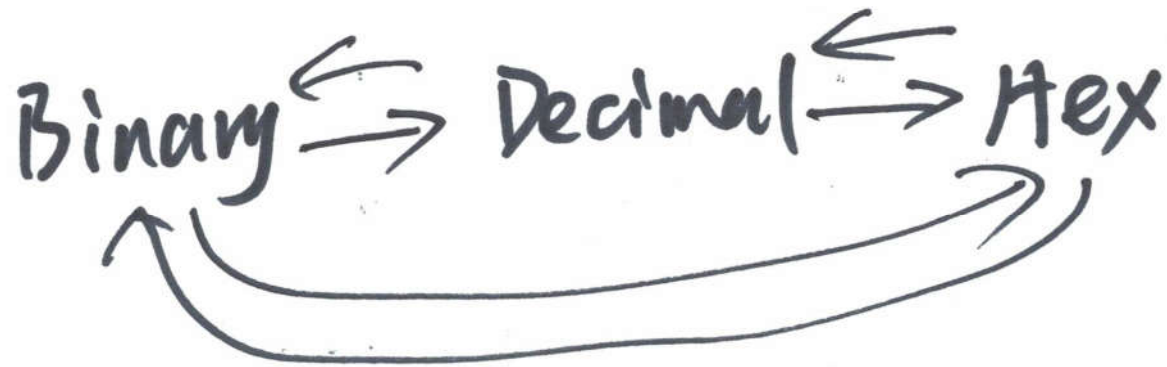
16-based
(hexadecimal)

0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
10
11

~~12~~
20
16 15
↑ ↑
1 F

2

Number Conversions



① Binary \rightarrow Decimal

$$1101 \rightarrow 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 13$$

\rightarrow

$$537 \rightarrow 5 \times 10^2 + 3 \times 10^1 + 7 \times 10^0 = 537$$

③

② Decimal \rightarrow Binary

$$\begin{array}{r} 2 \overline{) 25} \\ 2 \overline{) 12} \\ 2 \overline{) 6} \\ 2 \overline{) 3} \\ 2 \overline{) 1} \\ 0 \end{array}$$

1
0
0
1
1



$2^3 \times 2^2$

$$\begin{array}{r} 11001 \\ \downarrow \downarrow \downarrow \downarrow \downarrow \\ 16+8+0+0+1 \\ = 25 \end{array}$$