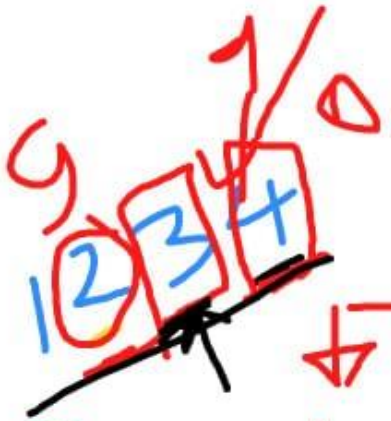
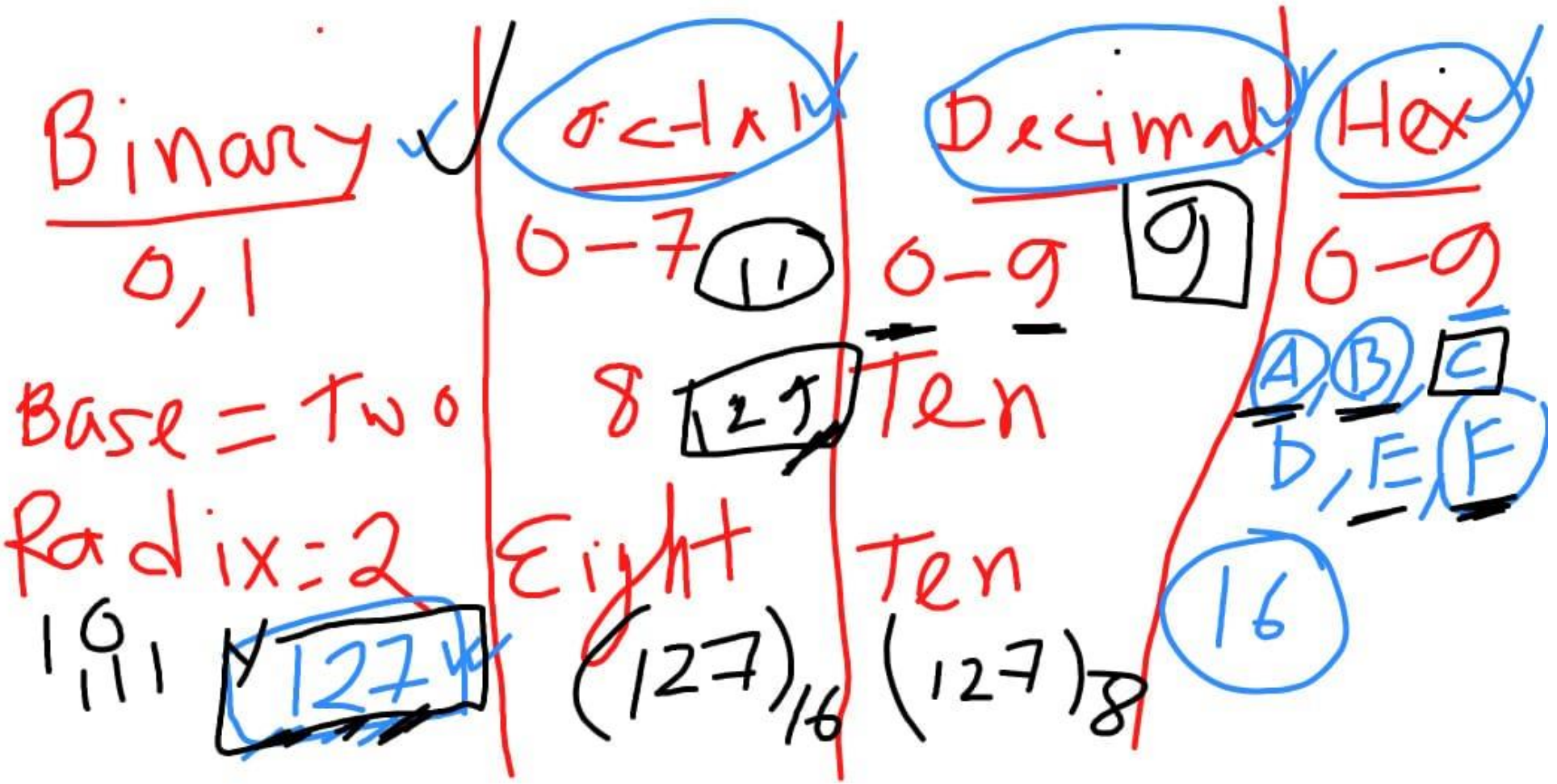
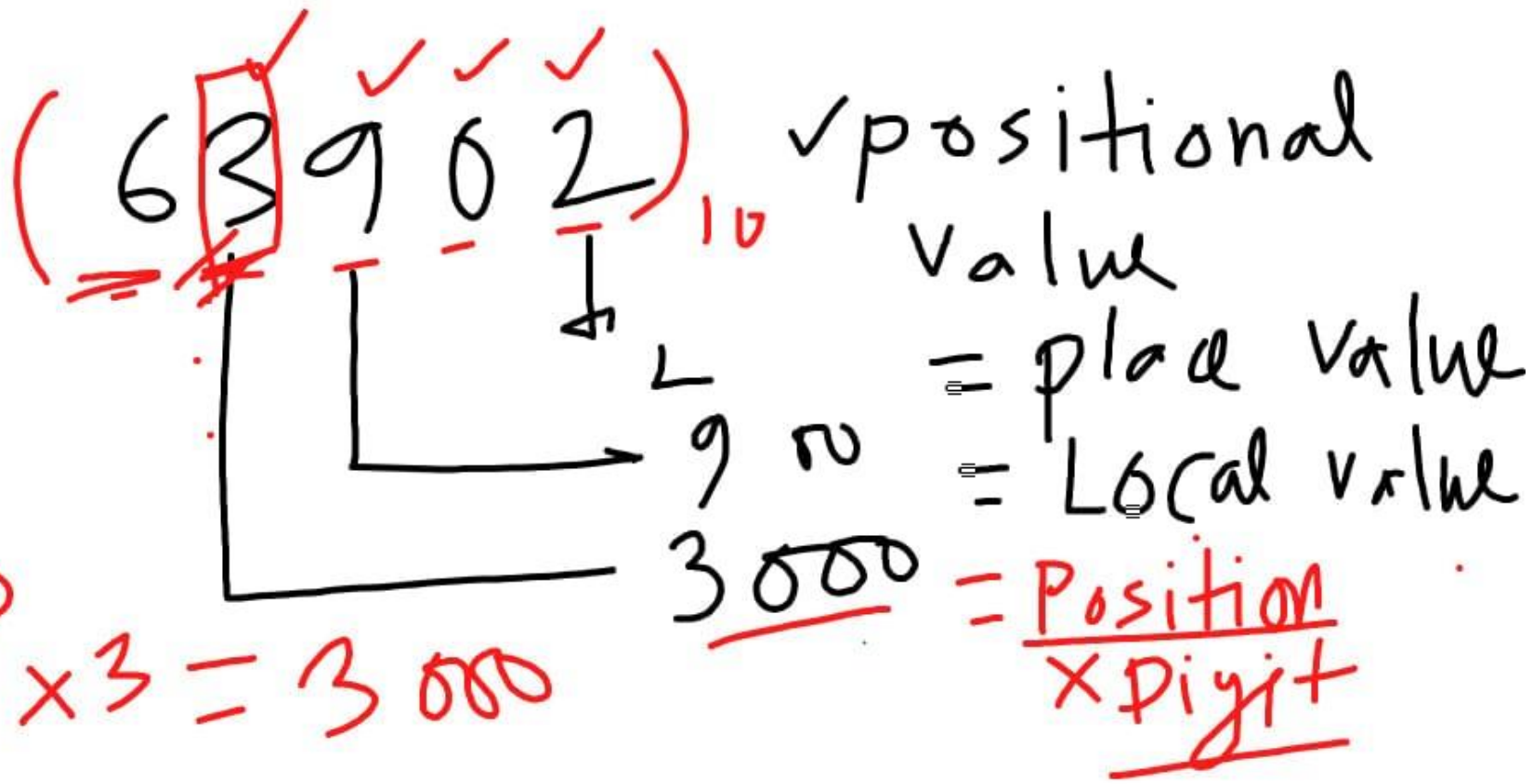


Number system

- Positional
  - Every position has well defined significance
  - Restricted Binary Code
- Non-positional
  - ✓ Roman
  - ✓ Extended Binary Code
  - ✓ Gray Code

III
IV
V


Binary
0, 1
Base = two
Radix: 2
1111
127
Octal
0-7
11
8
27
Eight
(127)16
Decimal
0-9
9
Ten
(127)8
Hex
0-9
A, B, C
D, E, F
16


(6390)10
positional value
= place value
9 0
= Local value
3000
= Position × Digit
10^3 x 3 = 3000

Type-1 Ary → Decimal

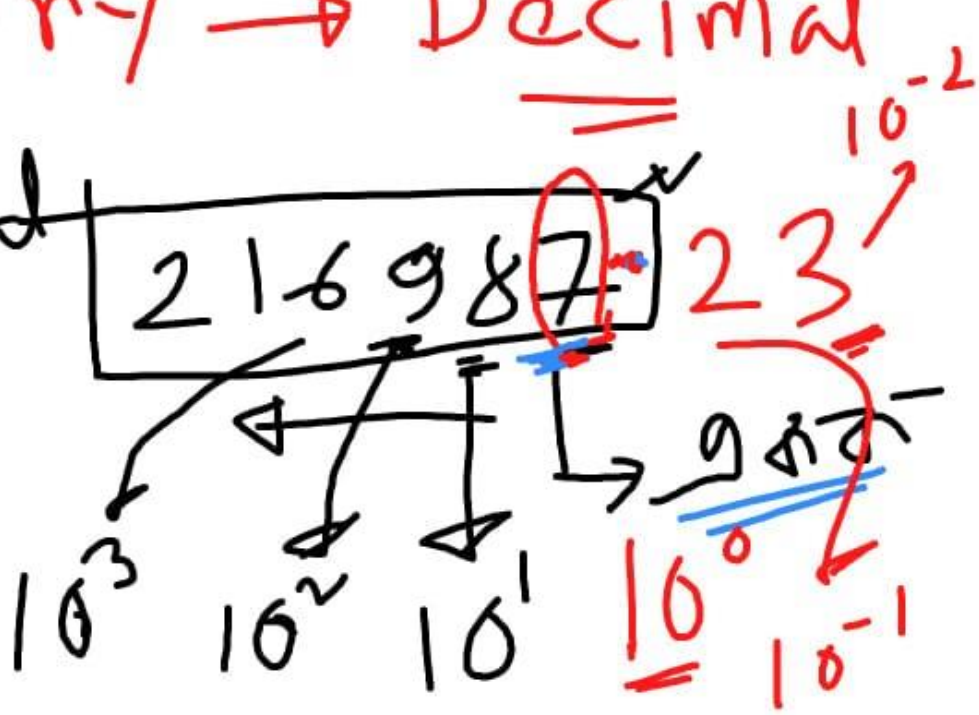
Decimal

21

Position

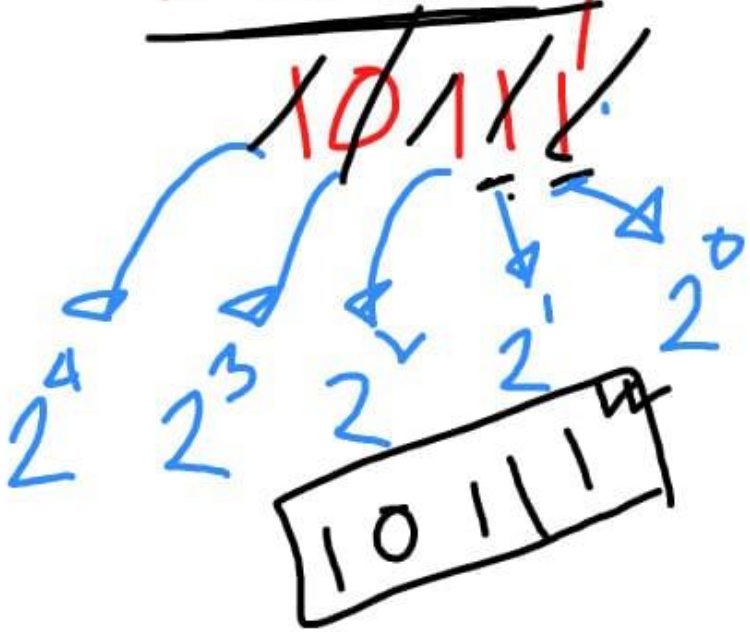
(Base)^0

$(10)^0 = 1$



Binary → Decimal

10111



$2^0 \times 1 = 1$

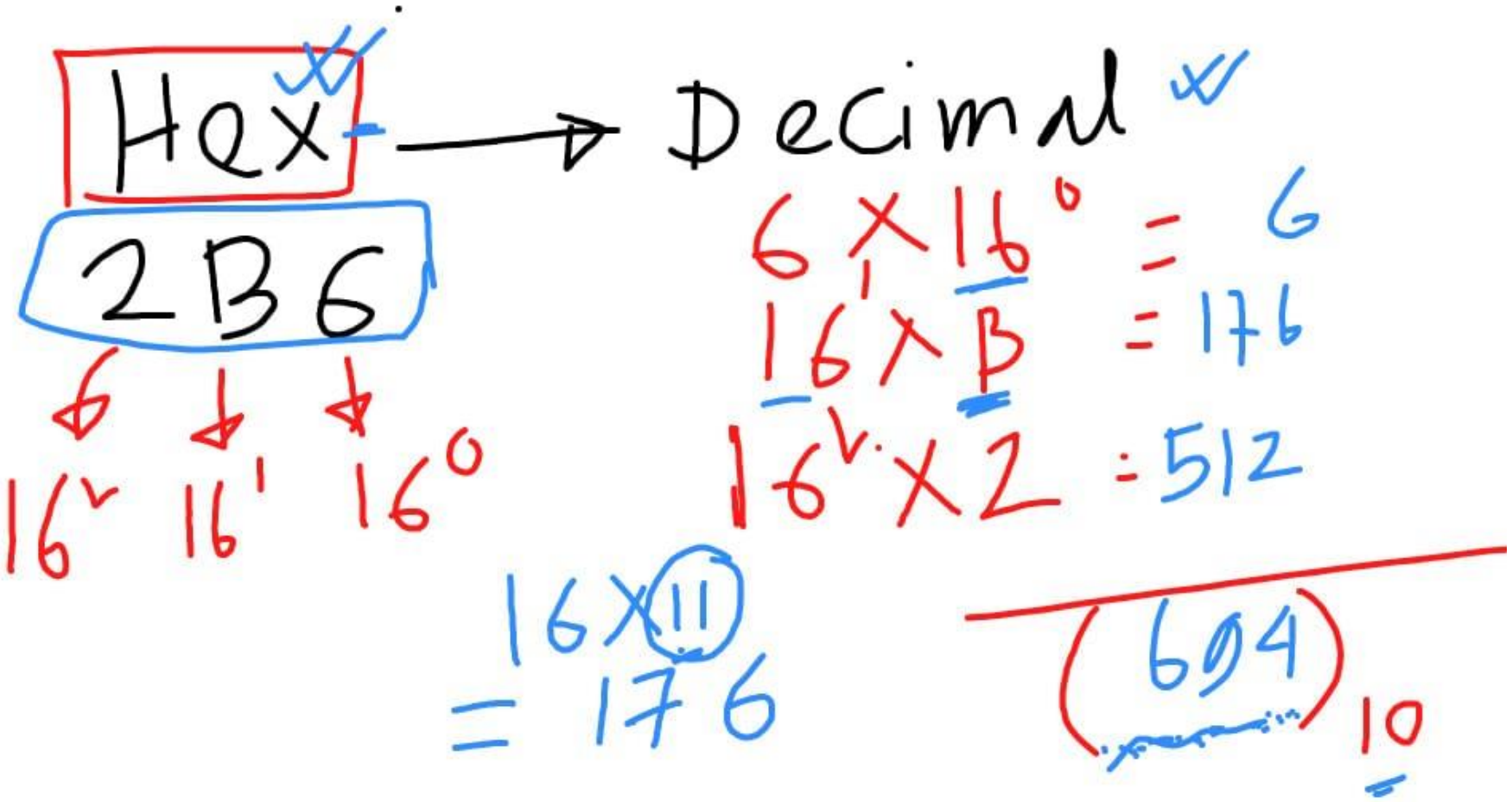
$2^1 \times 1 = 2$

$2^2 \times 1 = 4$

$2^3 \times 0 = 0$

$2^4 \times 1 = 16$

$(23)_{10}$


Hex
Decimal
2B6
6
B
2
16^2 16^1 16^0
$6 \times 16^0 = 6$
$16 \times B = 176$
$16^2 \times 2 = 512$
16×11
$= 176$
$(694)_{10}$

23469

Local value

Face value = Digit

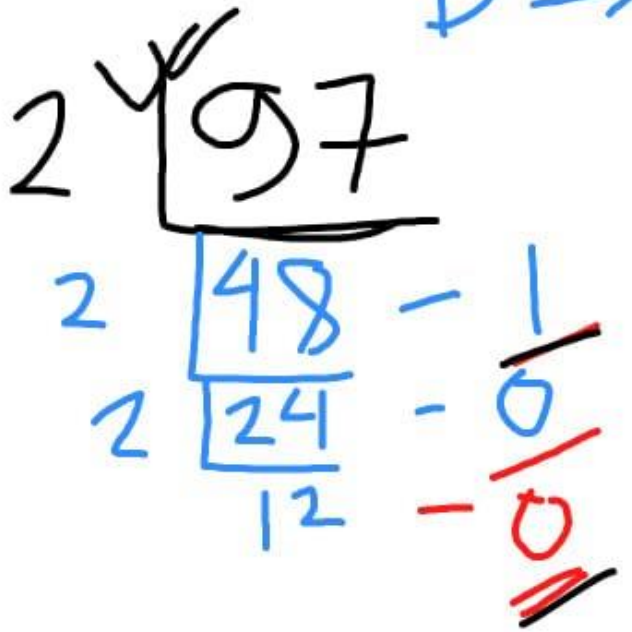
3000

−3

2997

Type-2 Decimal → Any

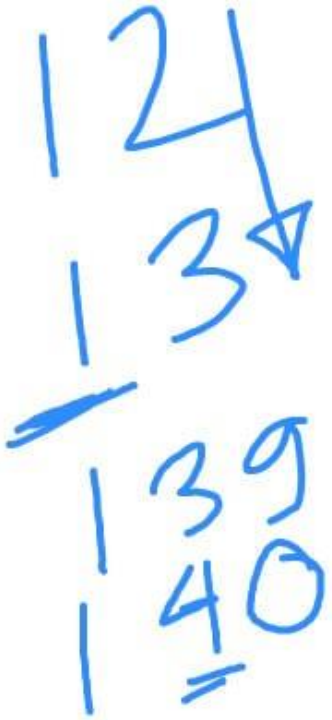
D → Binary



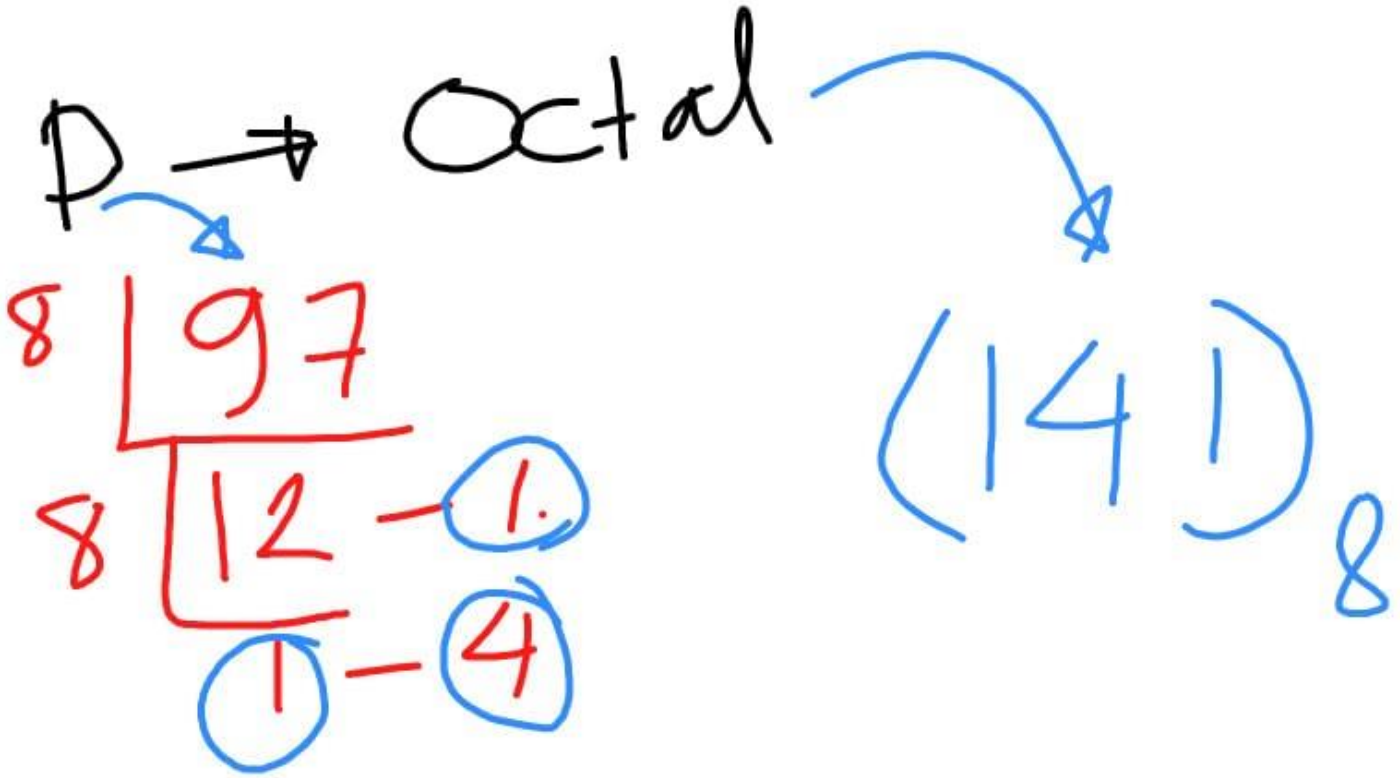
(1100001)$_2$

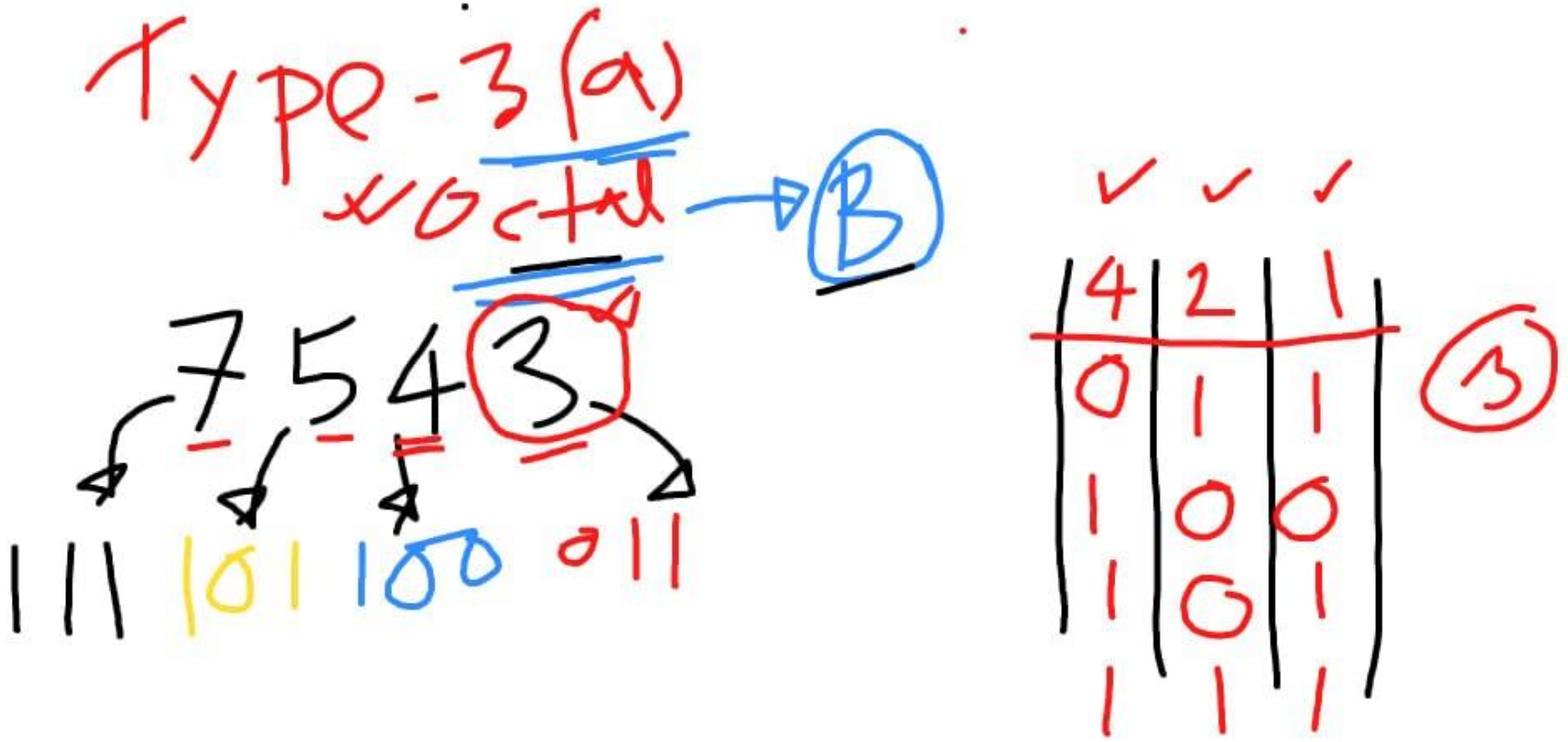
ASCII

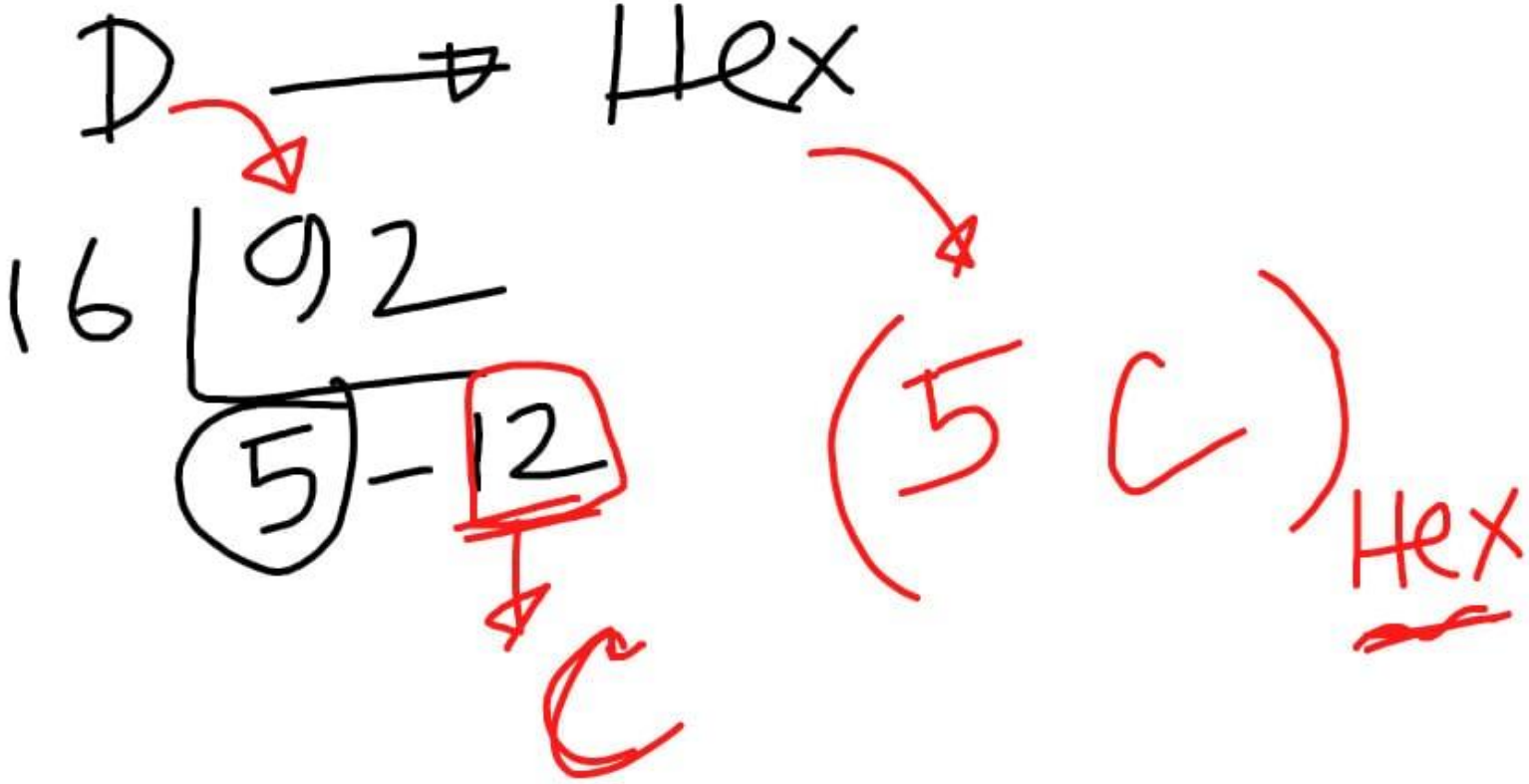
a


12
13
139
140

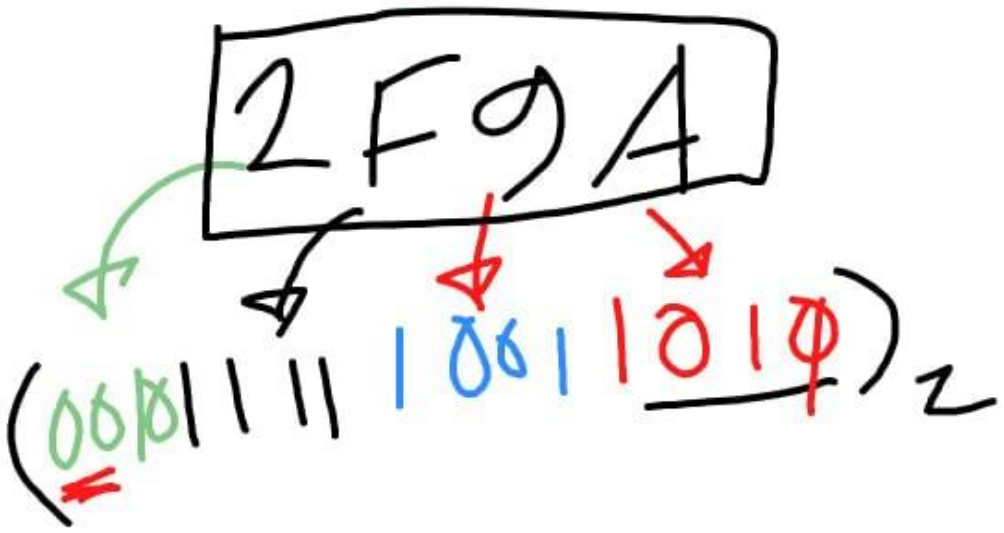

FAF
FBO


D → Octal
8 | 97
8 | 12 — 1
1 — 4
(141)8


Type-3(a)
Octal
B
7543
111 101 100 011
4 2 1
0 1 1
1 0 0
1 0 1
3


D → Hex
16 | 92
5 - 12
C
(5C)Hex

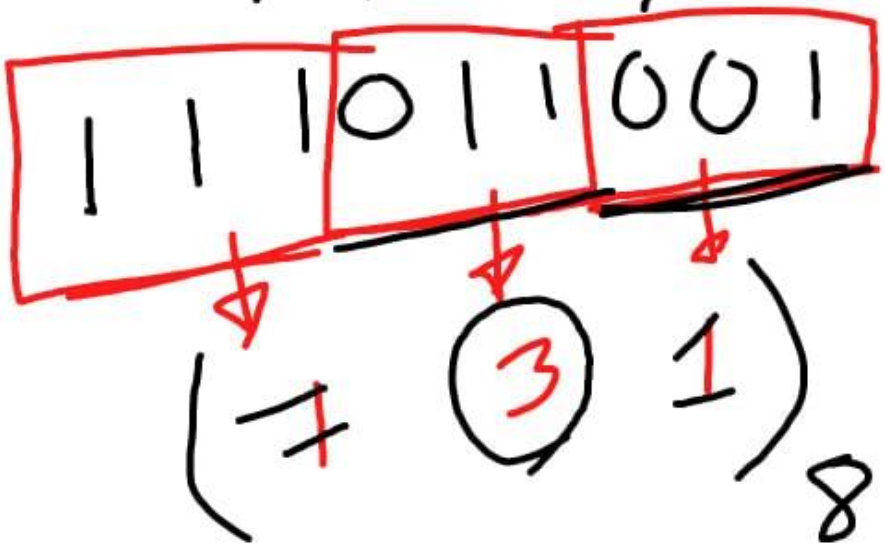
Hex → Binary



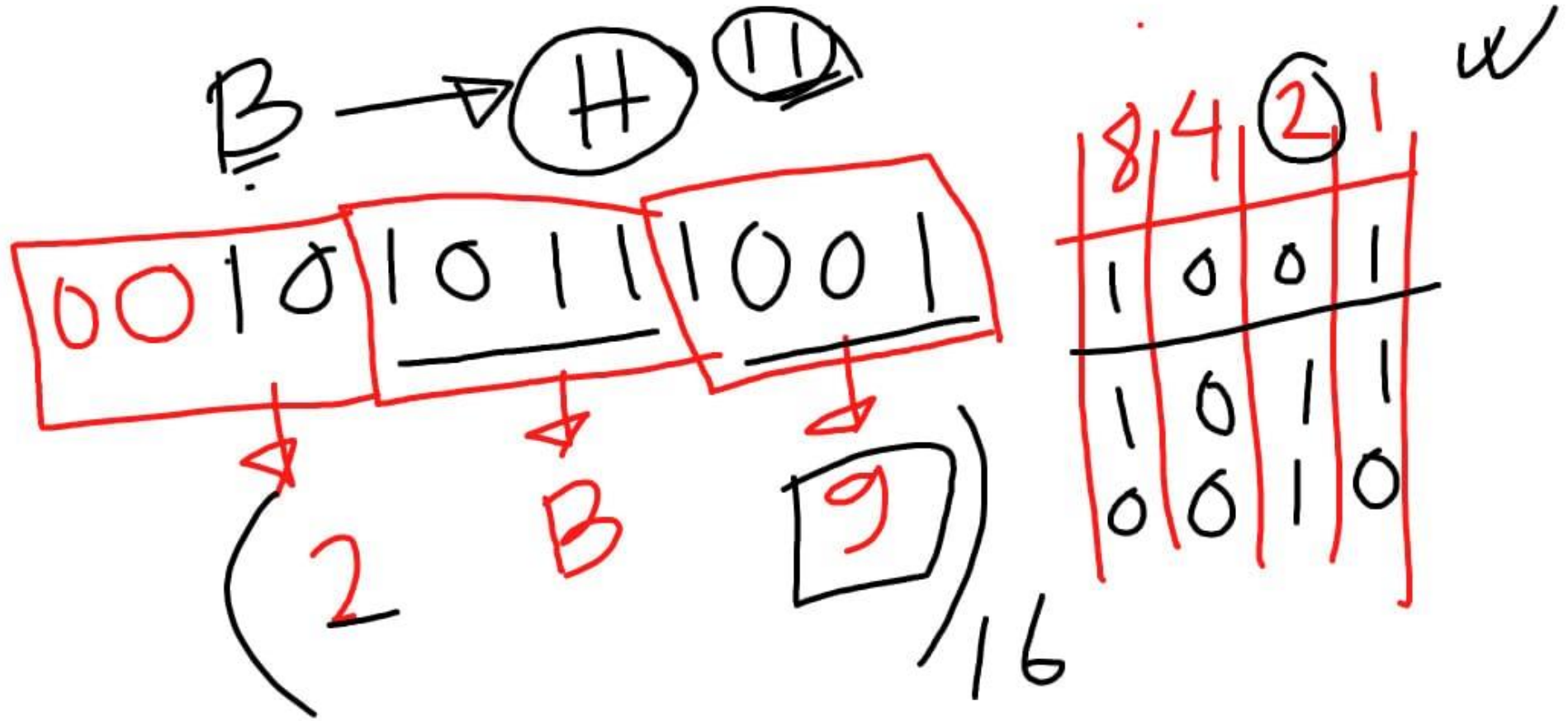
8	4	2	1
1	0	1	0
1	0	0	1
1	1	1	1
0	0	1	0

3 (b)

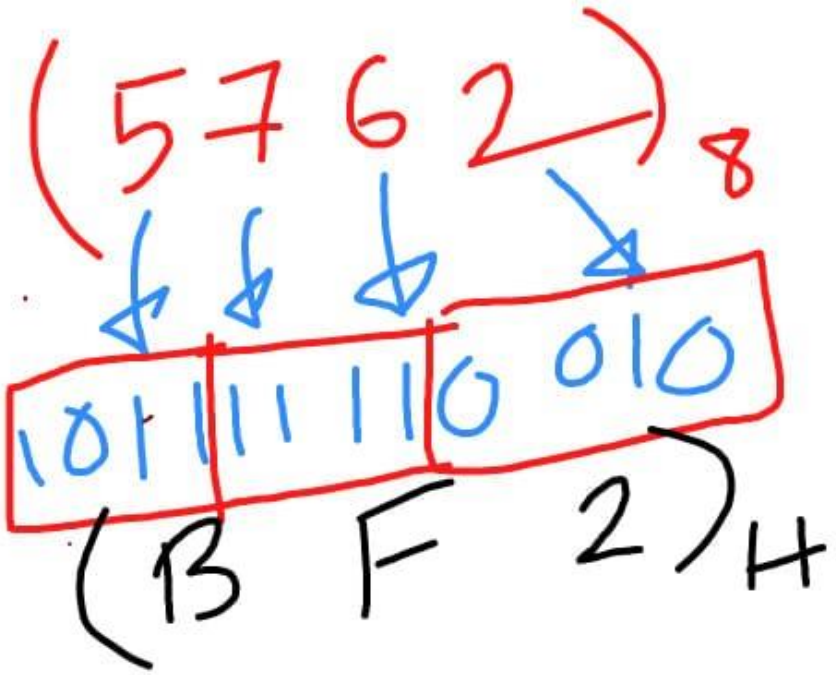
Binary → Octal

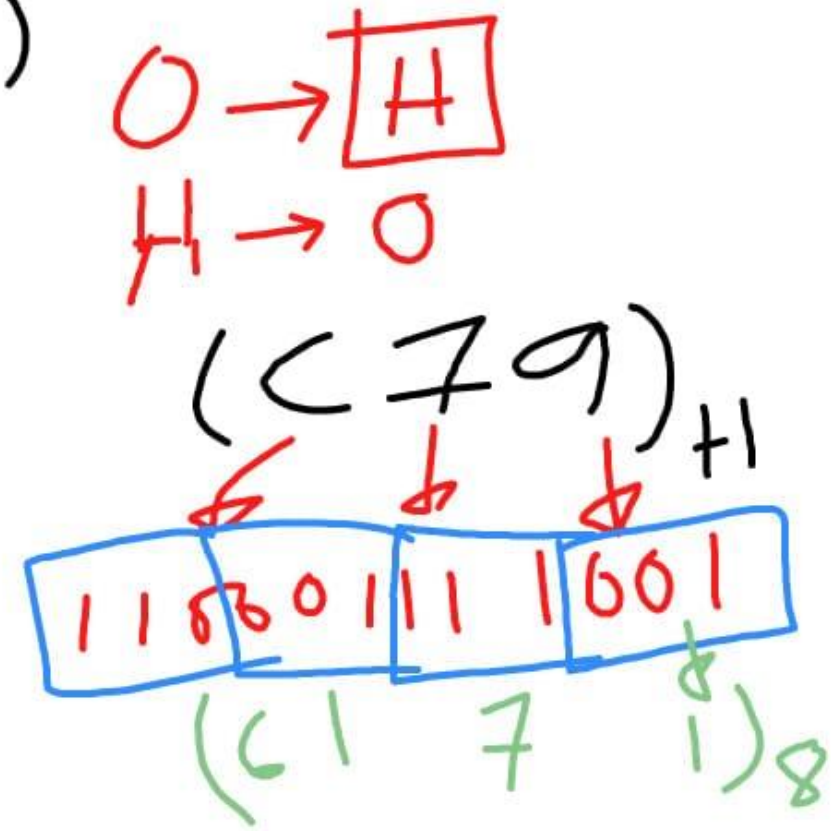


4	2	1
0	0	1
0	1	1
1	1	1


B → H
11
00101011 1001
2
B
9
16
8 4 2 1
1 0 0 1
1 0 1 1
0 0 1 0

Type-3 (C)





Type-3 (d)

(3567)$_{10}$

(0011 0101 0110 0111)

Embedded

BCD

Binary Coded Decimal

Type-3 (d)

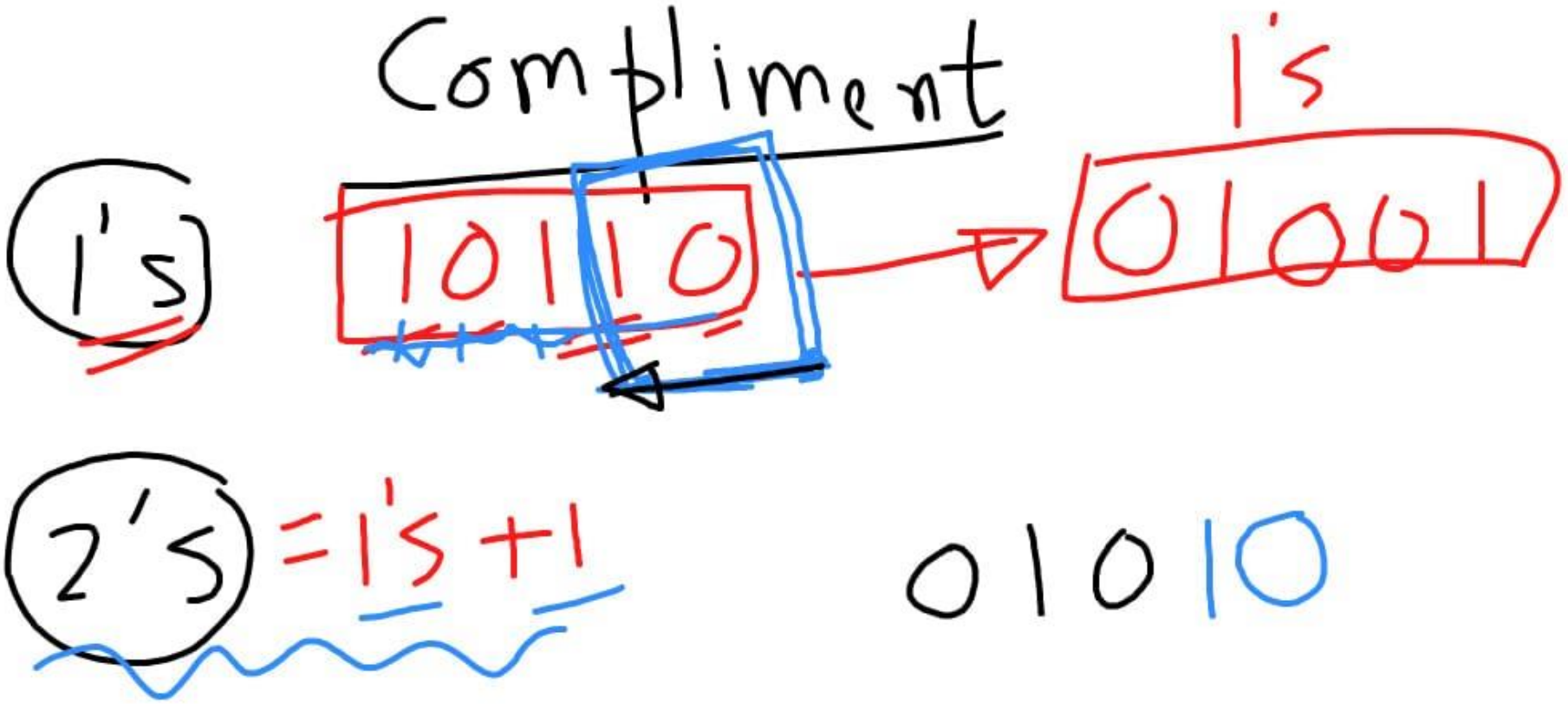
(3567)$_{10}$

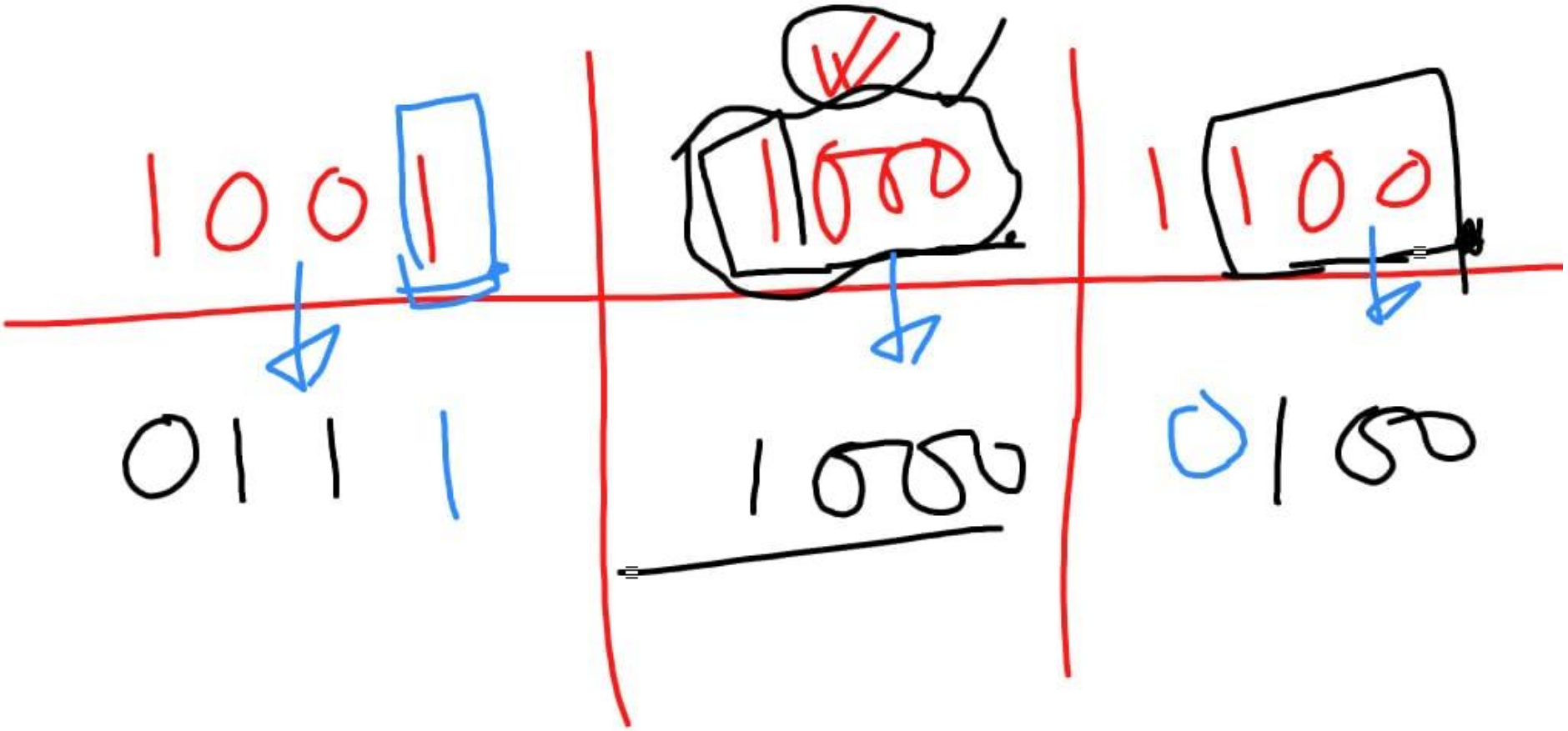
(0011 0101 0110 0111)

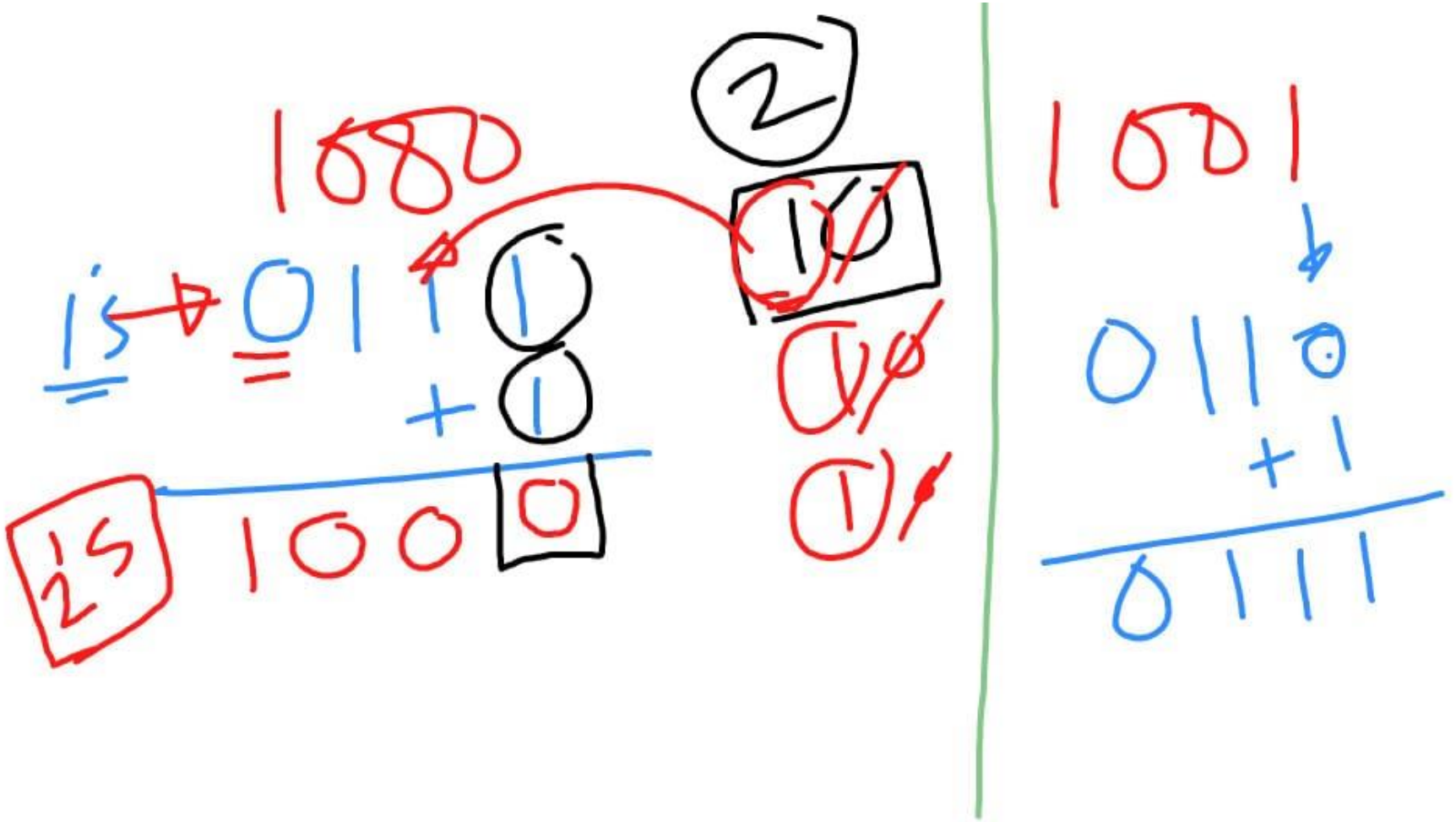
Embedded

Binary Coded Decimal

BCD


Compliment
1's
1's
10110
01001
2's = 1's + 1
01010


1001
1000
1100
0111
1000
0100


1080
2
10
15
0111
1
+1
10
1
1000
0
15
1001
0110
+1
0111