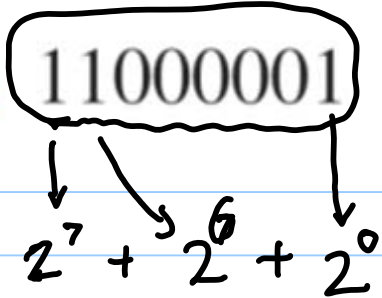


a. 10000001 00001011 00001011 11101111

b. 11000001 10000011 00011011 11111111



$$2^7 + 2^6 + 2^0 = 128 + 64 + 1 = 193$$

$$2^4 + 2^3 + 2^2 + 2^0$$

$$= 16 + 8 + 2 + 1 = 27$$

a. 111.56.45.78

b. 221.34.7.82

128, 64, 32, 16, 8, 4, 2

111

< 128

→ 8th bit = 0

> 64

→ 7th bit = 1

111 - 64 = 47

> 32

→ 6th bit = 1

47 - 32 = 15

< 16

→ 5th bit = 0

15

> 8

→ 4th bit = 1

15 - 8 = 7

> 4

→ 3rd bit = 1

7 - 4 = 3

> 2

→ 2nd bit = 1

0110111

205.16.37.39  $\rightarrow$  00100111

/28

00100000  $\rightarrow 2^5 = 32$

$\Rightarrow$  first address: 205.16.37.32

190.100.0.0/16

190.100.0.0/24

190.100.1.0/24

190.100.2.0/24

⋮

190.100.63.0/24

190.100.64.0/25  $\rightarrow$

190.100.64.128/25  $\rightarrow$

190.100.65.0/25  $\rightarrow$

190.100.65.128/25

} 1st group

00000000  
10000000  
 $\rightarrow 128$

223.1.17.0/24

Subnet 1: /26

Subnet 2: /26

Subnet 3: /25

Subnet 1: 223.1.17.0/26

last addr → 223.1.17.63

00:000000  
00111111

Subnet 2: 223.1.17.64/26

last addr: → 223.1.17.127

01:000000  
01111111

Subnet 3: 223.1.17.128/25

last addr: 223.1.17.255

1:000000  
11111111