

Set notes

true? $A \cap (B \cup C) \subseteq (A \cap B) \cup (A \cap C)$

$$(a(b+c)) \rightarrow (\underline{ab} + ac)$$

is this ever false?

	BC			
	00	01	11	10
A=0				
A=1		X	X	X

$A \cap (B \cup C)$

	BC			
	00	01	11	10
A=0				
A=1		✓	✓	✓

$(A \cap B) \cup (A \cap C)$

	CD			
	00	01	11	10
AB 00				
01		X	X	
11		X	X	
10				

x's name what set?

$B \cap D$

U and \cap using bitwise ops

	10101101	{0, 2, 3, 5, 7}	
AND	11110000	{4, 5, 6, 7}	AND
	10100000	{5, 7}	00001011

OR

10101101
11110000
11111101

OR

01101011
11110000
11111011

XOR

10101101
11110000
01011101

XOR

01101011
11110000
10011011

Binary rep'n of 1 : {0}

$$\begin{array}{r} 1 \\ \hline 76543210 \end{array}$$

x = 1 << 4 {4}

$$\begin{array}{r} 1 \\ \hline 43210 \end{array}$$

y = 1 << 6 {6}

$$\begin{array}{r} 1 \\ \hline 6543210 \end{array}$$

z = x + y add {4, 6}

$$\begin{array}{r} 1 1 \\ \hline 6543210 \\ \hline \end{array}$$

numerically
= $2^6 + 2^4$

Suppose {3, 4, 5, 6, 7}

$$\begin{array}{r} 11111 \\ \hline 76543 \end{array}$$

$$2^7 + 2^6 + 2^5 + 2^4 + 2^3$$

8 short of 2^8

2^3 short of 2^8

$$2^8 - 2^3$$

~~$$\begin{array}{r} 1 << 7 \\ + 1 << 6 \\ + 1 << 5 \end{array}$$~~

$$2^a + 2^{a-1} + 2^{a-2} + \dots + 1 = \boxed{2^{a+1} - 1}$$

$$2^a + 2^{a-1} + \dots + 2^b = \boxed{2^{a+1} - 2^b}$$

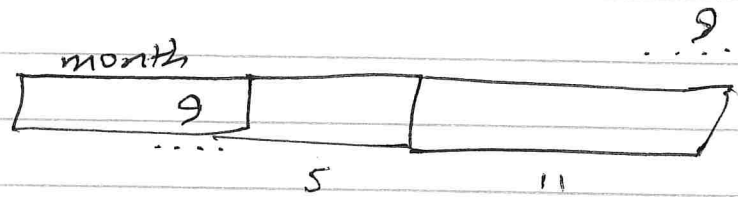
$$1 << (a+1)$$

$$- 1 << b$$

	size	value
month	4	9
day	5	23
year	11	2020

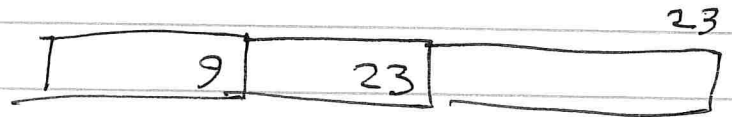
month = 9

date = month << 16



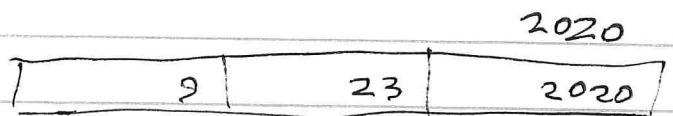
day = 23

date | = ~~date~~ day << 11



year = 2020

date | = year



license plate: L L L # # #

$$\underbrace{26 \cdot 26 \cdot 26}_{17,576} \cdot \underbrace{10 \cdot 10 \cdot 10}_{1,000} \Rightarrow 17,576,000$$

phone #: _____

$\approx 10^7$
not 7^{10}