

Binary numbers

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	

0000001|1000000

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
	0	0	0	0	0	0	0	1	1

0 0 0 0 0 1 1 | 1+2=3 0 0 0 0 0 0

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	1	1	$1+2 = 3$

0 0 0 0 1 1 1 | **1+2+4 = 7** 0 0 0 0 0 0 0

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	1	1	$1+2 = 3$
	0	0	0	0	0	1	1	1	$1+2+4 = 7$

$$000111 \mid 1+2+4+8 = 15$$

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	1	1	$1+2 = 3$
	0	0	0	0	0	1	1	1	$1+2+4 = 7$
	0	0	0	0	1	1	1	1	$1+2+4+8 = 15$

$$000111 \mid 1+2+4+8+16=31$$

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	1	1	$1+2 = 3$
	0	0	0	0	0	1	1	1	$1+2+4 = 7$
	0	0	0	0	1	1	1	1	$1+2+4+8 = 15$
	0	0	0	1	1	1	1	1	$1+2+4+8+16 = 31$

$$0011111: 1+2+4+8+16+32=63$$

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	1	1	$1+2 = 3$
	0	0	0	0	0	1	1	1	$1+2+4 = 7$
	0	0	0	0	1	1	1	1	$1+2+4+8 = 15$
	0	0	0	1	1	1	1	1	$1+2+4+8+16 = 31$
	0	0	1	1	1	1	1	1	$1+2+4+8+16+32 = 63$

$$011111: 1+2+4+8+16+32+64=127$$

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	1	1	$1+2 = 3$
	0	0	0	0	0	1	1	1	$1+2+4 = 7$
	0	0	0	0	1	1	1	1	$1+2+4+8 = 15$
	0	0	0	1	1	1	1	1	$1+2+4+8+16 = 31$
	0	0	1	1	1	1	1	1	$1+2+4+8+16+32 = 63$
	0	1	1	1	1	1	1	1	$1+2+4+8+16+32+64 = 127$

$$\mathbf{111111} \mid 1+2+4+8+16+32+64+128=255$$

Binary numbers

Base	128	64	32	16	8	4	2	1	
Base	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	1	1	$1+2 = 3$
	0	0	0	0	0	1	1	1	$1+2+4 = 7$
	0	0	0	0	1	1	1	1	$1+2+4+8 = 15$
	0	0	0	1	1	1	1	1	$1+2+4+8+16 = 31$
	0	0	1	1	1	1	1	1	$1+2+4+8+16+32 = 63$
	0	1	1	1	1	1	1	1	$1+2+4+8+16+32+64 = 127$
	1	1	1	1	1	1	1	1	$1+2+4+8+16+32+64+128 = 255$

Binary numbers

What are the possible 3-digit binary numbers?