- A cache's organization can be characterized by the tuple:

$$(S, E, B, m)$$

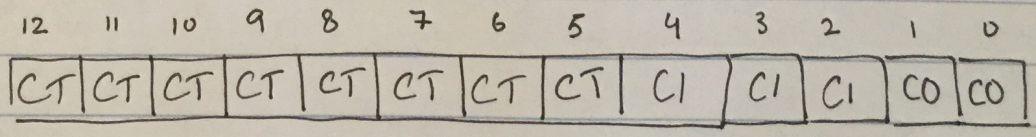
$S = 2^s$: Number of Sets
$E =$: Lines per set
$B = 2^b$: Block Size
$m = \log_2(M)$: Number of physical Address bits
$M = 2^m$: Number of unique addresses

$s = \log_2(S)$: Number of set index bits
$b = \log_2(B)$: Number of block offset bits
$t = m - (s+b)$: Tag bits
$C = B \times E \times S$: Cache Size (without overhead)

①

	m	C	B	E	S	t	s	b
1	32	1024	4	4	64	24	6	2
2	32	1024	4	256	1	30	0	2
3	32	1024	8	1	128	22	7	3
4	32	1024	8	128	1	29	0	3
5	32	1024	32	1	32	22	5	5
6	32	1024	32	4	8	24	3	5

② Part 1



$E = 2$

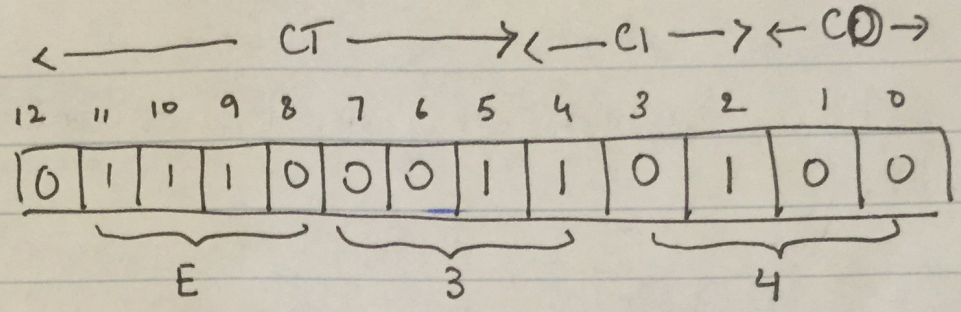
$b = \log_2 4 = 2$

$S = \text{lines} / E = 16/2 = 8$

$s = \log_2 8 = 3$

$t = 13 - (3+2) = 8$

Part 2



0x 0E34

Parameter	Value
Byte Offset	0x0
Cache Index	0x5
Cache Tag	0x71
Cache Hit (Y/N)	Y
Cache Byte returned	0xB