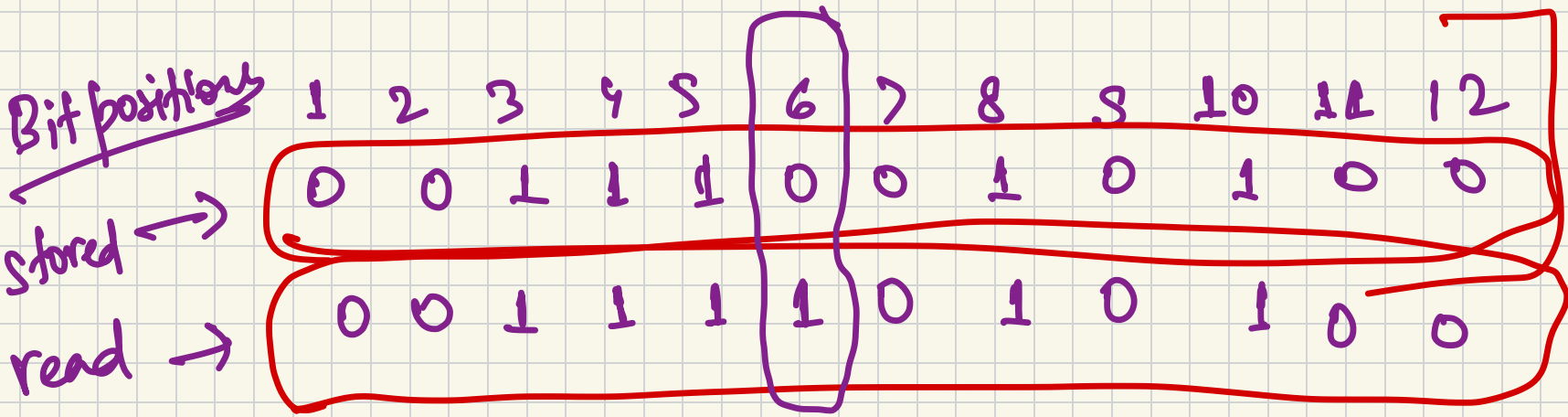
ACOL215 (08 Dec.)



C_1 = XOR (1, 3, 5, 7, 9, 11) 0

C_2 = XOR (2, 3, 6, 7, 10, 11) 1

C_4 = XOR (4, 5, 6, 7, 12) 1

C_8 = XOR (8, 9, 10, 11, 12) 0

C = $C_8\ C_4\ C_2\ C_1$

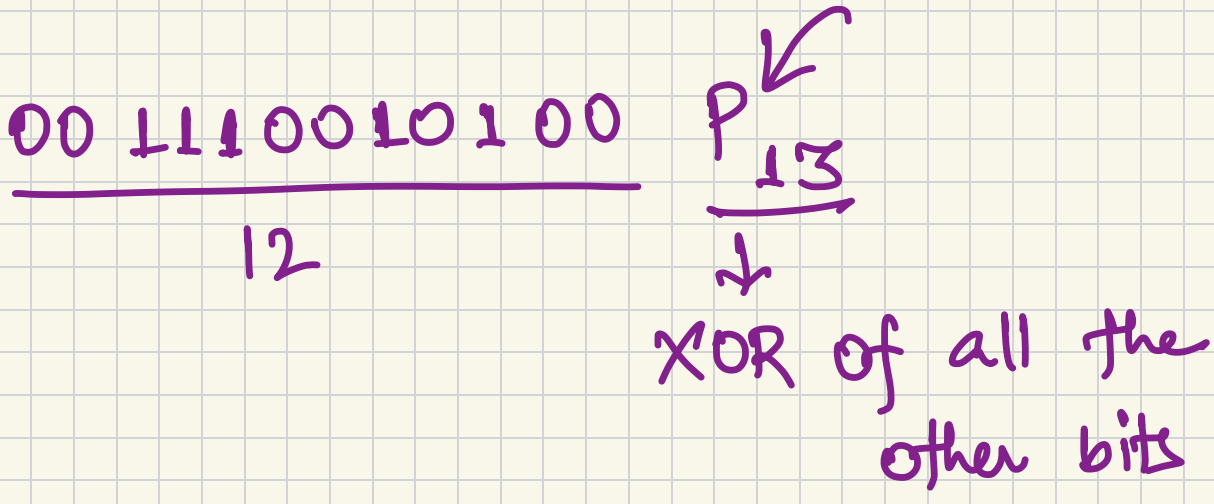
0 0 0 0 → no error

0	1	1	0

n bit word

$$2^k \geq n + K + 1$$

We can add another parity bit to detect double errors.



Whenever you read a word from the memory the check bits C and the extra parity bit P over the entire word is evaluated.

$C = 0$ and $P = 0$ → no error

$C = 0$ and $P = 1$ → error only in the final parity bit

$C \neq 0$ and $P = 1$ → single error can be corrected

$C \neq 0$ and $P = 0$ → double error detected