

11101011



10101011 → (odlali bybn / lichij prst) 1  
10001011 (medlali)

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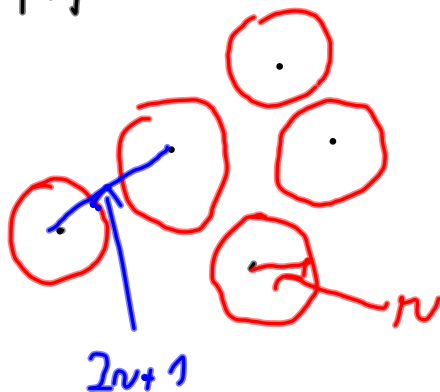
10 ~~bits~~ 111000

✓ 110000 pravn 111000

$$\begin{matrix} 1111001 \rightarrow 1 \\ 0010011 \rightarrow 0 \end{matrix}$$

Hammingova vzdálenost  $\hookrightarrow$

$$\begin{matrix} 1110001 \\ 1110011 \end{matrix}$$



$$p(x) = x^3 + x^2 + 1$$

$$m(x) = 1 + x \iff (1, 1)$$

$$\text{hád, } x^3(1+x) + x \iff (0, 1, 0, 1, 1) \quad (5, 2)$$

$$\begin{matrix} \{ \\ x^3 - x^4 \end{matrix}$$

← *nivodni  
mávná*

$$x^3 \equiv x^2 + 1 \pmod{x^3 - 1}$$

$$(x^3 = 1 + x^2 + (x^3 - 1 - x^2))$$

$$x^4 \equiv x \cdot x^3 \equiv x(x^2 + 1) \equiv x^3 + x \equiv 1 + x \pmod{x^3 - 1} \quad (1, x^2 + x^3)$$

$$x^3 + x^4 \equiv x \pmod{x^3 - 1}$$

$x^2 + 1$  je ireducibilno nad  $\mathbb{R}$

$$x^2 - 1 = (x+1)(x-1)$$

$$x^2 - 1 = (x+1)^2 = x^2 + 2x - 1 = x^2 - 1 \quad (\text{nad } \mathbb{Z}_2)$$

$$x^2 - x + 1$$

$$(1+x+x^2)^2 = 1 + x^2 - x^4 + 2x + 2x^2 = 2x^3 - 1 - x^2 + x^4$$

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$$w(x) = v(x) + e(x)$$

1 step -  $e(x) = x^k$

2 step -  $e(x) = x^k + x^{k+1} = x^k (1 + x)$

Bičični stona delky w brow uššorový  
fektor nad  $\mathbb{Z}_2$  dim.  $n$

$$(1 \mid 0, \mid 0 \mid 1 \mid 0)$$

$$\underbrace{(1 \mid 0 \mid 1)}_k \xrightarrow{G} \underbrace{(\dots)}_n \quad \Rightarrow \quad G = n \times k$$

$$\begin{pmatrix} 1 & 0 & 1 \\ 1 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$x^3 \equiv 1+x$$

$$x^4 \equiv x+x^2$$

$$x^5 \equiv 1+x+x^2$$

$$G \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$\underbrace{(010)}_w \rightsquigarrow \underbrace{(011010)}_{v \in G_w}$$

G

$$H = \begin{pmatrix} 100 & 101 \\ 010 & 111 \\ 001 & 011 \end{pmatrix}$$

$$G \cdot w = v$$

$$Hv = H \cdot G \cdot w$$

$$HG = \begin{pmatrix} I_{m \times k} & P \end{pmatrix} \begin{pmatrix} P \\ I_n \end{pmatrix}$$

$$CP \text{ and } P \text{ and } 0$$