

①

- a)  $d(11001011, 0111001) = 6$   
 b)  $d(001110, 111001) = 5$   
 c)  $d(11001110; 111000111) = 4$   
 d)  $d(1101, 1101) = 0$   
 e)  $d(0101, 1101) = 1$   
 f)  $d(1110, 1101) = 2$

②

$$C = \{1001, 0111, 1110, 1100, 0000, 1010, 1111, 1100\}$$

- a)  $w(1001) = 2$ ,  $w(0111) = 3$ ,  $w(1110) = 3$ ,  $w(1100) = 2$   
 $w(0000) = 0$ ,  $w(1010) = 2$ ,  $w(1111) = 4$ ,  $w(1100) = 2$
- b)
- |                     |                     |                     |
|---------------------|---------------------|---------------------|
| $d(1001, 0111) = 3$ | $d(1001, 1110) = 3$ | $d(1001, 1100) = 2$ |
| $d(1001, 0000) = 2$ | $d(1001, 1010) = 2$ | $d(1001, 1111) = 2$ |
| $d(1001, 1100) = 2$ | $d(0111, 1110) = 2$ | $d(0111, 1100) = 3$ |
| $d(0111, 0000) = 3$ | $d(0111, 1010) = 3$ | $d(0111, 1111) = 1$ |
| $d(0111, 1100) = 3$ | $d(1110, 1100) = 1$ | $d(1110, 0000) = 3$ |
| $d(1110, 1010) = 1$ | $d(1110, 1111) = 1$ | $d(1110, 1100) = 1$ |
| $d(1100, 0000) = 2$ | $d(1100, 1010) = 2$ | $d(1100, 1111) = 2$ |
| $d(1100, 1100) = 0$ | $d(0000, 1010) = 2$ | $d(0000, 1111) = 4$ |
| $d(0000, 1100) = 2$ | $d(1010, 1111) = 2$ | $d(1010, 1100) = 2$ |
| $d(1111, 1100) = 2$ |                     |                     |
- c)  $(n, m, d) = (1, 8, 0)$

$$③ \ a) \ C = \{1000, 0100, 1100, 0010\}$$

$$1000 + 1000 = 0000 \pmod{2} \notin C$$

$$1000 + 0100 = 1100 \pmod{2} \in C$$

$$1000 + 0010 = 1010 \pmod{2} \notin C$$

$$b) \ C = \{1101000, 0110100, 1110010, 0101110, 1011100, 0011010, 1000110, 0000\}$$

$$1101000 + 1101000 = 0000000 \pmod{2} \in C$$

$$1101000 + 0110100 = 1011100 \pmod{2} \in C$$

$$1101000 + 1110010 = 0011010 \pmod{2} \in C$$

$$1101000 + 0101110 = 1000110 \pmod{2} \in C$$

$$1101000 + 1011100 = 0110100 \pmod{2} \in C$$

$$1101000 + 0011010 = 1110010 \pmod{2} \notin C$$

$$1101000 + 1000110 = 0101110 \pmod{2} \in C$$

$$1101000 + 0000000 = 1101000 \pmod{2} \notin C$$

$$~~1101000 + 1101000 = 0000000 \pmod{2} \in C~~$$

$$0110100 + 0110100 = 0000000 \pmod{2} \in C$$

$$0110100 + 1110010 = 1000110 \pmod{2} \notin C$$

$$0110100 + 0101110 = 0011010 \pmod{2} \in C$$

$$0110100 + 1011100 = 1101000 \pmod{2} \in C$$

$$0110100 + 0011010 = 0101110 \pmod{2} \notin C$$

$$0110100 + 1000110 = 1110010 \pmod{2} \in C$$

$$0110100 + 0000000 = 0110100 \pmod{2} \in C$$

~~000~~

$$1110010 + 1110010 = 0000000 \pmod{2} \in C$$

$$1110010 + 0101110 = 1011100 \pmod{2} \in C$$

$$1110010 + 1011100 = 0101110 \pmod{2} \in C$$

$$1110010 + 0011010 = 1101000 \pmod{2} \in C$$

$$1110010 + 1000110 = 0110100 \pmod{2} \in C$$

$$1110010 + 0000000 = 1110010 \pmod{2} \in C$$

$$~~1110010 + 1110010 = 0000000 \pmod{2} \in C~~$$

$$c) C = \{0010, 1001, 0111, 1100\}$$

$$10010 + 0010 = 0000 \pmod{2} \notin C \text{ bukan munggal kod biner}$$

$$d) C = \{1000, 0011, 1101, 0110\}$$

$$1000 + 1000 = 0000 \pmod{2} \in C \text{ bukan munggal kod biner}$$

4)

$$b) [1001], [0111], [0011], [1001], [1101]$$

$$A[1001] + B[0111] + C[0001] + D[1001] + E[1101]$$

$$\left. \begin{aligned} 1A + 0B + 0C + 1D + 1E &= 0 \\ 0A + 1B + 0C + 0D + 1E &= 0 \\ 0A + 1B + 0C + 0D + 0E &= 0 \\ 1A + 1B + 1C + 1D + 1E &= 0 \end{aligned} \right\} \Rightarrow$$

$$A + D + E = 0$$

$$B + E = 0$$

$$B + C = 0$$

$$A + B + C + D + E = 0$$



$$c) [101], [010], [222] = 0$$

$$\alpha \cdot [101] + \beta [010] + \gamma [222] = 0$$

$$\left. \begin{aligned} 1\alpha & & 0\beta & & 2\gamma & = 0 \\ 0\alpha & & 1\beta & & 2\gamma & = 0 \\ 1\alpha & & 0\beta & & 2\gamma & = 0 \end{aligned} \right\} \begin{aligned} \alpha + 2\gamma &= 0 \\ \beta + 2\gamma &= 0 \\ 1\alpha + 2\gamma &= 0 \end{aligned}$$

$$\left. \begin{aligned} A + D + E &= 0 \\ B + E &= 0 \\ B = C &= 0 \\ B + B &= 0 \end{aligned} \right\} \begin{aligned} A + D + E &= 0 \\ B + E &= 0 \\ B &= 0 \\ 2B &= 0 \end{aligned}$$

$$\left. \begin{aligned} A + D + E &= 0 \\ B + E &= 0 \\ B = C &= 0 \\ B &= 0 \end{aligned} \right\} \begin{aligned} A + D + E &= 0 \\ E &= 0 \\ C &= 0 \\ B &= 0 \end{aligned}$$

$$A = 0$$

$$E = 0$$

$$C = 0$$

$$B = 0$$

$$A \neq 0$$

$$L.V$$



$$c) [111], [110], [011]$$

$$d \cdot [111] + \beta [110] + \gamma [011] = 0$$

$$\begin{array}{l} 1d + \beta 1 + 0 \cdot \gamma = 0 \\ 1d + \beta 1 + 1 \cdot \gamma = 0 \\ 1d + 0 + 1 \cdot \gamma = 0 \end{array} \left\{ \begin{array}{l} d + \beta = 0 \\ d + \beta + \gamma = 0 \\ d + \beta + \gamma = 0 \end{array} \right\} \begin{array}{l} d + \beta = 0 \\ \gamma = 0 \\ d + 0 = 0 \end{array} \left\{ \begin{array}{l} d + \beta = 0 \\ \gamma = 0 \\ d + 0 = 0 \end{array} \right\} \begin{array}{l} \beta = 0 \\ \gamma = 0 \\ d = 0 \end{array}$$

$$L.B.V. \quad d, \beta, \gamma = 0$$