Detyrë Ushtrimi

Gentrit Krasniqi
18 19 44 73 9

1. Të gjendet t ashtuqë vargu i shifrave të librit me ISBN kodi:
0 3 2 1 5 - 7 3 5 - 1 - t.

$$10 \cdot 0 + 9 \cdot 3 + 8 \cdot 2 + 7 \cdot 1 + 6 \cdot 5 + 5 \cdot 7 + 4 \cdot 3 + 3 \cdot 5 + 2 \cdot 1 + 1 \cdot t \equiv 0 \pmod{11}$$

$$27 + 16 + 7 + 30 + 35 + 12 + 15 + 2 + t \equiv 0 \pmod{11}$$

$$144 + t \equiv 0 \pmod{11}$$

$$144 \equiv 1 \pmod{11}$$

$$t \equiv t \pmod{11}$$

$$144 + t \equiv 1 + t \pmod{11}$$

$10 + 1 = 11 \Rightarrow t = 10$

2.
1 1 3 8 4 - 1 3 7 - 2 - t t = ? ISBN kodi

$$10 \cdot 1 + 9 \cdot 1 + 8 \cdot 3 + 7 \cdot 8 + 6 \cdot 4 + 5 \cdot 1 + 4 \cdot 3 + 3 \cdot 7 + 2 \cdot 2 + 1 \cdot t \equiv 0 \pmod{11}$$

$$10 + 9 + 24 + 56 + 24 + 5 + 12 + 21 + 4 + t \equiv 0 \pmod{11}$$

$$165 + t \equiv 0 \pmod{11}$$

$$165 \equiv 0 \pmod{11}$$

$$t \equiv t \pmod{11}$$

$$165 + t \equiv 0 + t \pmod{11}$$

$$t = 11$$

3. ISBN kod 98994-562-3-t $\quad t = ?$

$$10\cdot 9 + 9\cdot 8 + 8\cdot 9 + 7\cdot 9 + 6\cdot 4 + 5\cdot 5 + 4\cdot 6 + 3\cdot 2 + 2\cdot 3 + 1\cdot t \equiv 0 \pmod{11}$$

$$90 + 81 + 81 + 63 + + 24 + 25 + 24 + 6 + 6 + t \equiv 0 \pmod{11}$$

$$400 + t \equiv 0 \pmod{11}$$

$$400 \equiv 4 \pmod{11}$$

$$t \equiv t \pmod{11}$$

$$400 + t = 4 + t \pmod{11}$$

$$t = 7$$

4. Të gjendet x ashtu që vargu i shifrave të shërbej në ISBN kod:

978-1118-87-164-x_{13}

$$r = 10 - (9 + 3\cdot 7 + 8 + 3\cdot 1 + 1 + 3\cdot 1 + 8 + 3\cdot 8 + 7 + 3\cdot 1 + 6 + 3\cdot 4) \bmod 10$$

$$r = 10 - (9 + 21 + 8 + 3 + 1 + 3 + 8 + 24 + 7 + 3 + 6 + 12) \bmod 10$$

$$r = 10 - 105 \bmod 10$$

$$r = 10 - 5 = 5 \Rightarrow \quad r < 10 \quad x_{13} = t = 5$$

ISBN: 978-1118-87-164-5

5. ISBN: $978-0672-33-808-X_{13}$ $t=?$

$r = 10 - (9 + 3\cdot 7 + 8 + 3\cdot 0 + 6 + 3\cdot 7 + 2 + 3\cdot 3 + 3 + 3\cdot 8 + 0 + 3\cdot 8) \bmod 10$

$r = 10 - (9 + 21 + 8 + 0 + 6 + 21 + 2 + 9 + 3 + 24 + 0 + 24) \bmod 10$

$r = 10 - 123 \bmod 10$

$r = 10 - 3 = 7$ $\quad r < 10$ $\quad X_{13} = t = 7$

6. ISBN: $978-3642-36-579-X_{13}$ $t=$?

$r = 10 - (9 + 3\cdot 7 + 8 + 3\cdot 3 + 6 + 3\cdot 4 + 2 + 3\cdot 3 + 6 + 3\cdot 5 + 7 + 3\cdot 9) \bmod 10$

$r = 10 - (9 + 21 + 8 + 9 + 6 + 12 + 2 + 9 + 6 + 15 + 7 + 27) \bmod 10$

$r = 10 - 131 \bmod 10$

$r = 10 - 1 = 9$ $\quad r < 10$ $\quad X_{13} = t = 9$

ISBN: $979-3642-36-579-9$

7. Ti provohet shifra e shenuar me poshtë shënimi ni ISBN kod:
$161172-949-4-2$

$10\cdot 1 + 9\cdot 6 + 8\cdot 1 + 7\cdot 7 + 6\cdot 2 + 5\cdot 9 + 4\cdot 4 + 3\cdot 9 + 2\cdot 4 + 1\cdot t \equiv 0 \pmod{11}$

$10 + 54 + 8 + 49 + 12 + 45 + 16 + 27 + 8 + t \equiv 0 \pmod{11}$

$229 + t \equiv 0 \pmod{11}$

$229 \equiv 9 \pmod{11}$

$t = t \pmod{11}$

$229 + t = \underbrace{9 + t} \pmod{11}$

$t = 2$

8. Gjuri shifra dubet të gëndraj në vend të shkronjës x që të shërbej si UCP kod

a) $\overset{t}{0} - \overset{\xi}{2}\overset{t}{8}\overset{t}{0}\overset{t}{0} - \overset{t}{4}\overset{\xi}{6}\overset{t}{6}\overset{\xi}{3}\overset{t}{1} - \overset{s}{x}$ $\boxed{x = t = 2}$

03. $(0 + 8 + 0 + 4 + 6 + 1) + (2 + 0 + 0 + 6 + 3) + t \equiv 0 \pmod{10}$

3. $(19) + 11 + t \equiv 0 \pmod{10}$

$$57 + 11 + t \equiv 0 \pmod{10}$$
$$68 + t \equiv 0 \pmod{10}$$
$$68 \equiv 8 \pmod{10}$$
$$t \equiv t \pmod{10}$$
$$68 + t \equiv 8 + t \pmod{10} \quad \boxed{t = 2}$$

b) $\overset{t}{0} - \overset{t}{4}\overset{t}{9}\overset{t}{0}\overset{t}{0} - \overset{t}{0}\overset{t}{3}\overset{t}{7}\overset{t}{0}\overset{t}{3} - x$ $\boxed{x = t = 6}$

$3 \cdot (0 + 9 + 0 + 0 + 7 + 3) + (4 + 0 + 0 + 3 + 0) + t \equiv 0 \pmod{10}$

$3 \cdot (19) + 7 + t \equiv 0 \pmod{10}$

$$57 + 7 + t \equiv 0 \pmod{10}$$
$$64 + t \equiv 0 \pmod{10}$$
$$64 \equiv 4 \pmod{10}$$
$$t \equiv t \pmod{10}$$
$$64 + t \equiv 4 + t \pmod{10} \quad \boxed{t = 6}$$

c) $\overset{t}{0} - 4\overset{t}{9}\ 7\overset{t}{9}\ 4 - \overset{t}{9}\ 9\ 1\overset{t}{0}\overset{t}{0} - X$ $\boxed{X = t = 5}$

3. $(0+8+9+9+1+0) + (4+7+4+9+0) + t \equiv 0 \pmod{10}$

3. $(27) + 24 + t \equiv 0 \pmod{10}$

$81 + 24 + t \equiv 0 \pmod{10}$

$105 + t \equiv 0 \pmod{10}$

$105 \equiv 5 \pmod{10}$

$t \equiv t \pmod{10}$

$105 + t \equiv 5 + t \pmod{10}$ $t = 5$

9. Mesazhi 15 bitësh të hedhet si 20 bit

1011110011111100

$$M = \begin{bmatrix} 1011 \\ 1001 \\ 1100 \end{bmatrix}_{3\times 5} \xrightarrow{\text{Kodim}} C = \left[\begin{array}{cc} \begin{bmatrix} 1011 & 0 \\ 1001 & 1 \\ 1100 & 1 \end{bmatrix} \\ \hline 1100 \quad 0 \end{array}\right]$$

10111010011111001100000

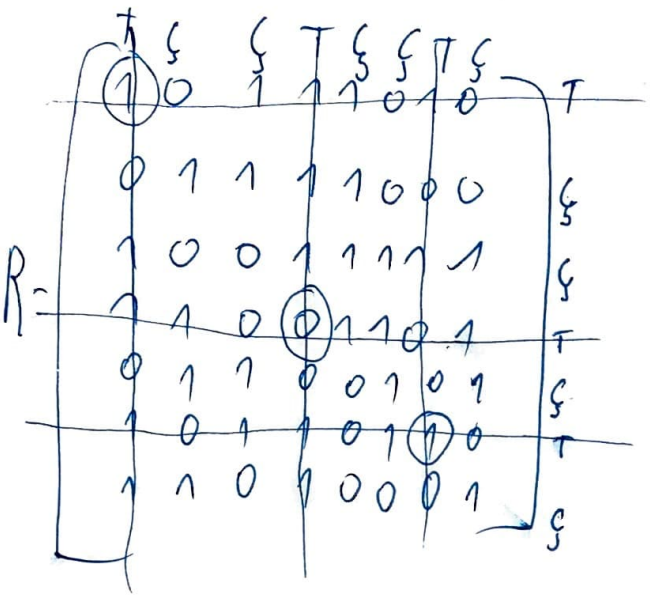
10 20 bit

00010110101011101001110

$$M = \begin{bmatrix} 000101 \\ 101010 \\ 111010 \\ 001110 \end{bmatrix}_{4\times 6} \xrightarrow{\text{Kodim}} C = \left[\begin{array}{cc} \begin{bmatrix} 000101 & 0 \\ 101010 & 1 \\ 111010 & 0 \\ 001110 & 1 \end{bmatrix} \\ \hline 011011 \quad 0 \end{array}\right]$$

00010101010101111010001110101101100

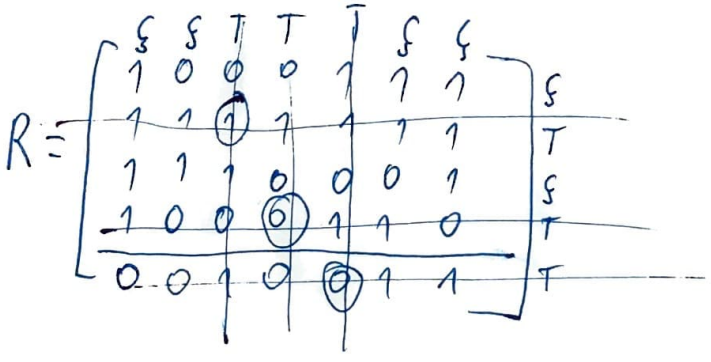
(11) R: 10111010 01111000 10011111 11001101 01100101 10110110 11010001



$$C = \left[\begin{array}{ccccccc|c} 0 & 0 & 1 & 1 & 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 & 1 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 & 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 1 & 0 & 1 & 0 & 0 \\ \hline 1 & 1 & 0 & 1 & 0 & 0 & 0 & 1 \end{array}\right]$$

(12)

R: 1000111 11111111 11100011 00011000 06100111



$$C: \left[\begin{array}{ccccccc|c} 1 & 0 & 0 & 0 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 1 & 1 & 1 & 0 \\ \hline 0 & 0 & 1 & 0 & 1 & 1 & 1 \end{array}\right]$$