

= Logički dižajn =  
= Zadaca 1 =

1) a)

$$10 \cdot 125_{(10)} = 1010,001_{(2)} = 12,1_{(8)} = A.2_{(16)}$$

$$\begin{array}{r|rrr} 10 & 2 & 0 \\ 5 & 2 & 1 \\ 2 & 2 & 0 \\ 1 & 2 & 1 \\ 0 & & \end{array}$$

$$10_{(10)} = 1010_{(2)}$$

$$0,125 \cdot 2 = 0,25 \quad 0$$

$$0,25 \cdot 2 = 0,5 \quad 0$$

$$0,5 \cdot 2 = 1,0 \quad 1$$

$$0,125_{(10)} = 001_{(2)}$$

$$\begin{array}{r|rrr} 10 & 8 & 2 \\ 1 & 8 & 1 \\ 0 & & \end{array}$$

$$10_{(10)} = 12_{(8)}$$

$$0,125 \cdot 8 = 1 \quad 1$$

$$\begin{array}{r|rrr} 10 & 16 & 10(A) \\ 0 & & \end{array}$$

$$0,125 \cdot 16 = 2 \quad 2$$

$$11001001.10011_{(2)} = 201.59375_{(10)} = 311,46_{(8)} = C9.98_{(16)}$$

$$11001001_{(2)} = 1 \cdot 2^0 + 1 \cdot 2^3 + 1 \cdot 2^6 + 1 \cdot 2^8 = 1 + 8 + 64 + 128 = 201_{(10)}$$
$$= \cancel{1} + \cancel{8} + \cancel{128} + \cancel{256}$$

≈

$$0,10011_{(2)} = 1 \cdot 2^0 + 1 \cdot 2^1 + 1 \cdot 2^5$$

$$0,10011_{(2)} = 1 \cdot 2^0 + 1 \cdot 2^1 + 1 \cdot 2^5 = \frac{1}{2} + \frac{1}{2^4} + \frac{1}{2^5} = 0,5 + 0,0625 + 0,03125$$
$$= 0,5 + 0,0625 + 0,03125$$
$$= 0,59375$$

201,46  
A1 18  
B1 18  
0  
11 (B)

$$\begin{array}{r}
 201 \quad 8 \quad 1 \\
 25 \quad 8 \quad 1 \\
 3 \quad 8 \quad 3 \\
 0
 \end{array}
 \quad
 \begin{array}{l}
 0,59375 \cdot 8 = 4,75 \quad 4 \\
 0,75 \cdot 8 = 6 \quad 6
 \end{array}$$

$$\begin{array}{r}
 201 \quad 16 \quad 9 \\
 12 \quad 16 \quad 12(C) \\
 0
 \end{array}
 \quad
 \begin{array}{l}
 0,59375 \cdot 16 = 9,5 \quad 9 \\
 0,5 \cdot 16 = 8,08 \quad 8
 \end{array}$$

$$\left[ 15.5661_{(8)} \right] = 5 \cdot 8^0 + 1 \cdot 8^1 + 5 \cdot 8^{-1} + 6 \cdot 8^{-2} + 6 \cdot 8^{-3} + 1 \cdot 8^{-4} = \left[ 13,730712890625_{(10)} \right]$$

$$\begin{array}{r}
 13 \quad 2 \quad 1 \\
 6 \quad 2 \quad 0 \\
 3 \quad 2 \quad 1 \\
 1 \quad 2 \quad 1 \\
 0
 \end{array}
 \quad
 \begin{array}{l}
 0,730712890625 \cdot 2 = 1,46142578125 \quad 1 \\
 0,46142578125 \cdot 2 \quad 0,9228515625 \quad 0 \\
 0,9228515625 \cdot 2 \quad 1,845703125 \quad 1 \\
 0,845703125 \cdot 2 \quad 1,69140625 \quad 1 \\
 0,69140625 \cdot 2 \quad 1,3828125 \quad 1 \\
 0,3828125 \cdot 2 \quad 0,765625 \quad 0 \\
 0,765625 \cdot 2 \quad 1,53125 \quad 1 \\
 0,53125 \cdot 2 \quad 1,0625 \quad 1 \\
 0,0625 \cdot 2 \quad 0,125 \quad 0 \\
 0,125 \cdot 2 \quad 0,25 \quad 0 \\
 0,25 \cdot 2 \quad 0,5 \quad 0 \\
 0,5 \cdot 2 \quad 1 \quad 1
 \end{array}$$

$$\left[ 15.5661_{(8)} = 1101.101110110001_{(2)} = 0.BB1_{(16)} \right]$$

15.5.6.8.9

1101.101110110001 (2)

131.11113111  
[D. BB1 (16)]

[FA.A11]

15|10|.110|111|

1111|1010|.11010|0001|0001 = [1111010.101000010001 (2)]

011|111|010|.1101|000|010|001|

3|7|2|.15|0|2|1| = [372.5021 (8)]

$$\text{FA.A11}_{(16)} = 10 \cdot 16^0 + 15 \cdot 16^1 + 10 \cdot 16^2 + 1 \cdot 16^3 + 1 \cdot 16^4 = 250.629150390625_{(10)}$$

| Decimalno        | Binarno              | Oktalno  | Hexadekadno |
|------------------|----------------------|----------|-------------|
| 10.125           | 1010.001             | 12.1     | A.2         |
| 201.59375        | 11001001.10011       | 311.46   | C9.98       |
| 13.730712890625  | 1101.101110110001    | 15.5661  | D.BB1       |
| 250.629150390625 | 1111010.101000010001 | 372.5021 | FA.A11      |

b)  $101010 = 42_{(10)}$   
 $110100 = 52_{(10)}$

$$110100 \Rightarrow \begin{array}{r} 001011 \\ + \quad \quad \quad 1 \\ \hline 001100 \end{array}$$

1kk                            2kk

Oduzimanja a od b je isto kao sabiranje a sa -b od b  
 Sljedi::

$$\begin{array}{r} 101010 \\ + 001100 \\ \hline 110110 \end{array}$$

W

$$101010 - 110100$$

$$\begin{array}{r} 001010 \\ - 001100 \\ \hline 000110 \end{array}$$

$$= 11011 = -10_{(10)}$$

Provjeri:  $42 - 52 = -10$  ✓

| Q. | A | B | C | D | $Y_1$ | $Y_2$ |
|----|---|---|---|---|-------|-------|
| 1  | 0 | 0 | 0 | 0 | 1     | 1     |
| 2  | 0 | 0 | 0 | 1 | 0     | 0     |
| 3  | 0 | 0 | 1 | 0 | 1     | 0     |
| 4  | 0 | 0 | 1 | 1 | C     | 1     |
| 5  | 0 | 1 | 0 | 0 | 1     | C     |
| 6  | 0 | 1 | 0 | 1 | 0     | 0     |
| 7  | 0 | 1 | 1 | 0 | 1     | 1     |
| 8  | 0 | 1 | 1 | 1 | C     | 0     |
| 9  | 1 | 0 | 0 | 0 | 1     | 0     |
| 10 | 1 | 0 | 0 | 1 | 0     | 1     |
| 11 | 1 | 0 | 1 | C | 1     | C     |
| 12 | 1 | 0 | 1 | 1 | 0     | 0     |
| 13 | 1 | 1 | 0 | 0 | 1     | 1     |
| 14 | 1 | 1 | 0 | 1 | C     | 0     |
| 15 | 1 | 1 | 1 | 0 | 1     | 0     |
| 16 | 1 | 1 | 1 | 1 | C     | 1     |

$$Y_1 = \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D}$$

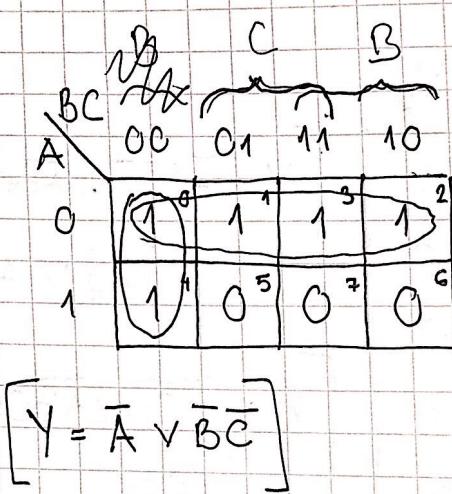
$$\vee \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D}$$

$$Y_2 = \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D} \vee \overline{A}\overline{B}\overline{C}\overline{D}$$

$$\vee \overline{A}\overline{B}\overline{C}\overline{D}$$

3.

| A | B | C |  | Y |
|---|---|---|--|---|
| 0 | 0 | 0 |  | 1 |
| 0 | 0 | 1 |  | 1 |
| 0 | 1 | 0 |  | 1 |
| 0 | 1 | 1 |  | 1 |
| 1 | 0 | 0 |  | 1 |
| 1 | 0 | 1 |  | 0 |
| 1 | 1 | 0 |  | 0 |
| 1 | 1 | 1 |  | 0 |



4.