

Ficha 4

1.

1.1. $2 S_{10} = 2 S_{comp/9}$

1.3. $16_{10} = 16_{comp/9}$

1.4. $-137_{10} = 9863_{comp/9}$

C.A.

$$\begin{array}{r} 10000 \\ - 137 \\ \hline 09863 \end{array}$$

2.

2.1. $-13_{10} = 110010_{comp/1}$

C.A.

$$\begin{array}{r} 13|2 \\ \hline 16|2 \\ \hline 03|2 \\ \hline 11|2 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 111111 \\ - 1101 \\ \hline 110010 \end{array}$$

$13_{10} = 1101_2$

1.2. $-13_{10} = 9987_{comp/9}$

C.A.

$$\begin{array}{r} 10000 \\ - 13 \\ \hline 09987 \end{array}$$

2.2. $29_{10} = 011101_{comp/1}$

C.A.

$$\begin{array}{r} 29|2 \\ \hline 114|2 \\ \hline 07|2 \\ \hline 13|2 \\ \hline 11|2 \\ \hline 10 \end{array}$$

$$011101$$

2.3. $24_{10} = 011000_{comp/1}$

C.A.

$$\begin{array}{r} 24|2 \\ \hline 012|2 \\ \hline 06|2 \\ \hline 03|2 \\ \hline 11|2 \\ \hline 10 \end{array}$$

011000

2.4. $111101_2 (com\ sign) = 110010_{comp/1}$

C.A.

$$\begin{array}{r} 111111 \\ - 1101 \\ \hline 110010 \end{array}$$

2.5. $111011_2 (com\ sign) = 110100_{comp/1}$

C.A.

$$\begin{array}{r} 111111 \\ - 1011 \\ \hline 110100 \end{array}$$

2.6. $010010_2 (com\ sign) = 001001_{comp/1}$

3.

3.1. $\underline{1} \ 1 \ 1 \ 0 \ 1 \ 2 \text{ (com sinal)} = -13_{10}$

C.A.

$$\begin{array}{r} \underline{1} \ 1 \ 1 \ 0 \ 1 \\ - \ 3 \ 2 \ 1 \ 0 \end{array}$$

$$\begin{aligned} 2^3 + 2^2 + 2^0 &= \\ = 8 + 4 + 1 &= \\ = 13 & \end{aligned}$$

3.3. $\underline{0} \ 1 \ 1 \ 1 \ 2 \text{ (com sinal)} = 7_{10}$

$$\begin{array}{r} \underline{0} \ 1 \ 1 \ 1 \\ + \ 2 \ 1 \ 0 \end{array}$$

C.A.

$$\begin{aligned} 2^2 + 2^1 + 2^0 &= \\ = 4 + 2 + 1 &= \\ = 7 & \end{aligned}$$

4.

4.1. $-18_{10} = 982 \text{ comp/10}$

C.A.

$$\begin{array}{r} 9 \ 9 \ 9 \\ - \ 1 \ 8 \\ \hline 9 \ 8 \ 1 \\ + \ 1 \\ \hline 9 \ 8 \ 2 \end{array}$$

5.

5.1. $-13_{10} = \underline{1} \ 1 \ 1 \ 0 \ 0 \ 1 \ 1 \text{ comp/2}$

C.A.

$$\begin{array}{r} \underline{1} \ 3 \ 12 \\ - \ 6 \ 12 \\ \hline \underline{0} \ 3 \ 12 \\ + \ 1 \ 1 \ 12 \\ \hline \underline{1} \ 0 \end{array}$$

$$- \ 1 \ 1 \ 0 \ 1 \ 2$$

3.2. $\underline{1} \ 0 \ 0 \ 1 \ 1 \text{ comp/1 (s algoritmos)} = -12_{10}$

C.A.

$$\begin{array}{r} \underline{1} \ 1 \ 1 \ 1 \ 1 \\ - \ 0 \ 0 \ 0 \ 0 \ 0 \\ \hline \underline{1} \ 0 \ 0 \ 1 \ 1 \end{array}$$

$$\begin{array}{r} \underline{1} \ 1 \ 1 \ 0 \ 0 \ 2 \text{ (com sinal)} \\ - \ 1 \ 1 \ 0 \ 0 \ 2 \\ \hline \underline{3} \ 2 \ 1 \ 0 \end{array}$$

$$2^3 + 2^2 = 8 + 4 = 12$$

3.4. $\underline{0} \ 1 \ 0 \ 0 \text{ comp/1 (4 algoritmos)} = 4_{10}$

C.A.

$$\begin{aligned} 0100 \text{ comp/1} &= \underline{0}1002 \text{ (com sinal)} \\ + \ 1002 & \\ \hline \underline{2} \ 1 \ 0 \end{aligned}$$

$$2^2 = 4$$

4.2. $23_{10} = 23 \text{ comp/10}$

4.3. $-52_{10} = 948 \text{ comp/10}$

C.A.

$$\begin{array}{r} 9 \ 9 \ 9 \\ - \ 5 \ 2 \\ \hline 9 \ 4 \ 7 \\ + \ 1 \\ \hline 9 \ 4 \ 8 \end{array}$$

5.2. $24_{10} = \underline{0} \ 0 \ 1 \ 1 \ 0 \ 0 \ 0 \ 2$

C.A.

$$\begin{array}{r} \underline{2} \ 4 \ 12 \\ - \ 1 \ 2 \ 12 \\ \hline \underline{0} \ 6 \ 12 \\ + \ 0 \ 3 \ 12 \\ \hline \underline{0} \ 9 \ 12 \\ + \ 1 \ 1 \ 12 \\ \hline \underline{1} \ 0 \end{array}$$

$$1 \ 1 \ 0 \ 0 \ 0$$

$$5.3. \begin{array}{r} \underline{1} \ 1 \ 1 \ 0 \ 1 \ 2 \text{ (com sign)} = 1 \ 1 \ 1 \ 0 \ 0 \ 1 \ 1 \text{ comp } 12 \\ - \ 1 \ 1 \ 0 \ 1 \end{array}$$

C.A.

$$\begin{array}{r} 1 \ 1 \ 1 \ 1 \ 1 \ 1 \ 1 \\ - \quad \quad \quad 1 \ 1 \ 0 \ 1 \\ \hline 1 \ 1 \ 1 \ 0 \ 0 \ 1 \ 0 \\ \hline 1 \ 1 \ 1 \ 0 \ 0 \ 1 \ 1 \end{array}$$

$$5.4. \begin{array}{r} \underline{0} \ 1 \ 0 \ 1 \ 0 \ 2 \text{ (com sign)} = 0 \ 0 \ 0 \ 1 \ 0 \ 1 \ 1 \text{ comp } 12 \\ + \ 1 \ 0 \ 1 \ 0 \end{array}$$

$$6. \quad 999 \% 2 = 499 \quad \curvearrowright \quad 999 \rightarrow (-1)$$

$$6.1. \quad 986 \text{ comp } 10 = -13_{10}$$

C.A.

$$\begin{array}{r} 999 \\ - \ x^0 x^1 x^3 \\ \hline 986 \end{array}$$

$$6.2. \quad 521 \text{ comp } 1 = -478_{10}$$

C.A.

$$\begin{array}{r} 999 \\ - \ x^4 x^7 x^8 \\ \hline 521 \end{array}$$

$$6.3. \quad 473 \text{ comp } 10 = 473_{10}$$

7.

$$7.1. \quad 0101001 \text{ comp } 2 = +40_{10}$$

C.A.

$$\begin{array}{r} 0101001 \\ - \quad \quad \quad 1 \\ \hline \underline{0}101000 \\ + \ 1010002 \\ \hline 543210 \end{array}$$

$$2^5 + 2^3 = 32 + 8 = 40$$

7.2. $1111001_{\text{comp}12} = -7_{10}$

C.A.

$$\begin{array}{r}
 1111001 \\
 - \quad 1 \\
 \hline
 1111000
 \end{array}
 \rightarrow
 \begin{array}{r}
 1111111 \\
 1111000 \\
 \hline
 0000111 \\
 210
 \end{array}$$

$2^2 + 2^1 + 2^0 = 4 + 2 + 1 = 7$

7.3. $1010010_{\text{comp}12} = -46_{10}$

C.A.

$$\begin{array}{r}
 1010010 \\
 - \quad 1 \\
 \hline
 1010001
 \end{array}
 \rightarrow
 \begin{array}{r}
 1111111 \\
 -1010001 \\
 \hline
 0101110 \\
 -101110 \\
 \hline
 543210
 \end{array}$$

$2^5 + 2^3 + 2^2 + 2^1 = 32 + 8 + 4 + 2 = 46$

7.4. $0101110_{\text{comp}12} = 45_{10}$

C.A.

$$\begin{array}{r}
 0101110 \\
 - \quad 1 \\
 \hline
 0101101 \\
 +543210
 \end{array}$$

$$\begin{aligned}
 &2^5 + 2^3 + 2^2 + 2^0 = \\
 &= 32 + 8 + 4 + 1 = \\
 &= 45
 \end{aligned}$$

8.

Decimal	B C D
354	0011 0110 0100 _{BCD}
663	0110 0110 0111 _{BCD}
231	0010 0111 0001 _{BCD}
74	0111 0100 _{BCD}
5231	0101 0010 0011 0001 _{BCD}

C.A.

$$\begin{aligned} 3_{10} &= 0011_{BCD} & \left\{ \begin{array}{l} 0110_2 = 2^2 + 2^1 = 6_{10} \\ 6_{10} = 0110_{BCD} \\ 4_{10} = 0100_{BCD} \end{array} \right. \\ 6_{10} &= 0110_{BCD} \\ 4_{10} &= 0100_{BCD} \end{aligned}$$

$$\begin{aligned} 2_{10} &= 0010_{BCD} & \left\{ \begin{array}{l} 7_{10} = 0111_{BCD} \\ 7_{10} = 0111_{BCD} \\ 1_{10} = 0001_{BCD} \end{array} \right. \\ 7_{10} &= 0111_{BCD} \\ 1_{10} &= 0001_{BCD} \end{aligned}$$

$$0101_2 = 2^2 + 2^0 = 4 + 1 = 5_{10}$$

$$0010_2 = 2^1 = 2_{10}$$

$$0011_2 = 2^1 + 2^0 = 2 + 1 = 3_{10}$$

$$0001_2 = 2^0 = 1_{10}$$

9.

9.1. $-34_{10} = 10110100_{BCD \text{ erhalt}}$

9.2. $49_{10} = 01001001_{BCD \text{ erhalt}}$

C.A.

$$3 = 011_2$$

$$4 = 0100_2$$

C.A.

$$4 = 100_2$$

$$9 = 1001_2$$

9.3. $-28_{10} = 10101000_{BCD \text{ erhalt}}$

C.A.

$$2_{10} = 010_2$$

$$8 = 1000_2$$