

Sistemas Digitais - Exercícios de Conversão

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Exercícios

[Sistemas Digitais
Exercícios

1-) Conversão de decimal para binário

a-) $173_{10} = (10101101)_2$

$$\begin{array}{r}
 173 \div 2 \\
 \hline
 172 \quad 86 \div 2 \\
 \hline
 1 \quad 86 \quad 43 \div 2 \\
 \hline
 0 \quad 42 \quad 21 \div 2 \\
 \hline
 1 \quad 20 \quad 10 \div 2 \\
 \hline
 1 \quad 10 \quad 5 \div 2 \\
 \hline
 0 \quad 4 \quad 2 \div 2 \\
 \hline
 1 \quad 2 \quad 1 \div 2 \\
 \hline
 0 \quad 1
 \end{array}$$

b-) $65_{10} = (1000001)_2$

$$\begin{array}{r}
 65 \div 2 \\
 \hline
 1 \quad 32 \div 2 \\
 \hline
 0 \quad 16 \div 2 \\
 \hline
 0 \quad 8 \div 2 \\
 \hline
 0 \quad 4 \div 2 \\
 \hline
 0 \quad 2 \div 2 \\
 \hline
 0 \quad 1
 \end{array}$$

$$c-1205_{10} = (11001101)_2$$

$$205 \div 2$$

$$1 \quad 102 \div 2$$

$$0 \quad 51 \div 2$$

$$1 \quad 25 \div 2$$

$$1 \quad 12 \div 2$$

$$0 \quad 6 \div 2$$

$$0 \quad 3 \div 2$$

$$1 \quad 1$$

$$d-1513_{10} = (100100001001)_2$$

$$2313 \div 2$$

$$1 \quad 1156 \div 2$$

$$0 \quad 578 \div 2$$

$$0 \quad 289 \div 2$$

$$1 \quad 144 \div 2$$

$$0 \quad 72 \div 2$$

$$0 \quad 36 \div 2$$

$$0 \quad 18 \div 2$$

$$0 \quad 9$$

$$9 \div 2$$

$$1 \quad 4 \div 2$$

$$0 \quad 2 \div 2$$

$$0 \quad 1$$

2-) Conversão de binário para decimal

$$a-11111010111_2 = 983_{10}$$

$$1 \cdot 2^9 + 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 512 + 256 + 128 + 64 + 16 + 4 + 2 + 1 = 983$$

$$b) 10001101_2 = 141_{10}$$

$$1 \cdot 2^7 + 0 \cdot 2^6 + 0 \cdot 2^5 + 0 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0$$
$$128 + \quad \quad \quad + 8 + 4 + \quad \quad + 1 = 141$$

$$c) 10110_2 = 22_{10}$$

$$1 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0$$
$$16 + \quad \quad + 4 + 2 \quad \quad = 22$$

$$d) 10101101_2 = 175_{10}$$

$$1 \cdot 2^7 + 0 \cdot 2^6 + 1 \cdot 2^5 + 0 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0$$
$$128 + \quad + 32 + \quad \quad + 8 + 4 + \quad + 1 = 175$$