

Convert 1011011 binary to decimal

①

$$\begin{array}{cccccc} 1 & 0 & 1 & 1 & 0 & 1 & 1 \\ \hline 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ \downarrow & & \downarrow & \downarrow & & \downarrow & \downarrow \end{array}$$

$$64 + 16 + 8 + 2 + 1 = (91)_{10}$$

② Convert 743 octal to decimal

$$\begin{array}{ccc} 7 & 4 & 3 \\ \hline 64 & 8 & 1 \end{array}$$

↓      ↓      ↘

$$\underline{7 \times 64} + \underline{4 \times 8} + \underline{3 \times 1} = 448 + 32 + 3 = (483)_{10}$$

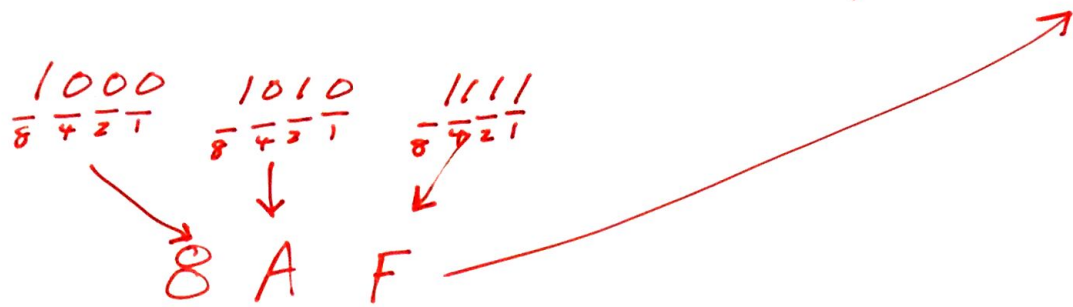
③ Convert A6F hexadecimal to decimal

$$\begin{array}{ccc} A & 6 & F \\ \hline 256 & 16 & 1 \end{array}$$

↓      ↘      ↘

$$\underline{A(10) \times 256} + \underline{6 \times 16} + \underline{F(15) \times 1} = 2560 + 96 + 15 \\ = (2671)_{10}$$

(4) Convert 100010101111 binary to hexadecimal



⑤ Convert 172 octal to hexadecimal

A.  $(172)_8 \rightarrow (\underbrace{001}_{421} \underbrace{111}_{421} \underbrace{010}_{421})_2$

B.  $(00111010)_2 \longrightarrow (7A)_{16}$

⑥ Convert 3721 decimal to hexadecimal

$$\begin{array}{r} \cancel{4096} \\ \hline 256 \end{array} \quad \begin{array}{r} \cancel{E} \\ \hline 16 \end{array} \quad \begin{array}{r} \cancel{8} \\ \hline 1 \end{array} \quad \begin{array}{r} \cancel{9} \\ \hline 1 \end{array}$$

$$\begin{array}{r} 3721 \\ - 3584 \\ \hline 137 \end{array}$$

$$256 \times 14 = 3584 \rightarrow E, 256's$$

$$256 \times 15 = 3840 \text{ (too big)}$$

$$16 \times 8 = 128 \rightarrow 8, 16's$$

$16 \times 9 = 144$  (too big)

⑦ Convert 111011001 binary to octal

$\begin{array}{ccc} \underline{421} & \underline{421} & \underline{421} \\ \downarrow & \downarrow & \downarrow \\ 7 & 3 & 1 \end{array}$

⑧ Convert 955 decimal to octal

1	6	7	3
512	64	8	1

955	443	59
-512	-384	-56
443	59	3

$6 \times 64 = 384$   
 $7 \times 8 = 56$

⑨ Convert CDB hexadecimal to octal

A. C D B  $\longrightarrow$   $\left( \begin{array}{ccc} \underline{1100} & \underline{1101} & \underline{1000} \\ \underline{8} & \underline{421} & \underline{421} \end{array} \right)_2$

$C = 12$   
 $D = 13$

$\left( \underline{1100} \underline{1101} \underline{1000} \right)_2 \longrightarrow \left( \begin{array}{ccc} \underline{6330} \\ \uparrow \uparrow \uparrow \uparrow \end{array} \right)_8$

(10) Convert 561 octal to binary

$$\begin{array}{ccc} & 5 & 6 & 1 \\ & \swarrow & \downarrow & \searrow \\ \underline{1} & \underline{0} & \underline{1} & \underline{1} & \underline{1} & \underline{0} & \underline{0} & \underline{1} \\ 4 & 2 & 1 & 4 & 2 & 1 & 4 & 2 & 1 \end{array}$$

(11) Convert 1073 decimal to binary

$$\begin{array}{cccccccccccc} \underline{1} & \underline{0} & \underline{0} & \underline{0} & \underline{0} & \underline{1} & \underline{1} & \underline{0} & \underline{0} & \underline{0} & \underline{1} \\ 1024 & 512 & 256 & 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \end{array}$$

$$\begin{array}{r} 1073 \\ -1024 \\ \hline 49 \end{array} \quad \begin{array}{r} 49 \\ -32 \\ \hline 17 \end{array} \quad \begin{array}{r} 17 \\ -16 \\ \hline 1 \end{array} \quad \begin{array}{r} 1 \\ -1 \\ \hline 0 \end{array}$$

(12) Convert E4C hexadecimal to binary

$$\begin{array}{ccc} & E & 4 & C \\ & \swarrow & \downarrow & \searrow \\ \underline{1} & \underline{1} & \underline{1} & \underline{0} & \underline{0} & \underline{1} & \underline{0} & \underline{0} \\ 8 & 4 & 2 & 1 & 8 & 4 & 2 & 1 \end{array}$$