

Les changements de bases (réponses)

A1:

$$2^{13}=8192$$

$$7910/2^{12}=7910/4096=1 \text{ (reste 3814)}$$

$$3814/2^{11}=3814/2048=1 \text{ (reste 1766)}$$

$$1766/2^{10}=1766/1024=1 \text{ (reste 742)}$$

$$742/2^9=742/512=1 \text{ (reste 230)}$$

$$230/2^8=230/256=0 \text{ (reste 230)}$$

$$230/2^7=230/128=1 \text{ (reste 102)}$$

$$102/2^6=102/64=1 \text{ (reste 38)}$$

$$38/2^5=38/32=1 \text{ (reste 6)}$$

$$6/2^4=6/16=0 \text{ (reste 6)}$$

$$6/2^3=6/8=0 \text{ (reste 6)}$$

$$6/2^2=6/4=1 \text{ (reste 2)}$$

$$2/2^1=2/2=1 \text{ (reste 0)}$$

$$0/2^0=0/0=0 \text{ (reste 0)}$$

$$\Rightarrow 1111011100110$$

A2:

$$5 \cdot 16^0 = 5 \cdot 1 = 5$$

$$8 \cdot 16^1 = 8 \cdot 16 = 128$$

$$1 \cdot 16^2 = 1 \cdot 256 = 256$$

$$\Rightarrow 5 + 128 + 256 = 389 \text{asdf}$$

A3:

$$0 \cdot 2^0 = 0 \cdot 1 = 0$$

$$1 \cdot 2^1 = 1 \cdot 2 = 2$$

$$0 \cdot 2^2 = 0 \cdot 4 = 0$$

$$1 \cdot 2^3 = 1 \cdot 8 = 8$$

$$1 \cdot 2^4 = 1 \cdot 16 = 16$$

$$1 \cdot 2^5 = 1 \cdot 32 = 32$$

$$0 \cdot 2^6 = 0 \cdot 64 = 0$$

$$1 \cdot 2^7 = 1 \cdot 128 = 128$$

$$1 \cdot 2^8 = 1 \cdot 256 = 256$$

$$0 \cdot 2^9 = 0 \cdot 512 = 0$$

$$\Rightarrow 0 + 2 + 0 + 8 + 16 + 32 + 0 + 128 + 256 + 0 = 442$$

A4:

$$16^3 = 4096$$

$$835 / 16^2 = 835 / 256 = 3 \text{ (reste 67)}$$

$$67 / 16^1 = 67 / 16 = 4 \text{ (reste 3)}$$

$$3 / 16^0 = 3 / 1 = 3 \text{ (reste 0)}$$

$$\Rightarrow 343$$

A5:

Convertir 400 en décimal $\Rightarrow 1024$

Convertir 1023 en binaire $\Rightarrow 10'000'000'000$

A6:

Convertir 1001001110 en décimal $\Rightarrow 590$

Convertir 590 en hexadécimal $\Rightarrow 24E$

B1:

En utilisant la technique

... | 4^3 | 4^2 | 4^1 | 4^0

B2:

Convertir 155 en décimal $\Rightarrow 341$

Convertir 341 en base 4:

$$4^5 = 1024$$

$$341 / 4^4 = 341 / 256 = 1 \text{ (reste 85)}$$

$$85 / 4^3 = 85 / 64 = 1 \text{ (reste 21)}$$

$$21 / 4^2 = 21 / 16 = 1 \text{ (reste 5)}$$

$$5 / 4^1 = 5 / 4 = 1 \text{ (reste 1)}$$

$$1 / 4^0 = 1 / 1 = 1 \text{ (reste 0)}$$

$$\Rightarrow 11111 \text{ (en base 4)}$$