

# Codage

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## 1 Codage des entiers positifs:

### 1.1 La base 2:

1	2	4	8	16	32	64	128	256	512	1024	2048	4096
$2^0$	$2^1$	$2^2$	$2^3$	$2^4$	$2^5$	$2^6$	$2^7$	$2^8$	$2^9$	$2^{10}$	$2^{11}$	$2^{12}$

#### Rappels:

$$20813_{10} = 2 * 2^4 + 0 * 10^3 + 8 * 10^2 + 1 * 10^1 + 3 * 10^0$$

$$1011_{10} = 1 * 2^3 + 0 * 2^2 + 1 * 2^1 + 1 * 2^0$$

#### 1.1.1 Methode lourde:

Ecriture de  $11_{10}$  en base 2:

$$11_{10} = 1 * 2^3 + 3 = 1 * 2^3 + 1 * 2 + 1 = 1011_2$$

#### Division euclidienne:

$$11 = 2 * 5 + 1$$

$$5 = 2 * 2 + 1$$

$$2 = 2 * 1 + 0$$

$$1 = 2 * 0 + 1$$

## 1.2 La base 16

On utilise:

0 1 2 3 4 5 6 7 8 9 A B C D E F

Avec:

$$A_{16} = 10$$

$$B_{16} = 11$$

$$C_{16} = 12$$

$$D_{16} = 13$$

$$E_{16} = 14$$

$$F_{16} = 15$$

### 1.2.1 Exemples:

$$F8A_{16} = 15 * 16^2 + 12 * 16^1 + 10 * 16^0$$

$$3CB_{16} = 3 * 16^2 + 12 * 16^1 + 11 * 16^0$$