

1 Exercice 1

1.1 a

- 010011011101
 - $1245 - (1024 + 128 + 64 + 16) = 0$
- 4DD
 - $0100 \Rightarrow 4; 1101 \Rightarrow D$

1.2 b

- 001111100001
 - $1 + 32 + 64 + 128 + 256 + 512 = 993$
- 000101101111
 - $1 + 2 + 4 + 8 + 32 + 64 = 111$
- 1111111111111111
 - $2^{16} = 65536$

1.3 c

- $9B37 = 7 + 3 \cdot 16 + 11 \cdot 16^2 + 9 \cdot 16^3 = 39735$
- $0x2F92 = 12178$

1.4 d

- $127.75 = 1111111,11$
 - $127 = 1111111$
 - $0.75 \cdot 2 = 1.5$
 - $0.5 \cdot 2 = 1$
- $307.18 = 100110011,00101$
 - $0.18 \cdot 2 = 0.36$
 - $0.36 \cdot 2 = 0.72$
 - $0.72 \cdot 2 = 1.44$
 - $0.44 \cdot 2 = 0.88$
 - $0.88 \cdot 2 = 1.76$
 - $[\dots]$

1.5 e

- $1000101 + 1111 = 1010100$
- $1011111 + 10011 =$

1.6 f

- $11000001-00000111=10111010$

1.7 g

- $1000000-1000000=0001011$
- $1001011-1000000=0001011$
 - $0110101+1+1000000=1110101$
 - $0001010+1=0001011$

1.8 h

- $111011*1001=111011+111011000$

2 Exercice 2

2.1 a

- $41705=32768+8192+512+128+64+32+8+1=1010001011101001$
- Non signé : 16 bits/octets, de 0 à 65535
- Signé C à 2 : 24bit, -2^{23} a $2^{23}-1$
- Biais = $2^{n-1}-1 = 2^{23}-1$
 - $41705+\text{Biais} = 0x80A2E8$; De $-2^{23}+1$ à 2^{23}