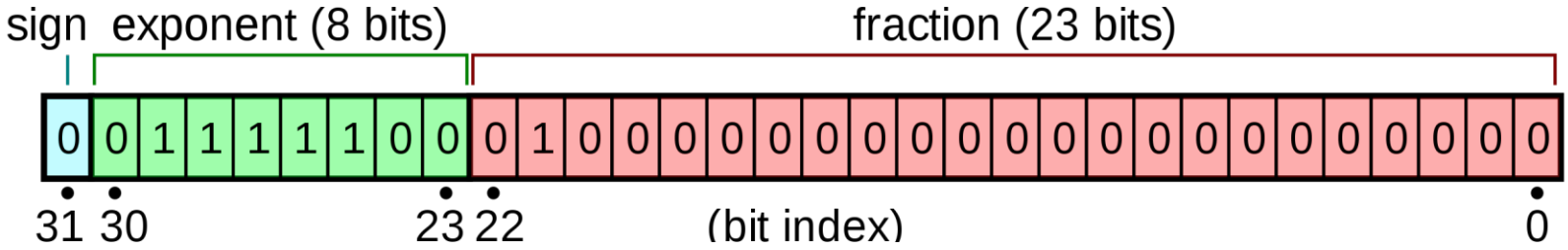
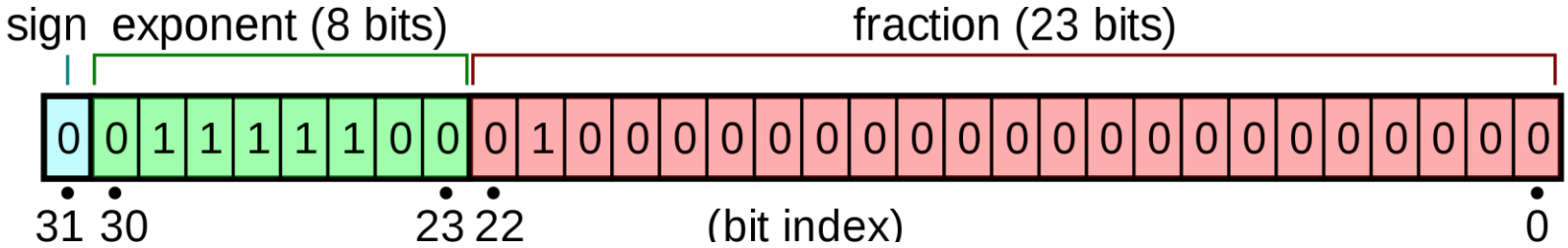
CONVERSIA ÎN IEEE FP, EX. 7



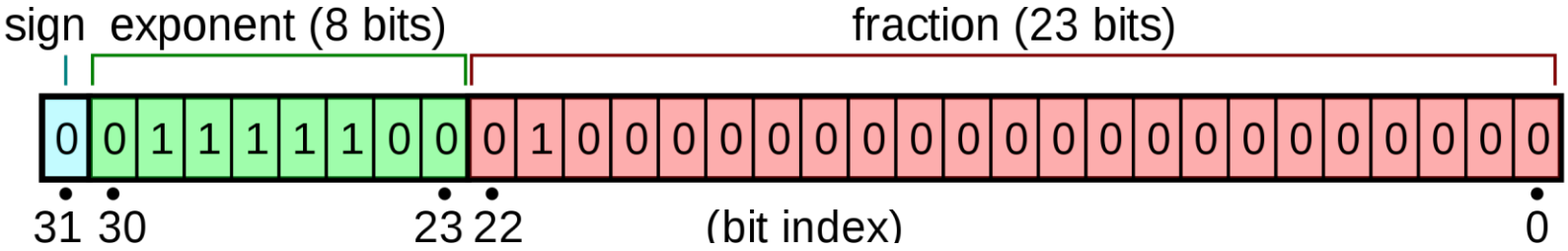
- -1313.3125
  - partea întreagă este: 1313
  - partea fracționară: 0.3125
    - 0.3125 × 2 = 0.625 => 0
    - 0.625 × 2 = 1.25 => 1
    - 0.25 × 2 = 0.5 => 0
    - 0.5 × 2 = 1.0 => 1
  - deci, $1313.3125_{10} = 10100100001.0101_2$
  - normalizare: $10100100001.0101_2 = 1.01001000010101_2 \times 2^{10}$
  - mantisa este 01001000010101000000000
  - exponentul este $10 + 127 = 137 = 10001001_2$
  - semnul este 1

CONVERSIA ÎN IEEE FP, EX. 8



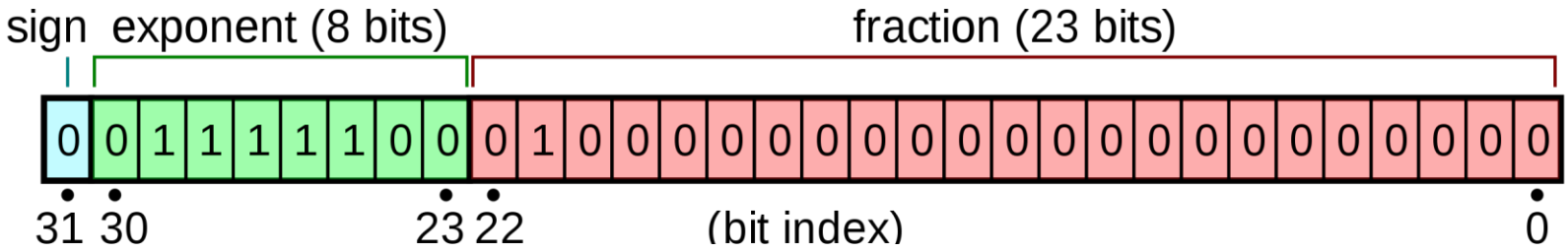
- **calculăm abs(a)**
  - **soluția: a = a & ~(1 << 31)**

CONVERSIA ÎN IEEE FP, EX. 8



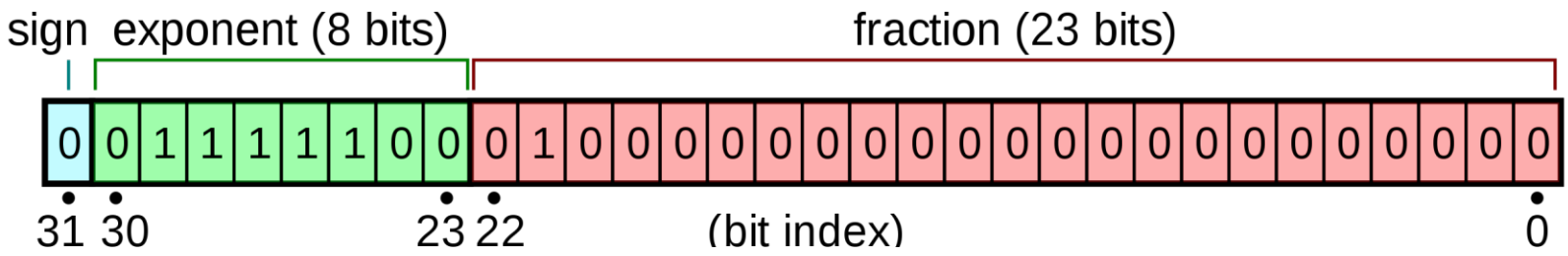
- **schimbați semnul lui a**
  - **soluția: a = a ^ (1 << 31)**

CONVERSIA ÎN IEEE FP, EX. 8



- **împărțiți a la 4**
  - **soluția:**
    - **vrem exponentul, unde se află?**
      - **MASK = 0x7F800000**
    - **extragem exponent = (a & MASK) >> 23**
    - **dacă exponent > 1 atunci exponent = exponent – 2, altfel a = 0**
    - **trebuie să actualizăm a**
      - **a = (a & ~MASK) | (exponent << 23)**

CONVERSIA ÎN IEEE FP, EX. 8



- **împărțiți a la 4**
  - **soluția:**
    - **vrem exponentul, unde se află?**
      - **MASK = 0x7F800000**

MASK: 0 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

    - **extragem exponent_var = (a & MASK) >> 23 = 124**

a & MASK: 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

(a & MASK) >> 23: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 0

    - **dacă exponent_var > 1 atunci exponent_var = exponent_var – 2, altfel a = 0**

exponent_var – 2 = 122: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 1 0

    - **trebuie să actualizăm a**
      - **a = (a & ~MASK) | (exponent_var << 23)**

a & ~MASK: 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

exponent_var << 23: 0 0 1 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

(a & ~MASK) | (exponent_var << 23): 0 0 1 1 1 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

FP ÎN HEX, EX. 9

d) 0xDEADBEEF = 0b11011110101011011011111011101111

- S = 1
- E = 10111101
- M = 01011011011111011101111
- (-1)^S 1.M * 2^{E-127} = (-1) 1.01011011011111011101111 $2^{189-127}$
  = - 1.01011011011111011101111 2^{62}
  = -6259853398707798000

e) 0x44361000 = 0b01000100001101100001000000000000

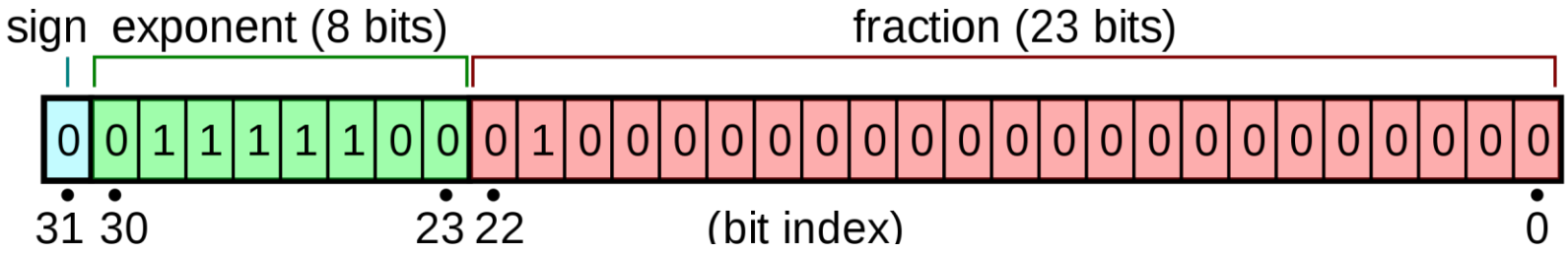
- S = 0
- E = 10001000
- M = 01101100001000000000000
- (-1)^S 1.M * 2^{E-127} = (1) 1. 01101100001000000000000 $2^{136-127}$
  = 1. 01101100001000000000000 2^{9}
  = 728.25

j) 0xC00010FF = 0b11000000000000000010000111111111

- S = 1
- E = 10000000
- M = 00000000010000111111111
- (-1)^S 1.M * 2^{E-127} = (-1) 1.00000000010000111111111 $2^{128-127}$
  = -1.00000000010000111111111 2^{1}
  = -2.001037359237671

0xFFFFFFFF și 0xFFFF0000 sunt NaN (convenție),

ZERO ÎN IEEE FP, EX. 10



- **setați s = 0, e = 0, f = 0**
- **a = $(-1)^0 \times 1.00\ldots00 \times 2^{-127} = 2^{-127} \neq 0$**

ÎMPĂRȚIREA RAPIDĂ, EX. 12

- **a / 19**

$$a \times \frac{1}{19} \approx \frac{a \times \frac{2938661835}{2^{32}} + \frac{a - a \times \frac{2938661835}{2^{32}}}{2^1}}{2^4}$$

$$a \times \frac{1}{19} \approx (a \times 2938661835 \times 2^{-32} + (a - a \times 2938661835 \times 2^{-32}) \times 2^{-1}) \times 2^{-4}$$

$$a \times \frac{1}{19} \approx a \times \frac{7233629131}{137438953472}$$

- **soluția generală**

$$\frac{a}{D} \approx \frac{\frac{aC}{2^X} + \frac{a - \frac{aC}{2^X}}{2^Y}}{2^Z}$$

$$D \approx \frac{2^{X+Y+Z}}{C \times (2^Y - 1) + 2^X}$$