

| Zahlensysteme | Zahlenbasis |
|---------------|-------------|
| Binär         | 2           |
| Dezimal       | 10          |
| Hexadezimal   | 16          |

Decimal in Decimal

132  $\rightarrow$

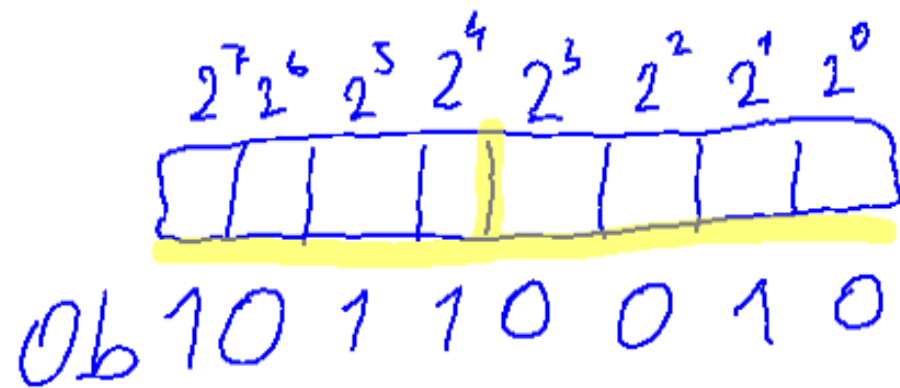
$$2 \cdot 10^0 = 2 \cdot 1 = 2$$

$$3 \cdot 10^1 = 3 \cdot 10 = 30$$

$$1 \cdot 10^2 = 1 \cdot 100 = \frac{100}{132}$$

# Binär in Dezimal

Byte:



|       |         |   |     |     |         |   |     |     |
|-------|---------|---|-----|-----|---------|---|-----|-----|
| $2^0$ | $\cdot$ | 0 | $=$ | 1   | $\cdot$ | 0 | $=$ | 0   |
| $2^1$ | $\cdot$ | 1 | $=$ | 2   | $\cdot$ | 1 | $=$ | 2   |
| $2^2$ | $\cdot$ | 0 | $=$ | 4   | $\cdot$ | 0 | $=$ | 0   |
| $2^3$ | $\cdot$ | 0 | $=$ | 8   | $\cdot$ | 0 | $=$ | 0   |
| $2^4$ | $\cdot$ | 1 | $=$ | 16  | $\cdot$ | 1 | $=$ | 16  |
| $2^5$ | $\cdot$ | 1 | $=$ | 32  | $\cdot$ | 1 | $=$ | 32  |
| $2^6$ | $\cdot$ | 0 | $=$ | 64  | $\cdot$ | 0 | $=$ | 0   |
| $2^7$ | $\cdot$ | 1 | $=$ | 128 | $\cdot$ | 1 | $=$ | 128 |

Summe: 178

0b 1111 1111 =  $_{10}$  in Decimal

|               |     |               |     |       |
|---------------|-----|---------------|-----|-------|
| $2^0 \cdot 1$ | $=$ | $1 \cdot 1$   | $=$ | 1     |
| $2^1 \cdot 1$ | $=$ | $2 \cdot 1$   | $=$ | 2     |
| $2^2 \cdot 1$ | $=$ | $4 \cdot 1$   | $=$ | 4     |
| $2^3 \cdot 1$ | $=$ | $8 \cdot 1$   | $=$ | 8     |
| $2^4 \cdot 1$ | $=$ | $16 \cdot 1$  | $=$ | 16    |
| $2^5 \cdot 1$ | $=$ | $32 \cdot 1$  | $=$ | 32    |
| $2^6 \cdot 1$ | $=$ | $64 \cdot 1$  | $=$ | 64    |
| $2^7 \cdot 1$ | $=$ | $128 \cdot 1$ | $=$ | 128   |
|               |     |               |     | <hr/> |
|               |     |               |     | 255   |

Binär: 0b 1111

Dezimal: 15

Hexadezimal: 0x F

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0b 1111 1111

= 0x F F

# Binär $\rightarrow$ Hexadezimal

0b 1 0 1 1 0 0 1 0

Nibble: 11 | 2

Hexadezimal: 0x **B** 2

dez

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15

Hex

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

| Dezimal | Binär | Hexadezi |
|---------|-------|----------|
| 0       | 0000  | 0        |
| 1       | 0001  | 1        |
| 2       | 0010  | 2        |
| 3       | 0011  | 3        |
| 4       | 0100  | 4        |
| 5       | 0101  | 5        |
| 6       | 0110  | 6        |
| 7       | 0111  | 7        |
| 8       | 1000  | 8        |
| 9       | 1001  | 9        |
| 10      | 1010  | A        |
| 11      | 1011  | B        |
| 12      | 1100  | C        |
| 13      | 1101  | D        |
| 14      | 1110  | E        |
| 15      | 1111  | F        |

$$181 = 0b1011 \mid 0101$$

Einschub in Nibble: 11 5

$$= 0x \quad B \quad 5$$



Dezimal  $\rightarrow$  Dezimal

|                 | Rest        |
|-----------------|-------------|
| $181 : 100 = 1$ | 81          |
| $81 : 10 = 8$   | 1           |
| $1 : 1 = 1$     | $\emptyset$ |

# Dezimal $\rightarrow$ Binär

ges: 181 in Binär

$$\begin{aligned} 2^0 &= 1 \\ 2^1 &= 2 \\ 2^2 &= 4 \\ 2^3 &= 8 \\ 2^4 &= 16 \\ 2^5 &= 32 \\ 2^6 &= 64 \\ 2^7 &= 128 \end{aligned}$$

|                 | Rest         |
|-----------------|--------------|
| $181 : 2^7 = 1$ | 53           |
| $53 : 2^6 = 0$  | 53           |
| $53 : 2^5 = 1$  | 21           |
| $21 : 2^4 = 1$  | 5            |
| $5 : 2^3 = 0$   | 5            |
| $5 : 2^2 = 1$   | 1            |
| $1 : 2^1 = 0$   | 1            |
| $1 : 2^0 = 1$   | <del>0</del> |

Ergebnis: 0b10110101