Aufgabe 2.3

October 28, 2014

(a)

Dezimal: 2014
Binär:
2014 : 2 = 1007 Rest: 0
1007 : 2 = 503 Rest: 1
503 : 2 = 251 Rest: 1
251 : 2 = 125 Rest: 1
125 : 2 =   62 Rest: 1
62   : 2 =   31 Rest: 0
31   : 2 =   15 Rest: 1
15   : 2 =   7 Rest: 1
7   : 2 =   3 Rest: 1
3   : 2 =   1 Rest: 1
1   : 2 =   0 Rest: 1 ↑ Leserichtung

→ 11111011110

Oktal:
11 111 011 110
↓   ↓   ↓   ↓
3   7   3   6

Hexadezimal:
111 1101 1110
↓   ↓   ↓
7   D   E

(b)

Dezimal: $375,375$
Binär:
$375 : 2 = 187$ Rest: 1
$187 : 2 = 93$ Rest: 1
$93 : 2 = 46$ Rest: 1
$46 : 2 = 23$ Rest: 0
$23 : 2 = 11$ Rest: 1
$11 : 2 = 5$ Rest: 1
$5 : 2 = 2$ Rest: 1
$2 : 2 = 1$ Rest: 0
$1 : 2 = 0$ Rest: $1 \uparrow$ Leserichtung

$0,375 \cdot 2 = 0,75 \rightarrow 0 \downarrow$ Leserichtung
$0,75 \cdot 2 = 1,5 \rightarrow 1$
$0,5 \cdot 2 = 1 \rightarrow 1$

$\rightarrow 101110111,011$

Oktal:
$101 \quad 110 \quad 111 \; , \; 011$
$\downarrow \quad\;\; \downarrow \quad\;\; \downarrow \quad\;\; \downarrow$
$5 \quad\;\;\; 6 \quad\;\;\; 7 \quad , \, 3$

Hexadezimal:
$1 \quad 0111 \quad 0111 \; , \; 0110$
$\downarrow \quad\;\; \downarrow \quad\;\;\; \downarrow \quad\;\;\; \downarrow$
$1 \quad\;\; 7 \quad\;\;\;\; 7 \quad , \, 6$

(c)

Dezimal: $0.\overline{3} = \frac{1}{3}$

Binär:

$\frac{1}{3} \cdot 2 = \frac{2}{3} \rightarrow 0 \downarrow$ Leserichtung

$\frac{2}{3} \cdot 2 = \frac{4}{3} \rightarrow 1$

$\frac{1}{3} \cdot 2 = \frac{2}{3} \rightarrow 0$

$\frac{2}{3} \cdot 2 = \frac{4}{3} \rightarrow 1$

etc...

$\rightarrow 0, \overline{01}$

Oktal:

0 , 010 101 ...

$\downarrow$ $\downarrow$ $\downarrow$

0 ,   2   5   ...

$\rightarrow 0, \overline{25}$

Hexadezimal:

0 , 0101 ...

$\downarrow$ $\downarrow$

0 ,   5   ...

$\rightarrow 0, \overline{5}$