

Digitale Medien
Übungsblatt 1

1a

i)

1 1 0 0 1 0 1 0

$$128 + 64 + 0 + 0 + 8 + 0 + 2 + 0 = 202$$

ii)

$$2^{(-1)} + 2^{(-3)} = 0,5 + 0,125 = 0,625$$

b

i)

$$354 / 256 = 1 \text{ R } 98$$

$$98 / 128 = 0 \text{ R } 98$$

$$98 / 64 = 1 \text{ R } 34$$

$$34 / 32 = 1 \text{ R } 2$$

$$2 / 16 = 0 \text{ R } 2$$

$$2 / 8 = 0 \text{ R } 2$$

$$2 / 4 = 0 \text{ R } 2$$

$$2 / 2 = 1 \text{ R } 0$$

$$0 / 1 = 0 \text{ R } 0$$

Ergebnis: 101100010

ii)

$$0,6874 * 2 = 1,3748$$

$$0,3748 * 2 = 0,7496$$

$$0,7496 * 2 = 1,4992$$

$$0,4992 * 2 = 0,9984$$

$$0,9984 * 2 = 1,9968$$

Ergebnis: 0,10101

2a

$$8888888 / 16 = 555555 \text{ R } 8$$

$$555555 / 16 = 34722 \text{ R } 3$$

$$34722 / 16 = 2170 \text{ R } 2$$

$$2170 / 16 = 135 \text{ R } 10$$

$$135 / 16 = 8 \text{ R } 7$$

7

Ergebnis: 0x832A87

b

$$16^{(0)} * 14 +$$

$$16^{(1)} * 4 +$$

$$16^{(2)} * 1 +$$

$$16^{(3)} * 6 +$$

$$16^{(4)} * 12 +$$

$$16^{(5)} * 11 = 12345678$$

c

$$A1: 10 * 16 + 1 = 161$$

$$178 / 128 = 1 \text{ R } 50$$

$50/64 = 0 \text{ R } 50$
 $50/32 = 1 \text{ R } 18$
 $18/16 = 1 \text{ R } 2$
 $2/8 = 0 \text{ R } 2$
 $2/4 = 0 \text{ R } 2$
 $2/2 = 1 \text{ R } 0$
 $0/1 = 0 \text{ R } 0$
 10110010

88: $8 \cdot 16 + 8 = 136$
 $136/128 = 1 \text{ R } 8$
 $8/64 = 0 \text{ R } 0$
 $8/32 = 0 \text{ R } 0$
 $8/16 = 0 \text{ R } 0$
 $8/8 = 1 \text{ R } 0$
 $0/4 = 0 \text{ R } 0$
 $0/2 = 0 \text{ R } 0$
 $0/1 = 0 \text{ R } 0$
 10001000

2B: $2 \cdot 16 + 11 = 43$
 $43/32 = 1 \text{ R } 11$
 $11/16 = 0 \text{ R } 11$
 $11/8 = 1 \text{ R } 3$
 $3/4 = 0 \text{ R } 3$
 $3/2 = 1 \text{ R } 1$
 $1/1 = 1 \text{ R } 0$
 101011

	Big Endian			Little Endian		
Adresse	hex	bin	dez	Hex	Bin	Dez
1	A1	10110010	161	2B	00101011	43
2	88	10001000	136	88	10001000	136
3	2B	00101011	43	A1	10110010	161

Big Endian: 10110010 10001000 00101011
 0xA1882B
 $11 + 2 \cdot 16 + 8 \cdot 16^2 + 8 \cdot 16^3 + 16^4 + 10 \cdot 16^5 = 10586155$

Little Endian: 00101011 10001000 10110010
 0x2B88A1
 $1 + 10 \cdot 16 + 8 \cdot 16^2 + 8 \cdot 16^3 + 11 \cdot 16^4 + 2 \cdot 16^5 = 2853025$

3
 Die Binärwerte der Buchstaben werden gemäß der Tabelle abgelesen.
 D 1000100
 i 1101001
 g 1100111
 i 1101001

t	1101100
a	1100001
l	1101100