

CS Week 1 Homework

Number Systems

1) $0xAFF \rightarrow \text{Binary}$

$$F \cdot 16 = 15 = 1$$

$$A \cdot 16 = 10 \cdot 16 = 160$$

$$F \cdot 16 \cdot 16 = 15 \cdot 16 \cdot 16 = 3840 \\ \boxed{4001} \text{ D}_{10}, \text{ D}_2.$$

0005

$$4001 : 2 = 2000 \quad R = 1$$

$$2000 : 2 = 1000 \quad R = 0$$

$$1000 : 2 = 500 \quad R = 0$$

$$500 : 2 = 250 \quad R = 0$$

$$250 : 2 = 125 \quad R = 0$$

$$125 : 2 = 62 \quad R = 1$$

$$62 : 2 = 31 \quad R = 0$$

$$31 : 2 = 15 \quad R = 1$$

$$15 : 2 = 7 \quad R = 1$$

$$7 : 2 = 3 \quad R = 1$$

$$3 : 2 = 1 \quad R = 1$$

$$1 : 2 = 0 \quad R = 1$$

zachob.

an ten

$$1 \cdot 2 = 1$$

$$2 : 2 \text{ rest } R = 0 \quad \boxed{\text{non}}$$

2) $11011110 \rightarrow \text{hex} \Rightarrow DE$

$$\begin{array}{c} 13 \\ D \\ \swarrow \\ 19 \\ E \end{array}$$

3) $0x8E \rightarrow \text{Binär}$

$$8 = 8 \cdot 16^0 = 8$$

$$E = 14 \cdot 16^1 = 224 + 8 = 232$$

$:2 = 116$	$R = 0$
$:2 = 58$	$R = 0$
$:2 = 29$	$R = 0$
$:2 = 14$	$R = 1$
$= 7$	$R = 0$
$= 3$	$R = 1$
1	$R = 1$
0	$R = 1$

4) $31,301 \rightarrow \text{hex}$