bit-manipulations.c

$(60)_{10} \rightarrow (0011\ 1100)_2$

$(13)_{10} \rightarrow (0000\ 1101)_2$

bitwise OR

Bitwise OR of 60 and 13 is 61

```
  00111100
| 00001101
  00111101
```

0...00 (24)

32 16 8 4 2 1

00111101

$32+16+8+4+1 = 61$

try with XOR yourself!

Shifting - left

$0011\ 1100 << 2 \rightarrow 1111\ 0000$

$(128\ 64\ 32\ 16\ 8\ 4\ 2\ 1)$

$(1\ 1\ 1\ 1\ 0\ 0\ 0\ 0)_2 \rightarrow (240)_{10}$

$128+64+32+16 = 240$

Shifting - Right

$0011\ 1100 >> 2$

$(0000\ 1111)_2 \rightarrow (15)_{10}$

$8+4+2+1 = 15$

Not $\sim 0011\ 1100$ this is wrong!!

$1100\ 0011$

128 64 32 16 8 4 2 1

$(1100\ 0011)_2 \rightarrow (195)_{10}$

$128 + 64 + 2 + 1 = 195$

0s

0 ..... 0011 1100 → 60 (int)

-2^{31} 1 ..... 1100 0011

$-2^{31} + 2^{30} + 2^{29} + \ldots + 2^8 + 128 + 64 + 0 + 0 + 0 + 0 + 2 + 1 =$

$= -61$

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practice problem 2.1

A) 0x25B9D2

2 5 B 9 D 2

0010 0101 1011 1001 1101 0010

B) 1010111001001001

1010 1110 0100 1001

A E 4 9

problem 2,2 → 2^h

$i+4j$ $\quad 0 \le i \le 3$

2^i → leading number

j → 0s

2^{23} $\quad h = 23$ $\quad$ 0s

$23 = 4 \cdot 5 + 3$ → 2^3 - leading

2^{23} → 0x800000

---

problem 23 $\quad$ of 2

158 → Binary → Hex

128	64	32	16	8	4	2	1
1	0	0	1	1	1	1	0

128 + 16 + 8 + 4 + 2 = 158

158 − 128 = 30

30 − 16 = 14

14 − 8 = 6

6 − 4 = 2

2 − 2 = 0

8	4	2	1	8	4	2	1
1	0	0	1	1	1	1	0
9				E			

Decimal − 158

Binary − 1001 1110

Hex → 0x 9E (9E)

2.5

128 64 32 16 8 4 2 1

1010 1110

binary -> 10101110

decimal -> 174

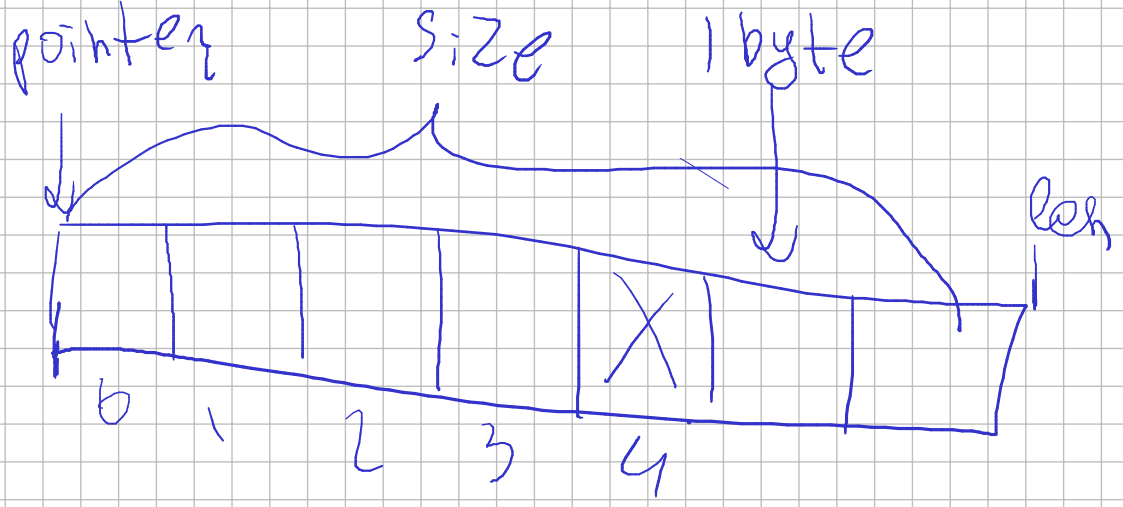
128 + 32 + 8 + 4 + 2 = 174 Hex -> 0xAE (AE)

8 2 8 4 2 1

1 0 1 0 1 1 1 0

A E

2.5)



start + 4 x datatype size

TODO in this week

Read Chapter 2 (first 2 chapters is a must)

Do the Practice problems!