CS 208

Friday

21 Jan 2022

Bitwise OR (|)

a 0000 1010

b 0100 0110

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a | b 0100 1110

Bitwise AND (&)

a 0000 1013

b 01000110

a&b 00000010

Bitwise XOR ($\wedge$)

a or b
but not
both

a 0000 1013

b 0100 0110

---

a $\wedge$ b 0100 1100

Bitwise NOT (~)

a 0000 1013

~a 1111 0101

35

=

0x23 0 — 0 0010 0011

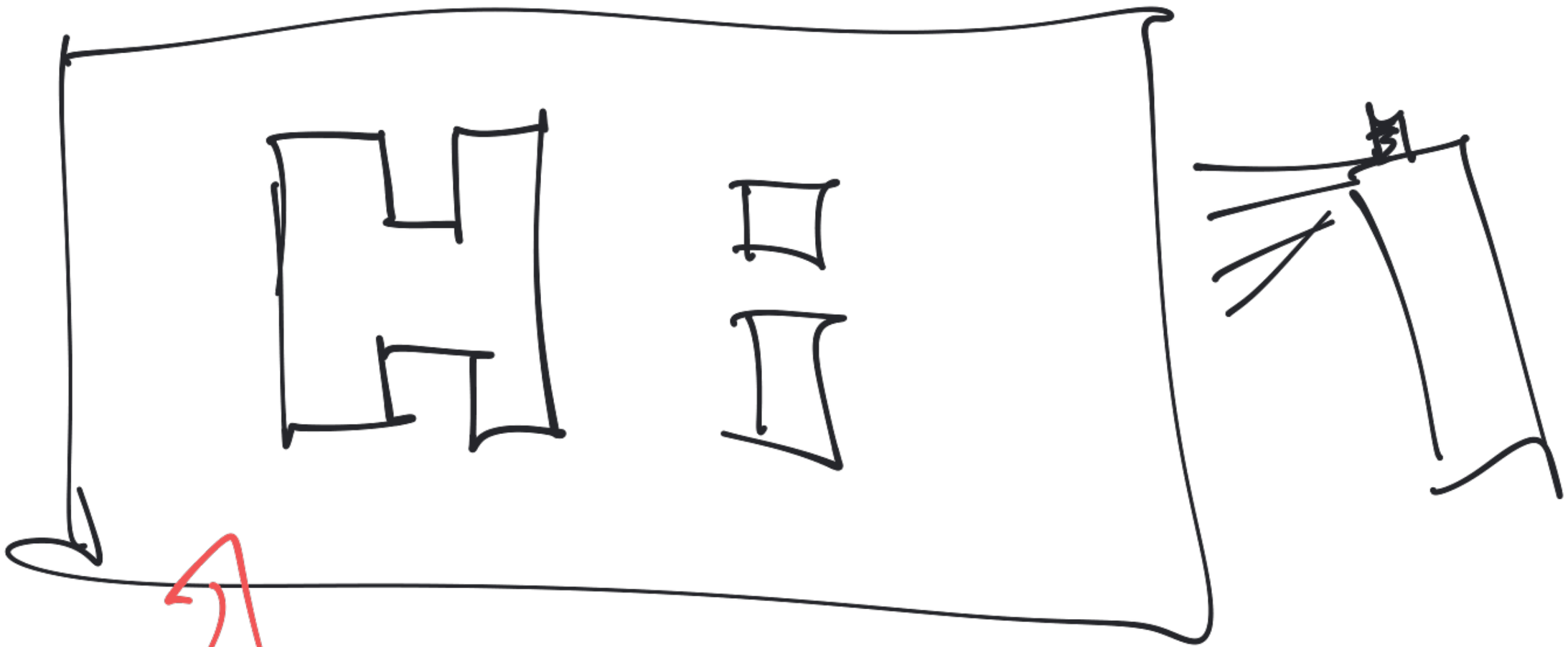
0x80 0 — 0 1000 0000

0xa3 0 — 0 1010 0011

=

163

Stencil



"mask"

mask 0xFFFFFFFD

1111 1111 1111 1111 1111 1111 1111 1101

a 0 ——————————————— 0 0010 0011

a & mask 0 ——————————————— 0 0010 0001

0x21

$35 = 0x23 = 0 — 0\ 0\ 0\ 1\ 0\ 0\ 0\ 1\ 1$

$35 << 2 \rightsquigarrow 00-8\ 1\ 0\ 0\ 0\ 1\ 1\ 0\ 0$

$35 \times 4 = 140$

35 >> 2

0 0010 0011

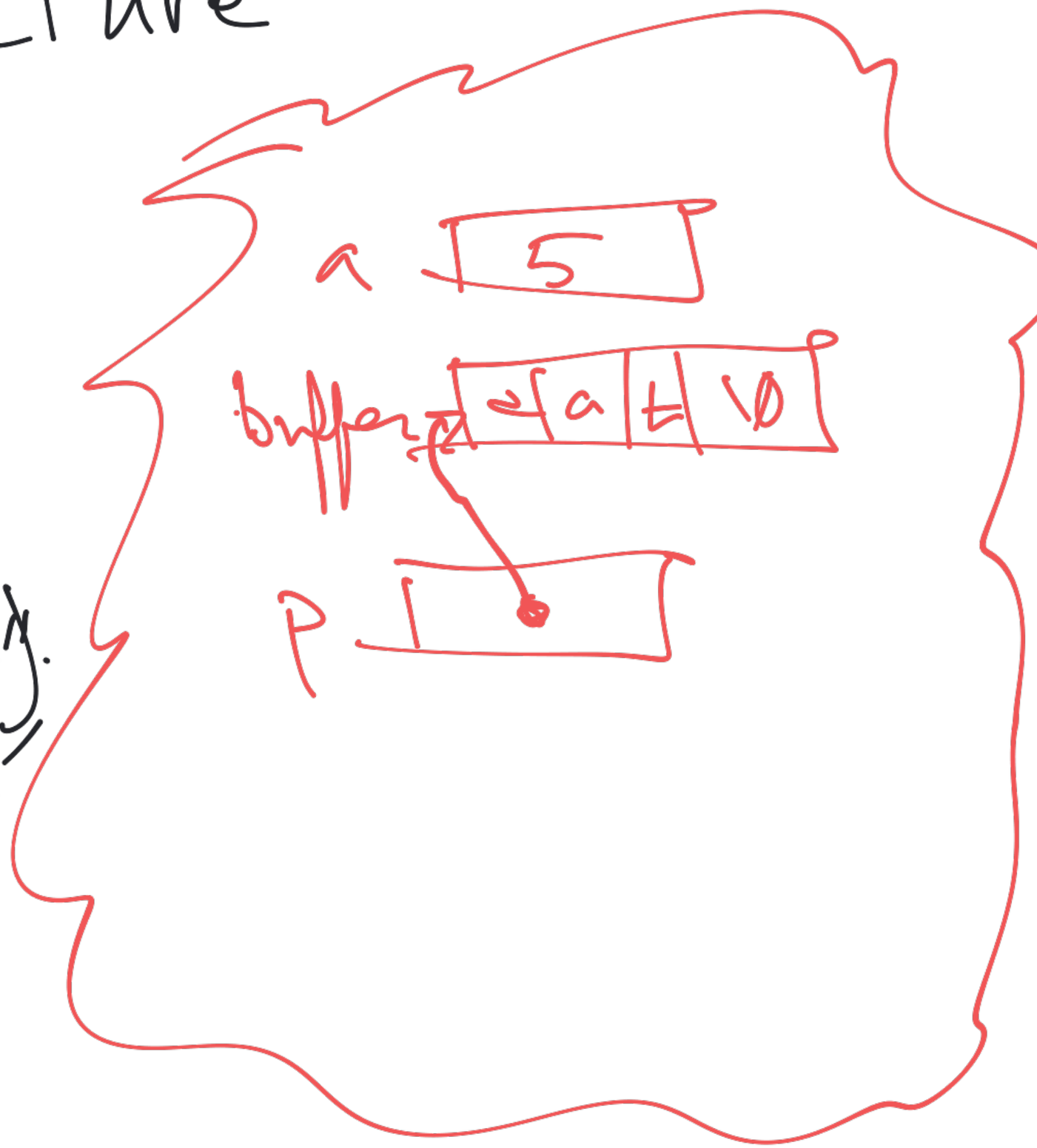
0 000 1000

35/4 = 8

↑
int division

C "architecture"

```
int main(){
    int a=5;
    char buffer[4];
    strcpy(buffer, "cat");
    char *p = buffer;
}
```



Compile hello.c

preprocesor

hello.c w/ a few changes

text assembly generation

hello.s or hello.asm

(assembly language version)

but close to bits

machine language

hello.o (roughly)