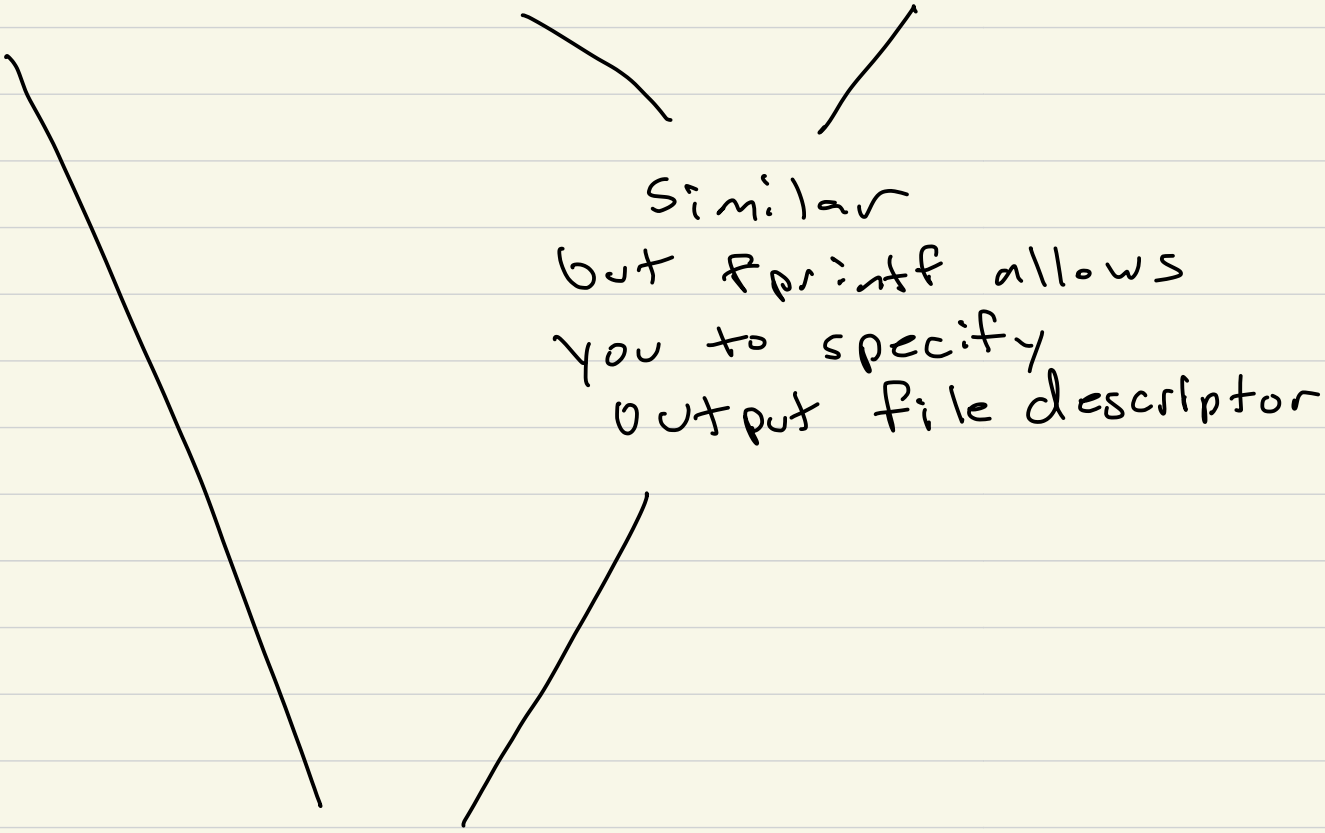
CS326-01 User Memory

Lab02 / Lab03

write() vs fprintf vs printf

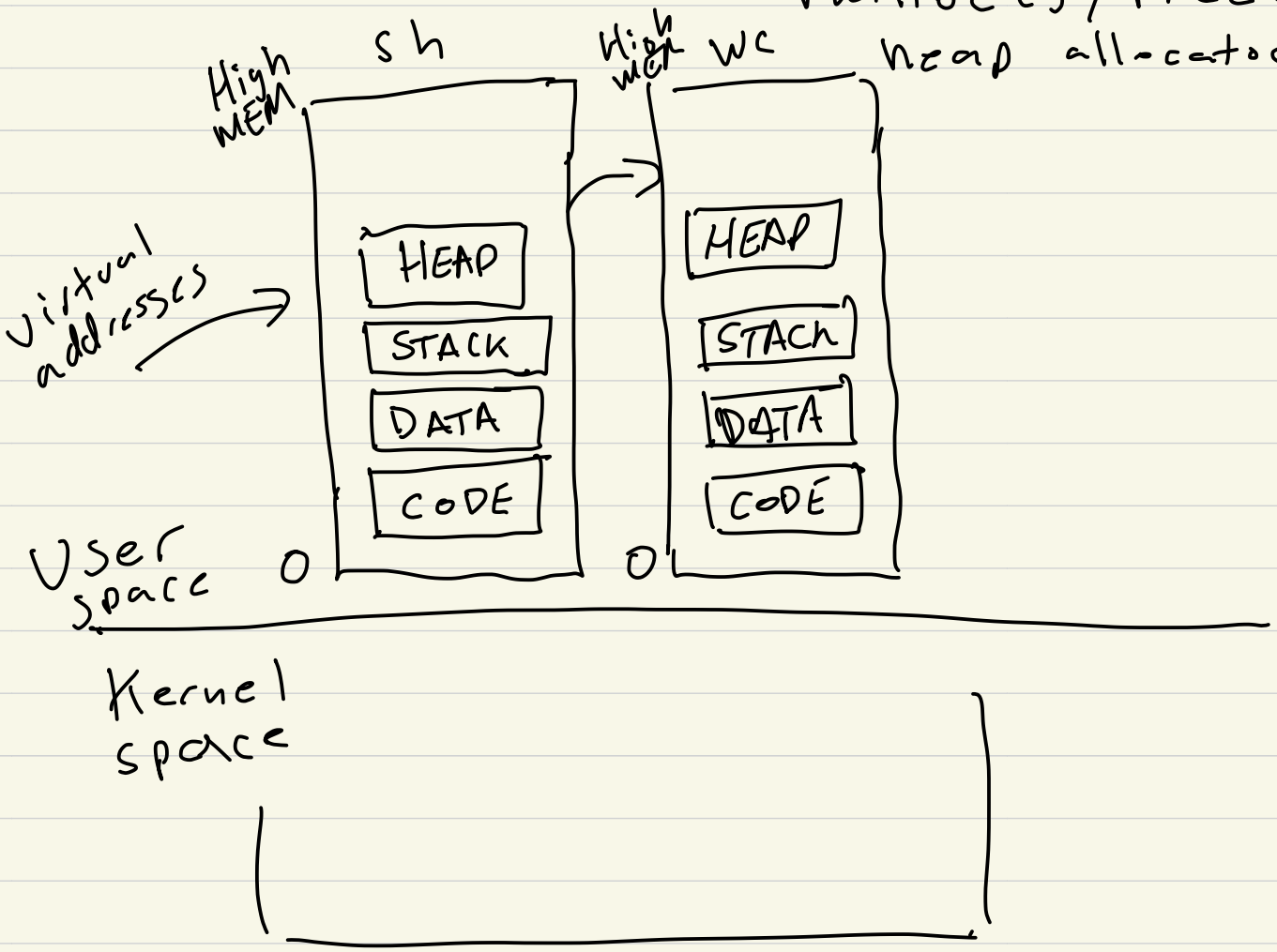


write() is a system call

int write(int fd, char *buf, int n)

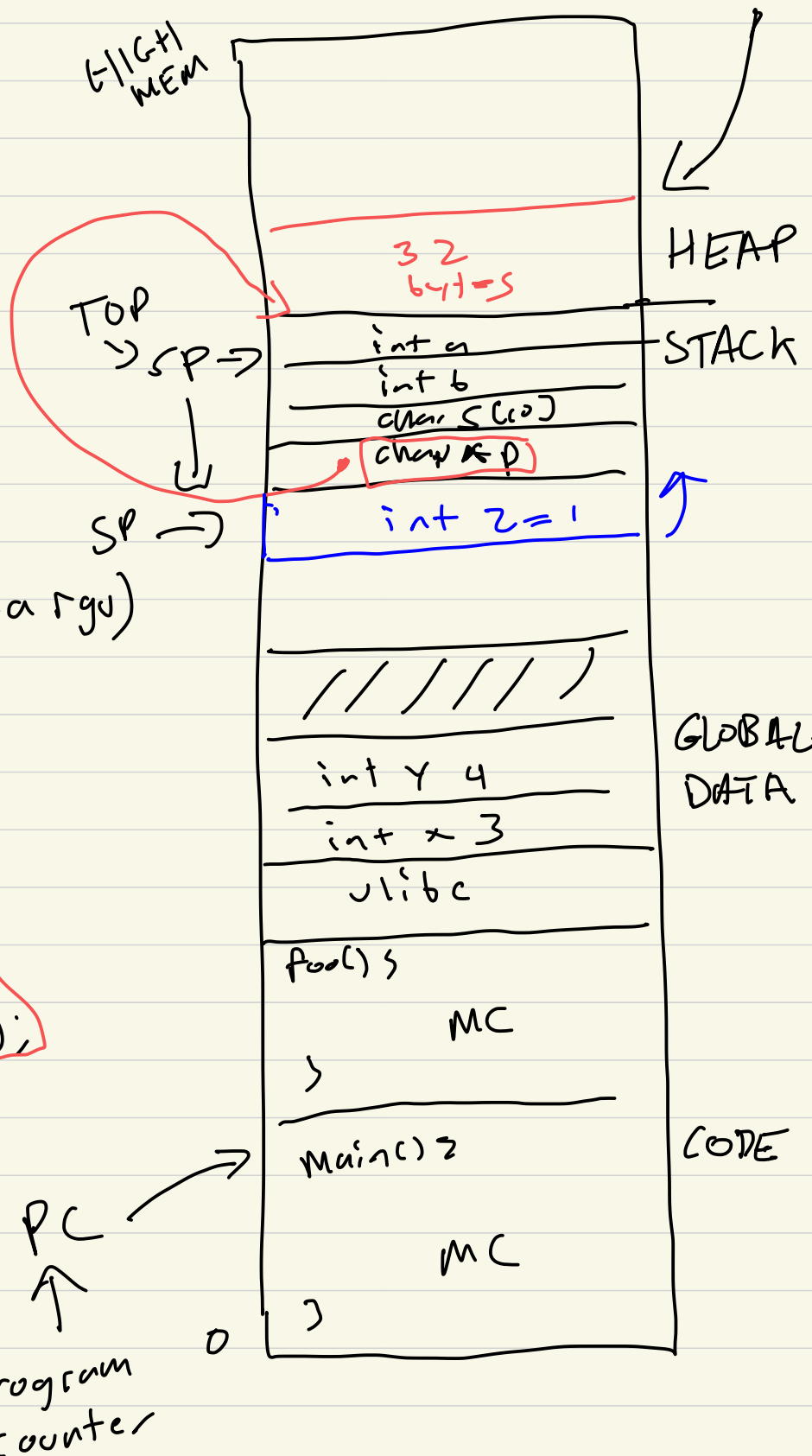
User memory

Project 01
malloc() / free()
heap allocator



foo.c

```
int x = 3;
int y = 4;

int foo(int d)
{
    int z;
    z = 1;
    return z+d;
}

int
main(int argc, char **argv)
{
    int a;
    int b;
    char s[10];
    char *p;

    p = (char *)malloc(32);

    a = foo(3);

}
```

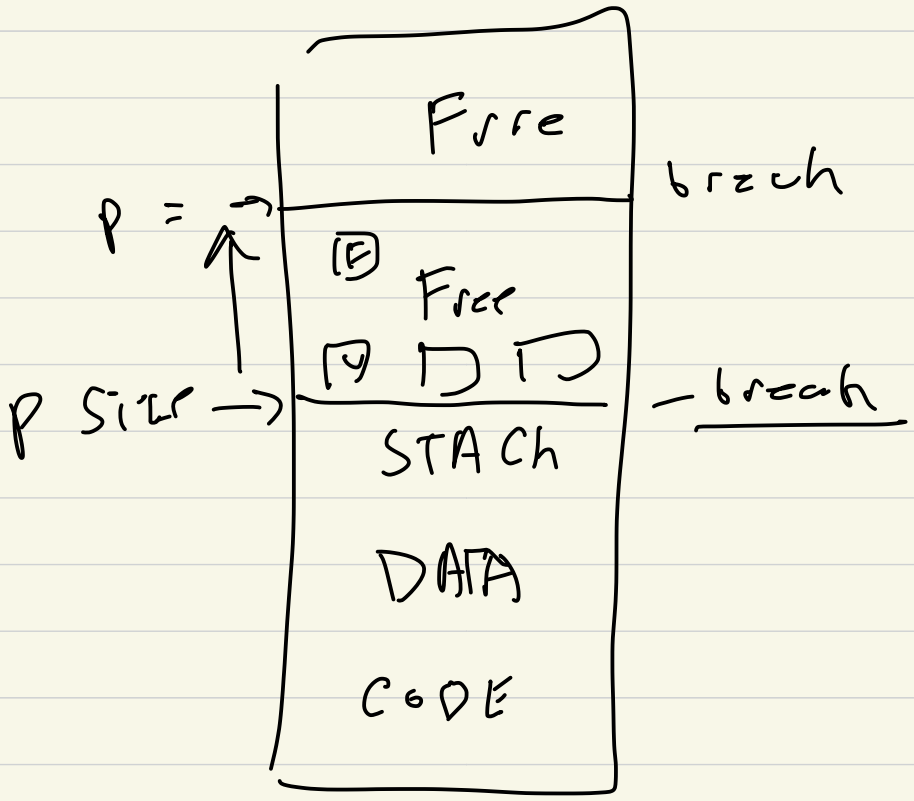


Heap

xv6 system call

p = sbrk(n)

p = sbrk(n)



Heap

a = malloc()

b = malloc()

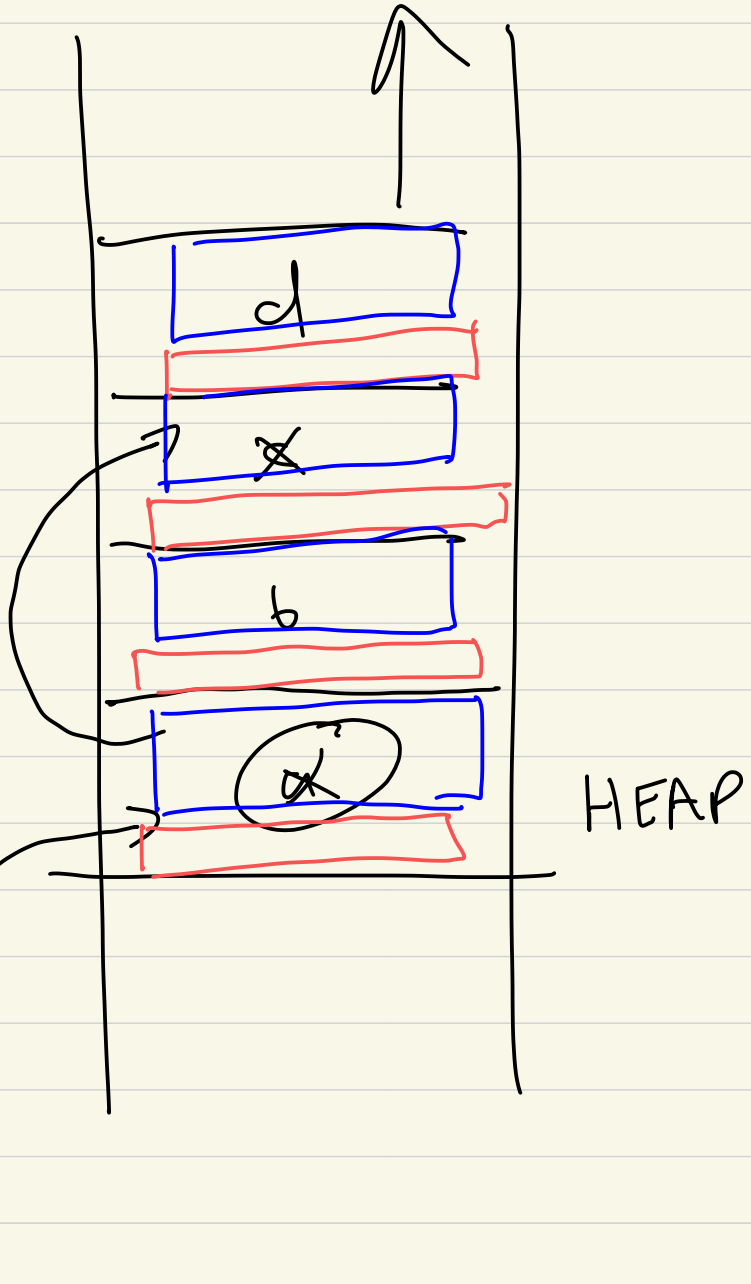
c = malloc()

d = malloc()

free(c)

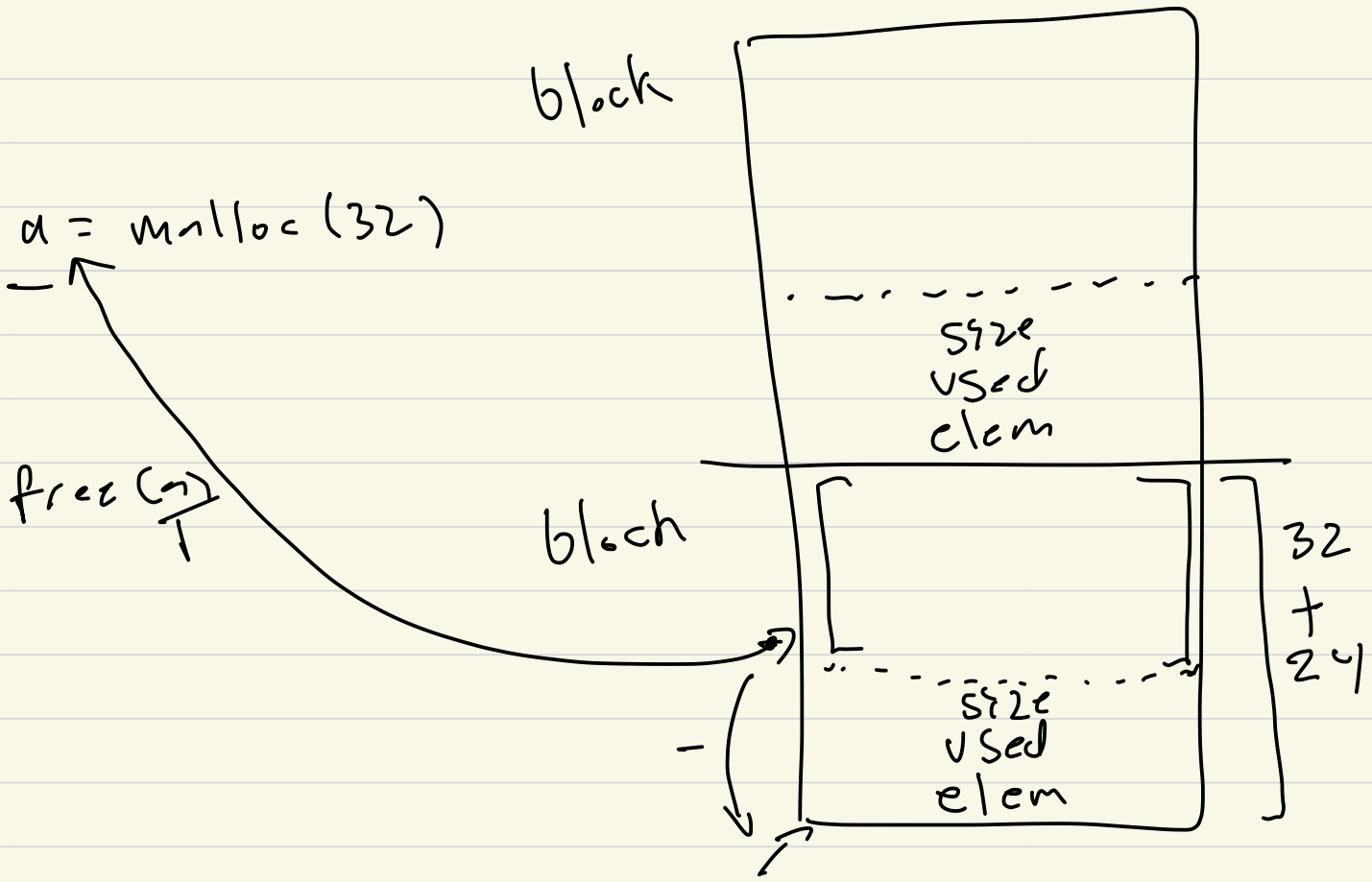
free(a)

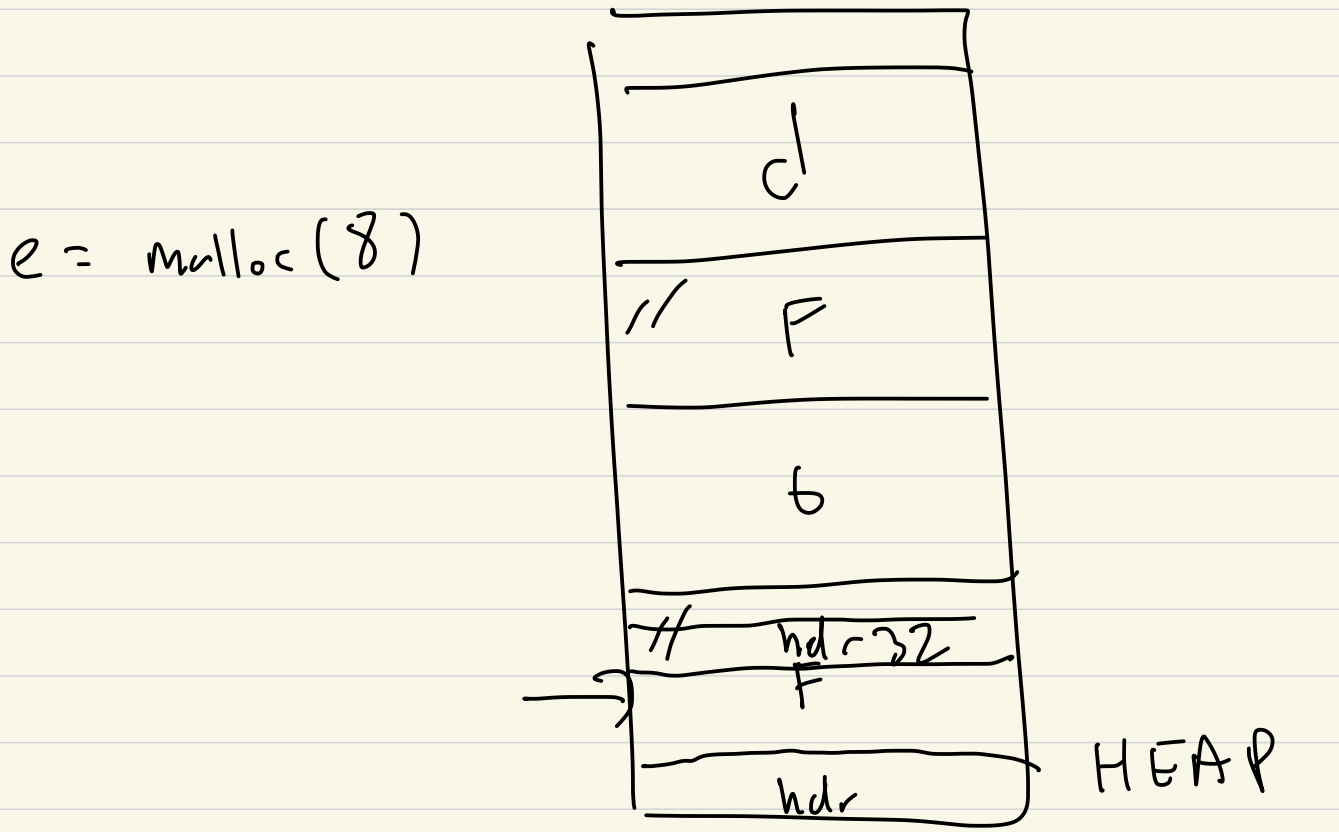
e = mallo()



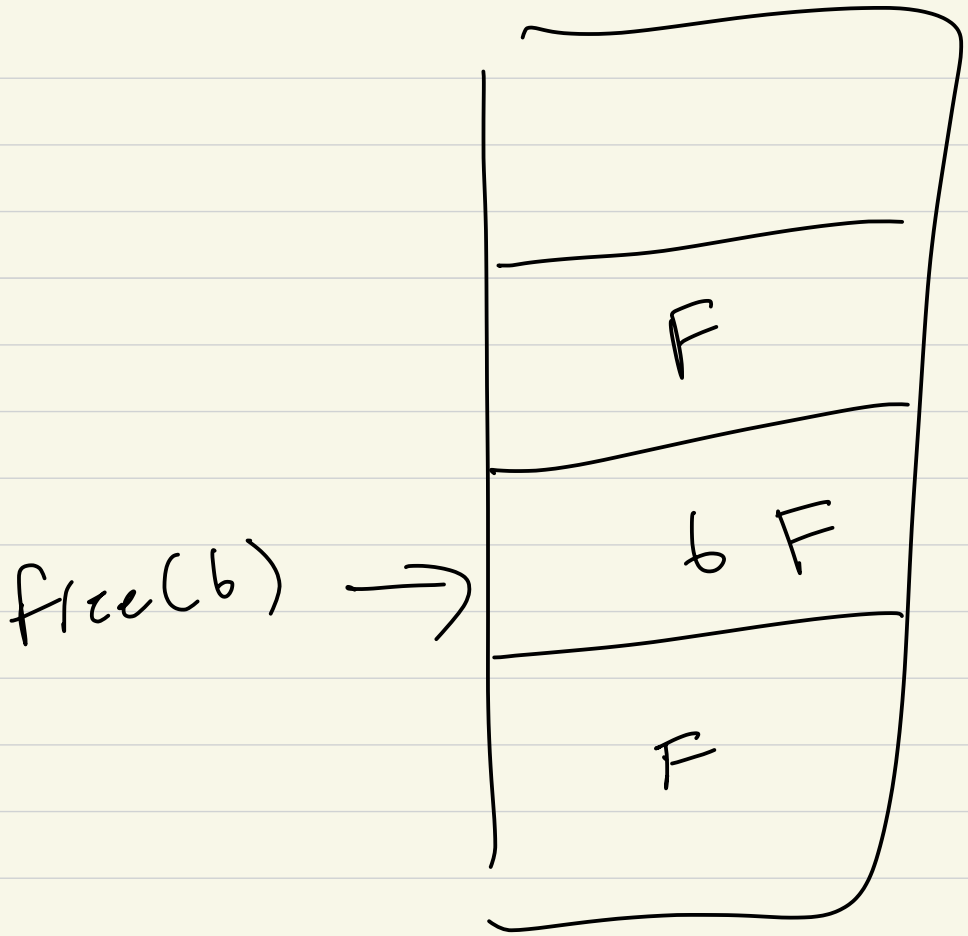
free_list

```
struct block_hdr {
        struct list_elem elem;
        int used;
        int size;
};
```


block
a = malloc(32)
size
used
elem
free(a)
block
32
+
24
size
used
elem


c
F
b
hdr 32
F
hdr
HEAP

e = malloc(8)


F
b F
free(b)
F