

CPSC 213 Lab 4

Structs & Dynamic Allocation

Slides available at <https://randyzhu.com/cpsc213>

Course Deadlines

- A4 due this Friday, Feb 6th
- Quiz 2 next week
- Good luck with other midterms!

Struct sizeof and offsetof

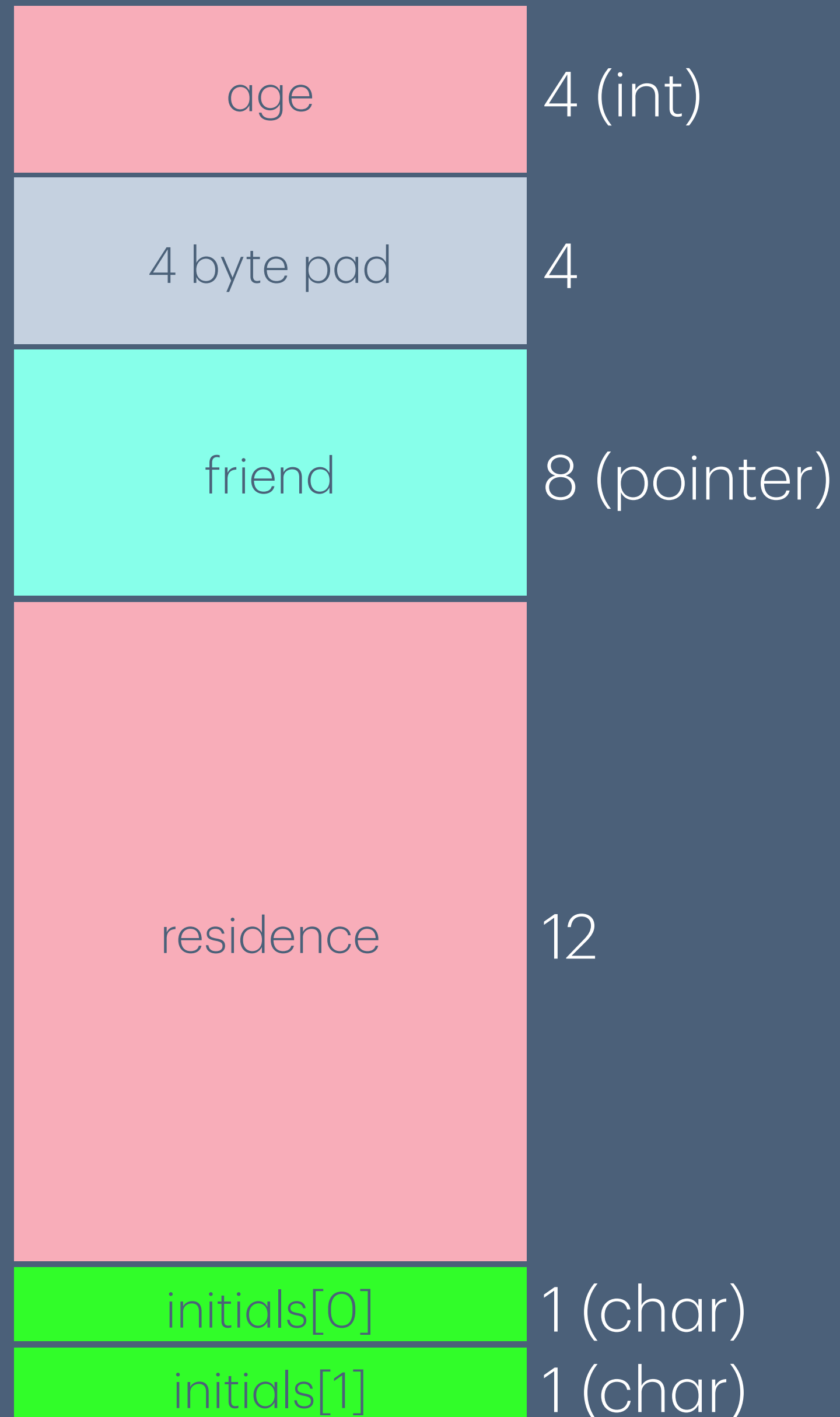
Q1

struct Address:

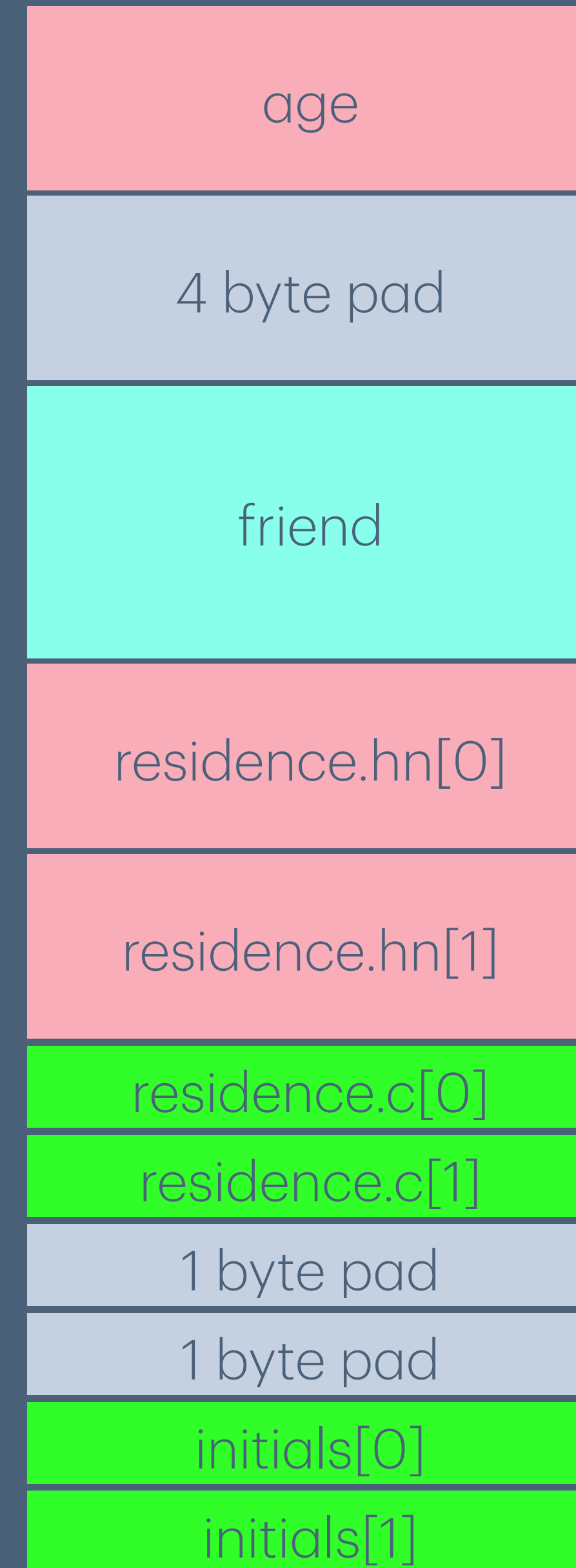
houseNumber[0]	4 (int)
houseNumber[1]	4 (int)
country[0]	1 (char)
country[1]	1 (char)
1 byte pad	1 (char)
1 byte pad	1 (char)

Struct sizeof and offsetof

struct Person



transparent:



Struct sizeof and offsetof

Why can't you be clever?

friend	friend
residence.hn[0]	residence.hn[0]
residence.hn[1]	residence.hn[1]
residence.c[0]	residence.c[0]
residence.c[1]	residence.c[1]
1 byte pad	initials[0]
1 byte pad	initials[1]
initials[0]	
initials[1]	

```
void f(struct Address *a):
```

```
    unsigned char* c = ((unsigned char*) a) + 10;
```

```
    c[0] = 3;
```

```
    c[1] = 4;
```

```
int main():
```

```
    struct Person p;
```

```
    f(&p.residence);
```

Lab Code

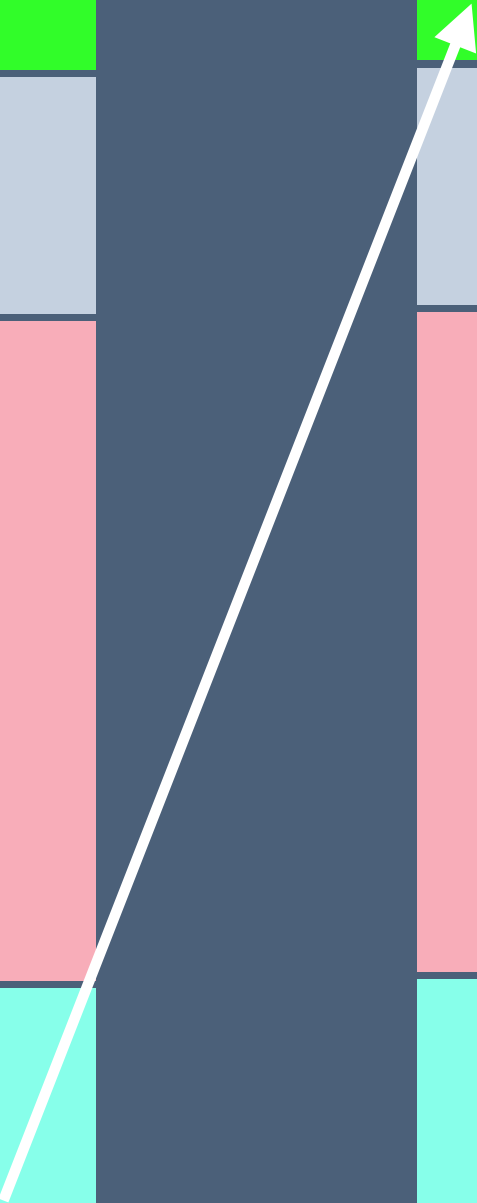
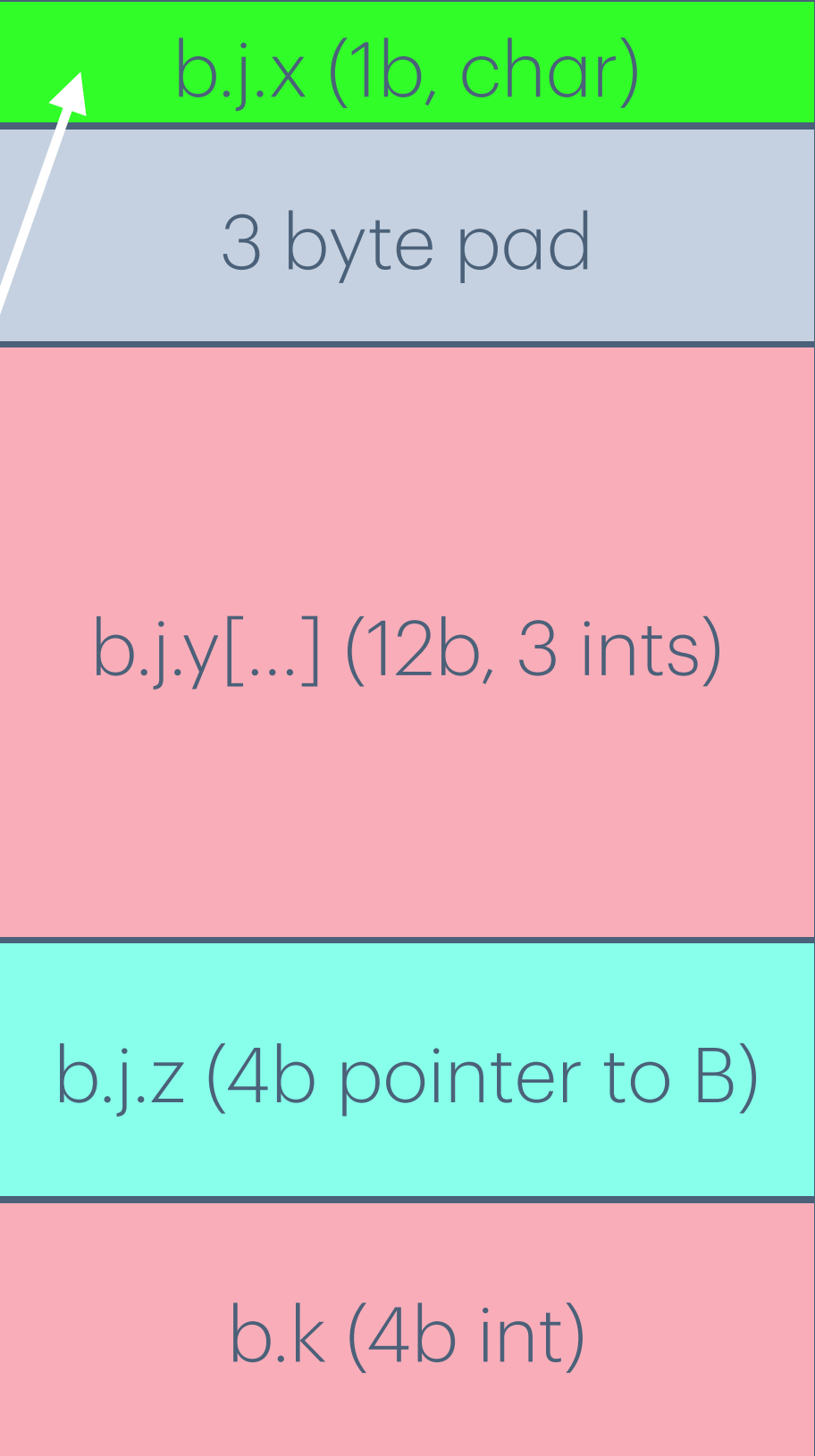
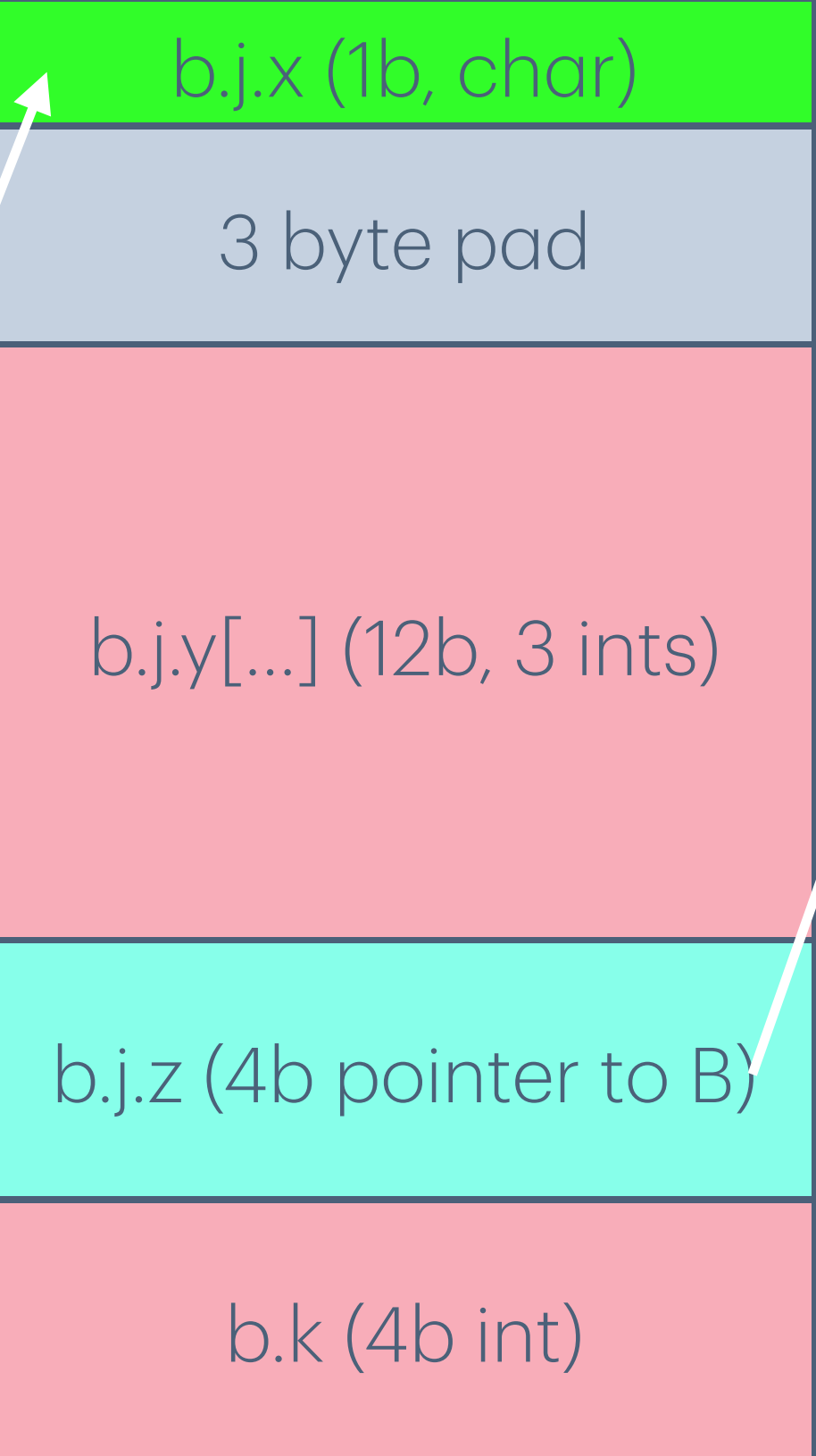
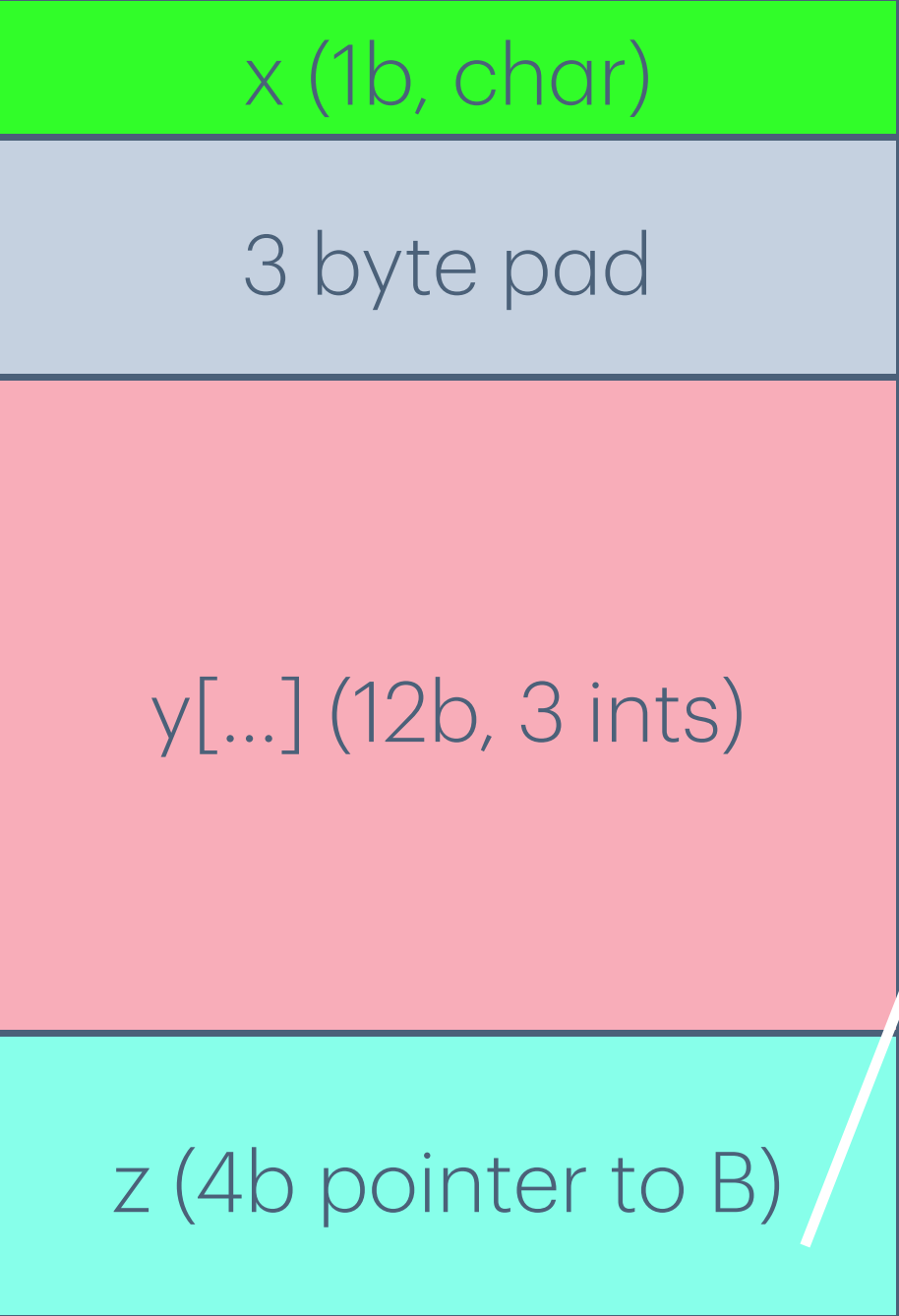
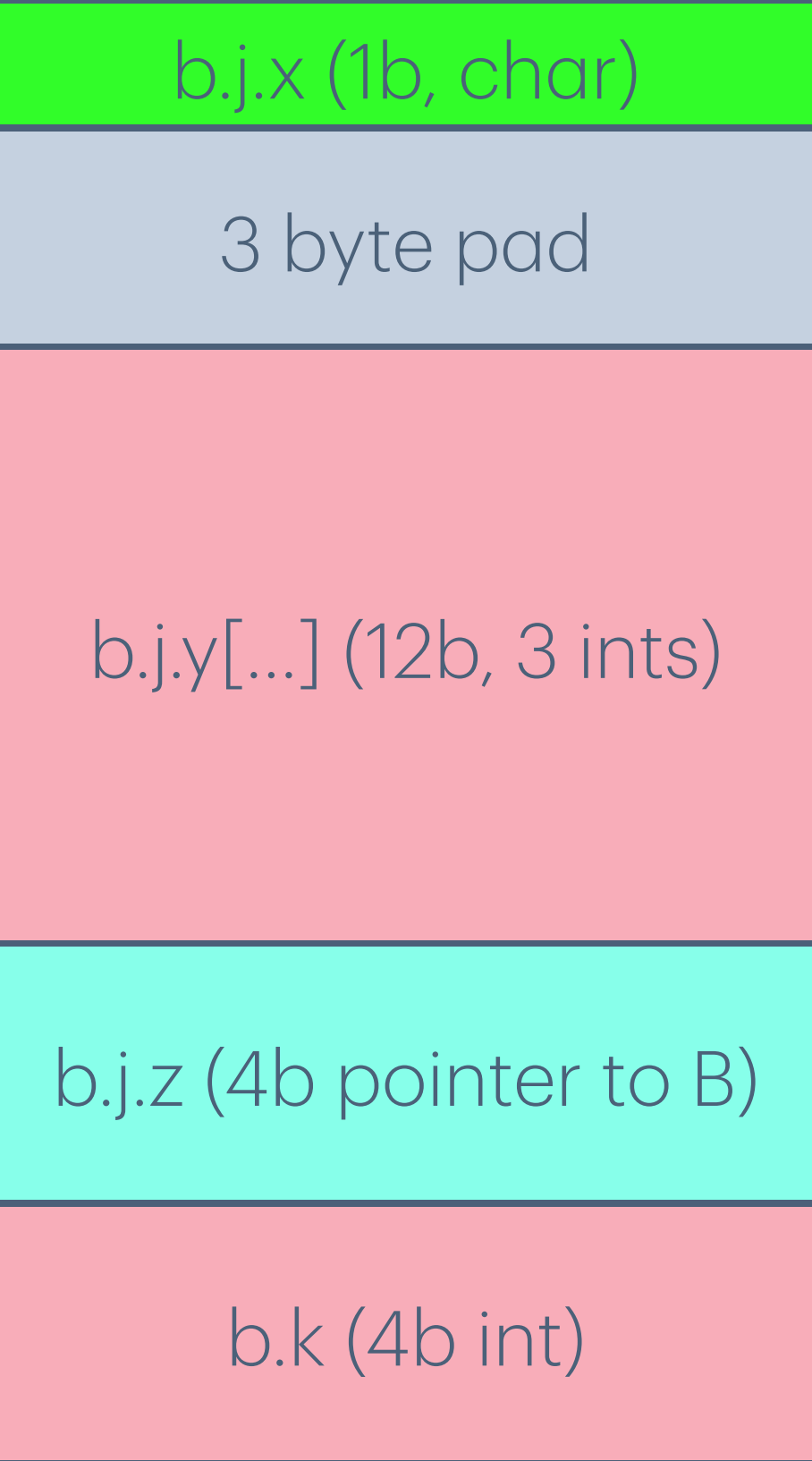
NSJD

Memory Reads

(0x100) a:



(0x104) b:

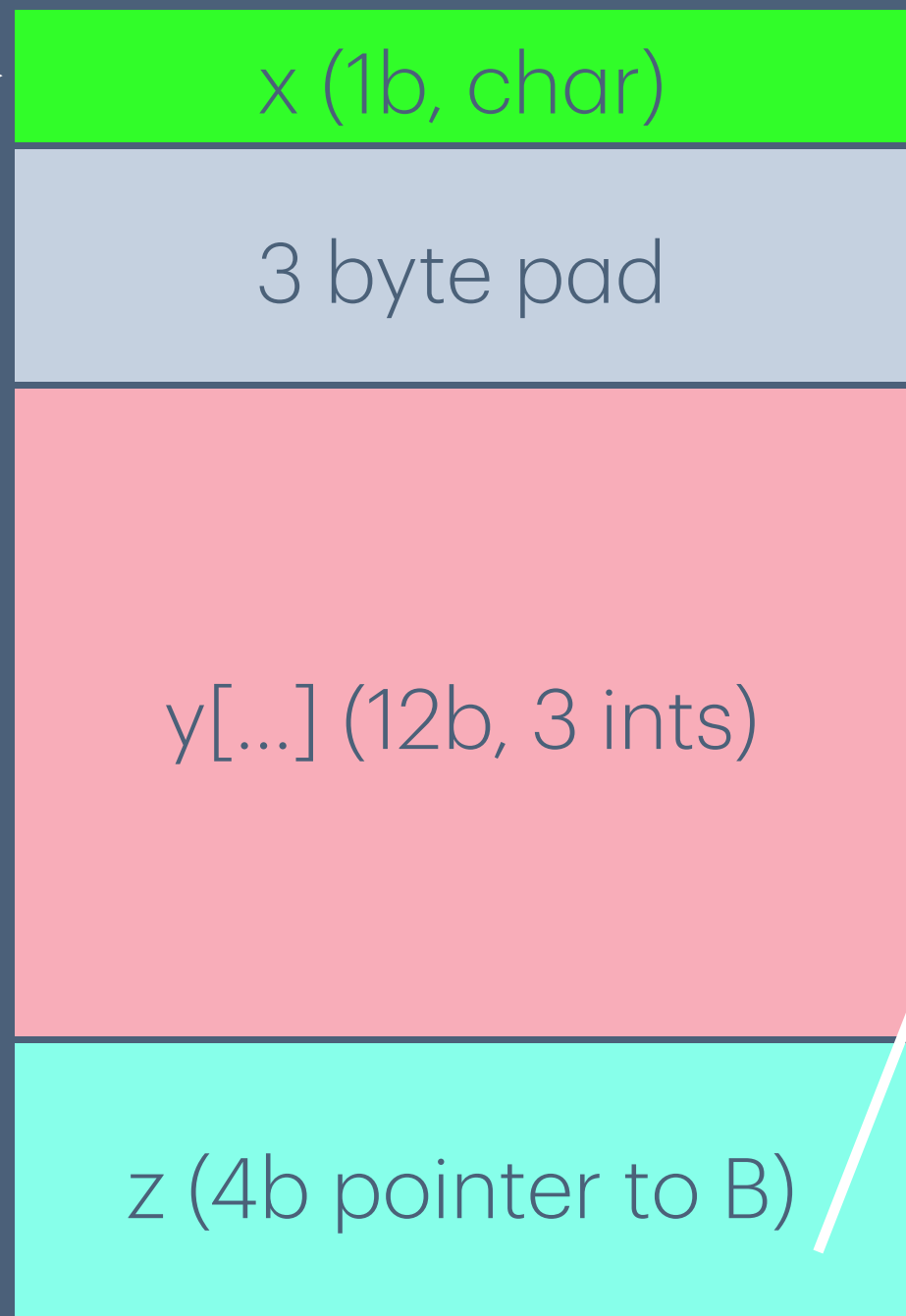
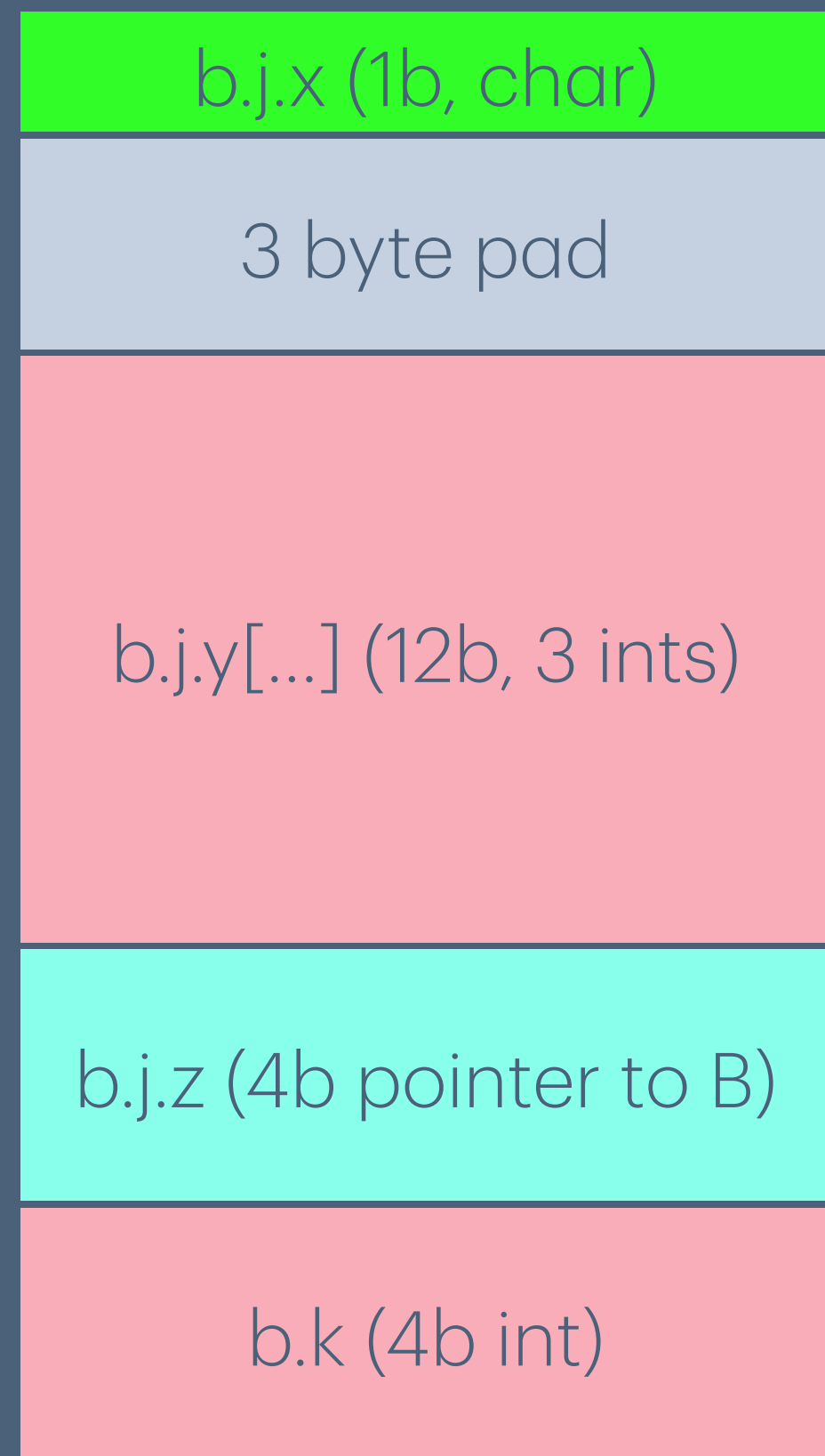


Memory Reads

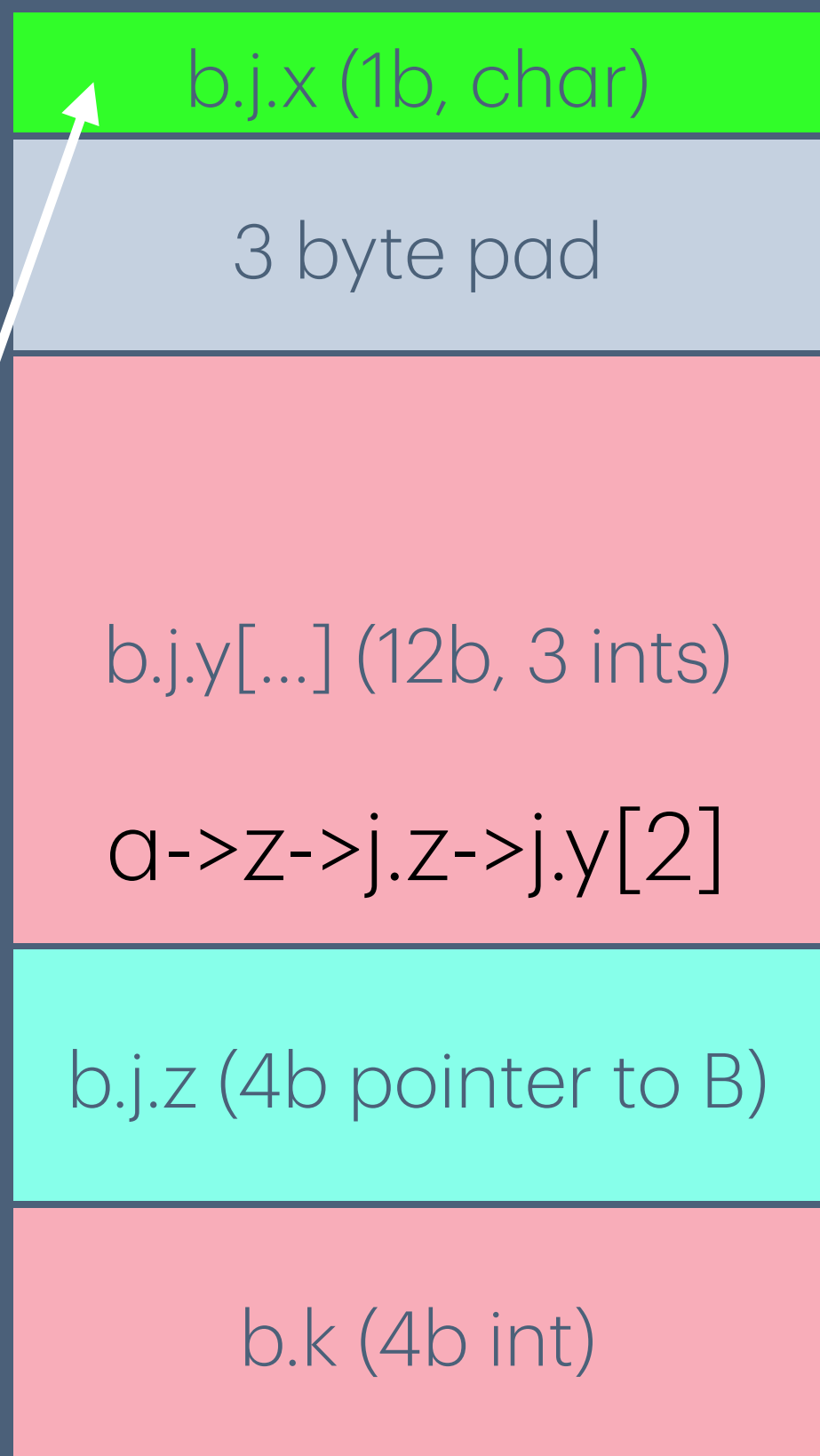
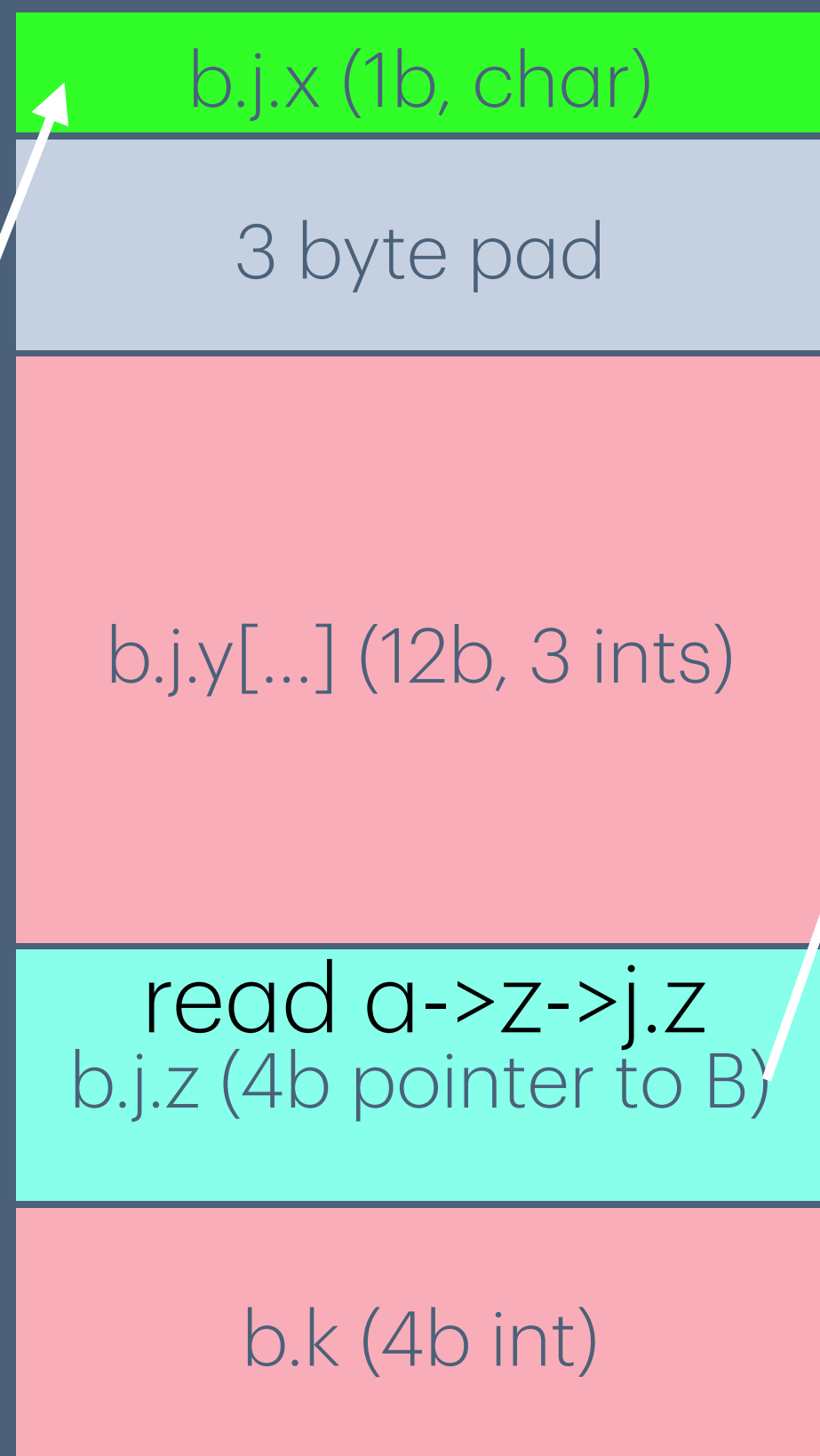
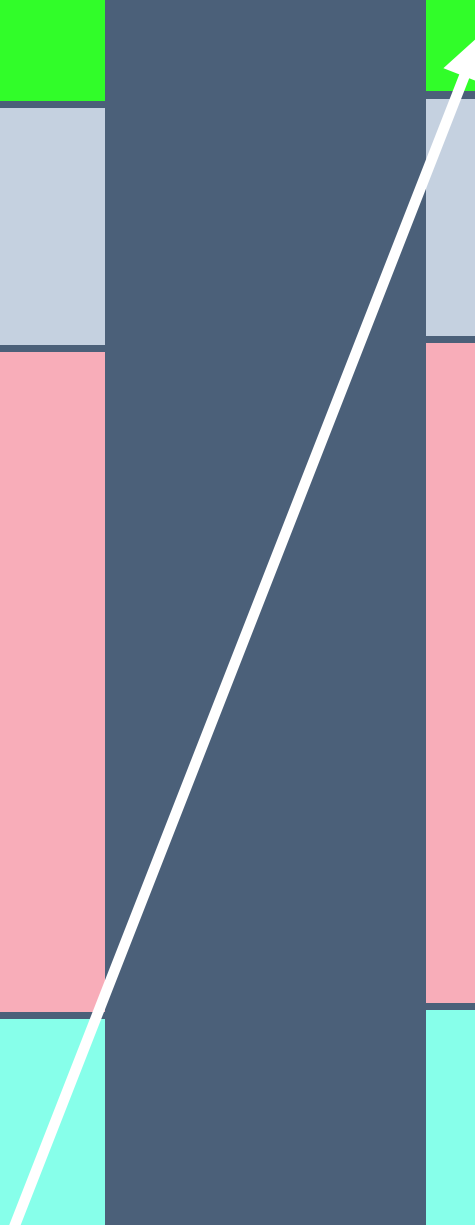
(0x100) a:



(0x104) b:



read a->z



address of b.k (known at compile time, 0x114)